MINUTES
TOWN OF AMHERST
AMHERST PLANNING BOARD MEETING
August 27, 2024
6:30 PM

The Planning Board will hold a public work session at 6:00 PM in the Amherst Municipal Building, 5583 Main Street, Williamsville, NY 14221 on the same date.

This meeting is being video recorded.

ROLL CALL

Attendee Name	Organization	Title	Status	Arrived
Michael Chmiel	Town of Amherst	Chair	Present	
John B. Davis	Town of Amherst	Board Member	Absent	
Harbinder Gill	Town of Amherst	Board Member	Present	
Dal Giuliani	Town of Amherst	Board Member	Absent	
Carrie H. Kahn	Town of Amherst	Board Member	Present	
Brittany Lee Penberthy	Town of Amherst	Board Member	Absent	
Joseph P. Raffaele Jr.	Town of Amherst	Board Member	Present	
Dan Howard	Town of Amherst	Planning Director	Present	
Daniel J. Ulatowski	Town of Amherst	Assistant Planning Director/ZEO	Present	
Scott Marshall	Town of Amherst	Principal Planner	Present	
Roberta Rappoccio	Town of Amherst	Associate Planner	Present	
James Quinn	Town of Amherst	Assistant Planner	Present	

Amy Carrato	Town of Amherst	Community Development Assistant	Present	
Nora B. Robshaw	Town of Amherst	Deputy Town Attorney	Present	

Note: There will be no public hearing or opportunity to speak for the projects listed under the Unfinished Business section of this agenda.

Please note the following time limits for speakers at public hearings:

- **Presentation by Petitioner: 15 minutes**
- **Rebuttal by neighborhood/resident spokesperson: 15 minutes**
- **Individual speakers: 3 minutes**

PUBLIC HEARINGS

SITE PLANS & RELIEF FROM CONDITIONS OF SITE PLANS

None

SUBDIVISIONS & RELIEF FROM CONDITIONS OF SUBDIVISIONS

1. PROPOSED SKETCH PLAN REVIEW FOR A 27-LOT SUBDIVISION, ASHLEY GREEN PHASE II, SUB-2024-01SK
Property located at 10060 Transit Rd. (portion)
DJC Land Inc., Petitioner

Proposed subdivision of 8.97± acres of land into 27 lots for detached single-family homes. A proposed 60 foot public right-of-way is shown roughly through the center of the site connecting Transit Road to the proposed terminus of the “Ashley Green” subdivision to the west on the east side of Town Ditch 26D-1. Proposed lots range in size from 7,540 sq. ft. to 23,671 sq. ft. and have frontages that range in size from 52 ft. to 124 ft.

August 27, 2024

Ken Zollitsch, Greenman-Pedersen, Inc., represented the petitioner, explained the proposal and was available to answer questions from the Board.

In response to the Board's questions, Mr. Zollitsch stated DJC Land Inc. is under contract to purchase the property but doesn't have a letter from the current land owners yet, they are aware of the downstream sewer capacity issues and intend to move forward with the subdivision process while working with the Engineering Department on the sewer issues, will provide a stub street for future connection to the north and south, and access to Transit Road will be provided.

Susan Kobus, 1079 Smith Road; Fran Daumeb, 418 Glen Oak Drive; and Steve Massaro, 1116 Smith Road spoke in opposition of the proposal.

No further comments were heard on this proposal.

Following discussion, Mr. Gill moved to keep the public hearing open and adjourn the request. The motion was seconded by Mr. Raffaele and carried. Ayes 4, Noes 0, Absent 3 (Davis, Giuliani, Penberthy).

RESULT:	**ADJOURNED [UNANIMOUS]**	**Next: 9/19/2024 6:30 PM**
MOVER:	Harbinder Gill, Board Member	
SECONDER:	Joseph P. Raffaele Jr., Board Member	
AYES:	Chmiel, Gill, Kahn, Raffaele Jr.	
ABSENT:	Davis, Giuliani, Penberthy	

REZONING & RELIEF FROM CONDITIONS OF REZONINGS

2. REQUEST TO AMEND THE SEQR CERTIFICATION OF FINDINGS, THE FILED DECLARATION OF RESTRICTIONS AND AMENDMENT #77 TO THE AUDUBON DEVELOPMENT PLAN FOR 17.42± ACRES OF LAND FROM NCD-RI TO NCD-LC FOR MUIR WOODS SITE A, PROPERTY LOCATED AT 50 DODGE ROAD (PORTION) [NCD], Z-2002-09_E
Property located at 50 Dodge Road (portion)
Sawyers Landing LLC, Petitioner

Sean Hopkins, Esq., Hopkins Sorgi & McCarthy, represented the petitioner, explained the proposal and was available to answer questions from the Board.

No further comments were heard on this proposal. The hearing was closed.

Following discussion, Mr. Gill moved to approve the Amended Certification of Findings based on the resolution. The motion was seconded by Mr. Raffaele and carried. Ayes 4, Noes 0, Absent 3 (Davis, Giuliani, Penberthy).

Following the approval of the Amended Certification of Findings, Mr. Raffaele moved to approve the Amended Declaration of Restrictions based on the resolution. The motion was seconded by Ms. Kahn and carried. Ayes 4, Noes 0, Absent 3 (Davis, Giuliani, Penberthy).

Following the approval of the Amended Declaration of Restrictions, Mr. Raffaele moved to approve the Audubon Development Plan Amendment based on the resolution. The motion was seconded by Ms. Kahn and carried. Ayes 4, Noes 0, Absent 3 (Davis, Giuliani, Penberthy).

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Harbinder Gill, Board Member
SECONDER:	Joseph P. Raffaele Jr., Board Member
AYES:	Chmiel, Gill, Kahn, Raffaele Jr.
ABSENT:	Davis, Giuliani, Penberthy

MISCELLANEOUS

None

OTHER COMMUNICATIONS

None

All public hearings are completed and closed at the termination of public discussion for each agenda item unless otherwise specified by the Chair.

UNFINISHED BUSINESS

Note: All public hearings have been completed. There will be no public hearings for items listed under this section.

None

SITE PLANS & RELIEF FROM CONDITIONS OF SITE PLANS

None

SUBDIVISIONS & RELIEF FROM CONDITIONS OF SUBDIVISIONS

None

REZONING & RELIEF FROM CONDITIONS OF REZONINGS

None

MISCELLANEOUS

3. LOCAL LAW TO AMEND §204 OF TOWN CODE - THE SUBDIVISION REGULATIONS, ZTA-2024-01
Town of Amherst, Petitioner

Various amendments to Chapter 204 of the Town Code (Subdivision Regulations), amendments include changes to minimum right-of-way width, increased sidewalk width, detailed tree planting specifications and uniformity in allowed curb type.

June 25, 2024

Dan Ulatowski, Assistant Planning Director, represented the petitioner, explained the proposal and was available to answer questions from the Board.

No further comments were heard on this proposal. The hearing was closed.

Following discussion, Ms. Kahn moved to adjourn the request. The motion was seconded by Mr. Davis and carried. Ayes 4, Noes 0, Absent 3 (Chmiel, Penberthy, Raffaele).

August 27, 2024

Dan Ulatowski, Assistant Planning Director, represented the petitioner, explained the proposal and was available to answer questions from the Board.

No further comments were heard on this proposal. The hearing was closed.

Following discussion, Mr. Gill moved to approve the request based on the resolution. The motion was seconded by Ms. Kahn and carried. Ayes 4, Noes 0, Absent 3 (Davis, Giuliani, Penberthy).

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Harbinder Gill, Board Member
SECONDER:	Carrie H. Kahn, Board Member
AYES:	Chmiel, Gill, Kahn, Raffaele Jr.
ABSENT:	Davis, Giuliani, Penberthy

OTHER COMMUNICATIONS

None

DIRECTOR'S REPORT

4. TOWN BOARD REFERRAL - SUBURBAN AGRICULTURE (SA) DISTRICT ALTERNATIVE REPORT
Dan Howard, Planning Director, and Roberta Rappoccio, Associate Planner, discussed the subject report and sought input from the Board on its future use for the proposed recommened zoning changes and encouraged discussion on the potential implementation strategies for a recommendation to the Town Board.

MINUTES APPROVAL

July 23, 2024

Ms. Kahn moved to approve the minutes. The motion was seconded by Mr. Gill and carried. Ayes 4, Noes 0, Absent 3 (Davis, Giuliani, Penberthy).

ADJOURNMENT

The Planning Board meeting of August 27, 2024 was adjourned at 8:18 pm.

Amherst Planning Board
5583 Main Street
Williamsville, NY 14221

TABLED

Meeting: 08/27/24 06:30 PM
Department: Planning
Category: Subdivisions & Relief from Conditions
Prepared By: Amy Carrato
Initiator: Dan Howard
Sponsors:
DOC ID: 29165

PLANNING BOARD ITEM (ID # 29165)

Proposed Sketch Plan Review for a 27-Lot Subdivision, Ashley Green Phase II, SUB-2024-01SK

Property located at 10060 Transit Rd. (portion)
DJC Land Inc., Petitioner

Proposed subdivision of 8.97± acres of land into 27 lots for detached single-family homes. A proposed 60 foot public right-of-way is shown roughly through the center of the site connecting Transit Road to the proposed terminus of the "Ashley Green" subdivision to the west on the east side of Town Ditch 26D-1. Proposed lots range in size from 7,540 sq. ft. to 23,671 sq. ft. and have frontages that range in size from 52 ft. to 124 ft.

August 27, 2024

Ken Zollitsch, Greenman-Pedersen, Inc., represented the petitioner, explained the proposal and was available to answer questions from the Board.

In response to the Board's questions, Mr. Zollitsch stated DJC Land Inc. is under contract to purchase the property but doesn't have a letter from the current land owners yet, they are aware of the downstream sewer capacity issues and intend to move forward with the subdivision process while working with the Engineering Department on the sewer issues, will provide a stub street for future connection to the north and south, and access to Transit Road will be provided.

Susan Kobus, 1079 Smith Road; Fran Daumeb, 418 Glen Oak Drive; and Steve Massaro, 1116 Smith Road spoke in opposition of the proposal.

No further comments were heard on this proposal.

Following discussion, Mr. Gill moved to keep the public hearing open and adjourn the request. The motion was seconded by Mr. Raffaele and carried. Ayes 4, Noes 0, Absent 3 (Davis, Giuliani, Penberthy).

ATTACHMENTS:

- SUB-2024-01SK_application_082724 (PDF)
- SUB-2024-01SK_drawings_082724 (PDF)

RESULT:	**ADJOURNED [UNANIMOUS]**	**Next: 9/19/2024 6:30 PM**
MOVER:	Harbinder Gill, Board Member	
SECONDER:	Joseph P. Raffaele Jr., Board Member	
AYES:	Michael Chmiel, Harbinder Gill, Carrie H. Kahn, Joseph P. Raffaele Jr.	
ABSENT:	John B. Davis, Dal Giuliani, Brittany Lee Penberthy	

RECEIVED
JUN 24 2024
TOWN OF AMHERST
PLANNING DEPT.

TOWN OF AMHERST PLANNING DEPARTMENT

Subdivision Application

For Official Use

File # _____ **Acreage** _____ **Fee $** _____

Type of Subdivision Application (check one):

Sketch Plan _____
Preliminary Plat _____
Final Plat _____

Address Verified by Assessor's Office _____ VERIFIED BY DATE

Materials Received by Planning Department _____ RECEIVED BY DATE

Fee Paid to Town Clerk _____ RECEIVED BY DATE

		Fill In Applicable Fees
Sketch Plan	**$1,150.00**	$ 1,150.00
Preliminary Plat		
* 1 acre or less	**$1,250.00**	_____
* Each additional acre or fraction thereof *(fraction to be counted as 1 acre)*	**$ 650.00/acre**	_____
Amendments to Subdivisions	$1,150.00	_____
Request for Relief of / or Change to Conditions of Subdivision Approval	$1,150.00	_____
Request for Extension of Subdivision Approval	$ 450.00	_____
Minor Modification to a Subdivision Plat	$ 325.00	_____
Stormwater Pollution Prevention Plan		
1 - 4.99 Acres	$ 500.00	_____
5 - 10 Acres	$ 750.00	_____
>10 Acres	$1,000.00	_____
Affidavit Fee for Public Hearing	**$ 15.00**	$ 15.00
Final Plat	**$ 450.00**	_____
	TOTAL FEE:	$1,165.00

Town of Amherst Planning Department • 5583 Main Street • Williamsville • New York 14221
(716) 631-7051 • Fax: • (716) 631-7153 • Web: www.amherst.ny.us

Attachment: SUB-2024-01SK_application_082724 (29165 : SUB-2024-01SK, 10060 Transit Rd. (Portion))

SUBDIVISION APPLICATION (con't)

To Be Completed By Applicant

Petitioner: Name: DJC Land, Inc., Attn: David Capretto

Address: 470 Cayuga Road

Buffalo (city) NY (state) 14225 (zip code)

Phone: (716) 688-5597 Fax:

E Mail: dcapretto@forbeshomes.com

Representative (Architect, Engineer, Landscape Architect, Surveyor, or Attorney)**:**

Name: Greenman-Pedersen, Inc. (Attn: Ken Zollitsch)

Address: 4950 Genesee Street, Suite 100

Buffalo (city) NY (state) 14225 (zip code)

Phone: 633-4844 Fax: 633-4940

E Mail: kzollitsch@gpinet.com

Subdivision Location & Address: 10060 Transit Road (SBL 29.01-2-5.1)

Town of Amherst, Erie County, New York

Zoning District(s): MFR-5

Number of Proposed Sublots: 27

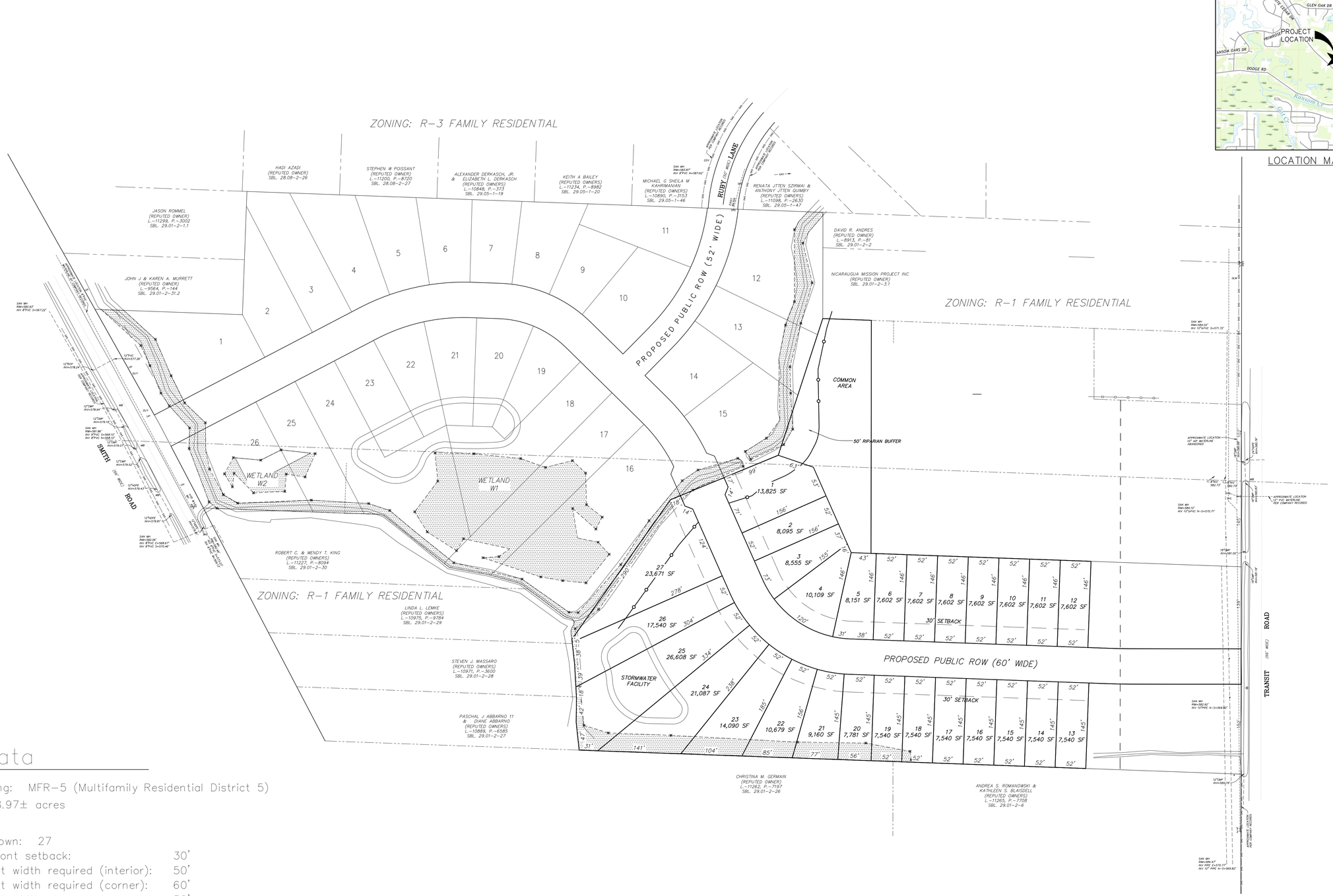
Proposed Subdivision Name: Ashley Green, Phase 2

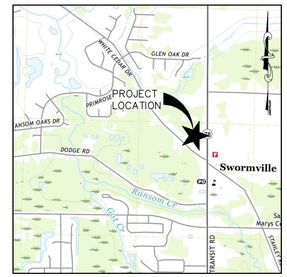
Proposed Street Names:

Name to be determined	☒ Public	☐ Private
	☐ Public	☐ Private
	☐ Public	☐ Private
	☐ Public	☐ Private

Current Planning/Application Forms 2019/Subdivision Application Form 2019
REVISED February 2021

Attachment: SUB-2024-01SK_application_082724 (29165 : SUB-2024-01SK, 10060 Transit Rd. (Portion))





LOCATION MAP

Site Data

Present Zoning: MFR-5 (Multifamily Residential District 5)

Site Area: 8.97± acres

Lots:

Number shown:	27
Minimum front setback:	30'
Minimum lot width required (interior):	50'
Minimum lot width required (corner):	60'
Minimum lot width shown:	52'
Minimum lot area required (interior):	6,000± sq.ft.
Minimum lot area required (corner):	7,200± sq.ft.
Minimum lot area shown:	7,540± sq.ft.

Greenman-Pedersen, Inc.
Engineering and Construction Services
In Western New York:
BUFFALO (716) 633-4844 • ROCHESTER (585) 486-4859 • JAMESTOWN (716) 488-2803

GPI

SCALE:	1"=80'	DRAWN BY:	E.W.		
DATE:	JUNE 2024	CHECKED BY:	K.Z.		
DWG NO.:	01	JOB NO.:	2020097		
NO.	REVISIONS:	BY	DATE		
NO.					

SKETCH PLAN

ASHLEY GREEN, PHASE 2
TOWN OF AMHERST

SHEET NO.
01

Attachment: SUB-2024-015K_drawings_082724 (29165 : SUB-2024-015K_1060 Transit Rd. (Portion))

LOCATION MAP

Key:

- Proposed Sanitary Sewer
- Proposed Storm Sewer
- Proposed Water Line

Greenman-Pedersen, Inc.
Engineering and Construction Services
In Western New York:
BUFFALO (716) 633-4844 • ROCHESTER (585) 486-4859 • JAMESTOWN (716) 488-2803

GPI

DRAWN BY: E.W.
CHECKED BY: K.Z.
JOB NO.: 2020097
DWG NO.: 01
SCALE: 1"=80'
DATE: JUNE 2024

NO.	REVISIONS:	BY	DATE

SKETCH UTILITY PLAN

ASHLEY GREEN, PHASE 2
TOWN OF AMHERST

SHEET NO.
01

Attachment: SUB-2024-015K_drawings_082724 (29165 : SUB-2024-015K_1060 Transit Rd. (Portion))

Amherst Planning Board
5583 Main Street
Williamsville, NY 14221

Meeting: 08/27/24 06:30 PM
Department: Planning
Category: Rezoning and Relief from Conditions of Rezoning
Prepared By: Amy Carrato
Initiator: Dan Howard
Sponsors:
DOC ID: 29166

ADOPTED

PLANNING BOARD ITEM (ID # 29166)

Request to Amend the Seqr Certification of Findings, the Filed Declaration of Restrictions and Amendment #77 to the Audubon Development Plan for 17.42± Acres of Land from Ncd-Ri to Ncd-Lc for Muir Woods Site A, Property Located at 50 Dodge Road (Portion) [Ncd], Z-2002-09_E

Property located at 50 Dodge Road (portion)
Sawyers Landing LLC, Petitioner

Sean Hopkins, Esq., Hopkins Sorgi & McCarthy, represented the petitioner, explained the proposal and was available to answer questions from the Board.

No further comments were heard on this proposal. The hearing was closed.

Following discussion, Mr. Gill moved to approve the Amended Certification of Findings based on the resolution. The motion was seconded by Mr. Raffaele and carried. Ayes 4, Noes 0, Absent 3 (Davis, Giuliani, Penberthy).

Following the approval of the Amended Certification of Findings, Mr. Raffaele moved to approve the Amended Declaration of Restrictions based on the resolution. The motion was seconded by Ms. Kahn and carried. Ayes 4, Noes 0, Absent 3 (Davis, Giuliani, Penberthy).

Following the approval of the Amended Declaration of Restrictions, Mr. Raffaele moved to approve the Audubon Development Plan Amendment based on the resolution. The motion was seconded by Ms. Kahn and carried. Ayes 4, Noes 0, Absent 3 (Davis, Giuliani, Penberthy).

ATTACHMENTS:

- Z-2002-09E_application_082724 (PDF)
- Z-2002-09E_drawings_082724(PDF)
- Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (PDF)
- Z-2002-09E signed resolution 082724 (PDF)

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Harbinder Gill, Board Member
SECONDER:	Joseph P. Raffaele Jr., Board Member
AYES:	Michael Chmiel, Harbinder Gill, Carrie H. Kahn, Joseph P. Raffaele Jr.
ABSENT:	John B. Davis, Dal Giuliani, Brittany Lee Penberthy

Application to Amend the Findings Statement and to Amend the Comprehensive Plan Site "A" of Muir Woods Project Location of Project Site: 50 Dodge Road Town of Amherst

APPLICANT/PROJECT SPONSOR:

Sawyers Landing LLC
c/o William Severyn
43 Central Avenue
Lancaster, New York 14086

Date: June 24, 2024

Prepared By:
Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: (716) 510-4338
E-mail: shopkins@hsmlegal.com

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

TABLE OF CONTENTS

- **Exhibit 1:** Application to Amend the Findings Statement & Reclassify a Portion of 50 Dodge Road from NCD-RI to NCD-LC dated June 24, 2024
- **Exhibit 2:** Description of Requested Amendment of Findings Statement for Site "A" of the Muir Woods Project
- **Exhibit 3:** Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA") with attached Page 5[a]
- **Exhibit 4:** Survey of Portion of 50 Dodge Road to be Reclassified from NCD-RI to NCD-LC as prepared by Mark Andrews of GPI Engineering & Surveying dated June 19, 2024
- **Exhibit 4A**: Survey of 50 Dodge Road as prepared by Mark Andrews of GPI Engineering & Surveying
- **Exhibit 5:** Legal Description of Portion of 50 Dodge Road to be Reclassified from NCD-RI to NCD-LC as prepared by Mark Andrews of GPI Engineering & Surveying
- **Exhibit 6:** Responses to Questions 11A and 11B of the Application to Amend the Findings Statement & Reclassify a Portion of 50 Dodge Road from NCD-RI to NCD-LC dated June 24, 2024
- **Exhibit 7:** Responses to Questions 16A, 16C, 16D and 16E of the Application to Amend the Findings Statement & Reclassify a Portion of 50 Dodge Road from NCD-RI to NCD-LC dated June 24, 2024
- **Exhibit 8:** Amended Findings Statement issued by the Town of Amherst Town Board on September 27, 2021
- **Exhibit 9**: Reduced-Size Copy of Overall Site Plan [Drawing C-100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]
- **Exhibit 9A**: Reduced-Size Copy of Site Plan [Drawing C-100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]
- **Exhibit 9B:** Reduced-Size Copy of Landscape Plan [Drawing L-100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

- **Exhibit 9C:** Reduced-Size Copy of Landscape Plan [Drawing L-100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]

- **Exhibit 10:** Resolution 2021-818 as Adopted by the Town of Amherst Town Board on September 27, 2021 for the purpose of Issuing an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") for Mixed-Use Development on Site "A" of Muir Woods Property [Formerly 1081 North French Road – Current Address of 50 Dodge Road]

- **Exhibit 11:** Reduced-Size Copy of Parcel Plan [Drawing C-102 – Date: 05/28/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]

- **Exhibit 12:** Copy of the Declaration of Restrictions as recorded in at the Erie County Clerk's Office on June 21, 2018 at Liber 11330 of Deeds at Page 8243 for the purpose of complying with the relevant portion of the Amended Findings Statement issued by the Town Board pursuant to the State Environmental Quality Review Act ("SEQRA") on December 7, 2015

- **Exhibit 13:** No Impact Determination Letter Issued by Ruth Pierpont, Director, New York State Office of Parks, Recreation and Historic Preservation, dated October 10, 2001

- **Exhibit 14:** Amended Wetland Permit Issued by the United States Army Corps of Engineers ("USACE") dated February 25, 2021

- **Exhibit 15:** Amended Wetland Permit Issued by the New York State Department of Environmental Conservation ("NYSDEC") dated December 24, 2020

- **Exhibit 16:** Redline Draft of Proposed Amended Findings for Proposed Mixed-Use Project on Site "A" of Muir Woods Property

- **Exhibit 17:** Color Copy of Figure 6 of the Town of Amherst Comprehensive Plan titled "Conceptual Land Use Plan"

- **Exhibit 18:** Color Copy of Figure 21 of the Town of Amherst Comprehensive Plan titled "University Focal Planning Area – Concept Plan"

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 1 – Application to Amend the Findings Statement and to Amend the Comprehensive Plan

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Application to Amend Findings Statement & Reclassify Portion of 50 Dodge Road from NCD-RI to NCD-LC - Site A of Muir Woods [Z-2002-9E]

Applicant: Sawyer's Landing LLC
Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsmlegal.com

TOWN OF AMHERST PLANNING DEPARTMENT

Application for Rezoning Review and, if required Comprehensive Plan Amendment

For Official Use

File #: Z-2002-9E **Acreage** 17.424 **Fee $** $5,465.00

Address Verified by Assessor's Office _____ VERIFIED BY DATE

Materials Accepted by Town Clerk & Fee Paid _____ AC CEP TE BY DATE

Materials Checked by Building Dept. _____ RECEIVED BY DATE

Materials Received by Planning Dept. 6/24/24 RECEIVED BY DATE

		Fill In Applicable Fees
2 ACRES OR LESS	**$1,250**	$1,250.00
2 – 20 ACRES **$1,250 + $250/acres or fraction thereof over 2 acres**		$3,000.00
20 – 30 ACRES **$5,700 + $150/acre or fraction thereof over 20 acres**		_____
OVER 30 ACRES **$6,900 +$75/acre or fraction thereof over 30 acres**		1,200.00
Request for Relief of/Change to Conditions of Zoning Approval [Application to Amend Findings Statement]	**$ 1,200**	
AFFIDAVIT FEE FOR PUBLIC HEARING	**$ 15.00**	$15.00
TOTAL FEE:	$ 5,465.00	

RECEIVED JUN 24 2024 TOWN OF AMHERST PLANNING DEPT.

[Note: A completed Part 1 of the Full Environmental Assessment Form is attached as Exhibit "3" of this Application.]

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

TO BE COMPLETED BY APPLICANT

1. **Petitioner:** Name: Sawyers Landing LLC

Address: c/o Sean Hopkins, Esq.
5500 Main Street, Suite 343
Williamsville, New York 14221
City State Zip Code

Phone: 510-4338 Fax:

E Mail shopkins@hsmlegal.com

2. **The undersigned hereby petitions the Honorable Town Board to rezone the following described property**

From: NCD-RI District

To: NCD-LC District

3. **Street address of land to be rezoned:** (must be verified by Town Assessor's Office)

Portion of 50 Dodge Road

SBL #: 40.08-3-13.11

4. **Area of land to be rezoned** (in acres): 13.452 Acres to be Reclassified from NCD-RI to NCD-LC

5. **Owner of Land:**

Name: Sawyers Landing LLC

Address: c/o Sean Hopkins, Esq., 5500 Main Street, Suite 343, Williamsville, NY 14221

Telephone: 510-4338

6. **Representative** (Architect, Engineer, Landscape Architect, Surveyor or Attorney):

Name: Sean W. Hopkins, Esq.

Address: 5500 Main Street Suite 343
Williamsville, New York 14221
Tel: 716.510-4338 - E-mail: shopkins@hsmlegal.com
City State Zip Code

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

7. **Petitioner's interest in property**

_____ Option to purchase

__X__ Owner

_____ Other (explain) _____

8. **The following are all others having an interest in this application and join herein with the petitioner named above:** (describe extent of interest; attach sheets as needed)

Not Applicable.

9. **Attach Survey and Legal description of land to be rezoned. The Survey must be prepared by a New York State Licensed Land Surveyor.** Legal description of portion of 50 Dodge Road to be Reclassified from NCD-LI to NCD-LC attacl as Exhibit "5" and Survey as Exhibit "4".

10. **Said property has the following deed restrictions or Covenants:** (attach copy) Not Applicable.

Liber 13330 Page 8243

A portion of the Project Site is subject to the Declaration of Restrictions recorded at the Erie County Clerk's Office on June 21, 2018. A copy of the recorded Declaration of Restrictions is provided at Exhibit "12".

11. **Information on proposed project:**

A. Description of the character of the proposed development:

See Exhibit "6".

B. Rationale for rezoning request:

1. Why was this site chosen?

See Exhibit "6".

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

2. Why cannot land be used with the existing zoning?

See Exhibit "6".

3. How will this rezoning impact surrounding properties?

See Exhibit "6".

4. How will this rezoning impact the school system?

See Exhibit "6".

12. Quantitative Data:

A. Total # of dwelling units 207

B. Distribution of dwelling units by type 63 two-story townhomes, 22 two-unit townhomes and 100 apartments in the mixed-use buildings

C. Gross Residential Density per acre 11.87 units per acre

D. Total amount of Open Space .98 acres

E. Proposed Non-Residential Floor Area 56,000 sq. ft.

Note: The large 9.81 acre wetland directly west of the Project Site that is subject to the jurisdiction of both the NYSDEC and USACE will also be preserved as Permanent Open Space.

13. Development Schedule:

Start 2024

Finish 2026 [The precise timing of the phasing and development of the Project Site as a mixed-use project will be dependent on market conditions.]

Stages (# of) 3-4

14. If any portion of the proposed development is planned to be sold or leased, please describe:

The commercial space will be leased along with the apartments in the mixed-use buildings and the single-story buildings with attached garages. The single-family townhomes will for sale. The two family townhomes will for lease.

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15. Open Space ownership and maintenance provisions (if applicable):

Greenspace and landscaping will be privately owned and maintained.

16. Basis for Findings (Sec. 8-3-5 of the Town Zoning Code) (Attach sheets and supplemental materials as necessary.)

A. The proposed zoning and development plan must be generally consistent with the policies of the Comprehensive Plan and the Town Zoning Ordinance.

1. State in detail why the proposed zoning is consistent with the adopted Town of Amherst Bicentennial Comprehensive Plan. Cite specific sections, maps, and/or figures in the plan that support the proposed zoning at this location (The Comprehensive Plan document is available at the Planning Department, Town Clerk's Office, Amherst libraries, or at www.amherst.ny.us). Add sheets as needed.

See Exhibit "7".

2. Pursuant to NYS Town Law Section 272a(11), "all Town land use regulations must be in accordance with a comprehensive plan adopted pursuant to this Section." The Town Board adopted the Comprehensive Plan pursuant to NYS Town Law 272 on January 2, 2007. If the rezoning is approved, the Town Board may require the Plan to be amended, as applicable.

Cite all text, map, and / or figures that must be amended to support the proposed zoning at this location (attach pages as necessary) and provide detailed suggested amendments.

See Exhibit "7".

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3. State why the proposed zoning is consistent with intent and objectives (Sec. 1-2-2) of the Zoning Ordinance:

See Exhibit "7".

B. **Adequate Services and Utilities are available or are proposed to be made available with the construction of the development:**

1. Sanitary Sewer
   Yes.
2. Storm Sewer/Drainage
   Yes.
3. Water
   Yes.
4. Other Yes.

C. **Compatibility with the present zoning and conforming uses of nearby property and with the character of the neighborhood:**

See Exhibit "7".

D. **Suitability of the subject property for uses permitted by the current versus the proposed district:**

See Exhibit "7".

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E. Whether the proposed change tends to improve the balance of uses, or meets a specific demand in the Town:

See Exhibit "7".

17. The petitioner encloses herewith the sum of $ 5,465.00 to pay the fee, and consents to the placement of a sign(s) at the described location identifying this request for a period of time to be determined by the Town Clerk.

18. The undersigned certifies that all information required to be disclosed pursuant to Section 809 of the General Municipal Law (see below) is as follows:

The undersigned swears or affirms that all statements made herein are true, that all drawings submitted correctly show the situation involved in this petition.

Sean Hopkins, Esq., Counsel for Petitioner
Signature of Petitioner

Subscribed and sworn to before me this 24th day of June, 20 24

Notary Public, Erie County, New York

PATRICIA C. MAYNARD
Notary Public, State of New York
Registration No. 01MA6384435
Qualified in Erie County
Commission Expires Dec. 10, 2026

N.Y.S. General Municipal Law - Section 809 Disclosure in certain applications.

1. Every application, petition or request submitted for a variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license or permit, pursuant to the provision of any ordinance, local law, rule or regulation constituting the zoning and planning regulations of a municipality shall state the name, residence and the nature and extent of the interest of any state office or any office or employee of such municipality or of a municipality of which such municipality is a part, in the person, partnership or association making such application, petition or request (hereinafter called the applicant) to the extent known to such applicant.

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2. For the purpose of this section an officer or employee shall be deemed to have an interest in the applicant when he, his spouse, or their brothers, sisters, parents, children, grandchildren, or the spouse of any of them

   (a) is the applicant, or
   (b) is an officer, director, partner or employee of the applicant, or
   (c) legally or beneficially owns or controls stock of a corporate applicant or is a member of a partnership or association applicant, or
   (d) is a party to an agreement with such an applicant, express or implied, whereby he may receive any payment or other benefit, whether or not for services rendered, dependent or contingent upon the favorable approval of such applicant, petition or request.

3. In the county of Nassau the provisions of subdivisions one and two of this section shall also apply to a party officer. "Party Officer" shall mean any person holding any position or office, whether by election, appointment or otherwise, in any party as defined by subdivision four or section two of the election law.

4. Ownership of less than five per cent of the stock of a corporation whose stock is listed on the New York or American Stock Exchanges shall not constitute an interest for the purposes of this section.

5. A person who knowingly and intentionally violates this section shall be guilty of a misdemeanor.

P/CurrPlan/Applications2007/Rezoning & Comp Plan Amend App.
10/08

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Exhibit 2 – Description of Requested Amendment of Findings Statement for Proposed Mixed-Use Project on Site "A" of the Muir Woods Property

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EXHIBIT 2 OF APPLICATION TO AMEND FINDINGS STATEMENT AND RECLASSIFY PORTION OF 50 DODGE ROAD FROM NCD-RI TO NCD-LC

DESCRIPTION OF REQUEST TO AMEND THE FINDINGS STATEMENT AND TO RECLASSIFY PORTION OF 50 DODGE ROAD FROM NCD-RI TO NCD-LC

I. INTRODUCTION:

Sawyers Landing LLC ("Project Sponsor") is requesting that the Town Board approve a request to amend the Findings Statement issued by the Town Board pursuant to the State Environmental Quality Review Act ("SEQRA") on September 27, 2021 to allow the property at 50 Dodge Road to be developed as a mixed-use project in a manner consistent with the Overall Site Plan [Drawing C-100 – Date: 06/21/24] prepared by Carmina Wood Design, which includes a climate controlled storage building on the western portion of the Project Site. Reduced-size copies of the Overall Site Plan and the Site Plan are attached as Exhibits "9" and "9A".

The proposed mixed-use project consists of mixture of components including 2 four-story mixed use buildings that will each include 15,000 sq. ft. of 1st floor commercial space with 50 apartments per building, a four-story climate controlled storage building, single-family and two-family townhomes buildings and related site improvements. The layout for the proposed mixed-use project depicted on the Overall Site Plan has a total 207 residential units.

The proposed mixed-use project will also include all necessary site improvements including driveway connections to Dodge Road, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, an on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements.

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The documentation being submitted on behalf of the Project Sponsor in connection with this Application to Amend the Findings Statement and Reclassify a portion of 50 Dodge Road from NCD-RI to NCD-LC attached to this Application consists of the following:

- **Exhibit 1:** Application to Amend the Findings Statement & Reclassify a Portion of 50 Dodge Road from NCD-RI to NCD-LC dated June 24, 2024
- **Exhibit 2:** Description of Requested Amendment of Findings Statement for Site "A" of the Muir Woods Project
- **Exhibit 3:** Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA") with attached Page 5[a]
- **Exhibit 4:** Survey of Portion of 50 Dodge Road to be Reclassified from NCD-RI to NCD-LC as prepared by Mark Andrews of GPI Engineering & Surveying dated June 19, 2024
- **Exhibit 4A**: Survey of 50 Dodge Road as prepared by Mark Andrews of GPI Engineering & Surveying
- **Exhibit 5:** Legal Description of Portion of 50 Dodge Road to be Reclassified from NCD-RI to NCD-LC as prepared by Mark Andrews of GPI Engineering & Surveying
- **Exhibit 6:** Responses to Questions 11A and 11B of the Application to Amend the Findings Statement & Reclassify a Portion of 50 Dodge Road from NCD-RI to NCD-LC dated June 24, 2024
- **Exhibit 7:** Responses to Questions 16A, 16C, 16D and 16E of the Application to Amend the Findings Statement & Reclassify a Portion of 50 Dodge Road from NCD-RI to NCD-LC dated June 24, 2024
- **Exhibit 8:** Amended Findings Statement issued by the Town of Amherst Town Board on September 27, 2021
- **Exhibit 9**: Reduced-Size Copy of Overall Site Plan [Drawing C-100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]
- **Exhibit 9A**: Reduced-Size Copy of Site Plan [Drawing C-100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]

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- **Exhibit 9B:** Reduced-Size Copy of Landscape Plan [Drawing L-100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]

- **Exhibit 9C:** Reduced-Size Copy of Landscape Plan [Drawing L-100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]

- **Exhibit 10:** Resolution 2021-818 as Adopted by the Town of Amherst Town Board on September 27, 2021 for the purpose of Issuing an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") for Mixed-Use Development on Site "A" of Muir Woods Property [Formerly 1081 North French Road – Current Address of 50 Dodge Road]

- **Exhibit 11:** Reduced-Size Copy of Parcel Plan [Drawing C-102 – Date: 05/28/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]

- **Exhibit 12:** Copy of the Declaration of Restrictions as recorded in at the Erie County Clerk's Office on June 21, 2018 at Liber 11330 of Deeds at Page 8243 for the purpose of complying with the relevant portion of the Amended Findings Statement issued by the Town Board pursuant to the State Environmental Quality Review Act ("SEQRA") on December 7, 2015

- **Exhibit 13:** No Impact Determination Letter Issued by Ruth Pierpont, Director, New York State Office of Parks, Recreation and Historic Preservation, dated October 10, 2001

- **Exhibit 14:** Amended Wetland Permit Issued by the United States Army Corps of Engineers ("USACE") dated February 25, 2021

- **Exhibit 15:** Amended Wetland Permit Issued by the New York State Department of Environmental Conservation ("NYSDEC") dated December 24, 2020

- **Exhibit 16:** Redline Draft of Proposed Amended Findings for Proposed Mixed-Use Project on Site "A" of Muir Woods Property

- **Exhibit 17:** Color Copy of Figure 6 of the Town of Amherst Comprehensive Plan titled "Conceptual Land Use Plan"

- **Exhibit 18:** Color Copy of Figure 21 of the Town of Amherst Comprehensive Plan titled "University Focal Planning Area – Concept Plan"

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Exhibit 3 – Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA") with attached Page 5[a]

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Full Environmental Assessment Form
Part 1 - Project and Setting

Prepared By: Sean Hopkins, Esq. Hopkins Sorgi & McCarthy PLLC 5500 Main Street, Suite 343 Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsmlegal.com

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Mixed-Use Project - Site A of Muir Woods		
Project Location (describe, and attach a general location map): 50 Dodge Road - Town of Amherst - Erie County		
Brief Description of Proposed Action (include purpose or need): The proposed action consists of an amendment of the Findings Statement issued by the Town of Amherst Town Board ("Town Board") on September 27, 2021 pursuant to the State Environmental Quality Review Act ("SEQRA") to accommodate the updated layout for the proposed mixed-use project to be located at 50 Dodge Road. The layout of the mixed-use project is depicted on the Overall Site Plan [Drawing C-100] prepared by Carmina Wood Design. The residential density of the project has been reduced to 207 units. The action has been defined broadly to include all required discretionary approvals and permits as well as all site improvements including the proposed mixed-use and residential buildings, a climate controlled storage buildings, driveway connections, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, an on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements. The project purpose is to develop Site "A" of overall Muir Woods Project Site as a mixed-use project in a manner consistent with the Overall Site Plan for the project prepared by Carmina Wood Morris DPC prepared by Carmina Wood Design. The project is a Type I action pursuant to SEQRA and the Town Board issued an Amended Findings Statement pursuant to SEQRA on September 27, 2021. The proposed use is consistent with the Town's adopted Comprehensive Plan.		
Name of Applicant/Sponsor: Sawyers Landing LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsmlegal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville, NY	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:

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B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town Board - Amended Findings Statement and Reclassification of NCD Property	June 24, 2024
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Amended Site Plan Approval and Subdivision Approval	To be Determined
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☑Yes ☐No	Building Department - Building Permits; Town of Amherst IDA [PILOT, etc.]	To be determined
e. County agencies ☑Yes ☐No	Highway Work Permit - ECDPW; Water - ECWA	To be determined
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - Amended Wetland Permit; DSCA Approval and SPDES Permit	Amended wetland permit issued on 12/24/20 - DSCA & SPDES - To be determined
h. Federal agencies ☑Yes ☐No	USACE - Amended Wetland Permit	Issued on 02/25/21

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

[**Note**: The Town has an adopted Waterfront Revitalization Program.]

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):

NYS Heritage Areas:West Erie Canal Corridor [Note: The project will not have any impacts on the West Erie Canal Corridor.]

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

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C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Site "A" of the Muir Woods property is zoned New Community District - NCD-ND and NCD-RI pursuant to the Town of Amherst Zoning Map.

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☑ Yes ☐ No
If Yes,
i. What is the proposed new zoning for the site? The Applicant is proposing to reclassify 13.54 acres from NCD-RI to NCD-LC.

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department

d. What parks serve the project site?
Various Town Parks including Nature View Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Mixed-use project consisting of commercial space and various residential unit types.

b. a. Total acreage of the site of the proposed action? 17.424 acres
b. Total acreage to be physically disturbed? 17 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 17.424 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☑ Yes ☐ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
63 residential lots [2 family townhomes for sale]
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? 63 lots
iv. Minimum and maximum proposed lot sizes? Minimum 1,400 sq. ft. Maximum 1,400 sq ft.

e. Will the proposed action be constructed in multiple phases? ☑ Yes ☐ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated 3-4
- Anticipated commencement date of phase 1 (including demolition) Mar month 2025 year
- Anticipated completion date of final phase Mar month 2027 year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases:
The infrastructure necessary for each phase will be installed to ensure compliance with applicable technical standards including those for stormwater management.

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f. Does the project include new residential uses? [**Note**: The 63 one-family units consist of attached townhome units for sale.] ☑ Yes ☐ No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase	63	22		50
At completion of all phases	63	22		100

The build-out of the residential components will be based on market conditions.

g. Does the proposed action include new non-residential construction (including expansions)? ☑ Yes ☐ No

If Yes, There will be 15,000 sq. ft. of commercial space in each of the two mixed-use buildings.

i. Total number of structures 3

ii. Dimensions (in feet) of largest proposed structure: 55' height; 240' width; and 120' length

iii. Approximate extent of building space to be heated or cooled: 56,000 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑ Yes ☐ No

If Yes,

i. Purpose of the impoundment: Storm water management

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☑ Other specify: Storm water runoff from impervious surfaces.

iii. If other than water, identify the type of impounded/contained liquids and their source.

N/A

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: 1.5 acres

v. Dimensions of the proposed dam or impounding structure: N/A height; _____ length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

Impoundment area is an excavation consisting of earth fill.

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No

If Yes:

i .What is the purpose of the excavation or dredging?

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards):
- Over what duration of time?

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No

If yes, describe.

v. What is the total area to be dredged or excavated? _____ acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐ Yes ☐ No

ix. Summarize site reclamation goals and plan:

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐ Yes ☑ No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description):

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ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☑No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☑No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 56,524 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 51,385 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Tonawanda Creek Wastewater Treatment Plant
- Name of district: Town of Amherst Consolidated Sanitary Sewer District
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

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- Do existing sewer lines serve the project site? ☑Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☑No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 8 acres (impervious surface)

_____ Square feet or 17.42 acres (parcel size)

ii. Describe types of new point sources. Parking lots and roof tops

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

Stormwater runoff will be conveyed into the on-site stormwater management system to be installed per the applicable stringent stormwater quality and quantity standards of the NYS Department of Environmental Conservation ("NYSDEC")

- If to surface waters, identify receiving water bodies or wetlands:

NYSDEC & Federal wetlands on the east portion of the site after on-site stormwater management system.

- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☐Yes ☑No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? [**Note:** An updated Traffic Impact Study prepared by Passero Associates has been submitted based on the current project layout.] ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐Morning ☐Evening ☐Weekend ☐Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____
To be determined

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):
National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 to 7:00
- Saturday: 8:00 to 6:00
- Sunday: As needed
- Holidays: Not Applicable

ii. During Operations:

- Monday - Friday: 8:00 to 11:00
- Saturday: 8:00 to 11:00
- Sunday: 8:00 to 10:00
- Holidays: 8:00 to 10:00

The hours of operation during "During Operations" as listed above apply to the first floor commercial space in the two mixed-use buildings. The hours are estimates since the tenants that will lease the first floor commercial space including both office and retail tenants have not yet been identified.

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

Construction activities will include the use of construction equipment during daytime hours that will exceed ambient background noise levels. The construction related noise impacts are a temporary unavoidable impact.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe:

n. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Lighting will be installed in compliance with the lighting standards contained in the Town of Amherst Zoning Code.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe:

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures:

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities:

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☑ Yes ☐ No

If Yes:

i. Describe proposed treatment(s):

Potential use of lawn fertilizer and pesticides on maintained portions of property in accordance with applicable standards for application and use of lawn fertilizer and pesticides.

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☑ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: 3 tons per week (unit of time)
- Operation : 3 tons per week (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: wood and metal waste may be recycled by the contract at their discretion
- Operation: Town of Amherst recycling program will be followed

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: approved NYSDEC landfill via contractor or private disposal company
- Operation: approved NYSDEC landfill via private disposal company

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☑ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Wetlands

ii. If mix of uses, generally describe:

There are mixture of uses in the vicinity of the Project Site including residential uses to the north in the Bucyrus Heights Subdivision, an elementary school, apartments and office buildings on Sweet Home Road and permanent open space to the east of Site "A".

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	8.0	+ 8.0
• Forested	0	0	0
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	17.4	0	-17.4
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)			
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace, Landscaping, Pond	0	9.4	+9.4

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c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☑ No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☑ Yes ☐ No
If Yes,
i. Identify Facilities:
1. Heritage Heights Elementary School (Sweet Home School District- 2545 Sweet Home Road); 2. Creative Play Learning Center (Private Day Care Facility- 647 Dodge Road); and 3. Four Seasons Child Care & Preschool (Private Day Care Facility- 1639 North French Road).

e. Does the project site contain an existing dam? ☐ Yes ☑ No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:
_____
_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐ Yes ☑ No
If Yes:
i. Has the facility been formally closed? ☐ Yes ☐ No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:
_____
_____
iii. Describe any development constraints due to the prior solid waste activities: _____
_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐ Yes ☑ No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:
_____
_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐ Yes ☑ No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐ Yes ☐ No
☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____
_____
_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐ Yes ☑ No
If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):
_____
_____

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >5 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____ %

c. Predominant soil type(s) present on project site:

Getzville silt loam	94 %
Swormville clay loam	6 %
	%

d. What is the average depth to the water table on the project site? Average: >5 feet

e. Drainage status of project site soils:

☐ Well Drained:	% of site
☐ Moderately Well Drained:	% of site
☑ Poorly Drained	100 % of site

f. Approximate proportion of proposed action site with slopes:

☑ 0-10%:	100 % of site
☐ 10-15%:	% of site
☐ 15% or greater:	% of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name Federal Waters, NYS Wetland Approximate Size NYS Wetland (in a...
- Wetland No. (if regulated by DEC) TE-33

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☑ Yes ☐ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:

i. Name of aquifer: _____

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m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No
If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☑Yes ☐No
If Yes:
i. Species and listing:
Spiny Softshell - The Project Sponsor does not believe that Spiny Softshell is present on Site A of the Muir Woods property.

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☑ Yes ☐ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: Eligible property:Heritage Heights Elementary School

iii. Brief description of attributes on which listing is based:

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No [No impact letter issued by SHPO on October 10, 2001.]

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s):

ii. Basis for identification:

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource:

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.):

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation:

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name Sawyers Landing LLC Date June 24, 2024

Signature Sean Hopkins Title Attorney for Project Sponsor

Sean W. Hopkins, Esq.

PRINT FORM

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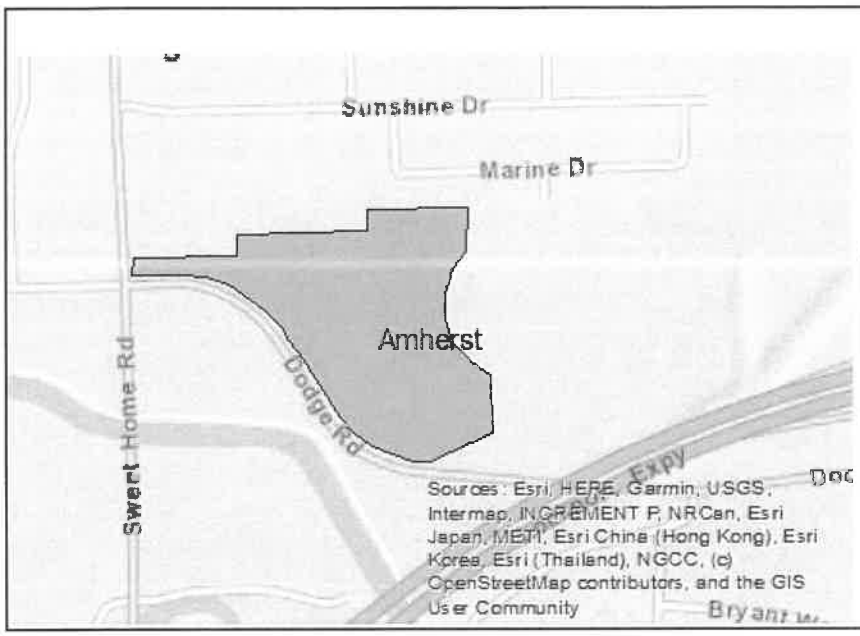
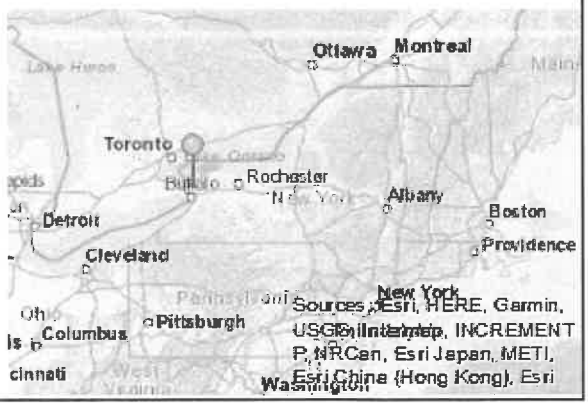
EAF Mapper Summary Report

Thursday, June 18, 2020 8:50 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters, NYS Wetland
E.2.h.iv [Surface Water Features - Wetlands Size]	NYS Wetland (in acres):34.6
E.2.h.iv [Surface Water Features - DEC Wetlands Number]	TE-33
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

E.2.k. [500 Year Floodplain]	Yes
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	Yes
E.2.p. [Rare Plants or Animals - Name]	Spiny Softshell
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Yes - Digital mapping data for archaeological site boundaries are not available. Refer to EAF Workbook.
E.3.e.ii [National or State Register of Historic Places or State Eligible Sites - Name]	Eligible property:Heritage Heights Elementary School
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

TOWN OF AMHERST ATTACHMENT
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM
Mixed-Use Project - 50 Dodge Road

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Getzville Silt Loam	Severe	Severe	Severe	Severe	Moderate
Swormville Clay Loam	Severe	Severe	Severe	Severe	Severe

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   x Geotechnical report attached _____ Not applicable

   [Note: Copy of Geotechnical Report included with Application.

3. Is your property located: On Youngs Road between Dodge and Klein Roads? □ Yes x No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? □ Yes x No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? □ Yes x No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:
   __Not Applicable

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: Yes ☒ No

   Describe A

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project 243 [Sat. Peak Hour]
   Source: Updated Traffic Impact Study prepared by Passero Associates.

8. Will blasting occur during construction? □ Yes ☒ No

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ☒ Yes □ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    51,385 average flow 205,540 peak flow.

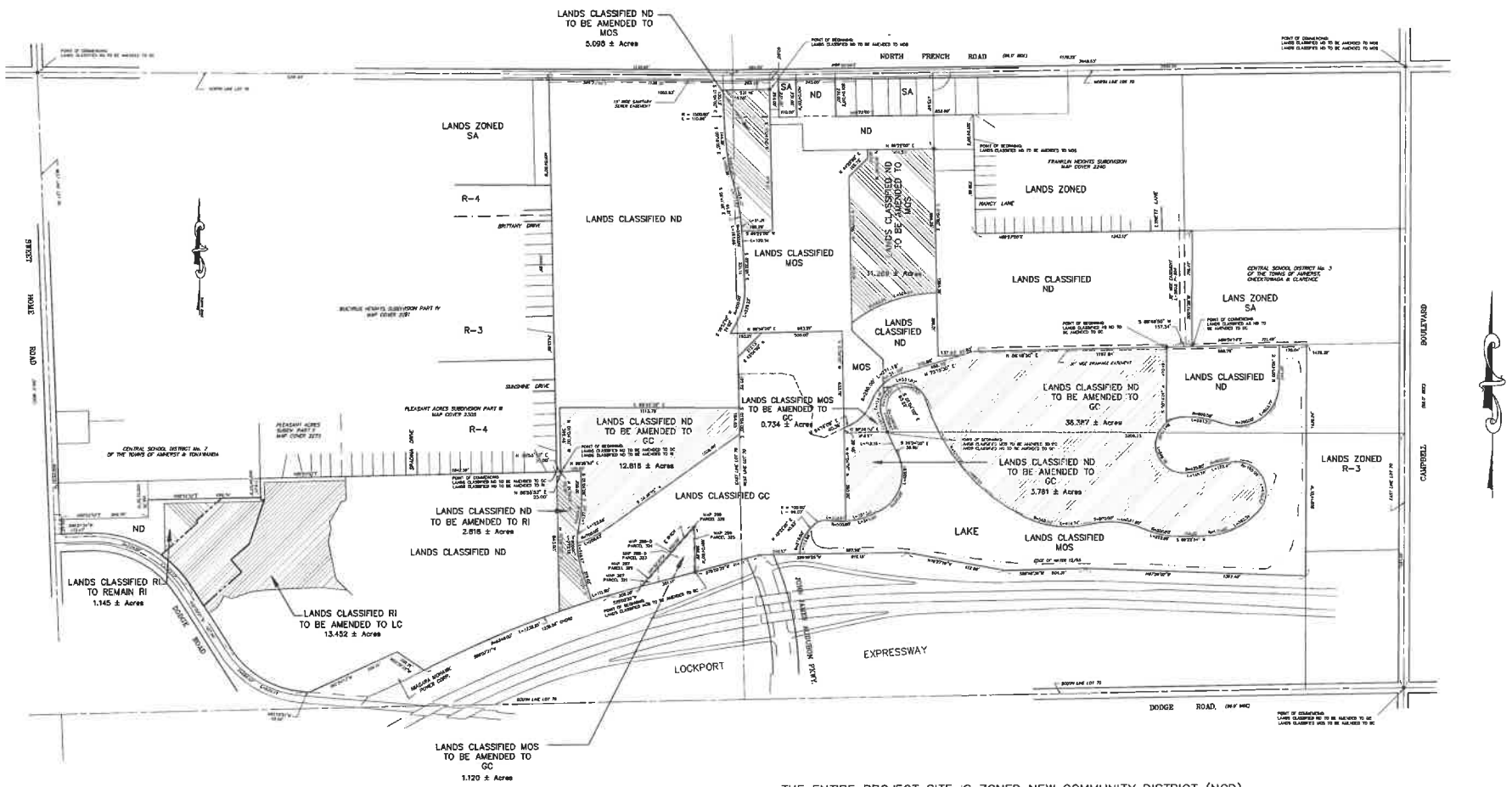
    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources,* is your property 'blue-rated' for historic significance? x Yes □ No
    [There are not any buildings located on the Project Site.]
    [Note: A copy of the No Impact Determination letter issued by SHPO is provided at Exhibit "13".]

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 4 – Survey of 50 Dodge Road as prepared by Mark Andrews of GPI Engineering & Surveying

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



THE ENTIRE PROJECT SITE IS ZONED NEW COMMUNITY DISTRICT (NCD)

GRAPHIC SCALE

(IN FEET)
1 inch = 300 ft.

AMENDMENT TO AUDUBON DEVELOPMENT PLAN

PART OF LOTS 70 & 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI GREENMAN-PEDERSEN, INC. CONSULTING ENGINEERS
ENGINEERING + SURVEYING + PLANNING

Job No. PAH 99059 Date: APRIL 17, 2002
GP: 2004108 REVISED: NOVEMBER 2007
Scale 1"=300' REVISED: JUNE 19, 2024

059-23

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 5 – Legal Description of Portion of 50 Dodge Road to be Reclassified from NCD–RI to NCD–LC as prepared by Mark Andrews of GPI Engineering & Surveying

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

EXHIBIT 5

LEGAL DESCRIPTION OF PROPERTY TO BE RECLASSIFIED FROM NCD-RI TO NCD-LC

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Amherst, County of Erie, State of New York, being part of Lot 76, Township 12, Range 7 of the Holland Land Company's Survey, bounded and described as follows.

COMMENCING at the southwest corner of lands shown on a map of Pleasant Acres Subdivision Part II filed in the Erie County Clerk's Office under Map Cover 2273;

THENCE: N-88°-55'-52"-E along the south line of said Map Cover 2273 and partly along the south line of lands shown on a map of Pleasant Acres Subdivision Part III filed in the Erie County Clerk's Office under Map Cover 2305, a distance of 530.61 feet to a point;

THENCE: Through the lands conveyed to Ciminelli Muir Woods LLC by deed recorded in the Erie County Clerk's Office in Liber 11307 of Deeds at page 4915, the following sixteen (16) courses and distances:

1) S-01°-04'-08"-E, a distance of 25 feet to the POINT OF BEGINNING;
2) S-01°-04'-08"-E, a distance of 120.35 feet to a point;
3) S-64°-48'-00"-W, a distance of 35.05 feet to a point;
4) S-29°-42'-37"-W, a distance of 141.03 feet to a point;
5) S-10°-07'-24"-E, a distance of 43.27 feet to a point;
6) S-11°-02'-55"-W, a distance of 83.05 feet to a point;
7) S-11°-56'-26"-E, a distance of 236.39 feet to a point;
8) S-45°-19'-36"-E, a distance of 99.81 feet to a point;
9) N-83°-38'-15"-W, a distance of 172.76 feet to a point;
10) S-87°-22'-49"-W, a distance of 322.92 feet to a point;
11) S-83°-36'-25"-W, a distance of 105.17 feet to a point;
12) S-71°-08'-13"-W, a distance of 128.98 feet to a point;
13) N-67°-53'-17"-W, a distance of 50.93 feet to a point;
14) S-23°-50'-17"-W, a distance of 47.47 feet to a point;
15) S-39°-43'-51"-W, a distance of 50.80 feet to a point;
16) S-57°-29'-39"-W, a distance of 52.30 feet to a point on the northeast line of Dodge Road Relocation;

THENCE: N-32°-30'-21"-W and along the northeasterly line of Dodge Road Relocation a distance of 198.87 feet to a point of curvature;

THENCE: Northwesterly, along the northeasterly line of Dodge Road Relocation on a curve to the left having a radius of 724.00 feet, an arc distance of 272.06 to a point;

THENCE: Through the lands conveyed to Ciminelli Muir Woods LLC by deed recorded in the Erie County Clerk's Office in Liber 11307 of Deeds at page 4915, the following six (6) courses

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

and distances:

1) N-48°-24'-26"-E a distance of 302.13 feet to a point;
2) N-41°-35'-34"-W a distance of 14.00 feet to a point;
3) N-48°-24'-26"-E a distance of 173.12 feet to a point;
4) N-88°-55'-52"-E a distance of 296.93 feet to a point;
5) N-02°-04'-03"-W a distance of 118.24 feet to a point;
6) N-88°-55'-52"-E a distance of 505.17 feet to a point the POINT or PLACE of BEGINNING, having an area of 13.461 acres be the same more or less.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 6 – Responses to Questions 11A and 11B of the Application to Amend the Findings Statement and to Amend the Comprehensive Plan & Reclassify a Portion of 50 Dodge Road from NCD–RI to NCD–LC

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

EXHIBIT 6

APPLICATION TO AMEND FINDINGS STATEMENT AND RECLASSIFY PORTION OF 50 DODGE ROAD FROM NCD-RI TO NCD-LC

Question 11(A): **Description of the character of the proposed development:**

Response to Question 11(A): The updated layout of the proposed mixed-use project is depicted on the full- size copy of the Overall Site Plan [Drawing C-100 – Date: 06/20/24] for the proposed mixed-use project on Site A of the Muir Woods property prepared by Carmina Wood Morris DPC attached to this Application. A reduced size copy of the Overall Site Plan is also provided at Exhibit "9" of this Application. The project layout has been updated to add a climate controlled self-story building on the western portion of the Project Site.

The residential density of the project has been reduced to 207 units. The action has been defined with the Part 1 of the Full EAF, a copy of which is provided at Exhibit "3" broadly as follows: "All required discretionary approvals and permits as well as all site improvements including the proposed mixed-use and residential buildings, a climate controlled storage buildings, driveway connections, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, an on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements. The project purpose is to develop Site "A" of overall Muir Woods Project Site as a mixed-use project in a manner consistent with the Overall Site Plan for the project prepared by Carmina Wood Morris DPC prepared by Carmina Wood Design. The project is a Type I action pursuant to SEQRA and the Town Board issued an Amended Findings Statement pursuant to SEQRA on September 27, 2021. The proposed use is consistent with the Town's adopted Comprehensive Plan."

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Question 11(B)(1): Rationale for rezoning request: 1. Why was this site chosen?

Response to Question 11(B)(1): The reclassification of a portion of 50 Dodge Road is being sought to ensure that the residential components of the Project Site will be located on property to be classified NCD-ND. Within Section 5-2-5 of the Zoning Code, the language states that the NCD-ND classification is intended to include primarily residential areas designed to provide living space for families and individuals and that ancillary uses designed to conveniently serve residents may be located within them. Section 5-2-5 of the Zoning Code also states that the NCD-NC classification includes:

- Residences and dwelling units of every type, except as otherwise specified in this subsection. In developing a balanced community the use of a variety housing types, styles and construction methods shall be deemed most in keeping with this Section.
- Small convenience retail and service facilities, except for automobile drive-in restaurants, and ancillary office facilities designed to serve the needs of residents of the neighborhood.

Question 11(B)(2): Why cannot land be used with the existing zoning?

Response to Question 11(B)(2): Not applicable. The Project Sponsor is not seeking to amend the zoning classification of the Project Site.

Question 11(B)(3): How will this rezoning impact surrounding properties?

Response to Question 11(B)(3): Not applicable. The Project Sponsor is not seeking to amend the zoning classification of the Project Site. The Project Sponsor believes the proposed development of Site "A" of the Muir Woods property as a mixed-use project per the updated layout will not have any potentially significant adverse impacts on surrounding properties and also that the proposed use is dramatically more compatible with nearby land use than the originally proposed flex/office space and research and development use.

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Question 11(B)(4): How will this rezoning impact the school system?

Response to Question 11(B)(4): The proposed mixed-use project will have positive impacts that will benefit the Sweet Home Central School District since the mixed-use project will generate substantial annual property taxes.

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Exhibit 7 – Responses to Questions 16A, 16C, 16D and 16E of the Application to Amend the Findings Statement & Reclassify a Portion of 50 Dodge Road from NCD–RI to NCD–LC

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

EXHIBIT 7

APPLICATION TO AMEND THE FINDINGS STATEMENT AND RECLASSIFY PORTION OF 50 DODGE ROAD FROM NCD-RI TO NCD-LC

Question 16(A)(1): **State in detail why the proposed zoning is consistent with the adopted Town of Amherst Bicentennial Comprehensive Plan. Cite specific sections, maps and/or figures in the plan that support the proposed zoning at this location.**

Response to Question 16(A)(1): During its meeting on October 19, 2020, the Town Board adopted Resolution 2020-792 for the purpose of approving an amendment to the Comprehensive Plan to designate Site A as appropriate for a mixed-use residential/commercial use instead of the previously proposed flex office/R&D buildings. The proposed mixed-use project is clearly consistent with the adopted Comprehensive Plan including Figure 6, which designates the Project Site as appropriate for "Commercial/Mixed Use". A color copy of Figure 6 is provided at Exhibit "17". Figure 21 of the Comprehensive Plan which is titled "University Focal Planning Area – Concept Plan" designates the Project Site as appropriate for "Commercial/Mixed Use. A copy of Figure 21 of the Comprehensive Plan is provided at Exhibit "18".

Question 16(A)(2): **Cite all text, map, and/or figures that must be amended to support the proposed zoning at this location and provide detailed suggested amendments.**

Response to Question 16(A)(2): The Project Sponsor is not seeking to amend the adopted Comprehensive Plan in connection with the updated layout for the mixed-use project.

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Question 16(A)(3): State why the proposed zoning is consistent with intent and objectives (Sec. 1-2-2) of the Zoning Ordinance:

Response to Question 16(A)(3): Not applicable. The Project Sponsor is not seeking to amend the zoning classification of the Project Site. Nonetheless, the requested amendment of the Findings Statement issued by the Town Board on October 19, 2020 is consistent with the intent and objectives of the Zoning Code for the reasons stated below.

Section 1-2-1 of the Zoning Code is titled "Purpose" and it states as follows:

> *"The purpose of this Zoning Ordinance and the intent of the legislative authority in its adoption is to promote the environment of the town and its public health, safety, convenience, comfort, prosperity and the general welfare by regulating the use of buildings, other structures and land for residences, open space, public facilities, business, services, industry or other purposes; by regulating and restricting the bulk, height, design, building coverage and location of structures; by regulating and limiting population density; and for the aforesaid purposes, to divide the land within the limits of the town into districts of such number and dimensions generally consistent with the policies of the Comprehensive Plan and to provide procedures for the administration and amendment of said Zoning Ordinance."*

The proposed development of the Project Site as mixed-use project is consistent with the "Purpose" of the Zoning Code. Section 1-2-2 of the Zoning Code sets forth the objectives of the Zoning Code. This section of the Zoning Code lists thirteen (13) objectives that are discussed below as follows:

A. To protect the character and values of residential, institutional and public uses, business, commercial and manufacturing uses and to insure their orderly and beneficial development;

Response: The proposed mixed-use project will be consistent with the objective of protecting the character and value of existing land uses. The proposed mixed-use project has been carefully designed to reduce previously authorized wetland impacts and to

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

include a mixture of uses in a pedestrian friendly environment and as such represents orderly and beneficial development.

B. To provide adequate open spaces for light, air and outdoor uses to include public, common and private open space areas;

Response: The proposed mixed use project is consistent with this objective. The Project Site will include permanent open space and a portion of the recreational trail on the overall Muir Woods property that will connect to the Town's nearby recreational trail that connects to the UB North Campus.

C. To prevent overcrowding of land;

Response: The proposed mixed-use project will not result in the overcrowding of land.

D. To prevent excessive concentration of population and to prevent spare and uncoordinated development;

Response: The proposed mixed-use project will not result in excessive concentration of population. The proposed mixed-use project does not represent an example of uncoordinated development.

E. To regulate and control the location and spacing of buildings on the lot and in relation to the surrounding property generally consistent with the policies of the Comprehensive Plan.

Response: The proposed mixed-use project has been carefully designed to be consistent with the policies of the Comprehensive Plan.

F. To protect persons and property from damage and injury due to fire or flood;

Response: A SWPPP with Engineer's Report prepared by Carmina Wood Design was previously submitted for review and approval by the Town's Engineering Department. The mixed-use project will not increase the likelihood of damage and injury due to fire and flood. The proposed project will be constructed per the stringent requirements of the NYS Building Code including the fire safety standards contained therein.

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G. To preserve and protect significant natural features and vegetation, thereby preventing ecological damage and visual blight which occur when those features or vegetation are eliminated or substantially altered to serve development purposes only.

Response: The proposed mixed-use project will not be inconsistent with this objective.

H. To assure that structure and land use arrangements are aesthetically harmonious with nearby areas and structures.

Response: The development of the Project Site in a manner consistent with the updated Site Plan will be aesthetically harmonious with nearby areas and structures.

I. To regulate the location of buildings and intensity of uses in relation to streets according to plans so as to cause the least interference with and be damaged least by traffic movements and hence result in lessened street congestion and improved public safety.

Response: The proposed mixed-use project will not result in any potentially significant traffic impacts as confirmed by the updated Traffic Impact Study prepared by Passero Associates.

J. To establish zoning patterns that insure economical extensions for sewers, water supply waste disposal and other public utilities, as well as development of recreation, schools and other public facilities;

Response: The Project Site has access to sanitary sewer and water lines as well as necessary public utilities.

K. To guide the future development of the town so as to being the gradual conformity of land, structures and uses generally consistent with the policies of the Comprehensive Plan.

Response: The proposed mixed-use project is consistent with this objective since the project is generally consistent with the policies in the Comprehensive Plan.

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L. To accomplish the specific intents and goals set forth in the introduction to the respective sections.

Response: The proposed mixed-use project is consistent with this objective.

M. To protect the community from visual pollution resulting from the unregulated use of signs and other advertising devices.

Response: The proposed mixed-use project will not be inconsistent with this objective.

Question 16(C): Compatibility with the present zoning and conforming uses of nearby property and with the character of the neighborhood:

Response to Question 16(C): The proposed mixed-use project will be compatible with the present zoning and conforming uses of nearby properties and the character of the neighborhood. There are a mixture of land uses on parcels with varying zoning classifications in the vicinity of the Project Site. The nearby land uses include residential uses in the Bucyrus Heights Subdivision to the north of a portion of the Project Site, the Lockwood Villas apartment project on Sweet Home Road directly north of a portion of the Project Site, Heritage Heights Elementary School on Sweet Home Road, and office buildings on property at the southeast corner of Dodge Road and Sweet Home Road.

Question 16(D): Suitability of the subject property for uses permitted by the current versus the proposed district:

Response to Question 16(D): The Project Site is more suitable for the proposed mixed-use project that the previously proposed flex office and research and development buildings.

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Question 16(E): **Whether the proposed change tends to improve the balance of uses, or meets a specific demand in the Town:**

Response to Question 16(D): The proposed mixed-use project will improve the balance of uses in the Town and will meet a specific demand for mixed-use living environments featuring integrated residential and commercial uses in a pedestrian friendly environment.

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Exhibit 8 – Amended Findings Statement issued by the Town of Amherst Town Board on September 27, 2021

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Town of Amherst

Brian J. Kulpa
Town Supervisor

AMENDMENT #51 TO THE AUDUBON DEVELOPMENT PLAN
TO RECLASSIFY A PORTION OF 326± ACRES OF LAND
FROM NCD-ND & NCD-MOS to NCD-GC, NCD-RI & NCD-MOS
1081 & 1121 North French Road
(Z-9-02)

CERTIFICATION OF AMENDED FINDINGS

Having considered the Draft and Final Generic EIS documents, and having considered the preceding written facts and conclusions relied upon to meet the requirements of 6 NYCRR 617, this Amended Statement of Findings certifies that:

1. The requirements of 6 NYCRR Part 617 have been met;

2. Consistent with the social, economic and other essential considerations from among the reasonable alternatives thereto, the action **approved** is one which minimizes or avoids adverse environmental effects to the maximum extent practicable; including the effects disclosed in the Generic Environmental Impact Statements, and the Application to Amend the Findings Statement, and

3. Consistent with social, economic and other essential considerations, to the maximum extent practicable, adverse environmental effects revealed in the Environmental Impact Statement process and the Second Application to Amend the Findings Statement will be minimized or avoided by incorporating as conditions to the decision those mitigative measures which were identified as practicable.

TOWN OF AMHERST
Name of Agency

Signature of Responsible Official

BRIAN J. KULPA
Name of Responsible Official

TOWN SUPERVISOR
Title of Responsible Official

September 27, 2021
Date

5583 MAIN STREET, WILLIAMSVILLE, NY 14221
Address of Agency

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RESOLUTION

WHEREAS, following the April 16, 2004 submittal of a Draft Generic Environmental Impact Statement (DGEIS) prepared by Ciminelli Development Company, Inc., the DGEIS was accepted by the Town Board on September 7, 2004. The DGEIS was submitted for the proposed rezoning from NCD-ND & NCD-MOS to NCD-GC, NCD-RI & NCD-MOS and development of 326± acres of land located at1081 & 1121 North French Road. On October 28, 2004, the Planning Board held a public hearing on the DGEIS and rezoning request and recommended approval of the subject petition. Subsequently, a public hearing on the DGEIS and rezoning request was held by the Town Board on March 2, 2005. A Final Generic Environmental Impact Statement (FGEIS) was accepted by the Town Board on November 5, 2007, and a Notice of Completion of the FGEIS was filed on November 14, 2007; and

WHEREAS, the Planning Board and the Town Board have considered the content of the DGEIS, the FGEIS, and all other documents and comments and submissions made during and after the hearings.

WHEREAS, on February 18, 2014, the Project Sponsor submitted an Application to Amend the Findings Statement and Audubon Development Plan along with supporting documentation. The Planning Board held a public hearing on the Application during its meeting on March 14, 2014 and it recommended approval of the Application. On June 16, 2014, the Town Board held a public hearing on the Application but did not issue a decision on the Application.

WHEREAS, on August 17, 2015, the Project Sponsor submitted an Amended Application to Amend the Findings Statement and Audubon Development Plan for the purpose of modifying the Application filed on February18, 2014.

WHEREAS, the Planning Board held a public hearing on the Amended Application during its meeting on September 17, 2015 and the Planning Board recommended in favor of the Application. On November 16, 2015, the Town Board held a public hearing on the Application. On December 7, 2015, the Town Board voted to issue an Amended Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the comprehensive environmental review of the Project that concluded with the original issuance of a Findings Statement on December 17, 2007.

WHEREAS, the Planning Board conducted a coordinated environmental review of the development of Sites C and D of the overall Project Site as a 133 lot residential subdivision. On September 14, 2017, the Planning Board issued a negative declaration pursuant to SEQRA for the subdivision based on its determination that the subdivision would not result in any potentially significant adverse environmental impacts.

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WHEREAS, on April 15, 2019, the Project Sponsor submitted an Application to Amend the Findings Statement and Audubon Development Plan along with supporting documentation. The requested amendment of the Findings Statement issued by the Town Board on December 17, 2017 was to allow student housing to be developed on Site B of the overall Muir Woods Project Site ("Application to Amend the Findings Statement"). The Planning Board held public hearings on the Application to Amend the Findings Statement during its meeting on May 16, 2019 and June 20, 2019 it adopted a resolution recommended approval of the Application to Amend the Findings Statement during its meeting on June 20, 2019.

WHEREAS, on August 5, 2019, the Town Board held a public hearing on the Application to Amend the Findings Statement. On August 5, 2019, the Town Board voted three to one to amend the Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of a Findings Statement on December 7, 2007 and the issuance of an Amended Findings Statement on December 7, 2015.

WHEREAS, on June 24, 2020, the Project Sponsor submitted an Application to Amend the Findings Statement issued by the Town Board on December 17, 2017 and to Amend the Comprehensive Plan for Site A of the Muir Woods Project to allow a mixed-use project to be developed on Site A of the overall Muir Woods Project Site (hereinafter collectively the "Application to Amend the Findings Statement"). The Planning Board held a public hearing on the Application to Amend the Findings Statement during its meeting on August 20, 2020 and at the same meeting adopted a resolution recommending approval of the Application to Amend the Findings Statement by the Town Board.

WHEREAS, on October 6, 2020, the Town Board held a public hearing on the Application to Amend the Findings Statement. On October 19, 2020, the Town Board voted to issue the Amended Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of a Findings Statement on December 7, 2007, and the issuance of an Amended Findings Statements on December 7, 2015 and August 5, 2019.

WHEREAS, on July 7, 2021, Sawyers Landing LLC submitted an Application to Amend the Findings Statement issued by the Town Board on October 19, 2020 in order to seek to increase the allowable residential density from 202 units to 258 units. The Planning Board held a public hearing on the Application to Amend the Findings Statement during its meeting on August 19, 2021 and at the same meeting adopted a resolution recommending approval of the Application to Amend the Findings Statement by the Town Board.

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WHEREAS, on September 27 2021, the Town Board held a public hearing on the Application to Amend the Findings Statement. On September 27 2021, the Town Board voted to issue the Amended Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of a Findings Statement on December 7, 2007, and the issuance of an Amended Findings Statements on December 7, 2015 and August 5, 2019 and October 19, 2020.

NOW THEREFORE THE TOWN BOARD FINDS AND DETERMINES THAT:

1. These Amended Findings set forth specific conditions and criteria consistent with 6 NYCRR Sections 617.7, 617.9, 617.11, and 617.12 under which the site plan process can proceed. This process provides procedures to supplement the FGEIS if necessary and for public notice and opportunity to participate in hearings before the Town Planning Board before it approves a site plan. An Environmental Assessment Form will be required with site plan application for environmental review. If the proposed development does not conform with these Amended Findings, a Supplemental Findings Statement, a supplement to the FGEIS, or a Negative Declaration shall be prepared to comply with 6 NYCRR Section 617.9.

2. The proposed mixed-use, student housing and residential development as presented in the FGEIS and the Application to Amend the Findings Statement submitted to the Planning Department on July 6, 2021 is consistent with the intent and objectives of the Zoning Ordinance.

3. Adequate services and utilities must be available prior to occupancy. Review and approval of services and utilities by the Town agencies will be required for site plan approval.

4. Development will be consistent with all other applicable laws, rules and regulations.

5. As provided in 6NYCRR Part 617.10, the Town Board chose to require the preparation of a draft Generic Environmental Impact Statement (DGEIS) instead of a draft Environmental Impact Statement (DEIS) for this project. This decision was based on the scope and timetable of the development described by the Project Sponsor and depicted in the Conceptual Master Plan, which showed a multi-use development on 330± acres of land, to be built out over a 15-20 year period. The Board's decision is also based on the following reasons:

    - A DGEIS provides a lead agency with the framework for properly evaluating a conceptual master plan while identifying the important elements of the environmental setting associated with the project site. A DGEIS assesses a

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broad scope of a group of actions or a combination of effects from a single action.

- The utilization of a DGEIS provides the Town Board with the authority to establish specific criteria and thresholds by which future actions such as site plan and subdivision applications will be reviewed, including requirements for ensuring subsequent compliance with SEQR.
- The Town Board's decision to require the Project Sponsor to prepare a DGEIS acknowledges that the specific layout and appearance of the development cannot be determined at this time but rather will be decided over a period of several years and subject to market demands, and the development of the project will occur in stages.
- The SEQR regulations state that a DGEIS is appropriate for a series or sequence of separate actions and/or projects that have wide application or restrict the range of future alternative policies.
- The Town Board's utilization of a DGEIS affords it the opportunity to evaluate a broad range of anticipated impacts, and it also ensures that related actions will not be segmented in order to avoid the required analysis of the proposed development of the overall project site.

6. By the time the Findings Statement was issued by the Town Board on December 17, 2007, the proposed Muir Woods development had been significantly revised since its initial submittal in 2002, resulting in a reduction in the commercial/office component of the project from 1.8± million sq. ft. to 700,000± sq. ft. and in the residential component from 200± units to 136± units. These changes were made in response to the NYS Department of Environmental Conservation, the U.S. Army Corps of Engineers and the public to minimize impacts to wetland areas to the greatest extent possible.

Following the issuance of the Findings Statement by the Town Board on December 17, 2007, the Project Sponsor obtained the required wetland permits from the New York State Department of Environmental Conservation and the United State Army Corps of Engineers. In an effort to address current market needs while maintaining the intent of the project site New Community District zoning, the Project Sponsor submitted an Application to Amend the Findings Statement in February of 2014 to expand the range of uses within Site B of the project site to specifically allow for multi-family housing in addition to the previously approved office/retail development.

Based on input received during the review of the Application to Amend the Findings Statement to allow for multi-family housing on Site B, the Project Sponsor submitted an Amended Application to Amend the Findings Statement and Audubon Development Plan on August 17, 2015 for the purpose of modifying the Application filed on February18, 2014. The Amended Application proposed to modify the permitted use of the eastern portion of Site B, comprised of approximately 26 acres. Pursuant to the updated Application, the western

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portion of Site B comprised of approximately 20 acres would have remained designated for commercial office and retail development per the Finding Statement issued by the Town Board on December 17, 2007.

Subsequent to the issuance of an Amended Findings Statement by the Town Board on December 7, 2015, the Project Sponsor sought the required approvals and permits for the development of Sites C and D of the Project Site as a 133 lot residential subdivision that includes a roadway connection to Campbell Boulevard on 520 Campbell Boulevard. The Planning Board thoroughly considered the potential adverse environmental impacts associated with the subdivision and issued a negative declaration pursuant to SEQR on September 14, 2017 based on its determination that the 133 lot residential subdivision on Sites C and D would not result in any potentially significant adverse environmental impacts. On September 14, 2017, the Planning Board granted Site Plan Approval for the subdivision, and on June 21, 2018 granted Final Plat Approval for the subdivision. A map cover for the approved 133 residential subdivision was filed with the Erie County Clerk's Office on July 24, 2018, and construction activities in furtherance of the construction of the subdivision began in the fall of 2018.

Following the issuance of the Amended Findings Statement by the Town Board on December 7, 2015, the Project Sponsor sought and obtained extensions of the expiration dates of the wetland permits previously issued by the New York State Department of Environmental Conservation and the United States Army Corps of Engineers.

In an effort to allow student housing to be developed on Site B while maintaining the intent of the New Community District zoning, the Project Sponsor submitted an Application to Amend the Findings Statement on April 15, 2019. The Project Sponsor sought an Amendment of the Findings Statement to expand the range of uses within Site B of the project site to specifically allow for student housing in addition to the previously approved multifamily housing on the western 20± acres of Site B and the previously approved office/retail development on the eastern portion of Site B.

In an effort to allow a mixed-use project to be developed on Site A while maintaining the intent of the New Community District zoning, the Project Sponsor submitted an Application to Amend the Findings Statement and the adopted Comprehensive Plan on June 24, 2020. The Project Sponsor sought an Amendment of the Findings Statement to modify the land use category within Site A of the project site to replace the previously proposed 237,000 sq. ft. maximum Flex office/R&D use with a mixed-use development including 2 four-story mixed-use buildings along the Dodge Road frontage of Site A, 45 two-family townhomes and 2 six-unit single-story multifamily buildings. The Project Sponsor sought to amend the Comprehensive Plan to designate Site A as appropriate for Mixed Residential use. In connection with the proposed mixed-

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use development of Site A, the Project Sponsor proposed to reduce previously approved impacts to the federal wetlands subject to the jurisdiction of the United States Army Corps of Engineers ("USACE") and also to the NYSDEC Freshwater Wetland and its regulated 100 ft. Adjacent Area.

On August 20, 2020, the Planning Board held public hearings in connection with its review of the Application to Amend the Findings Statement and the Comprehensive Plan as filed by the Project Sponsor on June 24, 2020. The Planning Board adopted resolutions during its meeting on August 20, 2020 by unanimous votes recommending that the Town Board issue the Amended Findings Statement and amend the Comprehensive Plan to designate Site A as appropriate for Mixed Residential use.

On October 6, 2020, the Town Board held public hearings in connection with its review of the Application to Amend the Findings Statement and the Comprehensive Plan as filed by the Project Sponsor on June 24, 2020. On October 19, 2020, the Town Board adopted Resolution 2020-791 for the purpose of issuing an Amended Findings Statement to allow Site A of the Muir Woods Property to be developed as a mixed-use residential/commercial project instead of the previously proposed flex office/R&D buildings. Resolution 2020-791 as adopted by the Town Board on October 6, 2020 also authorized the acquisition of approximately 43 acres of Permanent Open Space via a donation by the property owner consisting of property to the west of Site B including the eastern portion of Site A consisting of approximately 9.81 acres of wetlands subject to the jurisdiction of both the NYSDEC and USACE. During its meeting on October 19, 2020, the Town Board also adopted Resolution 2020-792 for the purpose of approving an amendment to the Comprehensive Plan to designate Site A as appropriate for a mixed-use residential/commercial use instead of the previously proposed flex office/R&D buildings

On December 24, 2020, the New York State Department of Environmental Conservation ("NYSDEC") issued an Amended Wetland Permit [Permit No. 9-1422-00398/0001] authorizing the impacts to NYSDEC Freshwater Wetlands and the associated regulated 100 ft. Adjacent Area in order to accommodate the mixed-use development of Site "A". The Amended Wetland Permit reduced the impacts to jurisdictional freshwater wetlands associated with the development of Site A from 9.46 acres to 1.2 acres and reduced the impacts with the development of Site A to the regulated 100 ft. wide adjacent area from 4.2 acres to 3.65 acres.

As a result of the Amended Wetland Permit issued by the NYSDEC on December 24, 2020, the development of the Muir Woods Property will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the Project Sponsor is required to create 19.58 acres of in-kind and out-of-kind wetlands on the overall Muir Woods

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Property, in six areas, to replace the functions and benefits of the impacted wetlands. Additionally, there will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts.

On February 25, 2021, the United States Army Corps of Engineers ("USACE") issued an Amended Wetland Permit [LRB-2001-00067] authorizing impacts to 6.09 acres of federal wetlands, which was a reduction of 6.92 acres of previously authorized impact of 13.01 acre to federal wetlands, in order to accommodate the mixed-use project on Site A.

On July 7, 2021, Sawyers Landing LLC filed an Application to Amend the Findings Statement to accommodate an increase of the allowable density of the residential component of the mixed-use project on Site A from 202 units to 258 units.

7. A Supplemental GEIS, an option that the SEQR regulations leaves to the discretion of the Lead Agency, was not required for this project due to the Town Board's decision that the reduction in the project described in #6, above did not meet the criteria set forth in 6NYCRR Part 617.9(a)(7). Although the changes proposed by the Project Sponsor reduced the development significantly, it was not determined that the amended project would encroach on any land not initially identified in the scope of the original development proposal. The project changes also did not result in newly discovered information, and would not result in any significant environmental impacts not addressed or inadequately addressed in the DGEIS.

8. Traffic and Transportation (FGEIS Section 2.1)

Site specific requirements shall be established by the Town, County and State, as appropriate, as development applications are reviewed. The developer shall be responsible for any traffic mitigation required for development of the project site.

The potential traffic impacts associated with the original project proposal were clearly analyzed and identified within the Traffic Impact Study prepared by Stantec Consulting Services, Inc. dated March 2003 and updated August of 2005 in association with the acceptance of the FGEIS.

The Amended Findings Statement issued by the Town Board on August 5, 2019 included the consideration of adding student housing to the authorized uses of Site B pursuant to the Amended Findings Statement issued by the Town Board on December 17, 2007. The Project Sponsor submitted a Traffic Impact Study for the purpose of evaluating the potential traffic impacts of the development of Site B as a maximum of 515 student housing units. It was determined that the potential traffic impacts associated with student housing on Site B will be less than the potential traffic impacts of the development of Site B in its entirety as a

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maximum of 464,850 sq. ft. of commercial office and retail development pursuant to the Findings Statement issued by the Town Board on December 17, 2007.

The Town Board, as Lead Agency, requires that the Project Sponsor comply with the following mitigation measures during the development of the project site:

A. Provision for Future Extension of John James Audubon Parkway to North French Road

The extension of John James Audubon Parkway through the project site and connecting to North French Road was proposed in the initial Concept Plan submitted for the Muir Woods project in 2002. This proposal was also incorporated into the DGEIS submitted to the Town in 2004. The connection was removed from the Concept Plan in response to the requirement from the NYS Department of Environmental Conservation to further reduce impacts to State and federal wetlands. The Town of Amherst may in the future be interested in the possibility of a future northerly extension of John James Audubon Parkway to North French Road while acknowledging such possible future extension would require approvals from both the NYS Department of Environmental Conservation and the United States Army Corps of Engineers.

The rationale for the road connection was found in several planning documents, both historical and recent:

- The Amherst Community Development Plan adopted by the Planning Board in 1975 includes the extension of the then-planned Lockport Expressway through the subject site as a future Minor Arterial road.
- A report prepared by NYSDOT in 1976 anticipated the extension of the John James Audubon Parkway and forecast its use by 1,950 vehicles per hour.
- The Amherst Bicentennial Comprehensive Plan, accepted by the Town Board in February 2004 and adopted by the Town Board in January 2007, identifies the "Audubon Parkway Extension" in the map showing the Future Thoroughfare System.

The 30+ years of anticipating this roadway connection point to its significance in meeting the transportation goal of improving circulation within the Town and the role this connection would play in overall Town development. Given its importance, the Town Board is requiring that the future location of this connector be shown on site plans submitted for review, and that sufficient land be reserved by the Project Sponsor for the eventual connection to be constructed. The road construction and alignment will be subject to approval by the NYSDEC and the U.S. Army Corps of Engineers, as applicable.

B. Residential Connection to Lynette Lane

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The residential component of the proposed Muir Woods development to occur on Sites C & D may have a direct road connection to Lynette Lane. There will be no direct roadway connection to Nancy Lane. Non-residential traffic will be discouraged from using Lynette Lane through the implementation of various traffic calming measures to be proposed during the site plan review process for the development of Sites C & D, subject to review of such traffic calming measures by the Town Traffic-Safety Board and Fire Chief's Association. These measures include:

1. The lack of direct sight lines for motorists to discourage non-residential traffic from utilizing Lynette Lane to access North French Road;

2. Curvilinear road design; and

3. Installation of signage posting the road for "resident and emergency traffic only" or other such measure to prohibit non-residential traffic from travelling on Lynette Lane and the proposed public roadways within the existing residential subdivision;

If a problem is determined to exist based on the Phase 2 traffic study, further measures to discourage traffic of prohibit cut-through traffic will be considered.

C. No Internal Roadway Connection to Dodge Road

The internal connector road within the Muir Woods development is not proposed to have a westerly connection to Dodge Road; the only direct vehicular connection to Dodge Road will be from the portion of the project located in the western portion of the project site (Site A). If warranted at some future time by a traffic analysis, a connection to Dodge Road may be made from the internal connector road if required permits for such a roadway connection can be obtained from the NYSDEC and the US Army Corps of Engineers.

D. Updated Traffic Impact Study

The Traffic Impact Study will be updated when any of three established thresholds are met:

1. Completion of Phase I development, defined as full build-out of Site B, or

2. prior to approval of any site plan in Site C or Site D or any direct or indirect connection to any of the Sites with Lynette Lane, or

3. when the number of combined vehicular trips entering and exiting the site during the AM weekday peak travel hour reaches 858 trips, or

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4. when the number of combined vehicular trips entering and exiting the site during the PM weekday peak travel hour reaches 774 trips.

If actual conditions exceed projections, this will be reflected in the updated TIS to be prepared by the Project Sponsor, and the Project Sponsor may be required to implement traffic related mitigation measure sooner than expected.

Any mitigation measures, including off-site mitigation measures that are required as a result of the updated TIS, shall be the sole obligation of the Project Sponsor, if approved. Any off-site improvements, including the acquisition of private property required to make those improvements, shall be conditions of any site plan approval and treated as Public Improvement Permits (PIPs) for the purpose of final permitting. At no time shall the Town be required to make any off-site improvements or acquire private property, either by purchase or through its eminent domain powers, to mitigate the impact of this development project.

E. Alternate Access to Campbell Boulevard

During the original environmental review of the proposed project which concluded with the Town Board's issuance of a Findings Statement on December 17, 2007, the Project Sponsor attempted to seek a vehicular connection from the site to Campbell Boulevard through property located at 520 Campbell Boulevard which is owned by the Williamsville Central School District. The Town also participated in efforts to obtain access to Campbell Boulevard via this property. These attempts were not successful.

The Project Sponsor eventually was successful in acquiring 520 Campbell Boulevard from the Williamsville Central School District on December 5, 2017 and the approved 133 residential subdivision on Sites C and D includes a public roadway connection on 520 Campbell Boulevard to Campbell Boulevard.

F. Construction Vehicles

As part of the public comment period for the project, concerns were raised regarding the use of construction vehicles on existing residential streets in the adjacent Franklin Heights Subdivision to access the project site during project construction. In order to avoid the adverse environmental impacts associated with construction vehicles, existing residential streets shall not be utilized by construction vehicles to access the project site. The infrastructure to be constructed for the project shall be appropriately sequenced so that construction vehicles can access the site via the northerly extension of John James Audubon Parkway and Doge Road only.

Any future builder, owner or developer who purchases lots for development within Site C & D shall be prohibited from using Lynette Lane as a means of

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access for construction vehicles. A deed restriction incorporating this restriction shall be a prerequisite of the sale of any lots within Sites C and D. and the Town shall be provided with a copy of the recorded deed restriction, which shall not be recorded at the Erie County Clerk's Office until the content and form of the deed restriction has been reviewed and approved by the Building Department and Town Attorney's Office.

On June 21, 2018, a Declaration of Restrictions was recorded at the Erie County Clerk's Office (Liber 11330 of Deeds at Page 8243) for the purpose of complying with the relevant portion of the Amended Findings Statement prohibiting construction vehicles from utilizing Lynette Lane for access by construction vehicles.

G. Break in Access for Connection to Lockport Expressway (I-990)

The proposed northerly extension of John James Audubon Parkway as a Town roadway to provide access to the project site requires a break in access to the Lockport Expressway (I-990). The NYSDOT has been aware of this requirement since the initial petition by the Project Sponsor in 2002. Prior to the granting of the break in access, several conditions must be met, including completion of any required environmental compliance. Once completed and inspected, the Project Sponsor will be required to dedicate the northern extension of John James Audubon Parkway to the Town for permanent use as a public roadway to be dedicated to the Town of Amherst.

On May 20, 2019, the Town Board adopted a resolution stating the Town will serve as the applicant for the required Break-in-Access for the proposed northerly extension of John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst.

The Town filed an Application for Break-in-Access with the New York State Department of Transportation on August 21, 2019. The NYSDOT has not yet issued a decision on the pending request for Break-in-Access approval.

The Break-in-Access for the proposed northerly extension of John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst will result in numerous public benefits including, but not limited to, accommodating the potential future extension of the NFTA light rail and a terminus for such light rail on Site B, publicly accessible parking for a recreational trail that will cross the overall Muir Woods Project Site and connect to the Town's recreational trail (extending from Niagara Falls Boulevard to the trailhead near the intersection of North Forest Road and Maple Road), and a potential future extension of John James Audubon Parkway as a public roadway connecting to North French Road.

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H. Traffic Mitigation Measures

Dodge Road / Project Site Roadway

Phase I development:

- Installation of a stop sign to the southbound (site driveway) approach
- Construction of one shared left-right turn lane for southbound site driveway approach

Full development:

- No additional improvements

John James Audubon Parkway / I-990 Ramps

Phase I development:
Upon the completion of Phase I development, (Phase I development defined in Section 8, Part D.1. of this Amended Findings Statement) the Project Sponsor shall be required to provide a current trip count Report for both the a.m. and p.m. peak travel hours. Subject to the findings of a warrant analysis prepared in accordance with appropriate traffic engineering standards as determined by the updated trip count Report and based on an analysis of the potential impacts upon existing Levels of Service at this intersection, the Project Sponsor may be required to work with the New York State Department of Transportation to provide the following mitigation measures:

- Installation of traffic signals, each with their own controller, at both the northbound and southbound I-990 to John James Audubon Parkway
- Installation of a wire connection between these two new signals and the existing traffic signal at John James Audubon Parkway and Dodge Road in order to coordinate all three traffic signals
- Widening of both the northbound and southbound I-990 off-ramps to provide one additional turning lane on each ramp approach to John James Audubon Parkway

Full development: If any of the thresholds identified in 'D' above are met, the following improvements will be evaluated and may be required:

- installation of a third lane to the northbound off-ramp in order to provide two left turn lanes and one right turn lane
- add a free-flow southbound right turn lane at the southbound ramp, including a second receiving lane on the ramp to merge to one lane prior to the I-990 mainline

Dodge Road / John James Audubon Parkway

Phase I development:

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- Traffic signal timings will need to be adjusted periodically over time as warranted by changing travel patterns

Full development:

- Construction of a westbound right turn lane. It is anticipated that this improvement will be required when approximately 75% of the development is complete or when the number of westbound right turning vehicles from Dodge Road exceeds 300 vehicles per hour during the morning peak travel period.

North French Road / Sweet Home Road

Phase I development:

- Adjustments to traffic signal timing as travel patterns warrant modification

Full Development:

- Construction of an eastbound right turn lane. Traffic volumes turning right at this location currently exceed guidelines recommended in the Highway Capacity Manual for consideration of installing a separate right turn lane. While construction of this lane is currently warranted to address current existing traffic operations in the area, it will not be needed as a result of traffic to be generated by the proposed development of the project site until approximately 90% of the proposed development has been completed, since new traffic projected to be generated by the project will only add a few additional vehicular trips to this traffic movement.
- Modify signal timings during both the morning and evening peak hours, as necessary. Recent improvements to this intersection to provide protected phasing for the left turns will reduce the number of left turn accidents at this location. Additionally, future planned improvements to be implemented by Erie County will assist in further reductions in the number of accidents at this intersection.

North French Road / Campbell Boulevard

Phase I development

- Adjustments to traffic signal timing as travel patterns warrant modification

Full development:

- Add protected/permitted phasing for eastbound, northbound and southbound left turns when the traffic signal is upgraded in association with the improvement identified above.

North French Road / I-990 Ramps
Dodge Road / Sweet Home Road
Dodge Road / Campbell Boulevard

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be 4.3 acres of stream channel enhancement on-site (totaling approximately 2,630 linear feet).

- The development of the eastern portion of Site B for residential purposes, shall not include any owner occupied housing units within the State regulated wetland or the 100 ft. regulated Adjacent Area that do not involve oversight by either a homeowners or condominium association to ensure there will not be any impacts into the 100 ft. regulated wetland Adjacent Area that is to be preserved on Site B.

Federal Wetlands:
As stated in its letter dated August 27, 2007, the United States Army Corps of Engineers (USACE) has field verified that the federal wetland boundaries located on the Muir Woods project site as shown on the wetland delineation map prepared by Greenman-Pedersen, Inc. dated May 2007 are accurate. The wetland areas were delineated by Earth Dimensions, Inc. and summarized in a final wetland delineation report dated May 16, 2007.

The Project Sponsor provided a complete Joint Application For Permit for wetland impacts associated with the project to the USACE and NYSDEC as of June, 2009. After thoroughly reviewing the complete application and associated wetland impacts, the USACE issued a Validated Department of the Army Permit for wetland impacts associated with the project as of May, 2012. Additionally, having thoroughly reviewed the complete application and associated wetland impacts, the NYSDEC officially issued a Freshwater Wetland Permit and Water Quality Certification for wetland impacts associated with the project as of November, 2009.

On May 14, 2012, the United States Army Corps of Engineers ("USACE") issued Department of Army Permit No. 2001-00067. The permit issued by the USACE permitted to impact 17.83 acres of Federal wetland, and 1.29 acres (approximately 5227 linear feet) of jurisdictional tributaries for the construction of Muir Woods project. On May 6, 2016, the USACE extended the permit expiration dated from May 14, 2012 to November 30, 2019. The USACE issued a modification of Permit No. 2001-00067 on June 20, 2018 in connection with the development of Sites "C" and "D" as a residential subdivision. On January16, 2019, the USACE extended the expiration date of Department of Army Permit No. 2001-00067 to November 30, 2024.

On February 25, 2021, the United States Army Corps of Engineers ("USACE") issued an Amended Wetland Permit [LRB-2001-00067] authorizing impacts to 6.089 acres of federal wetlands, which was a reduction of 6.921 acres of previously authorized impact of 13.01 acre to federal wetlands, in order to accommodate the mixed-use project on Site A.

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10. Wildlife / Biological Resources (FGEIS Section 2.3)

The NYSDEC's Natural Heritage Program has reported no record of known occurrences of rare or state-listed animals or plants, significant natural communities, or other significant habitats, on or in the immediate vicinity of the project site. The Project Sponsor will be required to implement the following mitigation measures in order to minimize impacts to wildlife resources to the maximum extent practicable:

- A comprehensive erosion control plan will be developed and implemented to protect vegetation and water quality.
- Off-limit areas, including wetlands, will be delineated prior to construction to avoid or minimize impacts to vegetation. The construction workforce will be educated as to respecting and adhering to physical boundaries of off-limit areas.
- Best Management Practices will be followed during construction.
- The establishment of invasive vegetative species will be deterred through manual extraction and rapid establishment of desirable vegetation. Exposed and disturbed soils will be seeded, planted and mulched to prevent the colonization of invasive species. Volume 8 of the Appendix of the FGEIS at Exhibit F (*SJWPA Appendix* M) contains a discussion of the proposed on-site wetland mitigation including the protection of habitat areas.
- Waterfowl activity will be deterred in the off-site wetland mitigation area located in the Town of Newstead through the use of mylar tape, snow fencing, 4-7 ft. tree plantings and the seeding of upland grassland areas with a cool season grass.
- The proposed on-site wetland mitigation system will be designed to provide seasonal aquatic habitat for fish, waterfowl and amphibians; habitat for multiple covertypes of wetland plant species; and passerine bird nesting, feeding and resting habitat.
- The project site historically has had an elevated number of deer-vehicle accidents on the roads surrounding the parcel. This parcel is a portion of a much larger habitat area which also includes Nature View Park to the north and is not a "closed" habitat area. The Planning Department, in conjunction with the Police Department, will continue to monitor the deer population throughout the Town and implement approved methods of reducing deer/vehicle accidents in accordance with the Deer-Vehicle Accident Management Plan.

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11. Drainage and Flooding (FGEIS Section 2.4)

The following measures shall be implemented by the Project Sponsor to mitigate drainage and flooding impacts to the maximum extent practicable:

A. The Town Highway Department shall have access to all Town ditches that are on the subject property including Town ditches 4, 4A, 4B and 4C. The Project Sponsor will be required to grant public easements to the Town to these ditches to ensure their proper maintenance. No aspect of the Muir Woods development will inhibit access to Town ditches or create undue burden to the Town for restoration of easement property used to access Town ditches. On June 28, 2018, the Project Sponsor recorded a Permanent Access and Drainage Easement at the Erie County Clerk's Office (Liber 11331 of Deeds at Page 1521) for the purpose of granting the Town an easement to access town ditches and stormwater management facilities on the Project Site including the existing lake.

B. The project site and the surrounding vicinity are known as locations for high amounts of beaver and mosquito activity. Access to the Town Highway Department for control of this activity in Town ditches or other areas of the development shall be provided.

C. The Project Sponsor shall be responsible for cleaning and debrushing of all Town ditches located on the project site during the initial construction phases of the project. The Project Sponsor will also be responsible for long-term maintenance of stream/drainage features and detention/stormwater basins; for maintenance of on-site wetland mitigation areas during the monitoring period; and for the construction of all drainage improvements required for development of the project site.

D. The Project Sponsor shall be required to construct any ponds and sand filters required stormwater quality treatment. All ponds and sand filters to be constructed on the project site will be privately owned and maintained, with public drainage easement to be granted by the Project Sponsor to allow Town to properly maintain the inlet and outlet pipes of any wet ponds.

E. All stormwater runoff will be treated to standards approved by the Town Engineering Department prior to discharging into the existing lake on the project site or Town ditches. No additional detention is being proposed for the Muir Woods development for stormwater quantity control.

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F. All buildings in the west portion of the Muir Woods site located within the Ellicott Creek flood plain will be at a minimum elevation of 576.0 feet, or one foot above the base flood elevation as determined by the Town Building Commissioner.

As development is proposed, specific drainage plans will be reviewed and approved by the Town Highway and Engineering Departments and the NYS Department of Environmental Conservation/US Army Corps of Engineers during site plan review, to ensure there is no adverse impact to the Ellicott Creek Flood Control system.

G. Upon development, the existing 32± acre lake in the southeast portion of the project site will be maintained with a normal lake level of 569.55 feet. The existing 42-inch CMP outlet at the west end of the lake will remain as it is. All stormwater from the east side of the development around the lake will pass through a stormwater quality treatment facility consistent with the NYS Stormwater Management Design Manual and Phase II Stormwater SPDES requirements prior to entering the lake. This system currently designed as sand filters may evolve into wet ponds, bio-retention filters, and/or other acceptable practices under the Design Manual and SPDES requirements.

H. Backyard runoff from proposed residential units will be separated from wetland mitigation areas and wetlands either by a ditch or rear yard drains to preclude pollution of those areas by lawn chemicals, per NYSDEC letter dated October 26, 2007.

I. A detailed Stormwater Pollution Prevention Plan (SWPPP), including a Sediment and Erosion Control Plan, for the various phases of the project including any related on-site drainage areas shall be submitted as specific site plans are submitted for review. The Stormwater Pollution Prevention Plan for each phase of the project will need to be reviewed and approved by the Town's Engineering Department.

J. The Project Sponsor shall be required to comply with the findings and recommendations of the Preliminary Drainage report prepared by Greenman-Pedersen, Inc. in August 2007 and any updated reports during the course of development.

K. The Project Sponsor will provide backyard drainage for the existing homes that are directly adjacent to the portions of the project site that will be developed for residential use. This requirement pertains to Sites and D. Additional drainage improvements for the areas along the rear yards of the homeowners on Nancy Lane will also be installed by the Project Sponsor. The drainage pipe to be installed in the rear yards of the new residential

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units that will be integrated with the new drainage swale behind the residents of Nancy Lane will be a minimum diameter of 12 inches.

12. Character and Quality of Life Issues (FGEIS Section 2.5)

A. Setbacks

On those portions of the project site where commercial or student housing development will be directly adjacent to existing residential areas (i.e. Bucyrus Heights), setbacks will retain existing vegetation to a depth that provides an adequate buffer. The following minimum setbacks will be required:

- The planting of additional trees and shrubs by the Project Sponsor within the minimum setback area may be required to supplement the existing vegetation in order to provide adequate buffers.

- A combination of earthen berms and new vegetation will be required in those portions of the minimum setback area where there is not sufficient existing vegetation to provide an adequate buffer. The minimum height at the top of berms shall be three feet, and the maximum slope shall be 1 on 3 (33%) to promote the growth and long-term viability of trees and shrubs planted on the berms. Berms should have a natural appearance by varying their width and height.

- Site A (western portion of the project site) – This portion of the project site will be utilized for mixed-use; a portion of Site A is located directly south of the Bucyrus Heights subdivision.

  - 25 ft. minimum building setback from residential lot line for single-story residential buildings.

  - 90 ft. minimum building setback from residential lot line for attached and detached two-family townhome style units.

  - 250 ft. minimum building setback from residential lot line for four-story mixed use buildings.

  - 250 ft. minimum building setback from residential lot line for four-story multifamily building.

  - 60 ft. parking setback from residential lot line

- Site B (center portion of site) – This portion of the project site will be developed around the extended John James Audubon Parkway as a

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public roadway to be dedicated to the Town of Amherst. Site B will be developed as student housing or for the land uses permitted pursuant to the Amended Findings Statement issued by the Town Board on December 17, 2015. The following setback standards apply to the development of Site B:

- 60 ft. building setback from residential lot line. If the height of any proposed buildings exceeds 50 feet, the required minimum building setback shall be equal to the height of the proposed building.

- 90 ft. parking setback to residential lot line

B. Building Height

The following maximum building heights will be observed for the proposed development:

- Site A (western portion of the project site) – This portion of the project site will be the location of mixed-use and residential buildings and a portion of Site A is located directly south of the Bucyrus Heights subdivision.

  - Maximum building height for mixed-use and multifamily buildings shall be four-stories and 55 ft. as measured from the finished grade to the top of any parapet (excluding any rooftop mechanical equipment). All mechanical equipment shall be properly screened in accordance with the standards contained in the Zoning Code adopted by the Town Board in May of 2006.

  - Maximum height of any residential buildings within 90 ft. of a residential lot shall be 25 ft.

- Site B (center portion of the project site) – This site will be developed around the extended John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst. Site B will be developed as student housing or Site B will be developed as permitted to the Amended Findings Statement issued by the Town Board on December 17, 2015.

  - There will not be a maximum height for buildings to be constructed on Site B. All buildings will be required to comply with a minimum required setback that shall be the greater of 50 feet or the height of the proposed building at the point of its maximum height (including rooftop mechanicals, etc.)

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13. Soil Stability and Foundation Issues (FGEIS Section 2.6)

The Geotechnical Engineering Report prepared by McMahon & Mann Consulting Engineers, P.C. dated June 2005 includes findings and foundation considerations for future construction of the various components of the project. The report is included in Volume 6, Appendix I of the FGEIS.

The Town shall not grant site plan, subdivision or Public Improvement Permit (PIP) approval for construction of any component of the project (buildings, parking areas or infrastructure) unless the identified limitations as discussed in the McMahon & Mann report are adequately accounted for. The applicant shall be required to provide documentation of site-specific soil characteristics and comply with all relevant Town building codes regarding soil conditions.

Additional mitigation measures to be undertaken by the Project Sponsor, subject to determination by the Building Department, may include:

- Perform individual soil borings for each proposed structure to accurately determine the specific geotechnical design perimeters.
- Take measures to control the moisture content of the soils outside the structure. These may include installation of an irrigation system that would maintain near-saturated conditions in the soil around the structure during dry summer months, and/or installation of an exterior vapor barrier that extends out away from the structure around the perimeter.
- Monitoring of soil moisture with supplemental foundation watering during dry months.
- Use of a lower allowable bearing pressure for design of the spread footings.
- Placement of a minimum of two continuous #5 horizontal longitudinal reinforcing bars in each of the following locations: in the footing, at the base of the foundation wall, and at the top of the foundation wall.
- Use of an isolation joint between the basement floor slab and the foundation wall.
- Installation of a quality vapor barrier under the basement floor slab.
- Installation of a foundation drain system designed so that the floor elevation of the sump is above the elevation of the bottom of the footing.

14. Economic Impacts (FGEIS Section 2.7)

All infrastructure required to support the development of the project site will be installed at the Project Sponsor's expense. Town-wide or localized special assessment districts (sewer, water, highway, etc.) are established so operating cost can be spread over many taxpayers who use specific services.

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According to the "Cost of Servicing/Revenues Generated Land Use Study" in December 2006 commissioned by the Amherst Industrial Development Agency, for every $1.00 attributed to residential use, $1.11 is expended in providing government services, while just $0.48 is expended for commercial use and $0.60 is expended for open land. As a predominantly commercial oriented mixed-use project, the estimated $3,500,000 in yearly tax revenue (2007 estimated) to the Town at full build out projected to be generated by the project is expected to cover the cost of any additional services including police and fire protection, snow plowing, maintenance of roads, water and sewer infrastructure, ditches, etc.

An economic real estate study for the proposed Muir Woods project was completed by Northeast Appraisers in March, 2002 which analyzed residential demand and property values. A subsequent Economic Analysis was completed by Real Property Services, LLC in July 2006, which is included in Appendix K, Volume 8 of the FGEIS. The conclusions of those reports are:

- There will be no negative impact on the marketability or values of nearby existing housing. The project may potentially have a positive impact on surrounding residential property values due to increased demand on desirability to live in close proximity to the development.

- The proposed project development will add over $70 million to the Town of Amherst tax base when completed, and generate over $3.4 million in tax revenue per year at stabilized 2008 levels.

- Over the first 10 years of development, the project is projected to generate over $21.4 million in tax revenue, as compared to total tax revenue of approximately $260,000 that would be generated if the project site remains as vacant land over the same period.

- It appears that both the Sweet Home and Williamsville School Districts will be impacted minimally with regards to expenditures on a per student basis. This takes into account that more than 50% of the residential development will consist of patio homes, which primarily cater to "empty nesters" and typically generate less students per household.

- The competitive advantages of the project site which are expected to support strong market absorption include its direct interchange access from the Lockport Expressway (I-990) and the high visibility of the site from expressway traffic.

15. Noise and Light Issues (FGEIS Section 2.9)

Noise – It is anticipated that the project site will be built-out in stages over many years and, as such, there is a need to impose mitigation measure for noise from

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

construction activities to minimize this identified adverse environmental impact to the maximum extent practicable. Both temporary and long terms noise impacts may result from the construction activities on the project site as well as from the proposed use of the project site.

Noise from construction-related activities, which will exceed local ambient levels for noise outside of structures, may cause some temporary annoyance to nearby residents. It is expected that this impact, caused by heavy equipment, construction vehicles and power tools, will continue throughout the duration of construction. In order to reduce this noise, the following measures will be undertaken by the Project Sponsor:

- Limit major construction activities to daytime hours
- Use of construction equipment with mufflers
- The preservation of existing vegetation to the greatest extent practicable will provide a noise barrier to existing residential areas.
- If blasting is required, the developer will follow all requirements of the Town Blasting Ordinance

Noise resulting from the occupation and usage of the buildings constructed on the project site can be expected to result in sound levels that are characteristic of suburban office and residential developments and should not be significant.

With the Lockport Expressway (I-990) forming the southern boundary of the project site, and its design as an elevated highway for a portion of this boundary, traffic is considered the largest source of existing noise. Levels from typical noise generators that may be expected to exist in the vicinity of the project site include:

Distant traffic (45 mph)	45 – 50 decibels
Passenger car pass-bys	70 decibels
Accelerating trucks	85 decibels
Distant aircraft noise	60 – 85 decibels

The Transportation Project Report for the Lockport Expressway evaluated the potential noise impacts of the entire I-990 project, including the interchange that will be improved in connection with the proposed project. A copy of the Noise & Air Pollution Study is found in Volume 6 of the Appendix of the DGEIS at Exhibit 30. In addition, there is not any development directly adjacent to the existing interchange that will be impacted by the proposed interchange improvements. To the south of the northbound off-ramp there are some residential units situated along Dodge Road. However, the planned improvements at the existing off-ramps will not result in a movement of traffic 50% or more closer to source receptors.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Light – To mitigate the light spillage from exterior lighting on adjacent residential properties, especially the Bucyrus Heights neighborhood, the following measures will be implemented:

- Appropriately located lighting, downward-directed lighting fixtures or hooded lighting will be used to prevent off-site light spillage on adjacent residential areas. The light fixtures and their placement will follow all Town of Amherst code requirements for usage and design. The Town Zoning Code requires a lighting plan to be submitted during the site plan review process, and the standards contained in the relevant section of the Zoning Code regulate lighting spillover from commercial locations onto adjacent residential land uses.

- Screening of proposed commercial buildings and parking lots will be provided through the creation of berms or landscaping elements on the periphery of developed areas (see Section 10A above).

16. Open Space and Recreation (FGEIS Section 2.10)

The proposed internal trail system shall be installed (Sites C & D) of the "The Preserve at Muir Woods" development, provided it does not impact regulated wetlands or is permitted by permits issued by the NYSDEC and/or USACE. Public access to a portion of the existing lake will be provided. The majority of State Wetlands TE-22, TE-33, and TE-34 will remain as Major Open Space (MOS). As a result of the modifications to the project, approximately 224± acres of the project site will be preserved as open space.

The proposed recreational trail connecting sites A, B, C, and D of the Muir Woods Development shall connect to the Town's existing trail system as shown in Figure 4 (Park, Open Space and Trail map) and Figure 2.1 (University Focal Planning Area Concept Plan) of the adopted Amherst Bicentennial Comprehensive Plan and shall be constructed by the Project Sponsor as part of the Muir Woods project. Each development site of the Muir Woods Development shall complete its portion of the trail system prior to the issuance of any certificate of occupancy by the Town of Amherst Building Department.

The Project Sponsor will work with the Town toward achieving the trail connections. An opportunity for a future multi-use trail connection northerly to Nature View Park shall be maintained in accordance with the Town Comprehensive Plan.

17. Other Issues (FGEIS Section 2.12)

A. Reclassification of Land

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

The entire project site is zoned New Community District (NCD), and no changes are proposed to remove the property from the NCD zoning district classification.

The original request by Ciminelli Development Company, Inc. in 2002 was to reclassify 326± acres of land from NCD-ND and NCD-MOS to NCD-GC, NCD-RI and NCD-MOS. This request was reviewed and commented on over a five year period. As a result of discussions with the NYS Department of Environmental Conservation during that time, the petitioner amended the original Muir Woods Concept Plan by reducing the overall development from 144 acres to 110 acres in order to minimize wetland impacts. In addition, the various components of the development were altered so that the proposed size of the commercial office/R&D space was reduced from 1.8 million sq. ft. to 700,000 sq. ft. The proposed "village center" originally envisioned was also eliminated. The result is a different land pattern from that initially proposed and one that is not consistent with the originally-requested reclassification districts.

The following additional steps shall be undertaken as part of the Findings for this project:

- The parcels to be reclassified to NCD-GC shall be deed restricted to prohibit the following uses:
    - Automobile sales and service facilities (except vehicles used primarily on the subject property)
    - veterinary clinics or kennels
    - gasoline service station will be prohibited around the existing lake

    On June 21, 2018, a Declaration of Restrictions was recorded at the Erie County Clerk's Office (Liber 11330 of Deeds at Page 8243) for the purpose of prohibiting the above described uses on the portion of the Project Site reclassified to NCD-GC.

- At the Town Board's direction, the Town shall initiate a reclassification of the remainder of wetland areas contained in the original project proposal as Major Open Space (MOS).

B. Land Use

The proposed development will follow the program summarized below as depicted in the original Findings Statement concept plan for the project dated September 2007, as depicted in the Concept Plan for Site B dated August 14, 2015, as the Concept Plan for Site B dated April 2,

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

2019showing a student housing project, or as the Concept Plan for Site A dated June 23, 2021 showing a mixed-use project:

Development Site	Land Use	Maximum Developed Area	Development Program
Site A	Mixed-Use	17.42 acres	Maximum of two mixed-use buildings with a maximum height of 60 ft. and maximum combined footprint of 50,000 sq. ft., one four-story multifamily building with a maximum height of 55 ft. (48 units), 49 two-family attached and detached townhomes (98 units) and 12 standalone apartments with attached garages and maximum height of 25 ft. The overall maximum allowed residential density on Site A is 258 units.
Site B (Option 1)	Class A Corporate office buildings	46 acres	Maximum of 464,850 sq. ft. of office/retail space
Site B (Option 2)	Residential/ Commercial	46 acres	Maximum of 192 residential units on the eastern portion of Site B (approximately 26 acres) and a maximum of 205,000 sq. ft. of office and commercial space on the western portion of Site B (approximately 20 acres)
Site B (Option 3)	Residential - Student housing	46 acres	Maximum of 515 student housing units
Sites C and D	Residential	37 acres	133 lot residential subdivision consisting of detached single-family homes on individual lots pursuant to the Map Cover filed at the Erie County Clerk's Office on July 24, 2018.

General components of the proposed development that will minimize adverse environmental impacts include:

- The maintenance of the remaining approximately 224± acres of the development site as permanent open space.
- Implementing a cluster pattern to maximize open space preservation.

C. Utility Infrastructure - In accordance with the October 17, 2007 letter received from the Erie County Department of Environment & Planning, all proposed sanitary sewer lines to be constructed to service both the residential and commercial portions of the project will be subject to review and approval by the Erie County Health Department. All systems installed or improved for the project will be undertaken by the Project Sponsor at its cost and will be required to meet all Town, County and State requirements.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

D. Archaeological/Cultural Resources – One prehistoric archaeological site was discovered on the project site, with a Stage 2 archaeological study determining that the identified prehistoric archaeological site did not meet the eligibility criteria for listing on the State or National Register of Historic Places. This finding was confirmed by the NYS Office of Parks, Recreation and Historic Preservation in its letter of October 10, 2001. No mitigation measures are needed for the subject development.

E. Air Quality – Potential impacts to air quality resulting from fugitive dust generated during construction activities will be minimized by the following measures:

- seeding and/or mulching exposed soils as soon as practicable and in accordance with the requirements and applicable regulations promulgated by the NYSDEC
- grading roadways and covering them with gravel during construction, periodically regarding, compacting and replacing gravel as necessary as determined by the Town
- wetting down temporary roads to be constructed on the project site during construction of the build-out of the project as needed throughout the duration of construction activities and as determined by the Town.

F. Condominium Designation - As originally proposed, the residential portion of the project was not to include the development of any units that will be filed as condominiums. The Project Sponsor previously offered to place a deed restriction to this affect as a condition of sale to any future builder, developer or owner of any lot on the subject site. On June 21, 2018, a Declaration of Restrictions was recorded at the Erie County Clerk's Office (Liber 11330 of Deeds at Page 8243) for the purpose of prohibiting the residential uses on the Project Site from utilizing the condominium form of ownership. The Project Sponsor is requesting that the Declaration of Restrictions be modified to allow the condominium form of ownership for the attached residential units to be developed on Site A.

18. Evaluation of Future Actions

In accordance with SEQR regulations, upon application to the Town for development of the project site that requires the submittal of an Environmental Assessment Form, the Town will be required to determine if the potential adverse environmental impacts associated with the development have been adequately identified and evaluated in the DGEIS, FGEIS, and this Amended Findings Statement, and whether the proposed development exceeds any of the thresholds and/or requirements contained in this

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Findings Statement. This determination must be made by the Town prior to the issuance of any discretionary land use approvals by the Town for the proposed development.

The following scenarios are put forth in Section 617.10(c) & (d) of the SEQR regulations:

A. If the Town determines that the proposed action is in conformance with the conditions and thresholds in the FGEIS or the Amended Findings Statement, then no further environmental review pursuant to SEQR will be required;

B. If the Town determines that the proposed action is adequately addressed in the FGEIS, but is not addressed or not adequately addressed in the Amended Findings Statement, then an amendment to this Amended Findings Statement must be prepared;

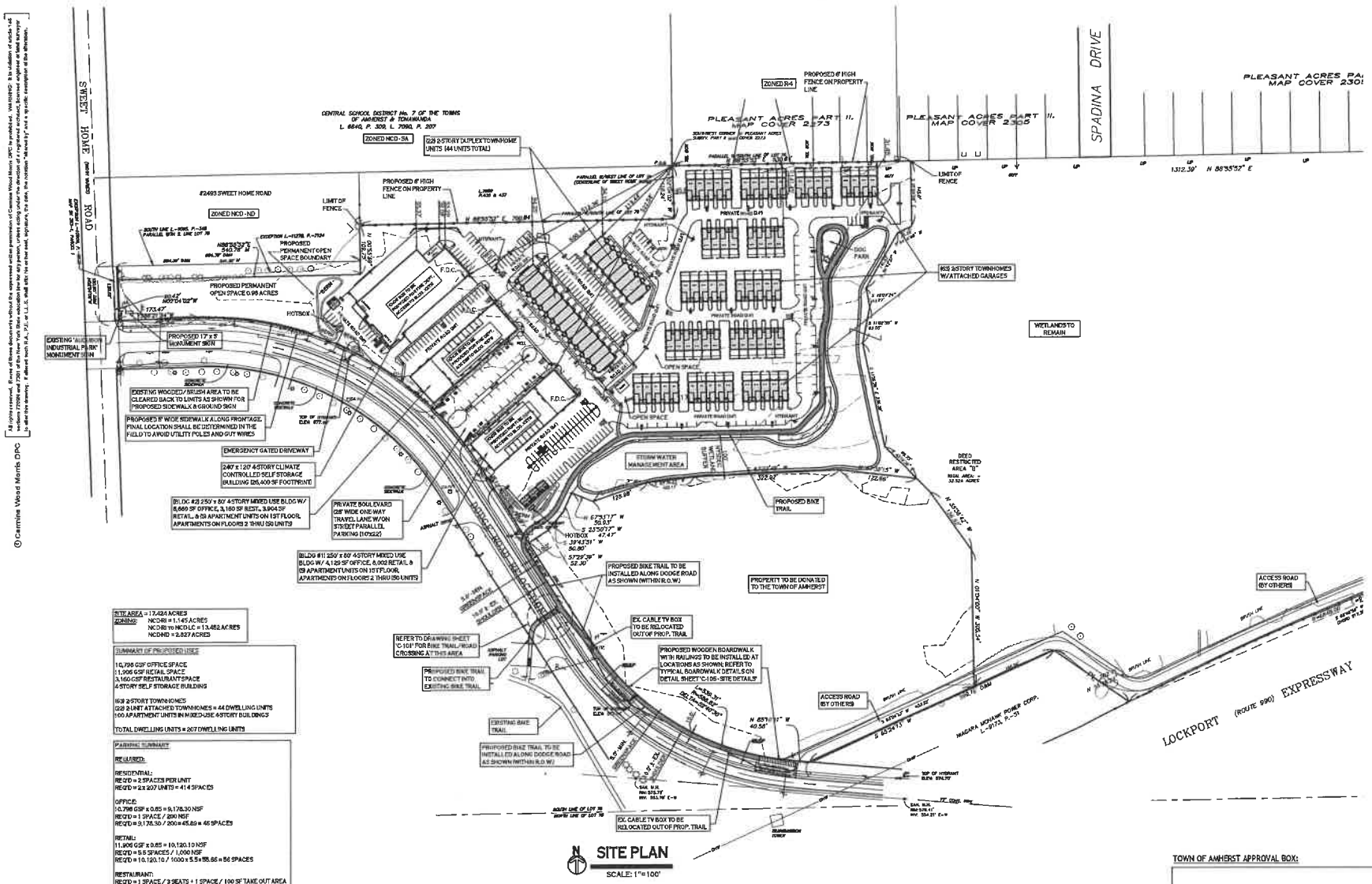
C. If the Town determines that the proposed action was not addressed, or was not adequately addressed, in the FGEIS, but it will not result in any significant environmental impacts, then a negative declaration must be prepared; or

D. If the Town determines that the proposed action was not addressed, or was not adequately addressed, in the FGEIS, and the action may have one or more significant adverse environmental impacts, than a supplement to the FGEIS must be prepared.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 9 – Reduced Size Copy of Overall Site Plan [Drawing C–100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed–Use Project at 50 Dodge Road [Note: Full–Size copy also attached]

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



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REVISIONS:

No.	Description	Date
1	Rev. per Amherst T.S.R. 03/07/24 Comments	05/13/24
2	Rev. per ECDPW 03/28/24 Comments	04/02/24

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/22/24
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Overall Site Plan

DRAWING NO.
C-100
Project no.: 21,0

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 9A – Reduced Size Copy of Site Plan [Drawing C–100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed–Use Project at 50 Dodge Road [Note: Full–Size copy also attached]

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

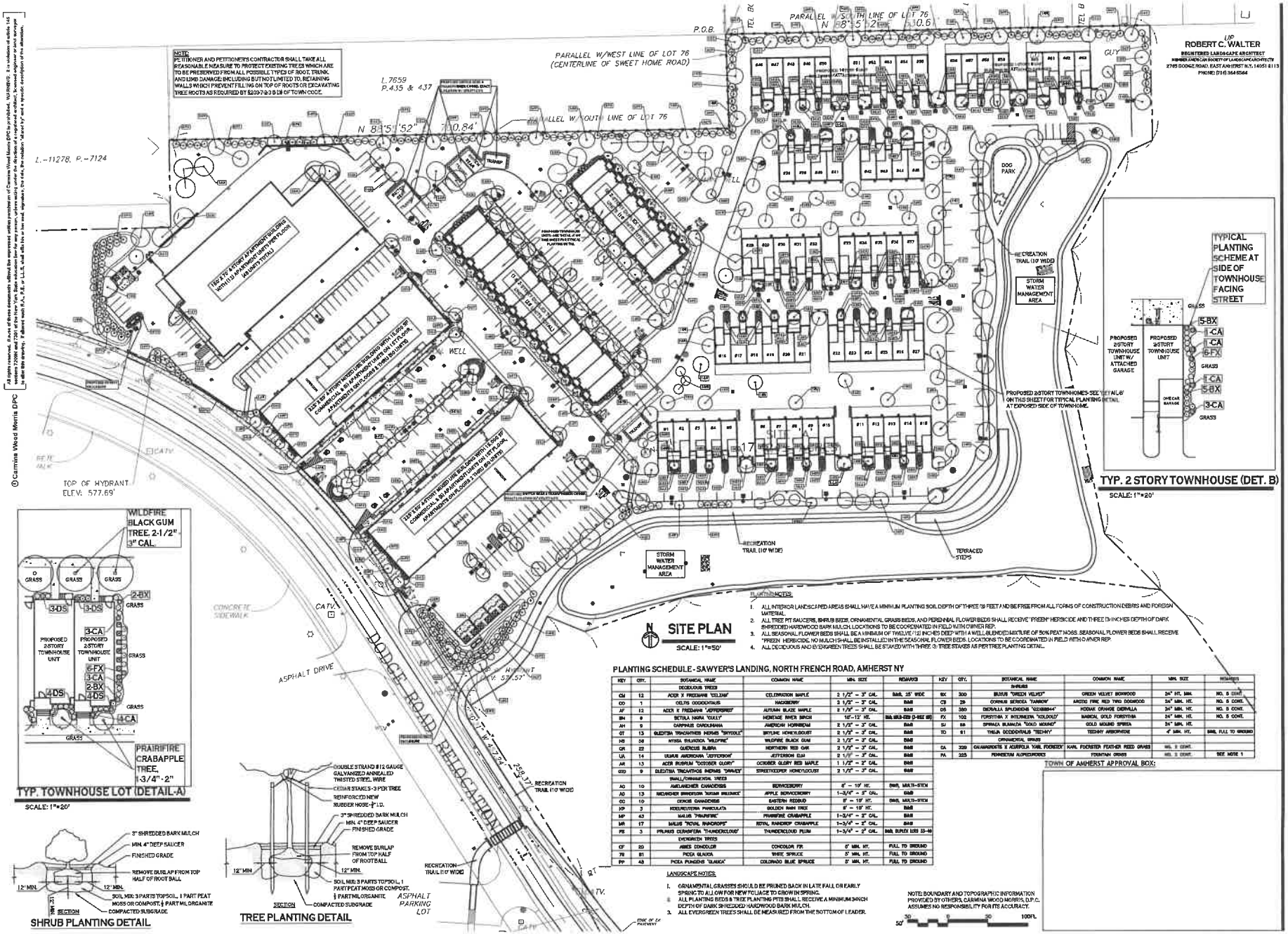

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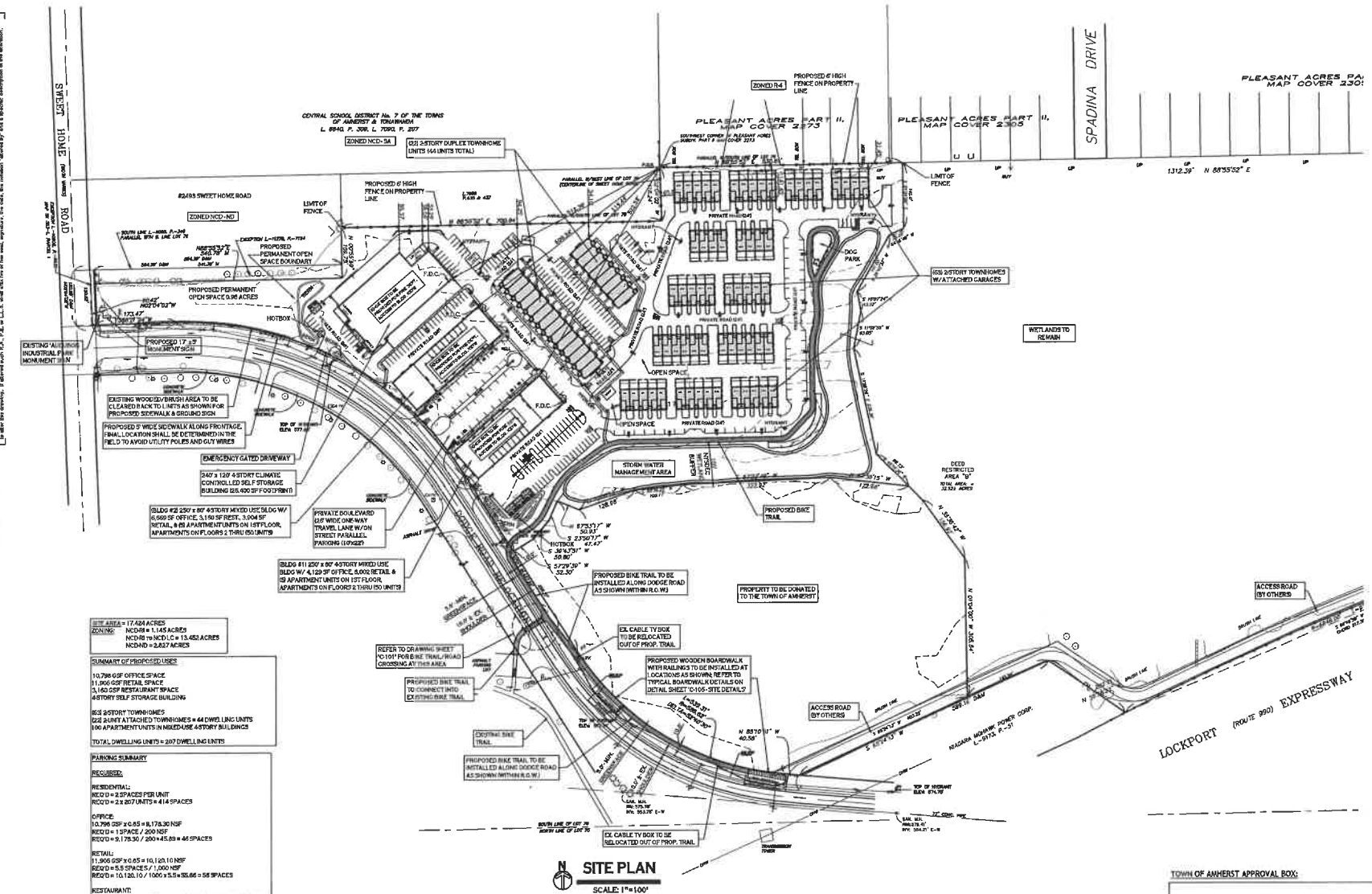
Exhibit 9B – Reduced–Size Copy of Landscape Plan [Drawing L–100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed–Use Project at 50 Dodge Road [Note: Full–Size copy also attached]

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



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REVISIONS:

No.	Description	Date
1	Rev. per Amherst T.B.B. 03/07/24 Comments	03/13/24
2	Rev. per ECDPW 03/28/24 Comments	04/02/24

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/22/24
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Overall Site Plan

DRAWING NO.
C-100
Project no.: 21.0

TOWN OF AMHERST APPROVAL BOX:

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 10 – Resolution 2021–818 as Adopted by the Town of Amherst Town Board on September 27, 2021 for the purpose of Issuing an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") for Mixed–Use Development on Site "A" of Muir Woods Property

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Amherst Town Board
5583 Main Street
Williamsville, NY 14221
www.amherst.ny.us

Francina J. Spoth
Town Clerk

Meeting: 10/19/20 07:00 PM
Department: Town Clerk
Initiated by: **Kathleen Cooper**
Co-Sponsored by:

DOC ID: 22383 **RESOLUTION 2020-791** **ROLL CALL VOTE (ADOPTED)**

Amendment to the SEQR Findings Statement for "Muir Woods - Site A" (1081 N. French Road)

Amendment to the SEQR Findings Statement for
"Muir Woods - Site A"
[1081 North French Road (NCD); Z-2002-09C]

RESOLVED, that pursuant to 6NYCRR Part 617 (SEQR) and Town Code Section 104, as amended, that the requirements of SEQR have been completed, and be it further

RESOLVED, that pursuant to NYS Town Law Section 272-a, the Town Board concurs with the findings of the Planning Board as stated in their resolution of August 20, 2020 to amend the "Development Program" within the SEQR Findings Statement approved by the Town Board on August 5, 2020 to permit "Site A" located at the western end of the overall Muir Woods site located at 1081 North French Road (NCD) to be developed as a mixed-use residential/commercial project instead of flex office/R&D buildings.

RESOLVED, that Ciminelli Muir Woods, LLC has offered to donate to the Town approximately 43 acres of Permanent Open Space located between Site "A" and Site "B" of the Overall Muir Wood Property as depicted on a plan prepared by Greenman-Pedersen Consulting Engineers Inc. dated October 13, 2020;

RESOLVED, the approximately 43 acres of Permanent Open Space includes a portion of the Muir Woods Project with frontage on Dodge Road and is also contiguous to the southern boundary of a portion of the Bucyrus Heights Subdivision and the approximately 43 acres of Permanent Open Space includes extensive existing vegetation and also includes wetlands subject to the jurisdiction of the United States Army Corps of Engineers ("USACE") and wetlands and regulated 100 ft. adjacent areas subject to the jurisdiction of the New York State Department of Environmental Conservation ("NYSDEC"); and

RESOLVED, the Town Board hereby finds as follows: i.) Acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site is consistent with the Conceptual Land Use Plan for the Town contained at Figure 6 of the adopted Bicentennial Comprehensive Plan that designates this acreage as "Recreation, Open Space & Gateways"; and, ii.) Acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site as described herein will result in benefits to the Town and its residents including homeowners in the Bucyrus Heights Subdivision.

RESOLVED, the Town Board has evaluated the potential adverse environmental impacts associated with the acquisition of the 43 acres of Permanent Open Space and determined that such acquisition will not result in any potentially significant adverse environmental impacts.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

RESOLVED, that the Town Board hereby authorizes the acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site as described herein via a donation from Ciminelli Muir Woods, LLC subject to the following terms and conditions:

1. The adoption of this resolution by the Town Board for the purpose of acquiring the Permanent Open Space described herein does not include the Town Board designating the Permanent Open Space as "parkland". The Town Board shall adopt a separate resolution in the future if it determines designating the Permanent Open Space as "parkland" is appropriate.

2. Ciminelli Muir Woods, LLC, its successors and assigns, shall retain an easement with respect to the approximately 43 acres of Permanent Open Space for the purpose of completing required wetland mitigation and wetland mitigation monitoring in accordance with the terms and conditions contained in wetland permits issued by the USACE and the NYSDEC. Upon the USACE and the NYSDEC determining that the required wetland mitigation has been completed to their satisfaction and the expiration of the monitoring period, the easement shall terminate.

3. Prior to the recording of a deed from Ciminelli Muir Woods, LLC to the Town of Amherst for the purpose of conveying ownership of the Permanent Open Space as described herein, a Declaration of Restrictive Covenants shall be recorded at the Erie County Clerk's Office for the restricting the use of the approximately 43 acres of Permanent Open Space in accordance with the terms and conditions of wetland permits issued by the USACE and the NYSDEC and also for the purpose of prohibiting future development of the approximately 43 acres of Permanent Open Space.

4. Ciminelli Muir Woods, LLC shall be responsible for the expenses associated with the preparation of a survey and an Abstract of Title for the Permanent Open Space as described herein and the recording fees for the deed to be recorded at the Erie County Clerk's Office.

5. The documentation required to effectuate the transfer of the Permanent Open Space as described herein and to comply with the above conditions shall be subject to review and approval by the Town Attorney's Office.

6. The Supervisor is authorized to execute any documentation required to effectuate the acquisition of the 43 acres of Permanent Open Space in accordance with the terms and conditions contained in this resolution.

10/06/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was opened at 7:51 PM.

Sean W. Hopkins, Esq., presented for both resolution #791 and #792 and answered questions from the Board.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

There were no speakers from the public, therefore Supervisor Kulpa moved to adjourn the public hearing and set a Decision Date for October 19th. The motion was seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was adjourned at 8:13 PM.

10/19/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 5-0. The public hearing was opened at 7:18 PM.

Sean W. Hopkins, Esq., presented under Res #792.

There were no speakers from the public, therefore Supervisor Kulpa moved to close the public hearing, seconded by Councilmember Lavin and unanimously approved 5-0. The public hearing was closed at 7:20 PM.

A motion to adopt the amended SEQR Findings Statement was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved via Roll Call vote 4-1 (nay, Bucki).

RESULT:	**ROLL CALL VOTE (ADOPTED) [4 TO 1]**
MOVER:	Brian J. Kulpa, Supervisor
SECONDER:	Jacqualine Berger, Deputy Supervisor
AYES:	Kulpa, Berger, Lavin, Szukala
NAYS:	Bucki

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 11 – Reduced–Size Copy of Parcel Plan [Drawing C–102 – Date: 05/28/24] prepared by Carmina Wood Design for the Mixed–Use Project at 50 Dodge Road [Note: Full–Size copy also attached]

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Amherst Town Board
5583 Main Street
Williamsville, NY 14221
www.amherst.ny.us

Francina J. Spoth
Town Clerk

Meeting: 09/27/21 07:00 PM
Department: Town Clerk
Initiated by: **Kathleen Cooper**
Co-Sponsored by:

DOC ID: 24831 **RESOLUTION 2021-818** **ROLL CALL VOTE (ADOPTED AS AMENDED)**

Amendment to the SEQR Findings Statement for "Muir Woods - Site A", Amendment #51 to the Audubon New Community District Development Plan [1081 (Formerly 1121) North French Road (NCD); Z-2002-09_D]

RESOLVED, that pursuant to 6NYCRR Part 617 (SEQR) and Town Code Section 104, as amended, that the requirements of SEQR have been completed, and be it further

RESOLVED, that pursuant to NYS Town Law Sec.272-a, the Town Board concurs with the findings of the Planning Board as stated in their resolution of August 19, 2021 to amend the "Development Program" within the SEQR Findings Statement approved by the Town Board on October 19, 2020 to permit "Site A" located at the western end of the overall Muir Woods site located at 1121 North French Road (NCD) to be developed at a higher density mixed-use residential/commercial project development than that outlined in the findings statement adopted on October 19, 2020.

1. That the Town Board approval of the issuance of the amended findings statement be subject to a condition requiring that the Planning Department be satisfied with the amended findings statement document prior to its signature by the Supervisor.

9/27/2021
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Bucki and unanimously approved 5-0. The public hearing was opened at 7:08 PM.

Sean Hopkins, Esq. presented.

There were no speakers from the public, therefore Supervisor Kulpa moved to close the public hearing, seconded by Deputy Supervisor Berger and unanimously approved 5-0. The public hearing was closed at 7:17 PM.

A motion to adopt was made by Supervisor Kulpa and seconded by Councilmember Lavin. A motion was then made by Supervisor Kulpa to amend, seconded by Councilmember Lavin and unanimously approved 5-0. Amendment adds a condition listed above.

A motion to approve as amended was made by Supervisor Kulpa, seconded by Councilmember Lavin and approved 4-1 (nay, Bucki) via Roll Call vote.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

RESULT:	**ROLL CALL VOTE (ADOPTED AS AMENDED) [4 TO 1]**
MOVER:	Brian J. Kulpa, Supervisor
SECONDER:	Shawn Lavin, Councilmember
AYES:	Kulpa, Berger, Lavin, Szukala
NAYS:	Bucki

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 12 – Copy of the Declaration of Restrictions as Recorded in at the Erie County Clerk's Office on June 21, 2018 at Liber 11330 of Deeds at Page 8243 for the purpose of complying with the relevant portion of the Amended Findings Statement issued by the Town Board Pursuant to the State Environmental Quality Review Act ("SEQRA") on December 7, 2015

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

FILED
JUN 21 2018
ERIE COUNTY
CLERK'S OFFICE

Return Original to Box 460
Hopkins Sorgi & Romanowski PLLC
Attn: Sean W. Hopkins, Esq.

DECLARATION OF RESTRICTIONS

THIS DECLARATION OF RESTRICTIONS (*"Declaration"*) is made as of the 8th day of June, 2018 by **CIMINELLI MUIR WOODS, LLC**, a limited liability company organized under the laws of the State of New York, having its office at 350 Essjay Road, Williamsville, NY (*"Declarant"*) under facts and circumstances summarized by the following recitals:

WHEREAS, Declarant is the owner of real property consisting of approximately 326 acres of real property located at 1081 and 1121 North French Road (hereinafter *"Subject Property"*) and that is more particularly by the metes and bounds legal description attached at **Schedule "1"** hereto;

WHEREAS, the Subject Property is zoned New Community District (*"NCD"*) pursuant to the Zoning Map of the Town of Amherst and the use of land within the New Community District is regulated pursuant to the land use classifications contained in the Zoning Code of the Town of Amherst;

WHEREAS, Declarant petitioned the Town Board of the Town of Amherst (hereinafter *"Town Board"*) to amend the land use classifications of portions of the Subject Property that is owned by the Declarant;

WHEREAS, on December 3, 2007, the Town Board issued a Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") and the Town Board also voted to: 1.) approve Amendment #51 to the Audubon Development Plan, 2.) amend the land use classifications of portions of the Subject Property from NCD-Neighborhood District and NCD-Major Open Space to NCD-General Commercial, NCD-Restricted Industrial and NCD-Major Open Space;

WHEREAS, as the Town Board imposed conditions in connection with its decisions to issue a Findings Statement pursuant to SEQRA and amending the land use classifications of portions of the Subject Property;

WHEREAS, the Town Board issued an Amended Statement of Findings pursuant to SEQRA on December 7, 2015;

NOW, THEREFORE, in exchange for good and valuable consideration the sufficiency of which is acknowledged, the Declarant agrees to restrict the future use of the portions of the Subject Property (or its entirety when expressly specified) in accordance with the conditions imposed by the Town Board that are subject to this Declaration of Restrictions as follows

1. All construction equipment and vehicles that will be utilized in connection with the development the Subject Property pursuant to site plans and final plats to be approved by the Town of Amherst Planning Board shall be expressly prohibited from utilizing the existing streets within the Franklin Heights Subdivision, including but not limited to Lynette Lane, for purposes of egress and ingress to the Subject Property.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

2. The residential components of the project shall be prohibited from utilizing the condominium form of ownership.

3. On those portions of the Subject Parcel where commercial development (excluding all residential uses) will be located directly adjacent to existing residential areas (i.e. Bucyrus Heights), minimum setbacks have been established for the purpose of providing an adequate buffer. The following minimum setbacks will apply only to development of portions of the Subject Property that are directly adjacent to existing residential uses as of the date of this Declaration of Restrictions:

- All commercial development (buildings and parking areas) will have a minimum setback of fifty feet (50'), with the area within forty feet (40') of adjacent residential property boundaries remaining undisturbed so that existing trees and brush remain as a buffer. The planting of additional trees and shrubs by the Declarant within the minimum setback area may be required by the Town of Amherst during the site plan review process to supplement the existing vegetation in order to provide adequate buffers.

- A combination of earthen berms and new vegetation will be required in those portions of the minimum setback area where there is not sufficient existing vegetation to provide an adequate buffer. The minimum height at the top of berms shall be three feet (3'), and the maximum slope shall be 1 on 3 (33%) to promote the growth and long-term viability of trees and shrubs planted on the berms. Berms should have a natural appearance by varying their width and height. The Town of Amherst will verify compliance with this requirement during the site plan review process.

- Site A: Site A is the western portion of the Subject Parcel that is proposed to be utilized for flex office/R&D buildings and it is located directly south of the existing Bucyrus Heights subdivision. A legal description of Site A is attached as **Schedule "2"**. The minimum setbacks for development within Site A shall be as follows:

  - 60 ft. minimum required building setback from residential lot line.

  - 60 ft. minimum required parking setback from residential lot line.

- Site B: Site B is the center portion of the Subject Parcel that will be utilized for office space. A legal description of Site B is attached as **Schedule "3"**. The minimum setbacks for development within Site B shall be as follows:

  - 60 ft. minimum building setback from residential lot line. If the height of any proposed office buildings exceeds 50 feet, the required minimum building setback shall be equal to or greater than the height of the proposed office building.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

- 60 ft. minimum parking setback to residential lot line.

4. The following maximum building heights shall apply to the commercial components of the development of the Subject Parcel:

- Site A (western portion of the project site) – The maximum building height for buildings within Site A as described in **Schedule "2"** shall be as follows:
  - Maximum building height shall be 40 ft. as measured from the finished grade to the top of any parapet (excluding any rooftop mechanical equipment). All mechanical equipment shall be properly screened in accordance with the standards contained in the Zoning Code adopted by the Town Board in May of 2006.
- Site B (center portion of the Subject Parcel) – The maximum building height for buildings within Site B as described in **Schedule "3"** shall be as follows:
  - There will not be a maximum height for office buildings to be constructed on Site B. All office buildings to be constructed on Site B will be required to comply with a minimum required setback that shall be the greater of fifty feet (50') feet or the height of the proposed office building at the point of its maximum height (including rooftop mechanicals, etc.).

5. The portions of the Subject Property reclassified to New Community District – General Commercial ("NCD-GC") by the Town Board as described in the attached **Schedule "4"** shall be prohibited from being utilized for the following categories of land uses:

A. Automobile sales and service facilities (except vehicles used primarily on the subject property);

B. Veterinary clinics or kennels; and

C. Gasoline service stations shall be prohibited around the existing approximately 32 acre lake on the southeastern portion of the Subject Property.

The above restrictions contained in numbered paragraphs 1, 2, 3, 4 and 5 shall be binding on all parties claiming thereunder and shall run and touch the land except that the above restrictions can be changed, modified or eliminated by a majority vote of the Town Board.

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK
SIGNATURE(S) ON FOLLOWING PAGE]

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

IN WITNESS WHEREOF, the individual executing this Declaration of Restrictions on behalf of the Declarant has the full legal authority to enter execute this Declaration of Restrictions.

CIMINELLI MUIR WOODS, LLC

By: _____

Title: Paul F. Ciminelli
Managing Member

Print Name:

STATE OF NEW YORK)
COUNTY OF ERIE) ss.:

On this 8 day of June, 2018, before me, the undersigned, a notary public in and for said state, personally appeared Paul F. Ciminelli, personally known to me or proved to me on the basis of satisfactory evidence to the be the individual whose name is subscribed to within this instrument and acknowledged to me that he executed the same in his capacity, that they by his signature on the instrument, the individual or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public

KATHLEEN A. GUENTHER #01GU4675162
NOTARY PUBLIC, STATE OF NEW YORK
QUALIFIED IN ERIE COUNTY
My Commission Expires August 31, 2018

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

SCHEDULE I

LEGAL DESCRIPTION OF SUBJECT PROPERTY

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Amherst, County of Erie, State of New York, being part of Lots 70 & 76, Township 12, Range 7 of the Holland Land Company's Survey, bounded and described as follows.

COMMENCING at a point on the centerline of North French Road at the northwest corner of Lot 70 distant 4179.22 feet west of the northeast corner of Lot 70, being the intersection of the centerline of North French Road and the centerline of Campbell Boulevard;

THENCE: N-89°-22'-00"-E, along the centerline of North French Road being the north line of Lot 70, a distance of 285.00 feet to a point;

THENCE: S-01°-04'-00"-E a distance of 33.00 feet to the south line of North French Road and the POINT OF BEGINNING;

THENCE: S-01°-04'-00"-E a distance of 231.00 feet to a point;

THENCE: N-89°-22'-00"-E, parallel with the centerline of North French Road being the north line of Lot 70, a distance of 110.00 feet to a point;

THENCE: N-01°-04'-00"-W a distance of 231.00 feet to the south line of North French Road;

THENCE: N-89°-22'-00"-E, along the said south line of North French Road a distance of 243.00 feet to a point;

THENCE: S-01°-04'-00"-E a distance of 231.00 feet to a point;

THENCE: N-89°-22'-00"-E, parallel with the centerline of North French Road being the north line of Lot 70, a distance of 853.60 feet to the western most northwest corner of Franklin Heights Subdivision filed in the Erie County Clerk's Office under Map Cover 2240;

THENCE: S-01°-04'-00"-E and parallel with the west line of Lot 70 a distance of 739.86 feet to the southwest corner of said Map Cover 2240;

THENCE: N-89°-22'-00"-E and parallel with the centerline of North French Road being the north line of Lot 70, a distance of 1343.12 feet to the northwest corner of lands conveyed to the Central School District No. 3 of the Towns of Amherst, Cheektowaga and Clarence by deed recorded in the Erie County Clerk's Office in Liber 7318 of Deeds at page 367;

THENCE: S-00°-11'-28"-W, along the west line of said Central School District No. 3 of the Towns of Amherst, Cheektowaga and Clarence lands, a distance of 716.41 feet to the southwest corner thereof;

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

THENCE: N-89°-04'-14"-E, and parallel with the south line of lot 70 being the centerline of Dodge Road, along the south line of said Central School District No. 3 of the Towns of Amherst, Cheektowaga and Clarence lands, a distance of 711.46 feet a point distant 609.84 feet west of the centerline of Campbell Boulevard being the east line of Lot 70;

THENCE: S-00°-14'-01"-W, parallel with the centerline of Campbell Boulevard (east line of Lot 70), a distance of 1439.24 feet to the northerly line of the Lockport Expressway Section II;

THENCE: Along the northerly lines of said Lockport Expressway Section II, the following six (6) courses and distances;

1.) N-87°-56'-02"-W, a distance of 1367.40 feet to a point.
2.) S-88°-46'-36"-W, a distance of 504.31 feet to a point.
3.) N-79°-27'-19"-W, a distance of 612.88 feet to a point.
4.) S-89°-19'-05"-W, a distance of 916.15 feet to a point.
5.) S-75°-02'-22"-W, a distance of 970.22 feet to a point of curvature
6.) Southwesterly along a curve to the left having a radius of 6,848.00 feet an arc distance of 1,238.25, and a central angle of 10°-21'-37" and a chord length of 1,236.56 feet at a bearing of S-68°-07'-21"-W to the east corner of lands conveyed to Niagara Mohawk Power Corporation by deed recorded in the Erie County Clerk's Office in Liber 9173 of Deeds at page 51.

THENCE: N-55°-38'-22"-W a distance of 202.71 feet to the north corner of said lands conveyed to Niagara Mohawk Power Corporation by deed recorded in the Erie County Clerk's Office in Liber 9173 of Deeds at page 51;

THENCE: S-65°-24'-13"-W a distance of 599.16 feet to the north line of Dodge Road Relocation;

THENCE: N-85°-10'-51"-W along the northerly line of Dodge Road Relocation a distance of 40.58 feet to a point of curvature;

THENCE: Northwesterly along a curve to the right and along the northerly line of Dodge Road Relocation said curve having a radius of 586.62 feet an arc distance of 539.31 and a central angle of 52°-40'-30" to a point of tangency;

THENCE: N-32°-30'-21"-W and along the northerly line of Dodge Road Relocation a distance of 457.24 feet to a point of curvature;

THENCE: Northwesterly along a curve to the left and along the northerly line of Dodge Road Relocation said curve having a radius of 724.00 feet an arc distance of 747.17 and a central angle of 59°-07'-45" to a point of tangency;

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THENCE: S-88°-21'-54"-W and along the northerly line of Dodge Road Relocation a distance of 173.47 feet to the east line of Sweet Home Road as appropriated by the County of Erie under Liber 10908 of Deeds at page 9632 and delineated on Map SK 353-1, Parcel 1;

THENCE: N-02°-04'-02"-W and along said east line of Sweet Home Road a distance of 90.42 feet to a point;

THENCE: N-88°-55'-52"-E a distance of 540.79 feet to a point;

THENCE: N-00°-55'-59"-W a distance of 109.75 feet to a point;

THENCE: N-88°-55'-52"-E a distance of 700.84 feet to a point;

THENCE: N-02°-04'-02"-W and parallel with the centerline of Sweet Home Road being the west line of Lot 76, a distance of 118.24 feet to the southwest corner of lands shown on a map of Pleasant Acres Subdivision Part II filed in the Erie County Clerk's Office under Map Cover 2273;

THENCE: N-88°-55'-52"-E along the south line of said Map Cover 2273 and along the south line of lands shown on a map of Pleasant Acres Subdivision Part III filed in the Erie County Clerk's Office under Map Cover 2305 and being parallel with the south line of Lot 76, a distance of 1843.00 feet to the southeast corner of said Map Cover 2305;

THENCE: N-01°-06'-07"-W along the east line of said Map Cover 2305 and along the east line of lands shown on a map Bucyrus Heights Subdivision Part IV filed in the Erie County Clerk's Office under Map Cover 2291 and their extension north a distance of 2433.88 feet to the south line of said North French Road;

THENCE: S-89°-37'-42"-E along the south line of said North French Road a distance of 1138.32 feet to an angle point;

THENCE: N-89°-22'-00"-E continuing along the south line of said North French Road a distance of 285.54 feet to the POINT or PLACE of BEGINNING, having an area of 325.46 acres be the same more or less.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

SCHEDULE 2

LEGAL DESCRIPTION OF SITE A

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Amherst, County of Erie, State of New York, being Part of Lot 76, Township 12, Range 7 of the Holland Land Survey (so-called) bounded and described as follows:

COMMENCING at the point of intersection of the centerline of Dodge Road with the centerline of Sweet Home Road; thence: south along the centerline of Sweet Home Road, a distance of 86.08 feet to a point; thence: east, at right angles with said centerline, a distance of 679.33 feet to the POINT OR PLACE OF BEGINNING of the parcel hereinafter described:

THENCE: through lands now or formerly of New York State Urban Development Corporation, the following fifteen (15) courses and distances:

1.) N-00°-55'-59"-W, a distances of 304.81 feet to a point;
2.) N-88°-55'-52"-E, a distance of 625.24 feet to a point;
3.) N-02°-04'-02"-W, a distance of 118.24 feet to a point;
4.) N-88°-55'-52"-E, a distance of 506.27 feet to a point;
5.) S-01°-04'-08"-E, a distance of 120.35 feet to a point;
6.) S-64°-48'-00"-W, a distance of 35.05 feet to a point;
7.) S-29°-42'-37"-W, a distance of 135.73 feet to a point;
8.) S-06°-01'-17"-E, a distance of 361.98 feet to a point;
9.) S-45°-04'-18"-E, a distance of 271.44 feet to a point;
10.) S-01°-04'-00"-E, a distance of 314.49 feet to a point;
11.) S-65°-24'-13"-W, a distance of 407.54 feet to a point;
12.) N-85°-10'-51"-W, a distance of 34.02 feet to a point of curvature;
13.) Northwesterly, on a curve to the right having a radius of 561.62 feet, an arc distance of 516.33 feet to a point of tangency;
14.) N-32°-30'-21'-W, a distance of 457.24 feet to a point of curvature;
15.) Northwesterly, on a curve to the left having a radius of 749.00 feet, an arc distance of 272.69 feet to the above described POINT OR PLACE OF BEGINNING containing 24.812 acres be the same more or less.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

SCHEDULE 3

LEGAL DESCRIPTION OF SITE B

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Amherst, County of Erie, State of New York, being Part of Lots 70 and 76, Township 12, Range 7 of the Holland Land Survey (so-called) bounded and described as follows:

COMMENCING at the southeasterly corner of Pleasant Acres Subdivision, Part III as shown on a map filed in the Erie County Clerk's Office under Map Cover 2305:

THENCE: N-88°-55'-52"-E, a distance of 25.49 feet to the POINT OR PLACE OF BEGINNING of the parcel hereinafter described:

THENCE: Through lands now or formerly of New York State Urban Development Corporation the following eighteen (18) courses and distances:

1.) N-01°-04'-00"-W, a distance of 399.46 feet to a point;
2.) S-89°-49'-30"-E, a distance of 1113.76 feet to a point;
3.) N-01°-04'-00"-W, a distance of 313.08 feet to a point;
4.) N-43°-56'-00"-E, a distance of 212.13 feet to a point;
5.) N-88°-56'-00"-E, a distance of 500.00 feet to a point;
6.) S-01°-04'-00"-E, a distance of 633.18 feet to a point;
7.) N-64°-16'-09"-E, a distance of 40.36 feet to a point of curvature;
8.) Northeasterly along a curve to the left having a radius 246.47 feet, an arc distance of 199.72 feet to a point of reverse curvature;
9.) Northeasterly along a curve to the right having a radius 290.00 feet, an arc distance of 139.68 feet to a point to a point;
10.) S-41°-06'-39"-E, along a radial line a distance of 42.58 feet to a point;
11.) Southwesterly along a curve to the left having a radius of 145.00 feet, an arc distance of 165.69 feet to a point of compound curvature;
12.) Southeasterly along a curve to the left having a radius of 1490.00 feet, an arc distance of 235.87 feet to a point to a point of tangency;
13.) S-26°-24'-00"-E, along a line a distance of 38.95 feet to a point of curvature;
14.) Southeasterly and Southwesterly along a curve to the right having a radius of 265.00 feet, an arc distance of 400.91 feet to a point to a point of compound curvature;
15.) Southwesterly along a curve to the right having a radius of 500.00 feet, an arc distance of 345.60 feet to a point to a point of reverse curvature;
16.) Southwesterly along a curve to the left having a radius of 100.00 feet, an arc distance of 99.07 feet to a point to a point of tangency;
17.) S-42°-22'-25"-W, a distance of 40.03 feet to a point of curvature;
18.) Southwesterly along a curve to the left having a radius of 215.00 feet, an arc distance of 161.56 feet to a point on the northerly boundary line of the Lockport Expressway;

THENCE: along the said northerly boundary of the Lockport Expressway the following three (3) courses and distances:

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1.) S-89°-19'-05"-W, a distance of 248.17 feet to a point;
2.) S-75°-02'-22"-W, a distance of 970.22 feet to a point of curvature;
3.) Southwesterly along a curve to the left having a radius of 6848.00 feet an arc distance of 322.33 feet to a point:

THENCE: Through lands now or formerly of New York State Urban Development Corporation the following three (3) courses and distances:

1.) N-01°-04'-00"-W, a distance of 843.03 feet to a point;
2.) N-88°-55'-52"-E, a distance of 25.00 feet to a point;
3.) N-01°-04'-00"-W, a distance of 25.00 feet to the above described POINT OR PLACE OF BEGINNING containing 52.202 acres be the same more or less.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

SCHEDULE 4

LEGAL DESCRIPTION OF PORTIONS OF SUBJECT PROPERTY RECLASSIFIED TO NEW COMMUNITY DISTRICT – GENERAL COMMERCIAL ("NCD-GC")

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Amherst, County of Erie, State of New York, being Part of Lots 70 and 76, Township 12, Range 7 of the Holland Land Survey (so-called) bounded and described as follows:

COMMENCING at the southeasterly corner of Pleasant Acres Subdivision, Part III as shown on a map filed in the Erie County Clerk's Office under Map Cover 2305:

THENCE: N-88°-55'-52"-E, a distance of 25.49 feet to the POINT OR PLACE OF BEGINNING of the parcel hereinafter described:

THENCE: Through lands now or formerly of New York State Urban Development Corporation the following thirty (30) courses and distances:

1.) N-01°-04'-00"-W, a distance of 399.46 feet to a point;
2.) S-89°-49'-30"-E, a distance of 1113.76 feet to a point;
3.) N-01°-04'-00"-W, a distance of 477.72 feet to a point;
4.) N-43°-56'-00"-W, a distance of 212.13 feet to a point;
5.) N-88°-56'-00"-E, a distance of 500.00 feet to a point;
6.) S-01°-04'-00"-E, a distance of 633.18 feet to a point;
7.) N-64°-16'-09"-E, a distance of 40.36 feet to a point of curvature;
8.) Northeasterly along a curve to the left having a radius 246.47 feet, an arc distance of 199.72 feet to a point of reverse curvature;
9.) Northeasterly along a curve to the right having a radius of 290.00 feet, an arc distance of 271.18 feet to a point;
10.) N-73°-15'-30"-E, a distance of 466.70 feet to a point;
11.) N-88°-48'-50"-E, a distance of 1197.84 feet to a point;
12.) S-00°-14'-01"-W, a distance of 470.19 feet to a point on a curve;
13.) Southwesterly and southeasterly along a curve to the left having a radius of 175.00 feet an arc distance of 442.29 feet to a point of compound curvature;
14.) Easterly along a curve to the left having a radius of 425.00 feet an arc distance of 145.78 feet to a point of reverse curvature;
15.) Easterly along a curve to the right having a radius of 500.00 an arc distance of 172.91 feet to a point of compound curvature;
16.) Southeasterly and southwesterly along a curve to the right having a radius of 185.00 an arc distance of 438.62 feet to a point of compound curvature;
17.) Southwesterly along a curve to the right having a radius of 475.00 feet an arc distance of 382.34 feet to a point of tangency;
18.) S-89°-22'-54"-W, a distance of 150.00 feet to a point;
19.) Westerly along a curve to the right having a radius of 500.00 feet an arc distance of 222.66 feet to a point of reverse curvature;

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20.) Westerly along a curve to the left having a radius of 500.00 feet an arc distance of 341.90 feet to a point of reverse curvature;
21.) Westerly along a curve to the right having a radius of 585.00 feet an arc distance of 414.74 feet to a point of compound curvature;
22.) Northwesterly along a curve to the right having a radius of 1200.00 feet an arc distance of 986.04 feet to a point of reverse curvature;
23.) Northwesterly and southwesterly along a curve to the left having a radius of 145.00 an arc distance of 455.53 feet to a point of compound curvature;
24.) Southeasterly along a curve to the left having a radius of 1490.00 feet, an arc distance of 235.87 feet to a point to a point of tangency;
25.) S-26°-24'-00"-E, a distance of 38.95 feet to a point of curvature;
26.) Southwesterly along a curve to the right having a radius of 265.00 feet, an arc distance of 400.91 feet to a point to a point of compound curvature;
27.) Southwesterly along a curve to the right having a radius of 500.00 feet, an arc distance of 345.60 feet to a point to a point of reverse curvature;
28.) Southwesterly along a curve to the left having a radius of 100.00 feet, an arc distance of 99.07 feet to a point to a point of tangency;
29.) S-42°-22'-25"-W, a distance of 40.03 feet to a point of curvature;
30.) Southwesterly along a curve to the left having a radius of 215.00 feet, an arc distance of 161.56 feet to a point on the northerly boundary line of the Lockport Expressway;

Thence along the said northerly boundary of the Lockport Expressway the following three (3) courses and distances:

1.) S-89°-19'-05"-W, a distance of 248.17 feet to a point;
2.) S-75°-02'-22"-W, a distance of 970.22 feet to a point of curvature;
3.) Southwesterly along a curve to the left having a radius of 6848.00 feet an arc distance of 111.80 feet to a point:

THENCE: Through lands now or formerly of New York State Urban Development Corporation the following five (5) courses and distances:

1.) N-17°-38'-00"-W, a distance of 219.03 feet to a point of curvature;
2.) Northerly along a curve to the right having a radius of 500.00 feet an arc distance of 272.15 feet to a point of reverse curvature;
3.) Northerly along a curve to the left having a radius of 500.00 feet an arc distance of 127.60 feet to a point of tangency;
4.) N-01°-04'-08"-W, a distance of 200.00 feet to a point;
5.) S-88°-55'-52"-W, a distance of 125.00 feet to the above described POINT OR PLACE OF BEGINNING containing 87.733 acres be the same more or less.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

MICHAEL P KEARNS, ERIE COUNTY CLERK
REF:

DATE:6/21/2018
TIME:4:01:37 PM
RECEIPT: 18114282

SEAN HOPKINS
ACCOUNT #: 0

ITEM - 01 774
RECD: 6/21/2018 4:07:17 PM
FILE: 2018123291 BK/PG D 11330/8243
CIMINELLI MUIR WOODS LLC
TOWN OF AMHERST
Recording Fees 105.00
Subtotal 105.00

TOTAL DUE $105.00
PAID TOTAL $105.00
PAID CREDIT $105.00
VISA # xxxx-

REC BY: Janet H
COUNTY RECORDER

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 13 – No Impact Determination Letter Issued by Ruth Pierpont, Director, New York State Office of Parks, Recreation and Historic Preservation, dated October 10, 2001

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

October 10, 2001

Carolyn A. Pierce
CCRG
105 Robie Avenue
Buffalo, New York 14214

Dear Ms. Pierce:

Re: SEQRA
~~Muir Woods~~ Mixed-Use Development
Amherst/Erie County
01PR0345

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

RLP:cmp

RECEIVED
OCT 16 2001
CIMINELLI DEVELOPMENT COMPANY, INC.

An Equal Opportunity/Affirmative Action Agency
Printed on recycled paper

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 14 – Amended Wetland Permit Issued by the United States Army Corps of Engineers ("USACE") dated February 25, 2021

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

February 25, 2021

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Mr. Adam Faeth
Development Manager
Ciminelli Muir Woods LLC
350 Essjay Road Suite 101
Williamsville, NY 14221

Dear Mr. Faeth:

This is in reply to your submittal dated July 20, 2020 in which you requested a modification of Department of the Army Permit No. LRB-2001-00067. The project is located on a 326-acre parcel in the Town of Amherst, Erie County, New York. Specifically, you seek authorization to change the proposed use of an area identified as Site A from research and development and flex office space to a mixed-use commercial and residential development. This includes two 4-story mixed-use buildings, two-family townhouses, 6-unit apartment buildings, and a recreational trail to connect Site A with Site B. Wetland impacts have been reduced from 13.01 acres to 6.089 acres in Site A. A reduction of 6.921 acres. In addition, because of the reconfigured project including the significant reduction of wetland impacts, you have requested that the requirement of off-site compensatory mitigation be removed. Lastly, you have requested that 134 acres of the overall Muir Woods site located northeast of Site B, is donated to the Town of Amherst. This area will remain as open space in perpetuity. Permit compliance with mitigation requirements will remain as it currently is on the 134-acre site as a responsibility of Ciminelli Muir Woods LLC.

A Public Notice was published and coordinated with agencies and adjacent property owners using standard procedures. No comments were received as a result of the Public Notice. Based upon our evaluation, I concluded your request will not result in any unacceptable environmental or navigational impacts. Therefore, I am modifying Department of the Army permit No. LRB-2001-00067 to reflect the changes outlined in your request and identified on the attached drawings. All other terms and conditions of Permit No. LRB-2001-00067 remain in full force and effect.

Sheets 1, 2, and 3 of 3 are hereby made part of Permit No. LRB-2001-00067. Sheet 1 of 3 of this modification is an update to Sheets 2, 3, and 5 of 6 of the original permit. Sheet 2 and 3 of 3 of this modification are updates to Sheet 5 of 6 of the original permit. In addition, the following Special Conditions No. 6 and 8 of Permit No. LRB-2001-00067 are modified so that they no

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

longer include the requirement of off-site compensatory mitigation, as indicated below with the original and the following modified condition:

1. Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 17.83 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site, and 27.37 acres of wetland off-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site and off-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

   Modified Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 10.91 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

2. Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan, and the Proposed Off-Site Wetland Mitigation Plan dated November 16, 2009. The stated mitigation plans are hereby incorporated into and made part of the permit as Attachments 1 and 2. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

   Modified Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan dated November 16, 2009. The stated on-site mitigation plan is hereby incorporated into and made part of the permit as Attachments 1. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Questions pertaining to this matter should be directed to Martin Crosson at 716-879-4346, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207 or by E-mail at: martin.h.crosson@usace.army.mil

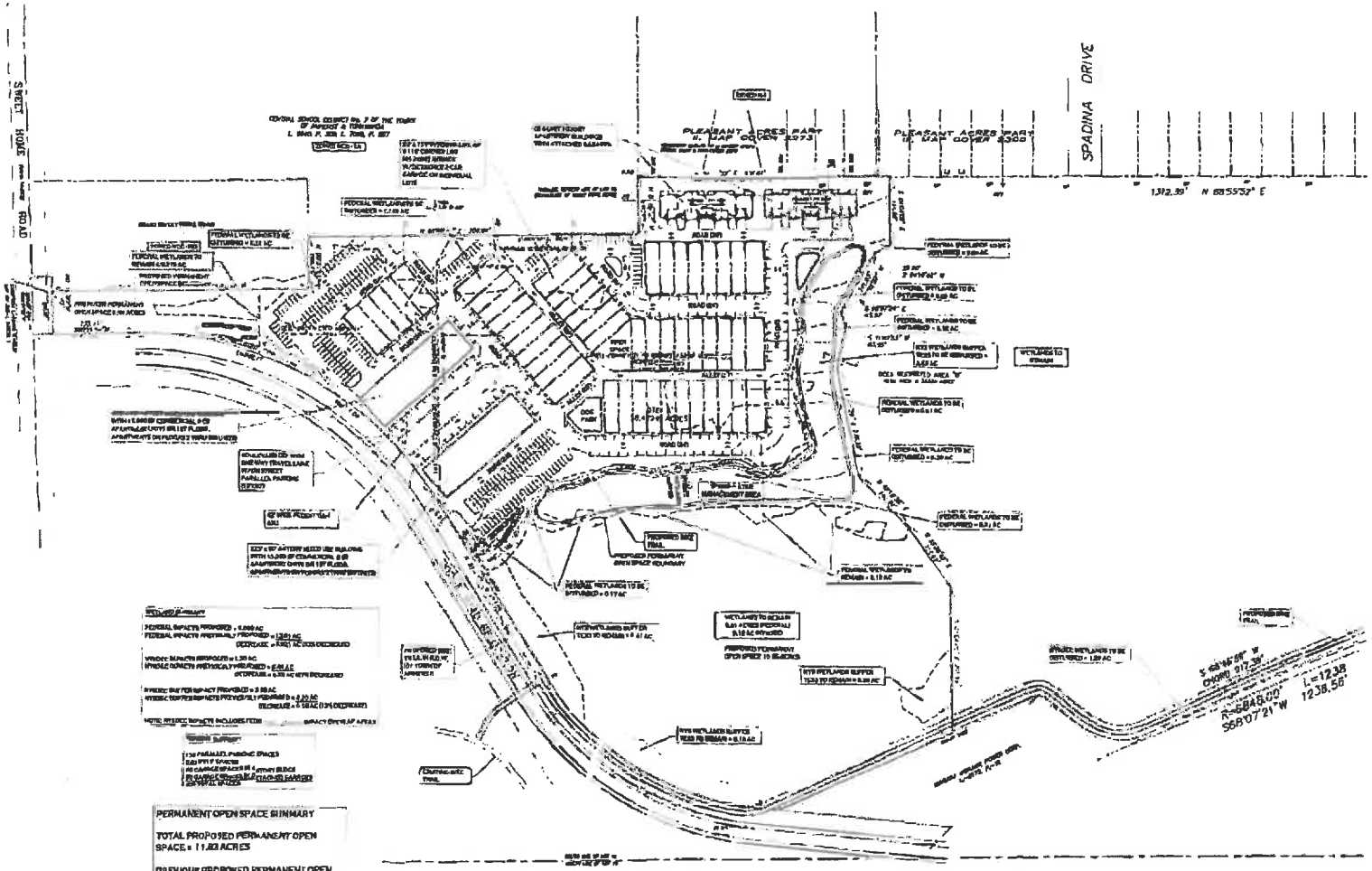
BY AUTHORITY OF THE SECRETARY OF THE ARMY

Steven V. Metivier

For: Mark Scalabrino
Acting Chief, Regulatory Branch

Enclosures

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 1 of 3

Camina Wood Morris

PROJECT NAME:
Site Development plans for:
Muir Woods Site "A"
Sweet Home & Dodge Road
Amherst, New York

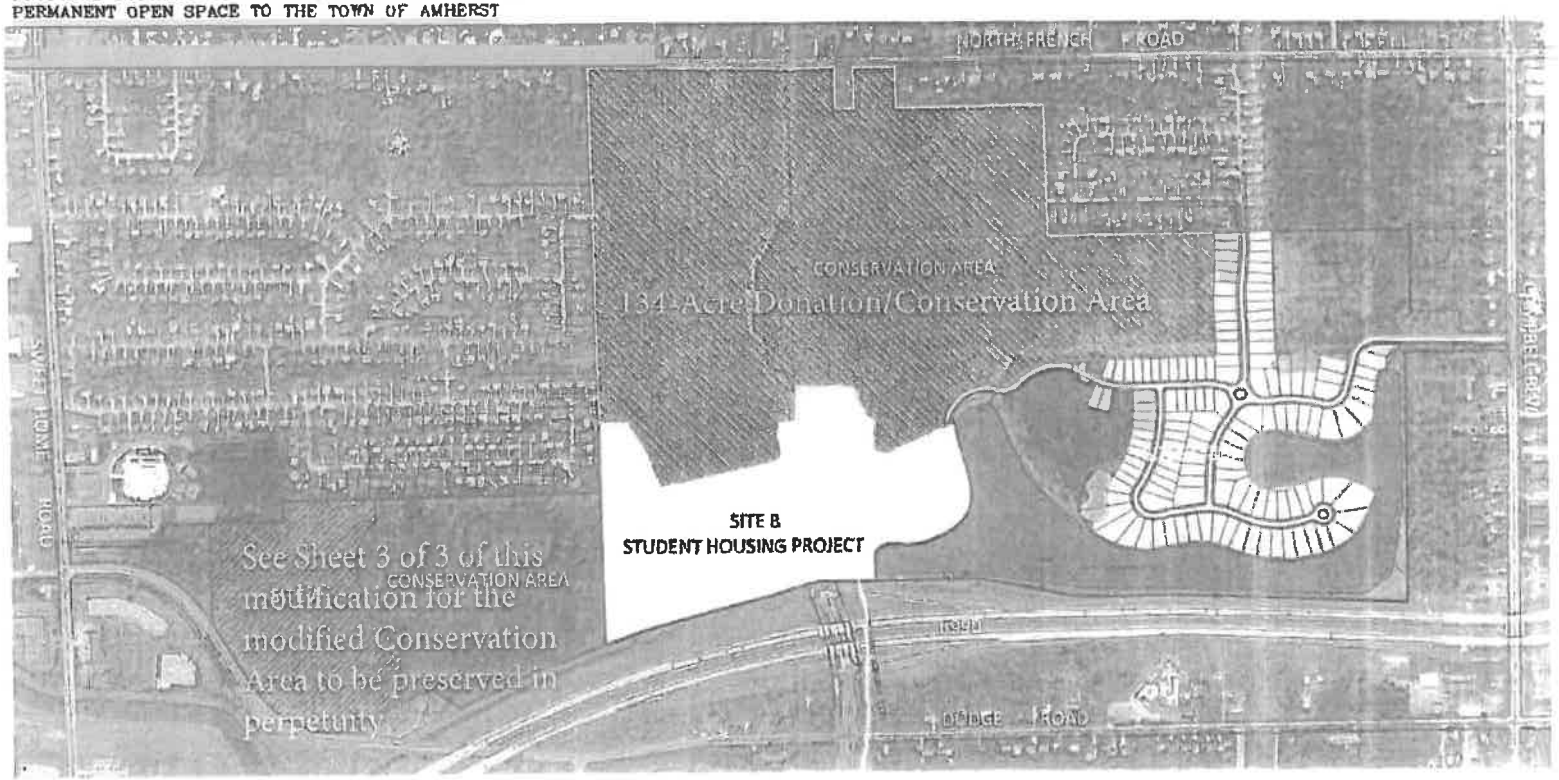
DRAWING NAME:
Concept Site Plan

DRAWING NO.
C-100

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

MUIR WOODS OVERALL PROJECT AREA

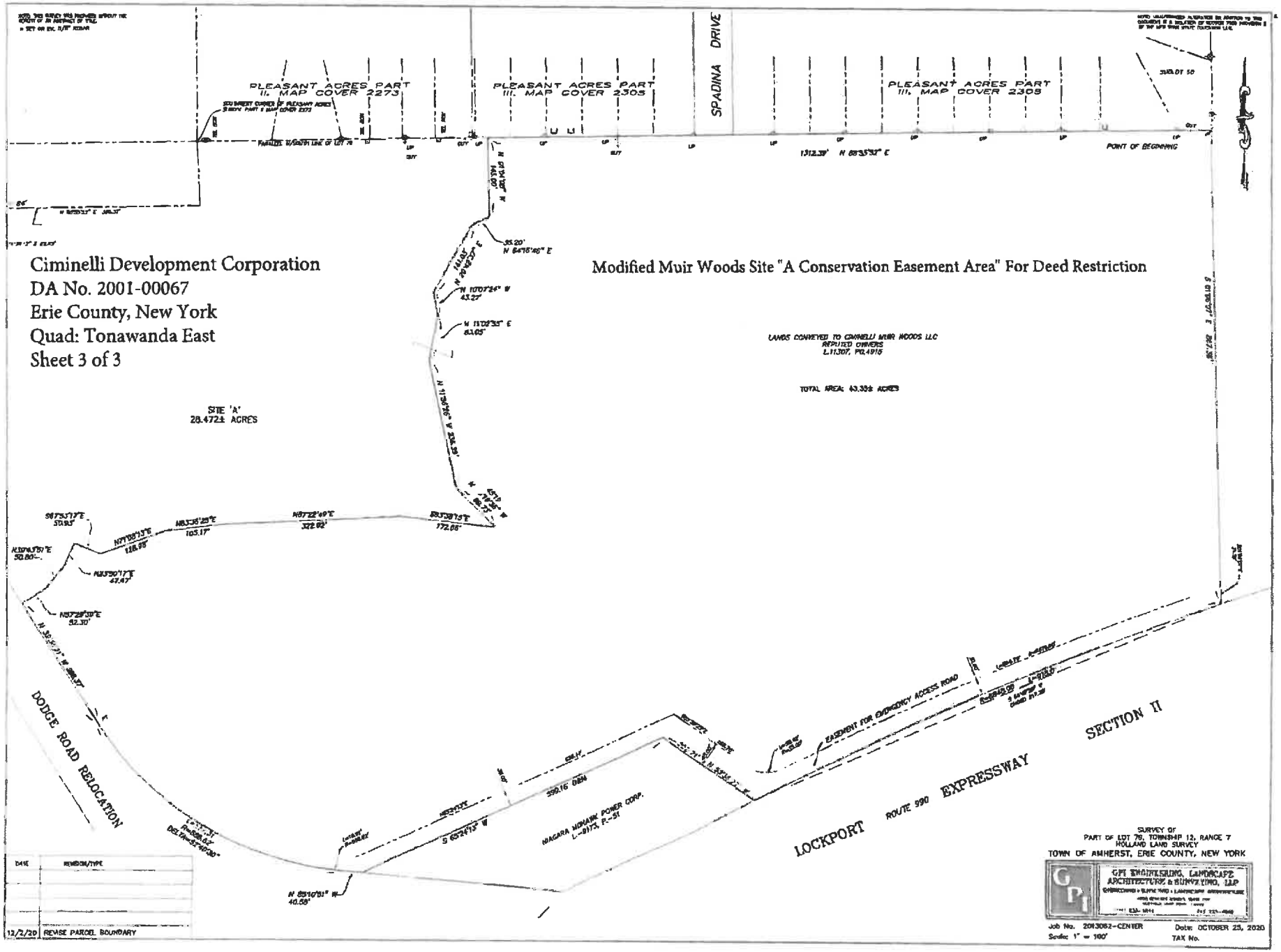
PROPOSED DONATION OF APPROXIMATELY 134 ACRES OF PERMANENT OPEN SPACE TO THE TOWN OF AMHERST



CONSERVATION AREA TO BE DONATED

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 2 of 3

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 15 – Amended Wetland Permit Issued by the New York State Department of Environmental Conservation ("NYSDEC") dated December 24, 2020

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7165 | F: (716) 851-7168
www.dec.ny.gov

December 24, 2020

Mr. Adam Faeth
Ciminelli Real Estate Corporation
50 Fountain Plaza, Suite 500
Buffalo, New York 14202

Muir Woods Development – "Site A"
Permit Transmittal Letter
Permit No. 9-1422-00398/00001

Dear Mr. Faeth:

Enclosed is your permit which was issued in accordance with applicable provisions of the Environmental Conservation Law. The permit is valid for only that project, activity or operation expressly authorized. If modifications are desired after permit issuance, you must submit the proposed revisions and receive written approval from the Permit Administrator prior to initiating any change. If the Department determines that the modification represents a material change in the scope of the authorized project, activity, operation or permit conditions, you will be required to submit a new application for permit.

Please review all permit conditions carefully. In particular, identify your initial responsibilities under this permit in order to assure timely action if required. Since failure to comply precisely with permit conditions may be treated as a violation of the environmental conservation law, you are requested to provide a copy of the permit to the project contractor, facility operator, and other persons directly responsible for permit implementation (if any).

If you have any questions, please contact this office at the above address.

Respectfully,
David S. Denk
Regional Permit Administrator

Enclosure
ecc: NYSDEC Law Enforcement
Maureen Brady, NYSDEC Office of General Counsel
Mr. Chuck Rosenburg, NYSDEC Division of Fish and Wildlife
Mr. Martin Crossen, USACOE
Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

PERMIT

Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/____

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 16 – Redline Draft of Proposed Amended Findings for Proposed Mixed-Use Project on Site "A" of Muir Woods Property

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Town of Amherst
Brian J. Kulpa
Town Supervisor

AMENDMENT #51 TO THE AUDUBON DEVELOPMENT PLAN
TO RECLASSIFY A PORTION OF 326± ACRES OF LAND
FROM NCD-ND & NCD-MOS to NCD-GC, NCD-RI & NCD-MOS
1081 & 1121 North French Road
(Z-9-02)

CERTIFICATION OF AMENDED FINDINGS

Having considered the Draft and Final Generic EIS documents, and having considered the preceding written facts and conclusions relied upon to meet the requirements of 6 NYCRR 617, this Amended Statement of Findings certifies that:

1. The requirements of 6 NYCRR Part 617 have been met;

2. Consistent with the social, economic and other essential considerations from among the reasonable alternatives thereto, the action **approved** is one which minimizes or avoids adverse environmental effects to the maximum extent practicable; including the effects disclosed in the Generic Environmental Impact Statements, and the Application to Amend the Findings Statement, and

3. Consistent with social, economic and other essential considerations, to the maximum extent practicable, adverse environmental effects revealed in the Environmental Impact Statement process and the Second Application to Amend the Findings Statement will be minimized or avoided by incorporating as conditions to the decision those mitigative measures which were identified as practicable.

TOWN OF AMHERST
Name of Agency

Signature of Responsible Official

BRIAN J. KULPA
Name of Responsible Official

TOWN SUPERVISOR
Title of Responsible Official

September 27, 2021
Date

5583 MAIN STREET, WILLIAMSVILLE, NY 14221
Address of Agency

Amherst Municipal Building | 5583 Main Street | Williamsville NY 14221
716-631-7032 | bkulpa@amherst.ny.us | www.amherst.ny.us

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Certification of Amended Findings
Amendment #51 to the Audubon Development Plan (Z-9-02)

RESOLUTION

WHEREAS, following the April 16, 2004 submittal of a Draft Generic Environmental Impact Statement (DGEIS) prepared by Ciminelli Development Company, Inc., the DGEIS was accepted by the Town Board on September 7, 2004. The DGEIS was submitted for the proposed rezoning from NCD-ND & NCD-MOS to NCD-GC, NCD-RI & NCD-MOS and development of 326± acres of land located at1081 & 1121 North French Road. On October 28, 2004, the Planning Board held a public hearing on the DGEIS and rezoning request and recommended approval of the subject petition. Subsequently, a public hearing on the DGEIS and rezoning request was held by the Town Board on March 2, 2005. A Final Generic Environmental Impact Statement (FGEIS) was accepted by the Town Board on November 5, 2007, and a Notice of Completion of the FGEIS was filed on November 14, 2007; and

WHEREAS, the Planning Board and the Town Board have considered the content of the DGEIS, the FGEIS, and all other documents and comments and submissions made during and after the hearings.

WHEREAS, on February 18, 2014, the Project Sponsor submitted an Application to Amend the Findings Statement and Audubon Development Plan along with supporting documentation. The Planning Board held a public hearing on the Application during its meeting on March 14, 2014 and it recommended approval of the Application. On June 16, 2014, the Town Board held a public hearing on the Application but did not issue a decision on the Application.

WHEREAS, on August 17, 2015, the Project Sponsor submitted an Amended Application to Amend the Findings Statement and Audubon Development Plan for the purpose of modifying the Application filed on February18, 2014.

WHEREAS, the Planning Board held a public hearing on the Amended Application during its meeting on September 17, 2015 and the Planning Board recommended in favor of the Application. On November 16, 2015, the Town Board held a public hearing on the Application. On December 7, 2015, the Town Board voted to issue an Amended Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the comprehensive environmental review of the Project that concluded with the original issuance of a Findings Statement on December 17, 2007.

WHEREAS, the Planning Board conducted a coordinated environmental review of the development of Sites C and D of the overall Project Site as a 133 lot residential subdivision. On September 14, 2017, the Planning Board issued a negative declaration pursuant to SEQRA for the subdivision based on its determination that the subdivision would not result in any potentially significant adverse environmental impacts.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

WHEREAS, on April 15, 2019, the Project Sponsor submitted an Application to Amend the Findings Statement and Audubon Development Plan along with supporting documentation. The requested amendment of the Findings Statement issued by the Town Board on December 17, 2017 was to allow student housing to be developed on Site B of the overall Muir Woods Project Site ("Application to Amend the Findings Statement"). The Planning Board held public hearings on the Application to Amend the Findings Statement during its meeting on May 16, 2019 and June 20, 2019 it adopted a resolution recommended approval of the Application to Amend the Findings Statement during its meeting on June 20, 2019.

WHEREAS, on August 5, 2019, the Town Board held a public hearing on the Application to Amend the Findings Statement. On August 5, 2019, the Town Board voted three to one to amend the Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of a Findings Statement on December 7, 2007 and the issuance of an Amended Findings Statement on December 7, 2015.

WHEREAS, on June 24, 2020, the Project Sponsor submitted an Application to Amend the Findings Statement issued by the Town Board on December 17, 2017 and to Amend the Comprehensive Plan for Site A of the Muir Woods Project to allow a mixed-use project to be developed on Site A of the overall Muir Woods Project Site (hereinafter collectively the "Application to Amend the Findings Statement"). The Planning Board held a public hearing on the Application to Amend the Findings Statement during its meeting on August 20, 2020 and at the same meeting adopted a resolution recommending approval of the Application to Amend the Findings Statement by the Town Board.

WHEREAS, on October 6, 2020, the Town Board held a public hearing on the Application to Amend the Findings Statement. On October 19, 2020, the Town Board voted to issue the Amended Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of a Findings Statement on December 7, 2007, and the issuance of an Amended Findings Statements on December 7, 2015 and August 5, 2019.

WHEREAS, on July 7, 2021, Sawyers Landing LLC submitted an Application to Amend the Findings Statement issued by the Town Board on October 19, 2020 in order to seek to increase the allowable residential density from 202 units to 258 units. The Planning Board held a public hearing on the Application to Amend the Findings Statement during its meeting on August 19, 2021 and at the same meeting adopted a resolution recommending approval of the Application to Amend the Findings Statement by the Town Board.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Certification of Amended Findings
Amendment #51 to the Audubon Development Plan (Z-9-02)

WHEREAS, on September 27 2021, the Town Board held a public hearing on the Application to Amend the Findings Statement. On September 27 2021, the Town Board voted to issue the Amended Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of a Findings Statement on December 7, 2007, and the issuance of an Amended Findings Statements on December 7, 2015 and August 5, 2019 and October 19, 2020.

WHEREAS, on June 24, 2024, Sawyers Landing LLC submitted an Application to Amend the Findings Statement issued by the Town Board on September 27, 2021 in order to modify the allowable uses on Site A of the overall Muir Woods Project Site [50 Dodge Road] to include a four-story climate controlled storage building and also to reclassify 13.452 acres of 50 Dodge Road from NCD-RI to NCD-LC.

The Planning Board held a public hearing on the Application to Amend the Findings Statement during its meeting on _____, 2024 and adopted a resolution recommending that the Town Board _____ the Application to Amend the Findings Statement and to reclassify 13.452 acres of 50 Dodge Road from NCD-RI to NCD-LC.

WHEREAS, on _____, 2024, the Town Board held a public hearing on the Application to Amend the Findings Statement and to reclassify 13.452 acres of 50 Dodge Road from NCD-RI to NCD-LC.

WHEREAS, on _____, 2024, the Town Board voted to issue the Amended Findings Statement based on its determination that the potential modifications to mixed-use project at 50 Dodge Road will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of an Amended Findings Statement pursuant to SEQRA on September 27, 2021.

WHEREAS, on _____, 2024, the Town Board adopted a resolution to approve the reclassification of 13.452 acres of 50 Dodge Road from NCD-RI to NCD-LC.

NOW THEREFORE THE TOWN BOARD FINDS AND DETERMINES THAT:

1. These Amended Findings set forth specific conditions and criteria consistent with 6 NYCRR Sections 617.7, 617.9, 617.11, and 617.12 under which the site plan process can proceed. This process provides procedures to supplement the FGEIS if necessary and for public notice and opportunity to participate in hearings before the Town Planning Board before it approves a site plan. An Environmental Assessment Form will be required with site plan application for environmental

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

review. If the proposed development does not conform with these Amended Findings, a Supplemental Findings Statement, a supplement to the FGEIS, or a Negative Declaration shall be prepared to comply with 6 NYCRR Section 617.9.

2. The proposed mixed-use, student housing and residential development as presented in the FGEIS and the Application to Amend the Findings Statement submitted to the Planning Department on July 6, 2021 is consistent with the intent and objectives of the Zoning Ordinance.

3. Adequate services and utilities must be available prior to occupancy. Review and approval of services and utilities by the Town agencies will be required for site plan approval.

4. Development will be consistent with all other applicable laws, rules and regulations.

5. As provided in 6NYCRR Part 617.10, the Town Board chose to require the preparation of a draft Generic Environmental Impact Statement (DGEIS) instead of a draft Environmental Impact Statement (DEIS) for this project. This decision was based on the scope and timetable of the development described by the Project Sponsor and depicted in the Conceptual Master Plan, which showed a multi-use development on 330± acres of land, to be built out over a 15-20 year period. The Board's decision is also based on the following reasons:

   - A DGEIS provides a lead agency with the framework for properly evaluating a conceptual master plan while identifying the important elements of the environmental setting associated with the project site. A DGEIS assesses a broad scope of a group of actions or a combination of effects from a single action.
   - The utilization of a DGEIS provides the Town Board with the authority to establish specific criteria and thresholds by which future actions such as site plan and subdivision applications will be reviewed, including requirements for ensuring subsequent compliance with SEQR.
   - The Town Board's decision to require the Project Sponsor to prepare a DGEIS acknowledges that the specific layout and appearance of the development cannot be determined at this time but rather will be decided over a period of several years and subject to market demands, and the development of the project will occur in stages.
   - The SEQR regulations state that a DGEIS is appropriate for a series or sequence of separate actions and/or projects that have wide application or restrict the range of future alternative policies.
   - The Town Board's utilization of a DGEIS affords it the opportunity to evaluate a broad range of anticipated impacts, and it also ensures that related actions will not be segmented in order to avoid the required analysis of the proposed development of the overall project site.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

6. By the time the Findings Statement was issued by the Town Board on December 17, 2007, the proposed Muir Woods development had been significantly revised since its initial submittal in 2002, resulting in a reduction in the commercial/office component of the project from 1.8± million sq. ft. to 700,000± sq. ft. and in the residential component from 200± units to 136± units. These changes were made in response to the NYS Department of Environmental Conservation, the U.S. Army Corps of Engineers and the public to minimize impacts to wetland areas to the greatest extent possible.

Following the issuance of the Findings Statement by the Town Board on December 17, 2007, the Project Sponsor obtained the required wetland permits from the New York State Department of Environmental Conservation and the United State Army Corps of Engineers. In an effort to address current market needs while maintaining the intent of the project site New Community District zoning, the Project Sponsor submitted an Application to Amend the Findings Statement in February of 2014 to expand the range of uses within Site B of the project site to specifically allow for multi-family housing in addition to the previously approved office/retail development.

Based on input received during the review of the Application to Amend the Findings Statement to allow for multi-family housing on Site B, the Project Sponsor submitted an Amended Application to Amend the Findings Statement and Audubon Development Plan on August 17, 2015 for the purpose of modifying the Application filed on February18, 2014. The Amended Application proposed to modify the permitted use of the eastern portion of Site B, comprised of approximately 26 acres. Pursuant to the updated Application, the western portion of Site B comprised of approximately 20 acres would have remained designated for commercial office and retail development per the Finding Statement issued by the Town Board on December 17, 2007.

Subsequent to the issuance of an Amended Findings Statement by the Town Board on December 7, 2015, the Project Sponsor sought the required approvals and permits for the development of Sites C and D of the Project Site as a 133 lot residential subdivision that includes a roadway connection to Campbell Boulevard on 520 Campbell Boulevard. The Planning Board thoroughly considered the potential adverse environmental impacts associated with the subdivision and issued a negative declaration pursuant to SEQR on September 14, 2017 based on its determination that the 133 lot residential subdivision on Sites C and D would not result in any potentially significant adverse environmental impacts. On September 14, 2017, the Planning Board granted Site Plan Approval for the subdivision, and on June 21, 2018 granted Final Plat Approval for the subdivision. A map cover for the approved 133 residential subdivision was filed with the Erie County Clerk's Office on July 24, 2018, and construction activities in furtherance of the construction of the subdivision began in the fall of 2018.

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Following the issuance of the Amended Findings Statement by the Town Board on December 7, 2015, the Project Sponsor sought and obtained extensions of the expiration dates of the wetland permits previously issued by the New York State Department of Environmental Conservation and the United States Army Corps of Engineers.

In an effort to allow student housing to be developed on Site B while maintaining the intent of the New Community District zoning, the Project Sponsor submitted an Application to Amend the Findings Statement on April 15, 2019. The Project Sponsor sought an Amendment of the Findings Statement to expand the range of uses within Site B of the project site to specifically allow for student housing in addition to the previously approved multifamily housing on the western 20± acres of Site B and the previously approved office/retail development on the eastern portion of Site B.

In an effort to allow a mixed-use project to be developed on Site A while maintaining the intent of the New Community District zoning, the Project Sponsor submitted an Application to Amend the Findings Statement and the adopted Comprehensive Plan on June 24, 2020. The Project Sponsor sought an Amendment of the Findings Statement to modify the land use category within Site A of the project site to replace the previously proposed 237,000 sq. ft. maximum Flex office/R&D use with a mixed-use development including 2 four-story mixed-use buildings along the Dodge Road frontage of Site A, 45 two-family townhomes and 2 six-unit single-story multifamily buildings. The Project Sponsor sought to amend the Comprehensive Plan to designate Site A as appropriate for Mixed Residential use. In connection with the proposed mixed-use development of Site A, the Project Sponsor proposed to reduce previously approved impacts to the federal wetlands subject to the jurisdiction of the United States Army Corps of Engineers ("USACE") and also to the NYSDEC Freshwater Wetland and its regulated 100 ft. Adjacent Area.

On August 20, 2020, the Planning Board held public hearings in connection with its review of the Application to Amend the Findings Statement and the Comprehensive Plan as filed by the Project Sponsor on June 24, 2020. The Planning Board adopted resolutions during its meeting on August 20, 2020 by unanimous votes recommending that the Town Board issue the Amended Findings Statement and amend the Comprehensive Plan to designate Site A as appropriate for Mixed Residential use.

On October 6, 2020, the Town Board held public hearings in connection with its review of the Application to Amend the Findings Statement and the Comprehensive Plan as filed by the Project Sponsor on June 24, 2020. On October 19, 2020, the Town Board adopted Resolution 2020-791 for the purpose of issuing an Amended Findings Statement to allow Site A of the Muir Woods

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Property to be developed as a mixed-use residential/commercial project instead of the previously proposed flex office/R&D buildings. Resolution 2020-791 as adopted by the Town Board on October 6, 2020 also authorized the acquisition of approximately 43 acres of Permanent Open Space via a donation by the property owner consisting of property to the west of Site B including the eastern portion of Site A consisting of approximately 9.81 acres of wetlands subject to the jurisdiction of both the NYSDEC and USACE. During its meeting on October 19, 2020, the Town Board also adopted Resolution 2020-792 for the purpose of approving an amendment to the Comprehensive Plan to designate Site A as appropriate for a mixed-use residential/commercial use instead of the previously proposed flex office/R&D buildings

On December 24, 2020, the New York State Department of Environmental Conservation ("NYSDEC") issued an Amended Wetland Permit [Permit No. 9-1422-00398/0001] authorizing the impacts to NYSDEC Freshwater Wetlands and the associated regulated 100 ft. Adjacent Area in order to accommodate the mixed-use development of Site "A". The Amended Wetland Permit reduced the impacts to jurisdictional freshwater wetlands associated with the development of Site A from 9.46 acres to 1.2 acres and reduced the impacts with the development of Site A to the regulated 100 ft. wide adjacent area from 4.2 acres to 3.65 acres.

As a result of the Amended Wetland Permit issued by the NYSDEC on December 24, 2020, the development of the Muir Woods Property will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the Project Sponsor is required to create 19.58 acres of in-kind and out-of-kind wetlands on the overall Muir Woods Property, in six areas, to replace the functions and benefits of the impacted wetlands. Additionally, there will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts.

On February 25, 2021, the United States Army Corps of Engineers ("USACE") issued an Amended Wetland Permit [LRB-2001-00067] authorizing impacts to 6.09 acres of federal wetlands, which was a reduction of 6.92 acres of previously authorized impact of 13.01 acre to federal wetlands, in order to accommodate the mixed-use project on Site A.

On July 7, 2021, Sawyers Landing LLC filed an Application to Amend the Findings Statement to accommodate an increase of the allowable density of the residential component of the mixed-use project on Site A from 202 units to 258 units.

On September 27, 2024, the Town Board adopted Resolution No. 2021-818 for the purpose of approving the issuance of an Amended Findings Statement pursuant to SEQRA.

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7. A Supplemental GEIS, an option that the SEQR regulations leaves to the discretion of the Lead Agency, was not required for this project due to the Town Board's decision that the reduction in the project described in #6, above did not meet the criteria set forth in 6NYCRR Part 617.9(a)(7). Although the changes proposed by the Project Sponsor reduced the development significantly, it was not determined that the amended project would encroach on any land not initially identified in the scope of the original development proposal. The project changes also did not result in newly discovered information, and would not result in any significant environmental impacts not addressed or inadequately addressed in the DGEIS.

8. Traffic and Transportation (FGEIS Section 2.1)

Site specific requirements shall be established by the Town, County and State, as appropriate, as development applications are reviewed. The developer shall be responsible for any traffic mitigation required for development of the project site.

The potential traffic impacts associated with the original project proposal were clearly analyzed and identified within the Traffic Impact Study prepared by Stantec Consulting Services, Inc. dated March 2003 and updated August of 2005 in association with the acceptance of the FGEIS.

The Amended Findings Statement issued by the Town Board on August 5, 2019 included the consideration of adding student housing to the authorized uses of Site B pursuant to the Amended Findings Statement issued by the Town Board on December 17, 2007. The Project Sponsor submitted a Traffic Impact Study for the purpose of evaluating the potential traffic impacts of the development of Site B as a maximum of 515 student housing units. It was determined that the potential traffic impacts associated with student housing on Site B will be less than the potential traffic impacts of the development of Site B in its entirety as a maximum of 464,850 sq. ft. of commercial office and retail development pursuant to the Findings Statement issued by the Town Board on December 17, 2007.

The Town Board, as Lead Agency, requires that the Project Sponsor comply with the following mitigation measures during the development of the project site:

A. Provision for Future Extension of John James Audubon Parkway to North French Road

The extension of John James Audubon Parkway through the project site and connecting to North French Road was proposed in the initial Concept Plan submitted for the Muir Woods project in 2002. This proposal was also incorporated into the DGEIS submitted to the Town in 2004. The connection was removed from the Concept Plan in response to the requirement from the NYS Department of Environmental Conservation to further reduce impacts to State and federal wetlands. The Town of Amherst may in the future be interested in the

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

possibility of a future northerly extension of John James Audubon Parkway to North French Road while acknowledging such possible future extension would require approvals from both the NYS Department of Environmental Conservation and the United States Army Corps of Engineers.

The rationale for the road connection was found in several planning documents, both historical and recent:

- The Amherst Community Development Plan adopted by the Planning Board in 1975 includes the extension of the then-planned Lockport Expressway through the subject site as a future Minor Arterial road.
- A report prepared by NYSDOT in 1976 anticipated the extension of the John James Audubon Parkway and forecast its use by 1,950 vehicles per hour.
- The Amherst Bicentennial Comprehensive Plan, accepted by the Town Board in February 2004 and adopted by the Town Board in January 2007, identifies the "Audubon Parkway Extension" in the map showing the Future Thoroughfare System.

The 30+ years of anticipating this roadway connection point to its significance in meeting the transportation goal of improving circulation within the Town and the role this connection would play in overall Town development. Given its importance, the Town Board is requiring that the future location of this connector be shown on site plans submitted for review, and that sufficient land be reserved by the Project Sponsor for the eventual connection to be constructed. The road construction and alignment will be subject to approval by the NYSDEC and the U.S. Army Corps of Engineers, as applicable.

B. Residential Connection to Lynette Lane

The residential component of the proposed Muir Woods development to occur on Sites C & D may have a direct road connection to Lynette Lane. There will be no direct roadway connection to Nancy Lane. Non-residential traffic will be discouraged from using Lynette Lane through the implementation of various traffic calming measures to be proposed during the site plan review process for the development of Sites C & D, subject to review of such traffic calming measures by the Town Traffic-Safety Board and Fire Chief's Association. These measures include:

1. The lack of direct sight lines for motorists to discourage non-residential traffic from utilizing Lynette Lane to access North French Road;

2. Curvilinear road design; and

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

3. Installation of signage posting the road for "resident and emergency traffic only" or other such measure to prohibit non-residential traffic from travelling on Lynette Lane and the proposed public roadways within the existing residential subdivision;

If a problem is determined to exist based on the Phase 2 traffic study, further measures to discourage traffic of prohibit cut-through traffic will be considered.

C. No Internal Roadway Connection to Dodge Road

The internal connector road within the Muir Woods development is not proposed to have a westerly connection to Dodge Road; the only direct vehicular connection to Dodge Road will be from the portion of the project located in the western portion of the project site (Site A). If warranted at some future time by a traffic analysis, a connection to Dodge Road may be made from the internal connector road if required permits for such a roadway connection can be obtained from the NYSDEC and the US Army Corps of Engineers.

D. Updated Traffic Impact Study

The Traffic Impact Study will be updated when any of three established thresholds are met:

1. Completion of Phase I development, defined as full build-out of Site B, or

2. prior to approval of any site plan in Site C or Site D or any direct or indirect connection to any of the Sites with Lynette Lane, or

3. when the number of combined vehicular trips entering and exiting the site during the AM weekday peak travel hour reaches 858 trips, or

4. when the number of combined vehicular trips entering and exiting the site during the PM weekday peak travel hour reaches 774 trips.

If actual conditions exceed projections, this will be reflected in the updated TIS to be prepared by the Project Sponsor, and the Project Sponsor may be required to implement traffic related mitigation measure sooner than expected.

Any mitigation measures, including off-site mitigation measures that are required as a result of the updated TIS, shall be the sole obligation of the Project Sponsor, if approved. Any off-site improvements, including the acquisition of private property required to make those improvements, shall be conditions of any site plan approval and treated as Public Improvement Permits (PIPs) for the purpose of final permitting. At no time shall the Town be required to make any off-site

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improvements or acquire private property, either by purchase or through its eminent domain powers, to mitigate the impact of this development project.

E. Alternate Access to Campbell Boulevard

During the original environmental review of the proposed project which concluded with the Town Board's issuance of a Findings Statement on December 17, 2007, the Project Sponsor attempted to seek a vehicular connection from the site to Campbell Boulevard through property located at 520 Campbell Boulevard which is owned by the Williamsville Central School District. The Town also participated in efforts to obtain access to Campbell Boulevard via this property. These attempts were not successful.

The Project Sponsor eventually was successful in acquiring 520 Campbell Boulevard from the Williamsville Central School District on December 5, 2017 and the approved 133 residential subdivision on Sites C and D includes a public roadway connection on 520 Campbell Boulevard to Campbell Boulevard.

F. Construction Vehicles

As part of the public comment period for the project, concerns were raised regarding the use of construction vehicles on existing residential streets in the adjacent Franklin Heights Subdivision to access the project site during project construction. In order to avoid the adverse environmental impacts associated with construction vehicles, existing residential streets shall not be utilized by construction vehicles to access the project site. The infrastructure to be constructed for the project shall be appropriately sequenced so that construction vehicles can access the site via the northerly extension of John James Audubon Parkway and Doge Road only.

Any future builder, owner or developer who purchases lots for development within Site C & D shall be prohibited from using Lynette Lane as a means of access for construction vehicles. A deed restriction incorporating this restriction shall be a prerequisite of the sale of any lots within Sites C and D. and the Town shall be provided with a copy of the recorded deed restriction, which shall not be recorded at the Erie County Clerk's Office until the content and form of the deed restriction has been reviewed and approved by the Building Department and Town Attorney's Office.

On June 21, 2018, a Declaration of Restrictions was recorded at the Erie County Clerk's Office (Liber 11330 of Deeds at Page 8243) for the purpose of complying with the relevant portion of the Amended Findings Statement prohibiting construction vehicles from utilizing Lynette Lane for access by construction vehicles.

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G. Break in Access for Connection to Lockport Expressway (I-990)

The proposed northerly extension of John James Audubon Parkway as a Town roadway to provide access to the project site requires a break in access to the Lockport Expressway (I-990). The NYSDOT has been aware of this requirement since the initial petition by the Project Sponsor in 2002. Prior to the granting of the break in access, several conditions must be met, including completion of any required environmental compliance. Once completed and inspected, the Project Sponsor will be required to dedicate the northern extension of John James Audubon Parkway to the Town for permanent use as a public roadway to be dedicated to the Town of Amherst.

On May 20, 2019, the Town Board adopted a resolution stating the Town will serve as the applicant for the required Break-in-Access for the proposed northerly extension of John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst.

The Town filed an Application for Break-in-Access with the New York State Department of Transportation on August 21, 2019. The NYSDOT has not yet issued a decision on the pending request for Break-in-Access approval.

The Break-in-Access for the proposed northerly extension of John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst will result in numerous public benefits including, but not limited to, accommodating the potential future extension of the NFTA light rail and a terminus for such light rail on Site B, publicly accessible parking for a recreational trail that will cross the overall Muir Woods Project Site and connect to the Town's recreational trail (extending from Niagara Falls Boulevard to the trailhead near the intersection of North Forest Road and Maple Road), and a potential future extension of John James Audubon Parkway as a public roadway connecting to North French Road.

H. Traffic Mitigation Measures

Dodge Road / Project Site Roadway

Phase I development:
- Installation of a stop sign to the southbound (site driveway) approach
- Construction of one shared left-right turn lane for southbound site driveway approach

Full development:
- No additional improvements

John James Audubon Parkway / I-990 Ramps

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Phase I development:
Upon the completion of Phase I development, (Phase I development defined in Section 8, Part D.1. of this Amended Findings Statement) the Project Sponsor shall be required to provide a current trip count Report for both the a.m. and p.m. peak travel hours. Subject to the findings of a warrant analysis prepared in accordance with appropriate traffic engineering standards as determined by the updated trip count Report and based on an analysis of the potential impacts upon existing Levels of Service at this intersection, the Project Sponsor may be required to work with the New York State Department of Transportation to provide the following mitigation measures:

- Installation of traffic signals, each with their own controller, at both the northbound and southbound I-990 to John James Audubon Parkway
- Installation of a wire connection between these two new signals and the existing traffic signal at John James Audubon Parkway and Dodge Road in order to coordinate all three traffic signals
- Widening of both the northbound and southbound I-990 off-ramps to provide one additional turning lane on each ramp approach to John James Audubon Parkway

Full development: If any of the thresholds identified in 'D' above are met, the following improvements will be evaluated and may be required:

- installation of a third lane to the northbound off-ramp in order to provide two left turn lanes and one right turn lane
- add a free-flow southbound right turn lane at the southbound ramp, including a second receiving lane on the ramp to merge to one lane prior to the I-990 mainline

Dodge Road / John James Audubon Parkway

Phase I development:

- Traffic signal timings will need to be adjusted periodically over time as warranted by changing travel patterns

Full development:

- Construction of a westbound right turn lane. It is anticipated that this improvement will be required when approximately 75% of the development is complete or when the number of westbound right turning vehicles from Dodge Road exceeds 300 vehicles per hour during the morning peak travel period.

North French Road / Sweet Home Road

Phase I development:

- Adjustments to traffic signal timing as travel patterns warrant modification

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Full Development:

- Construction of an eastbound right turn lane. Traffic volumes turning right at this location currently exceed guidelines recommended in the Highway Capacity Manual for consideration of installing a separate right turn lane. While construction of this lane is currently warranted to address current existing traffic operations in the area, it will not be needed as a result of traffic to be generated by the proposed development of the project site until approximately 90% of the proposed development has been completed, since new traffic projected to be generated by the project will only add a few additional vehicular trips to this traffic movement.
- Modify signal timings during both the morning and evening peak hours, as necessary. Recent improvements to this intersection to provide protected phasing for the left turns will reduce the number of left turn accidents at this location. Additionally, future planned improvements to be implemented by Erie County will assist in further reductions in the number of accidents at this intersection.

North French Road / Campbell Boulevard

Phase I development

- Adjustments to traffic signal timing as travel patterns warrant modification

Full development:

- Add protected/permitted phasing for eastbound, northbound and southbound left turns when the traffic signal is upgraded in association with the improvement identified above.

North French Road / I-990 Ramps
Dodge Road / Sweet Home Road
Dodge Road / Campbell Boulevard

Phase I development:

- Modify signal timings for both the morning and evening peak travel hours as traffic patterns change.

Full development:

- Modify signal timings for both the morning and evening peak travel hours as traffic patterns change.

North Forest Road / John James Audubon Parkway

Phase I and/or Full development:

- Add protected/permitted phasing for the southbound left turn movement when warranted

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- Modify signal timings during both peak travel periods, as traffic patterns change

North French Road / Lynette Lane

Phase I development:

Based on the most current Traffic Impact Study addressing the impact on Lynette Lane and its intersection with North French Road, Lynette Lane as currently constructed may not be adequate to support the traffic associated with full build-out of the proposed development plan. Consequently, the Project Sponsor acknowledges its potential obligation to make off-site improvements to Lynette Lane and its intersection with North French Road, should any site plan be approved. See Section 8.D of this Certification of Findings.

- If the updated TIS identifies traffic mitigation measures reasonably necessary to accommodate traffic from development of the project site, and such mitigation measures cannot be mitigated by the Project Sponsor, then the scope of the project may be limited.

Route 62 / East Robinson Road
Campbell Boulevard / Tonawanda Creek Road
Millersport Highway / Campbell Boulevard / Stahl Road

Phase I and Full development:

- Modify signal timings for both the morning and evening peak travel hours as traffic patterns change.

9. Wetland Issues (FGEIS Section 2.2)

The proposed Muir Woods project will result in permanent impacts to approximately 10.98 acres of State regulated wetlands (TE-22, TE-33 and TE-34), 13.46 acres of State regulated 100-foot wide wetland adjacent area, and 19.12 acres of federal wetlands. According to the Permit Transmittal Letter dated November 30, 2009, the NYSDEC has officially issued a Freshwater Wetlands Permit (Permit ID 9-1422-00398/00001) and Water Quality Certification (Permit ID 9-1422-00398/00002) for the permanent wetland impacts as identified.

On June 1, 2018, the NYSDEC issued a modification of Permit No. 9-1422-00398/00002 (Modification No. 1 of Permit No. 9-1422-00398/00002) that applies to the development of Sites C and D as a 133 lot residential subdivision. On August 29, 2018, the NYSDEC issued a modification of Permit No. 9-1422-00398/00001 and Permit No. 9-1422-00398/00002 (Modification No. 1 of Permit No. 9-1422-00398/00001 and Modification No. 2 of Permit No. 9-1422-

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00398/00002"). On January 10, 2019, the NYSDEC issued Modification No. 3 of Permit No. Permit No. 9-1422-00398/00001 to extend the expiration date of the wetland permit to November 30, 2024.

On December 24, 2020, the New York State Department of Environmental Conservation ("NYSDEC") issued an Amended Wetland Permit [Permit No. 9-1422-00398/0001] authorizing impacts to NYSDEC Freshwater Wetlands and the associated regulated 100 ft. Adjacent Area in order to accommodate the mixed-use development of Site "A". The Amended Wetland Permit reduced the impacts to jurisdictional freshwater wetlands associated with the development of Site A from 9.46 acres to 1.2 acres and reduced the impacts with the development of Site A to the regulated 100 ft. wide adjacent area from 4.2 acres to 3.65 acres.

As a result of the Amended Wetland Permit issued by the NYSDEC on December 24, 2020, for the development of the Muir Woods Property will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the Project Sponsor is required to create 19.58 acres of in-kind and out-of-kind wetlands on the overall Muir Woods Property in six areas, to replace the functions and benefits of the impacted wetlands. Additionally, there will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts.

Additional wetland findings include the following:

- The project will not create a regulated 100-ft. wetland buffer area that crosses any property line adjacent to the project site. The on-site mitigation areas will be designed so that they will be located at least 100 ft. from neighboring properties.

- As mitigation for the impacts as identified, the project includes creation of 26.917 acres of in-kind and out-of-kind wetland on-site, in several areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site (totaling approximately 2,630 linear feet).

- The development of the eastern portion of Site B for residential purposes, shall not include any owner occupied housing units within the State regulated wetland or the 100 ft. regulated Adjacent Area that do not involve oversight by either a homeowners or condominium association to ensure there will not be any impacts into the 100 ft. regulated wetland Adjacent Area that is to be preserved on Site B.

Federal Wetlands:

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As stated in its letter dated August 27, 2007, the United States Army Corps of Engineers (USACE) has field verified that the federal wetland boundaries located on the Muir Woods project site as shown on the wetland delineation map prepared by Greenman-Pedersen, Inc. dated May 2007 are accurate. The wetland areas were delineated by Earth Dimensions, Inc. and summarized in a final wetland delineation report dated May 16, 2007.

The Project Sponsor provided a complete Joint Application For Permit for wetland impacts associated with the project to the USACE and NYSDEC as of June, 2009. After thoroughly reviewing the complete application and associated wetland impacts, the USACE issued a Validated Department of the Army Permit for wetland impacts associated with the project as of May, 2012. Additionally, having thoroughly reviewed the complete application and associated wetland impacts, the NYSDEC officially issued a Freshwater Wetland Permit and Water Quality Certification for wetland impacts associated with the project as of November, 2009.

On May 14, 2012, the United States Army Corps of Engineers ("USACE") issued Department of Army Permit No. 2001-00067. The permit issued by the USACE permitted to impact 17.83 acres of Federal wetland, and 1.29 acres (approximately 5227 linear feet) of jurisdictional tributaries for the construction of Muir Woods project. On May 6, 2016, the USACE extended the permit expiration dated from May 14, 2012 to November 30, 2019. The USACE issued a modification of Permit No. 2001-00067 on June 20, 2018 in connection with the development of Sites "C" and "D" as a residential subdivision. On January16, 2019, the USACE extended the expiration date of Department of Army Permit No. 2001-00067 to November 30, 2024.

On February 25, 2021, the United States Army Corps of Engineers ("USACE") issued an Amended Wetland Permit [LRB-2001-00067] authorizing impacts to 6.089 acres of federal wetlands, which was a reduction of 6.921 acres of previously authorized impact of 13.01 acre to federal wetlands, in order to accommodate the mixed-use project on Site A.

10. Wildlife / Biological Resources (FGEIS Section 2.3)

The NYSDEC's Natural Heritage Program has reported no record of known occurrences of rare or state-listed animals or plants, significant natural communities, or other significant habitats, on or in the immediate vicinity of the project site. The Project Sponsor will be required to implement the following mitigation measures in order to minimize impacts to wildlife resources to the maximum extent practicable:

- A comprehensive erosion control plan will be developed and implemented to protect vegetation and water quality.

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- Off-limit areas, including wetlands, will be delineated prior to construction to avoid or minimize impacts to vegetation. The construction workforce will be educated as to respecting and adhering to physical boundaries of off-limit areas.

- Best Management Practices will be followed during construction.

- The establishment of invasive vegetative species will be deterred through manual extraction and rapid establishment of desirable vegetation. Exposed and disturbed soils will be seeded, planted and mulched to prevent the colonization of invasive species. Volume 8 of the Appendix of the FGEIS at Exhibit F (*SJWPA Appendix* M) contains a discussion of the proposed on-site wetland mitigation including the protection of habitat areas.

- Waterfowl activity will be deterred in the off-site wetland mitigation area located in the Town of Newstead through the use of mylar tape, snow fencing, 4-7 ft. tree plantings and the seeding of upland grassland areas with a cool season grass.

- The proposed on-site wetland mitigation system will be designed to provide seasonal aquatic habitat for fish, waterfowl and amphibians; habitat for multiple covertypes of wetland plant species; and passerine bird nesting, feeding and resting habitat.

- The project site historically has had an elevated number of deer-vehicle accidents on the roads surrounding the parcel. This parcel is a portion of a much larger habitat area which also includes Nature View Park to the north and is not a "closed" habitat area. The Planning Department, in conjunction with the Police Department, will continue to monitor the deer population throughout the Town and implement approved methods of reducing deer/vehicle accidents in accordance with the Deer-Vehicle Accident Management Plan.

11. Drainage and Flooding (FGEIS Section 2.4)

The following measures shall be implemented by the Project Sponsor to mitigate drainage and flooding impacts to the maximum extent practicable:

A. The Town Highway Department shall have access to all Town ditches that are on the subject property including Town ditches 4, 4A, 4B and 4C. The Project Sponsor will be required to grant public easements to the Town to these ditches to ensure their proper maintenance. No aspect of the Muir Woods development

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will inhibit access to Town ditches or create undue burden to the Town for restoration of easement property used to access Town ditches. On June 28, 2018, the Project Sponsor recorded a Permanent Access and Drainage Easement at the Erie County Clerk's Office (Liber 11331 of Deeds at Page 1521) for the purpose of granting the Town an easement to access town ditches and stormwater management facilities on the Project Site including the existing lake.

B. The project site and the surrounding vicinity are known as locations for high amounts of beaver and mosquito activity. Access to the Town Highway Department for control of this activity in Town ditches or other areas of the development shall be provided.

C. The Project Sponsor shall be responsible for cleaning and debrushing of all Town ditches located on the project site during the initial construction phases of the project. The Project Sponsor will also be responsible for long-term maintenance of stream/drainage features and detention/stormwater basins; for maintenance of on-site wetland mitigation areas during the monitoring period; and for the construction of all drainage improvements required for development of the project site.

D. The Project Sponsor shall be required to construct any ponds and sand filters required stormwater quality treatment. All ponds and sand filters to be constructed on the project site will be privately owned and maintained, with public drainage easement to be granted by the Project Sponsor to allow Town to properly maintain the inlet and outlet pipes of any wet ponds.

E. All stormwater runoff will be treated to standards approved by the Town Engineering Department prior to discharging into the existing lake on the project site or Town ditches. No additional detention is being proposed for the Muir Woods development for stormwater quantity control.

F. All buildings in the west portion of the Muir Woods site located within the Ellicott Creek flood plain will be at a minimum elevation of 576.0 feet, or one foot above the base flood elevation as determined by the Town Building Commissioner.

As development is proposed, specific drainage plans will be reviewed and approved by the Town Highway and Engineering Departments and the NYS Department of Environmental Conservation/US Army Corps of Engineers during site plan review, to ensure there is no adverse impact to the Ellicott Creek Flood Control system.

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G. Upon development, the existing 32± acre lake in the southeast portion of the project site will be maintained with a normal lake level of 569.55 feet. The existing 42-inch CMP outlet at the west end of the lake will remain as it is. All stormwater from the east side of the development around the lake will pass through a stormwater quality treatment facility consistent with the NYS Stormwater Management Design Manual and Phase II Stormwater SPDES requirements prior to entering the lake. This system currently designed as sand filters may evolve into wet ponds, bio-retention filters, and/or other acceptable practices under the Design Manual and SPDES requirements.

H. Backyard runoff from proposed residential units will be separated from wetland mitigation areas and wetlands either by a ditch or rear yard drains to preclude pollution of those areas by lawn chemicals, per NYSDEC letter dated October 26, 2007.

I. A detailed Stormwater Pollution Prevention Plan (SWPPP), including a Sediment and Erosion Control Plan, for the various phases of the project including any related on-site drainage areas shall be submitted as specific site plans are submitted for review. The Stormwater Pollution Prevention Plan for each phase of the project will need to be reviewed and approved by the Town's Engineering Department.

J. The Project Sponsor shall be required to comply with the findings and recommendations of the Preliminary Drainage report prepared by Greenman-Pedersen, Inc. in August 2007 and any updated reports during the course of development.

K. The Project Sponsor will provide backyard drainage for the existing homes that are directly adjacent to the portions of the project site that will be developed for residential use. This requirement pertains to Sites and D. Additional drainage improvements for the areas along the rear yards of the homeowners on Nancy Lane will also be installed by the Project Sponsor. The drainage pipe to be installed in the rear yards of the new residential units that will be integrated with the new drainage swale behind the residents of Nancy Lane will be a minimum diameter of 12 inches.

12. Character and Quality of Life Issues (FGEIS Section 2.5)

A. Setbacks

On those portions of the project site where commercial or student housing development will be directly adjacent to existing residential areas (i.e. Bucyrus Heights), setbacks will retain existing vegetation to a depth that

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provides an adequate buffer. The following minimum setbacks will be required:

- The planting of additional trees and shrubs by the Project Sponsor within the minimum setback area may be required to supplement the existing vegetation in order to provide adequate buffers.

- A combination of earthen berms and new vegetation will be required in those portions of the minimum setback area where there is not sufficient existing vegetation to provide an adequate buffer. The minimum height at the top of berms shall be three feet, and the maximum slope shall be 1 on 3 (33%) to promote the growth and long-term viability of trees and shrubs planted on the berms. Berms should have a natural appearance by varying their width and height.

- Site A (western portion of the project site – 50 Ddoge Road) – This portion of the project site will be utilized for mixed-use; a portion of Site A is located directly south of the Bucyrus Heights subdivision.

  ~~• 25 ft. minimum building setback from residential lot line for single-story residential buildings.~~

  • 3190 ft. minimum building setback from residential lot line for attached and detached -two-family -townhome style units.

  • 250 ft. minimum building setback from residential lot line for four-story mixed use buildings.

  • 400~~250~~ ft. minimum building setback from residential lot line for four-story multifamily building.

  • 450 ft. minimum setback from residential lot line for four-story climate controlled storage building.

  • 60 ft. parking setback from residential lot line

- Site B (center portion of site) – This portion of the project site will be developed around the extended John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst. Site B will be developed as student housing or for the land uses permitted pursuant to the Amended Findings Statement issued by the Town Board on December 17, 2015. The following setback standards apply to the development of Site B:

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- 60 ft. building setback from residential lot line. If the height of any proposed buildings exceeds 50 feet, the required minimum building setback shall be equal to the height of the proposed building.

- 90 ft. parking setback to residential lot line

B. Building Height

The following maximum building heights will be observed for the proposed development:

- Site A (western portion of the project site) – This portion of the project site will be the location of mixed-use and residential buildings and a portion of Site A is located directly south of the Bucyrus Heights subdivision.

  - Maximum building height for mixed-use buildings, ~~and~~ multifamily buildings and climate controlled storage building shall be four-stories and 60~~55~~ ft. as measured from the finished grade to the top of any parapet (excluding any rooftop mechanical equipment). All mechanical equipment shall be properly screened in accordance with the standards contained in the Zoning Code adopted by the Town Board in May of 2006.

  - Maximum height of any residential buildings within 90 ft. of a residential lot shall be 3~~2~~5 ft.

- Site B (center portion of the project site) – This site will be developed around the extended John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst. Site B will be developed as student housing or Site B will be developed as permitted to the Amended Findings Statement issued by the Town Board on December 17, 2015.

  - There will not be a maximum height for buildings to be constructed on Site B. All buildings will be required to comply with a minimum required setback that shall be the greater of 50 feet or the height of the proposed building at the point of its maximum height (including rooftop mechanicals, etc.)

13. Soil Stability and Foundation Issues (FGEIS Section 2.6)

The Geotechnical Engineering Report prepared by McMahon & Mann Consulting Engineers, P.C. dated June 2005 includes findings and foundation considerations

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for future construction of the various components of the project. The report is included in Volume 6, Appendix I of the FGEIS.

The Town shall not grant site plan, subdivision or Public Improvement Permit (PIP) approval for construction of any component of the project (buildings, parking areas or infrastructure) unless the identified limitations as discussed in the McMahon & Mann report are adequately accounted for. The applicant shall be required to provide documentation of site-specific soil characteristics and comply with all relevant Town building codes regarding soil conditions.

Additional mitigation measures to be undertaken by the Project Sponsor, subject to determination by the Building Department, may include:

- Perform individual soil borings for each proposed structure to accurately determine the specific geotechnical design perimeters.
- Take measures to control the moisture content of the soils outside the structure. These may include installation of an irrigation system that would maintain near-saturated conditions in the soil around the structure during dry summer months, and/or installation of an exterior vapor barrier that extends out away from the structure around the perimeter.
- Monitoring of soil moisture with supplemental foundation watering during dry months.
- Use of a lower allowable bearing pressure for design of the spread footings.
- Placement of a minimum of two continuous #5 horizontal longitudinal reinforcing bars in each of the following locations: in the footing, at the base of the foundation wall, and at the top of the foundation wall.
- Use of an isolation joint between the basement floor slab and the foundation wall.
- Installation of a quality vapor barrier under the basement floor slab.
- Installation of a foundation drain system designed so that the floor elevation of the sump is above the elevation of the bottom of the footing.

14. Economic Impacts (FGEIS Section 2.7)

All infrastructure required to support the development of the project site will be installed at the Project Sponsor's expense. Town-wide or localized special assessment districts (sewer, water, highway, etc.) are established so operating cost can be spread over many taxpayers who use specific services.

According to the "Cost of Servicing/Revenues Generated Land Use Study" in December 2006 commissioned by the Amherst Industrial Development Agency, for every $1.00 attributed to residential use, $1.11 is expended in providing government services, while just $0.48 is expended for commercial use and $0.60 is expended for open land. As a predominantly commercial oriented mixed-use project, the estimated $3,500,000 in yearly tax revenue (2007 estimated) to the

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Town at full build out projected to be generated by the project is expected to cover the cost of any additional services including police and fire protection, snow plowing, maintenance of roads, water and sewer infrastructure, ditches, etc.

An economic real estate study for the proposed Muir Woods project was completed by Northeast Appraisers in March, 2002 which analyzed residential demand and property values. A subsequent Economic Analysis was completed by Real Property Services, LLC in July 2006, which is included in Appendix K, Volume 8 of the FGEIS. The conclusions of those reports are:

- There will be no negative impact on the marketability or values of nearby existing housing. The project may potentially have a positive impact on surrounding residential property values due to increased demand on desirability to live in close proximity to the development.

- The proposed project development will add over $70 million to the Town of Amherst tax base when completed, and generate over $3.4 million in tax revenue per year at stabilized 2008 levels.

- Over the first 10 years of development, the project is projected to generate over $21.4 million in tax revenue, as compared to total tax revenue of approximately $260,000 that would be generated if the project site remains as vacant land over the same period.

- It appears that both the Sweet Home and Williamsville School Districts will be impacted minimally with regards to expenditures on a per student basis. This takes into account that more than 50% of the residential development will consist of patio homes, which primarily cater to "empty nesters" and typically generate less students per household.

- The competitive advantages of the project site which are expected to support strong market absorption include its direct interchange access from the Lockport Expressway (I-990) and the high visibility of the site from expressway traffic.

15. Noise and Light Issues (FGEIS Section 2.9)

Noise – It is anticipated that the project site will be built-out in stages over many years and, as such, there is a need to impose mitigation measure for noise from construction activities to minimize this identified adverse environmental impact to the maximum extent practicable. Both temporary and long terms noise impacts may result from the construction activities on the project site as well as from the proposed use of the project site.

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Noise from construction-related activities, which will exceed local ambient levels for noise outside of structures, may cause some temporary annoyance to nearby residents. It is expected that this impact, caused by heavy equipment, construction vehicles and power tools, will continue throughout the duration of construction. In order to reduce this noise, the following measures will be undertaken by the Project Sponsor:

- Limit major construction activities to daytime hours
- Use of construction equipment with mufflers
- The preservation of existing vegetation to the greatest extent practicable will provide a noise barrier to existing residential areas.
- If blasting is required, the developer will follow all requirements of the Town Blasting Ordinance

Noise resulting from the occupation and usage of the buildings constructed on the project site can be expected to result in sound levels that are characteristic of suburban office and residential developments and should not be significant.

With the Lockport Expressway (I-990) forming the southern boundary of the project site, and its design as an elevated highway for a portion of this boundary, traffic is considered the largest source of existing noise. Levels from typical noise generators that may be expected to exist in the vicinity of the project site include:

Distant traffic (45 mph)	45 – 50 decibels
Passenger car pass-bys	70 decibels
Accelerating trucks	85 decibels
Distant aircraft noise	60 – 85 decibels

The Transportation Project Report for the Lockport Expressway evaluated the potential noise impacts of the entire I-990 project, including the interchange that will be improved in connection with the proposed project. A copy of the Noise & Air Pollution Study is found in Volume 6 of the Appendix of the DGEIS at Exhibit 30. In addition, there is not any development directly adjacent to the existing interchange that will be impacted by the proposed interchange improvements. To the south of the northbound off-ramp there are some residential units situated along Dodge Road. However, the planned improvements at the existing off-ramps will not result in a movement of traffic 50% or more closer to source receptors.

Light – To mitigate the light spillage from exterior lighting on adjacent residential properties, especially the Bucyrus Heights neighborhood, the following measures will be implemented:

- Appropriately located lighting, downward-directed lighting fixtures or hooded lighting will be used to prevent off-site light spillage on adjacent residential

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areas. The light fixtures and their placement will follow all Town of Amherst code requirements for usage and design. The Town Zoning Code requires a lighting plan to be submitted during the site plan review process, and the standards contained in the relevant section of the Zoning Code regulate lighting spillover from commercial locations onto adjacent residential land uses.

- Screening of proposed commercial buildings and parking lots will be provided through the creation of berms or landscaping elements on the periphery of developed areas (see Section 10A above).

16. Open Space and Recreation (FGEIS Section 2.10)

The proposed internal trail system shall be installed (Sites C & D) of the "The Preserve at Muir Woods" development, provided it does not impact regulated wetlands or is permitted by permits issued by the NYSDEC and/or USACE. Public access to a portion of the existing lake will be provided. The majority of State Wetlands TE-22, TE-33, and TE-34 will remain as Major Open Space (MOS). As a result of the modifications to the project, approximately 224± acres of the project site will be preserved as open space.

The proposed recreational trail connecting sites A, B, C, and D of the Muir Woods Development shall connect to the Town's existing trail system as shown in Figure 4 (Park, Open Space and Trail map) and Figure 2.1 (University Focal Planning Area Concept Plan) of the adopted Amherst Bicentennial Comprehensive Plan and shall be constructed by the Project Sponsor as part of the Muir Woods project. Each development site of the Muir Woods Development shall complete its portion of the trail system prior to the issuance of any certificate of occupancy by the Town of Amherst Building Department.

~~The Project Sponsor will work with the Town toward achieving the trail connections. An opportunity for a future multi-use trail connection northerly to Nature View Park shall be maintained in accordance with the Town Comprehensive Plan.~~

17. Other Issues (FGEIS Section 2.12)

A. Reclassification of Land

The entire project site is zoned New Community District (NCD), and no changes are proposed to remove the property from the NCD zoning district classification.

The original request by Ciminelli Development Company, Inc. in 2002 was to reclassify 326± acres of land from NCD-ND and NCD-MOS to

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NCD-GC, NCD-RI and NCD-MOS. This request was reviewed and commented on over a five year period. As a result of discussions with the NYS Department of Environmental Conservation during that time, the petitioner amended the original Muir Woods Concept Plan by reducing the overall development from 144 acres to 110 acres in order to minimize wetland impacts. In addition, the various components of the development were altered so that the proposed size of the commercial office/R&D space was reduced from 1.8 million sq. ft. to 700,000 sq. ft. The proposed "village center" originally envisioned was also eliminated. The result is a different land pattern from that initially proposed and one that is not consistent with the originally-requested reclassification districts.

The following additional steps shall be undertaken as part of the Findings for this project:

- The parcels to be reclassified to NCD-GC shall be deed restricted to prohibit the following uses:

    - Automobile sales and service facilities (except vehicles used primarily on the subject property)
    - veterinary clinics or kennels
    - gasoline service station will be prohibited around the existing lake

    On June 21, 2018, a Declaration of Restrictions was recorded at the Erie County Clerk's Office (Liber 11330 of Deeds at Page 8243) for the purpose of prohibiting the above described uses on the portion of the Project Site reclassified to NCD-GC.

- At the Town Board's direction, the Town shall initiate a reclassification of the remainder of wetland areas contained in the original project proposal as Major Open Space (MOS).

B. Land Use

The proposed development will follow the program summarized below as depicted in the original Findings Statement concept plan for the project dated September 2007, as depicted in the Concept Plan for Site B dated August 14, 2015, as the Concept Plan for Site B dated April 2, 2019showing a student housing project, or as the Concept Plan for Site A dated June 23, 2021 showing a mixed-use project:

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Development Site	Land Use	Maximum Developed Area	Development Program
Site A	Mixed-Use	17.42 acres	Maximum of two mixed-use buildings with a maximum height of 60 ft. and maximum combined footprint of 50,000 sq. ft., one-four story climate controlled storage building with a maximum footprint of 32,000 sq. ft.; ~~one four-story multifamily building with a maximum height of 55 ft. (48 units),~~ 49 one-family and two-family attached and detached townhomes ~~(98 units) and 12 standalone apartments with attached garages~~ and maximum height of 325 ft. The overall maximum allowed residential density on Site A is 258 units.
Site B (Option 1)	Class A Corporate office buildings	46 acres	Maximum of 464,850 sq. ft. of office/retail space
Site B (Option 2)	Residential/ Commercial	46 acres	Maximum of 192 residential units on the eastern portion of Site B (approximately 26 acres) and a maximum of 205,000 sq. ft. of office and commercial space on the western portion of Site B (approximately 20 acres)
Site B (Option 3)	Residential - Student housing	46 acres	Maximum of 515 student housing units
Sites C and D	Residential	37 acres	133 lot residential subdivision consisting of detached single-family homes on individual lots pursuant to the Map Cover filed at the Erie County Clerk's Office on July 24, 2018.

General components of the proposed development that will minimize adverse environmental impacts include:

- The maintenance of the remaining approximately 224± acres of the development site as permanent open space.
- Implementing a cluster pattern to maximize open space preservation.

C. Utility Infrastructure - In accordance with the October 17, 2007 letter received from the Erie County Department of Environment & Planning, all proposed sanitary sewer lines to be constructed to service both the residential and commercial portions of the project will be subject to review and approval by the Erie County Health Department. All systems installed or improved for the project will be undertaken by the Project Sponsor at its cost and will be required to meet all Town, County and State requirements.

D. Archaeological/Cultural Resources – One prehistoric archaeological site was discovered on the project site, with a Stage 2 archaeological study determining that the identified prehistoric archaeological site did not meet

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the eligibility criteria for listing on the State or National Register of Historic Places. This finding was confirmed by the NYS Office of Parks, Recreation and Historic Preservation in its letter of October 10, 2001. No mitigation measures are needed for the subject development.

E. Air Quality – Potential impacts to air quality resulting from fugitive dust generated during construction activities will be minimized by the following measures:

- seeding and/or mulching exposed soils as soon as practicable and in accordance with the requirements and applicable regulations promulgated by the NYSDEC
- grading roadways and covering them with gravel during construction, periodically regarding, compacting and replacing gravel as necessary as determined by the Town
- wetting down temporary roads to be constructed on the project site during construction of the build-out of the project as needed throughout the duration of construction activities and as determined by the Town.

F. Condominium Designation - As originally proposed, the residential portion of the project was not to include the development of any units that will be filed as condominiums. The Project Sponsor previously offered to place a deed restriction to this affect as a condition of sale to any future builder, developer or owner of any lot on the subject site. On June 21, 2018, a Declaration of Restrictions was recorded at the Erie County Clerk's Office (Liber 11330 of Deeds at Page 8243) for the purpose of prohibiting the residential uses on the Project Site from utilizing the condominium form of ownership. The Project Sponsor is requesting that the Declaration of Restrictions be modified to allow the condominium form of ownership for the attached residential units to be developed on Site A.

18. Evaluation of Future Actions

In accordance with SEQR regulations, upon application to the Town for development of the project site that requires the submittal of an Environmental Assessment Form, the Town will be required to determine if the potential adverse environmental impacts associated with the development have been adequately identified and evaluated in the DGEIS, FGEIS, and this Amended Findings Statement, and whether the proposed development exceeds any of the thresholds and/or requirements contained in this Findings Statement. This determination must be made by the Town prior to the issuance of any discretionary land use approvals by the Town for the proposed development.

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Certification of Amended Findings
Amendment #51 to the Audubon Development Plan (Z-9-02)

The following scenarios are put forth in Section 617.10(c) & (d) of the SEQR regulations:

A. If the Town determines that the proposed action is in conformance with the conditions and thresholds in the FGEIS or the Amended Findings Statement, then no further environmental review pursuant to SEQR will be required;

B. If the Town determines that the proposed action is adequately addressed in the FGEIS, but is not addressed or not adequately addressed in the Amended Findings Statement, then an amendment to this Amended Findings Statement must be prepared;

C. If the Town determines that the proposed action was not addressed, or was not adequately addressed, in the FGEIS, but it will not result in any significant environmental impacts, then a negative declaration must be prepared; or

D. If the Town determines that the proposed action was not addressed, or was not adequately addressed, in the FGEIS, and the action may have one or more significant adverse environmental impacts, than a supplement to the FGEIS must be prepared.

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Exhibit 17 – Color Copy of Figure 6 of the Town of Amherst Comprehensive Plan titled "Conceptual Land Use Plan"

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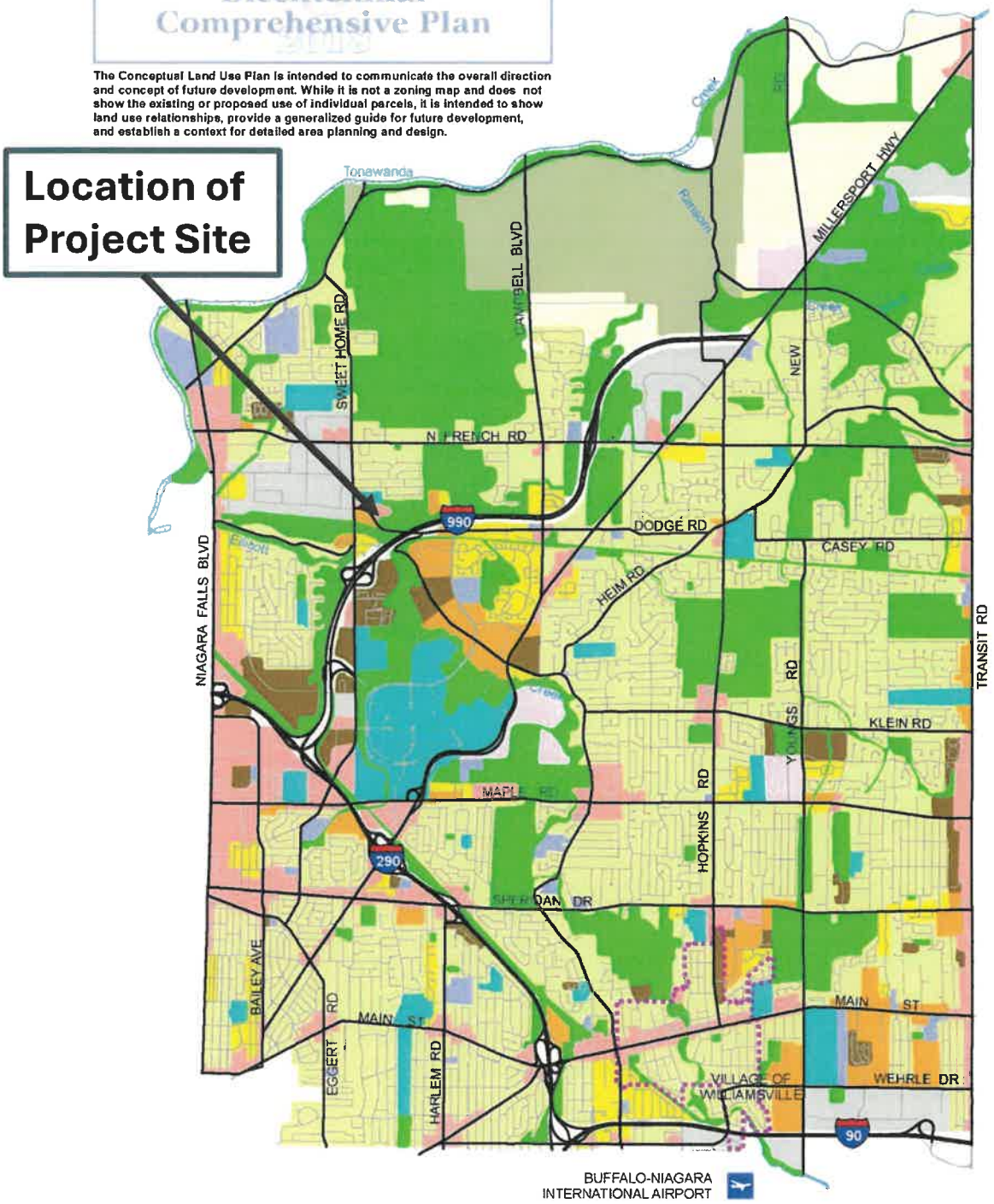
Town of Amherst Bicentennial Comprehensive Plan

The Conceptual Land Use Plan is intended to communicate the overall direction and concept of future development. While it is not a zoning map and does not show the existing or proposed use of individual parcels, it is intended to show land use relationships, provide a generalized guide for future development, and establish a context for detailed area planning and design.

Location of Project Site



Conceptual Land Use Plan

FIGURE 6

- Rural Residential
- Single Family Residential
- Mixed Residential
- Medium Residential
- Commercial / Mixed Use*
- Special Use Center
- Commercial - Office
- Industrial - Office
- Community Facilities
- Educational Campus
- Recreation, Open Space & Greenways
- Agriculture
- Transportation
- Surface Water
- Village of Williamsville Boundary

* See Map Figure 6-A for Additional Designations

SOURCE NOTES:

Original Source Data Provided by the Town of Amherst Information Technology Department, URS Corporation and Wallace Roberts & Todd, LLC

Map Compiled by the Town of Amherst Planning Department

Date: December 2020

N

0 0.25 0.5 0.75 1 1.25 Miles

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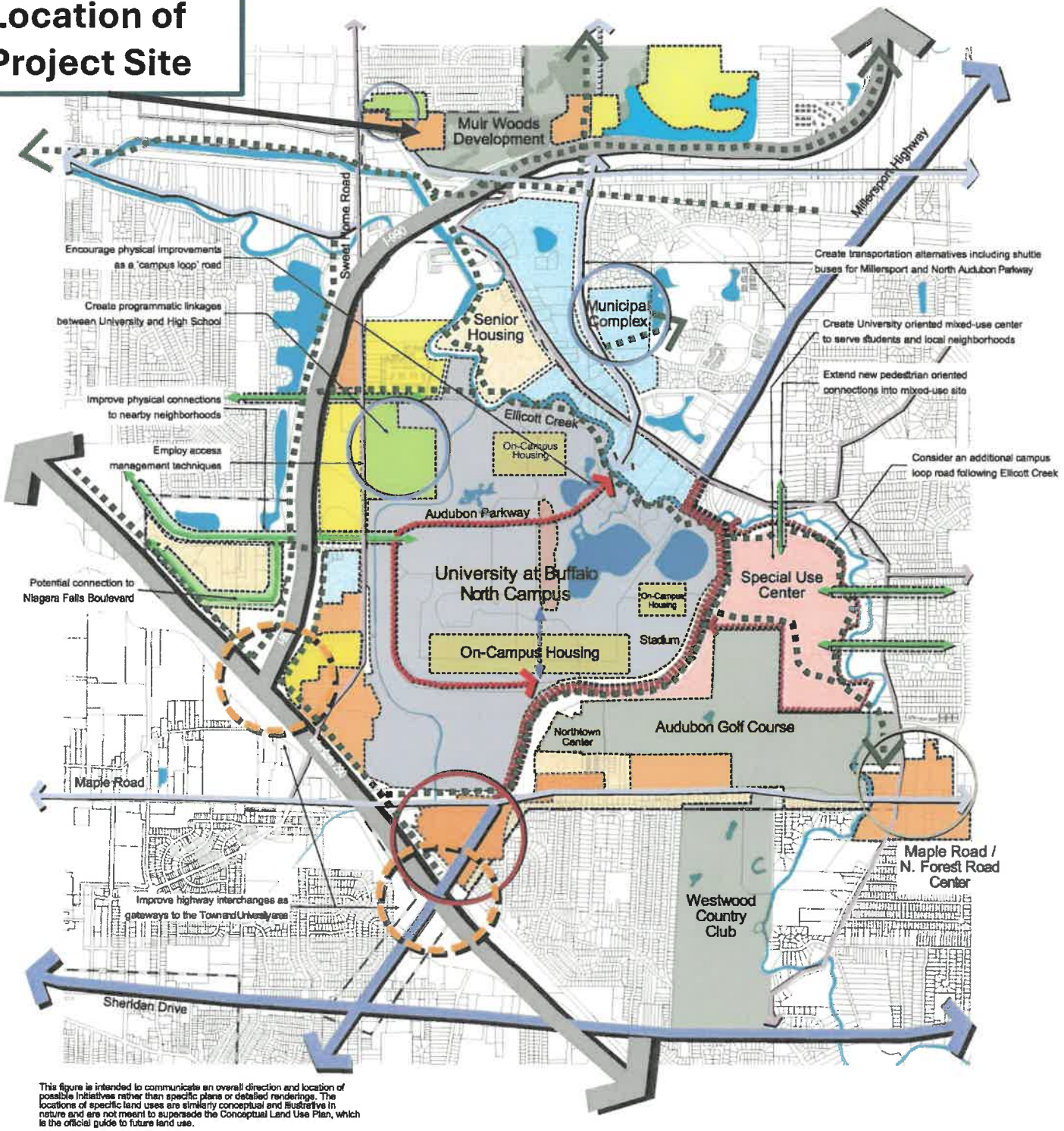
Exhibit 18 – Color Copy of Figure 6 of the Town of Amherst Comprehensive Plan titled "Conceptual Land Use Plan"

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Location of Project Site



UNIVERSITY FOCAL PLANNING AREA - CONCEPT PLAN

Town of Amherst Bicentennial Comprehensive Plan

December 2020 Figure 21

LEGEND

- Expressway
- Major Arterial
- Minor Arterial
- Collector
- Neighborhood Connector
- Campus Loop
- Multi-use Trail
- Natural Trail
- Special Use Center
- Stabilize and maintain existing residential fabric
- Medium Residential / Student Housing
- Commercial / Mixed-Use
- Office / Research
- School / Community Facility
- University at Buffalo
- Recreation / Open Space / Greenways
- Gateway
- Neighborhood Anchor / Community Service
- Regional Commercial Center
- Neighborhood Commercial Center

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Full Environmental Assessment Form
Part 1 - Project and Setting

Prepared By: Sean Hopkins, Esq. Hopkins Sorgi & McCar
PLLC 5500 Main Street, Suite
343 Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsmlegal.com

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Mixed-Use Project - Site A of Muir Woods		
Project Location (describe, and attach a general location map): 50 Dodge Road - Town of Amherst - Erie County		
Brief Description of Proposed Action (include purpose or need): The proposed action consists of an amendment of the Findings Statement issued by the Town of Amherst Town Board ("Town Board") on September 27, 2021 pursuant to the State Environmental Quality Review Act ("SEQRA") to accommodate the updated layout for the proposed mixed-use project to be located at 50 Dodge Road. The layout of the mixed-use project is depicted on the Overall Site Plan [Drawing C-100] prepared by Carmina Wood Design. The residential density of the project has been reduced to 207 units. The action has been defined broadly to include all required discretionary approvals and permits as well as all site improvements including the proposed mixed-use and residential buildings, a climate controlled storage buildings, driveway connections, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, an on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements. The project purpose is to develop Site "A" of overall Muir Woods Project Site as a mixed-use project in a manner consistent with the Overall Site Plan for the project prepared by Carmina Wood Morris DPC prepared by Carmina Wood Design. The project is a Type I action pursuant to SEQRA and the Town Board issued an Amended Findings Statement pursuant to SEQRA on September 27, 2021. The proposed use is consistent with the Town's adopted Comprehensive Plan.		
Name of Applicant/Sponsor: Sawyers Landing LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsmlegal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville, NY	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:

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B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town Board - Amended Findings Statement and Reclassification of NCD Property	June 24, 2024
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Amended Site Plan Approval and Subdivision Approval	To be Determined
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☑Yes ☐No	Building Department - Building Permits; Town of Amherst IDA [PILOT, etc.]	To be determined
e. County agencies ☑Yes ☐No	Highway Work Permit - ECDPW; Water - ECWA	To be determined
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - Amended Wetland Permit; DSCA Approval and SPDES Permit	Amended wetland permit issued on 12/24/20 - DSCA & SPDES - To be determined
h. Federal agencies ☑Yes ☐No	USACE - Amended Wetland Permit	Issued on 02/25/21

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

[**Note**: The Town has an adopted Waterfront Revitalization Program.]

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):

NYS Heritage Areas:West Erie Canal Corridor [Note: The project will not have any impacts on the West Erie Canal Corridor.]

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

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C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Site "A" of the Muir Woods property is zoned New Community District - NCD-ND and NCD-RI pursuant to the Town of Amherst Zoning Map.

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☑ Yes ☐ No
If Yes,
i. What is the proposed new zoning for the site? The Applicant is proposing to reclassify 13.54 acres from NCD-RI to NCD-LC.

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department

d. What parks serve the project site?
Various Town Parks including Nature View Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Mixed-use project consisting of commercial space and various residential unit types.

b. a. Total acreage of the site of the proposed action? 17.424 acres
b. Total acreage to be physically disturbed? 17 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 17.424 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☑ Yes ☐ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
63 residential lots [2 family townhomes for sale]
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? 63 lots
iv. Minimum and maximum proposed lot sizes? Minimum 1,400 sq. ft. Maximum 1,400 sq ft.

e. Will the proposed action be constructed in multiple phases? ☑ Yes ☐ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated 3-4
- Anticipated commencement date of phase 1 (including demolition) Mar month 2025 year
- Anticipated completion date of final phase Mar month 2027 year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases:
The infrastructure necessary for each phase will be installed to ensure compliance with applicable technical standards including those for stormwater management.

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f. Does the project include new residential uses? [**Note**: The 63 one-family units consist of attached townhome units for sale.] ☑ Yes ☐ No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase	63	22		50
At completion of all phases	63	22		100

The build-out of the residential components will be based on market conditions.

g. Does the proposed action include new non-residential construction (including expansions)? ☑ Yes ☐ No

If Yes, There will be 15,000 sq. ft. of commercial space in each of the two mixed-use buildings.

i. Total number of structures 3

ii. Dimensions (in feet) of largest proposed structure: 55' height; 240' width; and 120' length

iii. Approximate extent of building space to be heated or cooled: 56,000 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑ Yes ☐ No

If Yes,

i. Purpose of the impoundment: Storm water management

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☑ Other specify: Storm water runoff from impervious surfaces.

iii. If other than water, identify the type of impounded/contained liquids and their source.

N/A

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: 1.5 acres

v. Dimensions of the proposed dam or impounding structure: N/A height; _____ length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

Impoundment area is an excavation consisting of earth fill.

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No

If Yes:

i .What is the purpose of the excavation or dredging? _____

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards): _____
- Over what duration of time? _____

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

_____

_____

iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No

If yes, describe. _____

_____

v. What is the total area to be dredged or excavated? _____ acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐ Yes ☐ No

ix. Summarize site reclamation goals and plan: _____

_____

_____

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐ Yes ☑ No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): _____

_____

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ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐ Yes ☑ No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐ Yes ☑ No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑ Yes ☐ No
If Yes:

i. Total anticipated water usage/demand per day: 56,524 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑ Yes ☐ No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑ Yes ☐ No
- Is the project site in the existing district? ☑ Yes ☐ No
- Is expansion of the district needed? ☐ Yes ☑ No
- Do existing lines serve the project site? ☑ Yes ☐ No

iii. Will line extension within an existing district be necessary to supply the project? ☐ Yes ☑ No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐ Yes ☐ No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑ Yes ☐ No
If Yes:

i. Total anticipated liquid waste generation per day: 51,385 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑ Yes ☐ No
If Yes:

- Name of wastewater treatment plant to be used: Tonawanda Creek Wastewater Treatment Plant
- Name of district: Town of Amherst Consolidated Sanitary Sewer District
- Does the existing wastewater treatment plant have capacity to serve the project? ☑ Yes ☐ No
- Is the project site in the existing district? ☑ Yes ☐ No
- Is expansion of the district needed? ☐ Yes ☑ No

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- Do existing sewer lines serve the project site? ☑ Yes ☐ No
- Will a line extension within an existing district be necessary to serve the project? ☐ Yes ☑ No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐ Yes ☑ No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

_____

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑ Yes ☐ No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 8 acres (impervious surface)

_____ Square feet or 17.42 acres (parcel size)

ii. Describe types of new point sources. Parking lots and roof tops

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

Stormwater runoff will be conveyed into the on-site stormwater management system to be installed per the applicable stringent stormwater quality and quantity standards of the NYS Department of Environmental Conservation ("NYSDEC")

- If to surface waters, identify receiving water bodies or wetlands: NYSDEC & Federal wetlands on the east portion of the site after on-site stormwater management system.
- Will stormwater runoff flow to adjacent properties? ☐ Yes ☑ No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☐ Yes ☑ No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐ Yes ☑ No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐ Yes ☑ No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐ Yes ☐ No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? [**Note:** An updated Traffic Impact Study prepared by Passero Associates has been submitted based on the current project layout.] ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend ☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

To be determined

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 to 7:00
- Saturday: 8:00 to 6:00
- Sunday: As needed
- Holidays: Not Applicable

ii. During Operations:

- Monday - Friday: 8:00 to 11:00
- Saturday: 8:00 to 11:00
- Sunday: 8:00 to 10:00
- Holidays: 8:00 to 10:00

The hours of operation during "During Operations" as listed above apply to the first floor commercial space in the two mixed-use buildings. The hours are estimates since the tenants that will lease the first floor commercial space including both office and retail tenants have not yet been identified.

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

Construction activities will include the use of construction equipment during daytime hours that will exceed ambient background noise levels. The construction related noise impacts are a temporary unavoidable impact.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe: _____

n. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Lighting will be installed in compliance with the lighting standards contained in the Town of Amherst Zoning Code.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe: _____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities: _____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☑ Yes ☐ No

If Yes:

i. Describe proposed treatment(s):

Potential use of lawn fertilizer and pesticides on maintained portions of property in accordance with applicable standards for application and use of lawn fertilizer and pesticides.

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☑ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: 3 tons per week (unit of time)
- Operation : 3 tons per week (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: wood and metal waste may be recycled by the contract at their discretion
- Operation: Town of Amherst recycling program will be followed

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: approved NYSDEC landfill via contractor or private disposal company
- Operation: approved NYSDEC landfill via private disposal company

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☑ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Wetlands

ii. If mix of uses, generally describe:

There are mixture of uses in the vicinity of the Project Site including residential uses to the north in the Bucyrus Heights Subdivision, an elementary school, apartments and office buildings on Sweet Home Road and permanent open space to the east of Site "A".

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	8.0	+ 8.0
• Forested	0	0	0
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	17.4	0	-17.4
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)			
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace, Landscaping, Pond	0	9.4	+9.4

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c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☑ No

i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☑ Yes ☐ No

If Yes,

i. Identify Facilities:

1. Heritage Heights Elementary School (Sweet Home School District- 2545 Sweet Home Road); 2. Creative Play Learning Center (Private Day Care Facility- 647 Dodge Road); and 3. Four Seasons Child Care & Preschool (Private Day Care Facility- 1639 North French Road).

e. Does the project site contain an existing dam? ☐ Yes ☑ No

If Yes:

i. Dimensions of the dam and impoundment:

- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____

iii. Provide date and summarize results of last inspection:

_____

_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Has the facility been formally closed? ☐ Yes ☐ No

- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

_____

_____

iii. Describe any development constraints due to the prior solid waste activities: _____

_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

_____

_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐ Yes ☑ No

If Yes:

i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐ Yes ☐ No

☐ Yes – Spills Incidents database Provide DEC ID number(s): _____

☐ Yes – Environmental Site Remediation database Provide DEC ID number(s): _____

☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures:_____

_____

_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐ Yes ☑ No

If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

_____

_____

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2.a

v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >5 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____%

c. Predominant soil type(s) present on project site:

Getzville silt loam	94 %
Swormville clay loam	6 %
	%

d. What is the average depth to the water table on the project site? Average: >5 feet

e. Drainage status of project site soils:

☐	Well Drained:	% of site
☐	Moderately Well Drained:	% of site
☑	Poorly Drained	100 % of site

f. Approximate proportion of proposed action site with slopes:

☑	0-10%:	100 % of site
☐	10-15%:	% of site
☐	15% or greater:	% of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name Federal Waters, NYS Wetland Approximate Size NYS Wetland (in a...
- Wetland No. (if regulated by DEC) TE-33

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☑ Yes ☐ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:

i. Name of aquifer: _____

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m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐ Yes ☑ No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐ Yes ☑ No

If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☑ Yes ☐ No

If Yes:
i. Species and listing:
Spiny Softshell - The Project Sponsor does not believe that Spiny Softshell is present on Site A of the Muir Woods property.

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐ Yes ☑ No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐ Yes ☑ No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐ Yes ☑ No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐ Yes ☑ No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐ Yes ☑ No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

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e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☑ Yes ☐ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: Eligible property:Heritage Heights Elementary School

iii. Brief description of attributes on which listing is based:

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No [No impact letter issued by SHPO on October 10, 2001.]

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource: _____

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): _____

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name Sawyers Landing LLC Date June 24, 2024

Signature Sean Hopkins Title Attorney for Project Sponsor

Sean W. Hopkins, Esq.

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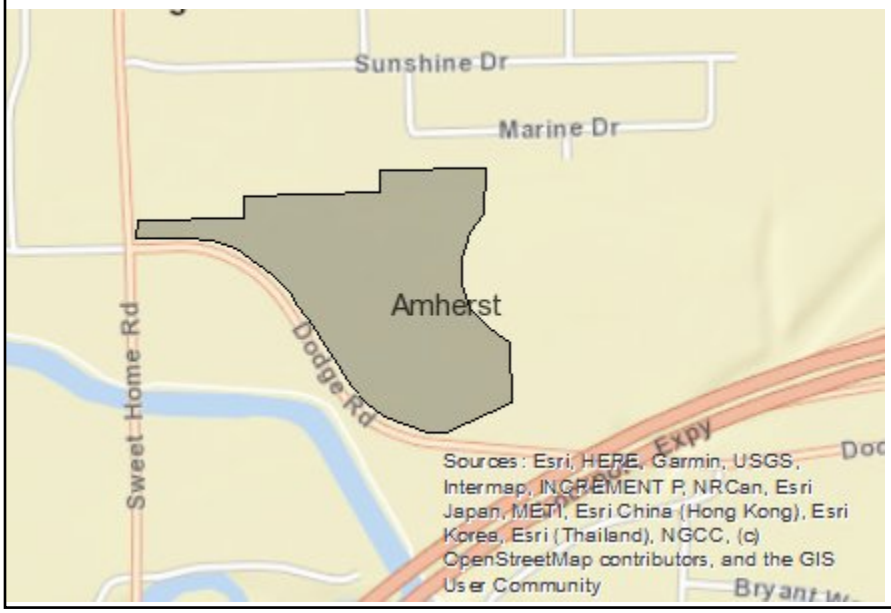
PRINT FORM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters, NYS Wetland
E.2.h.iv [Surface Water Features - Wetlands Size]	NYS Wetland (in acres):34.6
E.2.h.iv [Surface Water Features - DEC Wetlands Number]	TE-33
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No

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E.2.k. [500 Year Floodplain]	Yes
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	Yes
E.2.p. [Rare Plants or Animals - Name]	Spiny Softshell
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Yes - Digital mapping data for archaeological site boundaries are not available. Refer to EAF Workbook.
E.3.e.ii [National or State Register of Historic Places or State Eligible Sites - Name]	Eligible property:Heritage Heights Elementary School
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

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PASSERO
engineering architecture

242 West Main Street, Suite 100
Rochester, NY 14614
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June 17, 2024

Attn: **Daniel J. Ulatowski, AICP // Principal Planner/ZEO**
Town of Amherst Planning Department
5583 Main Street
Williamsville, New York 14221

Re: **Sawyer's Landing Mixed-Use Project, Town of Amherst, NY**
50 Dodge Road [Formerly Portion of 1081 North French Road - Site "A" of Muir Woods Property]
Alternative Parking Plan
Passero Project No: 20243845.0002

Dear Mr. Ulatowski:

This technical letter provides an updated shared parking demand assessment for the proposed mixed-use project (Sawyer's Landing Development) located in the Town of Amherst in connection with the request for the approval of an Alternate Parking Plan per Section 7-1-7A of the Zoning Code.

This letter updates a previous version of the Alternative Parking Plan dated December 18, 2023, and is consistent with the most recently updated plans prepared by Carmina Wood Design to be submitted in connection with a request to Amend the Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA"). Additionally, per Town feedback, this letter performs a shared parking sensitivity analysis of residential parking demands should more residents decide to work from home rather than leave the project site. All supporting materials are included in the attachments. The following tasks were undertaken:

- Estimated parking demands using Town Zoning Code requirements.
- Estimated mixed-use parking demands considering shared parking principles based on nationally accepted methodology developed, in part, by the Urban Land Institute (ULI), Institute of Transportation Engineers (ITE), International Council of Shopping Centers (ICSC), and National Parking Association (NPA).

1. PROJECT DESCRIPTION

The proposed mixed-use project consists of the following:

- **Residential:**
  - **Apartments:** 102 units with a total of 108 bedrooms
  - **2-Unit Attached Townhomes:** 44 units with a total of 88 bedrooms
  - **2-Story Townhomes:** 63 units with a total of 189 bedrooms
  - **Total Units:** 209 units
- **Self-Storage Building:** 105,600 SF
- **Building 1 (South Building) – 12,562 SF:**
  - 3,901 SF restaurant
  - 8,002 SF gym for outside membership
  - 227 SF meter room
  - 432 leasing office
- **Building 2 (North Building) – 15,154 SF:**

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- 2,300 SF office
- 12,854 SF retail

The project will provide 407 total parking spaces split into:

- 94 parallel spaces
- 171 9'x19' spaces
- 63 townhouse garage spaces
- 63 spaces in front of townhouse garage spaces
- 16 garage spaces in 4-story buildings

2. PARKING REQUIREMENTS PER ZONING CODE

Section 7-1-6A of the Zoning Code sets forth the off-street parking requirements for different categories of land uses. Strict application of the parking requirements is depicted in **Table 1**.

Table 1: *Town Code Parking Requirements*

Use Type	Parking Requirement	Size	Result
Residential	2 spaces per unit	209 units	418
Office	1 space per 200 NFA	2,300 GFA (1,955 NFA)	10
Retail	5.5 spaces per 1,000 NFA	12,854 GFA (10,925 NFA)	61
Athletic Club (Gym)	1 per 2 persons of posted maximum capacity	160 persons	80
Restaurant	1 space per 3 seats + 1 space per 100 SF of take-out area	100 seats + 500 SF	38
Self-Storage	1 space per 5,000 SF devoted to storage		22
Total Required Parking			**629**

GFA = gross floor area.
NFA = net floor area.
For single story, multiple tenant building – 85% of GFA. This was applied to the office and retail uses.
Athletic club assumed 50 GSF per person according to the 2020 NYS Building Code.

Strict application of the off-street parking standards results in a parking requirement of 629 spaces. Based on the current supply of 407 spaces, the site has a theoretical deficit of 222 spaces.

3. SHARED PARKING PRINCIPLES

Shared parking studies are conducted to establish the total number of spaces necessary by mixed-use developments to effectively serve expected parking demands. The shared parking concept builds upon the premise that land uses in a mixed-use development often do not share the same peak demand period, so spaces can be shared between the different land uses during different peak periods.

Each land use typically has a peak demand period where it would occupy the maximum number of spaces that the use requires and an off-peak period where a lesser percentage of the maximum spaces would be occupied; be it by time of day, day of week, or even month of the year. This allows for the project to provide fewer spaces than would be required if the land uses on a project site were to be treated separately with individual parking demands. The concept of shared parking is well recognized within the real estate and regulatory community and is proven to work.

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4. SHARED PARKING DEMAND

To estimate the number of parking spaces required for the proposed project, this assessment used the ULI methodology for shared parking. This methodology is utilized by transportation engineers and planners when evaluating the parking demand for a mixed-use project. The ULI *Shared Parking (3rd Edition)* includes state-of-the-art practice methodologies for determining parking demand in these types of projects.

Accompanying the publication is an interactive Shared Parking Calculation Model (Model) that is used to estimate the shared parking demand. The Model requires a user to input the number of units associated with each proposed land use. Within the Model, 32 land uses are identified – some of which are subdivided into more refined categories – with 44 different recommended base parking ratios based on suburban locations with little or no transit. Data contained within the Model is from a combination of ULI surveys and the ITE *Parking Generation Manual*. Outputs consist of a summary table describing the base parking demand and shared parking reduction; a monthly demand comparison; weekday and weekend demand by month; and weekday and weekend demand by hour.

Several important factors to consider when estimating demand for residential uses include the following:

- The residential demand is based on the number of units per bedroom type (e.g., studio efficiency, one-bedroom, two-bedroom, and three or more bedrooms).
- Time of day factors for demand vary throughout a typical 24-hour period for both weekday and weekend periods. Demands may also vary based on suburban or urban settings. Reserved spaces are assumed to have a 100% utilization rate for all hours. Reserved spaces are those that are dedicated to tenants. In this case, the garage spaces, and the surface spaces in front of them qualify as reserved. 128 spaces are assumed to be reserved for residential use only.
- For a typical weekday, residential suburban factors vary from 100% between 12:00 AM and 5:00 AM and fall to as low as 40% from 12:00 PM through 3:00 PM. In an urban setting, the demand varies from 100% between 12:00 AM and 5:00 AM and falls to as low as 50% between 12:00 PM and 2:00 PM.
- For a typical weekend, residential suburban factors range from 100% between 12:00 AM and 6:00 AM and fall to as low as 65% from 1:00 PM through 2:00 PM. In an urban setting, the demand varies from 100% between 12:00 AM and 5:00 AM and falls to as low as 50% at 6:00 PM.

This demand analysis reviewed residential parking accumulations in urban settings for the weekday and weekend to present the outcomes of the site if 50% of future residents remain on-site throughout a typical weekday.

The peak hour demand, respective to weekday, weekend, and seasonal demands, is projected to occur at 8:00 PM on a December weekday. The projected peak hour demand (i.e., the busiest hour of the busiest weekday or weekend of the year) is 403 spaces. The ULI does not have data for Self-Storage; therefore, 22 spaces were conservatively assumed without adjustment during weekdays and weekends. Parking demand accumulations for the peak weekday and weekend periods are presented in **Table 2**.

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Table 2: *Shared Parking Demand*

Land Use	Size	Weekday		Weekend	
		Max Demand	Shared Demand	Max Demand	Shared Demand
Residential	246 units	278	254	289	265
Office	2,300 SF	10	0	2	0
Retail	12,854 SF	47	39	53	32
Athletic Club	8,002 SF	57	36	48	19
Restaurant	3,901 SF	69	52	68	45
Self-Storage	105,600 SF	22	22	22	22
Total Parking Demands		**483**	**403**	**482**	**383**

Weekday shared demand occurs in December at 8:00 PM.
Weekend shared demand occurs in December at 7:00 PM.

It is known that parking demands can be affected by seasonality. The *Shared Parking Model* notes that the site is expected to peak at 100% in December (the holiday season). Monthly adjustments as a percentage of the peak month of December are calculated. **Table 3** depicts the monthly comparison and projected demands on the peak weekday at 8:00 PM.

Table 3: *Monthly Adjustments and Projected Demands*

Month	Shared Parking Monthly Comparison	Projected Demand WITH Self-Storage	Projected Demand WITHOUT Self-Storage
January	94%	379	357
February	94%	378	356
March	95%	382	360
April	93%	374	352
May	93%	376	354
June	93%	374	352
July	91%	368	346
August	92%	371	349
September	93%	375	353
October	94%	379	357
November	94%	380	358
December	100%	403	381
Late December	94%	379	357

Tables 2 and 3 assume that the self-storage facility is 100% parked, which is extremely unlikely to occur during the peak demand period. Outside of December, parking demands can be adequately satisfied by the proposed parking supply. **Table 3** also depicts the parking demands with and without the self-storage facility. The proposed supply will satisfy the project demands at all times of the year.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Please feel free to contact me directly with any questions.

Sincerely,

David Kruse, AICP, PTP
Senior Transportation Planner
dkruse@passero.com • 585-505-6012

Attachments

cc: William Severyn // Severyn Development, Inc.
Sean Hopkins, Esq. // Hopkins Sorgi & McCarthy PLLC
Chris Wood, PE // Carmina Wood Design

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

ATTACHMENTS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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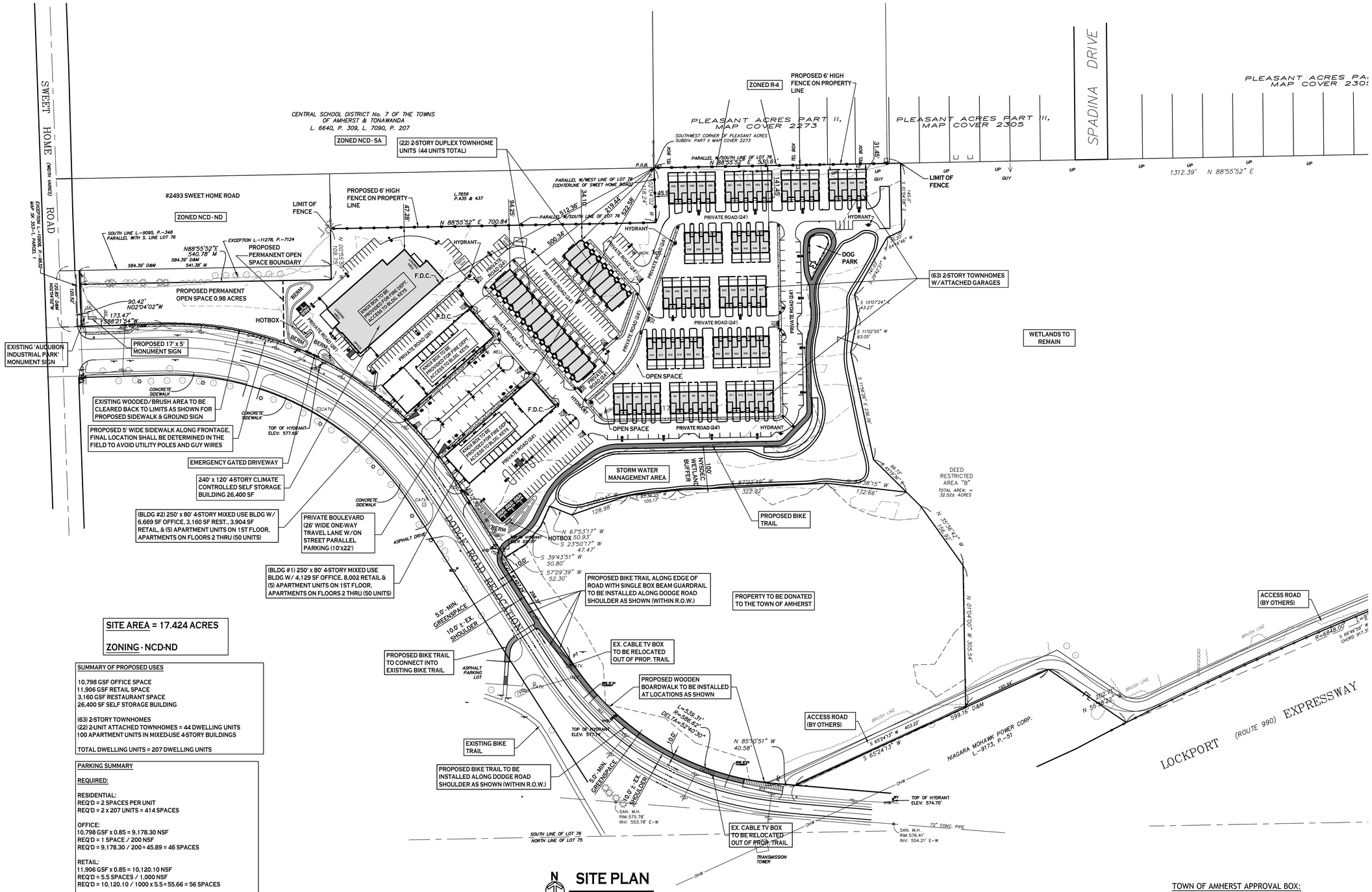

N SITE PLAN

SCALE: 1"=100'

SITE AREA = 17.424 ACRES

ZONING - NCD-ND

SUMMARY OF PROPOSED USES

10,798 GSF OFFICE SPACE
11,906 GSF RETAIL SPACE
3,160 GSF RESTAURANT SPACE
26,400 SF SELF STORAGE BUILDING

(63) 2-STORY TOWNHOMES
(22) 2-UNIT ATTACHED TOWNHOMES = 44 DWELLING UNITS
100 APARTMENT UNITS IN MIXED-USE 4-STORY BUILDINGS

TOTAL DWELLING UNITS = 207 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 207 UNITS = 414 SPACES

OFFICE:
10,798 GSF x 0.85 = 9,178.30 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 9,178.30 / 200 = 45.89 = 46 SPACES

RETAIL:
11,906 GSF x 0.85 = 10,120.10 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 10,120.10 / 1000 x 5.5 = 55.66 = 56 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

SELF STORAGE:
REQ'D = 1 SPACE / 5,000 AREA DEVOTED TO STORAGE
REQ'D = (26,400 SF x 4) / 5,000 SF = 22 SPACES

TOTAL REQ'D = 576 SPACES

PROVIDED:

94 PARALLEL PARKING SPACES
171 9'x19' SPACES
63 TOWNHOUSE GARAGE SPACES
63 SPACES IN FRONT OF TOWNHOUSE GARAGE SPACES
16 GARAGE SPACES IN 4-STORY BLDGS.
407 TOTAL SPACES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 0.98 ACRES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

TOWN OF AMHERST APPROVAL BOX:

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/22/24
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Overall Site Plan

DRAWING NO.

C-100

Project no.: 21.011

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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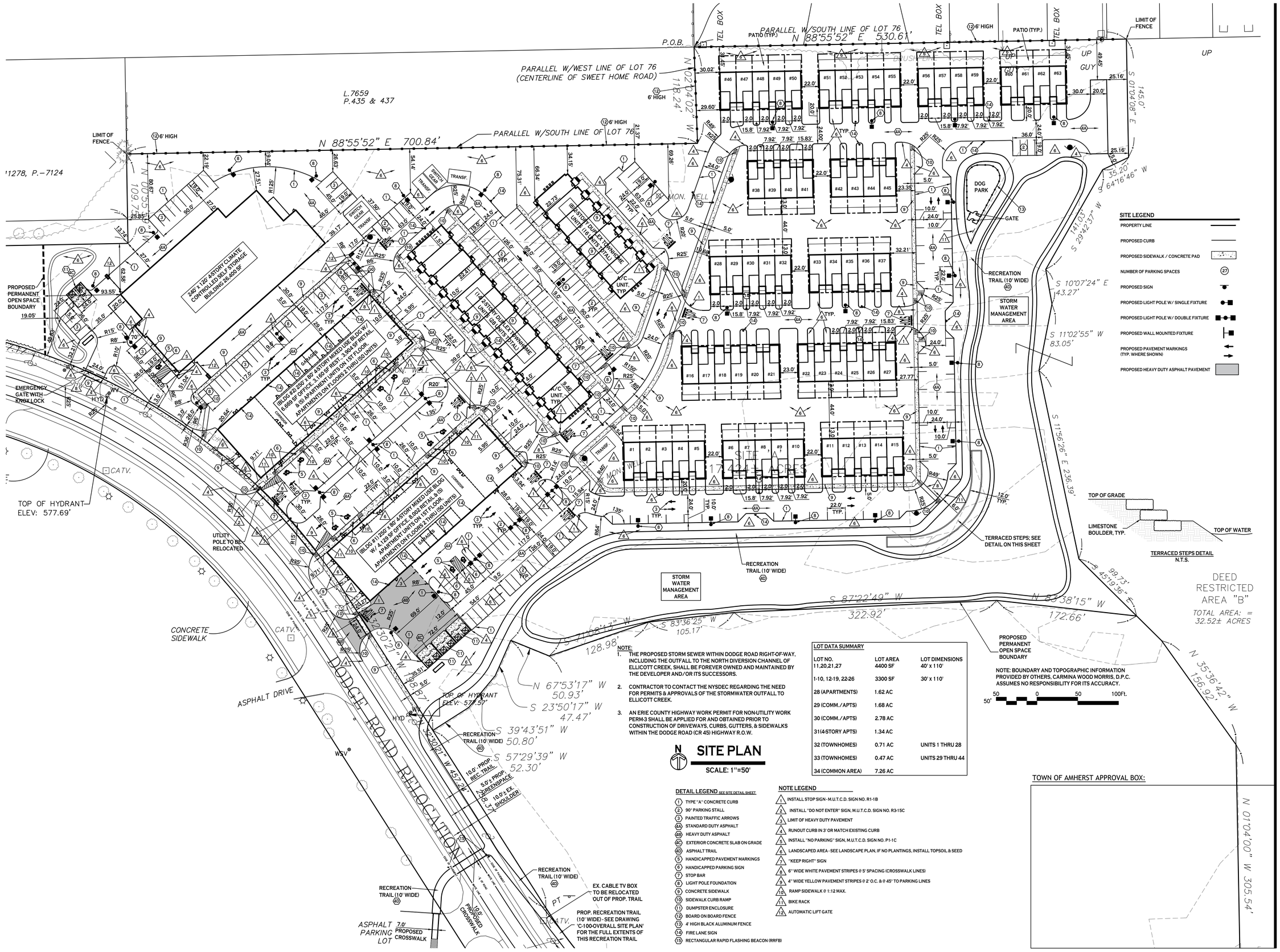


SITE LEGEND

- PROPERTY LINE
- PROPOSED CURB
- PROPOSED SIDEWALK / CONCRETE PAD
- NUMBER OF PARKING SPACES (27)
- PROPOSED SIGN
- PROPOSED LIGHT POLE W/ SINGLE FIXTURE
- PROPOSED LIGHT POLE W/ DOUBLE FIXTURE
- PROPOSED WALL MOUNTED FIXTURE
- PROPOSED PAVEMENT MARKINGS (TYP. WHERE SHOWN)
- PROPOSED HEAVY DUTY ASPHALT PAVEMENT

NOTE:

1. THE PROPOSED STORM SEWER WITHIN DODGE ROAD RIGHT-OF-WAY, INCLUDING THE OUTFALL TO THE NORTH DIVERSION CHANNEL OF ELLICOTT CREEK, SHALL BE FOREVER OWNED AND MAINTAINED BY THE DEVELOPER AND/OR ITS SUCCESSORS.
2. CONTRACTOR TO CONTACT THE NYSDEC REGARDING THE NEED FOR PERMITS & APPROVALS OF THE STORMWATER OUTFALL TO ELLICOTT CREEK.
3. AN ERIE COUNTY HIGHWAY WORK PERMIT FOR NONUTILITY WORK PERM3 SHALL BE APPLIED FOR AND OBTAINED PRIOR TO CONSTRUCTION OF DRIVEWAYS, CURBS, GUTTERS, & SIDEWALKS WITHIN THE DODGE ROAD (CR 45) HIGHWAY R.O.W.

SITE PLAN

SCALE: 1"=50'

LOT DATA SUMMARY

LOT NO.	LOT AREA	LOT DIMENSIONS
11,20,21,27	4400 SF	40' x 110'
1-10, 12-19, 22-26	3300 SF	30' x 110'
28 (APARTMENTS)	1.62 AC	
29 (COMM./APTS)	1.68 AC	
30 (COMM./APTS)	2.78 AC	
31(4-STORY APTS)	1.34 AC	
32 (TOWNHOMES)	0.71 AC	UNITS 1 THRU 28
33 (TOWNHOMES)	0.47 AC	UNITS 29 THRU 44
34 (COMMON AREA)	7.26 AC	

DETAIL LEGEND SEE SITE DETAIL SHEET

1. TYPE "A" CONCRETE CURB
2. 90° PARKING STALL
3. PAINTED TRAFFIC ARROWS
4A. STANDARD DUTY ASPHALT
4B. HEAVY DUTY ASPHALT
4C. EXTERIOR CONCRETE SLAB ON GRADE
4D. ASPHALT TRAIL
5. HANDICAPPED PAVEMENT MARKINGS
6. HANDICAPPED PARKING SIGN
7. STOP BAR
8. LIGHT POLE FOUNDATION
9. CONCRETE SIDEWALK
10. SIDEWALK CURB RAMP
11. DUMPSTER ENCLOSURE
12. BOARD ON BOARD FENCE
13. 4' HIGH BLACK ALUMINUM FENCE
14. FIRE LANE SIGN
15. RECTANGULAR RAPID FLASHING BEACON (RRFB)

NOTE LEGEND

1. INSTALL STOP SIGN - M.U.T.C.D. SIGN NO. R1-1B
2. INSTALL "DO NOT ENTER" SIGN, M.U.T.C.D. SIGN NO. R3-15C
3. LIMIT OF HEAVY DUTY PAVEMENT
4. RUNOUT CURB IN 3' OR MATCH EXISTING CURB
5. INSTALL "NO PARKING" SIGN, M.U.T.C.D. SIGN NO. P1-1C
6. LANDSCAPED AREA - SEE LANDSCAPE PLAN, IF NO PLANTINGS, INSTALL TOPSOIL & SEED
7. "KEEP RIGHT" SIGN
8. 6" WIDE WHITE PAVEMENT STRIPES @ 5' SPACING (CROSSWALK LINES)
9. 4" WIDE YELLOW PAVEMENT STRIPES @ 2' O.C. & @ 45° TO PARKING LINES
10. RAMP SIDEWALK @ 1:12 MAX.
11. BIKE RACK
12. AUTOMATIC LIFT GATE

TOWN OF AMHERST APPROVAL BOX:

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/22/24
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Plan

DRAWING NO.

C-101

Project no.: 21-011

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Copyright © 2020 All rights reserved. The Urban Land Institute, International Council of Shopping Centers, and National Parking Association.

Project: Sawyer's Landing
Description:

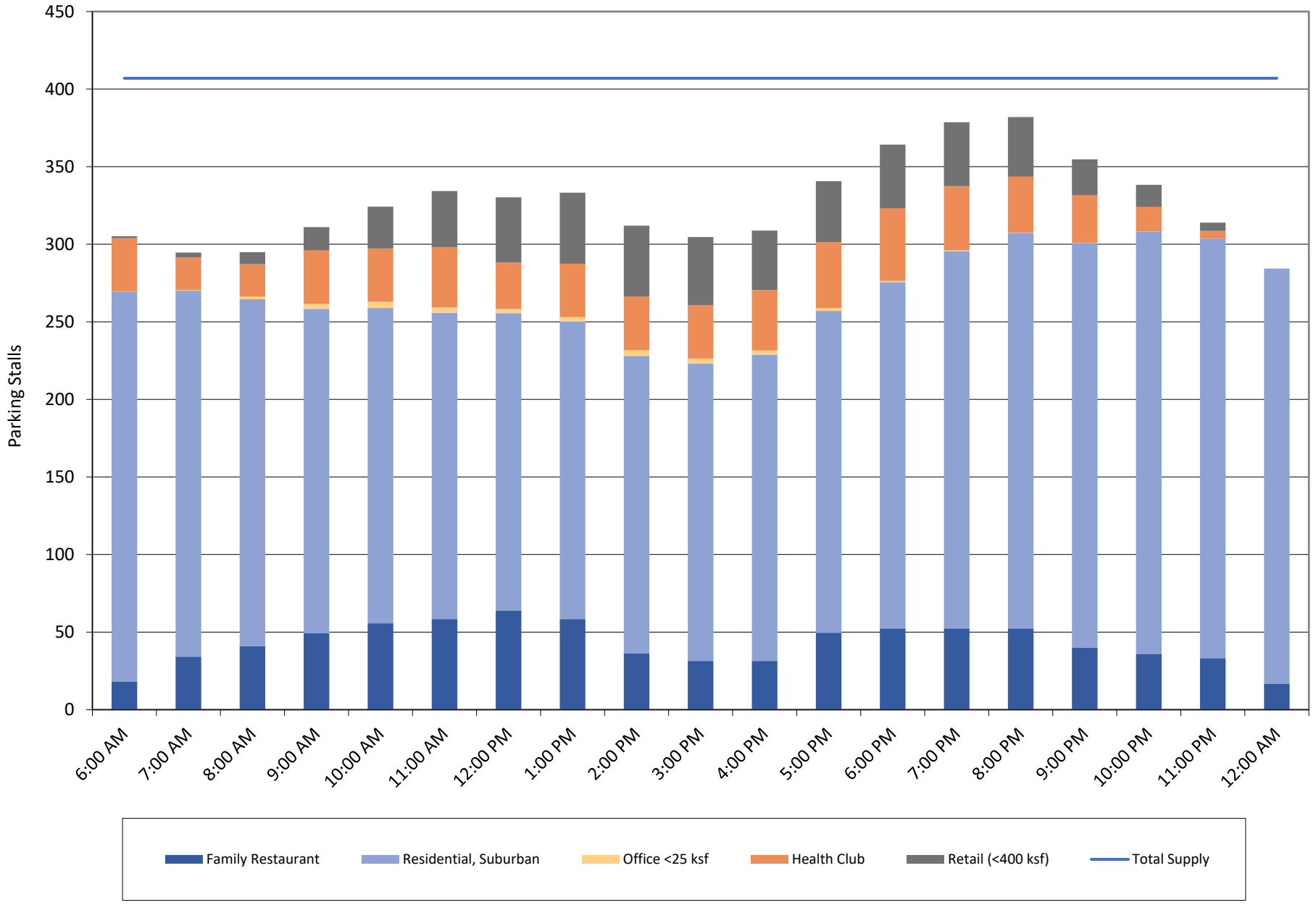
Shared Parking Demand Summary
Peak Month: DECEMBER -- Peak Period: 8 PM, WEEKDAY

Land Use	Project Data		Weekday					Weekend					Weekday			Weekend		
	Quantity	Unit	Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit For Ratio	Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit For Ratio	Peak Hr Adj 8 PM	Peak Mo Adj December	Estimated Parking Demand	Peak Hr Adj 7 PM	Peak Mo Adj December	Estimated Parking Demand
Retail																		
Retail (<400 ksf)	12,854	sf GLA	2.90	100%	95%	2.76	ksf GLA	3.20	100%	95%	3.03	ksf GLA	85%	100%	31	60%	100%	24
Employee			0.70	100%	96%	0.67		0.80	100%	95%	0.76		90%	100%	8	80%	100%	8
Food and Beverage																		
Family Restaurant	3,901	sf GLA	15.25	100%	92%	14.04	ksf GLA	15.00	100%	90%	13.44	ksf GLA	80%	100%	44	70%	100%	37
Employee			2.15	100%	96%	2.06		2.10	100%	95%	1.99		95%	100%	8	95%	100%	8
Entertainment and Institutions																		
Health Club	8,002	sf GLA	6.60	100%	81%	5.34	ksf GLA	5.50	100%	62%	3.40	ksf GLA	80%	100%	34	60%	100%	17
Employee			0.40	100%	96%	0.38		0.25	100%	95%	0.24		50%	100%	2	75%	100%	2
Hotel and Residential																		
Residential, Suburban																0%		
Studio Efficiency	12	units	0.38	100%	100%	0.38	unit	0.38	100%	100%	0.38	unit	80%	100%	4	80%	100%	4
1 Bedroom	106	units	0.41	100%	100%	0.41	unit	0.41	100%	100%	0.41	unit	80%	100%	34	80%	100%	34
2 Bedrooms	91	units	0.74	100%	100%	0.74	unit	0.74	100%	100%	0.74	unit	80%	100%	54	80%	100%	54
3+ Bedrooms		units	1.13	100%	100%	1.13	unit	1.13	100%	100%	1.13	unit	80%	100%	-	80%	100%	-
Reserved	55%	res spaces	0.67	100%	100%	0.67	unit	0.67	100%	100%	0.67	unit	100%	100%	141	100%	100%	141
Visitor	209	units	0.10	100%	100%	0.10	unit	0.15	100%	100%	0.15	unit	100%	100%	21	100%	100%	32
Office																		
Office <25 ksf	2,300	sf GFA	0.30	100%	100%	0.30	ksf GFA	0.03	100%	100%	0.03	ksf GFA	1%	100%	-	0%	100%	-
Reserved		empl	0.00	100%	100%	0.00		0.00	100%	100%	0.00		100%	100%	-	100%	100%	-
Employee			3.50	100%	33%	1.16		0.35	100%	33%	0.12		5%	100%	-	0%	100%	-
Additional Land Uses																		
Self Storage	105,600	sf GFA	0.20	100%	100%	0.20	sf GFA	0.20	100%	100%	0.20	sf GFA	0%	0%	-	0%	0%	-
Employee			0.00	100%	100%	0.00		0.00	100%	100%	0.00		0%	0%	-	0%	0%	-

Customer/Visitor	130	Customer	110
Employee/Resident	111	Employee/Resident	111
Reserved	141	Reserved	141
Total	382	Total	362
Shared Parking Reduction	21%		25%

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Peak Month Daily Parking Demand by Hour (Weekday)



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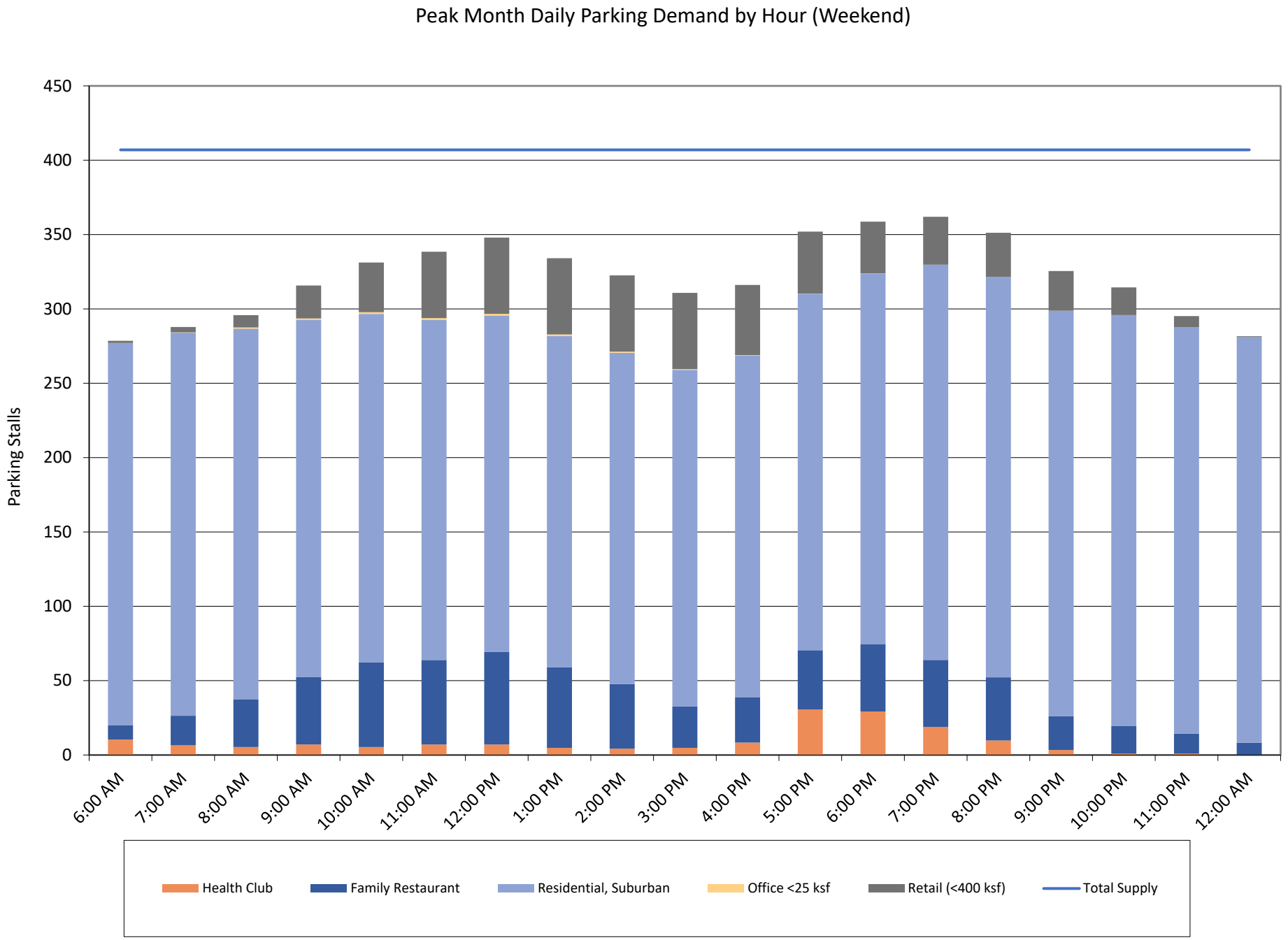

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

CARMINA WOOD
DESIGN

ENGINEER'S REPORT

for

Sawyer's Landing
Dodge & Sweet Home Road
Town of Amherst, Erie County, New York

Prepared for

Sawyer's Landing LLC

c/o Severyn Development
43 Central Ave Suite #300
Lancaster, NY 14086

Prepared by

Carmina Wood Morris, D.P.C.

487 Main Street, Suite 500
Buffalo, NY 14203

Telephone: (716) 842-3165
Fax: (716) 842-0263

February 2021

Revised 6/20/2024

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Table of Contents

Written Engineer's Report

Section 1 - Location & Description
Section 2 - Water Service
Section 3 - Sanitary Sewer Service
Section 4 - Storm Sewer Service

Appendices

Appendix A Sanitary Sewer and Water Demand Calculations

Appendix B Storm Sewer System Drainage Calculations

- Existing Runoff
- Proposed Runoff – East
- Proposed Runoff - West
- Green Infrastructure & Water Quality Calculations

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Section 1 - Location & Description

This project is a development of a 17.4 acre site located on the north side of Dodge Road, west of Sweet Home Road in the Town of Amherst. Both Dodge Road and Sweet Home Road are Erie County roads. Proposed is the construction of a mixed-use development to include (2) 4-story mixed-use buildings with 100 apartment units total, (22) 2-story duplex townhomes with 44-units total, (1) 4-story self-storage building and (63) 2-story townhomes. A bike trail will be constructed on site, this trail will connect to the existing Town of Amherst bike trail on the south side of Dodge Road. The approximately 1 acre westerly portion will remain undisturbed and be deed restricted as permanent open space. The site is currently undeveloped consisting of woods and overgrown brush/grass. NYSDEC and Federal wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The proposed site development area to be disturbed for this project is approximately 16.4 acres.

Section 2 - Water Service

A new 8" D.I. combined service will be tapped off the existing 24" D.I.P. ECWA water main along the north side of Dodge Road at the northern portion of the project site. Following the tap, the 8" D.I. service will continue north into the site where it will enter into a Hot-Box enclosure. Within the Hot-Box enclosure an 8" meter (by ECWA) and an 8" Watts 957 RPZ will be installed. Similarly, a second 8" D.I. combined service will be tapped off the existing 24" ECWA main at the southern portion of the site along Dodge Road. As with the first installation, following the tap, the 8" D.I. service will continue northeast into the site where it will enter a hotbox with the same 8" meter (by ECWA) and 8" Watts 957 RPZ. The services will exit the Hot-Box enclosures and then transition into 8" AWWA C-900 PVC. The services will run throughout the site to provide both domestic and fire service to the proposed buildings. Heat & light for testing will be provided in the areas of the meters & RPZs to prevent freezing. Drainage due to testing or failure will be to the exterior through a drain, drainage will be away from the enclosures. The owner will be responsible for keeping the drainage ports clear of snow and debris. A total of 5 (five) proposed fire hydrants shall be installed around the site to provide fire protection coverage. There are no existing water services to this site, and therefore none to be killed/abandoned per ECWA requirements.

Domestic Summary:

Peak Operating Demand:	141.31 gpm
Water Main:	24" on Dodge Road
Static Pressure:	105 psi (per ECWA, 98 psi residual)
Friction Loss:	0.0 psi
Loss through meter/RPZ:	13.0 psi
Elevation Loss:	0.0 psi
Pressure after RPZ & Meter:	92 psi
Pressure at 4th floor:	76.8 psi

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Repairs to all devices will be made during off hours, dual backflow preventers are not required. The site is not located in a 100-year flood plain. Disinfection of the water service following installation will be continuous feed, according to AWWA C-651, latest revision.

Section 3 - Sanitary Sewer Service

The proposed sanitary sewer service will connect to the existing 60" sanitary sewer (peanut line) located on the south side of Dodge Road. In order to connect to this sewer, a public sewer extension along the south side of Dodge Road will be required. This public extension will consist of a total of 643 LF of 8" SDR-35 PVC at a minimum slope of 0.4%.

The proposed private on-site sewer mains will consist of 8" SDR-35 PVC at a minimum slope of 0.4%. Each of the proposed commercial buildings and apartment buildings will have a 6" SDR-35 PVC sanitary sewer lateral at a minimum slope of 1.0% tied into the private main. The townhouse units will have a 4" SDR-35 PVC sanitary sewer lateral at a minimum slope of 1.0% tied into the private main. The 8" private main will tie into the proposed public extension on the south side of Dodge Road across from the SE portion of the project site.

A downstream sanitary sewer capacity analysis (DSCA) is required to be prepared for the site given the flows will exceed 2,500 gpd. This report is included in Appendix A.

Design Parameters

Housing: use 220/gpd/unit
Q = 207 units x 220 gpd/unit = 45,540 gpd

Commercial: use 0.1 gpd/sf
Q = 11,906 sf x 0.1 gpd/sf = 1,190.6 gpd

Office: use 0.1 gpd/sf
Q = 10,798 sf x 0.1 gpd/sf = 1,079.8 gpd

Self Storage: use 15 gpd/employee
Q = 5 empoyees x 15 gpd = 75 gpd

Restaurant: use 35 gpd/seat
Q = 100 seats x 35 gpd/seat = 3,500 gpd

Total = 51,385 gpd (average) using a 3.97 PF (see appendix A for calc)

Total = 51,385 x 3.97 = 203,902 gpd = 141.60 gpm = 0.315 cfs

The hydraulic loading rates per "Design Standard for Wastewater Treatment Works" 2014, NYSDEC. See attached Sanitary Sewer & Water Calculations for additional information.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

I/I Mitigation:

Peak Flow = 141.60 gpm
4:1 offset = 141.60 x 4 = 566.39 gpm
Mitigation Credit = $250/gpm
I/I Mitigation = 566.39 gpm x $250/gpm = $141,598.58
Refer to Appendix A for additional information.

Section 4 - Storm Sewer Service

The existing site is generally flat and slopes west with portions sloping east. The portion that slopes west settles in a low area and once the capacity of that area is exceeded, sheet flow continues towards Sweet Home Road and is collected by an existing 12" pipe on the north side of Dodge Road. This pipe flows to the Erie County system on Sweet Home Road. The portion that flows east flows to the offsite wetlands.

Currently Dodge Road does not have a drainage system. A series of catch basins and pipes will be installed in the green area on the north side of Dodge Road to collect the road drainage. The west portion of this system will connect to the existing closed drainage system on Sweet Home Road. The east portion will discharge to the Ellicott Creek diversion channel using and existing discharge point. This new system will also convey the proposed discharge from the site as described below.

The proposed onsite storm sewer system consists of smooth interior and perforated HDPE pipes connected by a series of catch basins, manholes and yard drains. The site is split into a storm water management area on the east and west sides.

<u>West Side</u>

The west side of the site has (2) bioretention areas which portions of the westerly area will discharge to. These bioretention areas along with the remainder of the west portion of the site will discharge to the underground detention area. Note that the yard drains installed along the north property line discharge to the underground detention area. An outlet structure in the SW portion of this area will control runoff to at or below existing runoff flow rates. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Sweet Home Road system.

<u>Underground Detention Summary</u>

(286) ADS Stormtech SC-740 chambers
Top of stone elev. = 573.00
Top of chamber elev. = 572.50
Bottom of chamber elev. = 570.00
Bottom of stone elev. = 569.50
Total storage = 18,574 CF

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Event	Ex. Discharge	Pro. Discharge	Elev.
1 yr	0.87 cfs	0.33 cfs	570.29
2 yr	1.34 cfs	0.68 cfs	570.46
5 yr	2.14 cfs	1.05 cfs	570.79
10 yr	2.94 cfs	1.28 cfs	571.13
25 yr	4.34 cfs	1.61 cfs	571.73
50 yr	5.69 cfs	3.61 cfs	572.23
100 yr	7.33 cfs	4.83 cfs	572.92

East Side

The east side of the site has a bioretention area and wet detention pond which this portion of the site discharges to. The NE portion of the site discharges to a forebay which spills into the main micropool portion of the wet detention basin. The SE portion of the site discharges to the bioretention area which also spills into the main micropool portion of the site. An outlet control structure is located in the SE portion of the micropool and controls the discharge from this storm water management area. Spillways are also located on the east portion of the micropool which will discharge to the existing wetlands to the east in order to not cut off all flow from this site into this area. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Ellicott Creek diversion channel.

The bioretention areas and wet detention pond for the project area are sized to provide 100% of the required Runoff Reduction Volume (RRv) and Water Quality Volume (WQv) treatment for the overall site in accordance with Chapter 4 of the NYSDEC Stormwater design manual. The soils in the vicinity of the bioretention areas are mainly USDA hydrologic group 'D' and therefore the system will be installed with underdrains per NYSDEC requirements. The bioretention areas will consist of 6" and 8" perforated HDPE underdrains in 12" of drainage gravel, followed by filter fabric and 18" minimum of planting soil. Overflow yard drains will be installed to allow 6" maximum temporary ponding for RRv treatment. The east bioretention area (area #3) spills into the wet detention pond and the underdrain pipe ties together with the pond discharge and flows to Dodge Road. The east bioretention areas (areas #1 & #2) have a catch basin to act as the spillway and this catch basin and the underdrain pipes discharge to the underground detention area.

Storm Water Management Area Summary

Forebay
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 569.00

Micropool
Top of basin elev. = 576.80
Permanent water elev. = 575.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Aquatic bench elev. = 574.50
Bottom of basin elev. = 563.00

Overall Storm Water Summary

WQv Provided = 152,678 cf (pond)
WQv Provided = 6,948 cf (bioretention)
WQv Provided = 159,626 cf (total)

Bioretention Area Summary:

Area	Rim Elev.	Bottom Elev.	Area
1	574.50	574.00	2,300 sf
2	574.50	574.00	2,600 sf
3	575.50	575.00	11,000 sf
		Total Provided =	15,900 sf

Water Quality Summary:
WQv req'd = 28,804 cf (0.661 ac-ft)
RRv min. req'd = 5,518 cf (0.127 ac-ft)
RRv provided = 8,662 cf (0.199 ac-ft)
WQv provided = 159,626 cf (3.665 ac-ft)
Total RRv + WQv provided = 8,662 cf + 159,626 cf = 168,287 cf (3.868 ac-ft)

Detention: Comparison of the existing 1-year vs. the proposed 1-year runoff
Comparison of the existing 10-year vs. the proposed 10-year runoff
Comparison of the existing 100-year vs. the proposed 100-year runoff

Storm pipes: 10-year storm

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Appendix A

Sanitary Sewer and Water Demand Calculations

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 24-4034 Date: 6/20/2024
Project Name: Muir Woods
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer Demand Calcs
Sheet: 1 of 1

Sanitary Sewage Demand Calculations:

West - Mixed Use Buildings

0.1	gal/d/sf	x	11,906	sf	=	1,191	gpd		*use 0.1 gallons per day per square foot (Retail
35.0	gal/d/seat	x	100	seats	=	3,500	gpd		*use 35 gallons per day per seat (fast food)
0.1	gal/d/sf	x	10,798	sf	=	1,080	gpd		*use 0.1 gallons per day per square foot (Office
15	gal/d/employee	x	5	employees		75	gpd		*use 15 gallons per employee (Self-Storage)

West - Apartments

220	gal/d/unit	x	100	units	=	22,000	gpd	*use 220 gallons per day per 2-bedroom unit

North - Apartments and Duplex Buildings

220	gal/d/unit	x	63	units	=	13,860	gpd	*use 220 gallons per day per 2-bedroom unit
220	gal/d/unit	x	44	units	=	9,680	gpd	*use 220 gallons per day per 2-bedroom unit

Total Site Sanitary Demand:	=	51,385	gpd
	=	0.051	MGD
Find Peak Sanitary Demand:	=	0.079	cfs

Peaking Factor based on Population:

Total demand: 51,385 gpd / 100 gpcd = 514 per capita

Population (P) = 514 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.97

Peak Sanitary Demand	=	51,385	x	3.97	=	203,902	gpd
					=	0.204	MGD
					=	0.315	cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow	=	203,902	gpd	=	141.60	gpm		
4:1 offset flow per NYSDEC requirements	=	141.6	x	4	=	566.39	gpm req'd	
Mitigation Credit	=	$250	/ gpm					
Mitigation Agreement Amount	**=**	**$141,598.58**						

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 24-4034 Date: 6/20/2024
Project Name: Sawyer's Landing (Muir Woods)
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer & Water Demand Calcs
Sheet: 2 of 2

Water Demand Calculations (domestic):

Site

51,385 gpd x 1.1 = 56,524 gpd *use 110% of sewage demand

*use 1.8 peaking factor and assume a 12 hour day

56,524 gpm x 1day/12hr x 1hr/60min = 78.50 gpm

78.50 gpm x 1.8 = 141.31 gpm Q_{peak}

Headlosses:

Q_{peak} = 141.31 gpm
Pipe = 8 inch Ductile Iron C = 140
Length = 33 LF (approx. distance from tap to RPZ)

$$H_L = \frac{10.44\, L\, Q^{1.85}}{C^{1.85}\, D^{4.866}} = \frac{10.44(33)(141.31)^{1.85}}{(140)^{1.85}\,(8)^{4.866}} = 0.01 \text{ ft} = 0.01 \text{ psi}$$

Δ elev = 0 ft = 0.00 psi
Loss through meter = 1 psi
Loss through RPZ = 12 psi
Total Losses = 13.0 psi
Static Pressure = 105 psi (per ECWA - residual pressure 98 psi)
Residual Pressure Following RPZ = 105 - 13.0 = 92.0 psi (available after rpz & meter)

Headlosses to furthest hydrant

Q_{peak} = 141.31 gpm
Pipe = 8 inch C-900 PVC C = 140
Length = 1,293 LF (approx. distance from RPZ to hydrant)

$$H_L = \frac{10.44\, L\, Q^{1.85}}{C^{1.85}\, D^{4.866}} = \frac{10.44(1{,}293)(141.31)^{1.85}}{(140)^{1.85}\,(8)^{4.866}} = 0.55 \text{ ft} = 0.24 \text{ psi}$$

Δ elev = 1.1 ft = 0.48 psi
Total Losses = 0.7 psi
Static Pressure = 92 psi (per ECWA - residual pressure 98 psi)
Residual Pressure Following hydrant = 92.0 - 0.7 = 91.3 psi (available after furthest hydrant)

Residual Pressure 30" above 4th Floor
Δ elev = 35 ft = 15.16 psi
Residual Pressure 30" above 4th Floor = 92.0 - 15.16 = 76.8 psi

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Downstream Sewer Capacity Analysis

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

CARMINAWOOD
DESIGN

DOWNSTREAM SANITARY SEWER CAPACITY ANALYSIS REPORT

for

Muir Woods Site

Sweet Home & Dodge Road
Amherst, Erie County, New York

Prepared for

Sawyer's Landing, LLC

c/o Severyn Development
43 Central Ave Suite #300
Lancaster, New York 14086

Prepared by

Carmina Wood Design

487 Main Street, Suite 500
Buffalo, NY 14203

Telephone: (716) 842-3165
Fax: (716) 842-0263

REVISED
June 2024

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Project Description

This new site development project will consist of the construction of apartment buildings, duplexes, office, restaurant, and retail space as well as self-storage. Construction will also include on-site utility, landscaping improvements, and associated roads and parking. The overall acreage of the site is 28.47 acres. The site is located at Sweet Home Road and Dodge Road on a western portion of parcel 40.08-3-13.1 in the Town of Amherst and is zoned NCD-SA.

The proposed sewer for this project will leave the site via a privately owned sanitary service and cross Dodge Road to connect to a proposed 8" publicly owned sewer extension. The public line will then tie in to the existing 60" RCP Peanut line along Dodge Road. Sewage will then be conveyed west and then eventually north through the 84" West Side Interceptor to the Town of Amherst Wastewater Treatment Facility #16. The proposed public extension from the tie in to the existing 60" RCP line will be owned and maintained by the Town of Amherst.

Node 1 – Dodge Road (60"):

Existing Peak Flow measured (wet weather event)	=	40.602 cfs (21.851 mgd)*
Proposed Muir Woods Peak Flow	=	0.315 cfs **
Proposed Peak Flow	=	40.917 cfs

Theoretical capacity of existing 60" RCP pipe @ 0.07% = 81.366 cfs

Conclusion: The proposed peak flow is less than the capacity of the 60" pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 1 of the downstream monitoring points during the rain events monitored.

Node 2 – North Ellicott Creek Rd (60")

Existing Peak Flow measured (wet weather event)	=	99.524 cfs (53.561 mgd)*
Proposed Muir Woods Peak Flow	=	0.315 cfs **
Proposed Peak Flow	=	99.839 cfs

Theoretical capacity of existing 60" pipe = 82.873 cfs (44.60 mgd)

Conclusion: Current flows the day following the 1.21" rainfall event exceeded the capacity of the existing 60" sewer pipe, but at no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole. In addition, Sanitary Sewer Overflow (SSO) did not occur. I/I mitigation shall be required for the contribution proposed for this project.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Node 3 – Sweet Home (66")

Existing Peak Flow measured (overall)	=	69.058 cfs (39.601 mgd)*
Proposed Muir Woods Peak Flow	=	0.315cfs **
Proposed Peak Flow	=	69.373 cfs

Capacity of existing 66" pipe = 106.657 cfs (57.40 mgd)

Conclusion: The proposed peak flow is less than the capacity of the 66" pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 3 of the downstream monitoring points during the rain events monitored.

Foot Notes:

Pipe slopes, sizes and materials provided by Town of Amherst Engineering Department Sewer Maintenance Division

* Converted from measurements in TECSmith report dated 8/12/20

** See Sanitary Sewage Demand Calculations

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Location Map

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Muir Woods Site - Sweet Home and Dodge Rd

8/18/2020, 8:51:26 AM

Parcels

Municipal Boundaries

1:9,028

0 300 600 1,200 ft

0 90 180 360 m

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS,

USGS TNM – National Hydrography Dataset. Data Refreshed July, 2020. | NYS GIS Program Office | Telephone: (518) 242-5029 | Email: its.sm.SAM.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Sanitary Demand Calculations

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 24-4034 Date: 6/20/2024
Project Name: Muir Woods
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer Demand Calcs
Sheet: 1 of 1

Sanitary Sewage Demand Calculations:

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	=	0.051	MGD
Find Peak Sanitary Demand:	=	0.079	cfs

Peaking Factor based on Population:

Total demand: 51,385 gpd / 100 gpcd = 514 per capita

Population (P) = 514 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.97

Peak Sanitary Demand	=	51,385	x	3.97	=	203,902	gpd
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Mitigation Credit	=	$250	/ gpm					
Mitigation Agreement Amount	=	**$141,598.58**						

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

TECSmith Monitoring Report

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

Date: August 12, 2020

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For: Muir Woods Capacity Analysis

Christopher Wood
487 Main Street, Suite 600
Buffalo, New York 14203
P: (716) 842-3165
F: (716) 842-0263

Project Name: Muir Woods Capacity Analysis

Flow Monitoring Period: July 8, 2020 to August 5, 2020

Rain Events (> 0.5-inches) Monitored: July 11 (1.21”), July 16 (0.86”), and August (0.90”)

Number of Monitoring Nodes: Three (3) downstream manholes

Node Locations and Descriptions:

- Node 1 Dodge Rd 60" (60")
- Node 2 North Ellicott Creek Rd. (60")
- Node 3 Sweethome 66 (66")

Summary Conclusion:

Based on the data presented in this report, specifically the flow depth measurements recorded (see graphs below)

- At no time did the flow depth exceed pipe diameter at Node 1 and Node3 of the downstream monitoring points during the rain events monitored.
- One time the flow depth exceed pipe diameter at Node 2 of the downstream monitoring points during the rain events monitored.
- At no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

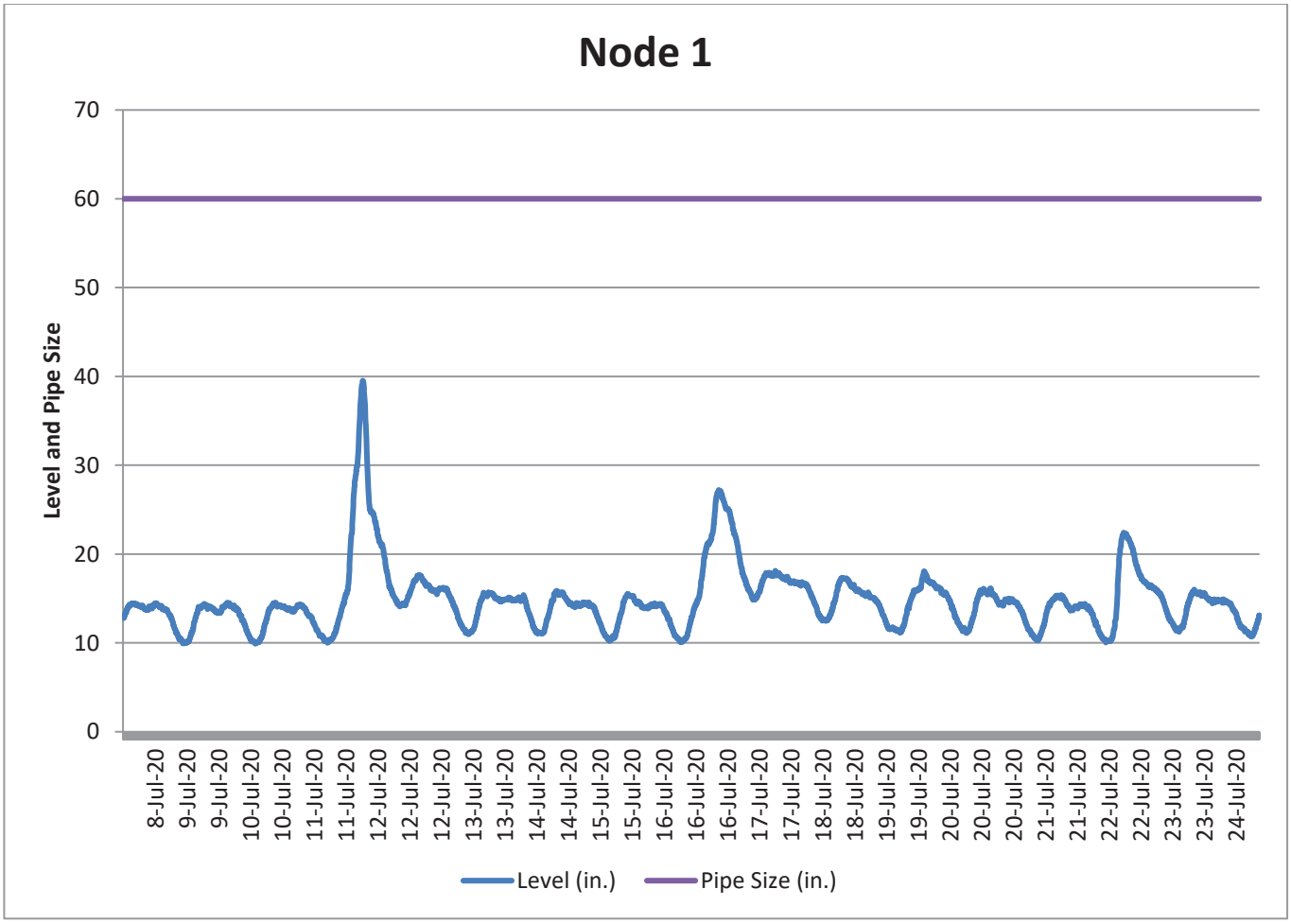
TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

Depth of Flow Capacity Summary:

Depth of flow capacity is based on diameter of pipe. See graphs below.

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 1.

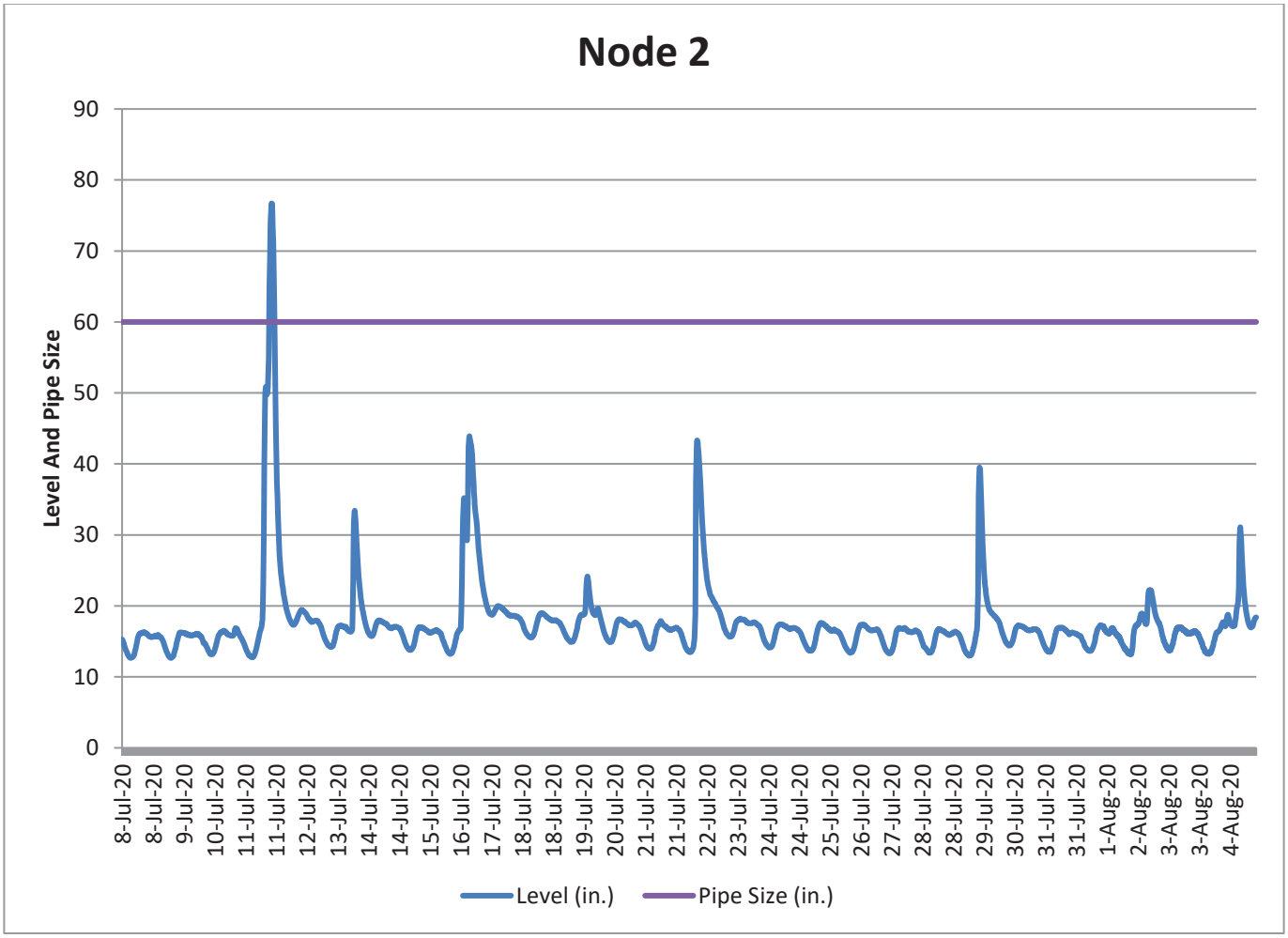


Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

- One time during the monitoring period did depth of flow exceed pipe diameter at Node 2.

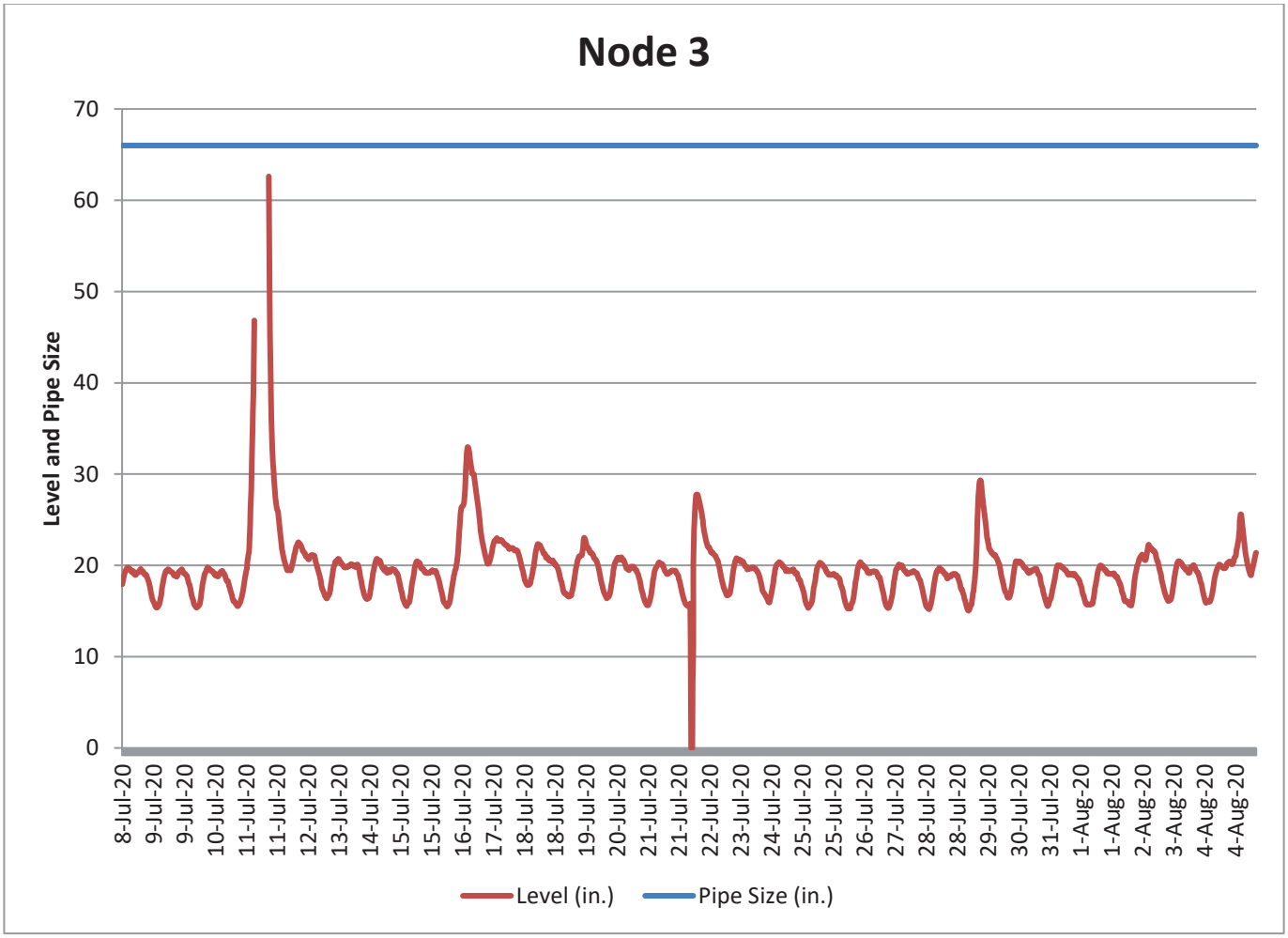


Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 3.



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Date	Node 1			Node 2			Node 3			Rain₂
	Dodge Rd 60" (60")			North Ellicott Creek Rd. (60")			Sweethome 66 (66")			
	FLOW (GAL x 1,000)	PEAK FLOW (MGD)	PEAK LEVEL (IN)	FLOW (GAL x 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	FLOW (GAL x 1	PEAK FLOW (MDG)	PEAK LEVEL (IN)	(inches)
7/8/2020	4186.283	8.161	14.473	7265.409	8.598	16.319	4800986323.2	8.025	19.770	***0***
7/9/2020	6195.964	8.253	14.556	7387.504	8.661	16.273	6645115872.8	8.044	19.590	***0***
7/10/2020	6231.790	8.143	14.521	7625.321	9.362	16.873	6667623530.3	8.079	19.790	***0***
7/11/2020	10033.769	21.851	39.526	20780.607	53.561	76.701	10540796680.3	28.096	66.000	***1.21***
7/12/2020	9184.078	14.374	22.474	11292.759	17.205	23.420	9306202243.7	13.750	25.810	***0***
7/13/2020	7070.585	9.115	15.714	11243.925	29.525	33.420	7609650153.8	9.108	20.730	***0.47***
7/14/2020	6974.494	9.101	15.869	9685.896	13.288	20.168	7274548275.2	9.280	20.720	***0***
7/15/2020	6591.385	8.845	15.512	8174.879	9.503	17.013	6975378581.5	8.831	20.460	***0***
7/16/2020	9916.241	20.532	27.213	18886.012	44.070	43.892	12067803314.2	39.601	32.990	***0.86***
7/17/2020	10096.644	16.639	23.493	12451.728	18.137	24.043	10307997546.4	14.224	26.250	***0.03***
7/18/2020	8256.593	10.757	17.307	9766.538	11.556	18.960	8664937727.1	10.772	22.350	***0***
7/19/2020	7589.558	11.382	18.060	10166.964	17.245	24.128	8331695207.5	24.048	23.030	***0.21***
7/20/2020	7269.757	9.235	16.144	8853.911	10.160	18.118	7730113857.4	9.669	20.890	***0***
7/21/2020	6681.658	8.895	15.365	8179.097	9.991	17.880	1603593925.8	9.197	20.330	***0***
7/22/2020	8633.887	15.390	22.402	15950.443	42.105	43.300	16326027301.0	29.736	27.790	***0.42***
7/23/2020	7327.211	9.216	16.027	9664.310	11.130	18.508	6916249204.1	19.172	20.800	***0***
7/24/2020	6764.464	8.779	15.317	8434.117	9.760	17.405	8296938032.2	15.723	20.360	***0***
7/25/2020	6426.122	8.861	15.407	8159.333	9.969	17.608	6871634377.4	12.359	20.320	***0***
7/26/2020	6409.255	8.667	15.297	8027.060	9.774	17.372	6816880470.0	9.106	20.360	***0***
7/27/2020	6487.339	8.269	15.107	7871.954	9.244	16.902	6854655651.9	8.336	20.100	***0.03***
7/28/2020	6298.427	8.016	14.780	7696.223	9.134	16.757	6692447010.5	8.080	19.740	***0.01***
7/29/2020	8340.302	16.584	23.592	12134.192	36.728	39.530	9170179156.5	20.222	29.310	***0.18***
7/30/2020	6969.955	8.785	15.769	8383.294	9.650	17.268	7523641190.2	9.272	20.460	***0***
7/31/2020	6450.443	8.415	15.050	7762.583	9.287	16.964	7145517425.5	9.079	20.020	***0***
8/1/2020	6190.340	8.162	14.979	7900.808	9.762	17.305	6954528215.3	13.188	20.010	***0***
8/2/2020	7093.727	10.270	17.033	9801.968	15.922	22.240	7827565960.7	17.585	22.270	***0.29***
8/3/2020	6767.967	8.538	15.346	8117.853	9.663	17.172	7374180322.3	9.104	20.460	***0***
8/4/2020	6796.062	10.365	17.180	8920.731	24.649	28.896	7717920498.0	19.489	24.920	***0.9***
8/5/2020	4464.403	13.072	20.203	5583.196	26.407	31.097	3896577334.0	14.011	25.600	***0***
---	---	---	---	---	---	---	---	---	---	***4.61***

	MGD	CFS		MGD	CFS		MGD	CFS
Wet	21.851	33.808	Wet	53.561	82.871	Wet	39.601	61.271
Overall	16.639	25.744	Overall	42.105	65.146	Overall	29.736	46.008

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

(T) Amherst Engineering Department Sewer Maintenance Division Downstream Routing Map

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Town of Amherst Engineering Department
Sewer Maintenance Division

Main Sanitary Sewer Interceptors

DOWNSTREAM SEWER

AMHERST PEANUT LINE & WEST SIDE INTERCEPTOR

460 Dodge Road - Proposed 26 Unit Apartment Building - Amherst Consolidated Sewer District

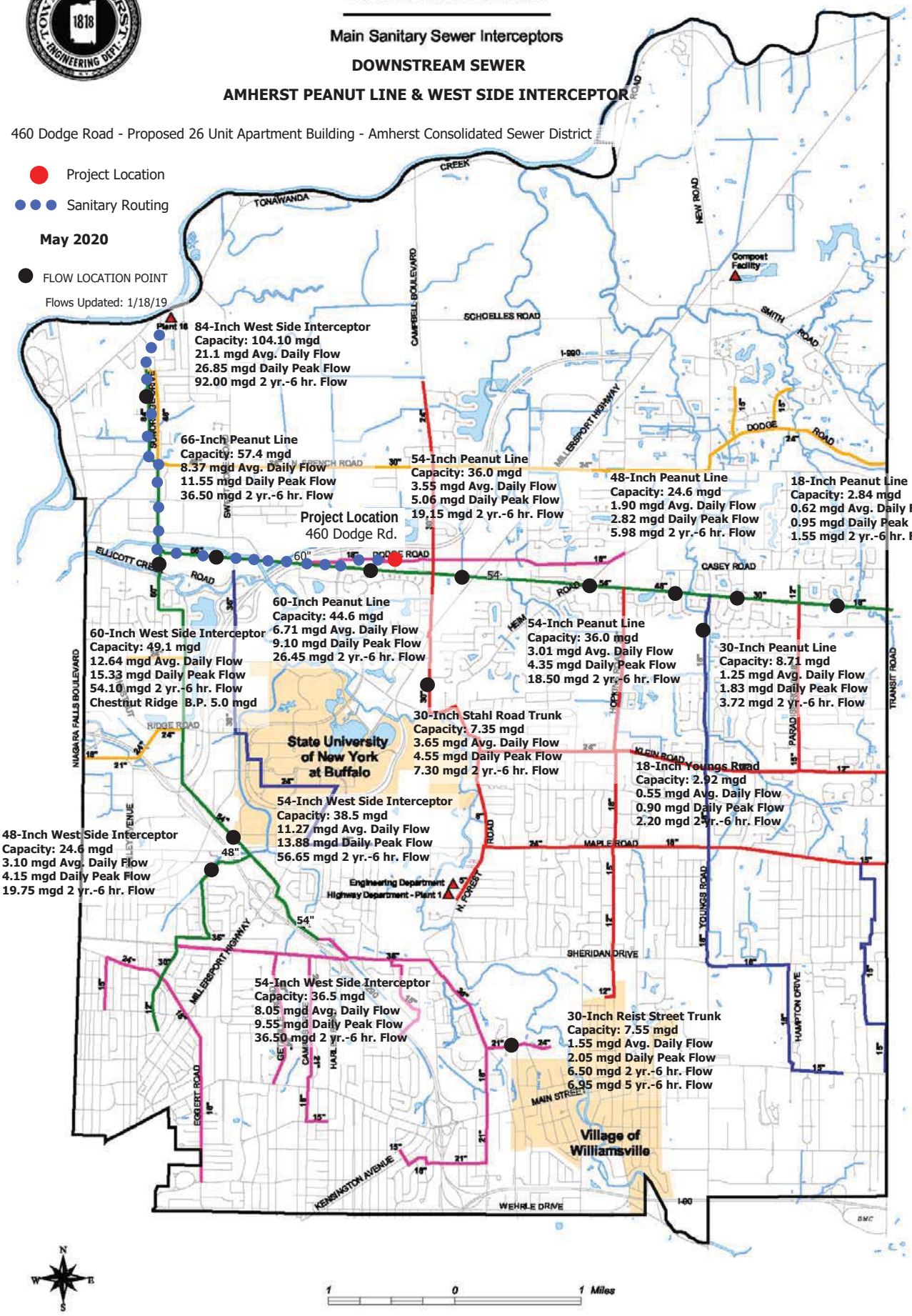
Project Location

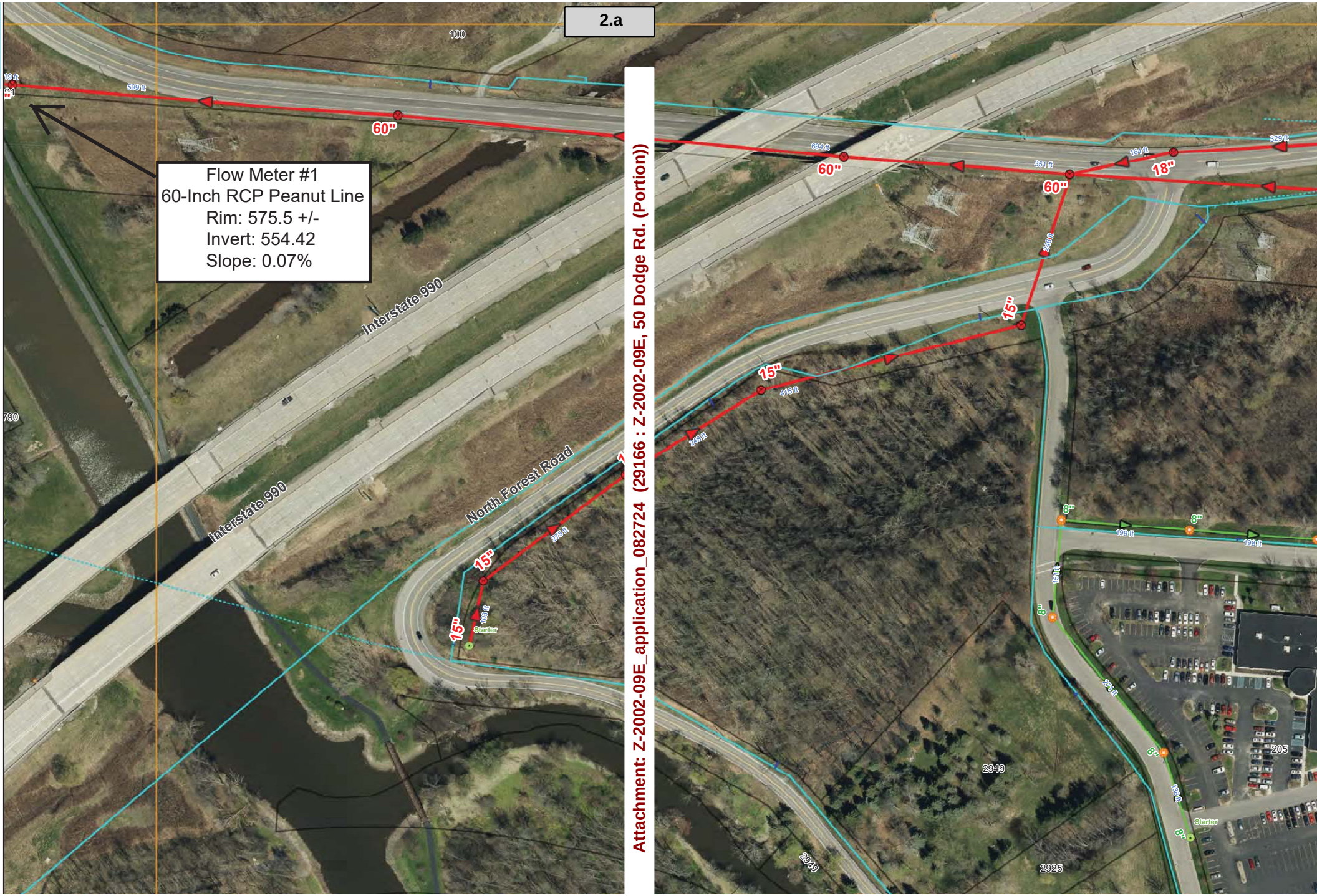
Sanitary Routing

May 2020

FLOW LOCATION POINT

Flows Updated: 1/18/19





Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

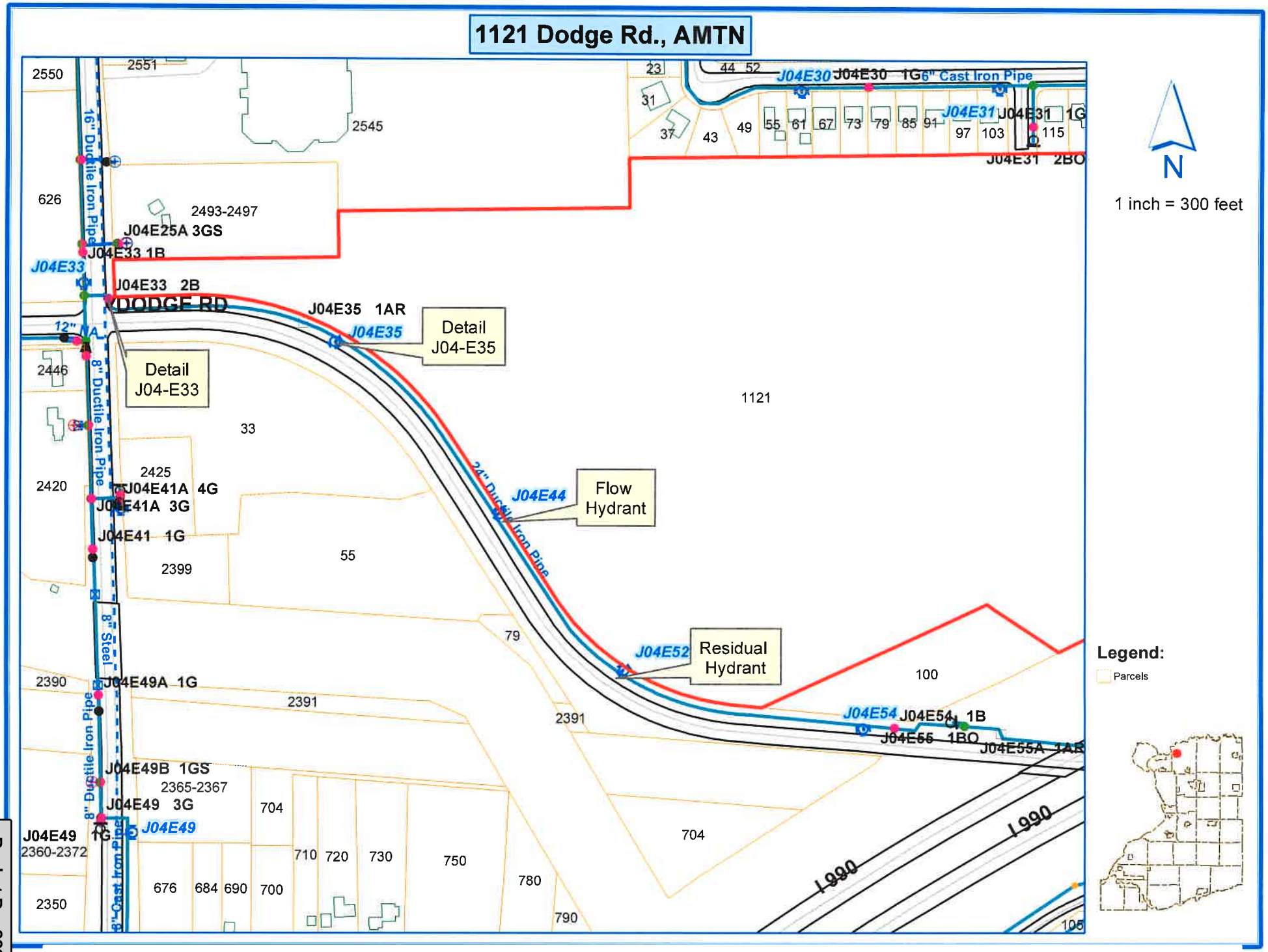
Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

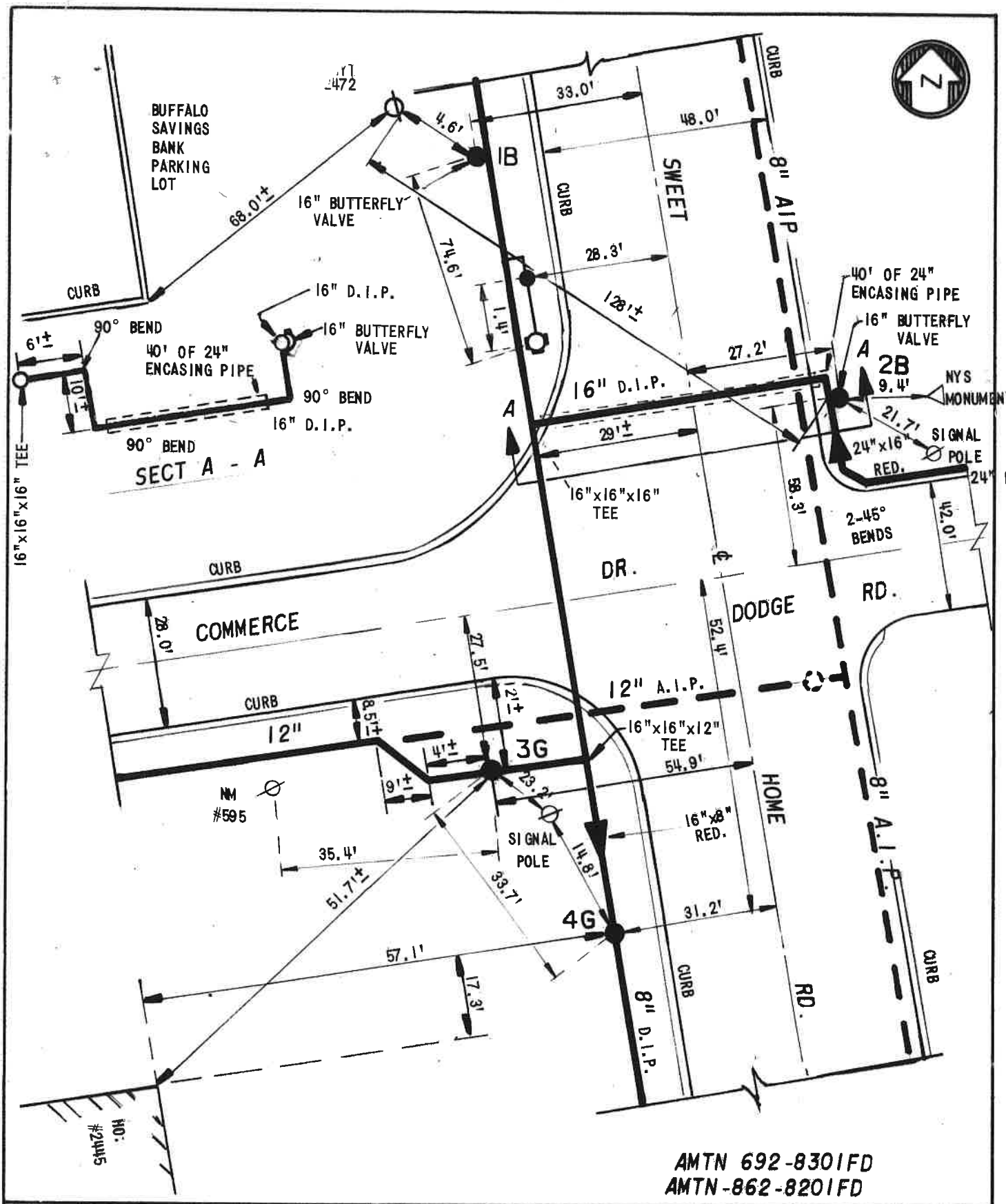
Flow Meter #3

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Water Demand Calculations

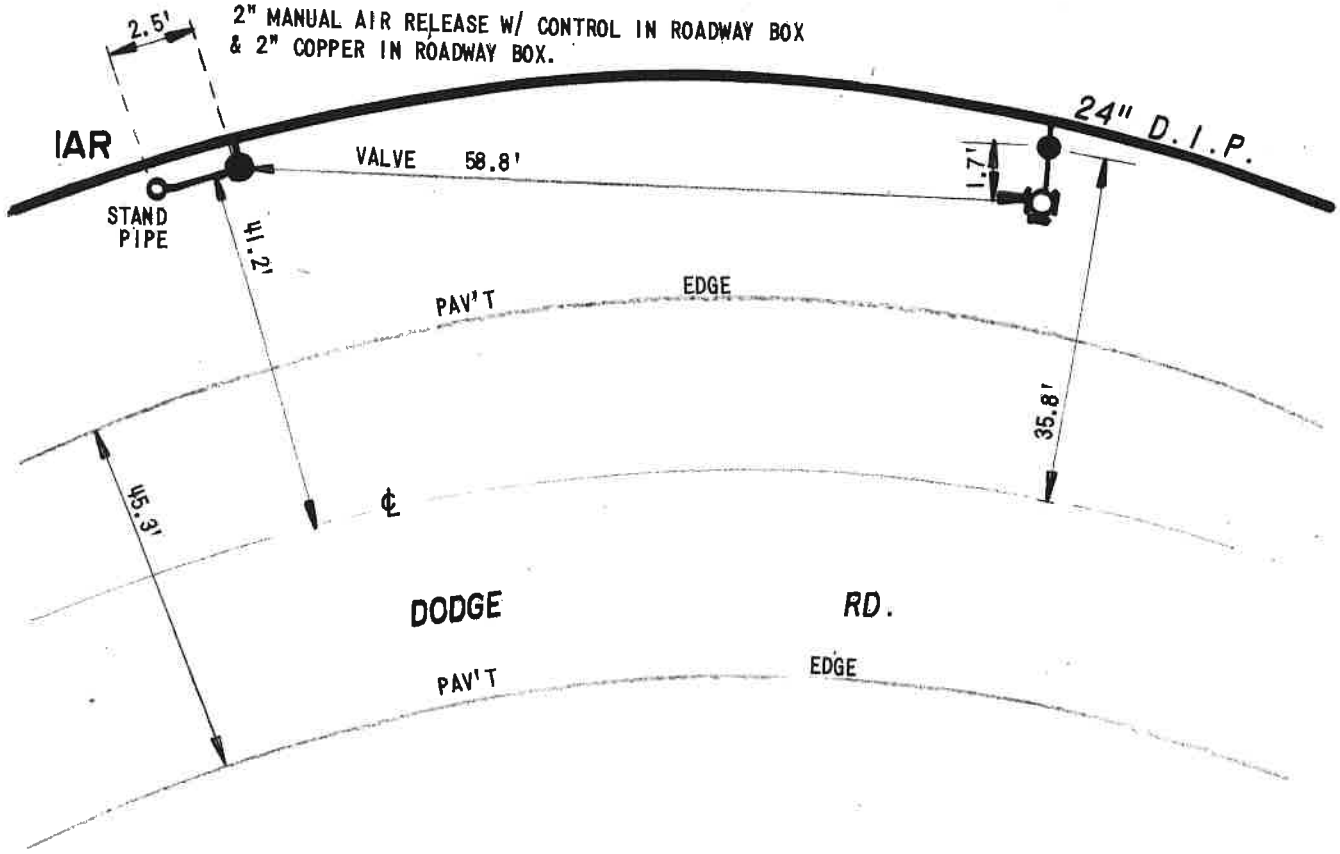
Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))


1121 Dodge Rd., AMTN
N
1 inch = 300 feet
DODGE RD
J04E33 2B
J04E33 1B
J04E25A 3GS
J04E35 1AR
J04E30 J04E30 1G 6" Cast Iron Pipe
J04E31 J04E31 1G
J04E31 2BO
J04E41A 4G
J04E41A 3G
J04E41 1G
J04E49A 1G
J04E49B 1GS
J04E49 3G
J04E49 1G
J04E54 J04E54 1B
J04E55 1BO
J04E55A 1AR
Detail J04-E33
Detail J04-E35
Flow Hydrant
Residual Hydrant
16" Ductile Iron Pipe
8" Ductile Iron Pipe
8" Steel
8" Cast Iron Pipe
24" Ductile Iron Pipe
2493-2497
2365-2367
2360-2372
1121
Legend:
Parcels



ERIE COUNTY WATER AUTHORITY, BUFFALO, NEW YORK	REVISED DR. BY: RLS DATE: 6-30-06 NOT TO SCALE	TOWN OF AMHERST W.D 15C	J04-E33 DETAIL SHEET NO.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



AMTN-692-8301-FD

SHEET 1

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	REVISED DR. BY: RLS DATE: 6-30-06 NOT TO SCALE	TOWN OF AMHERST W.D. 15C	J04-E35 DETAIL SHEET NO.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

AMHERST
Size of Main/Branch: 24"/6" Fire District: 22028 GETZVILLE FD 11 Water District: 315 AMHERST DISTRICT 15C

Performed By: JRS & DPZ

Comments: HYDRANT FLOW TEST REQUESTED BY BILL GROFF
PRATT & HUTH, PHONE: 633-4844, FAX: 633-4940

Dischrge Coef: .90 Elvtn Usgs(ft): Static(psi): 105 Residual(psi): 98 Required Residual Pressure(psi): 20
Gallons Used..: 7,680 Total Flow(gpm): 2,558 Flow at Reqd Resid Pressure: 9,850

Flow Hydrants:

C	Flow Hyd	Flow Hydrant Address	Main/Brnch	Nzle	Size	Pitot	Flow	Comments
_	J04 E44	DODGE RD	24"/6"	1:	2.50	58.0	1,279	
		2ND HYD E/O SWEET HOME RD		2:	2.50	58.0	1,279	
				3:			Tot Flow:	2,558

Bottom

I=Flow Hydrant Inquiry
ENTER=Continue F3=Exit F6=Maintain Test F7=Test Hydrant Inquiry F15=Print Test Information

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Appendix B

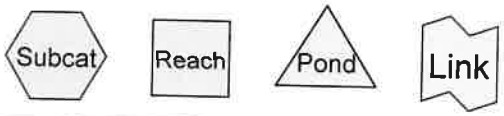
Storm Sewer System Drainage Calculations

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Existing Runoff

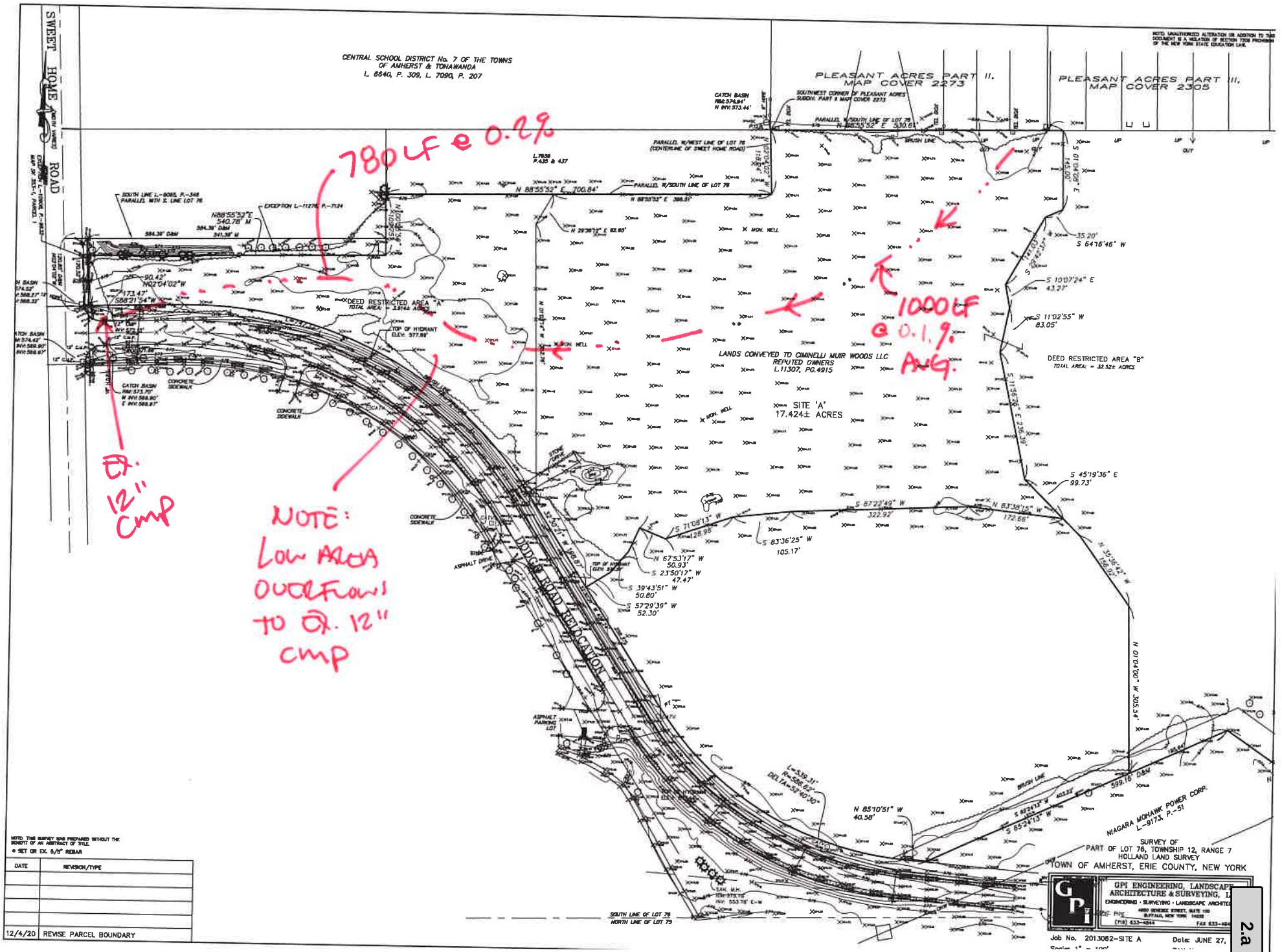
Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Existing



Routing Diagram for 21.011 Existing
Prepared by Hewlett-Packard Company, Printed 3/1/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))


780 LF @ 0.2%
1000 LF @ 0.1% AVG.
EX. 12" CMP
NOTE: LOW AREA OVERFLOWS TO EX. 12" CMP
SWEET HOME ROAD
DODGE ROAD RELOCATION
CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 8640, P. 309, L. 7090, P. 207
PLEASANT ACRES PART II. MAP COVER 2273
PLEASANT ACRES PART III. MAP COVER 2305
LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC REPUTED OWNERS L.11307, PG.4915
SITE 'A' 17.424± ACRES
DEED RESTRICTED AREA "A" TOTAL AREA: = 3.8144 ACRES
DEED RESTRICTED AREA "B" TOTAL AREA: = 32.52± ACRES
NIAGARA MOHAWK POWER CORP. L.-9173, P.-51
SURVEY OF PART OF LOT 78, TOWNSHIP 12, RANGE 7 HOLLAND LAND SURVEY TOWN OF AMHERST, ERIE COUNTY, NEW YORK
GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, L
Job No. 2013082-SITE A
Date: JUNE 27,
DATE | REVISION/TYPE
12/4/20 | REVISE PARCEL BOUNDARY

Events for Subcatchment 1S: Existing

Event	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	0.87	0.578	0.41
2-Year	1.34	0.851	0.60
5-Year	2.14	1.304	0.92
10-Year	2.94	1.752	1.24
25-Year	4.34	2.527	1.78
50-Year	5.69	3.272	2.31
100-Year	**7.33**	**4.181**	**2.95**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.830	77	Brush, Fair, HSG D (1S)
12.170	79	Woods, Fair, HSG D (1S)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
17.000	HSG D	1S
0.000	Other	

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	4.830	0.000	4.830	Brush, Fair	1S
0.000	0.000	0.000	12.170	0.000	12.170	Woods, Fair	1S

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Existing

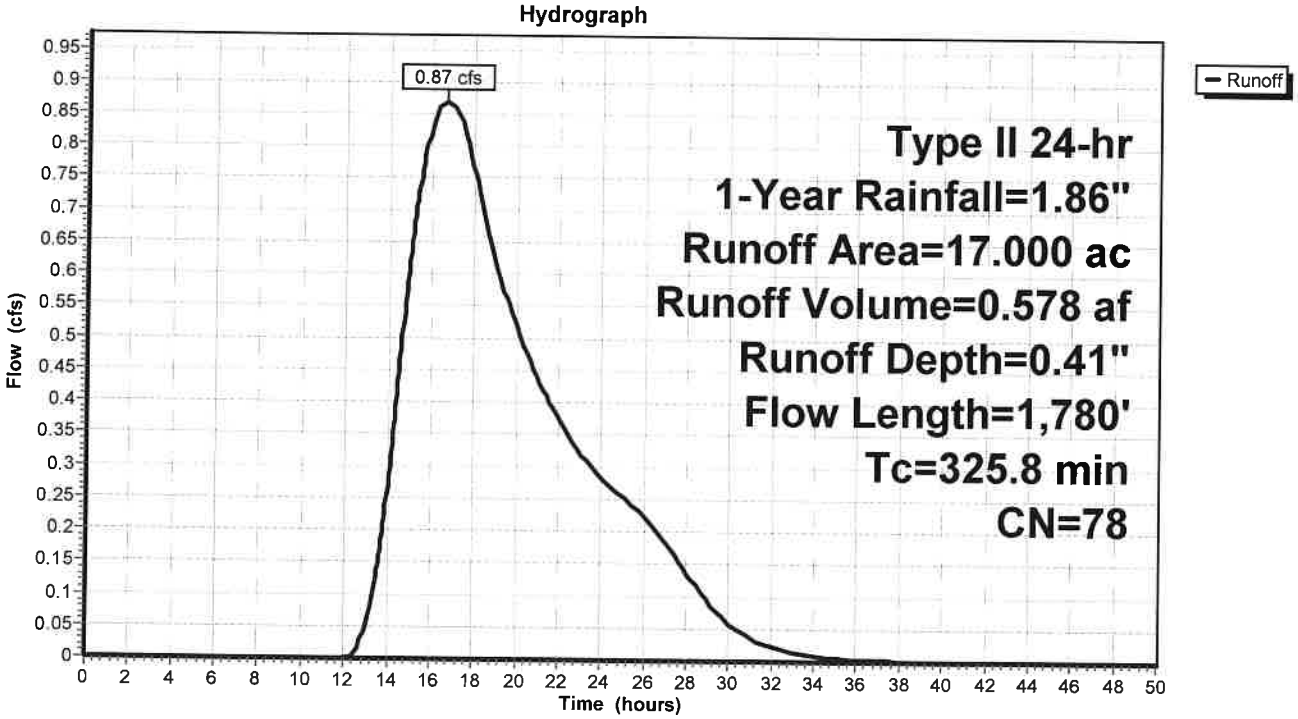
Runoff = 0.87 cfs @ 16.65 hrs, Volume= 0.578 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Existing

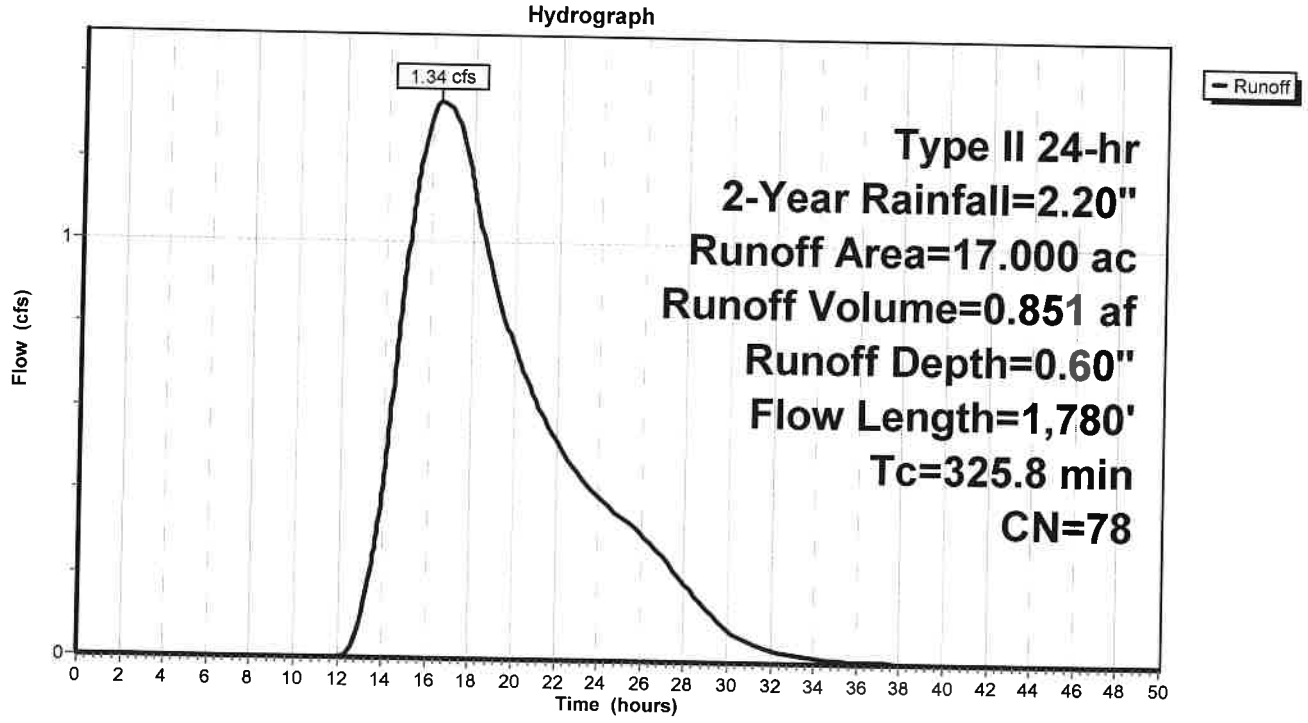
Runoff = 1.34 cfs @ 16.35 hrs, Volume= 0.851 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Existing

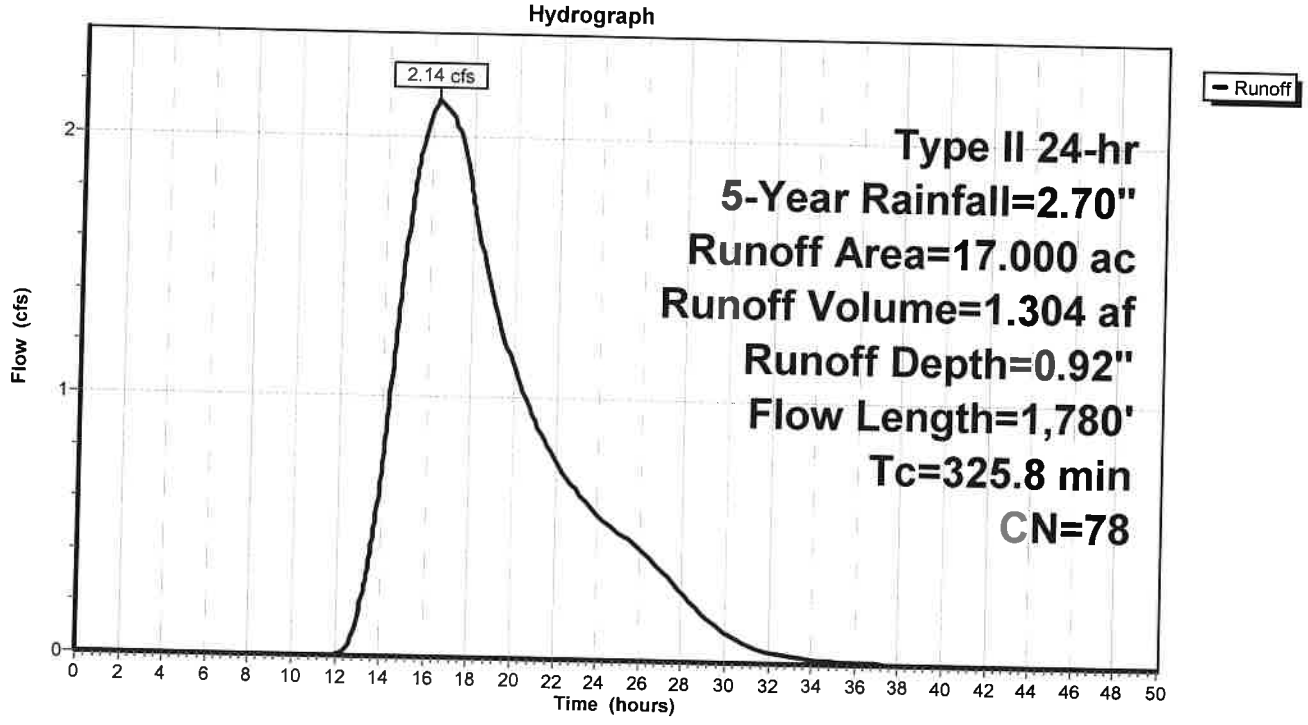
Runoff = 2.14 cfs @ 16.31 hrs, Volume= 1.304 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Existing

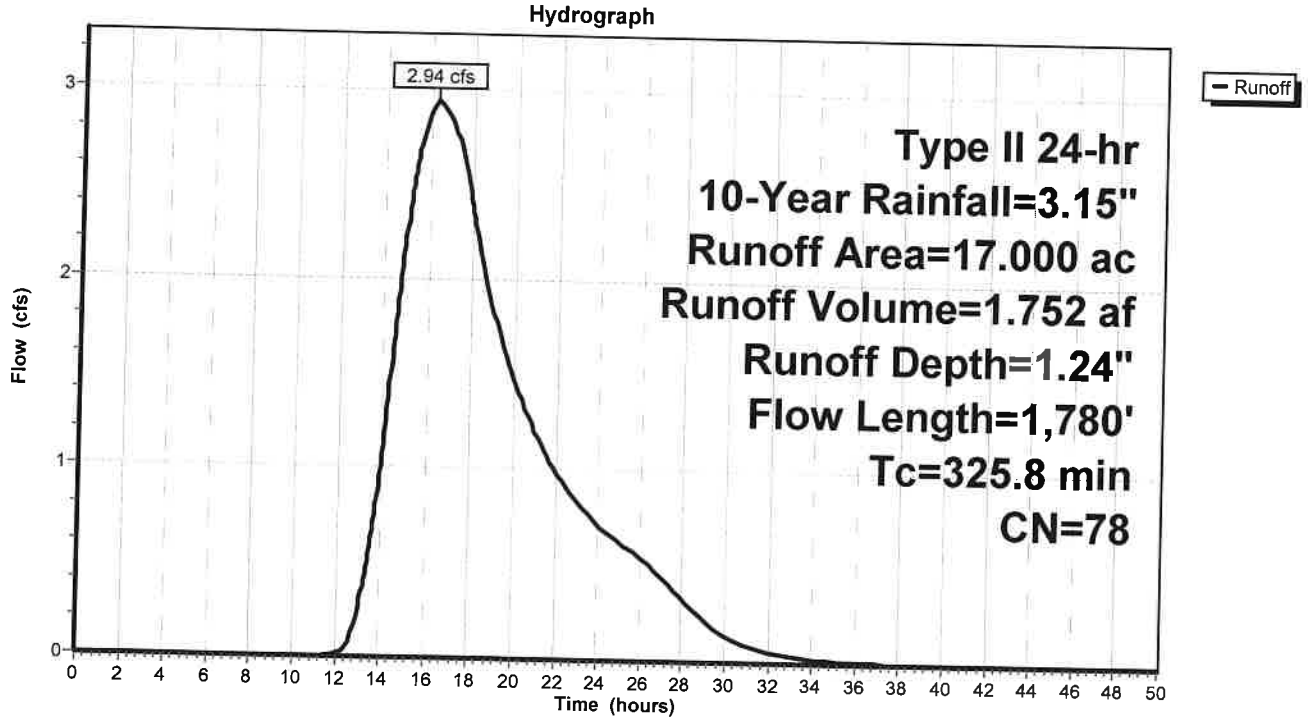
Runoff = 2.94 cfs @ 16.31 hrs, Volume= 1.752 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Existing

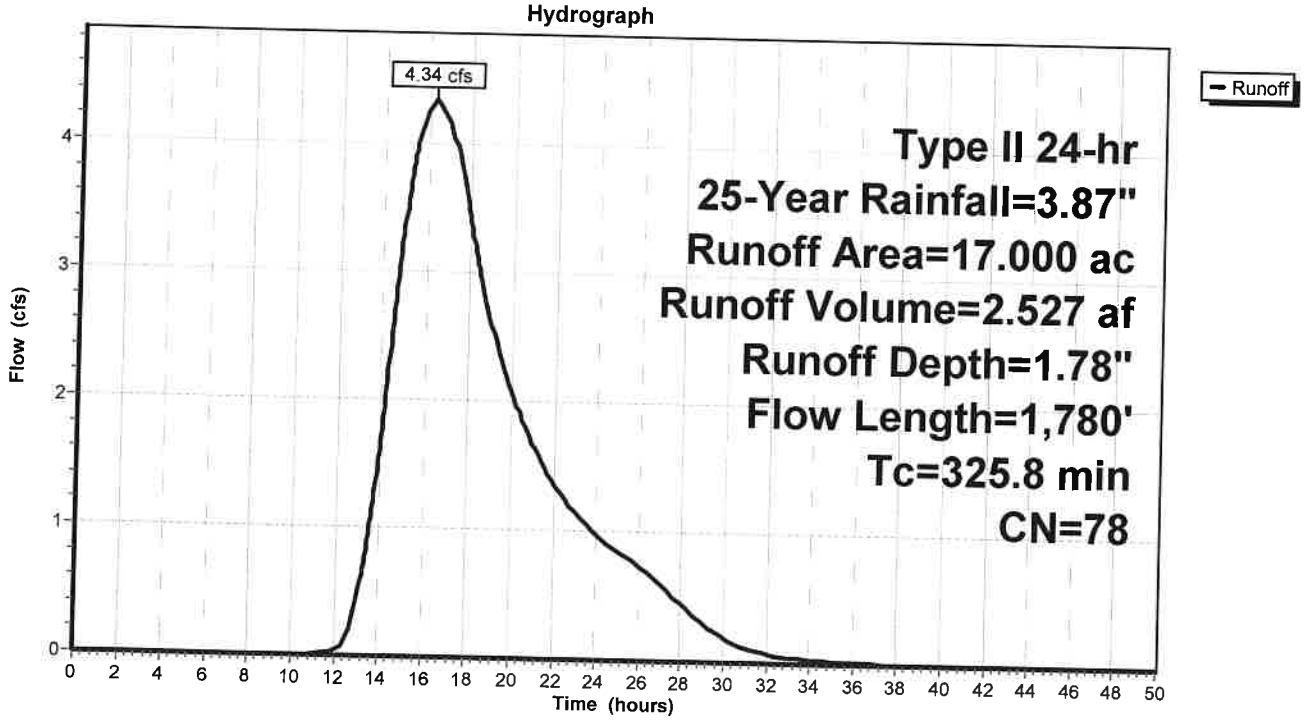
Runoff = 4.34 cfs @ 16.30 hrs, Volume= 2.527 af, Depth= 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Existing

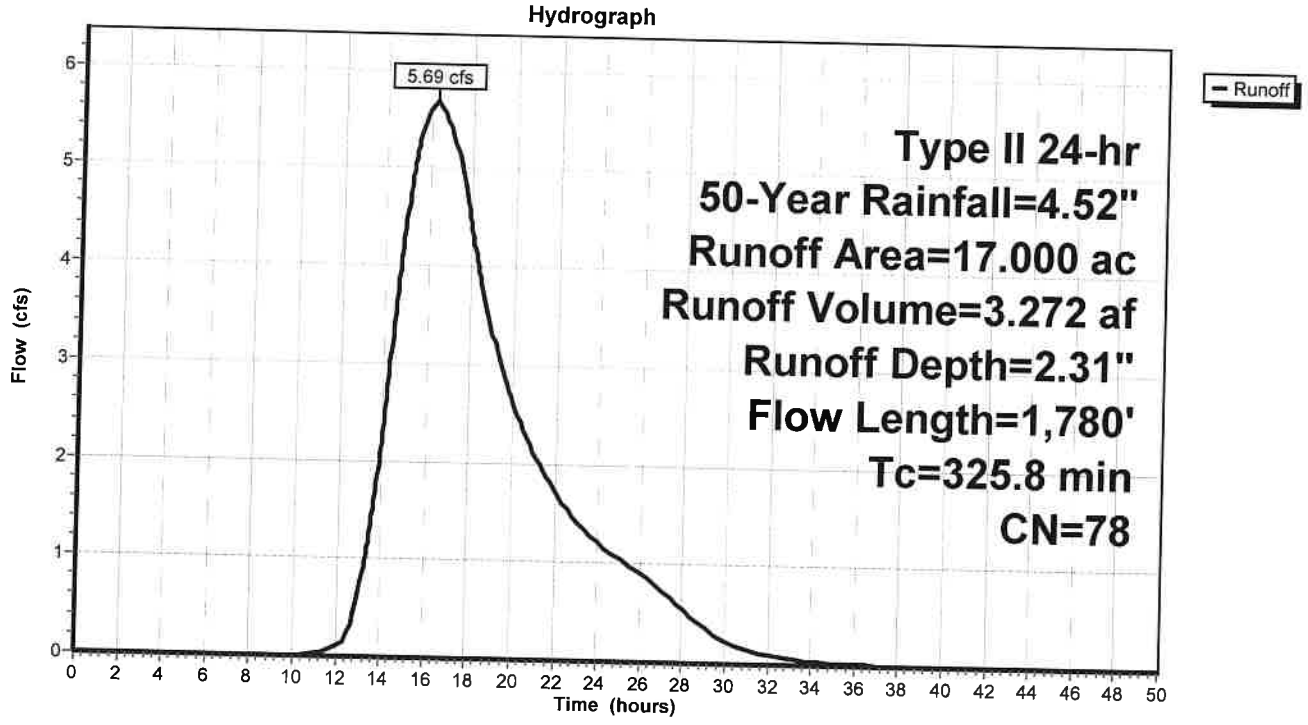
Runoff = 5.69 cfs @ 16.29 hrs, Volume= 3.272 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Existing

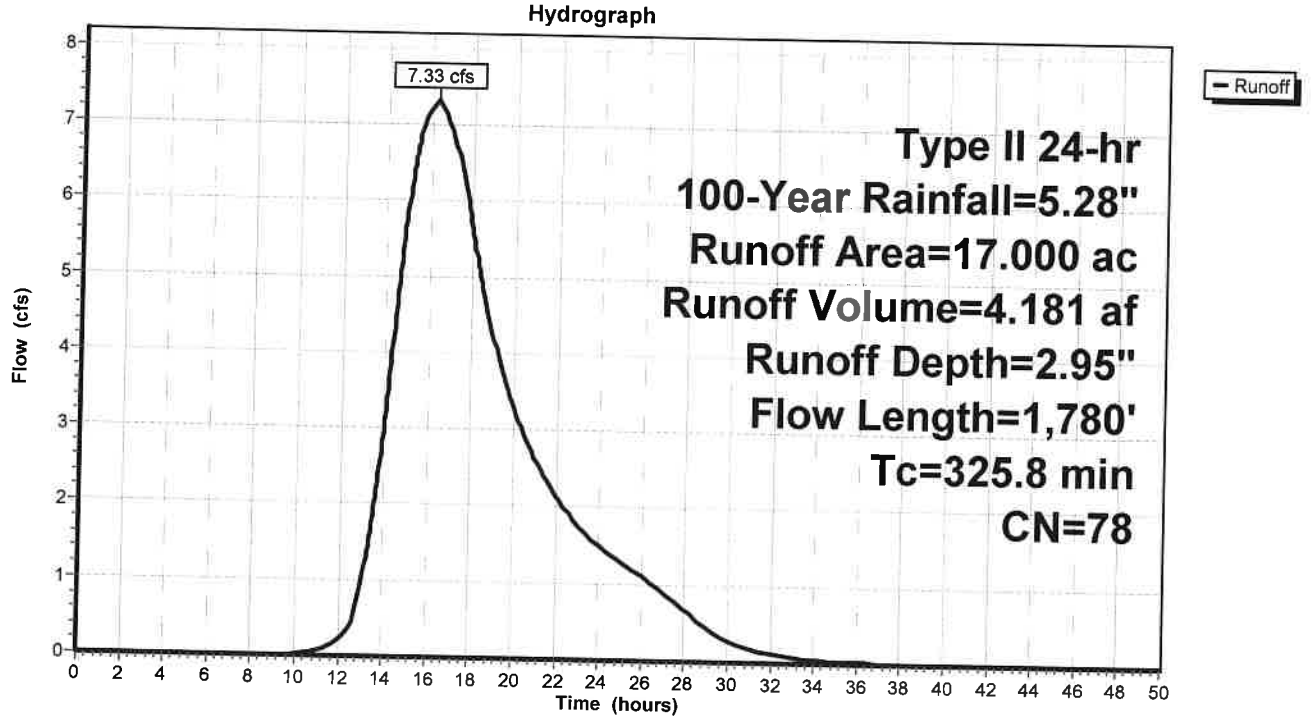
Runoff = 7.33 cfs @ 16.29 hrs, Volume= 4.181 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



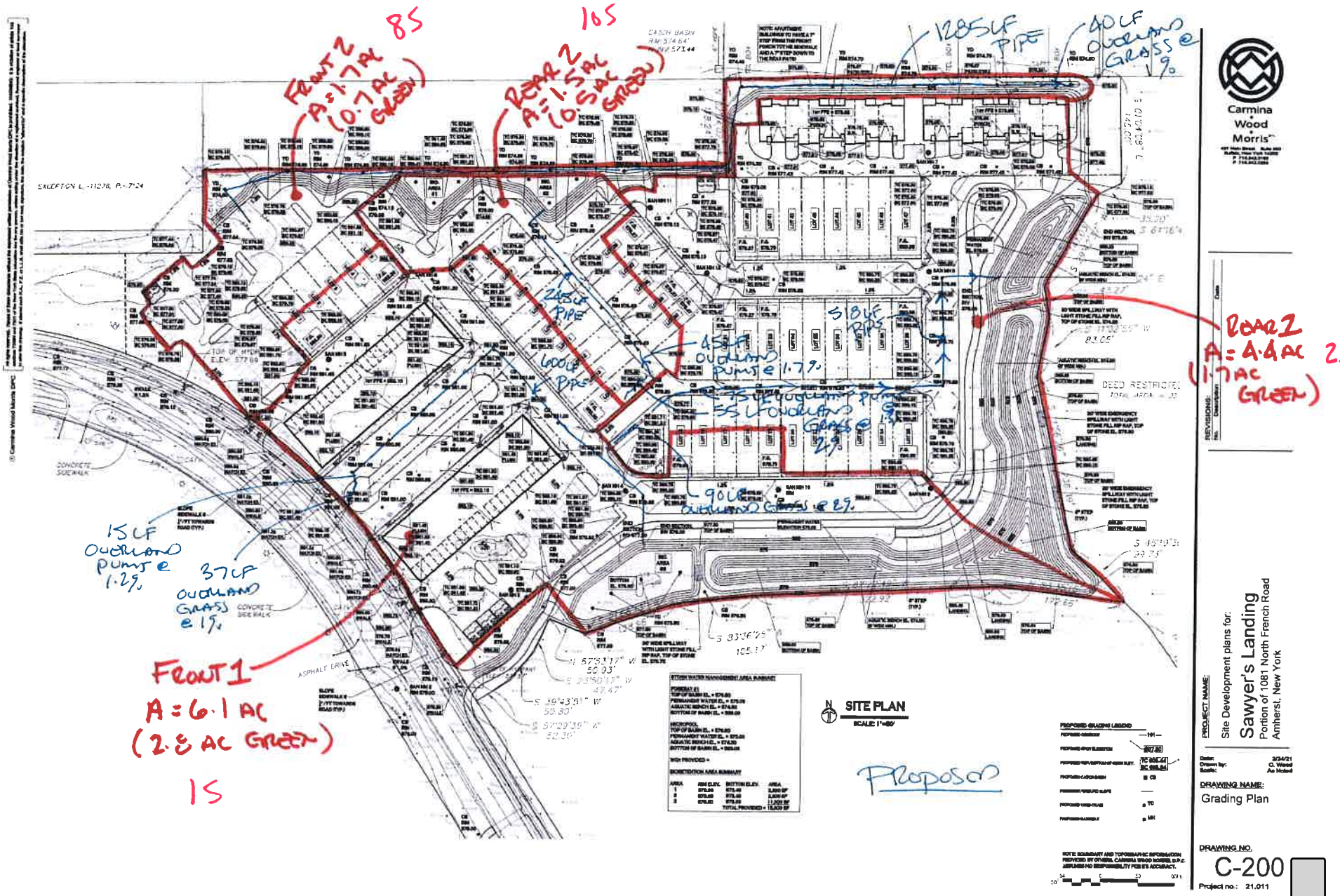
Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

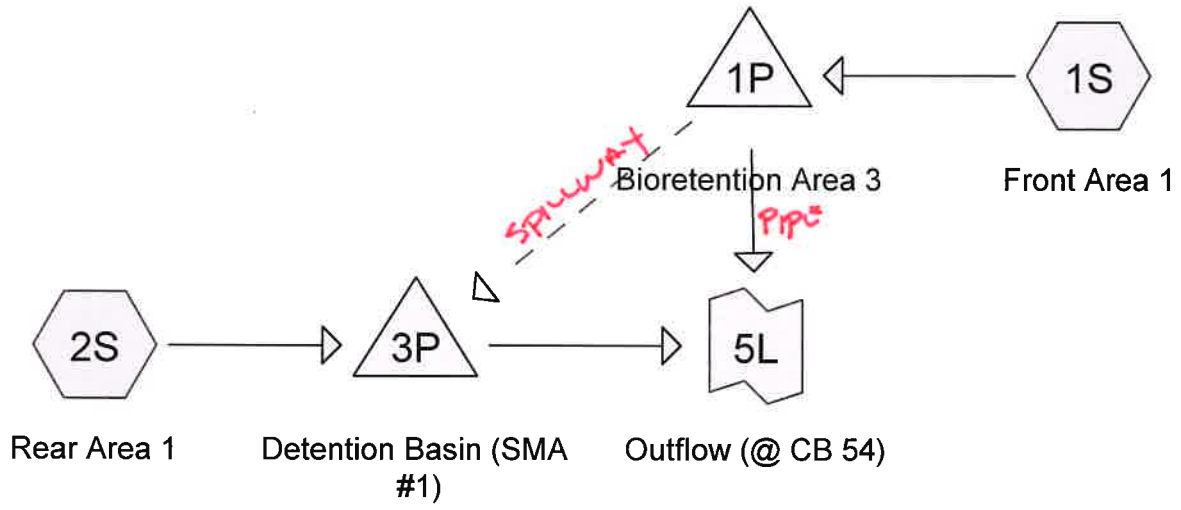
Proposed Runoff

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Proposed Runoff - East

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))


FRONT 2
A = 1.7 AC
(0.7 AC GREEN)
85
REAR 2
A = 1.5 AC
(0.5 AC GREEN)
105
120 LF PIPE
40 LF OVERLAND GRASS e 9%
REAR 2
A = 4.4 AC
(1.7 AC GREEN)
245 LF PIPE
45 LF OVERLAND PUMP e 1.7%
55 LF OVERLAND GRASS e 2%
90 LF OVERLAND GRASS e 2%
15 LF OVERLAND PUMP e 1.2%
37 LF OVERLAND GRASS e 1%
FRONT 1
A = 6.1 AC
(2.5 AC GREEN)
15
SITE PLAN
SCALE: 1"=80'
Proposed
Carmina Wood Morris
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York
DRAWING NAME:
Grading Plan
DRAWING NO.
C-200
Project no.: 21.011



Subcat Reach Pond Link

Routing Diagram for 21.011 Proposed
Prepared by Hewlett-Packard Company, Printed 3/4/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Events for Link 5L: Outflow (@ CB 54)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-Year	2.78	2.78	**0.00**
2-Year	2.86	2.86	0.00
5-Year	3.01	3.01	0.00
10-Year	3.16	3.16	0.00
25-Year	3.36	3.36	0.00
50-Year	3.48	3.48	0.00
100-Year	**3.60**	**3.60**	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Events for Pond 3P: Detention Basin (SMA #1)

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	6.05	0.10	0.10	0.00	575.23	13,685
2-Year	12.29	0.18	0.18	0.00	575.32	19,129
5-Year	20.08	0.33	0.33	0.00	575.46	28,218
10-Year	26.01	0.47	0.47	0.00	575.60	37,117
25-Year	34.94	0.64	0.64	0.00	575.83	51,964
50-Year	42.93	1.97	0.72	1.25	576.00	62,935
100-Year	**52.24**	**8.57**	**0.78**	**7.80**	**576.11**	**70,722**

TO DODGE RD

TO WETLANDS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Events for Pond 1P: Bioretention Area 3

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	8.17	4.38	2.74	1.63	575.82	7,520
2-Year	10.57	8.19	2.79	5.41	575.91	8,359
5-Year	14.18	12.91	2.83	10.09	575.99	9,153
10-Year	17.46	16.45	2.85	13.60	576.04	9,672
25-Year	22.74	21.73	2.89	18.84	576.11	10,375
50-Year	27.50	26.43	2.91	23.52	576.17	10,954
100-Year	**33.05**	**31.92**	**2.94**	**28.98**	**576.23**	**11,585**

↑ TO DODGE RD

↑ TO BASIN

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.500	80	>75% Grass cover, Good, HSG D (1S, 2S)
3.200	98	Paved parking, HSG D (1S, 2S)
2.800	98	Roofs, HSG D (1S, 2S)
10.500	**90**	**TOTAL AREA**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
10.500	HSG D	1S, 2S
0.000	Other	
10.500		**TOTAL AREA**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	4.500	0.000	4.500	>75% Grass cover, Good	1S, 2S
0.000	0.000	0.000	3.200	0.000	3.200	Paved parking	1S, 2S
0.000	0.000	0.000	2.800	0.000	2.800	Roofs	1S, 2S
0.000	**0.000**	**0.000**	**10.500**	**0.000**	**10.500**	**TOTAL AREA**	

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=0.98"
Flow Length=652' Tc=13.3 min CN=90 Runoff=8.17 cfs 0.496 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.04"
Flow Length=683' Tc=14.4 min CN=91 Runoff=6.05 cfs 0.382 af

Pond 1P: Bioretention Area 3 Peak Elev=575.82' Storage=7,520 cf Inflow=8.17 cfs 0.496 af
Primary=2.74 cfs 0.475 af Secondary=1.63 cfs 0.021 af Outflow=4.38 cfs 0.496 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.23' Storage=13,685 cf Inflow=6.05 cfs 0.403 af
Primary=0.10 cfs 0.249 af Secondary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.249 af

Link 5L: Outflow (@ CB 54) Inflow=2.78 cfs 0.724 af
Primary=2.78 cfs 0.724 af

Total Runoff Area = 10.500 ac Runoff Volume = 0.878 af Average Runoff Depth = 1.00"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Front Area 1

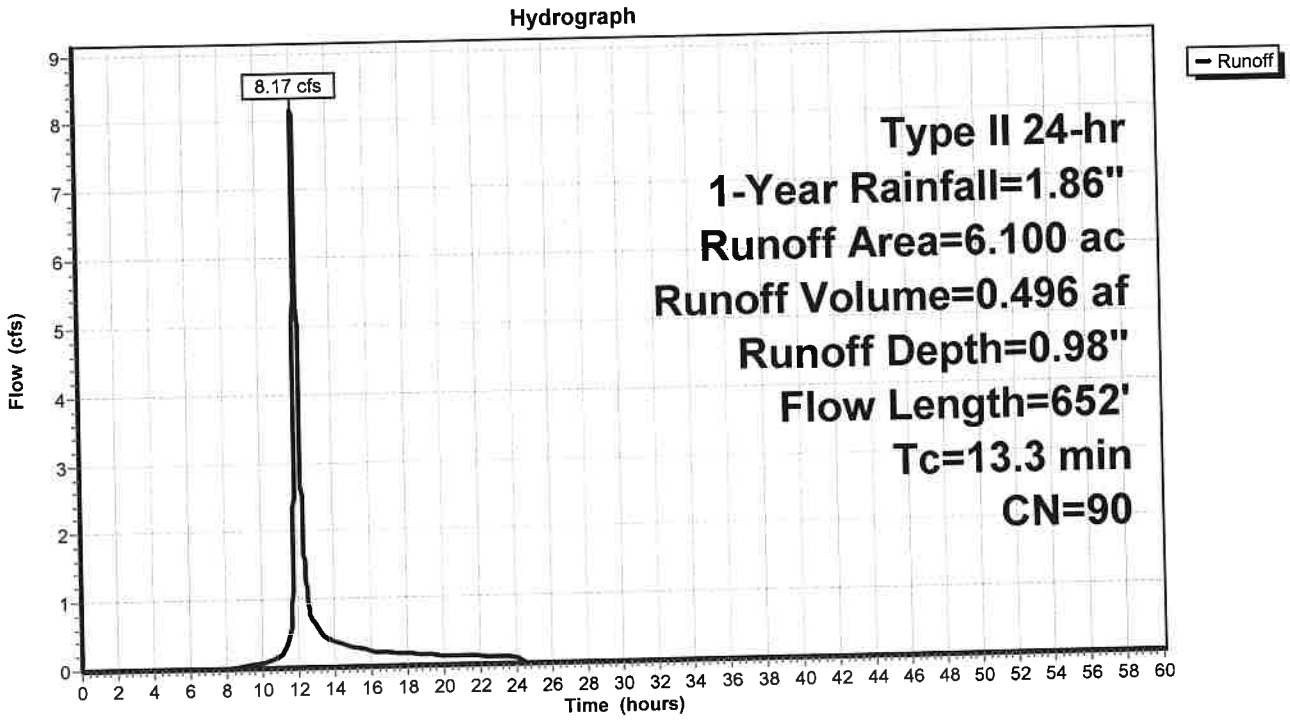
Runoff = 8.17 cfs @ 12.05 hrs, Volume= 0.496 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.00
9.00	0.27	0.00	0.02
10.00	0.34	0.01	0.07
11.00	0.44	0.03	0.20
12.00	1.23	0.48	**7.23**
13.00	1.44	0.63	**0.63**
14.00	1.53	0.70	0.37
15.00	1.59	0.75	0.29
16.00	1.64	0.79	0.23
17.00	1.68	0.83	0.20
18.00	1.71	0.85	0.17
19.00	1.74	0.88	0.15
20.00	1.77	0.90	0.13
21.00	1.79	0.92	0.12
22.00	1.82	0.94	0.12
23.00	1.84	0.96	0.11
24.00	**1.86**	**0.98**	0.11
25.00	1.86	0.98	0.00
26.00	1.86	0.98	0.00
27.00	1.86	0.98	0.00
28.00	1.86	0.98	0.00
29.00	1.86	0.98	0.00
30.00	1.86	0.98	0.00
31.00	1.86	0.98	0.00
32.00	1.86	0.98	0.00
33.00	1.86	0.98	0.00
34.00	1.86	0.98	0.00
35.00	1.86	0.98	0.00
36.00	1.86	0.98	0.00
37.00	1.86	0.98	0.00
38.00	1.86	0.98	0.00
39.00	1.86	0.98	0.00
40.00	1.86	0.98	0.00
41.00	1.86	0.98	0.00
42.00	1.86	0.98	0.00
43.00	1.86	0.98	0.00
44.00	1.86	0.98	0.00
45.00	1.86	0.98	0.00
46.00	1.86	0.98	0.00
47.00	1.86	0.98	0.00
48.00	1.86	0.98	0.00
49.00	1.86	0.98	0.00
50.00	1.86	0.98	0.00
51.00	1.86	0.98	0.00
52.00	1.86	0.98	0.00
53.00	1.86	0.98	0.00
54.00	1.86	0.98	0.00
55.00	1.86	0.98	0.00
56.00	1.86	0.98	0.00
57.00	1.86	0.98	0.00
58.00	1.86	0.98	0.00
59.00	1.86	0.98	0.00
60.00	1.86	0.98	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 2S: Rear Area 1

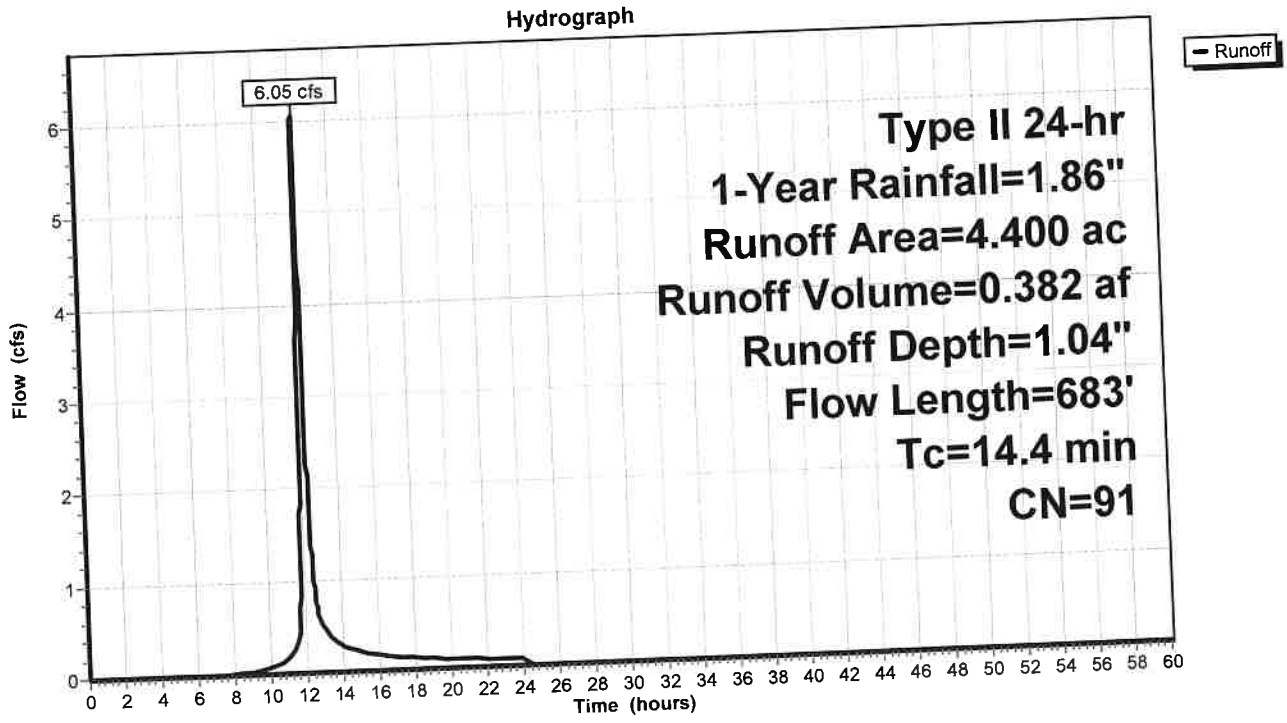
Runoff = 6.05 cfs @ 12.06 hrs, Volume= 0.382 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.01
9.00	0.27	0.01	0.03
10.00	0.34	0.02	0.06
11.00	0.44	0.05	0.17
12.00	1.23	0.53	**5.18**
13.00	1.44	0.69	**0.48**
14.00	1.53	0.76	0.28
15.00	1.59	0.81	0.21
16.00	1.64	0.85	0.17
17.00	1.68	0.89	0.15
18.00	1.71	0.92	0.13
19.00	1.74	0.94	0.11
20.00	1.77	0.97	0.10
21.00	1.79	0.99	0.09
22.00	1.82	1.01	0.09
23.00	1.84	1.02	0.08
24.00	**1.86**	**1.04**	0.08
25.00	1.86	1.04	0.00
26.00	1.86	1.04	0.00
27.00	1.86	1.04	0.00
28.00	1.86	1.04	0.00
29.00	1.86	1.04	0.00
30.00	1.86	1.04	0.00
31.00	1.86	1.04	0.00
32.00	1.86	1.04	0.00
33.00	1.86	1.04	0.00
34.00	1.86	1.04	0.00
35.00	1.86	1.04	0.00
36.00	1.86	1.04	0.00
37.00	1.86	1.04	0.00
38.00	1.86	1.04	0.00
39.00	1.86	1.04	0.00
40.00	1.86	1.04	0.00
41.00	1.86	1.04	0.00
42.00	1.86	1.04	0.00
43.00	1.86	1.04	0.00
44.00	1.86	1.04	0.00
45.00	1.86	1.04	0.00
46.00	1.86	1.04	0.00
47.00	1.86	1.04	0.00
48.00	1.86	1.04	0.00
49.00	1.86	1.04	0.00
50.00	1.86	1.04	0.00
51.00	1.86	1.04	0.00
52.00	1.86	1.04	0.00
53.00	1.86	1.04	0.00
54.00	1.86	1.04	0.00
55.00	1.86	1.04	0.00
56.00	1.86	1.04	0.00
57.00	1.86	1.04	0.00
58.00	1.86	1.04	0.00
59.00	1.86	1.04	0.00
60.00	1.86	1.04	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 1P: Bioretention Area 3

Inflow Area =	6.100 ac,	54.10% Impervious,	Inflow Depth =	0.98"	for 1-Year event
Inflow =	8.17 cfs @	12.05 hrs,	Volume=	0.496 af	
Outflow =	4.38 cfs @	12.19 hrs,	Volume=	0.496 af,	Atten= 46%, Lag= 8.2 min
Primary =	2.74 cfs @	12.19 hrs,	Volume=	0.475 af	
Secondary =	1.63 cfs @	12.19 hrs,	Volume=	0.021 af	

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.82' @ 12.19 hrs Surf.Area= 9,695 sf Storage= 7,520 cf

Plug-Flow detention time= 319.4 min calculated for 0.496 af (100% of inflow)
Center-of-Mass det. time= 319.4 min (1,152.7 - 833.3)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

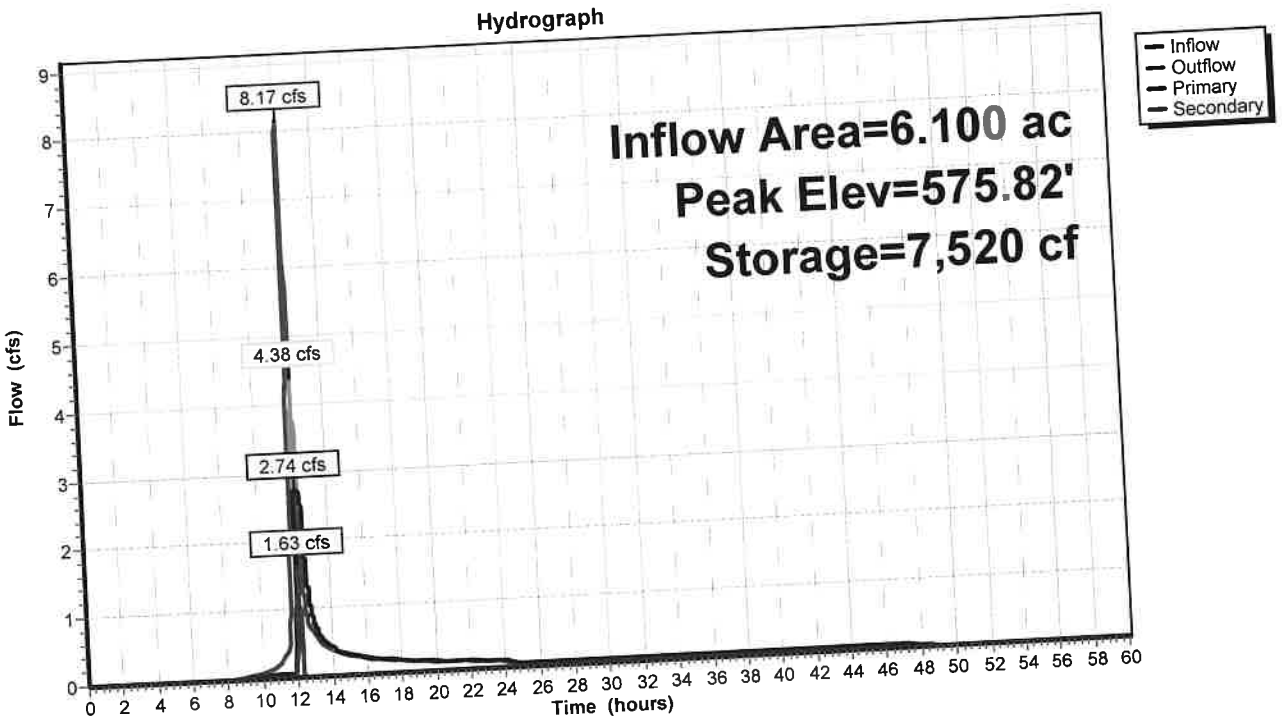
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.74 cfs @ 12.19 hrs HW=575.82' (Free Discharge)
↑—**1=8" pipe** (Barrel Controls 2.74 cfs @ 7.86 fps)
↑—**2=Grate** (Passes < 3.80 cfs potential flow)
↑—**3=Exfiltration** (Passes < 0.06 cfs potential flow)

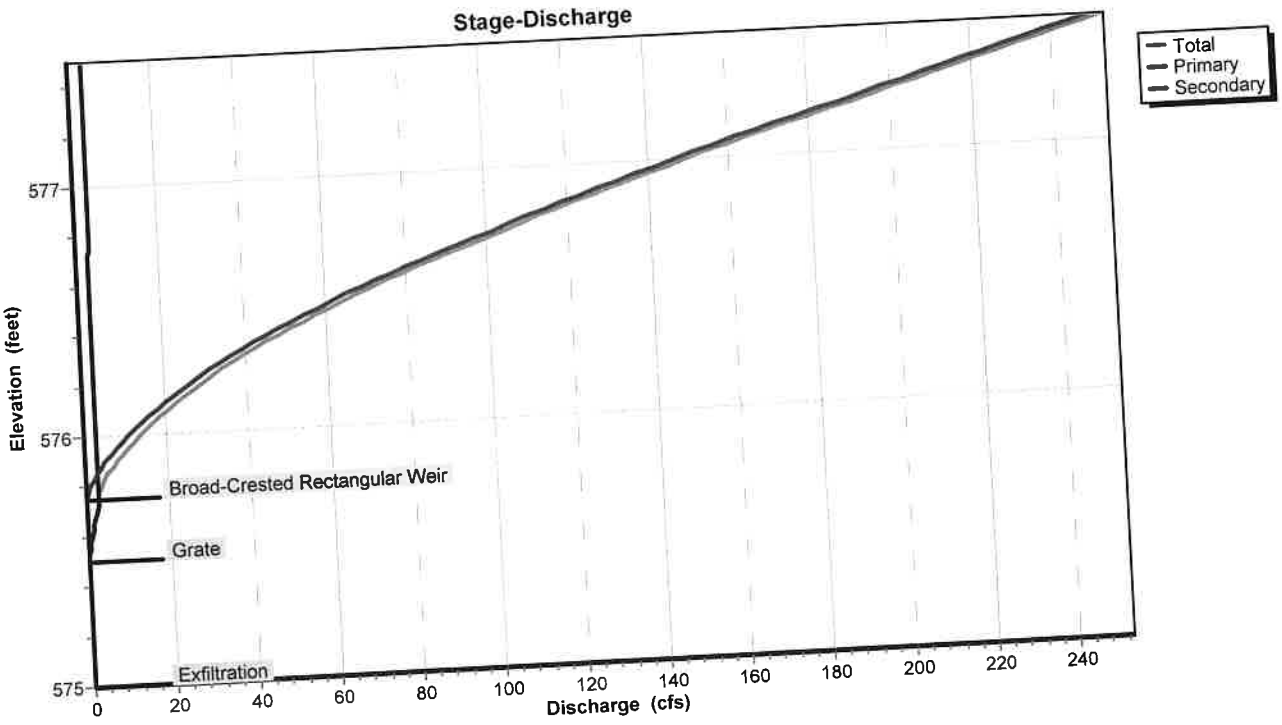
Secondary OutFlow Max=1.62 cfs @ 12.19 hrs HW=575.82' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Weir Controls 1.62 cfs @ 0.77 fps)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3

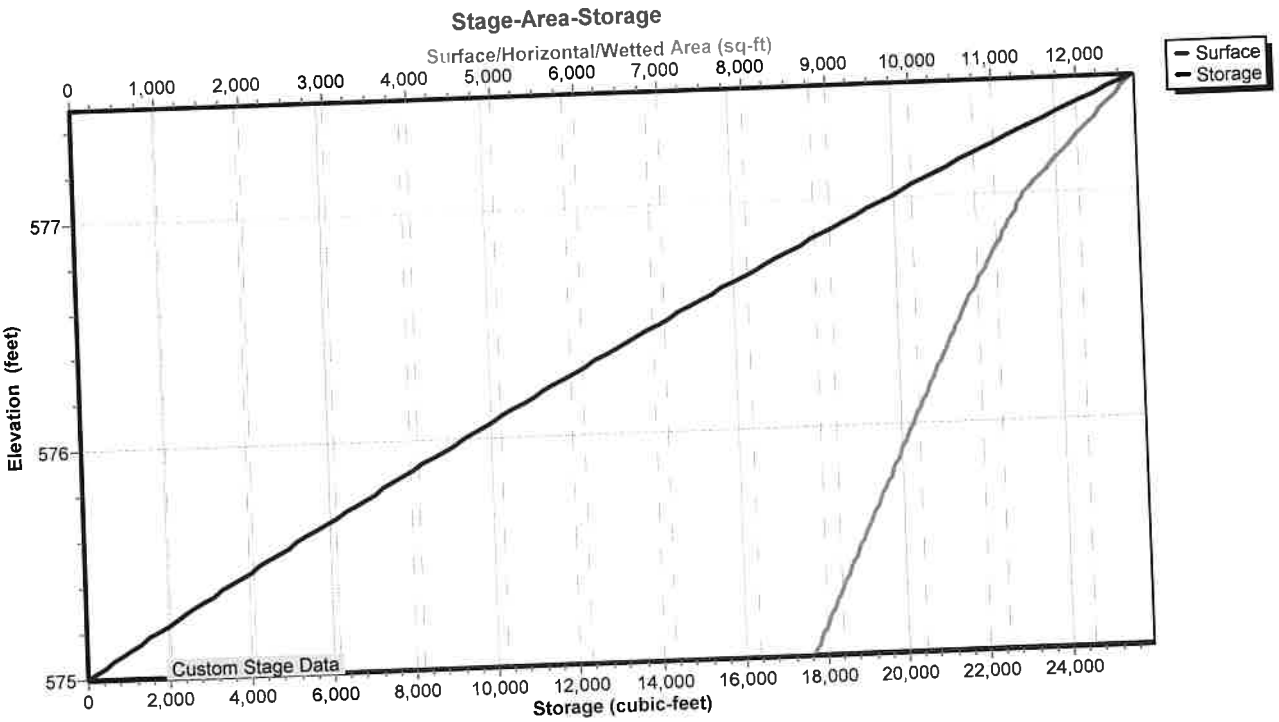


Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.00	0	575.00	0.00	0.00	0.00
10.00	0.07	121	575.01	0.03	0.03	0.00
12.00	**7.23**	**4,533**	**575.51**	**0.08**	**0.08**	**0.00**
14.00	**0.37**	**5,004**	**575.56**	**0.42**	**0.42**	**0.00**
16.00	0.23	4,812	575.54	0.25	0.25	0.00
18.00	0.17	4,735	575.53	0.18	0.18	0.00
20.00	0.13	4,666	575.52	0.14	0.14	0.00
22.00	0.12	4,618	575.51	0.12	0.12	0.00
24.00	0.11	4,598	575.51	0.11	0.11	0.00
26.00	0.00	4,207	575.47	0.06	0.06	0.00
28.00	0.00	3,812	575.43	0.05	0.05	0.00
30.00	0.00	3,420	575.38	0.05	0.05	0.00
32.00	0.00	3,031	575.34	0.05	0.05	0.00
34.00	0.00	2,646	575.30	0.05	0.05	0.00
36.00	0.00	2,264	575.26	0.05	0.05	0.00
38.00	0.00	1,885	575.21	0.05	0.05	0.00
40.00	0.00	1,510	575.17	0.05	0.05	0.00
42.00	0.00	1,138	575.13	0.05	0.05	0.00
44.00	0.00	769	575.09	0.05	0.05	0.00
46.00	0.00	404	575.05	0.05	0.05	0.00
48.00	0.00	96	575.01	0.02	0.02	0.00
50.00	0.00	18	575.00	0.00	0.00	0.00
52.00	0.00	3	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 1.10" for 1-Year event
Inflow = 6.05 cfs @ 12.06 hrs, Volume= 0.403 af
Outflow = 0.10 cfs @ 19.66 hrs, Volume= 0.249 af, Atten= 98%, Lag= 455.7 min
Primary = 0.10 cfs @ 19.66 hrs, Volume= 0.249 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.23' @ 19.66 hrs Surf.Area= 60,952 sf Storage= 13,685 cf

Plug-Flow detention time= 1,134.7 min calculated for 0.249 af (62% of inflow)
Center-of-Mass det. time= 1,028.3 min (1,852.6 - 824.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

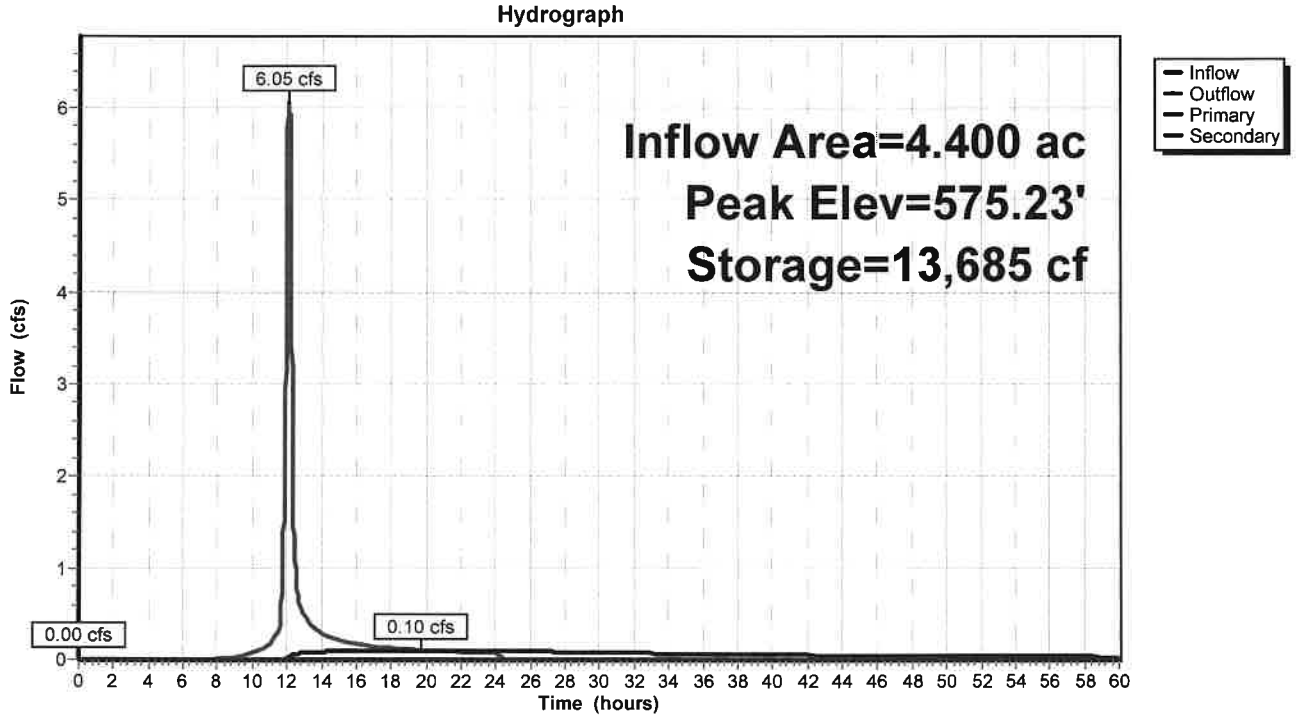
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.10 cfs @ 19.66 hrs HW=575.23' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.10 cfs of 1.85 cfs potential flow)
  ├**2=low flow outlet pipe** (Barrel Controls 0.10 cfs @ 1.70 fps)
  └**3=Grate** (Controls 0.00 cfs)

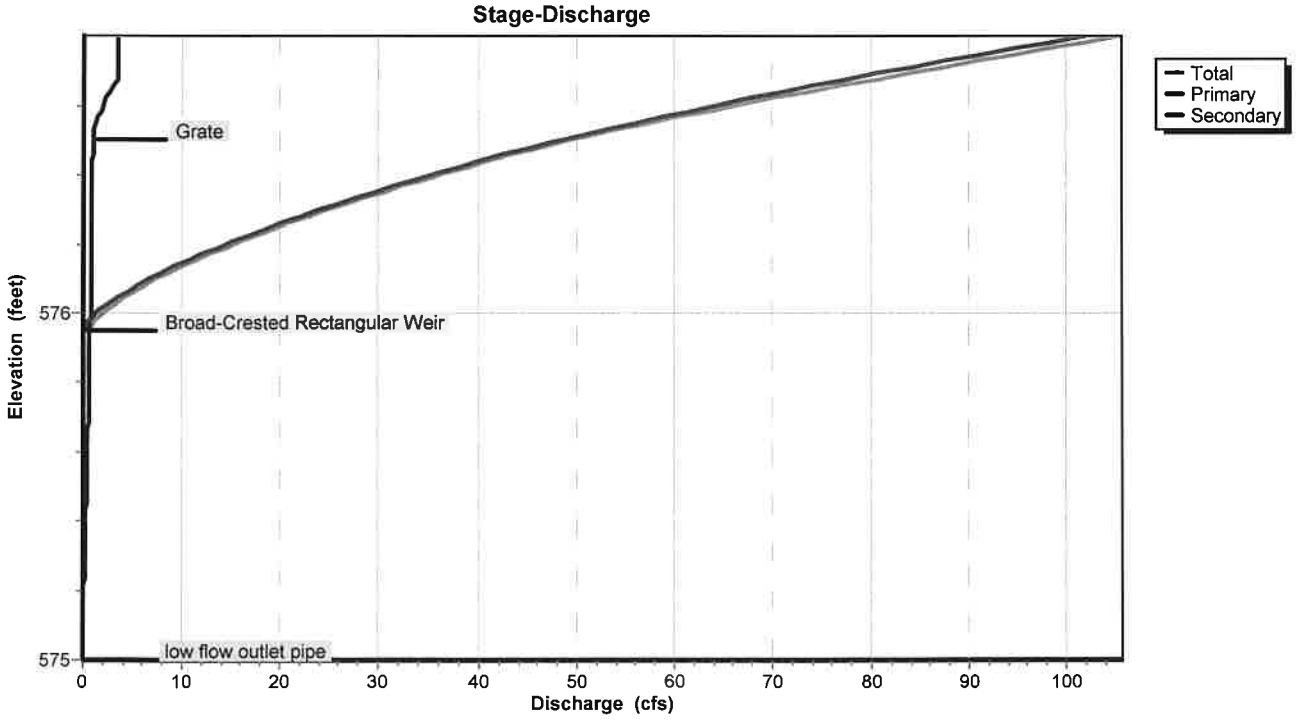
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)

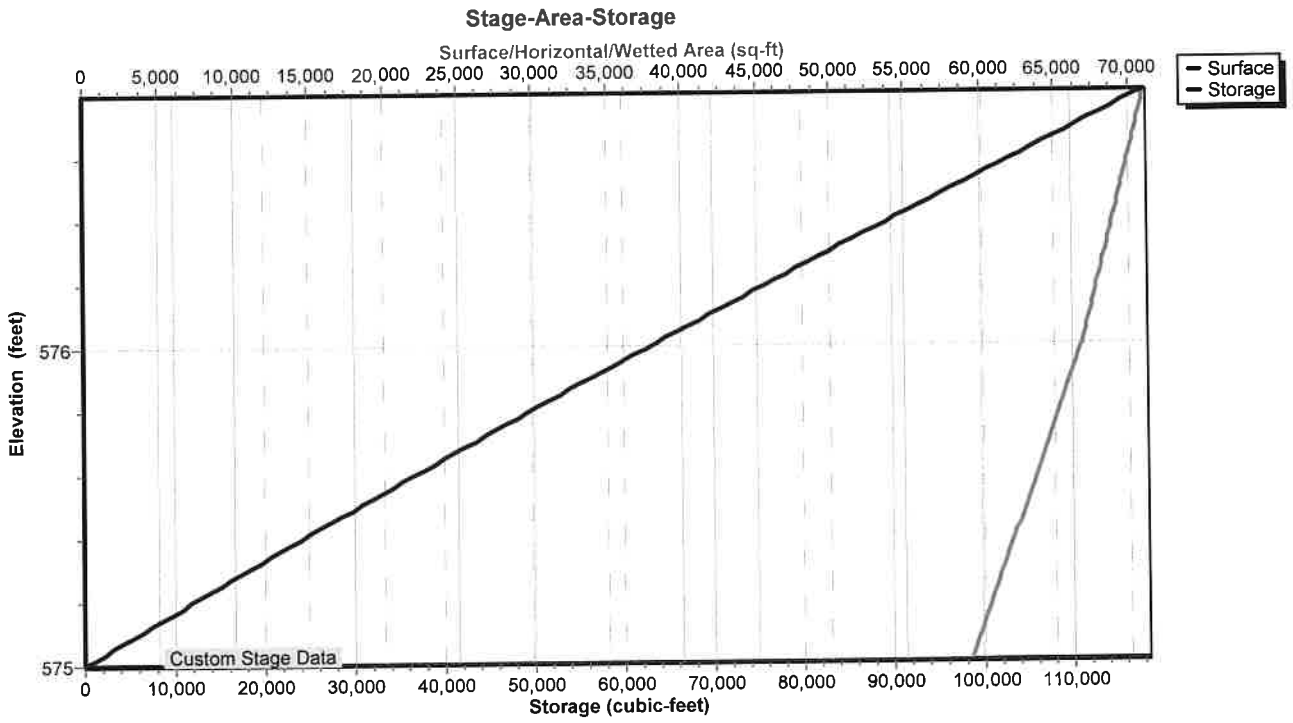


Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.01	5	575.00	0.00	0.00	0.00
10.00	0.06	218	575.00	0.00	0.00	0.00
12.00	**5.18**	3,798	575.06	0.01	0.01	0.00
14.00	**0.28**	12,350	575.21	0.08	0.08	0.00
16.00	0.17	13,252	575.22	0.10	0.10	0.00
18.00	0.13	**13,599**	**575.23**	**0.10**	**0.10**	0.00
20.00	0.10	**13,682**	**575.23**	**0.10**	**0.10**	0.00
22.00	0.09	13,599	575.23	0.10	0.10	0.00
24.00	0.08	13,477	575.22	0.10	0.10	0.00
26.00	0.00	12,859	575.21	0.09	0.09	0.00
28.00	0.00	12,236	575.20	0.08	0.08	0.00
30.00	0.00	11,664	575.19	0.08	0.08	0.00
32.00	0.00	11,139	575.19	0.07	0.07	0.00
34.00	0.00	10,655	575.18	0.06	0.06	0.00
36.00	0.00	10,207	575.17	0.06	0.06	0.00
38.00	0.00	9,792	575.16	0.06	0.06	0.00
40.00	0.00	9,408	575.16	0.05	0.05	0.00
42.00	0.00	9,050	575.15	0.05	0.05	0.00
44.00	0.00	8,716	575.15	0.04	0.04	0.00
46.00	0.00	8,404	575.14	0.04	0.04	0.00
48.00	0.00	8,113	575.14	0.04	0.04	0.00
50.00	0.00	7,839	575.13	0.04	0.04	0.00
52.00	0.00	7,582	575.13	0.03	0.03	0.00
54.00	0.00	7,341	575.12	0.03	0.03	0.00
56.00	0.00	7,114	575.12	0.03	0.03	0.00
58.00	0.00	6,899	575.12	0.03	0.03	0.00
60.00	0.00	6,696	575.11	0.03	0.03	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

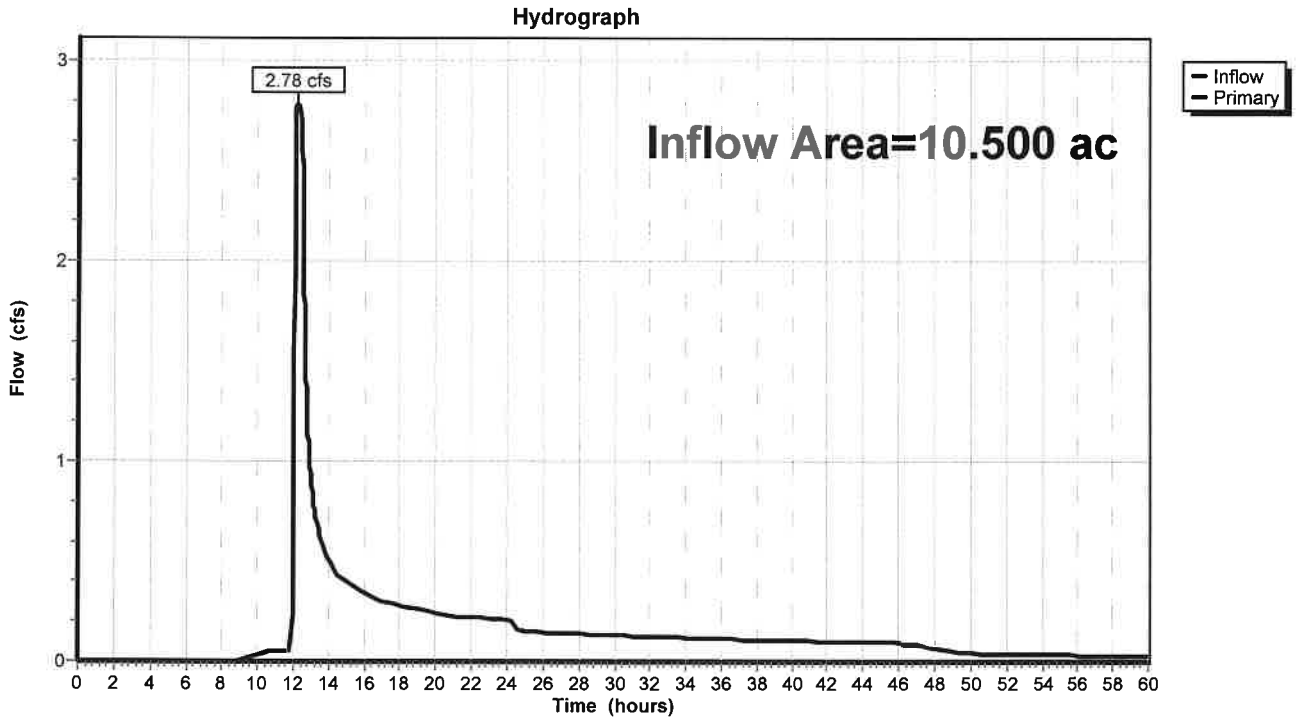
Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 0.83" for 1-Year event
Inflow = 2.78 cfs @ 12.22 hrs, Volume= 0.724 af
Primary = 2.78 cfs @ 12.22 hrs, Volume= 0.724 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.04	0.00	0.04
1.00	0.00	0.00	0.00	53.00	0.03	0.00	0.03
2.00	0.00	0.00	0.00	54.00	0.03	0.00	0.03
3.00	0.00	0.00	0.00	55.00	0.03	0.00	0.03
4.00	0.00	0.00	0.00	56.00	0.03	0.00	0.03
5.00	0.00	0.00	0.00	57.00	0.03	0.00	0.03
6.00	0.00	0.00	0.00	58.00	0.03	0.00	0.03
7.00	0.00	0.00	0.00	59.00	0.03	0.00	0.03
8.00	0.00	0.00	0.00	60.00	0.03	0.00	0.03
9.00	0.01	0.00	0.01				
10.00	0.03	0.00	0.03				
11.00	0.05	0.00	0.05				
12.00	**0.09**	0.00	**0.09**				
13.00	**0.91**	0.00	**0.91**				
14.00	0.51	0.00	0.51				
15.00	0.40	0.00	0.40				
16.00	0.34	0.00	0.34				
17.00	0.30	0.00	0.30				
18.00	0.28	0.00	0.28				
19.00	0.26	0.00	0.26				
20.00	0.24	0.00	0.24				
21.00	0.23	0.00	0.23				
22.00	0.22	0.00	0.22				
23.00	0.21	0.00	0.21				
24.00	0.21	0.00	0.21				
25.00	0.15	0.00	0.15				
26.00	0.15	0.00	0.15				
27.00	0.14	0.00	0.14				
28.00	0.14	0.00	0.14				
29.00	0.13	0.00	0.13				
30.00	0.13	0.00	0.13				
31.00	0.13	0.00	0.13				
32.00	0.12	0.00	0.12				
33.00	0.12	0.00	0.12				
34.00	0.12	0.00	0.12				
35.00	0.12	0.00	0.12				
36.00	0.11	0.00	0.11				
37.00	0.11	0.00	0.11				
38.00	0.11	0.00	0.11				
39.00	0.11	0.00	0.11				
40.00	0.10	0.00	0.10				
41.00	0.10	0.00	0.10				
42.00	0.10	0.00	0.10				
43.00	0.10	0.00	0.10				
44.00	0.10	0.00	0.10				
45.00	0.09	0.00	0.09				
46.00	0.09	0.00	0.09				
47.00	0.09	0.00	0.09				
48.00	0.06	0.00	0.06				
49.00	0.05	0.00	0.05				
50.00	0.04	0.00	0.04				
51.00	0.04	0.00	0.04				

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=1.27"
Flow Length=652' Tc=13.3 min CN=90 Runoff=10.57 cfs 0.644 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.34"
Flow Length=683' Tc=14.4 min CN=91 Runoff=7.75 cfs 0.491 af

Pond 1P: Bioretention Area 3 Peak Elev=575.91' Storage=8,359 cf Inflow=10.57 cfs 0.644 af
Primary=2.79 cfs 0.556 af Secondary=5.41 cfs 0.088 af Outflow=8.19 cfs 0.644 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.32' Storage=19,128 cf Inflow=12.29 cfs 0.579 af
Primary=0.18 cfs 0.400 af Secondary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.400 af

Link 5L: Outflow (@ CB 54) Inflow=2.86 cfs 0.956 af
Primary=2.86 cfs 0.956 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.135 af Average Runoff Depth = 1.30"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Front Area 1

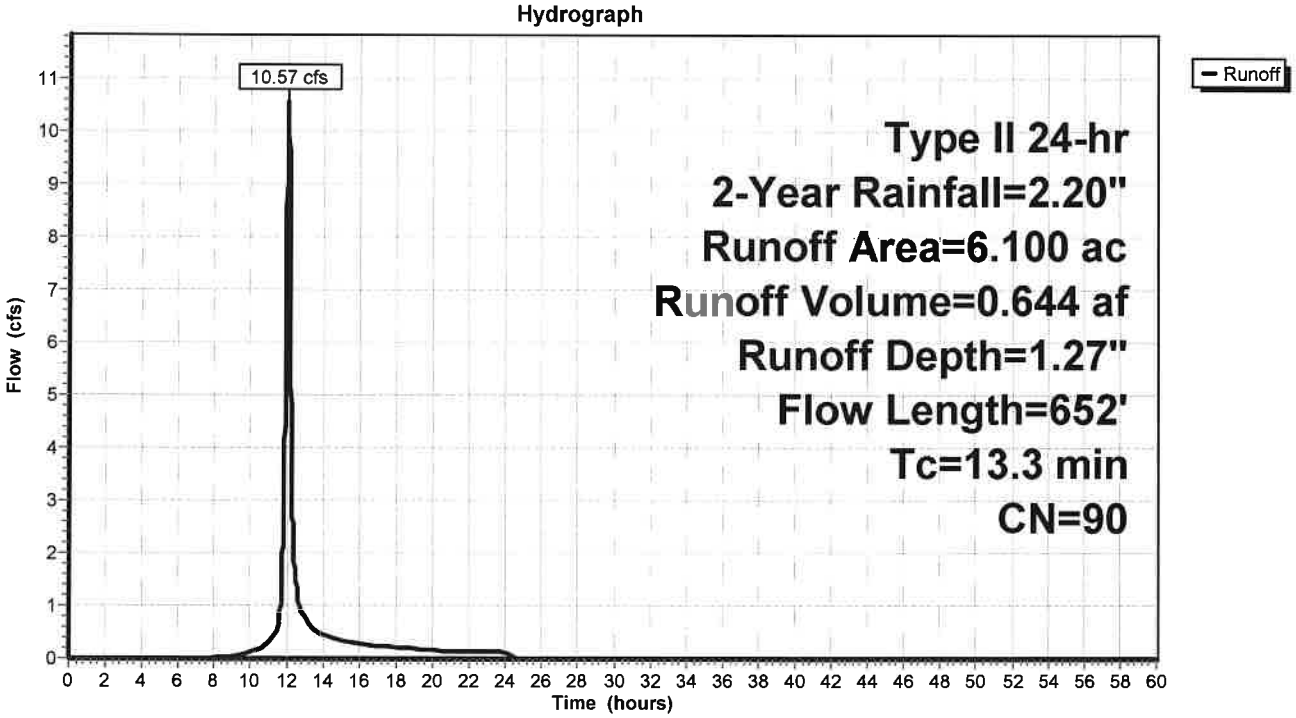
Runoff = 10.57 cfs @ 12.05 hrs, Volume= 0.644 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.02
9.00	0.32	0.01	0.06
10.00	0.40	0.02	0.12
11.00	0.52	0.06	0.30
12.00	1.46	0.65	**9.45**
13.00	1.70	0.84	**0.79**
14.00	1.80	0.93	0.46
15.00	1.88	0.99	0.36
16.00	1.94	1.04	0.28
17.00	1.98	1.08	0.24
18.00	2.03	1.12	0.21
19.00	2.06	1.15	0.19
20.00	2.09	1.17	0.16
21.00	2.12	1.20	0.15
22.00	2.15	1.22	0.14
23.00	2.18	1.24	0.14
24.00	**2.20**	**1.27**	0.13
25.00	2.20	1.27	0.00
26.00	2.20	1.27	0.00
27.00	2.20	1.27	0.00
28.00	2.20	1.27	0.00
29.00	2.20	1.27	0.00
30.00	2.20	1.27	0.00
31.00	2.20	1.27	0.00
32.00	2.20	1.27	0.00
33.00	2.20	1.27	0.00
34.00	2.20	1.27	0.00
35.00	2.20	1.27	0.00
36.00	2.20	1.27	0.00
37.00	2.20	1.27	0.00
38.00	2.20	1.27	0.00
39.00	2.20	1.27	0.00
40.00	2.20	1.27	0.00
41.00	2.20	1.27	0.00
42.00	2.20	1.27	0.00
43.00	2.20	1.27	0.00
44.00	2.20	1.27	0.00
45.00	2.20	1.27	0.00
46.00	2.20	1.27	0.00
47.00	2.20	1.27	0.00
48.00	2.20	1.27	0.00
49.00	2.20	1.27	0.00
50.00	2.20	1.27	0.00
51.00	2.20	1.27	0.00
52.00	2.20	1.27	0.00
53.00	2.20	1.27	0.00
54.00	2.20	1.27	0.00
55.00	2.20	1.27	0.00
56.00	2.20	1.27	0.00
57.00	2.20	1.27	0.00
58.00	2.20	1.27	0.00
59.00	2.20	1.27	0.00
60.00	2.20	1.27	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 2S: Rear Area 1

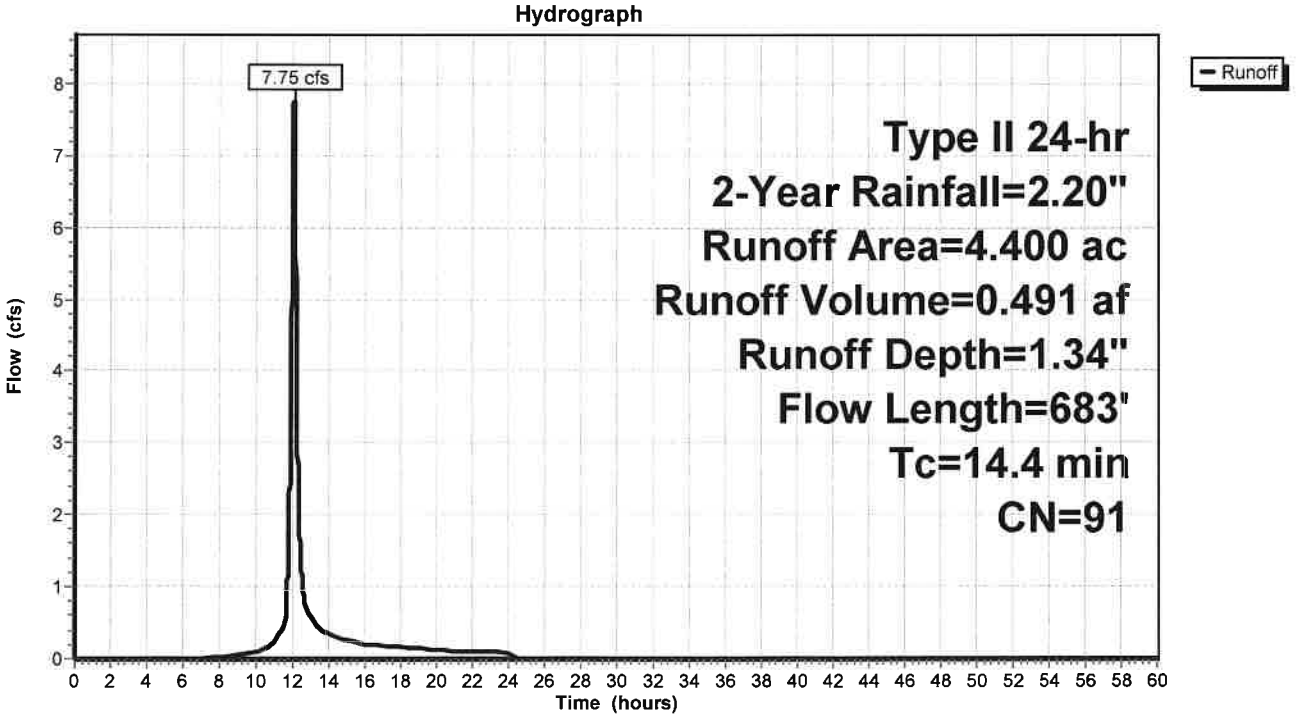
Runoff = 7.75 cfs @ 12.06 hrs, Volume= 0.491 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.02
9.00	0.32	0.01	0.06
10.00	0.40	0.03	0.10
11.00	0.52	0.08	0.25
12.00	1.46	0.71	**6.69**
13.00	1.70	0.90	**0.60**
14.00	1.80	0.99	0.35
15.00	1.88	1.06	0.27
16.00	1.94	1.11	0.21
17.00	1.98	1.15	0.18
18.00	2.03	1.19	0.16
19.00	2.06	1.22	0.14
20.00	2.09	1.25	0.12
21.00	2.12	1.27	0.11
22.00	2.15	1.30	0.10
23.00	2.18	1.32	0.10
24.00	**2.20**	**1.34**	0.10
25.00	2.20	1.34	0.00
26.00	2.20	1.34	0.00
27.00	2.20	1.34	0.00
28.00	2.20	1.34	0.00
29.00	2.20	1.34	0.00
30.00	2.20	1.34	0.00
31.00	2.20	1.34	0.00
32.00	2.20	1.34	0.00
33.00	2.20	1.34	0.00
34.00	2.20	1.34	0.00
35.00	2.20	1.34	0.00
36.00	2.20	1.34	0.00
37.00	2.20	1.34	0.00
38.00	2.20	1.34	0.00
39.00	2.20	1.34	0.00
40.00	2.20	1.34	0.00
41.00	2.20	1.34	0.00
42.00	2.20	1.34	0.00
43.00	2.20	1.34	0.00
44.00	2.20	1.34	0.00
45.00	2.20	1.34	0.00
46.00	2.20	1.34	0.00
47.00	2.20	1.34	0.00
48.00	2.20	1.34	0.00
49.00	2.20	1.34	0.00
50.00	2.20	1.34	0.00
51.00	2.20	1.34	0.00
52.00	2.20	1.34	0.00
53.00	2.20	1.34	0.00
54.00	2.20	1.34	0.00
55.00	2.20	1.34	0.00
56.00	2.20	1.34	0.00
57.00	2.20	1.34	0.00
58.00	2.20	1.34	0.00
59.00	2.20	1.34	0.00
60.00	2.20	1.34	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 1.27" for 2-Year event
Inflow = 10.57 cfs @ 12.05 hrs, Volume= 0.644 af
Outflow = 8.19 cfs @ 12.13 hrs, Volume= 0.644 af, Atten= 22%, Lag= 4.9 min
Primary = 2.79 cfs @ 12.13 hrs, Volume= 0.556 af
Secondary = 5.41 cfs @ 12.13 hrs, Volume= 0.088 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.91' @ 12.13 hrs Surf.Area= 9,805 sf Storage= 8,359 cf

Plug-Flow detention time= 252.3 min calculated for 0.644 af (100% of inflow)
Center-of-Mass det. time= 252.2 min (1,078.1 - 825.9)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

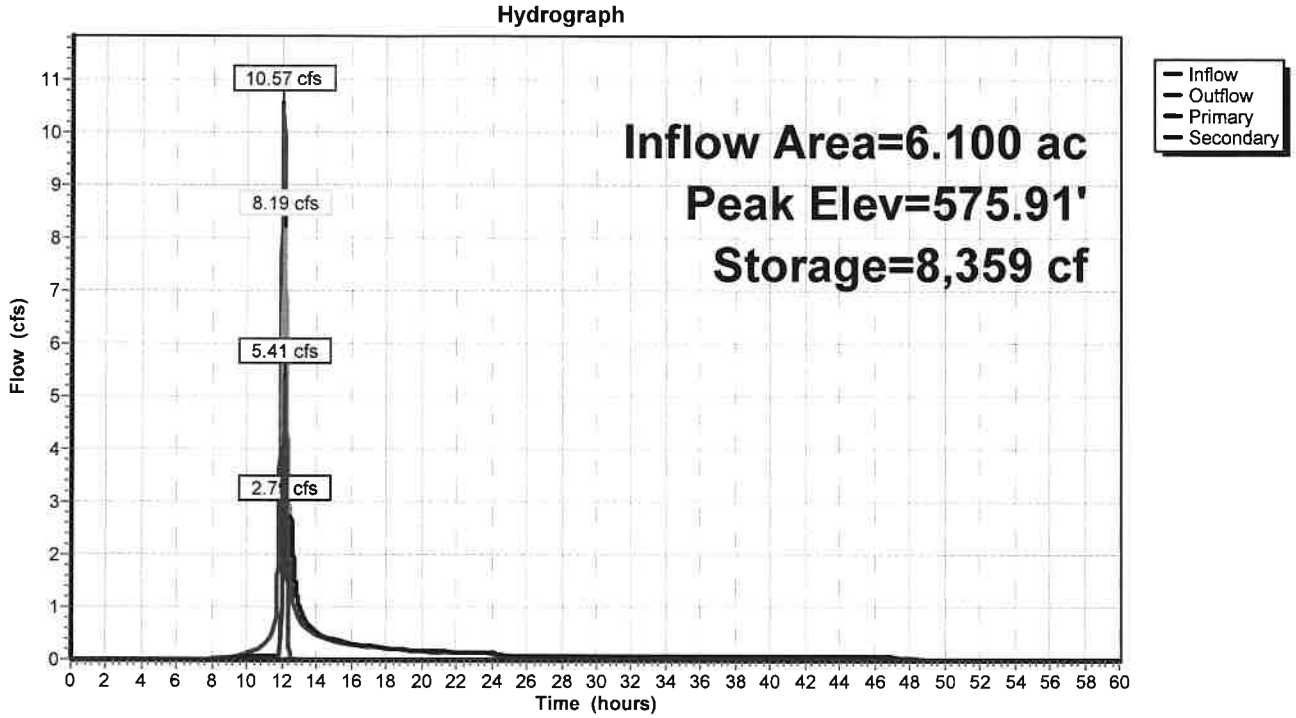
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.79 cfs @ 12.13 hrs HW=575.91' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.79 cfs @ 7.98 fps)
  ├**2=Grate** (Passes < 4.28 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

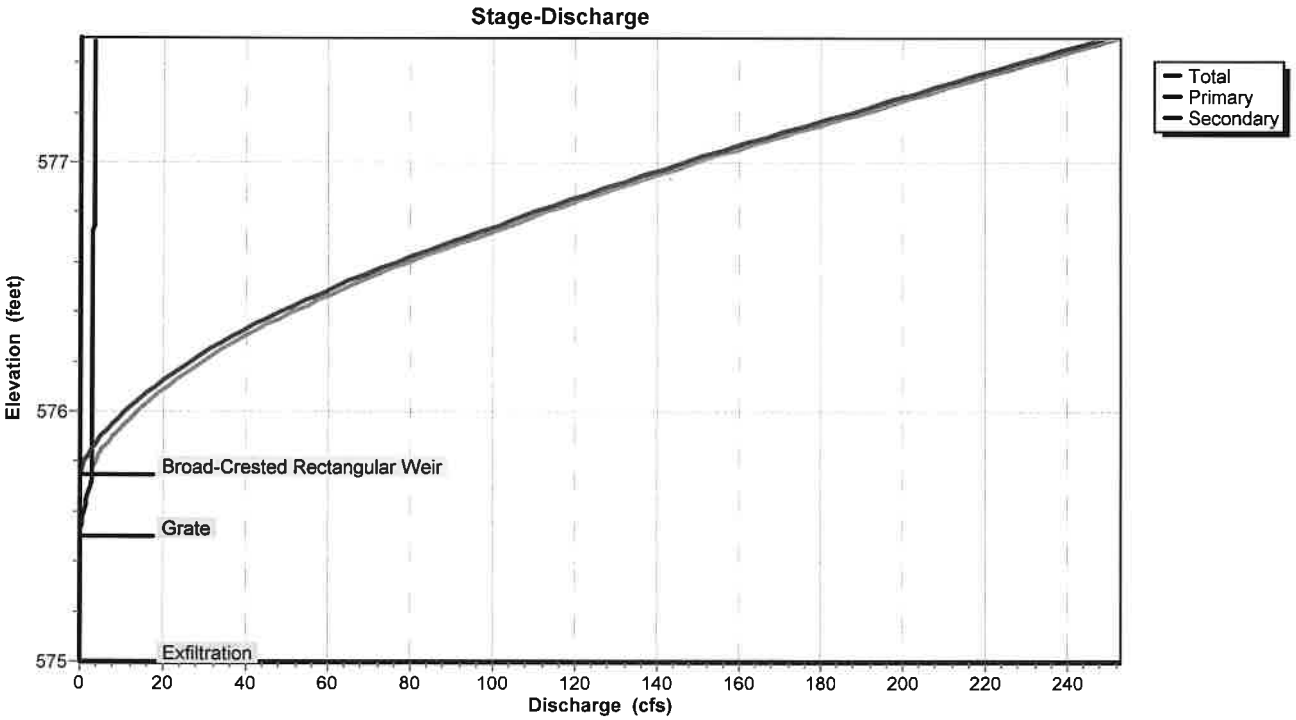
Secondary OutFlow Max=5.39 cfs @ 12.13 hrs HW=575.91' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 5.39 cfs @ 1.15 fps)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3

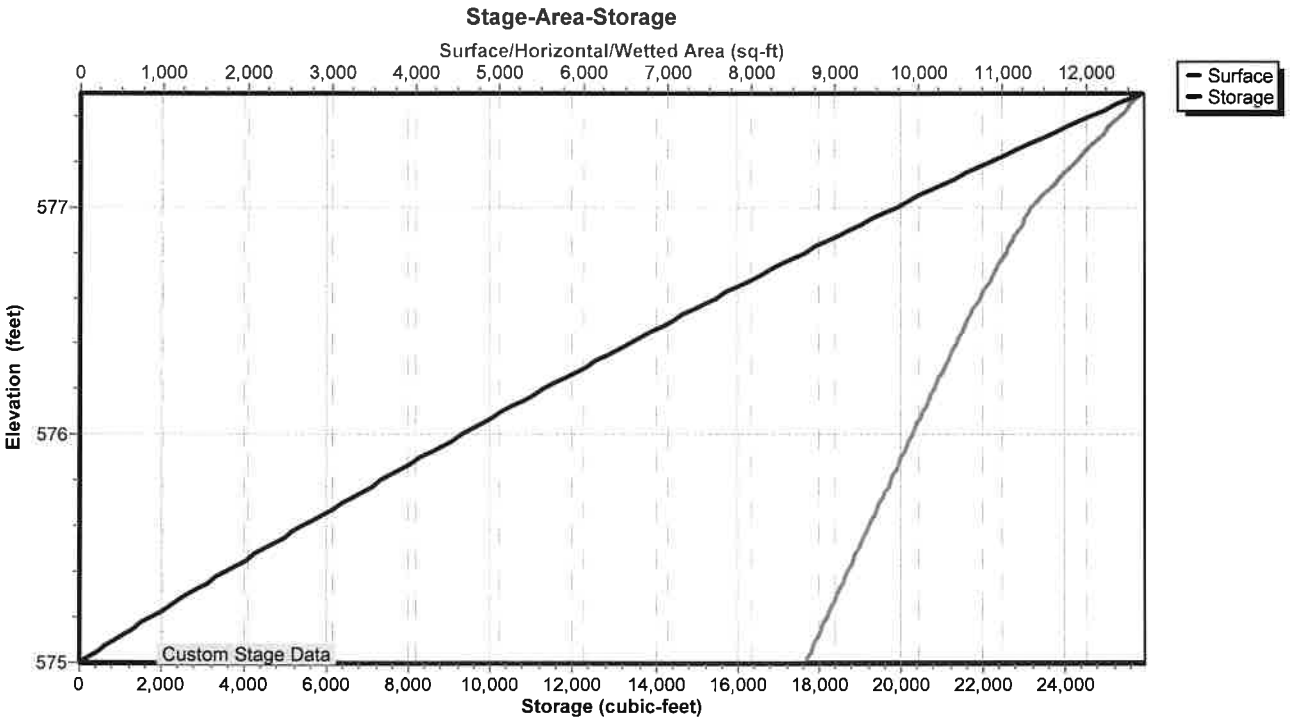


Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.02	17	575.00	0.00	0.00	0.00
10.00	0.12	257	575.03	0.05	0.05	0.00
12.00	**9.45**	**6,253**	**575.69**	**2.30**	**2.30**	**0.00**
14.00	**0.46**	**5,096**	**575.57**	**0.52**	**0.52**	**0.00**
16.00	0.28	4,881	575.54	0.30	0.30	0.00
18.00	0.21	4,786	575.53	0.22	0.22	0.00
20.00	0.16	4,719	575.53	0.17	0.17	0.00
22.00	0.14	4,676	575.52	0.15	0.15	0.00
24.00	0.13	4,652	575.52	0.13	0.13	0.00
26.00	0.00	4,232	575.47	0.06	0.06	0.00
28.00	0.00	3,836	575.43	0.05	0.05	0.00
30.00	0.00	3,444	575.39	0.05	0.05	0.00
32.00	0.00	3,055	575.34	0.05	0.05	0.00
34.00	0.00	2,670	575.30	0.05	0.05	0.00
36.00	0.00	2,287	575.26	0.05	0.05	0.00
38.00	0.00	1,909	575.22	0.05	0.05	0.00
40.00	0.00	1,533	575.18	0.05	0.05	0.00
42.00	0.00	1,161	575.13	0.05	0.05	0.00
44.00	0.00	792	575.09	0.05	0.05	0.00
46.00	0.00	426	575.05	0.05	0.05	0.00
48.00	0.00	107	575.01	0.02	0.02	0.00
50.00	0.00	20	575.00	0.00	0.00	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 1.58" for 2-Year event
Inflow = 12.29 cfs @ 12.11 hrs, Volume= 0.579 af
Outflow = 0.18 cfs @ 17.01 hrs, Volume= 0.400 af, Atten= 99%, Lag= 293.7 min
Primary = 0.18 cfs @ 17.01 hrs, Volume= 0.400 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.32' @ 17.01 hrs Surf.Area= 61,630 sf Storage= 19,128 cf

Plug-Flow detention time= 1,051.7 min calculated for 0.400 af (69% of inflow)
Center-of-Mass det. time= 962.0 min (1,770.2 - 808.1)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

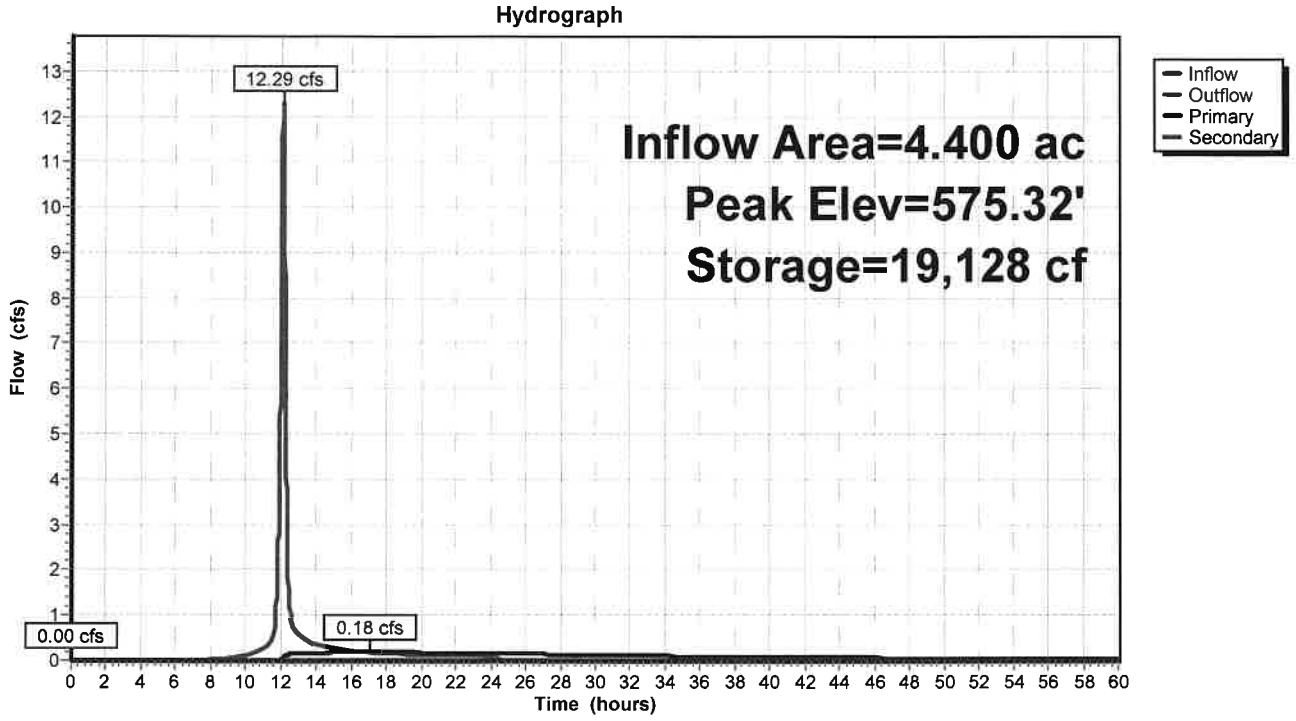
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.18 cfs @ 17.01 hrs HW=575.32' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.18 cfs of 1.87 cfs potential flow)
└**2=low flow outlet pipe** (Barrel Controls 0.18 cfs @ 1.95 fps)
└**3=Grate** (Controls 0.00 cfs)

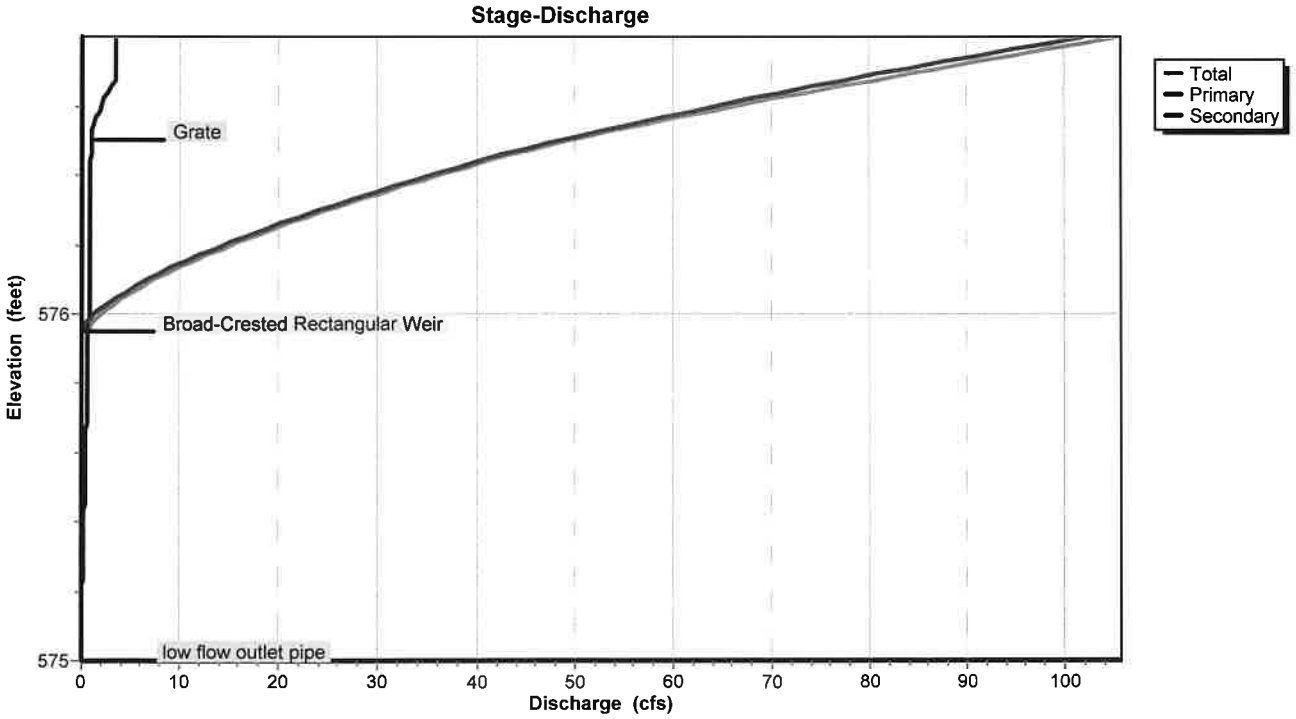
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)

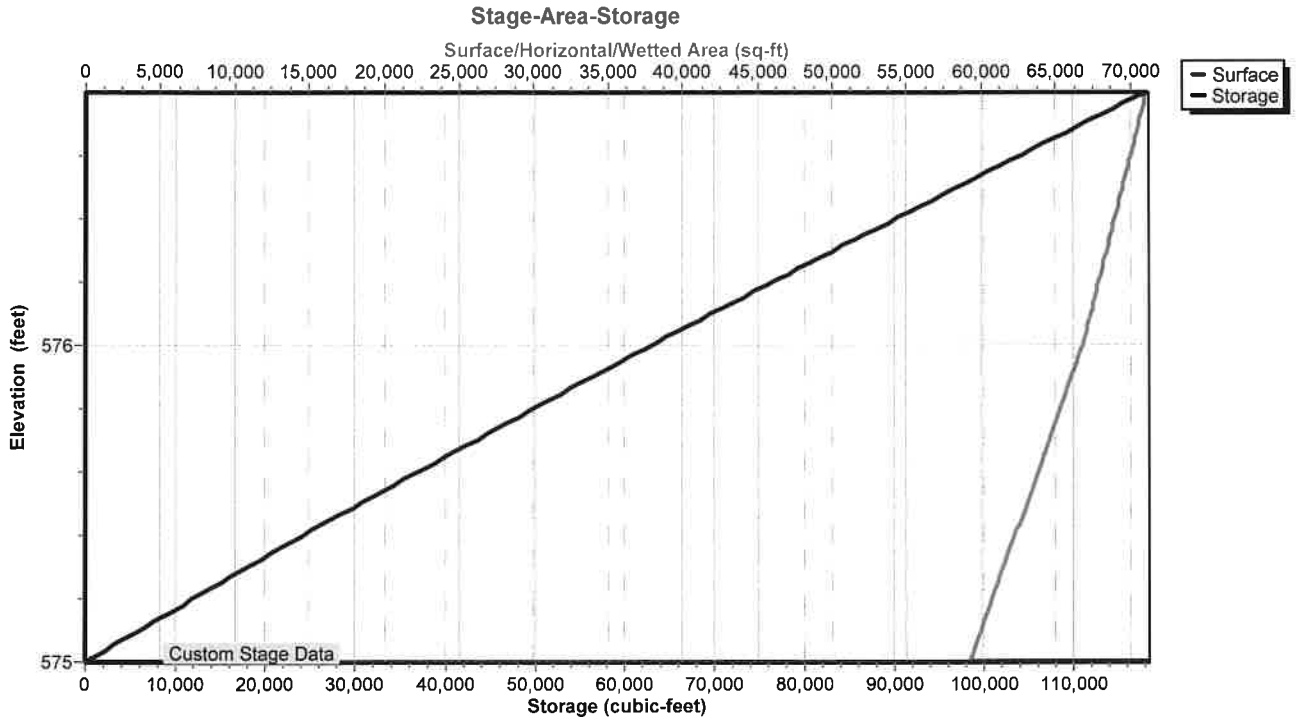


Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.02	48	575.00	0.00	0.00	0.00
10.00	0.10	451	575.01	0.00	0.00	0.00
12.00	**6.69**	5,327	575.09	0.02	0.02	0.00
14.00	**0.35**	18,425	575.31	0.17	0.17	0.00
16.00	0.21	**19,087**	**575.32**	**0.18**	**0.18**	0.00
18.00	0.16	**19,093**	**575.32**	**0.18**	**0.18**	0.00
20.00	0.12	18,812	575.31	0.17	0.17	0.00
22.00	0.10	18,367	575.30	0.17	0.17	0.00
24.00	0.10	17,912	575.30	0.16	0.16	0.00
26.00	0.00	16,886	575.28	0.15	0.15	0.00
28.00	0.00	15,893	575.26	0.13	0.13	0.00
30.00	0.00	14,996	575.25	0.12	0.12	0.00
32.00	0.00	14,184	575.24	0.11	0.11	0.00
34.00	0.00	13,445	575.22	0.10	0.10	0.00
36.00	0.00	12,772	575.21	0.09	0.09	0.00
38.00	0.00	12,156	575.20	0.08	0.08	0.00
40.00	0.00	11,591	575.19	0.08	0.08	0.00
42.00	0.00	11,071	575.18	0.07	0.07	0.00
44.00	0.00	10,592	575.18	0.06	0.06	0.00
46.00	0.00	10,149	575.17	0.06	0.06	0.00
48.00	0.00	9,739	575.16	0.05	0.05	0.00
50.00	0.00	9,358	575.16	0.05	0.05	0.00
52.00	0.00	9,003	575.15	0.05	0.05	0.00
54.00	0.00	8,673	575.15	0.04	0.04	0.00
56.00	0.00	8,364	575.14	0.04	0.04	0.00
58.00	0.00	8,075	575.14	0.04	0.04	0.00
60.00	0.00	7,803	575.13	0.04	0.04	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

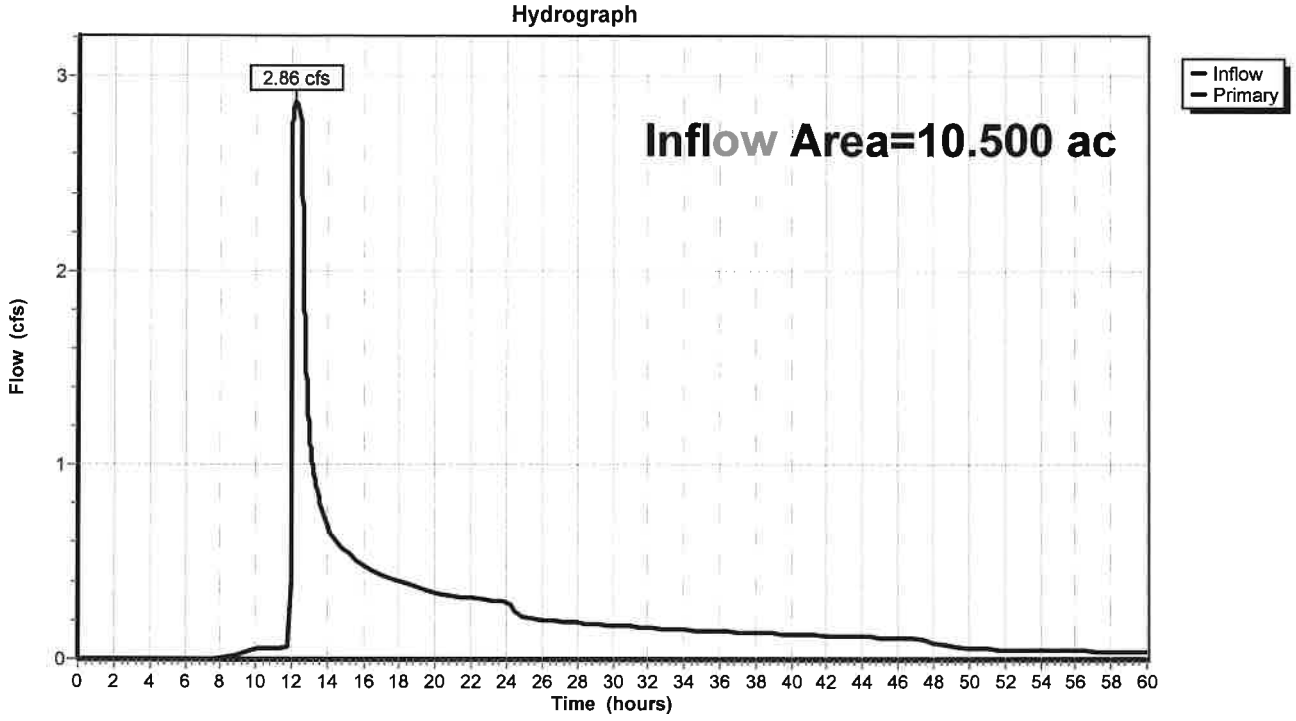
Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.09" for 2-Year event
Inflow = 2.86 cfs @ 12.23 hrs, Volume= 0.956 af
Primary = 2.86 cfs @ 12.23 hrs, Volume= 0.956 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.05	0.00	0.05
1.00	0.00	0.00	0.00	53.00	0.05	0.00	0.05
2.00	0.00	0.00	0.00	54.00	0.04	0.00	0.04
3.00	0.00	0.00	0.00	55.00	0.04	0.00	0.04
4.00	0.00	0.00	0.00	56.00	0.04	0.00	0.04
5.00	0.00	0.00	0.00	57.00	0.04	0.00	0.04
6.00	0.00	0.00	0.00	58.00	0.04	0.00	0.04
7.00	0.00	0.00	0.00	59.00	0.04	0.00	0.04
8.00	0.00	0.00	0.00	60.00	0.04	0.00	0.04
9.00	0.02	0.00	0.02				
10.00	0.05	0.00	0.05				
11.00	0.05	0.00	0.05				
12.00	**2.31**	0.00	**2.31**				
13.00	**1.18**	0.00	**1.18**				
14.00	0.69	0.00	0.69				
15.00	0.55	0.00	0.55				
16.00	0.48	0.00	0.48				
17.00	0.43	0.00	0.43				
18.00	0.40	0.00	0.40				
19.00	0.37	0.00	0.37				
20.00	0.34	0.00	0.34				
21.00	0.32	0.00	0.32				
22.00	0.31	0.00	0.31				
23.00	0.30	0.00	0.30				
24.00	0.29	0.00	0.29				
25.00	0.21	0.00	0.21				
26.00	0.20	0.00	0.20				
27.00	0.19	0.00	0.19				
28.00	0.19	0.00	0.19				
29.00	0.18	0.00	0.18				
30.00	0.17	0.00	0.17				
31.00	0.17	0.00	0.17				
32.00	0.16	0.00	0.16				
33.00	0.16	0.00	0.16				
34.00	0.15	0.00	0.15				
35.00	0.15	0.00	0.15				
36.00	0.14	0.00	0.14				
37.00	0.14	0.00	0.14				
38.00	0.13	0.00	0.13				
39.00	0.13	0.00	0.13				
40.00	0.13	0.00	0.13				
41.00	0.12	0.00	0.12				
42.00	0.12	0.00	0.12				
43.00	0.12	0.00	0.12				
44.00	0.11	0.00	0.11				
45.00	0.11	0.00	0.11				
46.00	0.11	0.00	0.11				
47.00	0.11	0.00	0.11				
48.00	0.08	0.00	0.08				
49.00	0.06	0.00	0.06				
50.00	0.06	0.00	0.06				
51.00	0.05	0.00	0.05				

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=1.71"
Flow Length=652' Tc=13.3 min CN=90 Runoff=14.18 cfs 0.870 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.79"
Flow Length=683' Tc=14.4 min CN=91 Runoff=10.29 cfs 0.658 af

Pond 1P: Bioretention Area 3 Peak Elev=575.99' Storage=9,153 cf Inflow=14.18 cfs 0.870 af
Primary=2.83 cfs 0.666 af Secondary=10.09 cfs 0.203 af Outflow=12.91 cfs 0.870 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.46' Storage=28,218 cf Inflow=20.08 cfs 0.861 af
Primary=0.33 cfs 0.652 af Secondary=0.00 cfs 0.000 af Outflow=0.33 cfs 0.652 af

Link 5L: Outflow (@ CB 54) Inflow=3.01 cfs 1.318 af
Primary=3.01 cfs 1.318 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.527 af Average Runoff Depth = 1.75"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Front Area 1

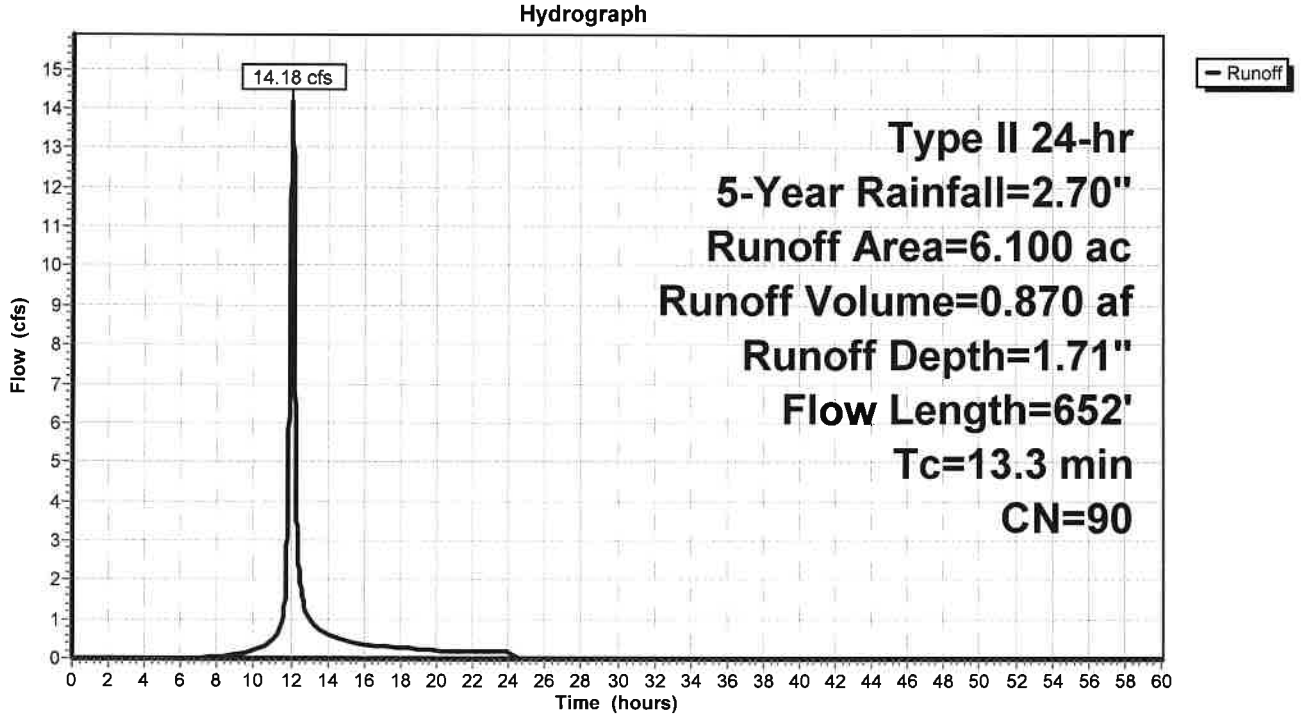
Runoff = 14.18 cfs @ 12.05 hrs, Volume= 0.870 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.02
8.00	0.32	0.01	0.05
9.00	0.40	0.02	0.12
10.00	0.49	0.05	0.20
11.00	0.63	0.11	0.47
12.00	1.79	0.92	**12.79**
13.00	2.08	1.17	**1.02**
14.00	2.21	1.28	0.59
15.00	2.30	1.36	0.46
16.00	2.38	1.42	0.36
17.00	2.43	1.47	0.31
18.00	2.49	1.52	0.27
19.00	2.53	1.56	0.24
20.00	2.57	1.59	0.20
21.00	2.60	1.62	0.19
22.00	2.64	1.65	0.18
23.00	2.67	1.68	0.17
24.00	**2.70**	**1.71**	0.17
25.00	2.70	1.71	0.00
26.00	2.70	1.71	0.00
27.00	2.70	1.71	0.00
28.00	2.70	1.71	0.00
29.00	2.70	1.71	0.00
30.00	2.70	1.71	0.00
31.00	2.70	1.71	0.00
32.00	2.70	1.71	0.00
33.00	2.70	1.71	0.00
34.00	2.70	1.71	0.00
35.00	2.70	1.71	0.00
36.00	2.70	1.71	0.00
37.00	2.70	1.71	0.00
38.00	2.70	1.71	0.00
39.00	2.70	1.71	0.00
40.00	2.70	1.71	0.00
41.00	2.70	1.71	0.00
42.00	2.70	1.71	0.00
43.00	2.70	1.71	0.00
44.00	2.70	1.71	0.00
45.00	2.70	1.71	0.00
46.00	2.70	1.71	0.00
47.00	2.70	1.71	0.00
48.00	2.70	1.71	0.00
49.00	2.70	1.71	0.00
50.00	2.70	1.71	0.00
51.00	2.70	1.71	0.00
52.00	2.70	1.71	0.00
53.00	2.70	1.71	0.00
54.00	2.70	1.71	0.00
55.00	2.70	1.71	0.00
56.00	2.70	1.71	0.00
57.00	2.70	1.71	0.00
58.00	2.70	1.71	0.00
59.00	2.70	1.71	0.00
60.00	2.70	1.71	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 2S: Rear Area 1

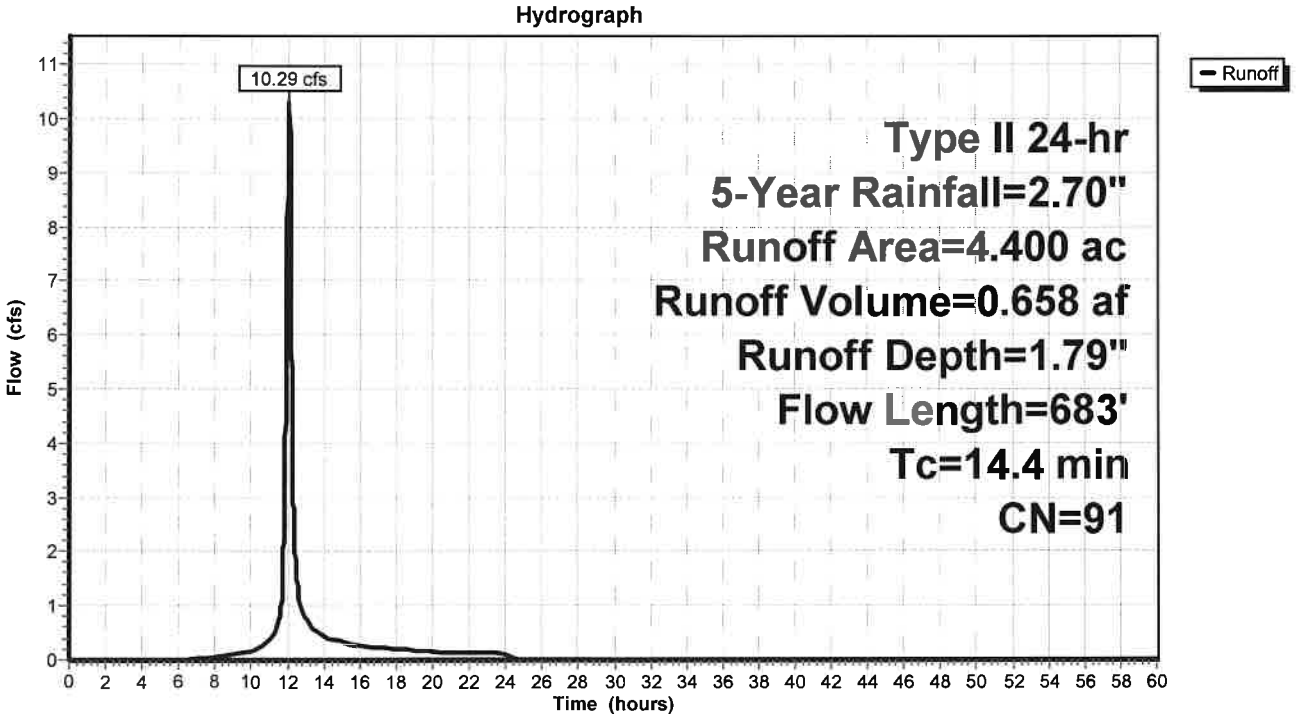
Runoff = 10.29 cfs @ 12.06 hrs, Volume= 0.658 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.03
8.00	0.32	0.01	0.05
9.00	0.40	0.03	0.10
10.00	0.49	0.07	0.17
11.00	0.63	0.13	0.37
12.00	1.79	0.98	**8.97**
13.00	2.08	1.24	**0.77**
14.00	2.21	1.35	0.44
15.00	2.30	1.43	0.34
16.00	2.38	1.50	0.27
17.00	2.43	1.55	0.23
18.00	2.49	1.60	0.20
19.00	2.53	1.64	0.18
20.00	2.57	1.67	0.15
21.00	2.60	1.71	0.14
22.00	2.64	1.74	0.13
23.00	2.67	1.77	0.13
24.00	**2.70**	**1.79**	0.12
25.00	2.70	1.79	0.00
26.00	2.70	1.79	0.00
27.00	2.70	1.79	0.00
28.00	2.70	1.79	0.00
29.00	2.70	1.79	0.00
30.00	2.70	1.79	0.00
31.00	2.70	1.79	0.00
32.00	2.70	1.79	0.00
33.00	2.70	1.79	0.00
34.00	2.70	1.79	0.00
35.00	2.70	1.79	0.00
36.00	2.70	1.79	0.00
37.00	2.70	1.79	0.00
38.00	2.70	1.79	0.00
39.00	2.70	1.79	0.00
40.00	2.70	1.79	0.00
41.00	2.70	1.79	0.00
42.00	2.70	1.79	0.00
43.00	2.70	1.79	0.00
44.00	2.70	1.79	0.00
45.00	2.70	1.79	0.00
46.00	2.70	1.79	0.00
47.00	2.70	1.79	0.00
48.00	2.70	1.79	0.00
49.00	2.70	1.79	0.00
50.00	2.70	1.79	0.00
51.00	2.70	1.79	0.00
52.00	2.70	1.79	0.00
53.00	2.70	1.79	0.00
54.00	2.70	1.79	0.00
55.00	2.70	1.79	0.00
56.00	2.70	1.79	0.00
57.00	2.70	1.79	0.00
58.00	2.70	1.79	0.00
59.00	2.70	1.79	0.00
60.00	2.70	1.79	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 1.71" for 5-Year event
Inflow = 14.18 cfs @ 12.05 hrs, Volume= 0.870 af
Outflow = 12.91 cfs @ 12.10 hrs, Volume= 0.870 af, Atten= 9%, Lag= 2.9 min
Primary = 2.83 cfs @ 12.10 hrs, Volume= 0.666 af
Secondary = 10.09 cfs @ 12.10 hrs, Volume= 0.203 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.99' @ 12.10 hrs Surf.Area= 9,908 sf Storage= 9,153 cf

Plug-Flow detention time= 193.1 min calculated for 0.869 af (100% of inflow)
Center-of-Mass det. time= 193.4 min (1,010.7 - 817.3)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

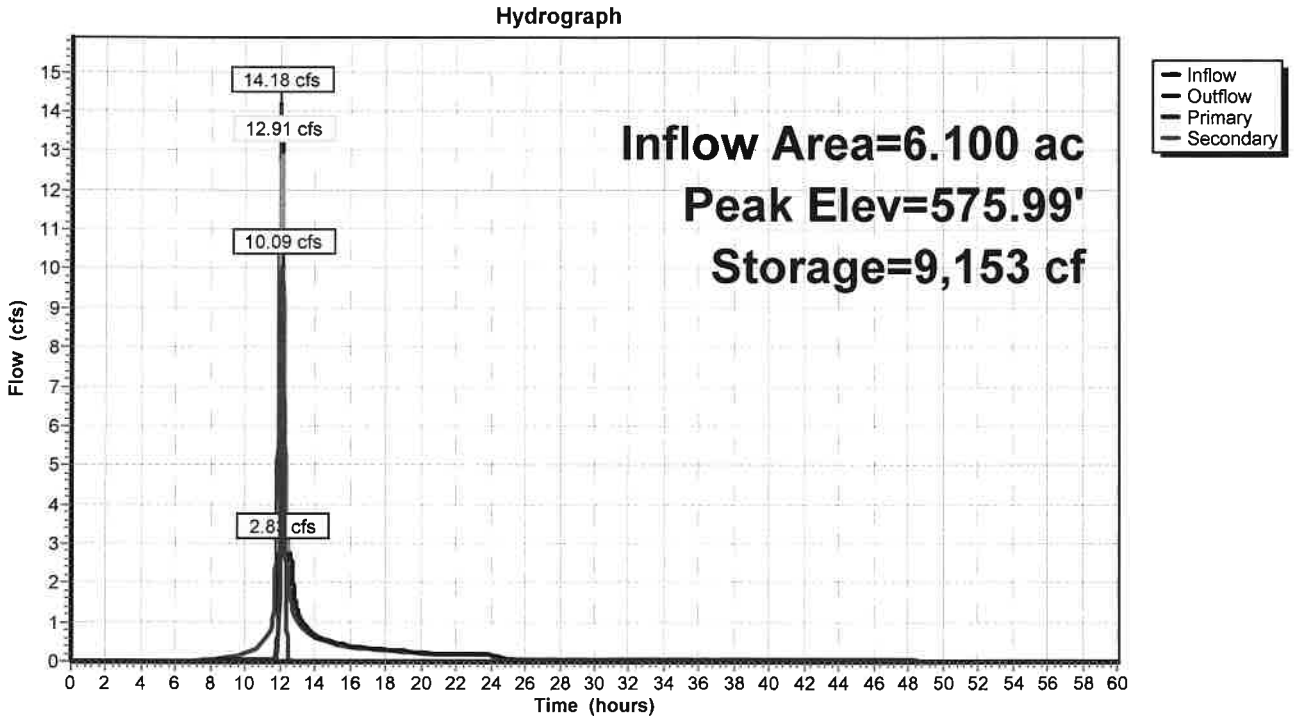
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.83 cfs @ 12.10 hrs HW=575.99' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.83 cfs @ 8.10 fps)
  ├**2=Grate** (Passes < 4.69 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

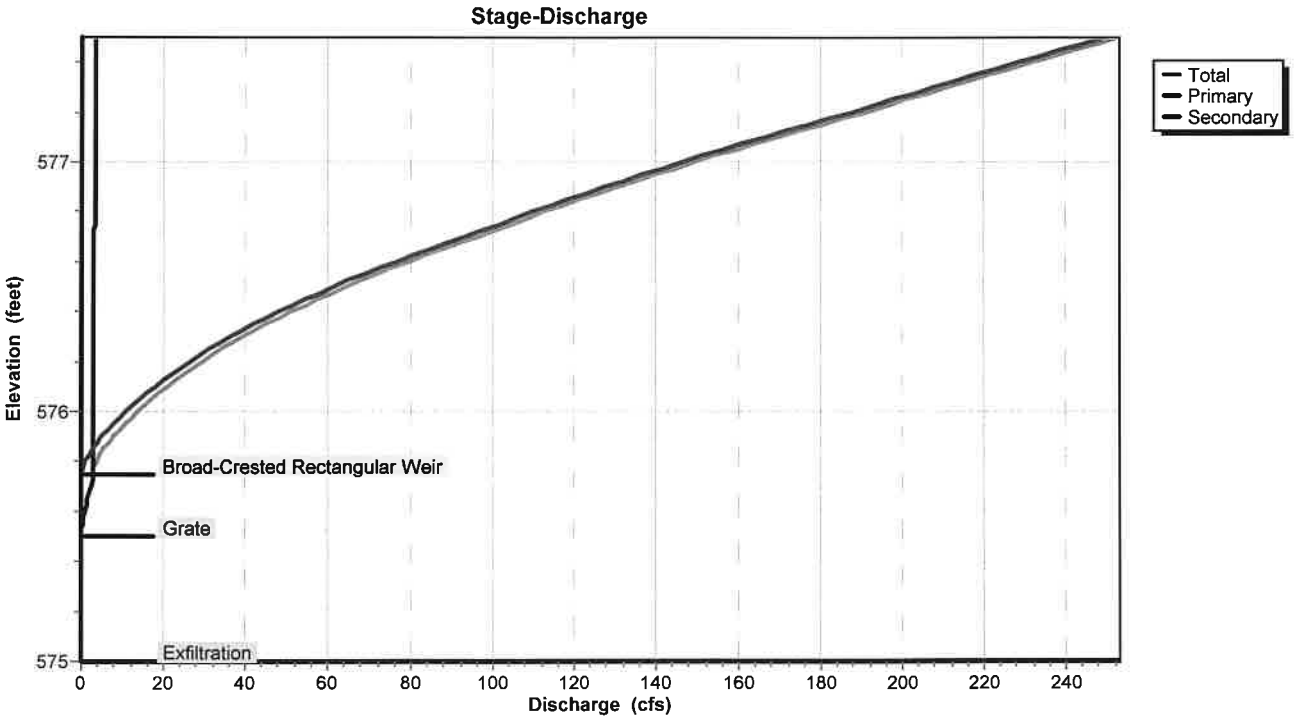
Secondary OutFlow Max=10.07 cfs @ 12.10 hrs HW=575.99' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 10.07 cfs @ 1.42 fps)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3

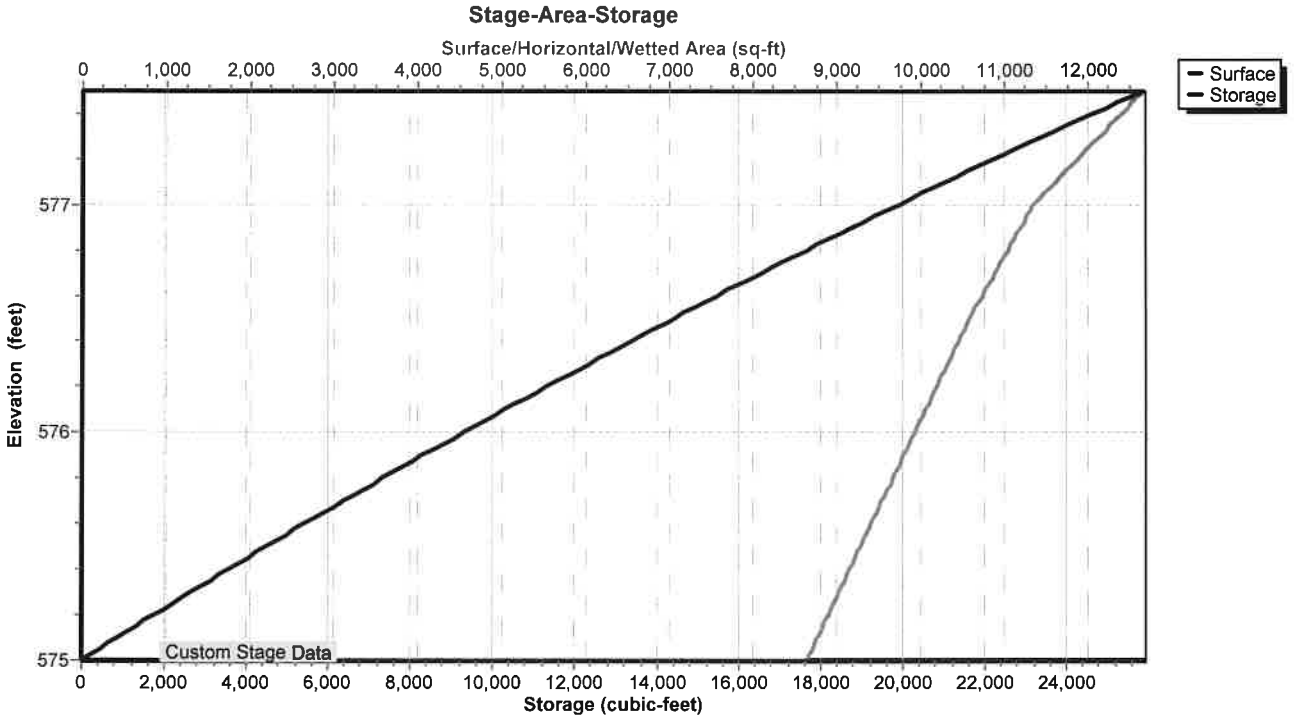


Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.05	99	575.01	0.02	0.02	0.00
10.00	0.20	617	575.07	0.05	0.05	0.00
12.00	**12.79**	**8,183**	**575.89**	**7.28**	**2.78**	**4.50**
14.00	**0.59**	**5,218**	**575.58**	**0.66**	**0.66**	**0.00**
16.00	0.36	4,969	575.55	0.38	0.38	0.00
18.00	0.27	4,859	575.54	0.29	0.29	0.00
20.00	0.20	4,774	575.53	0.21	0.21	0.00
22.00	0.18	4,739	575.53	0.18	0.18	0.00
24.00	0.17	4,722	575.53	0.17	0.17	0.00
26.00	0.00	4,258	575.48	0.06	0.06	0.00
28.00	0.00	3,862	575.43	0.05	0.05	0.00
30.00	0.00	3,470	575.39	0.05	0.05	0.00
32.00	0.00	3,081	575.35	0.05	0.05	0.00
34.00	0.00	2,695	575.30	0.05	0.05	0.00
36.00	0.00	2,313	575.26	0.05	0.05	0.00
38.00	0.00	1,934	575.22	0.05	0.05	0.00
40.00	0.00	1,558	575.18	0.05	0.05	0.00
42.00	0.00	1,186	575.14	0.05	0.05	0.00
44.00	0.00	816	575.09	0.05	0.05	0.00
46.00	0.00	450	575.05	0.05	0.05	0.00
48.00	0.00	119	575.01	0.03	0.03	0.00
50.00	0.00	22	575.00	0.01	0.01	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 2.35" for 5-Year event
Inflow = 20.08 cfs @ 12.08 hrs, Volume= 0.861 af
Outflow = 0.33 cfs @ 15.13 hrs, Volume= 0.652 af, Atten= 98%, Lag= 182.5 min
Primary = 0.33 cfs @ 15.13 hrs, Volume= 0.652 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.46' @ 15.13 hrs Surf.Area= 62,747 sf Storage= 28,218 cf

Plug-Flow detention time= 974.3 min calculated for 0.652 af (76% of inflow)
Center-of-Mass det. time= 898.6 min (1,692.2 - 793.6)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

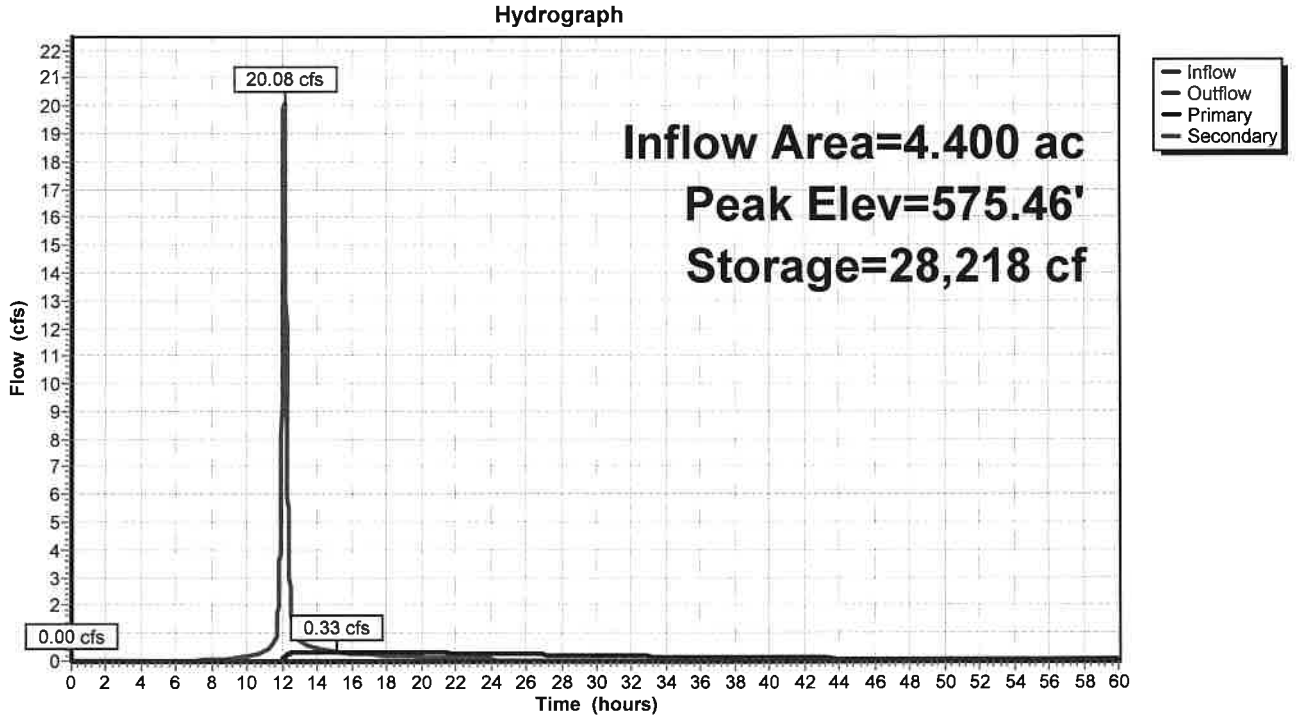
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.33 cfs @ 15.13 hrs HW=575.46' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.33 cfs of 2.02 cfs potential flow)
  └**2=low flow outlet pipe** (Barrel Controls 0.33 cfs @ 2.27 fps)
  └**3=Grate** (Controls 0.00 cfs)

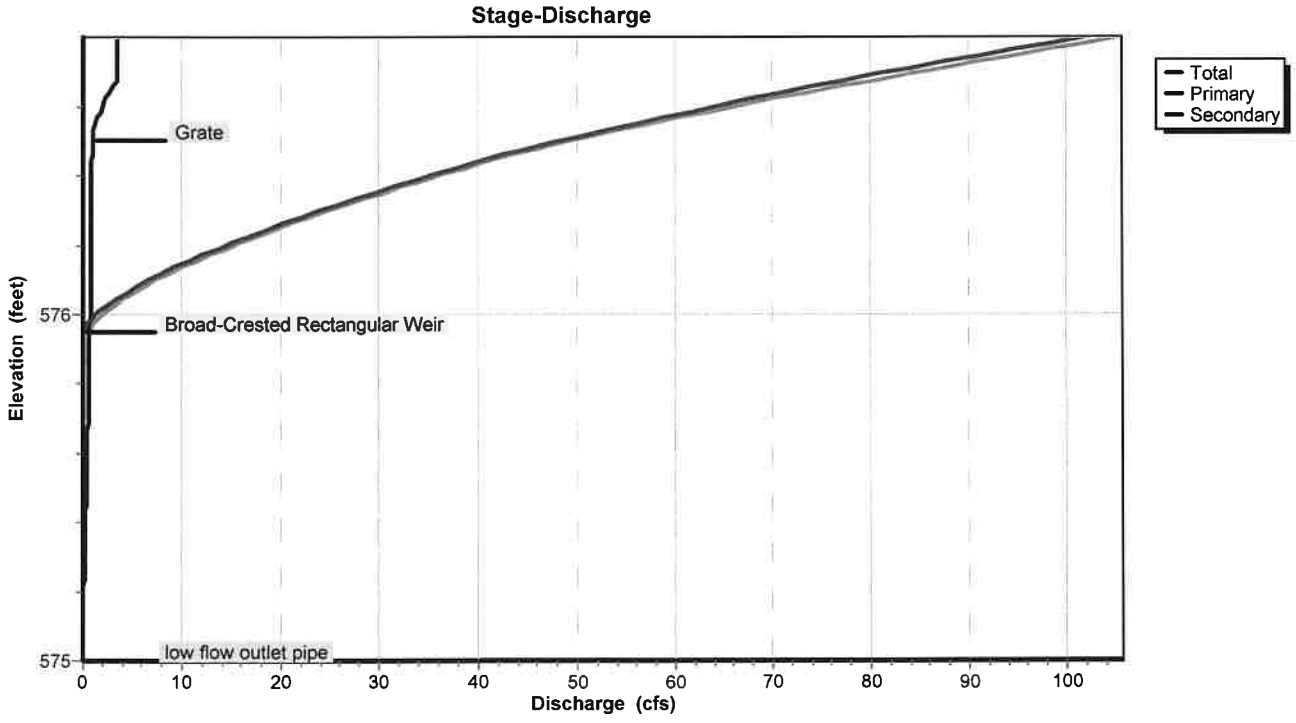
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)

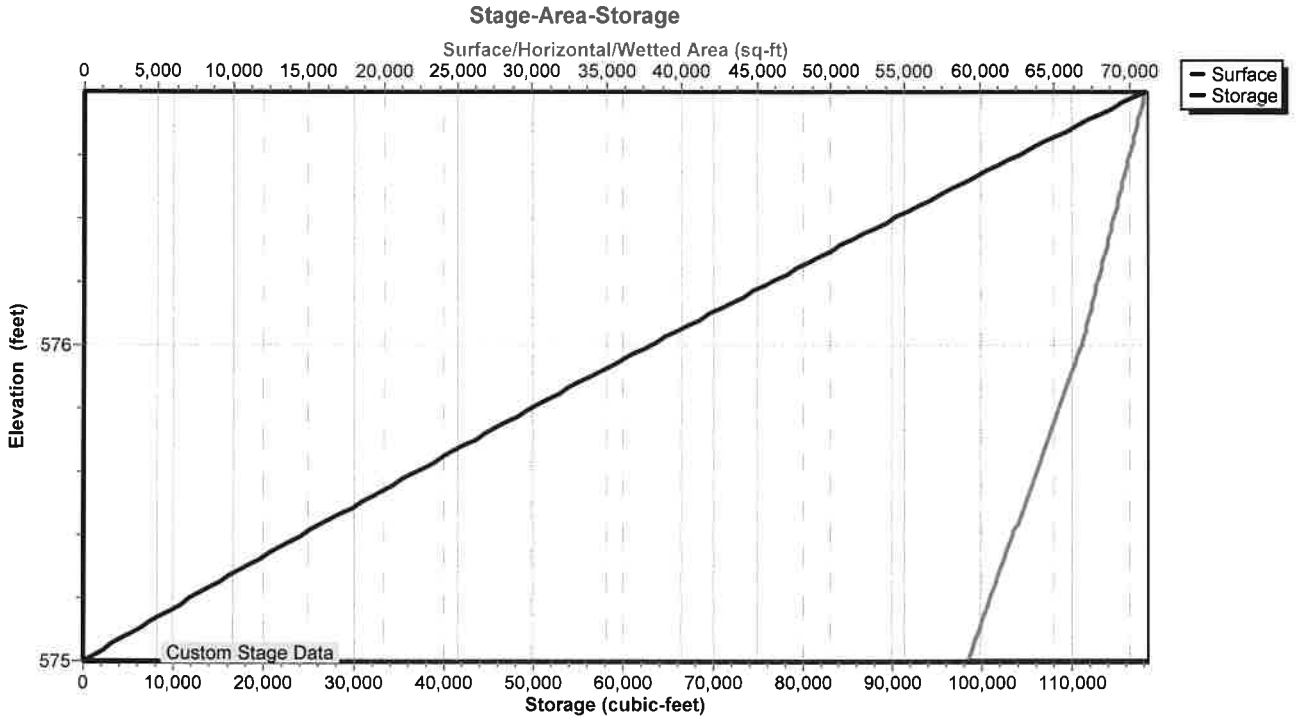


Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	1	575.00	0.00	0.00	0.00
8.00	0.05	186	575.00	0.00	0.00	0.00
10.00	0.17	912	575.02	0.00	0.00	0.00
12.00	**13.47**	8,186	575.14	0.04	0.04	0.00
14.00	**0.44**	**28,034**	**575.46**	**0.33**	**0.33**	0.00
16.00	0.27	**28,118**	**575.46**	**0.33**	**0.33**	0.00
18.00	0.20	27,442	575.45	0.32	0.32	0.00
20.00	0.15	26,479	575.43	0.30	0.30	0.00
22.00	0.13	25,382	575.42	0.28	0.28	0.00
24.00	0.12	24,337	575.40	0.26	0.26	0.00
26.00	0.00	22,633	575.37	0.24	0.24	0.00
28.00	0.00	21,033	575.35	0.21	0.21	0.00
30.00	0.00	19,609	575.32	0.19	0.19	0.00
32.00	0.00	18,338	575.30	0.17	0.17	0.00
34.00	0.00	17,199	575.29	0.15	0.15	0.00
36.00	0.00	16,175	575.27	0.13	0.13	0.00
38.00	0.00	15,251	575.25	0.12	0.12	0.00
40.00	0.00	14,415	575.24	0.11	0.11	0.00
42.00	0.00	13,655	575.23	0.10	0.10	0.00
44.00	0.00	12,964	575.22	0.09	0.09	0.00
46.00	0.00	12,331	575.21	0.08	0.08	0.00
48.00	0.00	11,752	575.20	0.08	0.08	0.00
50.00	0.00	11,220	575.19	0.07	0.07	0.00
52.00	0.00	10,729	575.18	0.07	0.07	0.00
54.00	0.00	10,276	575.17	0.06	0.06	0.00
56.00	0.00	9,856	575.16	0.06	0.06	0.00
58.00	0.00	9,467	575.16	0.05	0.05	0.00
60.00	0.00	9,105	575.15	0.05	0.05	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

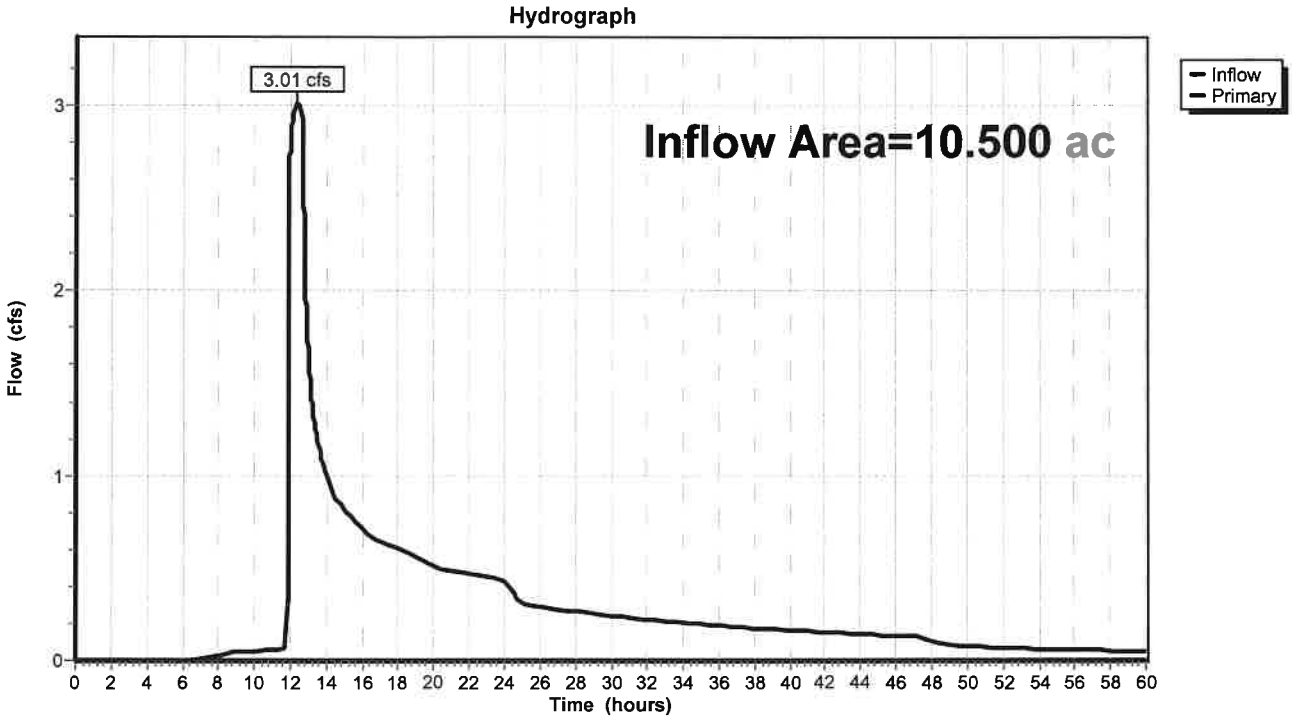
Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.51" for 5-Year event
Inflow = 3.01 cfs @ 12.34 hrs, Volume= 1.318 af
Primary = 3.01 cfs @ 12.34 hrs, Volume= 1.318 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.07	0.00	0.07
1.00	0.00	0.00	0.00	53.00	0.06	0.00	0.06
2.00	0.00	0.00	0.00	54.00	0.06	0.00	0.06
3.00	0.00	0.00	0.00	55.00	0.06	0.00	0.06
4.00	0.00	0.00	0.00	56.00	0.06	0.00	0.06
5.00	0.00	0.00	0.00	57.00	0.05	0.00	0.05
6.00	0.00	0.00	0.00	58.00	0.05	0.00	0.05
7.00	0.00	0.00	0.00	59.00	0.05	0.00	0.05
8.00	0.02	0.00	0.02	60.00	0.05	0.00	0.05
9.00	0.05	0.00	0.05				
10.00	0.05	0.00	0.05				
11.00	0.05	0.00	0.05				
12.00	**2.82**	0.00	**2.82**				
13.00	**1.62**	0.00	**1.62**				
14.00	0.99	0.00	0.99				
15.00	0.81	0.00	0.81				
16.00	0.71	0.00	0.71				
17.00	0.65	0.00	0.65				
18.00	0.60	0.00	0.60				
19.00	0.56	0.00	0.56				
20.00	0.51	0.00	0.51				
21.00	0.48	0.00	0.48				
22.00	0.47	0.00	0.47				
23.00	0.45	0.00	0.45				
24.00	0.43	0.00	0.43				
25.00	0.31	0.00	0.31				
26.00	0.29	0.00	0.29				
27.00	0.28	0.00	0.28				
28.00	0.26	0.00	0.26				
29.00	0.25	0.00	0.25				
30.00	0.24	0.00	0.24				
31.00	0.23	0.00	0.23				
32.00	0.22	0.00	0.22				
33.00	0.21	0.00	0.21				
34.00	0.20	0.00	0.20				
35.00	0.20	0.00	0.20				
36.00	0.19	0.00	0.19				
37.00	0.18	0.00	0.18				
38.00	0.17	0.00	0.17				
39.00	0.17	0.00	0.17				
40.00	0.16	0.00	0.16				
41.00	0.16	0.00	0.16				
42.00	0.15	0.00	0.15				
43.00	0.15	0.00	0.15				
44.00	0.14	0.00	0.14				
45.00	0.14	0.00	0.14				
46.00	0.13	0.00	0.13				
47.00	0.13	0.00	0.13				
48.00	0.10	0.00	0.10				
49.00	0.09	0.00	0.09				
50.00	0.08	0.00	0.08				
51.00	0.07	0.00	0.07				

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=2.12"
Flow Length=652' Tc=13.3 min CN=90 Runoff=17.46 cfs 1.079 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=2.21"
Flow Length=683' Tc=14.4 min CN=91 Runoff=12.59 cfs 0.811 af

Pond 1P: Bioretention Area 3 Peak Elev=576.04' Storage=9,672 cf Inflow=17.46 cfs 1.079 af
Primary=2.85 cfs 0.765 af Secondary=13.60 cfs 0.314 af Outflow=16.45 cfs 1.079 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.60' Storage=37,117 cf Inflow=26.01 cfs 1.125 af
Primary=0.47 cfs 0.892 af Secondary=0.00 cfs 0.000 af Outflow=0.47 cfs 0.892 af

Link 5L: Outflow (@ CB 54) Inflow=3.16 cfs 1.657 af
Primary=3.16 cfs 1.657 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.890 af Average Runoff Depth = 2.16"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Front Area 1

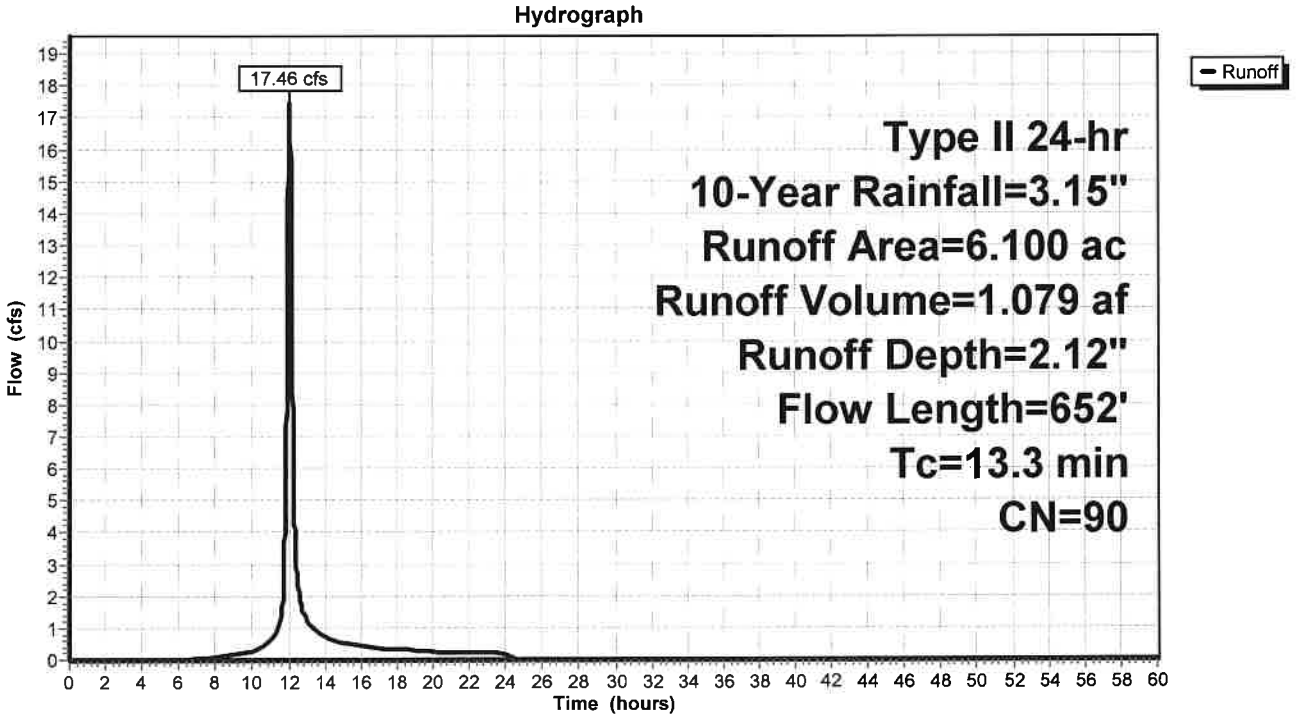
Runoff = 17.46 cfs @ 12.05 hrs, Volume= 1.079 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.00	0.01
7.00	0.31	0.01	0.05
8.00	0.38	0.02	0.09
9.00	0.46	0.04	0.18
10.00	0.57	0.08	0.28
11.00	0.74	0.16	0.63
12.00	2.09	1.17	**15.84**
13.00	2.43	1.47	**1.23**
14.00	2.58	1.61	0.71
15.00	2.69	1.70	0.55
16.00	2.77	1.78	0.43
17.00	2.84	1.84	0.37
18.00	2.90	1.89	0.33
19.00	2.95	1.94	0.28
20.00	3.00	1.98	0.24
21.00	3.04	2.02	0.22
22.00	3.08	2.06	0.22
23.00	3.11	2.09	0.21
24.00	**3.15**	**2.12**	0.20
25.00	3.15	2.12	0.00
26.00	3.15	2.12	0.00
27.00	3.15	2.12	0.00
28.00	3.15	2.12	0.00
29.00	3.15	2.12	0.00
30.00	3.15	2.12	0.00
31.00	3.15	2.12	0.00
32.00	3.15	2.12	0.00
33.00	3.15	2.12	0.00
34.00	3.15	2.12	0.00
35.00	3.15	2.12	0.00
36.00	3.15	2.12	0.00
37.00	3.15	2.12	0.00
38.00	3.15	2.12	0.00
39.00	3.15	2.12	0.00
40.00	3.15	2.12	0.00
41.00	3.15	2.12	0.00
42.00	3.15	2.12	0.00
43.00	3.15	2.12	0.00
44.00	3.15	2.12	0.00
45.00	3.15	2.12	0.00
46.00	3.15	2.12	0.00
47.00	3.15	2.12	0.00
48.00	3.15	2.12	0.00
49.00	3.15	2.12	0.00
50.00	3.15	2.12	0.00
51.00	3.15	2.12	0.00
52.00	3.15	2.12	0.00
53.00	3.15	2.12	0.00
54.00	3.15	2.12	0.00
55.00	3.15	2.12	0.00
56.00	3.15	2.12	0.00
57.00	3.15	2.12	0.00
58.00	3.15	2.12	0.00
59.00	3.15	2.12	0.00
60.00	3.15	2.12	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 2S: Rear Area 1

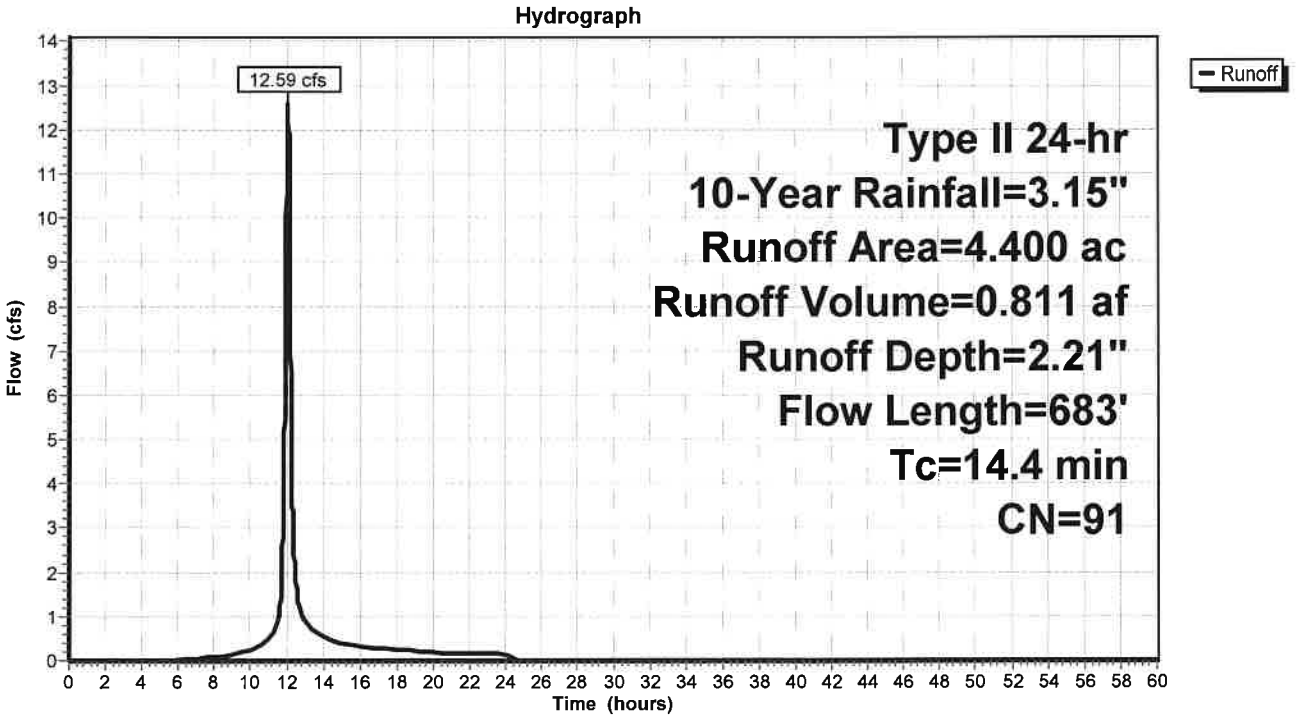
Runoff = 12.59 cfs @ 12.06 hrs, Volume= 0.811 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.00	0.02
7.00	0.31	0.01	0.05
8.00	0.38	0.03	0.08
9.00	0.46	0.06	0.15
10.00	0.57	0.10	0.23
11.00	0.74	0.19	0.49
12.00	2.09	1.24	**11.04**
13.00	2.43	1.55	**0.92**
14.00	2.58	1.69	0.53
15.00	2.69	1.78	0.40
16.00	2.77	1.86	0.32
17.00	2.84	1.92	0.27
18.00	2.90	1.98	0.24
19.00	2.95	2.03	0.21
20.00	3.00	2.07	0.18
21.00	3.04	2.11	0.16
22.00	3.08	2.14	0.16
23.00	3.11	2.18	0.15
24.00	**3.15**	**2.21**	0.15
25.00	3.15	2.21	0.00
26.00	3.15	2.21	0.00
27.00	3.15	2.21	0.00
28.00	3.15	2.21	0.00
29.00	3.15	2.21	0.00
30.00	3.15	2.21	0.00
31.00	3.15	2.21	0.00
32.00	3.15	2.21	0.00
33.00	3.15	2.21	0.00
34.00	3.15	2.21	0.00
35.00	3.15	2.21	0.00
36.00	3.15	2.21	0.00
37.00	3.15	2.21	0.00
38.00	3.15	2.21	0.00
39.00	3.15	2.21	0.00
40.00	3.15	2.21	0.00
41.00	3.15	2.21	0.00
42.00	3.15	2.21	0.00
43.00	3.15	2.21	0.00
44.00	3.15	2.21	0.00
45.00	3.15	2.21	0.00
46.00	3.15	2.21	0.00
47.00	3.15	2.21	0.00
48.00	3.15	2.21	0.00
49.00	3.15	2.21	0.00
50.00	3.15	2.21	0.00
51.00	3.15	2.21	0.00
52.00	3.15	2.21	0.00
53.00	3.15	2.21	0.00
54.00	3.15	2.21	0.00
55.00	3.15	2.21	0.00
56.00	3.15	2.21	0.00
57.00	3.15	2.21	0.00
58.00	3.15	2.21	0.00
59.00	3.15	2.21	0.00
60.00	3.15	2.21	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 2.12" for 10-Year event
Inflow = 17.46 cfs @ 12.05 hrs, Volume= 1.079 af
Outflow = 16.45 cfs @ 12.09 hrs, Volume= 1.079 af, Atten= 6%, Lag= 2.3 min
Primary = 2.85 cfs @ 12.09 hrs, Volume= 0.765 af
Secondary = 13.60 cfs @ 12.09 hrs, Volume= 0.314 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.04' @ 12.09 hrs Surf.Area= 9,976 sf Storage= 9,672 cf

Plug-Flow detention time= 160.8 min calculated for 1.079 af (100% of inflow)
Center-of-Mass det. time= 160.7 min (971.9 - 811.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

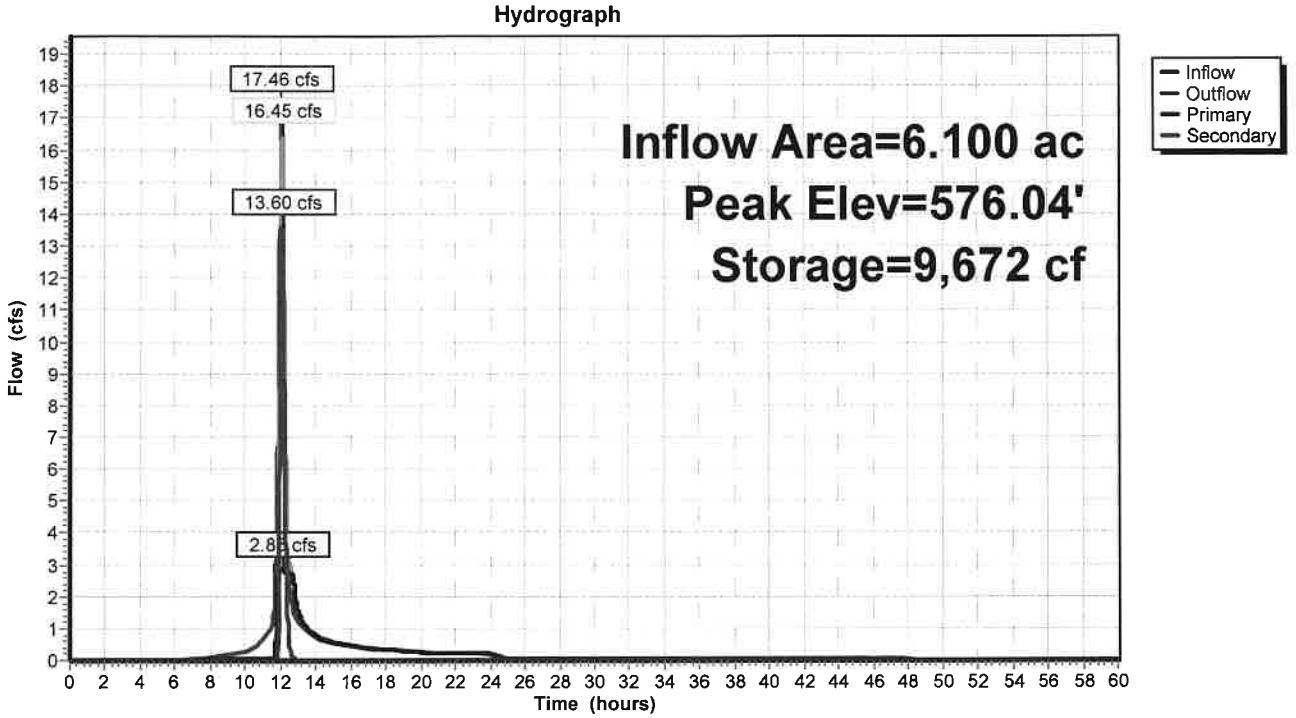
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.85 cfs @ 12.09 hrs HW=576.04' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.85 cfs @ 8.17 fps)
  └**2=Grate** (Passes < 4.93 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

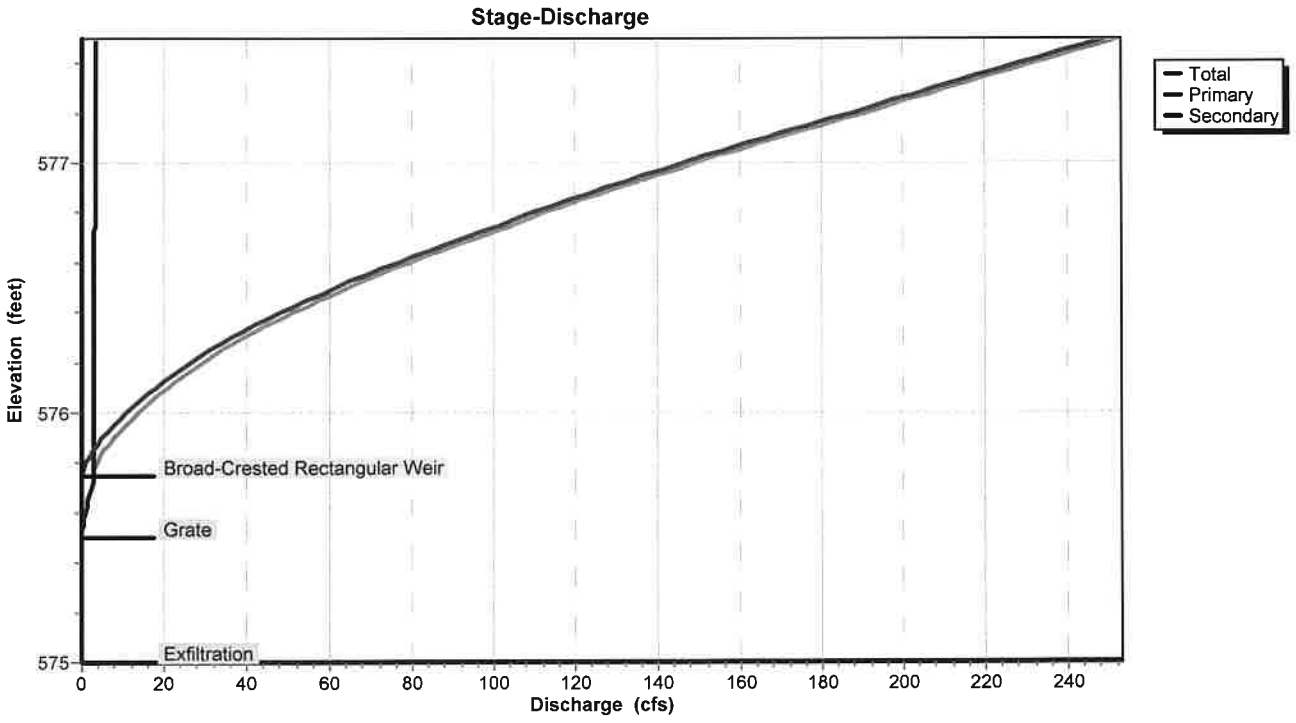
Secondary OutFlow Max=13.58 cfs @ 12.09 hrs HW=576.04' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 13.58 cfs @ 1.57 fps)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3

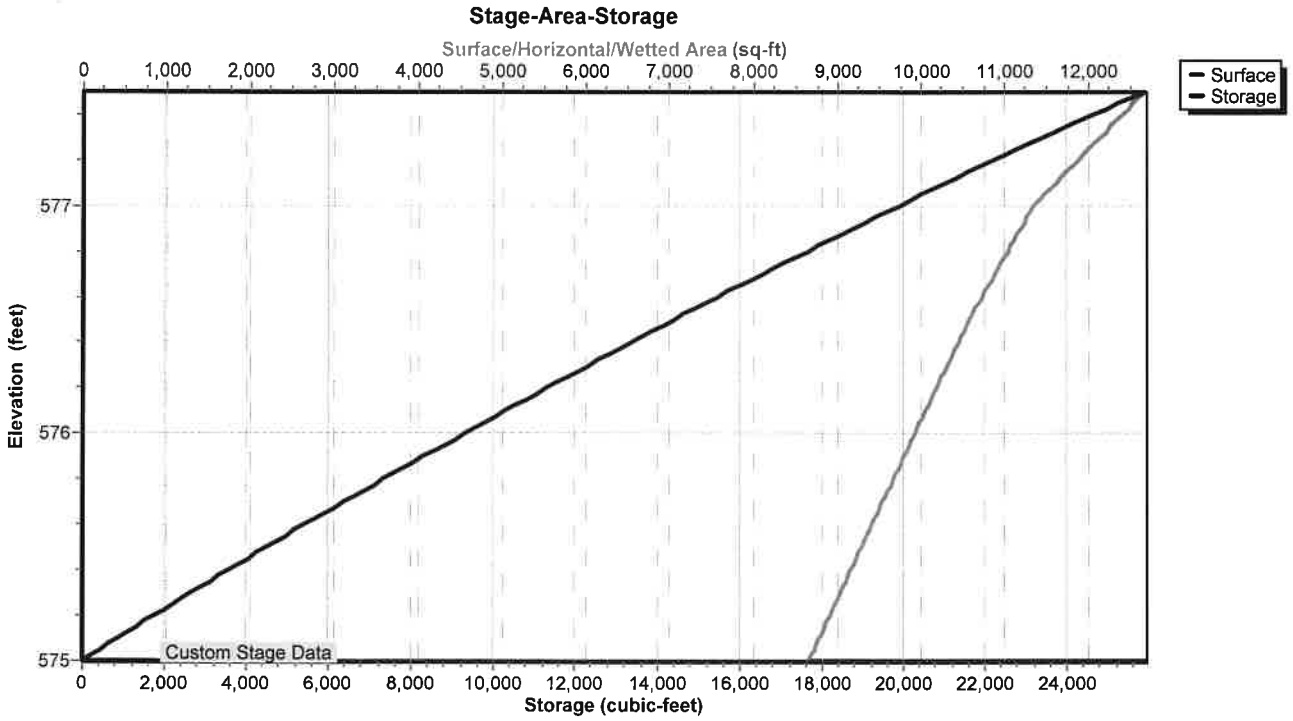


Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.01	6	575.00	0.00	0.00	0.00
8.00	0.09	207	575.02	0.05	0.05	0.00
10.00	0.28	1,102	575.13	0.05	0.05	0.00
12.00	**15.84**	**9,006**	**575.97**	**11.97**	**2.82**	**9.15**
14.00	**0.71**	**5,320**	**575.59**	**0.79**	**0.79**	**0.00**
16.00	0.43	5,039	575.56	0.46	0.46	0.00
18.00	0.33	4,925	575.55	0.34	0.34	0.00
20.00	0.24	4,823	575.54	0.25	0.25	0.00
22.00	0.22	4,781	575.53	0.22	0.22	0.00
24.00	0.20	4,760	575.53	0.20	0.20	0.00
26.00	0.00	4,270	575.48	0.06	0.06	0.00
28.00	0.00	3,874	575.43	0.05	0.05	0.00
30.00	0.00	3,482	575.39	0.05	0.05	0.00
32.00	0.00	3,093	575.35	0.05	0.05	0.00
34.00	0.00	2,707	575.31	0.05	0.05	0.00
36.00	0.00	2,324	575.26	0.05	0.05	0.00
38.00	0.00	1,945	575.22	0.05	0.05	0.00
40.00	0.00	1,569	575.18	0.05	0.05	0.00
42.00	0.00	1,197	575.14	0.05	0.05	0.00
44.00	0.00	828	575.10	0.05	0.05	0.00
46.00	0.00	461	575.05	0.05	0.05	0.00
48.00	0.00	126	575.01	0.03	0.03	0.00
50.00	0.00	24	575.00	0.01	0.01	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 3.07" for 10-Year event
Inflow = 26.01 cfs @ 12.08 hrs, Volume= 1.125 af
Outflow = 0.47 cfs @ 14.32 hrs, Volume= 0.892 af, Atten= 98%, Lag= 134.6 min
Primary = 0.47 cfs @ 14.32 hrs, Volume= 0.892 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.60' @ 14.32 hrs Surf.Area= 63,820 sf Storage= 37,117 cf

Plug-Flow detention time= 942.6 min calculated for 0.892 af (79% of inflow)
Center-of-Mass det. time= 874.9 min (1,660.4 - 785.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

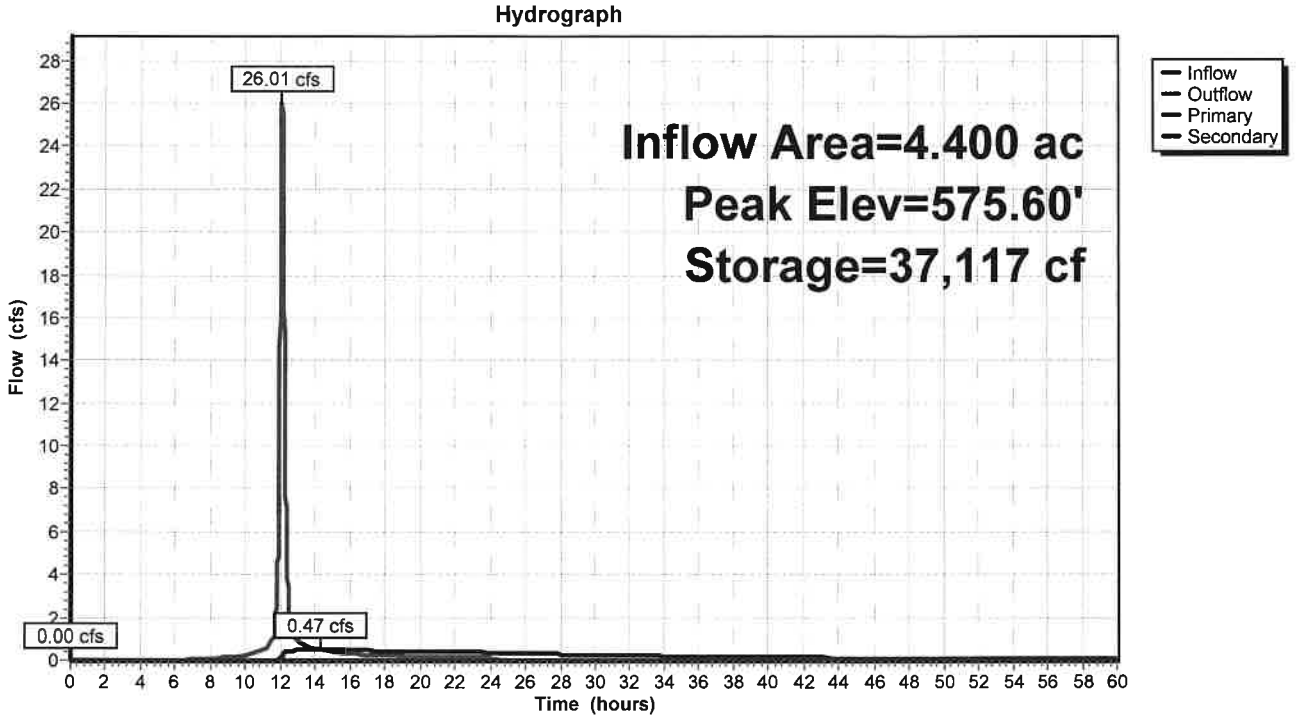
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.47 cfs @ 14.32 hrs HW=575.60' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.47 cfs of 2.23 cfs potential flow)
  ├**2=low flow outlet pipe** (Barrel Controls 0.47 cfs @ 2.50 fps)
  └**3=Grate** (Controls 0.00 cfs)

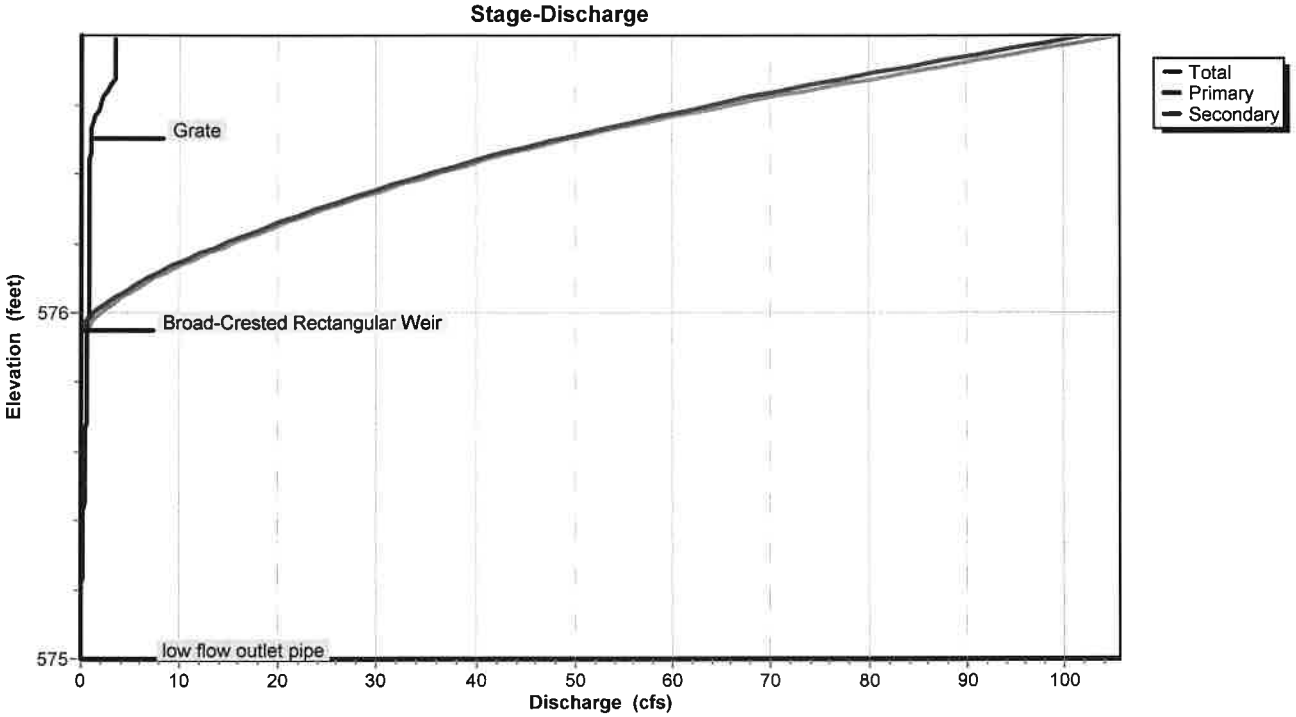
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)

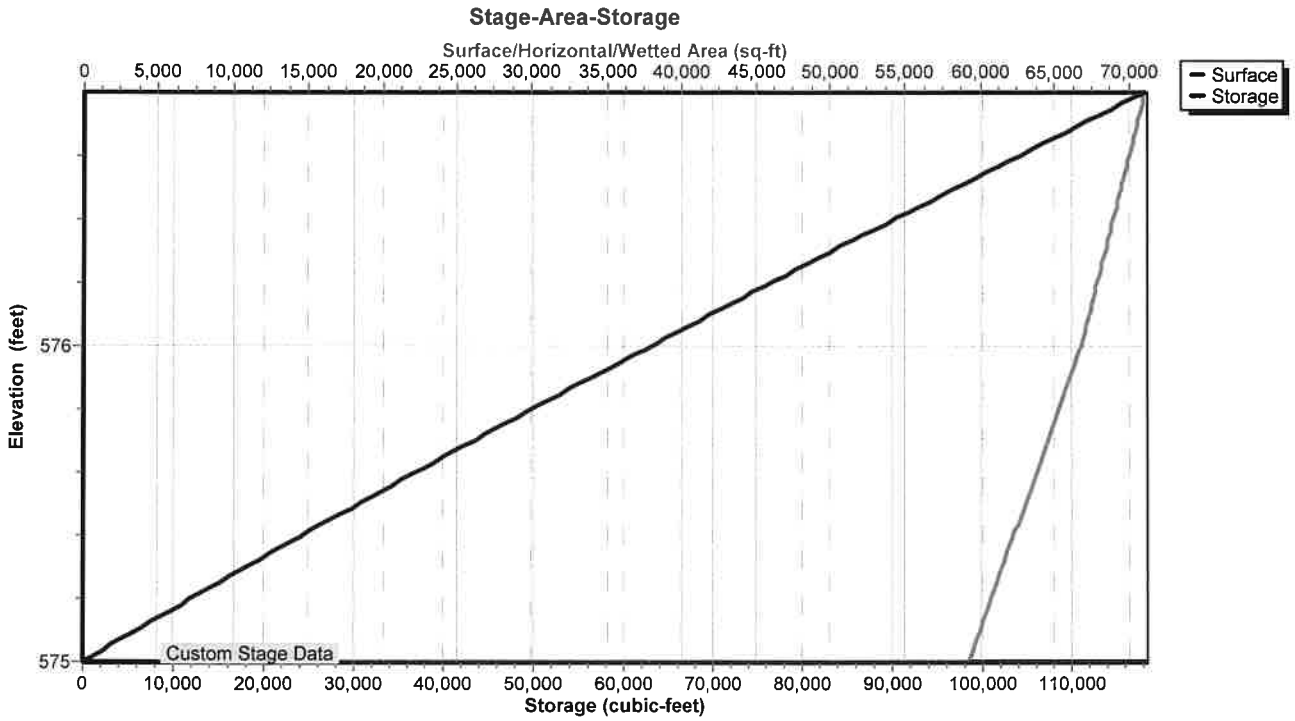


Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.02	28	575.00	0.00	0.00	0.00
8.00	0.08	376	575.01	0.00	0.00	0.00
10.00	0.23	1,427	575.02	0.00	0.00	0.00
12.00	**20.19**	11,922	575.20	0.08	0.08	0.00
14.00	**0.53**	**37,087**	**575.60**	**0.47**	**0.47**	0.00
16.00	0.32	**36,669**	**575.60**	**0.46**	**0.46**	0.00
18.00	0.24	35,374	575.58	0.44	0.44	0.00
20.00	0.18	33,764	575.55	0.42	0.42	0.00
22.00	0.16	32,024	575.52	0.39	0.39	0.00
24.00	0.15	30,385	575.50	0.37	0.37	0.00
26.00	0.00	28,005	575.46	0.33	0.33	0.00
28.00	0.00	25,794	575.42	0.29	0.29	0.00
30.00	0.00	23,836	575.39	0.26	0.26	0.00
32.00	0.00	22,102	575.36	0.23	0.23	0.00
34.00	0.00	20,561	575.34	0.20	0.20	0.00
36.00	0.00	19,188	575.32	0.18	0.18	0.00
38.00	0.00	17,961	575.30	0.16	0.16	0.00
40.00	0.00	16,860	575.28	0.14	0.14	0.00
42.00	0.00	15,870	575.26	0.13	0.13	0.00
44.00	0.00	14,975	575.25	0.12	0.12	0.00
46.00	0.00	14,165	575.24	0.11	0.11	0.00
48.00	0.00	13,428	575.22	0.10	0.10	0.00
50.00	0.00	12,756	575.21	0.09	0.09	0.00
52.00	0.00	12,141	575.20	0.08	0.08	0.00
54.00	0.00	11,578	575.19	0.08	0.08	0.00
56.00	0.00	11,059	575.18	0.07	0.07	0.00
58.00	0.00	10,581	575.18	0.06	0.06	0.00
60.00	0.00	10,139	575.17	0.06	0.06	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

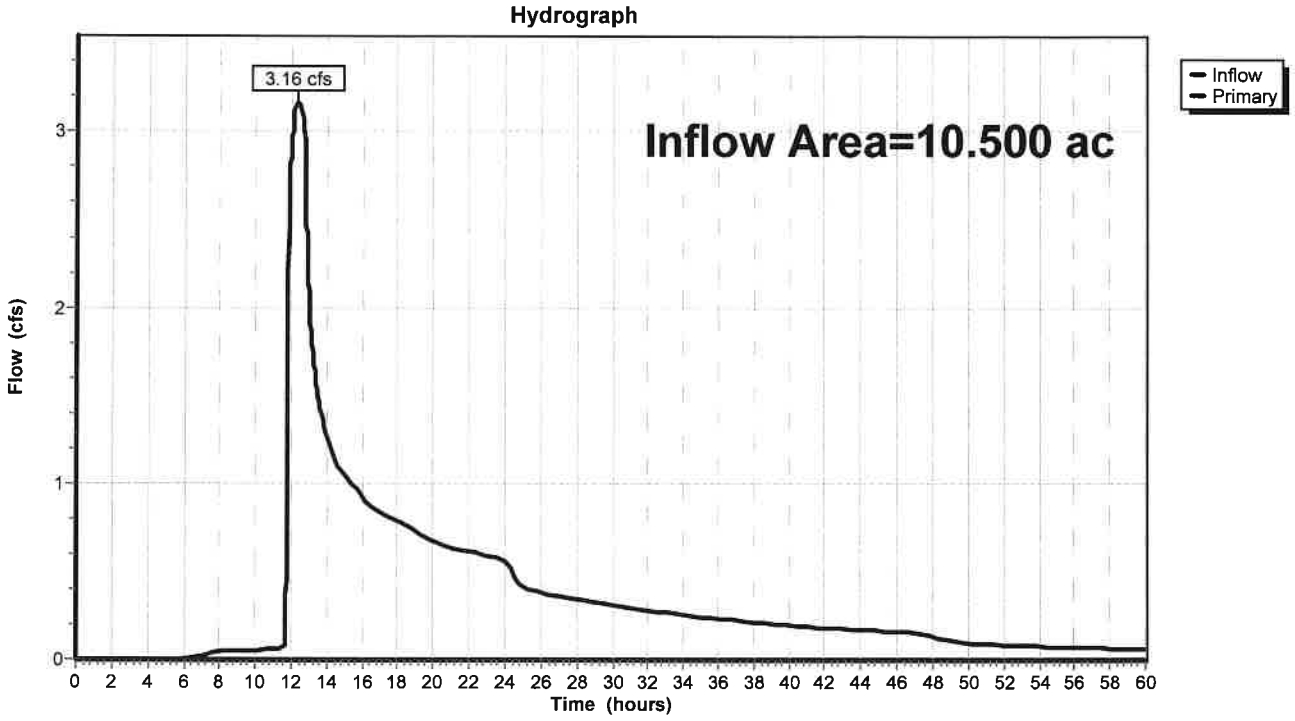
Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.89" for 10-Year event
Inflow = 3.16 cfs @ 12.39 hrs, Volume= 1.657 af
Primary = 3.16 cfs @ 12.39 hrs, Volume= 1.657 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.08	0.00	0.08
1.00	0.00	0.00	0.00	53.00	0.08	0.00	0.08
2.00	0.00	0.00	0.00	54.00	0.08	0.00	0.08
3.00	0.00	0.00	0.00	55.00	0.07	0.00	0.07
4.00	0.00	0.00	0.00	56.00	0.07	0.00	0.07
5.00	0.00	0.00	0.00	57.00	0.07	0.00	0.07
6.00	0.00	0.00	0.00	58.00	0.06	0.00	0.06
7.00	0.02	0.00	0.02	59.00	0.06	0.00	0.06
8.00	0.05	0.00	0.05	60.00	0.06	0.00	0.06
9.00	0.05	0.00	0.05				
10.00	0.05	0.00	0.05				
11.00	0.06	0.00	0.06				
12.00	**2.90**	0.00	**2.90**				
13.00	**2.02**	0.00	**2.02**				
14.00	1.26	0.00	1.26				
15.00	1.05	0.00	1.05				
16.00	0.92	0.00	0.92				
17.00	0.84	0.00	0.84				
18.00	0.78	0.00	0.78				
19.00	0.73	0.00	0.73				
20.00	0.67	0.00	0.67				
21.00	0.63	0.00	0.63				
22.00	0.61	0.00	0.61				
23.00	0.59	0.00	0.59				
24.00	0.57	0.00	0.57				
25.00	0.40	0.00	0.40				
26.00	0.38	0.00	0.38				
27.00	0.36	0.00	0.36				
28.00	0.34	0.00	0.34				
29.00	0.33	0.00	0.33				
30.00	0.31	0.00	0.31				
31.00	0.29	0.00	0.29				
32.00	0.28	0.00	0.28				
33.00	0.27	0.00	0.27				
34.00	0.26	0.00	0.26				
35.00	0.24	0.00	0.24				
36.00	0.23	0.00	0.23				
37.00	0.22	0.00	0.22				
38.00	0.21	0.00	0.21				
39.00	0.20	0.00	0.20				
40.00	0.20	0.00	0.20				
41.00	0.19	0.00	0.19				
42.00	0.18	0.00	0.18				
43.00	0.18	0.00	0.18				
44.00	0.17	0.00	0.17				
45.00	0.16	0.00	0.16				
46.00	0.16	0.00	0.16				
47.00	0.15	0.00	0.15				
48.00	0.13	0.00	0.13				
49.00	0.11	0.00	0.11				
50.00	0.09	0.00	0.09				
51.00	0.09	0.00	0.09				

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=2.80"
Flow Length=652' Tc=13.3 min CN=90 Runoff=22.74 cfs 1.421 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=2.89"
Flow Length=683' Tc=14.4 min CN=91 Runoff=16.27 cfs 1.061 af

Pond 1P: Bioretention Area 3 Peak Elev=576.11' Storage=10,375 cf Inflow=22.74 cfs 1.421 af
Primary=2.89 cfs 0.934 af Secondary=18.84 cfs 0.487 af Outflow=21.73 cfs 1.421 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.83' Storage=51,963 cf Inflow=34.94 cfs 1.548 af
Primary=0.64 cfs 1.276 af Secondary=0.00 cfs 0.000 af Outflow=0.64 cfs 1.276 af

Link 5L: Outflow (@ CB 54) Inflow=3.36 cfs 2.210 af
Primary=3.36 cfs 2.210 af

Total Runoff Area = 10.500 ac Runoff Volume = 2.482 af Average Runoff Depth = 2.84"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Front Area 1

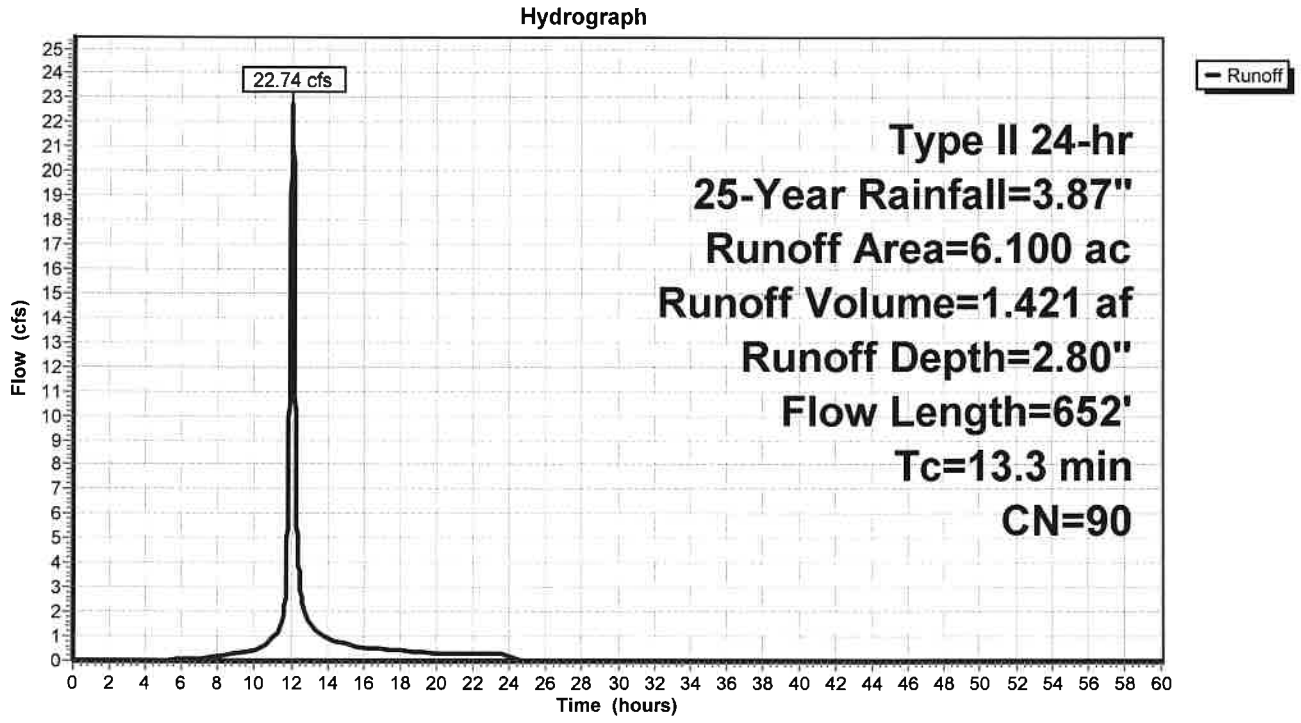
Runoff = 22.74 cfs @ 12.05 hrs, Volume= 1.421 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.01
6.00	0.31	0.01	0.05
7.00	0.38	0.02	0.10
8.00	0.46	0.04	0.16
9.00	0.57	0.08	0.28
10.00	0.70	0.14	0.43
11.00	0.91	0.26	0.90
12.00	2.57	1.59	**20.75**
13.00	2.99	1.97	**1.57**
14.00	3.17	2.14	0.90
15.00	3.30	2.26	0.70
16.00	3.41	2.36	0.54
17.00	3.49	2.44	0.47
18.00	3.56	2.51	0.41
19.00	3.63	2.57	0.36
20.00	3.68	2.62	0.30
21.00	3.73	2.67	0.28
22.00	3.78	2.71	0.27
23.00	3.83	2.75	0.26
24.00	**3.87**	**2.80**	0.25
25.00	3.87	2.80	0.00
26.00	3.87	2.80	0.00
27.00	3.87	2.80	0.00
28.00	3.87	2.80	0.00
29.00	3.87	2.80	0.00
30.00	3.87	2.80	0.00
31.00	3.87	2.80	0.00
32.00	3.87	2.80	0.00
33.00	3.87	2.80	0.00
34.00	3.87	2.80	0.00
35.00	3.87	2.80	0.00
36.00	3.87	2.80	0.00
37.00	3.87	2.80	0.00
38.00	3.87	2.80	0.00
39.00	3.87	2.80	0.00
40.00	3.87	2.80	0.00
41.00	3.87	2.80	0.00
42.00	3.87	2.80	0.00
43.00	3.87	2.80	0.00
44.00	3.87	2.80	0.00
45.00	3.87	2.80	0.00
46.00	3.87	2.80	0.00
47.00	3.87	2.80	0.00
48.00	3.87	2.80	0.00
49.00	3.87	2.80	0.00
50.00	3.87	2.80	0.00
51.00	3.87	2.80	0.00
52.00	3.87	2.80	0.00
53.00	3.87	2.80	0.00
54.00	3.87	2.80	0.00
55.00	3.87	2.80	0.00
56.00	3.87	2.80	0.00
57.00	3.87	2.80	0.00
58.00	3.87	2.80	0.00
59.00	3.87	2.80	0.00
60.00	3.87	2.80	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 2S: Rear Area 1

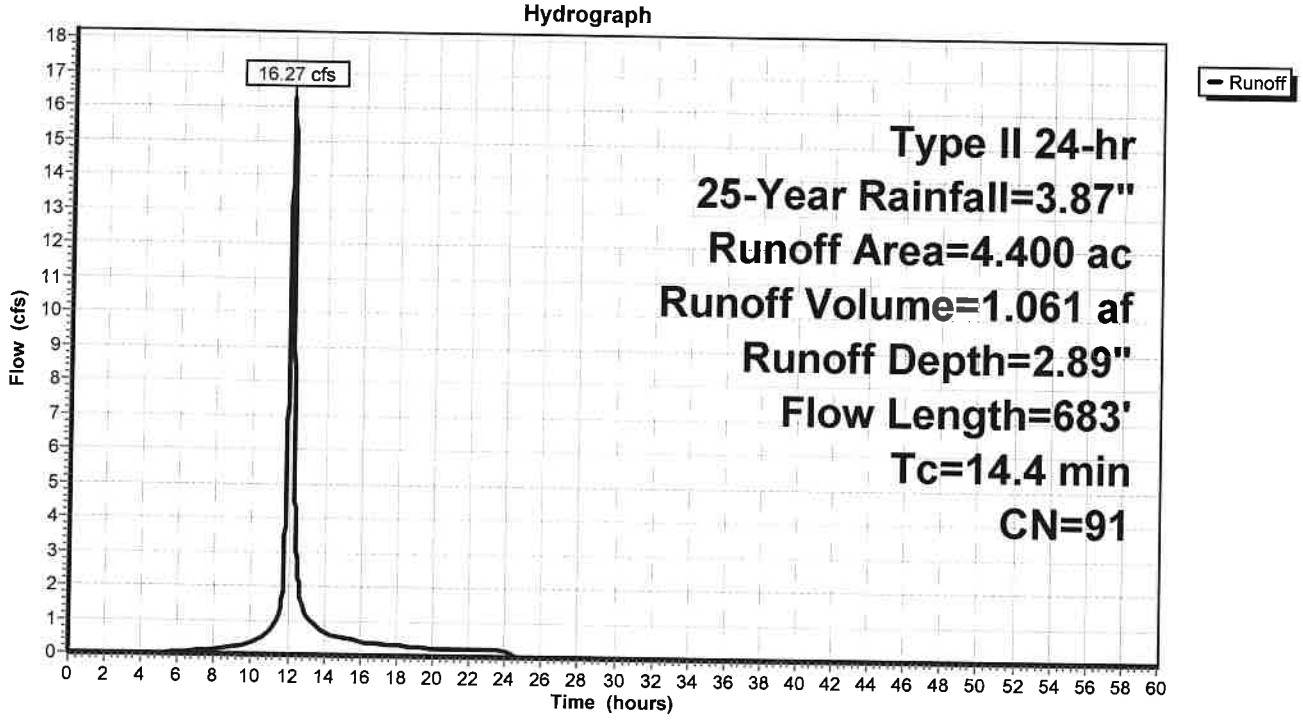
Runoff = 16.27 cfs @ 12.06 hrs, Volume= 1.061 af, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.02
6.00	0.31	0.01	0.05
7.00	0.38	0.03	0.09
8.00	0.46	0.06	0.13
9.00	0.57	0.10	0.23
10.00	0.70	0.17	0.34
11.00	0.91	0.30	0.69
12.00	2.57	1.67	**14.36**
13.00	2.99	2.06	**1.16**
14.00	3.17	2.23	0.67
15.00	3.30	2.36	0.51
16.00	3.41	2.45	0.40
17.00	3.49	2.53	0.34
18.00	3.56	2.60	0.30
19.00	3.63	2.66	0.26
20.00	3.68	2.72	0.22
21.00	3.73	2.76	0.21
22.00	3.78	2.81	0.20
23.00	3.83	2.85	0.19
24.00	**3.87**	**2.89**	0.18
25.00	3.87	2.89	0.00
26.00	3.87	2.89	0.00
27.00	3.87	2.89	0.00
28.00	3.87	2.89	0.00
29.00	3.87	2.89	0.00
30.00	3.87	2.89	0.00
31.00	3.87	2.89	0.00
32.00	3.87	2.89	0.00
33.00	3.87	2.89	0.00
34.00	3.87	2.89	0.00
35.00	3.87	2.89	0.00
36.00	3.87	2.89	0.00
37.00	3.87	2.89	0.00
38.00	3.87	2.89	0.00
39.00	3.87	2.89	0.00
40.00	3.87	2.89	0.00
41.00	3.87	2.89	0.00
42.00	3.87	2.89	0.00
43.00	3.87	2.89	0.00
44.00	3.87	2.89	0.00
45.00	3.87	2.89	0.00
46.00	3.87	2.89	0.00
47.00	3.87	2.89	0.00
48.00	3.87	2.89	0.00
49.00	3.87	2.89	0.00
50.00	3.87	2.89	0.00
51.00	3.87	2.89	0.00
52.00	3.87	2.89	0.00
53.00	3.87	2.89	0.00
54.00	3.87	2.89	0.00
55.00	3.87	2.89	0.00
56.00	3.87	2.89	0.00
57.00	3.87	2.89	0.00
58.00	3.87	2.89	0.00
59.00	3.87	2.89	0.00
60.00	3.87	2.89	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 2.80" for 25-Year event
Inflow = 22.74 cfs @ 12.05 hrs, Volume= 1.421 af
Outflow = 21.73 cfs @ 12.08 hrs, Volume= 1.421 af, Atten= 4%, Lag= 2.0 min
Primary = 2.89 cfs @ 12.08 hrs, Volume= 0.934 af
Secondary = 18.84 cfs @ 12.08 hrs, Volume= 0.487 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.11' @ 12.08 hrs Surf.Area= 10,069 sf Storage= 10,375 cf

Plug-Flow detention time= 127.9 min calculated for 1.421 af (100% of inflow)
Center-of-Mass det. time= 128.1 min (931.5 - 803.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

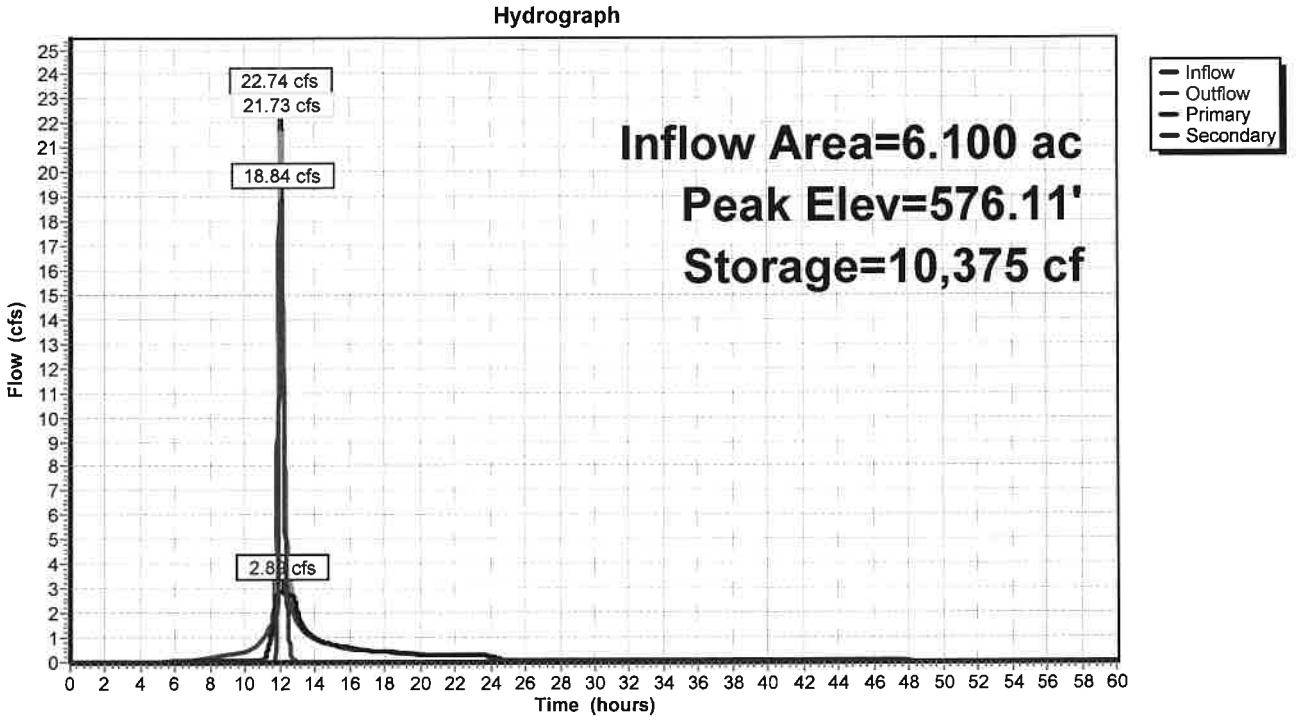
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.89 cfs @ 12.08 hrs HW=576.11' (Free Discharge)
↑—**1=8" pipe** (Barrel Controls 2.89 cfs @ 8.27 fps)
↑—**2=Grate** (Passes < 5.25 cfs potential flow)
—**3=Exfiltration** (Passes < 0.06 cfs potential flow)

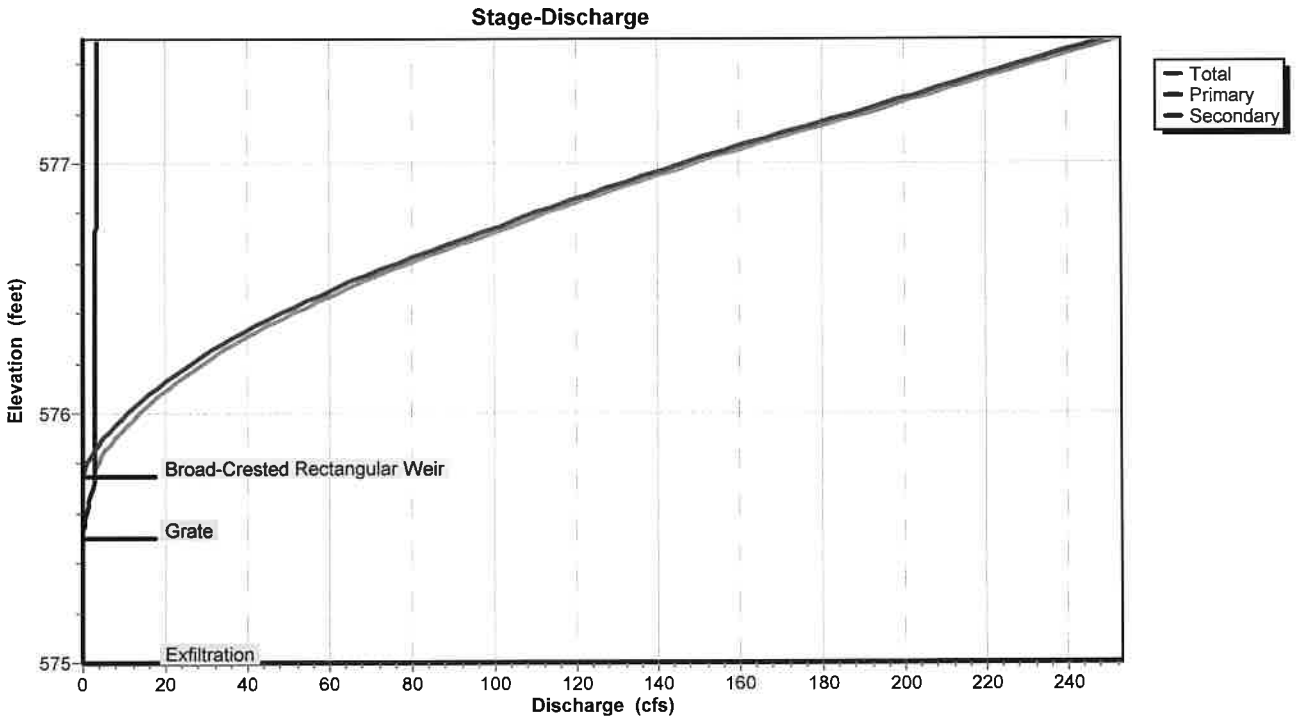
Secondary OutFlow Max=18.83 cfs @ 12.08 hrs HW=576.11' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Weir Controls 18.83 cfs @ 1.75 fps)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3

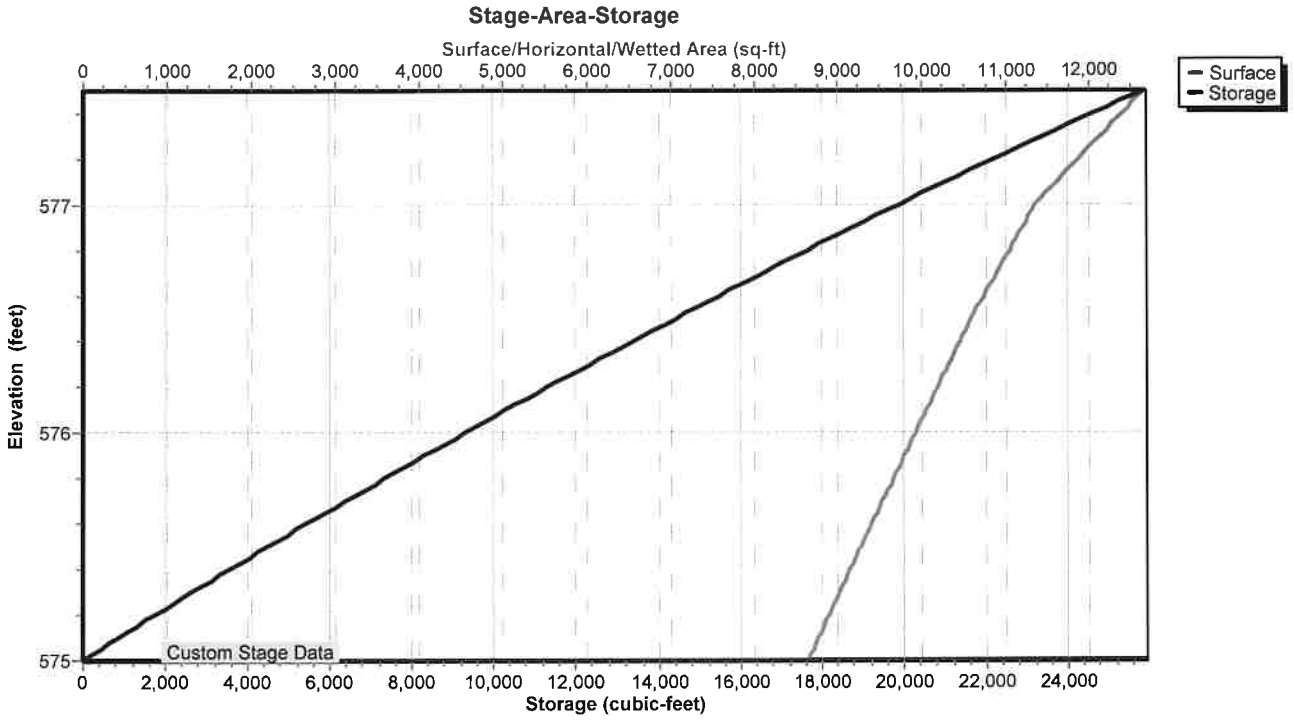


Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.05	75	575.01	0.02	0.02	0.00
8.00	0.16	510	575.06	0.05	0.05	0.00
10.00	0.43	2,153	575.24	0.05	0.05	0.00
12.00	**20.75**	**9,748**	**576.05**	**16.99**	**2.86**	**14.14**
14.00	**0.90**	**5,469**	**575.61**	**1.00**	**1.00**	**0.00**
16.00	0.54	5,148	575.57	0.58	0.58	0.00
18.00	0.41	5,009	575.56	0.43	0.43	0.00
20.00	0.30	4,900	575.54	0.32	0.32	0.00
22.00	0.27	4,847	575.54	0.28	0.28	0.00
24.00	0.25	4,821	575.54	0.25	0.25	0.00
26.00	0.00	4,285	575.48	0.06	0.06	0.00
28.00	0.00	3,889	575.44	0.05	0.05	0.00
30.00	0.00	3,497	575.39	0.05	0.05	0.00
32.00	0.00	3,108	575.35	0.05	0.05	0.00
34.00	0.00	2,722	575.31	0.05	0.05	0.00
36.00	0.00	2,339	575.27	0.05	0.05	0.00
38.00	0.00	1,960	575.22	0.05	0.05	0.00
40.00	0.00	1,584	575.18	0.05	0.05	0.00
42.00	0.00	1,211	575.14	0.05	0.05	0.00
44.00	0.00	842	575.10	0.05	0.05	0.00
46.00	0.00	475	575.05	0.05	0.05	0.00
48.00	0.00	134	575.02	0.03	0.03	0.00
50.00	0.00	25	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 4.22" for 25-Year event
Inflow = 34.94 cfs @ 12.07 hrs, Volume= 1.548 af
Outflow = 0.64 cfs @ 14.10 hrs, Volume= 1.276 af, Atten= 98%, Lag= 121.4 min
Primary = 0.64 cfs @ 14.10 hrs, Volume= 1.276 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.83' @ 14.10 hrs Surf.Area= 65,573 sf Storage= 51,963 cf

Plug-Flow detention time= 951.6 min calculated for 1.276 af (82% of inflow)
Center-of-Mass det. time= 890.6 min (1,667.8 - 777.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

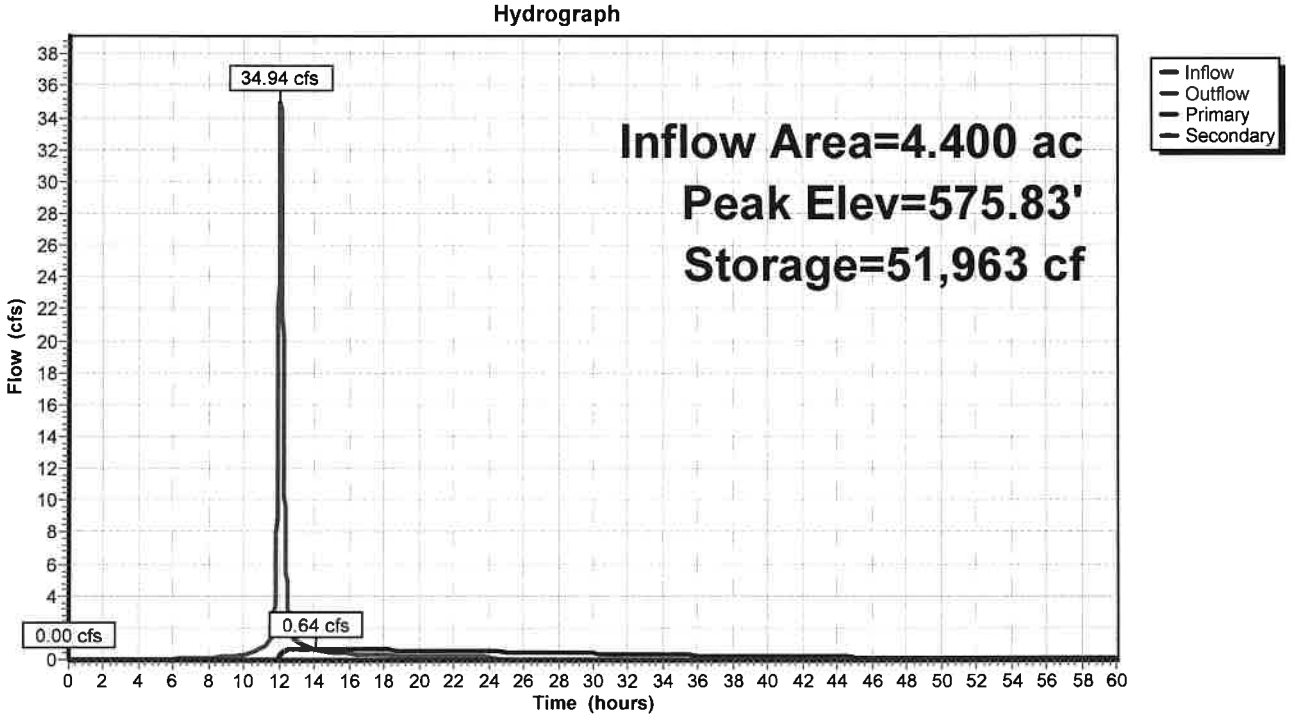
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.64 cfs @ 14.10 hrs HW=575.83' (Free Discharge)
↑—**1=12" outlet pipe** (Passes 0.64 cfs of 2.52 cfs potential flow)
↑—**2=low flow outlet pipe** (Inlet Controls 0.64 cfs @ 3.24 fps)
—**3=Grate** (Controls 0.00 cfs)

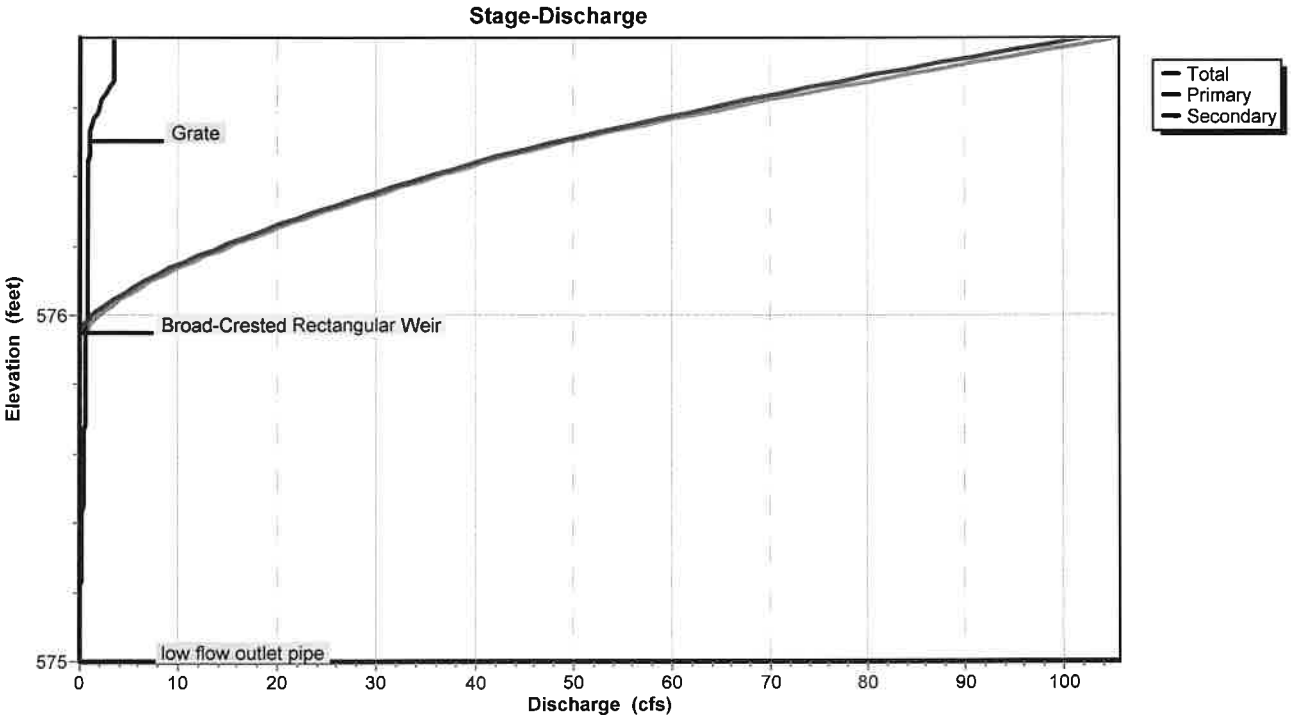
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)

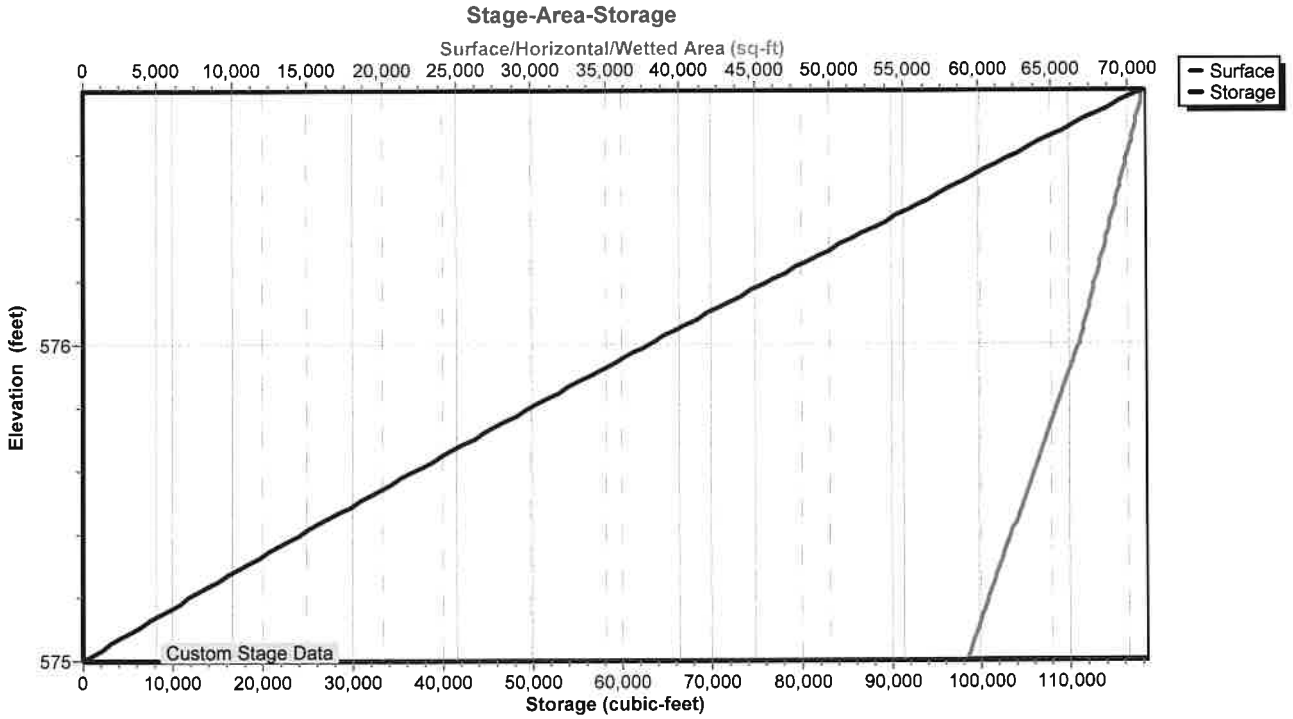


Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.05	138	575.00	0.00	0.00	0.00
8.00	0.13	792	575.01	0.00	0.00	0.00
10.00	0.34	2,407	575.04	0.00	0.00	0.00
12.00	**28.50**	18,305	575.30	0.17	0.17	0.00
14.00	**0.67**	**51,959**	**575.83**	**0.64**	**0.64**	0.00
16.00	0.40	**51,083**	**575.82**	**0.63**	**0.63**	0.00
18.00	0.30	49,081	575.79	0.61	0.61	0.00
20.00	0.22	46,637	575.75	0.59	0.59	0.00
22.00	0.20	44,041	575.71	0.55	0.55	0.00
24.00	0.18	41,619	575.67	0.51	0.51	0.00
26.00	0.00	38,209	575.62	0.48	0.48	0.00
28.00	0.00	34,905	575.57	0.44	0.44	0.00
30.00	0.00	31,923	575.52	0.39	0.39	0.00
32.00	0.00	29,266	575.48	0.35	0.35	0.00
34.00	0.00	26,910	575.44	0.31	0.31	0.00
36.00	0.00	24,824	575.41	0.27	0.27	0.00
38.00	0.00	22,978	575.38	0.24	0.24	0.00
40.00	0.00	21,340	575.35	0.21	0.21	0.00
42.00	0.00	19,882	575.33	0.19	0.19	0.00
44.00	0.00	18,582	575.31	0.17	0.17	0.00
46.00	0.00	17,418	575.29	0.15	0.15	0.00
48.00	0.00	16,372	575.27	0.14	0.14	0.00
50.00	0.00	15,429	575.26	0.12	0.12	0.00
52.00	0.00	14,576	575.24	0.11	0.11	0.00
54.00	0.00	13,802	575.23	0.10	0.10	0.00
56.00	0.00	13,098	575.22	0.09	0.09	0.00
58.00	0.00	12,454	575.21	0.09	0.09	0.00
60.00	0.00	11,865	575.20	0.08	0.08	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

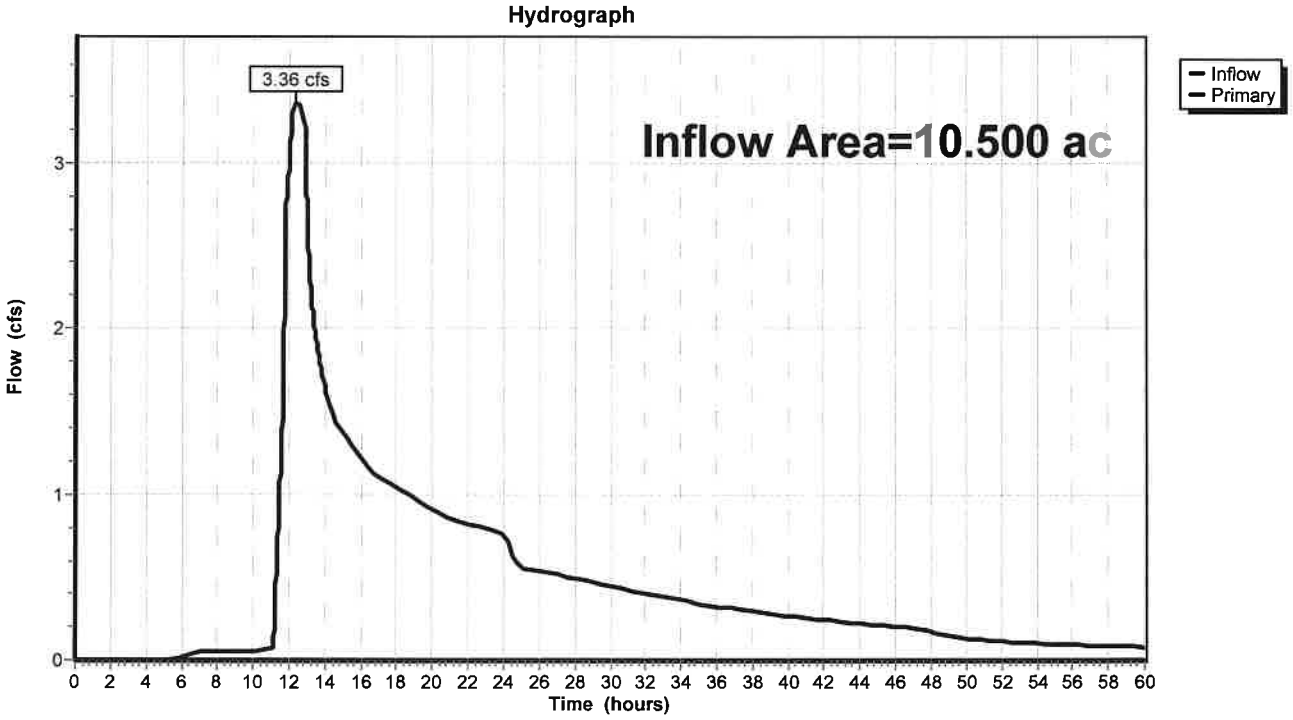
Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 2.53" for 25-Year event
Inflow = 3.36 cfs @ 12.37 hrs, Volume= 2.210 af
Primary = 3.36 cfs @ 12.37 hrs, Volume= 2.210 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.11	0.00	0.11
1.00	0.00	0.00	0.00	53.00	0.11	0.00	0.11
2.00	0.00	0.00	0.00	54.00	0.10	0.00	0.10
3.00	0.00	0.00	0.00	55.00	0.10	0.00	0.10
4.00	0.00	0.00	0.00	56.00	0.09	0.00	0.09
5.00	0.00	0.00	0.00	57.00	0.09	0.00	0.09
6.00	0.02	0.00	0.02	58.00	0.09	0.00	0.09
7.00	0.05	0.00	0.05	59.00	0.08	0.00	0.08
8.00	0.05	0.00	0.05	60.00	0.08	0.00	0.08
9.00	0.05	0.00	0.05				
10.00	0.06	0.00	0.06				
11.00	0.07	0.00	0.07				
12.00	**3.02**	0.00	**3.02**				
13.00	**2.64**	0.00	**2.64**				
14.00	1.63	0.00	1.63				
15.00	1.36	0.00	1.36				
16.00	1.21	0.00	1.21				
17.00	1.10	0.00	1.10				
18.00	1.04	0.00	1.04				
19.00	0.97	0.00	0.97				
20.00	0.91	0.00	0.91				
21.00	0.85	0.00	0.85				
22.00	0.82	0.00	0.82				
23.00	0.79	0.00	0.79				
24.00	0.76	0.00	0.76				
25.00	0.55	0.00	0.55				
26.00	0.53	0.00	0.53				
27.00	0.51	0.00	0.51				
28.00	0.49	0.00	0.49				
29.00	0.47	0.00	0.47				
30.00	0.45	0.00	0.45				
31.00	0.42	0.00	0.42				
32.00	0.40	0.00	0.40				
33.00	0.38	0.00	0.38				
34.00	0.36	0.00	0.36				
35.00	0.34	0.00	0.34				
36.00	0.33	0.00	0.33				
37.00	0.31	0.00	0.31				
38.00	0.29	0.00	0.29				
39.00	0.28	0.00	0.28				
40.00	0.27	0.00	0.27				
41.00	0.25	0.00	0.25				
42.00	0.24	0.00	0.24				
43.00	0.23	0.00	0.23				
44.00	0.22	0.00	0.22				
45.00	0.21	0.00	0.21				
46.00	0.20	0.00	0.20				
47.00	0.20	0.00	0.20				
48.00	0.17	0.00	0.17				
49.00	0.14	0.00	0.14				
50.00	0.13	0.00	0.13				
51.00	0.12	0.00	0.12				

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=3.41"
Flow Length=652' Tc=13.3 min CN=90 Runoff=27.50 cfs 1.736 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=3.52"
Flow Length=683' Tc=14.4 min CN=91 Runoff=19.58 cfs 1.290 af

Pond 1P: Bioretention Area 3 Peak Elev=576.17' Storage=10,953 cf Inflow=27.50 cfs 1.736 af
Primary=2.91 cfs 1.092 af Secondary=23.52 cfs 0.644 af Outflow=26.43 cfs 1.736 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=576.00' Storage=62,935 cf Inflow=42.93 cfs 1.933 af
Primary=0.72 cfs 1.504 af Secondary=1.25 cfs 0.131 af Outflow=1.97 cfs 1.635 af

Link 5L: Outflow (@ CB 54) Inflow=3.48 cfs 2.596 af
Primary=3.48 cfs 2.596 af

Total Runoff Area = 10.500 ac Runoff Volume = 3.026 af Average Runoff Depth = 3.46"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Front Area 1

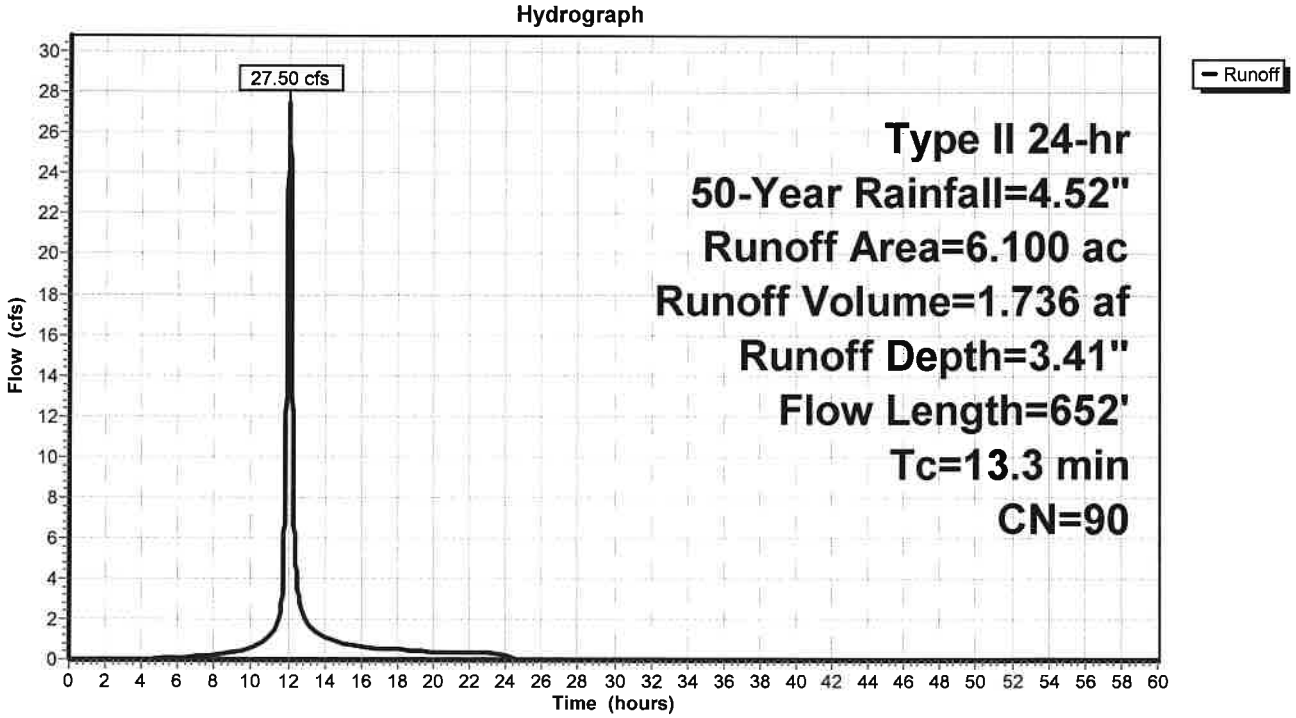
Runoff = 27.50 cfs @ 12.05 hrs, Volume= 1.736 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.00
5.00	0.28	0.00	0.04
6.00	0.36	0.02	0.09
7.00	0.45	0.04	0.16
8.00	0.54	0.07	0.23
9.00	0.66	0.13	0.39
10.00	0.82	0.21	0.57
11.00	1.06	0.36	1.16
12.00	3.00	1.98	**25.18**
13.00	3.49	2.44	**1.87**
14.00	3.71	2.64	1.08
15.00	3.86	2.78	0.83
16.00	3.98	2.90	0.64
17.00	4.08	2.99	0.55
18.00	4.16	3.07	0.49
19.00	4.24	3.15	0.42
20.00	4.30	3.21	0.36
21.00	4.36	3.26	0.33
22.00	4.42	3.32	0.32
23.00	4.47	3.37	0.31
24.00	**4.52**	**3.41**	0.30
25.00	4.52	3.41	0.00
26.00	4.52	3.41	0.00
27.00	4.52	3.41	0.00
28.00	4.52	3.41	0.00
29.00	4.52	3.41	0.00
30.00	4.52	3.41	0.00
31.00	4.52	3.41	0.00
32.00	4.52	3.41	0.00
33.00	4.52	3.41	0.00
34.00	4.52	3.41	0.00
35.00	4.52	3.41	0.00
36.00	4.52	3.41	0.00
37.00	4.52	3.41	0.00
38.00	4.52	3.41	0.00
39.00	4.52	3.41	0.00
40.00	4.52	3.41	0.00
41.00	4.52	3.41	0.00
42.00	4.52	3.41	0.00
43.00	4.52	3.41	0.00
44.00	4.52	3.41	0.00
45.00	4.52	3.41	0.00
46.00	4.52	3.41	0.00
47.00	4.52	3.41	0.00
48.00	4.52	3.41	0.00
49.00	4.52	3.41	0.00
50.00	4.52	3.41	0.00
51.00	4.52	3.41	0.00
52.00	4.52	3.41	0.00
53.00	4.52	3.41	0.00
54.00	4.52	3.41	0.00
55.00	4.52	3.41	0.00
56.00	4.52	3.41	0.00
57.00	4.52	3.41	0.00
58.00	4.52	3.41	0.00
59.00	4.52	3.41	0.00
60.00	4.52	3.41	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 2S: Rear Area 1

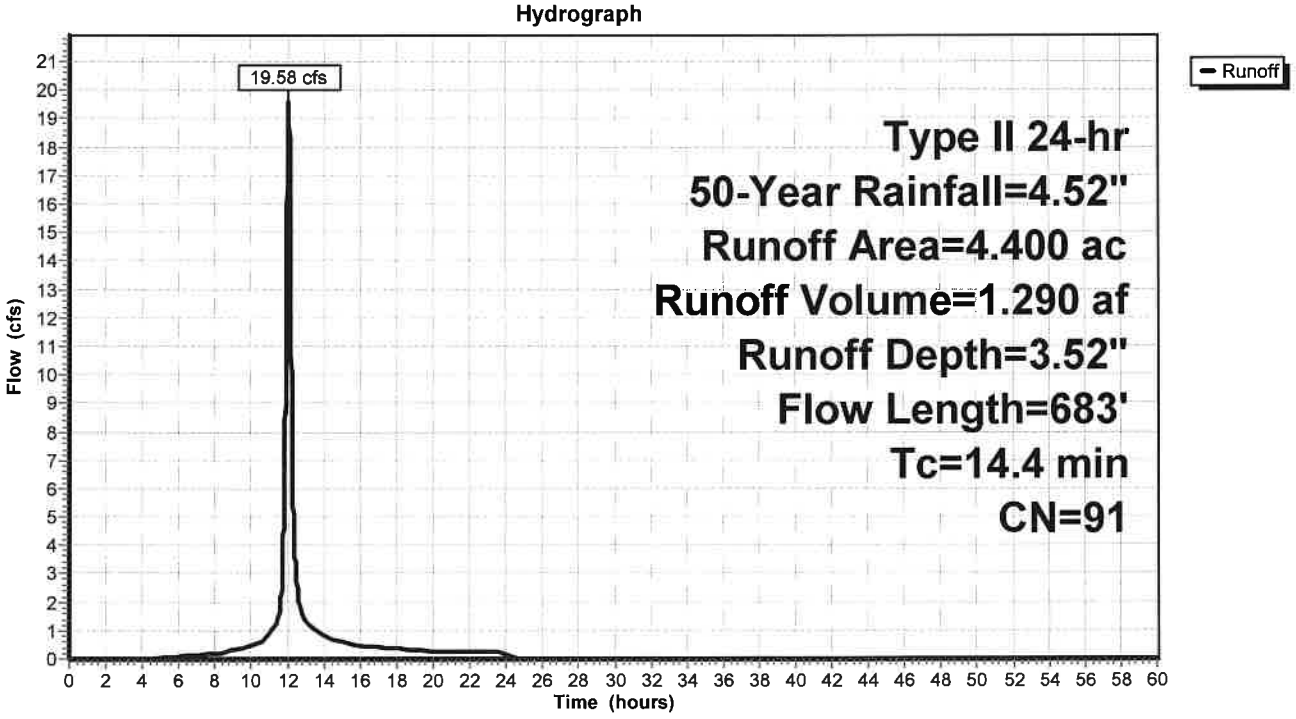
Runoff = 19.58 cfs @ 12.06 hrs, Volume= 1.290 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.00
5.00	0.28	0.01	0.04
6.00	0.36	0.02	0.08
7.00	0.45	0.05	0.13
8.00	0.54	0.09	0.19
9.00	0.66	0.15	0.31
10.00	0.82	0.24	0.44
11.00	1.06	0.40	0.88
12.00	3.00	2.07	**17.36**
13.00	3.49	2.53	**1.38**
14.00	3.71	2.74	0.79
15.00	3.86	2.88	0.60
16.00	3.98	3.00	0.47
17.00	4.08	3.09	0.40
18.00	4.16	3.17	0.36
19.00	4.24	3.25	0.31
20.00	4.30	3.31	0.26
21.00	4.36	3.36	0.24
22.00	4.42	3.42	0.23
23.00	4.47	3.47	0.22
24.00	**4.52**	**3.52**	0.21
25.00	4.52	3.52	0.00
26.00	4.52	3.52	0.00
27.00	4.52	3.52	0.00
28.00	4.52	3.52	0.00
29.00	4.52	3.52	0.00
30.00	4.52	3.52	0.00
31.00	4.52	3.52	0.00
32.00	4.52	3.52	0.00
33.00	4.52	3.52	0.00
34.00	4.52	3.52	0.00
35.00	4.52	3.52	0.00
36.00	4.52	3.52	0.00
37.00	4.52	3.52	0.00
38.00	4.52	3.52	0.00
39.00	4.52	3.52	0.00
40.00	4.52	3.52	0.00
41.00	4.52	3.52	0.00
42.00	4.52	3.52	0.00
43.00	4.52	3.52	0.00
44.00	4.52	3.52	0.00
45.00	4.52	3.52	0.00
46.00	4.52	3.52	0.00
47.00	4.52	3.52	0.00
48.00	4.52	3.52	0.00
49.00	4.52	3.52	0.00
50.00	4.52	3.52	0.00
51.00	4.52	3.52	0.00
52.00	4.52	3.52	0.00
53.00	4.52	3.52	0.00
54.00	4.52	3.52	0.00
55.00	4.52	3.52	0.00
56.00	4.52	3.52	0.00
57.00	4.52	3.52	0.00
58.00	4.52	3.52	0.00
59.00	4.52	3.52	0.00
60.00	4.52	3.52	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 3.41" for 50-Year event
Inflow = 27.50 cfs @ 12.05 hrs, Volume= 1.736 af
Outflow = 26.43 cfs @ 12.08 hrs, Volume= 1.736 af, Atten= 4%, Lag= 1.9 min
Primary = 2.91 cfs @ 12.08 hrs, Volume= 1.092 af
Secondary = 23.52 cfs @ 12.08 hrs, Volume= 0.644 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.17' @ 12.08 hrs Surf.Area= 10,144 sf Storage= 10,953 cf

Plug-Flow detention time= 109.3 min calculated for 1.736 af (100% of inflow)
Center-of-Mass det. time= 109.3 min (907.1 - 797.8)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

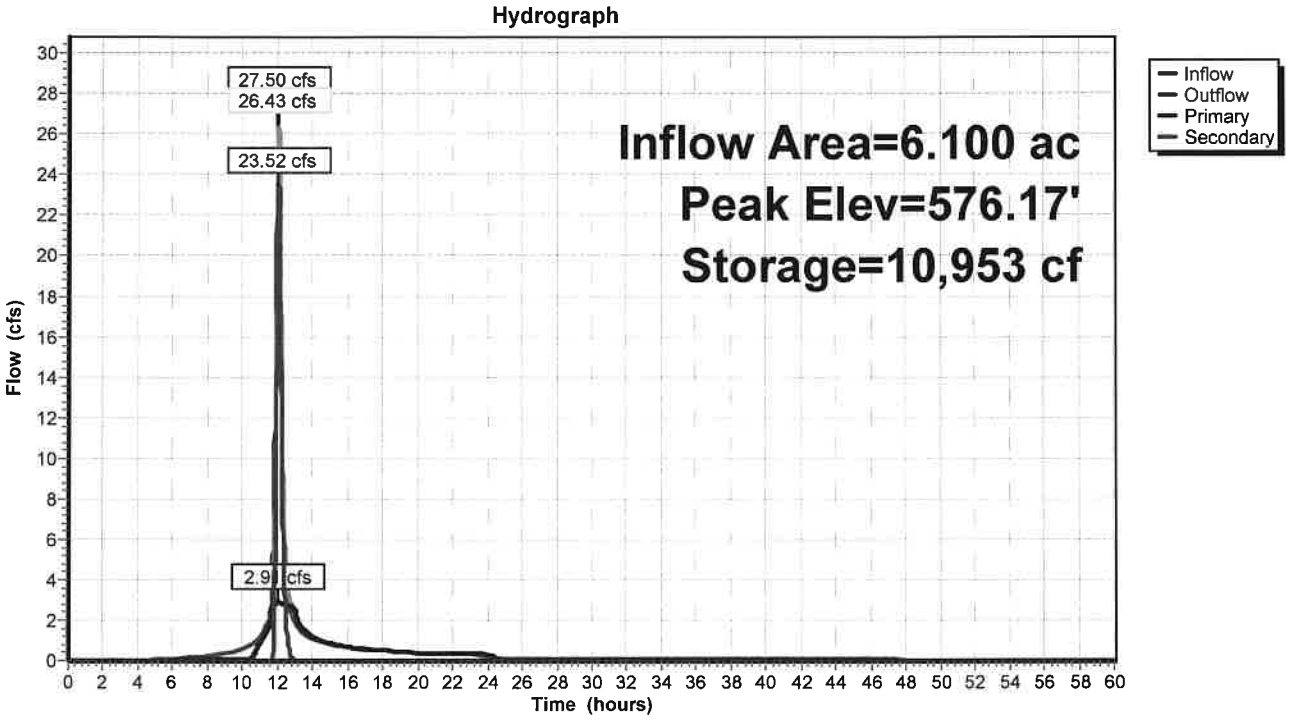
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.91 cfs @ 12.08 hrs HW=576.17' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.91 cfs @ 8.34 fps)
└**2=Grate** (Passes < 5.49 cfs potential flow)
└**3=Exfiltration** (Passes < 0.06 cfs potential flow)

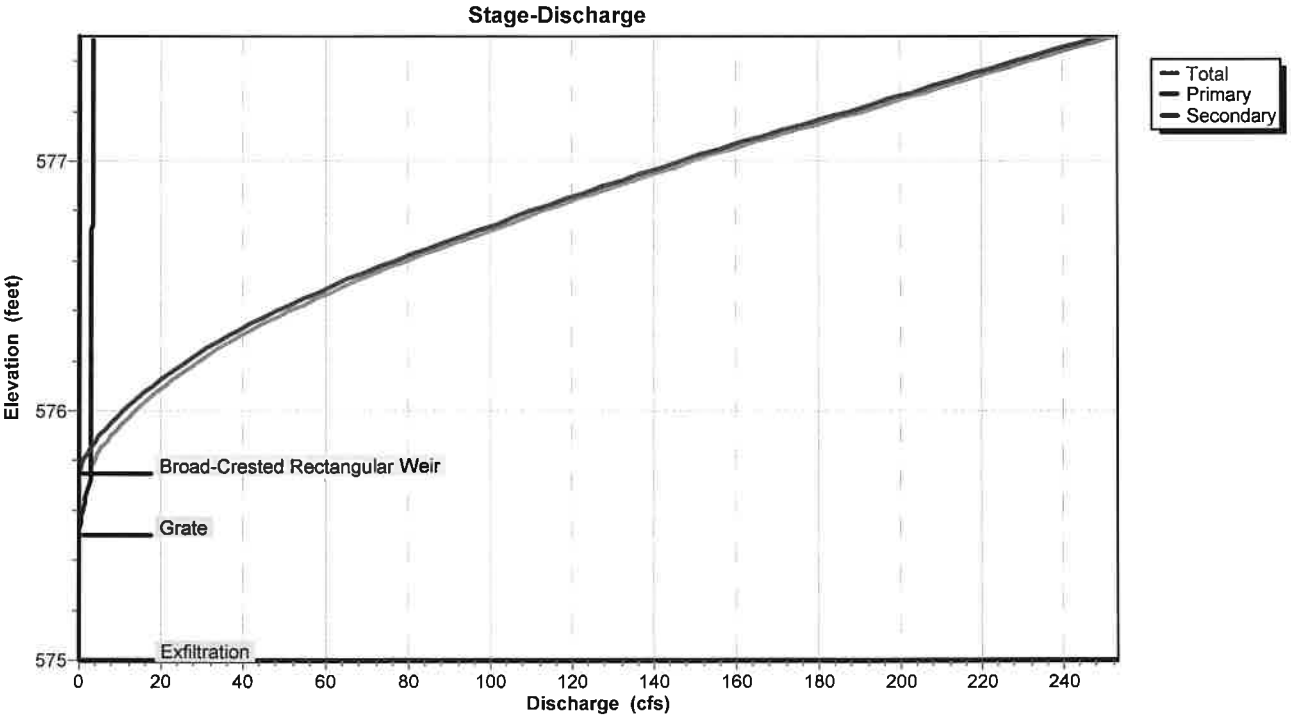
Secondary OutFlow Max=23.50 cfs @ 12.08 hrs HW=576.17' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 23.50 cfs @ 1.88 fps)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3

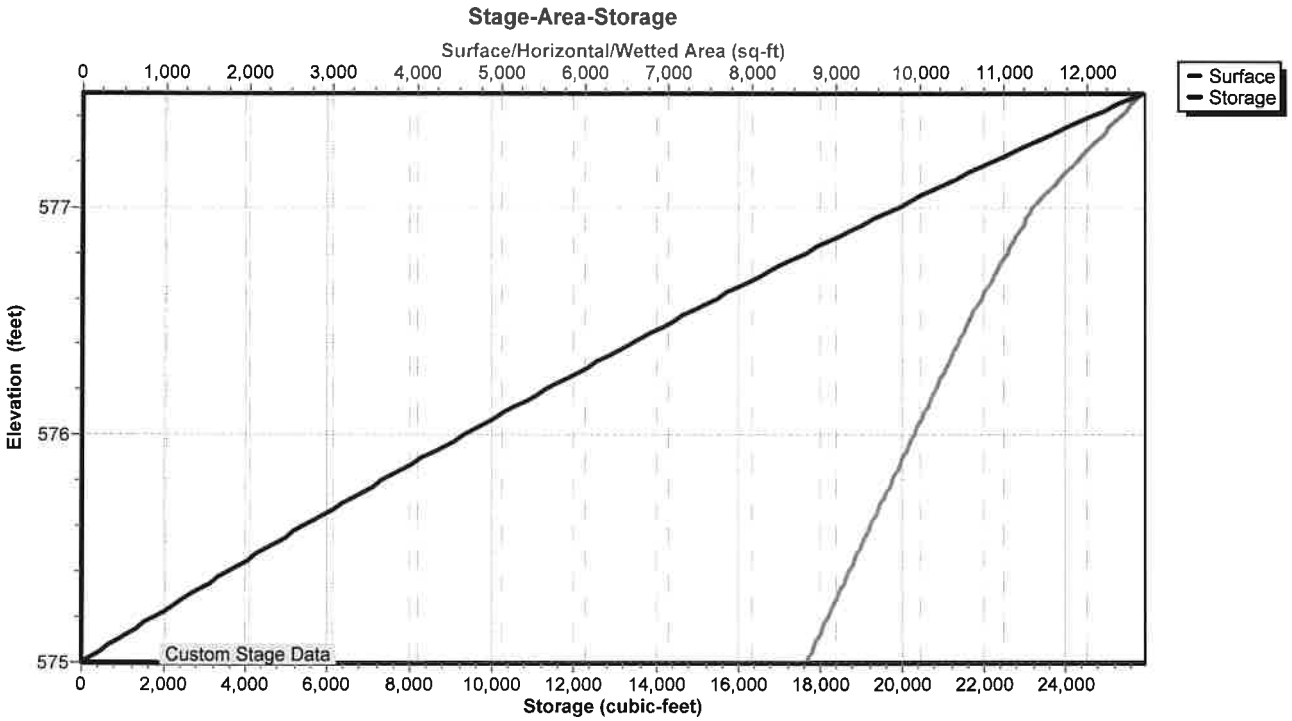


Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.09	180	575.02	0.04	0.04	0.00
8.00	0.23	959	575.11	0.05	0.05	0.00
10.00	0.57	3,333	575.38	0.05	0.05	0.00
12.00	**25.18**	**10,302**	**576.10**	**21.15**	**2.88**	**18.27**
14.00	**1.08**	**5,594**	**575.62**	**1.18**	**1.18**	**0.00**
16.00	0.64	5,233	575.58	0.68	0.68	0.00
18.00	0.49	5,081	575.56	0.51	0.51	0.00
20.00	0.36	4,961	575.55	0.38	0.38	0.00
22.00	0.32	4,907	575.55	0.33	0.33	0.00
24.00	0.30	4,876	575.54	0.30	0.30	0.00
26.00	0.00	4,297	575.48	0.06	0.06	0.00
28.00	0.00	3,900	575.44	0.05	0.05	0.00
30.00	0.00	3,508	575.39	0.05	0.05	0.00
32.00	0.00	3,118	575.35	0.05	0.05	0.00
34.00	0.00	2,732	575.31	0.05	0.05	0.00
36.00	0.00	2,350	575.27	0.05	0.05	0.00
38.00	0.00	1,970	575.22	0.05	0.05	0.00
40.00	0.00	1,594	575.18	0.05	0.05	0.00
42.00	0.00	1,221	575.14	0.05	0.05	0.00
44.00	0.00	852	575.10	0.05	0.05	0.00
46.00	0.00	486	575.06	0.05	0.05	0.00
48.00	0.00	140	575.02	0.03	0.03	0.00
50.00	0.00	26	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 5.27" for 50-Year event
Inflow = 42.93 cfs @ 12.07 hrs, Volume= 1.933 af
Outflow = 1.97 cfs @ 12.73 hrs, Volume= 1.635 af, Atten= 95%, Lag= 39.8 min
Primary = 0.72 cfs @ 12.73 hrs, Volume= 1.504 af
Secondary = 1.25 cfs @ 12.73 hrs, Volume= 0.131 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.00' @ 12.73 hrs Surf.Area= 66,838 sf Storage= 62,935 cf

Plug-Flow detention time= 900.4 min calculated for 1.635 af (85% of inflow)
Center-of-Mass det. time= 844.0 min (1,616.3 - 772.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

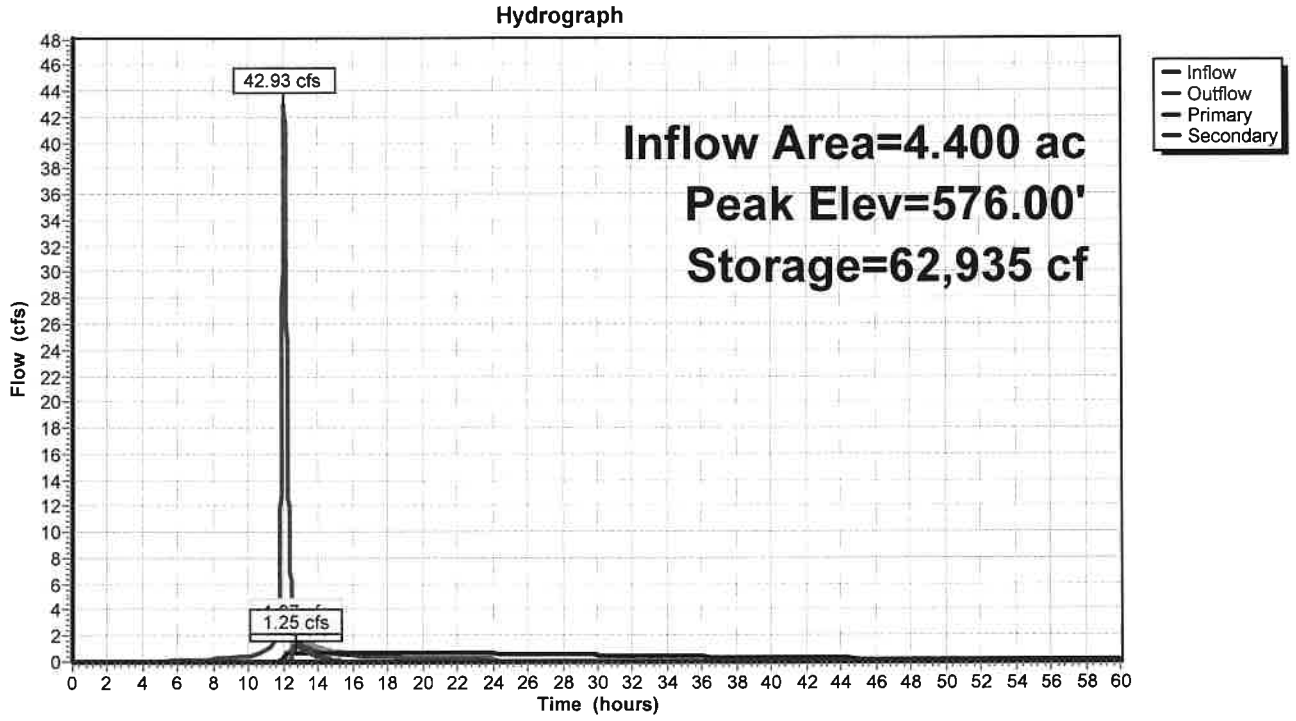
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.72 cfs @ 12.73 hrs HW=576.00' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.72 cfs of 2.71 cfs potential flow)
  ├**2=low flow outlet pipe** (Inlet Controls 0.72 cfs @ 3.68 fps)
  └**3=Grate** (Controls 0.00 cfs)

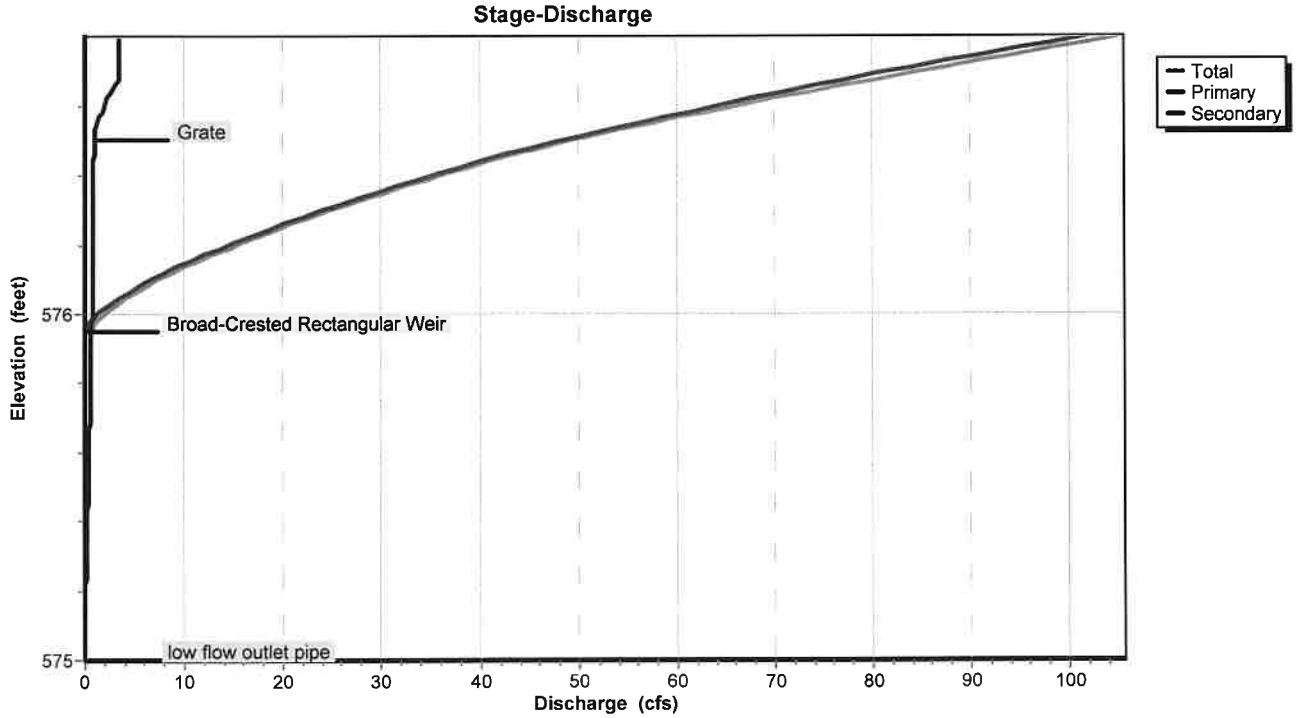
Secondary OutFlow Max=1.25 cfs @ 12.73 hrs HW=576.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 1.25 cfs @ 0.64 fps)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)

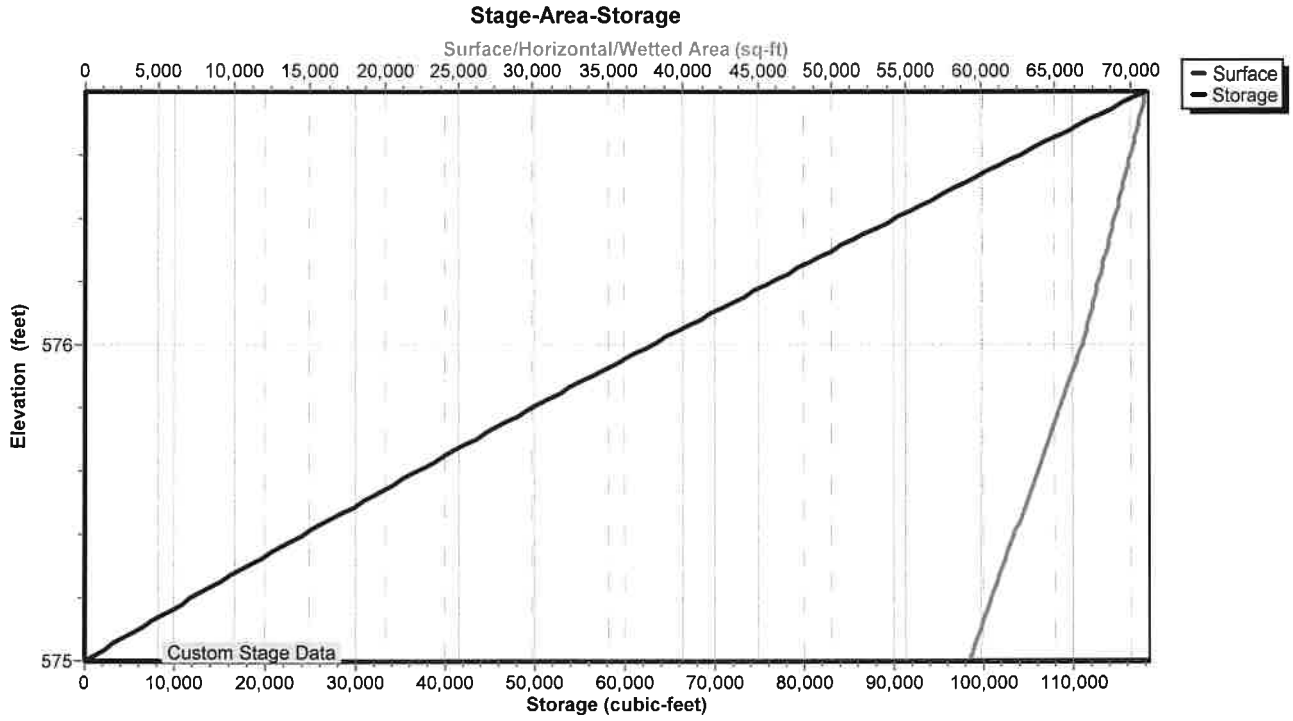


Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	1	575.00	0.00	0.00	0.00
6.00	0.08	300	575.01	0.00	0.00	0.00
8.00	0.19	1,265	575.02	0.00	0.00	0.00
10.00	0.44	3,420	575.06	0.01	0.01	0.00
12.00	**35.63**	**24,163**	**575.40**	**0.26**	**0.26**	**0.00**
14.00	**0.79**	**61,204**	**575.97**	**1.11**	**0.71**	**0.40**
16.00	0.47	59,536	575.95	0.70	0.70	0.00
18.00	0.36	57,495	575.92	0.68	0.68	0.00
20.00	0.26	54,889	575.88	0.66	0.66	0.00
22.00	0.23	51,975	575.83	0.64	0.64	0.00
24.00	0.21	49,094	575.79	0.61	0.61	0.00
26.00	0.00	45,010	575.73	0.56	0.56	0.00
28.00	0.00	41,189	575.67	0.50	0.50	0.00
30.00	0.00	37,665	575.61	0.47	0.47	0.00
32.00	0.00	34,410	575.56	0.43	0.43	0.00
34.00	0.00	31,481	575.51	0.38	0.38	0.00
36.00	0.00	28,873	575.47	0.34	0.34	0.00
38.00	0.00	26,562	575.44	0.30	0.30	0.00
40.00	0.00	24,517	575.40	0.27	0.27	0.00
42.00	0.00	22,705	575.37	0.24	0.24	0.00
44.00	0.00	21,097	575.35	0.21	0.21	0.00
46.00	0.00	19,666	575.33	0.19	0.19	0.00
48.00	0.00	18,389	575.30	0.17	0.17	0.00
50.00	0.00	17,245	575.29	0.15	0.15	0.00
52.00	0.00	16,216	575.27	0.14	0.14	0.00
54.00	0.00	15,288	575.25	0.12	0.12	0.00
56.00	0.00	14,449	575.24	0.11	0.11	0.00
58.00	0.00	13,686	575.23	0.10	0.10	0.00
60.00	0.00	12,992	575.22	0.09	0.09	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

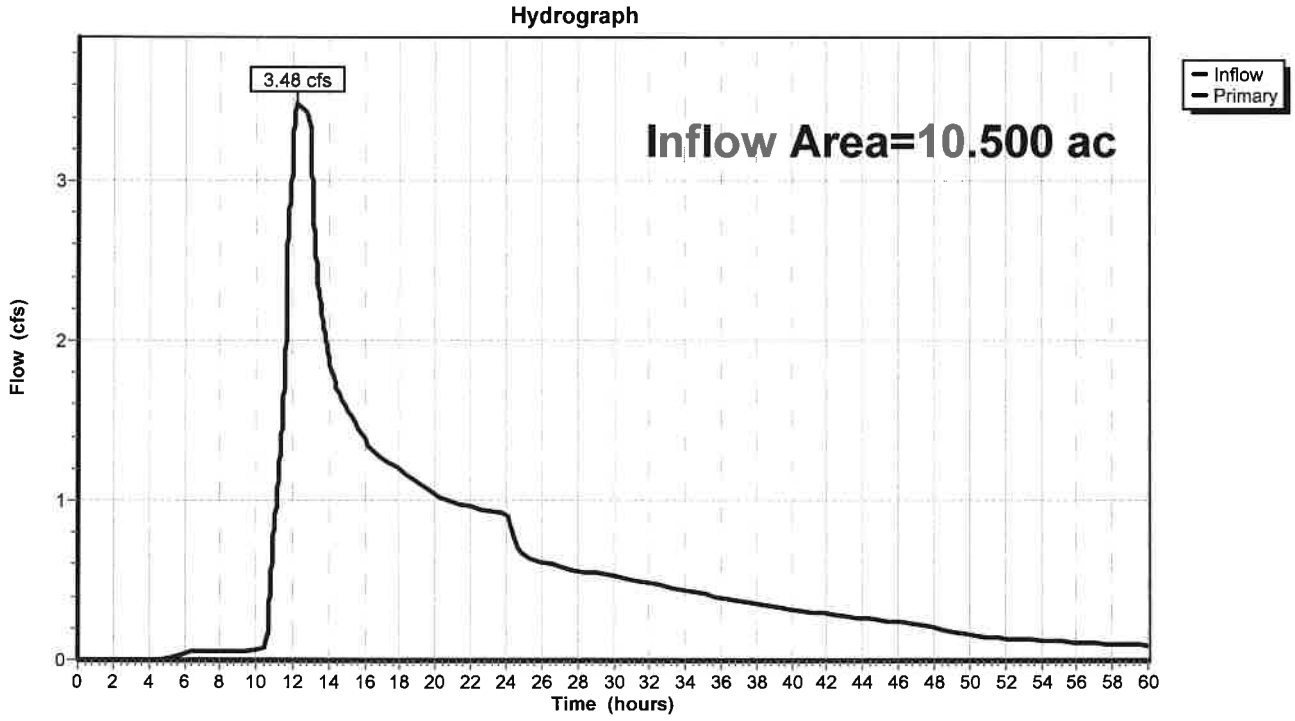
Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 2.97" for 50-Year event
Inflow = 3.48 cfs @ 12.21 hrs, Volume= 2.596 af
Primary = 3.48 cfs @ 12.21 hrs, Volume= 2.596 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.14	0.00	0.14
1.00	0.00	0.00	0.00	53.00	0.13	0.00	0.13
2.00	0.00	0.00	0.00	54.00	0.12	0.00	0.12
3.00	0.00	0.00	0.00	55.00	0.12	0.00	0.12
4.00	0.00	0.00	0.00	56.00	0.11	0.00	0.11
5.00	0.01	0.00	0.01	57.00	0.11	0.00	0.11
6.00	0.04	0.00	0.04	58.00	0.10	0.00	0.10
7.00	0.05	0.00	0.05	59.00	0.10	0.00	0.10
8.00	0.05	0.00	0.05	60.00	0.09	0.00	0.09
9.00	0.06	0.00	0.06				
10.00	0.06	0.00	0.06				
11.00	0.88	0.00	0.88				
12.00	**3.14**	0.00	**3.14**				
13.00	**3.25**	0.00	**3.25**				
14.00	1.89	0.00	1.89				
15.00	1.57	0.00	1.57				
16.00	1.38	0.00	1.38				
17.00	1.26	0.00	1.26				
18.00	1.19	0.00	1.19				
19.00	1.11	0.00	1.11				
20.00	1.04	0.00	1.04				
21.00	0.99	0.00	0.99				
22.00	0.96	0.00	0.96				
23.00	0.94	0.00	0.94				
24.00	0.91	0.00	0.91				
25.00	0.65	0.00	0.65				
26.00	0.62	0.00	0.62				
27.00	0.59	0.00	0.59				
28.00	0.56	0.00	0.56				
29.00	0.55	0.00	0.55				
30.00	0.53	0.00	0.53				
31.00	0.51	0.00	0.51				
32.00	0.48	0.00	0.48				
33.00	0.46	0.00	0.46				
34.00	0.44	0.00	0.44				
35.00	0.42	0.00	0.42				
36.00	0.39	0.00	0.39				
37.00	0.37	0.00	0.37				
38.00	0.35	0.00	0.35				
39.00	0.34	0.00	0.34				
40.00	0.32	0.00	0.32				
41.00	0.30	0.00	0.30				
42.00	0.29	0.00	0.29				
43.00	0.27	0.00	0.27				
44.00	0.26	0.00	0.26				
45.00	0.25	0.00	0.25				
46.00	0.24	0.00	0.24				
47.00	0.23	0.00	0.23				
48.00	0.20	0.00	0.20				
49.00	0.17	0.00	0.17				
50.00	0.16	0.00	0.16				
51.00	0.15	0.00	0.15				

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=4.15"
Flow Length=652' Tc=13.3 min CN=90 Runoff=33.05 cfs 2.108 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=4.25"
Flow Length=683' Tc=14.4 min CN=91 Runoff=23.44 cfs 1.560 af

Pond 1P: Bioretention Area 3 Peak Elev=576.23' Storage=11,585 cf Inflow=33.05 cfs 2.108 af
Primary=2.94 cfs 1.275 af Secondary=28.98 cfs 0.833 af Outflow=31.92 cfs 2.108 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=576.11' Storage=70,722 cf Inflow=52.24 cfs 2.392 af
Primary=0.78 cfs 1.554 af Secondary=7.80 cfs 0.534 af Outflow=8.57 cfs 2.088 af

Link 5L: Outflow (@ CB 54) Inflow=3.60 cfs 2.829 af
Primary=3.60 cfs 2.829 af

Total Runoff Area = 10.500 ac Runoff Volume = 3.668 af Average Runoff Depth = 4.19"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Front Area 1

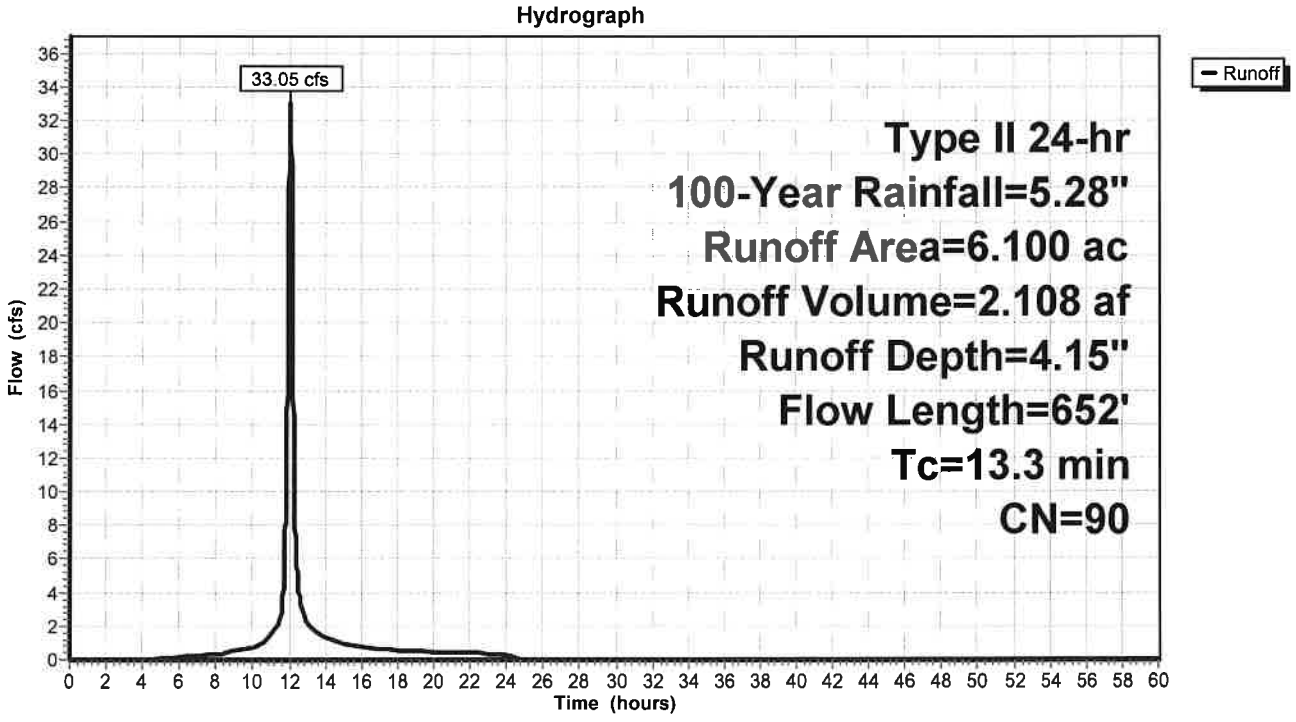
Runoff = 33.05 cfs @ 12.05 hrs, Volume= 2.108 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.28	4.15	0.00
1.00	0.06	0.00	0.00	53.00	5.28	4.15	0.00
2.00	0.12	0.00	0.00	54.00	5.28	4.15	0.00
3.00	0.18	0.00	0.00	55.00	5.28	4.15	0.00
4.00	0.25	0.00	0.01	56.00	5.28	4.15	0.00
5.00	0.33	0.01	0.08	57.00	5.28	4.15	0.00
6.00	0.42	0.03	0.15	58.00	5.28	4.15	0.00
7.00	0.52	0.06	0.23	59.00	5.28	4.15	0.00
8.00	0.63	0.11	0.32	60.00	5.28	4.15	0.00
9.00	0.78	0.18	0.52				
10.00	0.96	0.29	0.74				
11.00	1.24	0.49	1.47				
12.00	3.50	2.45	**30.36**				
13.00	4.08	2.99	**2.21**				
14.00	4.33	3.23	1.27				
15.00	4.51	3.40	0.98				
16.00	4.65	3.54	0.76				
17.00	4.76	3.65	0.66				
18.00	4.86	3.74	0.58				
19.00	4.95	3.83	0.50				
20.00	5.03	3.90	0.42				
21.00	5.09	3.97	0.40				
22.00	5.16	4.03	0.38				
23.00	5.22	4.09	0.36				
24.00	**5.28**	**4.15**	0.35				
25.00	5.28	4.15	0.00				
26.00	5.28	4.15	0.00				
27.00	5.28	4.15	0.00				
28.00	5.28	4.15	0.00				
29.00	5.28	4.15	0.00				
30.00	5.28	4.15	0.00				
31.00	5.28	4.15	0.00				
32.00	5.28	4.15	0.00				
33.00	5.28	4.15	0.00				
34.00	5.28	4.15	0.00				
35.00	5.28	4.15	0.00				
36.00	5.28	4.15	0.00				
37.00	5.28	4.15	0.00				
38.00	5.28	4.15	0.00				
39.00	5.28	4.15	0.00				
40.00	5.28	4.15	0.00				
41.00	5.28	4.15	0.00				
42.00	5.28	4.15	0.00				
43.00	5.28	4.15	0.00				
44.00	5.28	4.15	0.00				
45.00	5.28	4.15	0.00				
46.00	5.28	4.15	0.00				
47.00	5.28	4.15	0.00				
48.00	5.28	4.15	0.00				
49.00	5.28	4.15	0.00				
50.00	5.28	4.15	0.00				
51.00	5.28	4.15	0.00				

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 2S: Rear Area 1

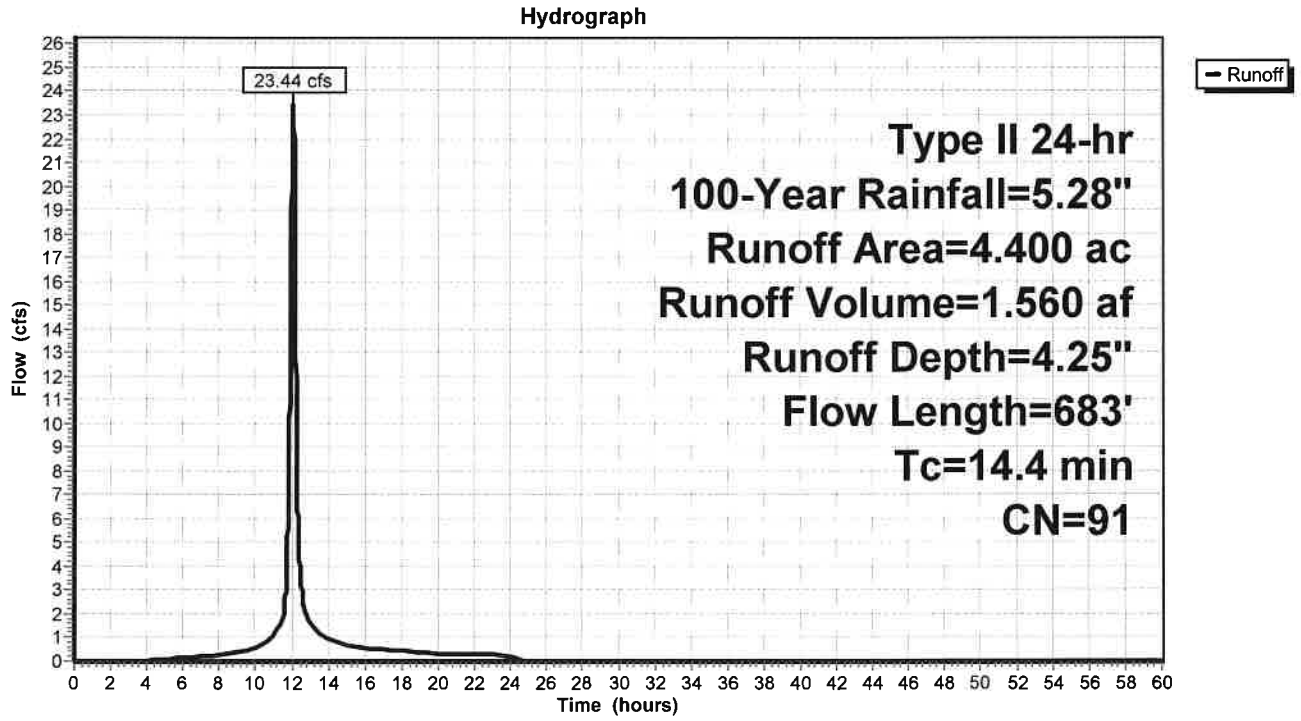
Runoff = 23.44 cfs @ 12.06 hrs, Volume= 1.560 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.18	0.00	0.00
4.00	0.25	0.00	0.02
5.00	0.33	0.02	0.07
6.00	0.42	0.04	0.13
7.00	0.52	0.08	0.19
8.00	0.63	0.13	0.25
9.00	0.78	0.21	0.41
10.00	0.96	0.33	0.57
11.00	1.24	0.54	1.10
12.00	3.50	2.54	**20.85**
13.00	4.08	3.09	**1.64**
14.00	4.33	3.33	0.94
15.00	4.51	3.50	0.71
16.00	4.65	3.64	0.56
17.00	4.76	3.75	0.48
18.00	4.86	3.85	0.42
19.00	4.95	3.93	0.36
20.00	5.03	4.01	0.31
21.00	5.09	4.07	0.29
22.00	5.16	4.14	0.28
23.00	5.22	4.20	0.26
24.00	**5.28**	**4.25**	0.25
25.00	5.28	4.25	0.00
26.00	5.28	4.25	0.00
27.00	5.28	4.25	0.00
28.00	5.28	4.25	0.00
29.00	5.28	4.25	0.00
30.00	5.28	4.25	0.00
31.00	5.28	4.25	0.00
32.00	5.28	4.25	0.00
33.00	5.28	4.25	0.00
34.00	5.28	4.25	0.00
35.00	5.28	4.25	0.00
36.00	5.28	4.25	0.00
37.00	5.28	4.25	0.00
38.00	5.28	4.25	0.00
39.00	5.28	4.25	0.00
40.00	5.28	4.25	0.00
41.00	5.28	4.25	0.00
42.00	5.28	4.25	0.00
43.00	5.28	4.25	0.00
44.00	5.28	4.25	0.00
45.00	5.28	4.25	0.00
46.00	5.28	4.25	0.00
47.00	5.28	4.25	0.00
48.00	5.28	4.25	0.00
49.00	5.28	4.25	0.00
50.00	5.28	4.25	0.00
51.00	5.28	4.25	0.00
52.00	5.28	4.25	0.00
53.00	5.28	4.25	0.00
54.00	5.28	4.25	0.00
55.00	5.28	4.25	0.00
56.00	5.28	4.25	0.00
57.00	5.28	4.25	0.00
58.00	5.28	4.25	0.00
59.00	5.28	4.25	0.00
60.00	5.28	4.25	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 4.15" for 100-Year event
Inflow = 33.05 cfs @ 12.05 hrs, Volume= 2.108 af
Outflow = 31.92 cfs @ 12.08 hrs, Volume= 2.108 af, Atten= 3%, Lag= 1.8 min
Primary = 2.94 cfs @ 12.08 hrs, Volume= 1.275 af
Secondary = 28.98 cfs @ 12.08 hrs, Volume= 0.833 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.23' @ 12.08 hrs Surf.Area= 10,226 sf Storage= 11,585 cf

Plug-Flow detention time= 93.7 min calculated for 2.108 af (100% of inflow)
Center-of-Mass det. time= 93.9 min (886.3 - 792.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

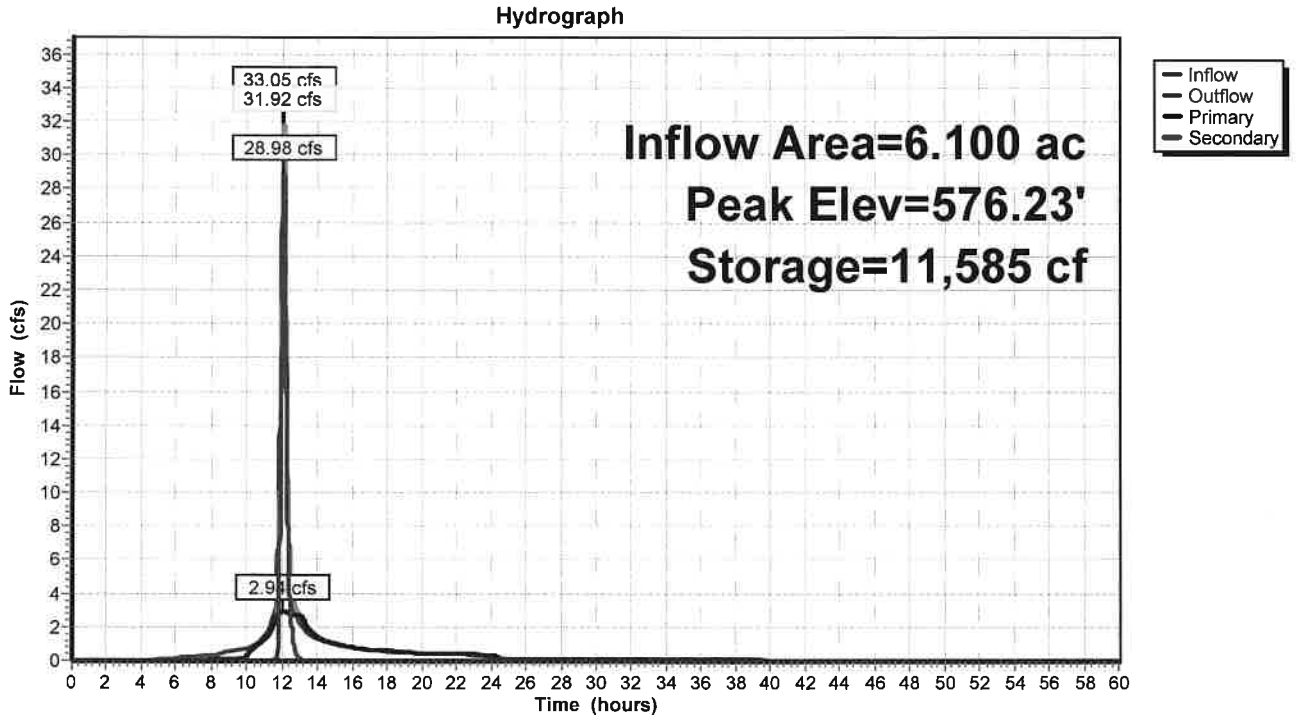
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.94 cfs @ 12.08 hrs HW=576.23' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.94 cfs @ 8.43 fps)
  ├**2=Grate** (Passes < 5.74 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

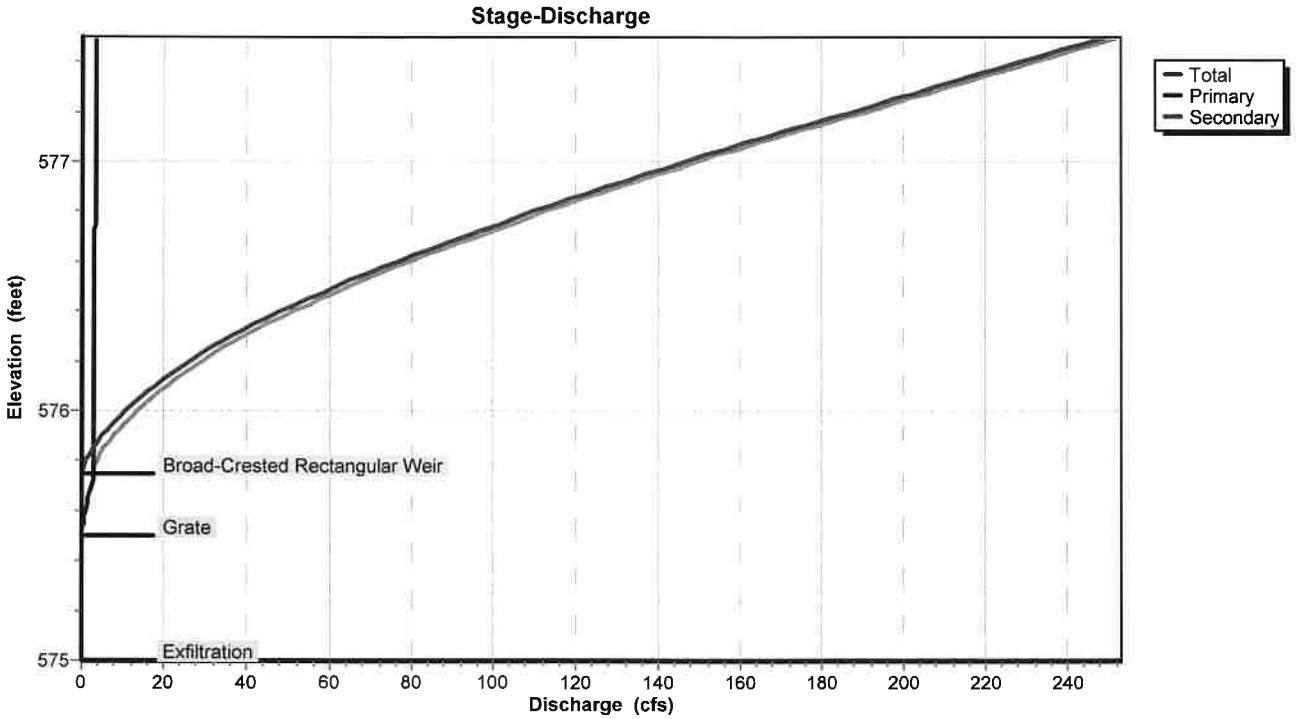
Secondary OutFlow Max=28.93 cfs @ 12.08 hrs HW=576.23' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 28.93 cfs @ 2.02 fps)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3

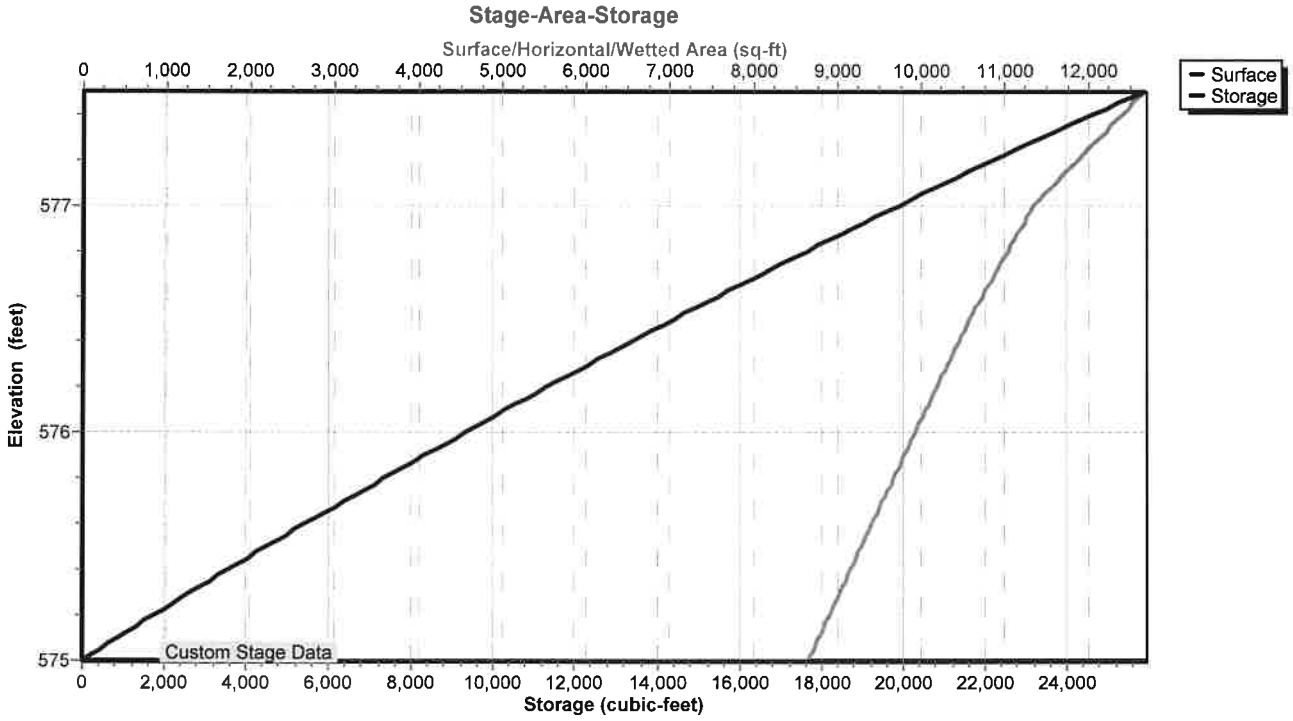


Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.01	6	575.00	0.00	0.00	0.00
6.00	0.15	359	575.04	0.05	0.05	0.00
8.00	0.32	1,651	575.19	0.05	0.05	0.00
10.00	0.74	4,857	575.54	0.28	0.28	0.00
12.00	**30.36**	**10,896**	**576.16**	**25.95**	**2.91**	**23.04**
14.00	**1.27**	**5,731**	**575.63**	**1.39**	**1.39**	**0.00**
16.00	0.76	5,329	575.59	0.81	0.81	0.00
18.00	0.58	5,164	575.57	0.60	0.60	0.00
20.00	0.42	5,023	575.56	0.44	0.44	0.00
22.00	0.38	4,969	575.55	0.38	0.38	0.00
24.00	0.35	4,939	575.55	0.35	0.35	0.00
26.00	0.00	4,307	575.48	0.06	0.06	0.00
28.00	0.00	3,911	575.44	0.05	0.05	0.00
30.00	0.00	3,518	575.40	0.05	0.05	0.00
32.00	0.00	3,129	575.35	0.05	0.05	0.00
34.00	0.00	2,743	575.31	0.05	0.05	0.00
36.00	0.00	2,360	575.27	0.05	0.05	0.00
38.00	0.00	1,981	575.23	0.05	0.05	0.00
40.00	0.00	1,604	575.18	0.05	0.05	0.00
42.00	0.00	1,232	575.14	0.05	0.05	0.00
44.00	0.00	862	575.10	0.05	0.05	0.00
46.00	0.00	496	575.06	0.05	0.05	0.00
48.00	0.00	147	575.02	0.03	0.03	0.00
50.00	0.00	28	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 6.52" for 100-Year event
Inflow = 52.24 cfs @ 12.07 hrs, Volume= 2.392 af
Outflow = 8.57 cfs @ 12.41 hrs, Volume= 2.088 af, Atten= 84%, Lag= 20.7 min
Primary = 0.78 cfs @ 12.41 hrs, Volume= 1.554 af
Secondary = 7.80 cfs @ 12.41 hrs, Volume= 0.534 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.11' @ 12.41 hrs Surf.Area= 67,462 sf Storage= 70,722 cf

Plug-Flow detention time= 739.0 min calculated for 2.088 af (87% of inflow)
Center-of-Mass det. time= 688.7 min (1,456.5 - 767.8)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

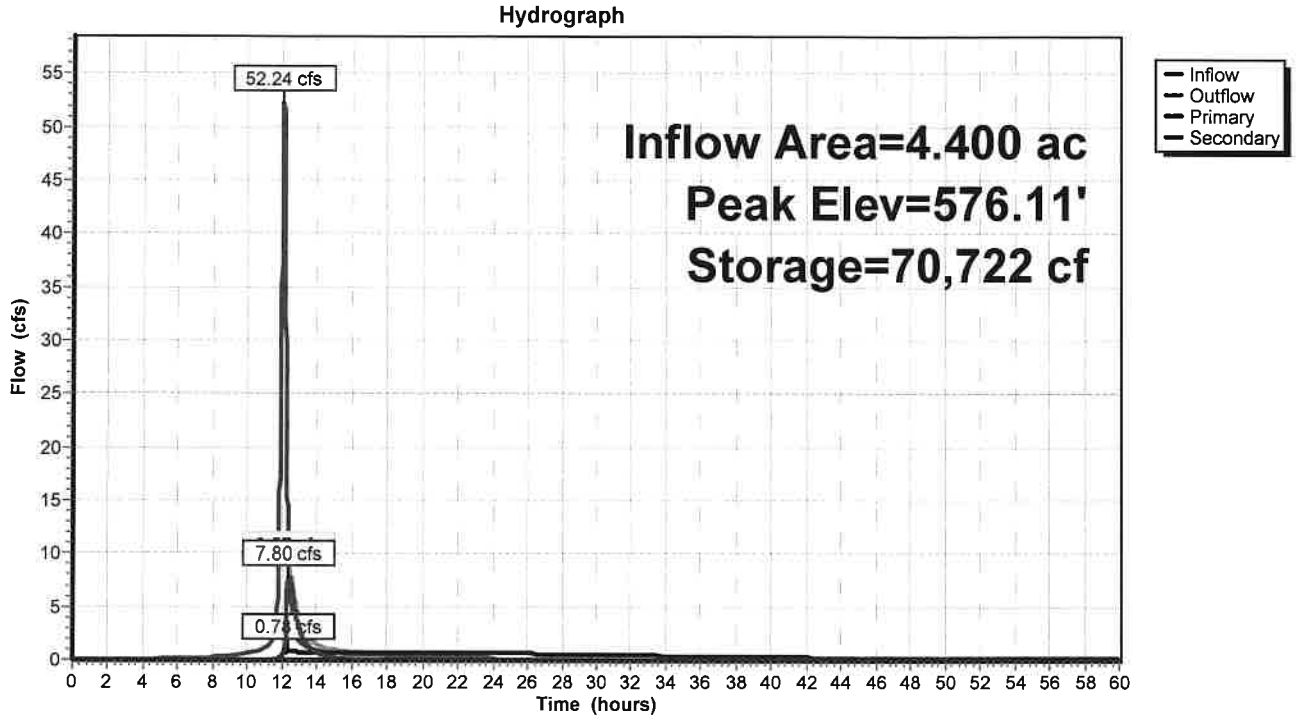
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.78 cfs @ 12.41 hrs HW=576.11' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.78 cfs of 2.84 cfs potential flow)
└**2=low flow outlet pipe** (Inlet Controls 0.78 cfs @ 3.95 fps)
└**3=Grate** (Controls 0.00 cfs)

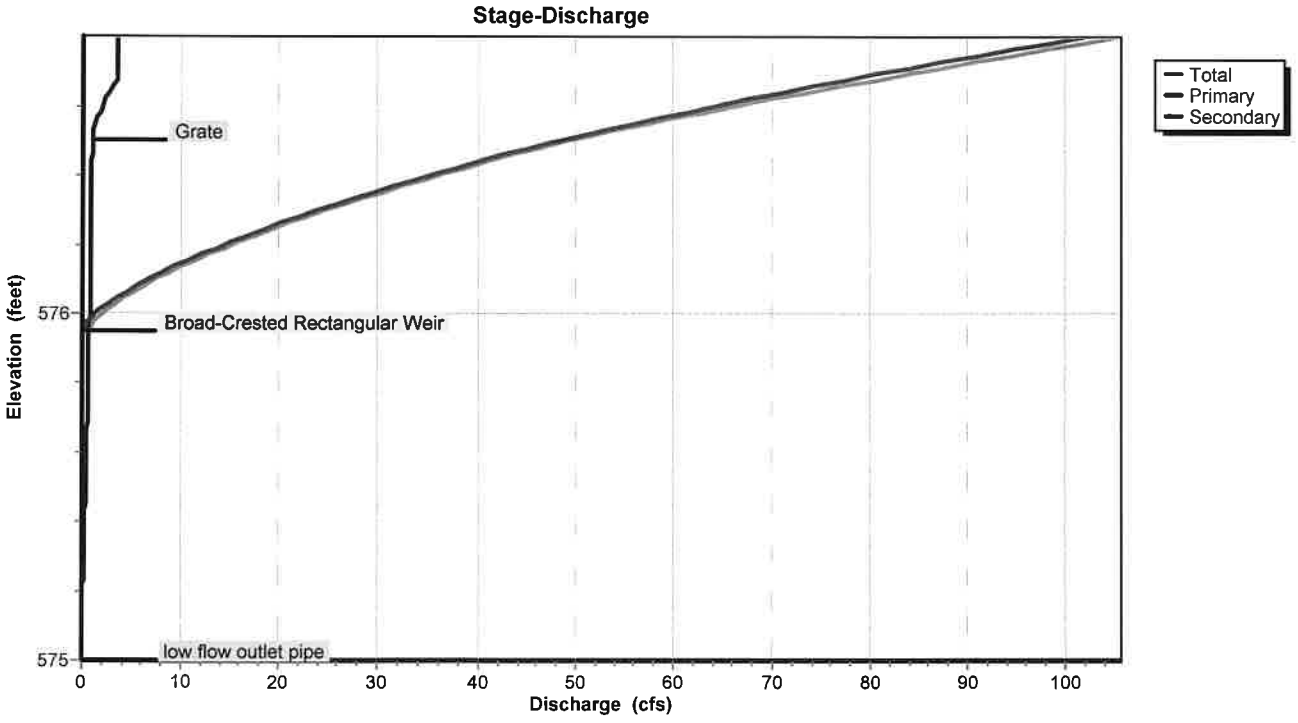
Secondary OutFlow Max=7.79 cfs @ 12.41 hrs HW=576.11' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 7.79 cfs @ 1.18 fps)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)

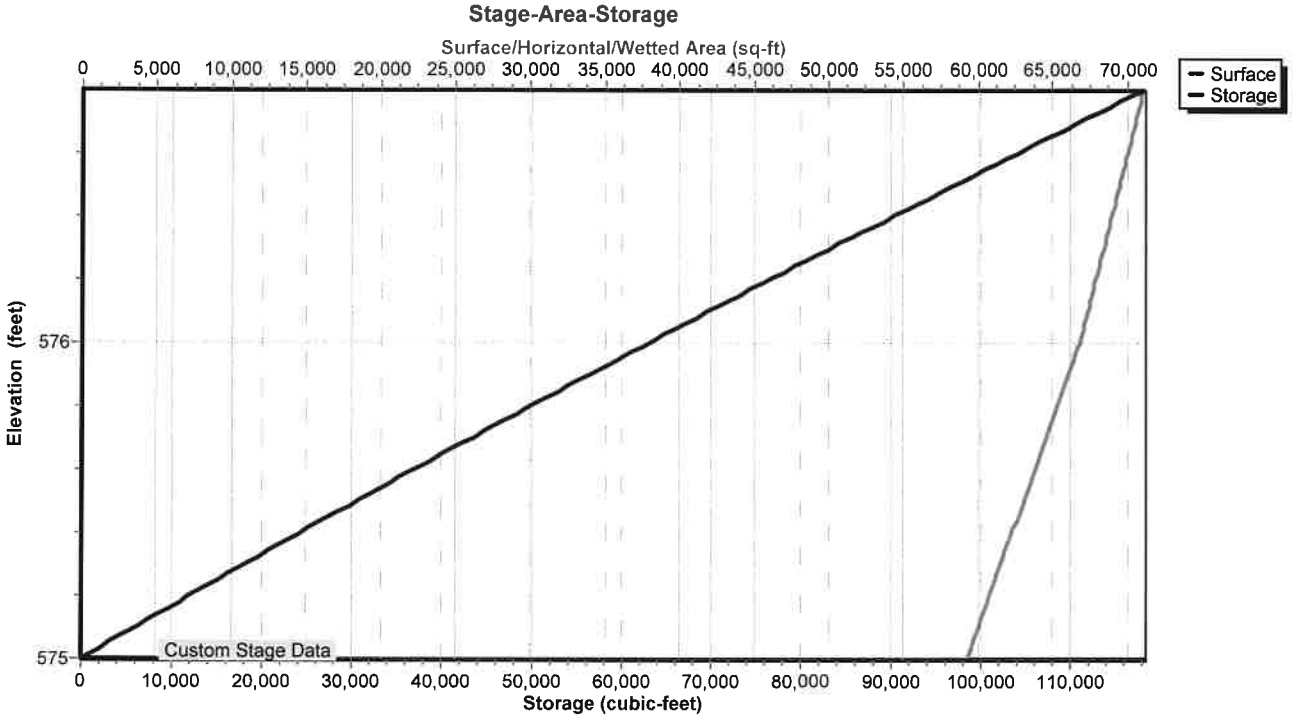


Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.02	25	575.00	0.00	0.00	0.00
6.00	0.13	556	575.01	0.00	0.00	0.00
8.00	0.25	1,914	575.03	0.00	0.00	0.00
10.00	0.57	4,720	575.08	0.01	0.01	0.00
12.00	**43.89**	**31,253**	**575.51**	**0.38**	**0.38**	**0.00**
14.00	**0.94**	**61,894**	**575.98**	**1.43**	**0.71**	**0.72**
16.00	0.56	59,972	575.95	0.73	0.70	0.03
18.00	0.42	58,398	575.93	0.69	0.69	0.00
20.00	0.31	56,130	575.90	0.67	0.67	0.00
22.00	0.28	53,450	575.86	0.65	0.65	0.00
24.00	0.25	50,762	575.81	0.63	0.63	0.00
26.00	0.00	46,581	575.75	0.59	0.59	0.00
28.00	0.00	42,588	575.69	0.52	0.52	0.00
30.00	0.00	38,979	575.63	0.49	0.49	0.00
32.00	0.00	35,609	575.58	0.45	0.45	0.00
34.00	0.00	32,555	575.53	0.40	0.40	0.00
36.00	0.00	29,827	575.49	0.36	0.36	0.00
38.00	0.00	27,407	575.45	0.32	0.32	0.00
40.00	0.00	25,264	575.42	0.28	0.28	0.00
42.00	0.00	23,368	575.39	0.25	0.25	0.00
44.00	0.00	21,686	575.36	0.22	0.22	0.00
46.00	0.00	20,191	575.33	0.20	0.20	0.00
48.00	0.00	18,858	575.31	0.17	0.17	0.00
50.00	0.00	17,665	575.29	0.16	0.16	0.00
52.00	0.00	16,594	575.28	0.14	0.14	0.00
54.00	0.00	15,630	575.26	0.13	0.13	0.00
56.00	0.00	14,758	575.25	0.12	0.12	0.00
58.00	0.00	13,967	575.23	0.10	0.10	0.00
60.00	0.00	13,248	575.22	0.10	0.10	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

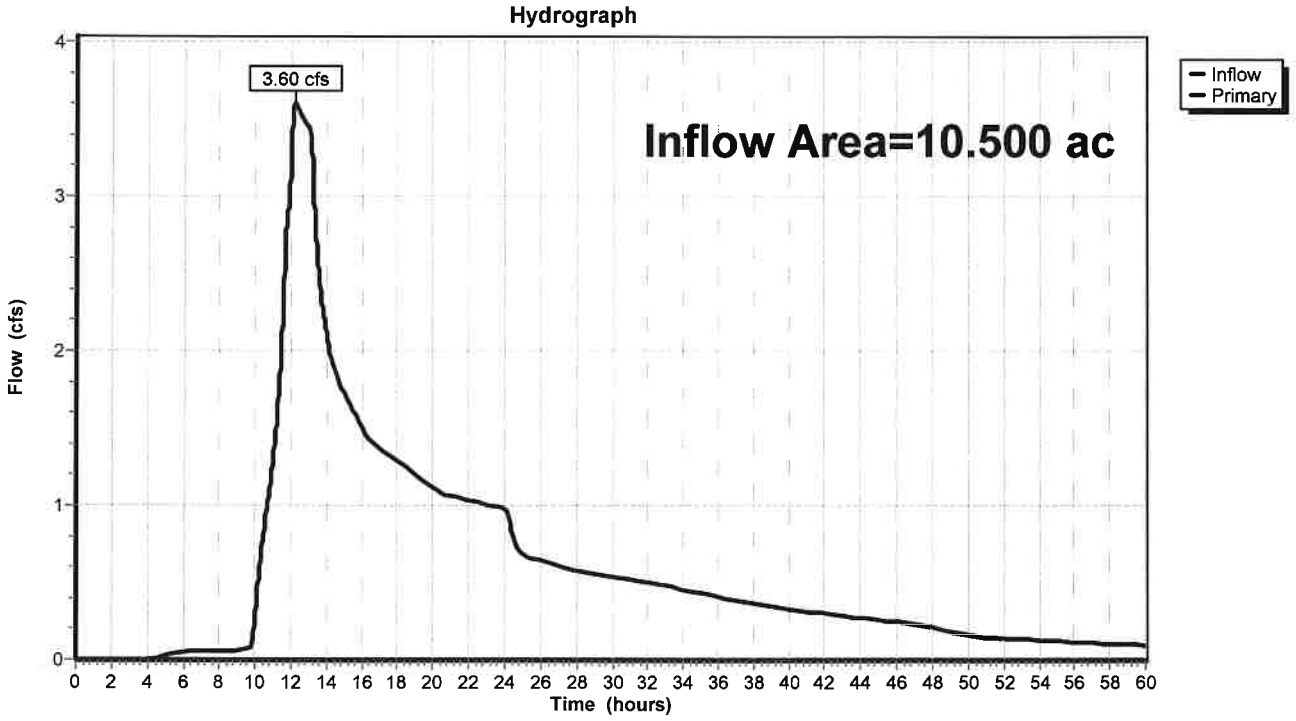
Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 3.23" for 100-Year event
Inflow = 3.60 cfs @ 12.19 hrs, Volume= 2.829 af
Primary = 3.60 cfs @ 12.19 hrs, Volume= 2.829 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

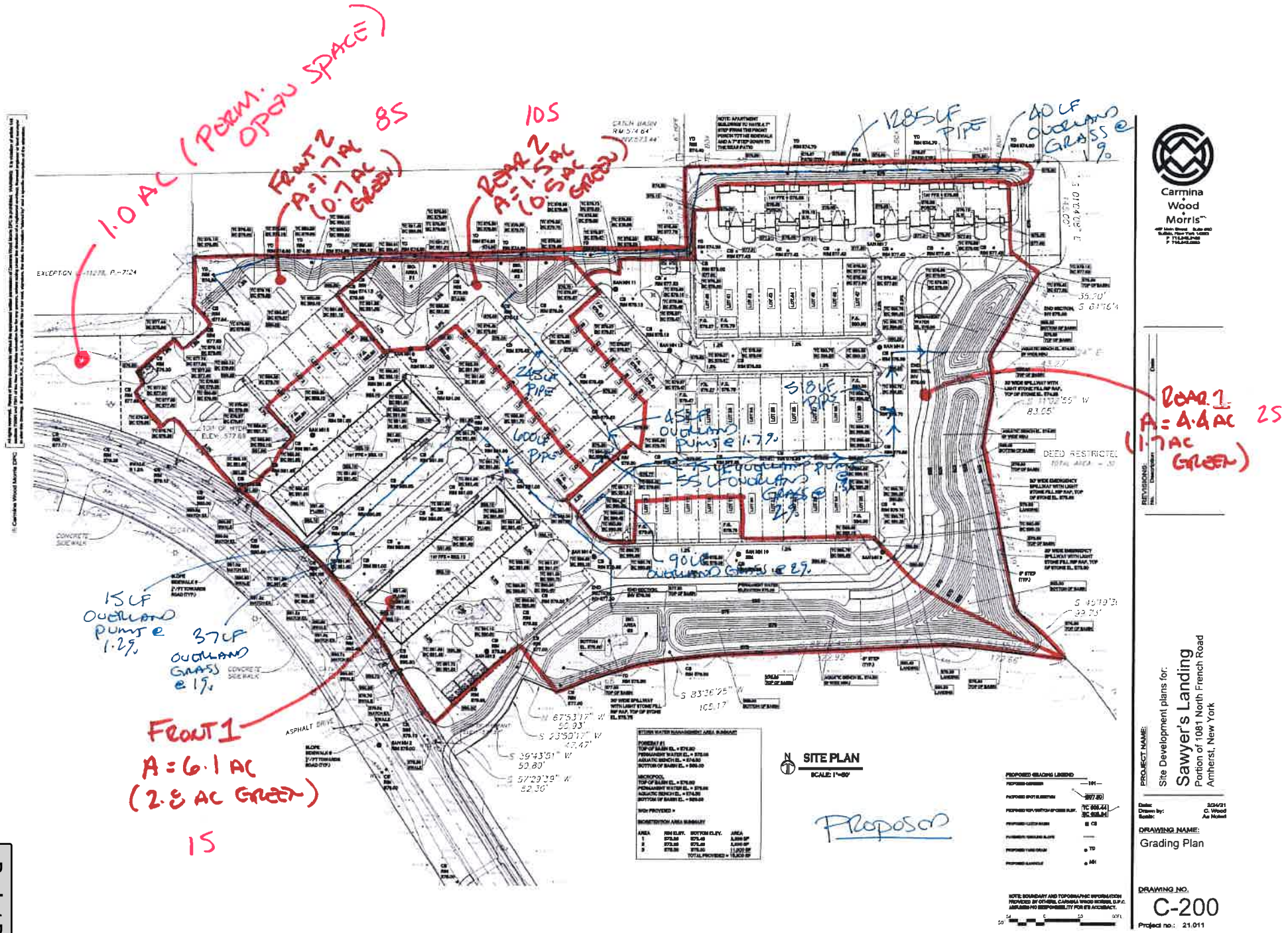
Hydrograph for Link 5L: Outflow (@ CB 54)

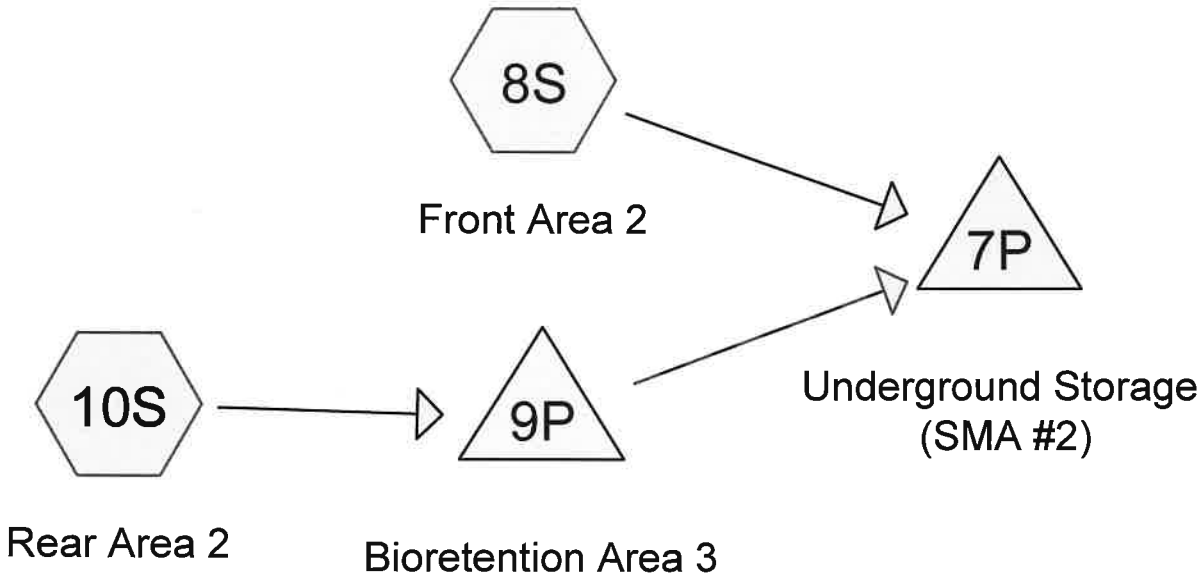
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.14	0.00	0.14
1.00	0.00	0.00	0.00	53.00	0.13	0.00	0.13
2.00	0.00	0.00	0.00	54.00	0.13	0.00	0.13
3.00	0.00	0.00	0.00	55.00	0.12	0.00	0.12
4.00	0.00	0.00	0.00	56.00	0.12	0.00	0.12
5.00	0.03	0.00	0.03	57.00	0.11	0.00	0.11
6.00	0.05	0.00	0.05	58.00	0.10	0.00	0.10
7.00	0.05	0.00	0.05	59.00	0.10	0.00	0.10
8.00	0.05	0.00	0.05	60.00	0.10	0.00	0.10
9.00	0.06	0.00	0.06				
10.00	0.30	0.00	0.30				
11.00	1.31	0.00	1.31				
12.00	**3.29**	0.00	**3.29**				
13.00	**3.44**	0.00	**3.44**				
14.00	2.10	0.00	2.10				
15.00	1.72	0.00	1.72				
16.00	1.51	0.00	1.51				
17.00	1.37	0.00	1.37				
18.00	1.29	0.00	1.29				
19.00	1.20	0.00	1.20				
20.00	1.11	0.00	1.11				
21.00	1.06	0.00	1.06				
22.00	1.03	0.00	1.03				
23.00	1.01	0.00	1.01				
24.00	0.98	0.00	0.98				
25.00	0.68	0.00	0.68				
26.00	0.64	0.00	0.64				
27.00	0.61	0.00	0.61				
28.00	0.58	0.00	0.58				
29.00	0.55	0.00	0.55				
30.00	0.54	0.00	0.54				
31.00	0.52	0.00	0.52				
32.00	0.50	0.00	0.50				
33.00	0.48	0.00	0.48				
34.00	0.45	0.00	0.45				
35.00	0.43	0.00	0.43				
36.00	0.41	0.00	0.41				
37.00	0.39	0.00	0.39				
38.00	0.37	0.00	0.37				
39.00	0.35	0.00	0.35				
40.00	0.33	0.00	0.33				
41.00	0.32	0.00	0.32				
42.00	0.30	0.00	0.30				
43.00	0.28	0.00	0.28				
44.00	0.27	0.00	0.27				
45.00	0.26	0.00	0.26				
46.00	0.25	0.00	0.25				
47.00	0.24	0.00	0.24				
48.00	0.21	0.00	0.21				
49.00	0.18	0.00	0.18				
50.00	0.16	0.00	0.16				
51.00	0.15	0.00	0.15				

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Proposed Runoff - West

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))


1.0 AC (PERM. OPEN SPACE)
FRONT 2
A=1.7AC
(0.7AC GREEN)
8S
REAR 2
A=1.5AC
(0.5AC GREEN)
10S
1285LF PIPE
40LF OVERLAND GRASS @ 1%
245LF PIPE
600LF PIPE
45LF OVERLAND PUMP @ 1.7%
518LF PIPE
35LF OVERLAND PUMP
35LF OVERLAND GRASS @ 1.5%
90LF OVERLAND GRASS @ 2%
REAR 1
A=4.4AC
(1.7AC GREEN)
2S
15LF OVERLAND PUMP @ 1.2%
37LF OVERLAND GRASS @ 1%
FRONT 1
A=6.1AC
(2.8AC GREEN)
1S
SITE PLAN
SCALE: 1"=80'
PROPOSED
Carmina Wood Morris
PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York
DRAWING NAME:
Grading Plan
DRAWING NO.
C-200
Project no.: 21.011



Subcat Reach Pond Link

Routing Diagram for 21.011 Proposed
Prepared by Hewlett-Packard Company, Printed 3/4/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Events for Pond 7P: Underground Storage

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	2.40	0.33	570.29	4,537
2-Year	4.15	0.68	570.46	5,990
5-Year	7.03	1.05	570.79	8,639
10-Year	9.17	1.28	571.13	11,342
25-Year	11.11	1.61	571.73	15,804
50-Year	12.80	3.61	572.23	18,836
100-Year	**14.92**	**4.83**	**572.92**	**21,772**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.200	80	>75% Grass cover, Good, HSG D (8S, 10S)
1.200	98	Paved parking, HSG D (8S, 10S)
0.800	98	Roofs, HSG D (8S, 10S)
3.200	**91**	**TOTAL AREA**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
3.200	HSG D	8S, 10S
0.000	Other	
3.200		**TOTAL AREA**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchmer Numbers
0.000	0.000	0.000	1.200	0.000	1.200	>75% Grass cover, Good	8S, 10S
0.000	0.000	0.000	1.200	0.000	1.200	Paved parking	8S, 10S
0.000	0.000	0.000	0.800	0.000	0.800	Roofs	8S, 10S
0.000	**0.000**	**0.000**	**3.200**	**0.000**	**3.200**	**TOTAL AREA**	

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.04"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=2.36 cfs 0.148 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.11"
Flow Length=345' Tc=9.1 min CN=92 Runoff=2.63 cfs 0.139 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.29' Storage=4,537 cf Inflow=2.40 cfs 0.287 af
Outflow=0.33 cfs 0.243 af

Pond 9P: Bioretention Area 3 Peak Elev=574.54' Storage=2,922 cf Inflow=2.63 cfs 0.139 af
Outflow=0.43 cfs 0.139 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.287 af Average Runoff Depth = 1.08"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 8S: Front Area 2

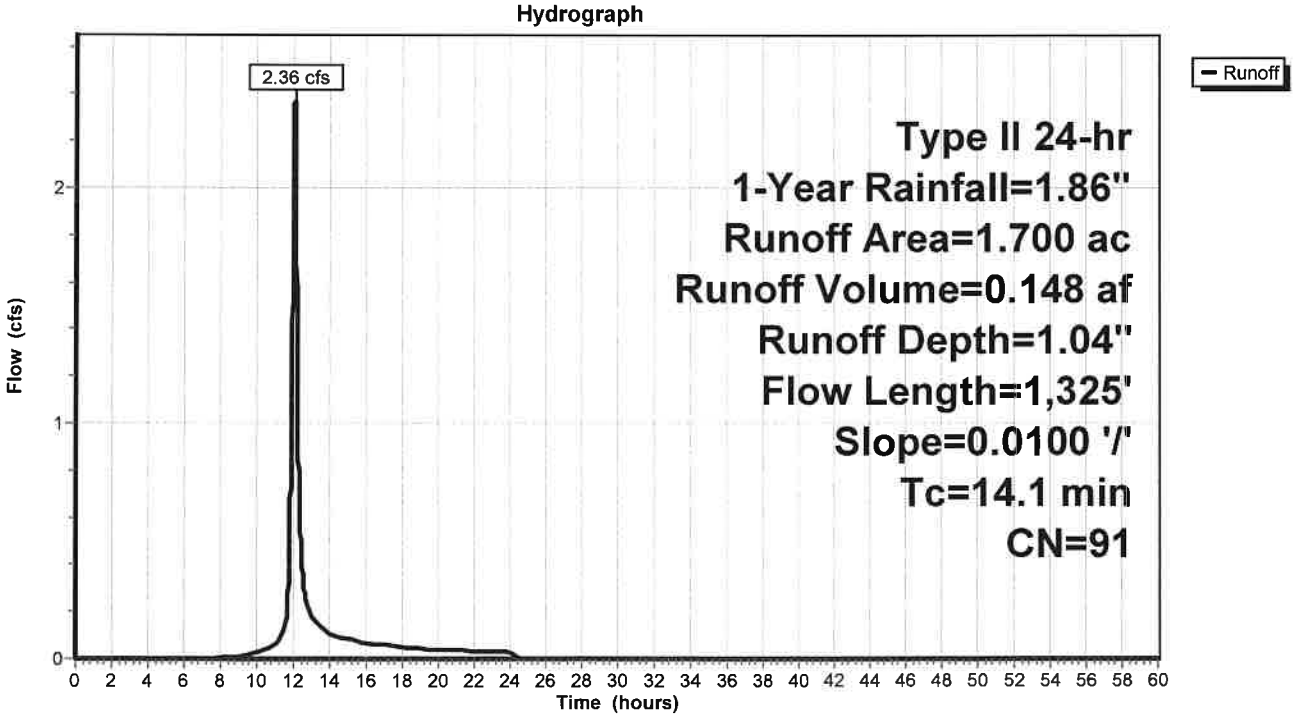
Runoff = 2.36 cfs @ 12.06 hrs, Volume= 0.148 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.00
9.00	0.27	0.01	0.01
10.00	0.34	0.02	0.02
11.00	0.44	0.05	0.07
12.00	1.23	0.53	**2.04**
13.00	1.44	0.69	**0.18**
14.00	1.53	0.76	0.11
15.00	1.59	0.81	0.08
16.00	1.64	0.85	0.07
17.00	1.68	0.89	0.06
18.00	1.71	0.92	0.05
19.00	1.74	0.94	0.04
20.00	1.77	0.97	0.04
21.00	1.79	0.99	0.03
22.00	1.82	1.01	0.03
23.00	1.84	1.02	0.03
24.00	**1.86**	**1.04**	0.03
25.00	1.86	1.04	0.00
26.00	1.86	1.04	0.00
27.00	1.86	1.04	0.00
28.00	1.86	1.04	0.00
29.00	1.86	1.04	0.00
30.00	1.86	1.04	0.00
31.00	1.86	1.04	0.00
32.00	1.86	1.04	0.00
33.00	1.86	1.04	0.00
34.00	1.86	1.04	0.00
35.00	1.86	1.04	0.00
36.00	1.86	1.04	0.00
37.00	1.86	1.04	0.00
38.00	1.86	1.04	0.00
39.00	1.86	1.04	0.00
40.00	1.86	1.04	0.00
41.00	1.86	1.04	0.00
42.00	1.86	1.04	0.00
43.00	1.86	1.04	0.00
44.00	1.86	1.04	0.00
45.00	1.86	1.04	0.00
46.00	1.86	1.04	0.00
47.00	1.86	1.04	0.00
48.00	1.86	1.04	0.00
49.00	1.86	1.04	0.00
50.00	1.86	1.04	0.00
51.00	1.86	1.04	0.00
52.00	1.86	1.04	0.00
53.00	1.86	1.04	0.00
54.00	1.86	1.04	0.00
55.00	1.86	1.04	0.00
56.00	1.86	1.04	0.00
57.00	1.86	1.04	0.00
58.00	1.86	1.04	0.00
59.00	1.86	1.04	0.00
60.00	1.86	1.04	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 10S: Rear Area 2

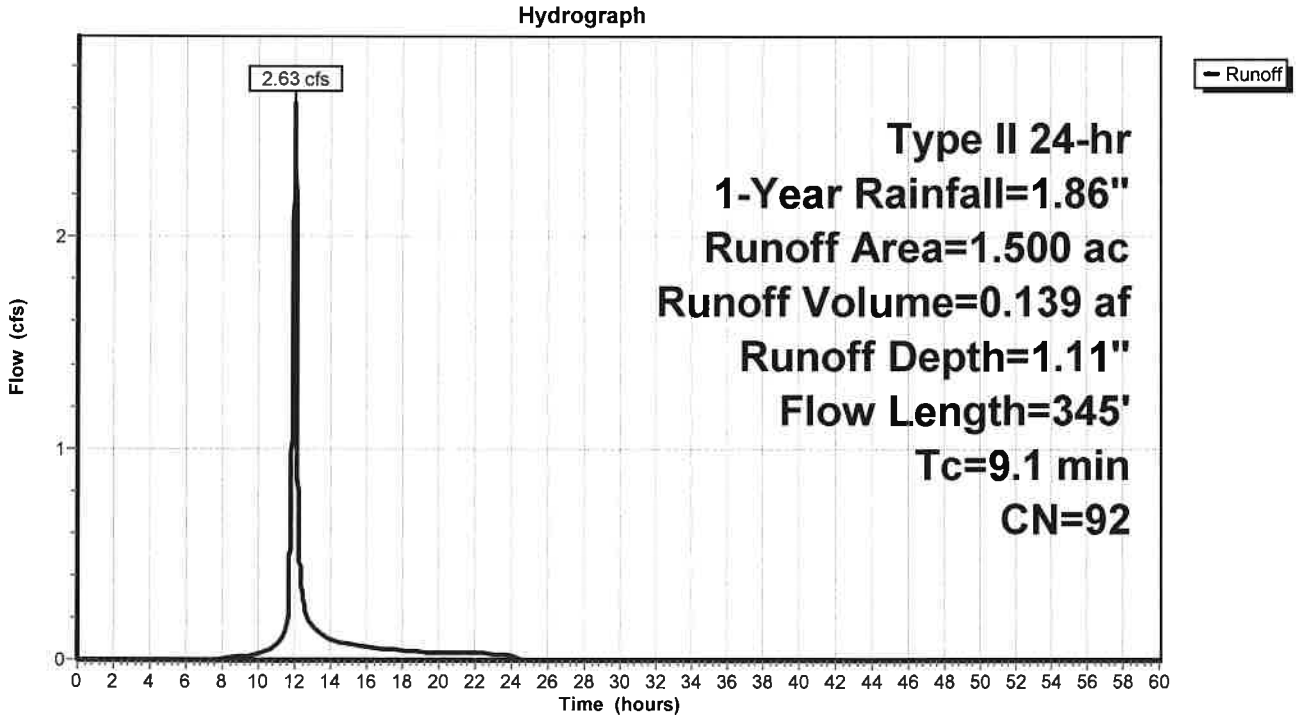
Runoff = 2.63 cfs @ 12.01 hrs, Volume= 0.139 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.01
9.00	0.27	0.01	0.02
10.00	0.34	0.03	0.03
11.00	0.44	0.06	0.07
12.00	1.23	0.58	**2.63**
13.00	1.44	0.75	**0.16**
14.00	1.53	0.82	0.09
15.00	1.59	0.88	0.07
16.00	1.64	0.92	0.06
17.00	1.68	0.95	0.05
18.00	1.71	0.98	0.04
19.00	1.74	1.01	0.04
20.00	1.77	1.03	0.03
21.00	1.79	1.05	0.03
22.00	1.82	1.07	0.03
23.00	1.84	1.09	0.03
24.00	**1.86**	**1.11**	0.03
25.00	1.86	1.11	0.00
26.00	1.86	1.11	0.00
27.00	1.86	1.11	0.00
28.00	1.86	1.11	0.00
29.00	1.86	1.11	0.00
30.00	1.86	1.11	0.00
31.00	1.86	1.11	0.00
32.00	1.86	1.11	0.00
33.00	1.86	1.11	0.00
34.00	1.86	1.11	0.00
35.00	1.86	1.11	0.00
36.00	1.86	1.11	0.00
37.00	1.86	1.11	0.00
38.00	1.86	1.11	0.00
39.00	1.86	1.11	0.00
40.00	1.86	1.11	0.00
41.00	1.86	1.11	0.00
42.00	1.86	1.11	0.00
43.00	1.86	1.11	0.00
44.00	1.86	1.11	0.00
45.00	1.86	1.11	0.00
46.00	1.86	1.11	0.00
47.00	1.86	1.11	0.00
48.00	1.86	1.11	0.00
49.00	1.86	1.11	0.00
50.00	1.86	1.11	0.00
51.00	1.86	1.11	0.00
52.00	1.86	1.11	0.00
53.00	1.86	1.11	0.00
54.00	1.86	1.11	0.00
55.00	1.86	1.11	0.00
56.00	1.86	1.11	0.00
57.00	1.86	1.11	0.00
58.00	1.86	1.11	0.00
59.00	1.86	1.11	0.00
60.00	1.86	1.11	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.08" for 1-Year event
Inflow = 2.40 cfs @ 12.06 hrs, Volume= 0.287 af
Outflow = 0.33 cfs @ 13.18 hrs, Volume= 0.243 af, Atten= 86%, Lag= 67.2 min
Primary = 0.33 cfs @ 13.18 hrs, Volume= 0.243 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.29' @ 13.18 hrs Surf.Area= 10,145 sf Storage= 4,537 cf

Plug-Flow detention time= 493.3 min calculated for 0.243 af (85% of inflow)
Center-of-Mass det. time= 283.3 min (1,405.6 - 1,122.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

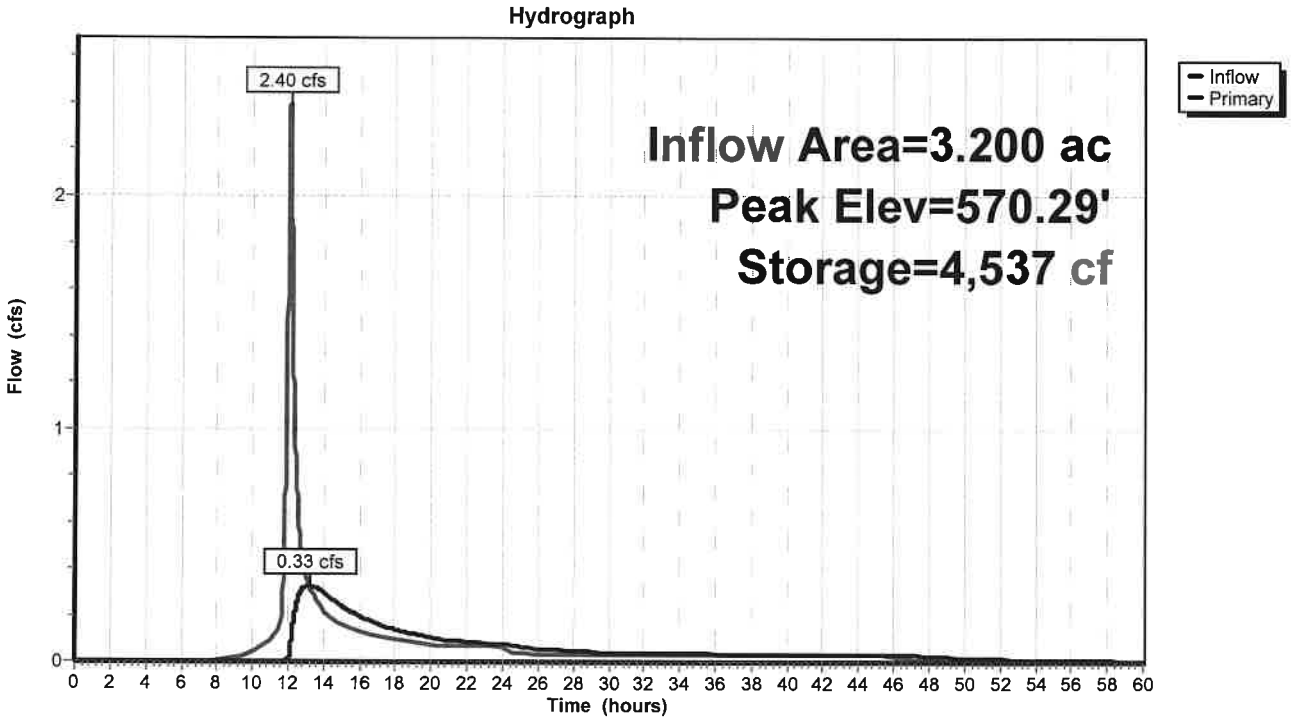
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

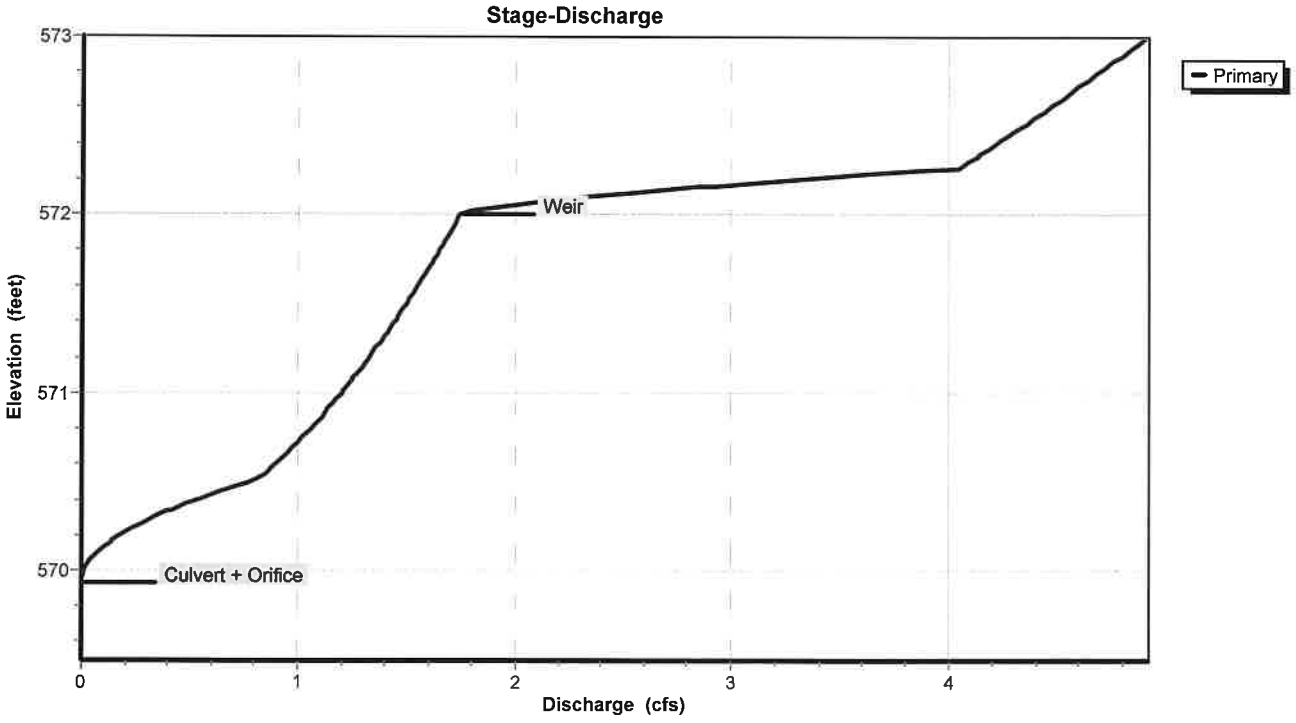
Primary OutFlow Max=0.32 cfs @ 13.18 hrs HW=570.29' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.32 cfs @ 1.88 fps)
  ├**2=Orifice** (Passes 0.32 cfs of 0.56 cfs potential flow)
  └**3=Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)

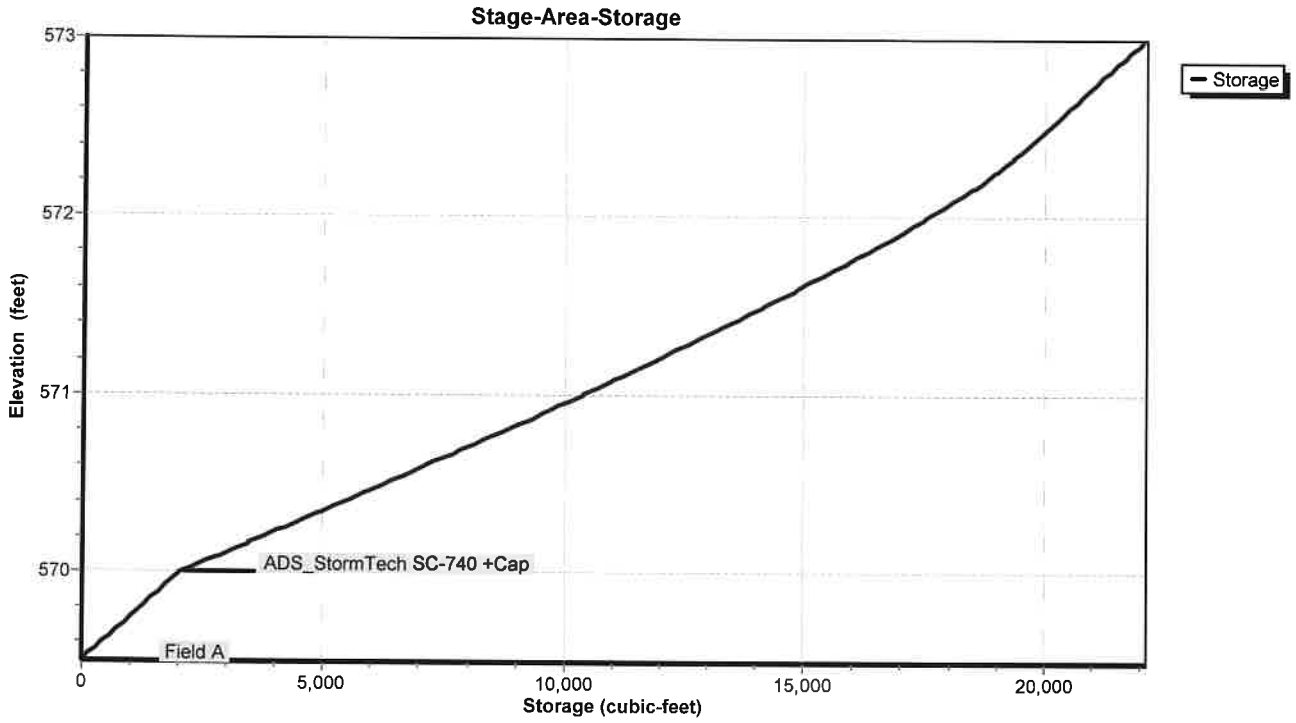


Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	0	569.50	0.00
8.00	0.00	4	569.50	0.00
10.00	0.04	139	569.53	0.00
12.00	**2.08**	**1,735**	**569.93**	**0.00**
14.00	**0.22**	**4,393**	**570.28**	**0.30**
16.00	0.13	3,835	570.21	0.20
18.00	0.10	3,452	570.17	0.14
20.00	0.07	3,194	570.14	0.10
22.00	0.07	3,023	570.12	0.08
24.00	0.06	2,931	570.10	0.07
26.00	0.03	2,737	570.08	0.06
28.00	0.03	2,618	570.07	0.05
30.00	0.03	2,550	570.06	0.04
32.00	0.03	2,506	570.06	0.04
34.00	0.03	2,476	570.05	0.04
36.00	0.03	2,453	570.05	0.03
38.00	0.03	2,436	570.05	0.03
40.00	0.03	2,422	570.05	0.03
42.00	0.03	2,410	570.04	0.03
44.00	0.03	2,399	570.04	0.03
46.00	0.03	2,388	570.04	0.03
48.00	0.01	2,288	570.03	0.02
50.00	0.00	2,166	570.02	0.02
52.00	0.00	2,066	570.00	0.01
54.00	0.00	1,993	569.99	0.01
56.00	0.00	1,945	569.98	0.01
58.00	0.00	1,910	569.97	0.00
60.00	0.00	1,885	569.96	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)
569.50	0
569.55	203
569.60	406
569.65	609
569.70	812
569.75	1,014
569.80	1,217
569.85	1,420
569.90	1,623
569.95	1,826
570.00	2,029
570.05	2,459
570.10	2,889
570.15	3,318
570.20	3,746
570.25	4,173
570.30	4,598
570.35	5,022
570.40	5,444
570.45	5,865
570.50	6,284
570.55	6,701
570.60	7,116
570.65	7,529
570.70	7,940
570.75	8,349
570.80	8,756
570.85	9,160
570.90	9,562
570.95	9,962
571.00	10,359
571.05	10,754
571.10	11,145
571.15	11,534
571.20	11,919
571.25	12,301
571.30	12,680
571.35	13,056
571.40	13,428
571.45	13,797
571.50	14,161
571.55	14,522
571.60	14,879
571.65	15,230
571.70	15,577
571.75	15,917
571.80	16,252
571.85	16,582
571.90	16,906
571.95	17,224
572.00	17,535
572.05	17,838
572.10	18,133
572.15	18,417
572.20	18,690
572.25	18,946
572.30	19,188
572.35	19,417
572.40	19,637
572.45	19,850
572.50	20,057
572.55	20,260
572.60	20,463
572.65	20,665
572.70	20,868
572.75	21,071
572.80	21,274
572.85	21,477
572.90	21,680
572.95	21,883
573.00	**22,086**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.11" for 1-Year event
Inflow = 2.63 cfs @ 12.01 hrs, Volume= 0.139 af
Outflow = 0.43 cfs @ 12.29 hrs, Volume= 0.139 af, Atten= 84%, Lag= 17.0 min
Primary = 0.43 cfs @ 12.29 hrs, Volume= 0.139 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.54' @ 12.29 hrs Surf.Area= 5,881 sf Storage= 2,922 cf

Plug-Flow detention time= 615.0 min calculated for 0.139 af (100% of inflow)
Center-of-Mass det. time= 615.0 min (1,433.7 - 818.7)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

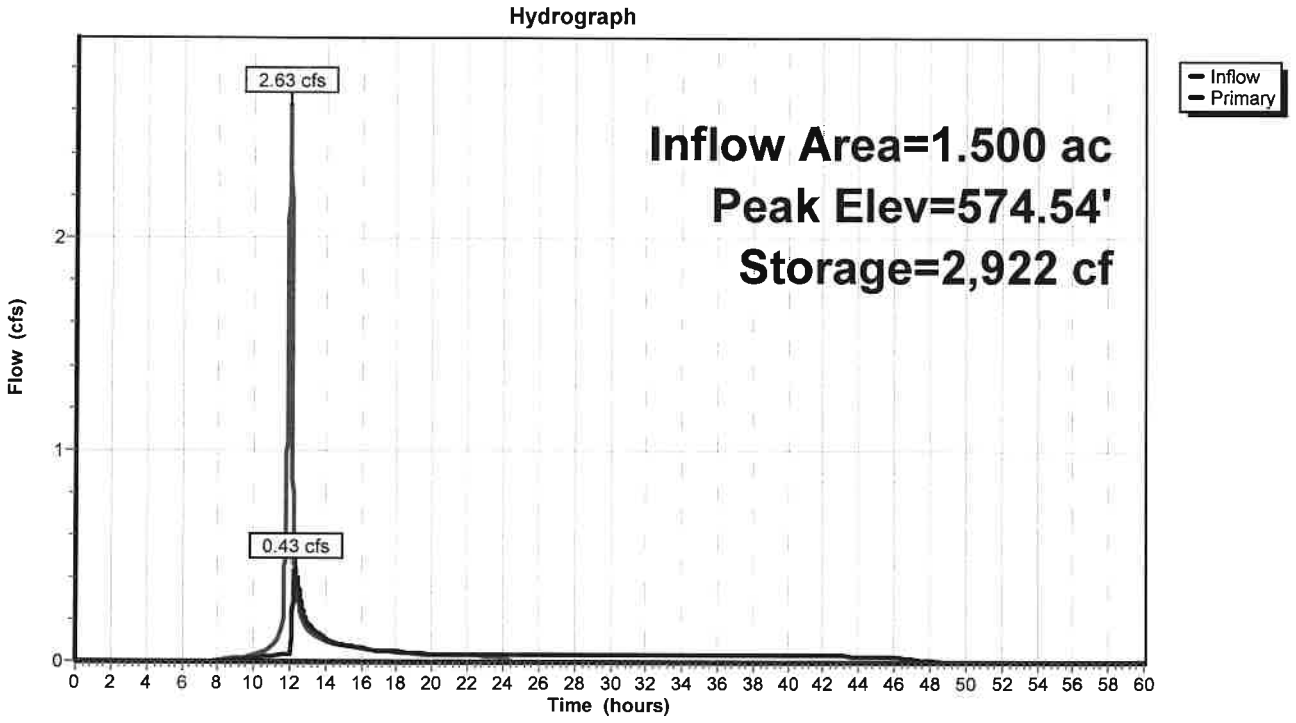
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

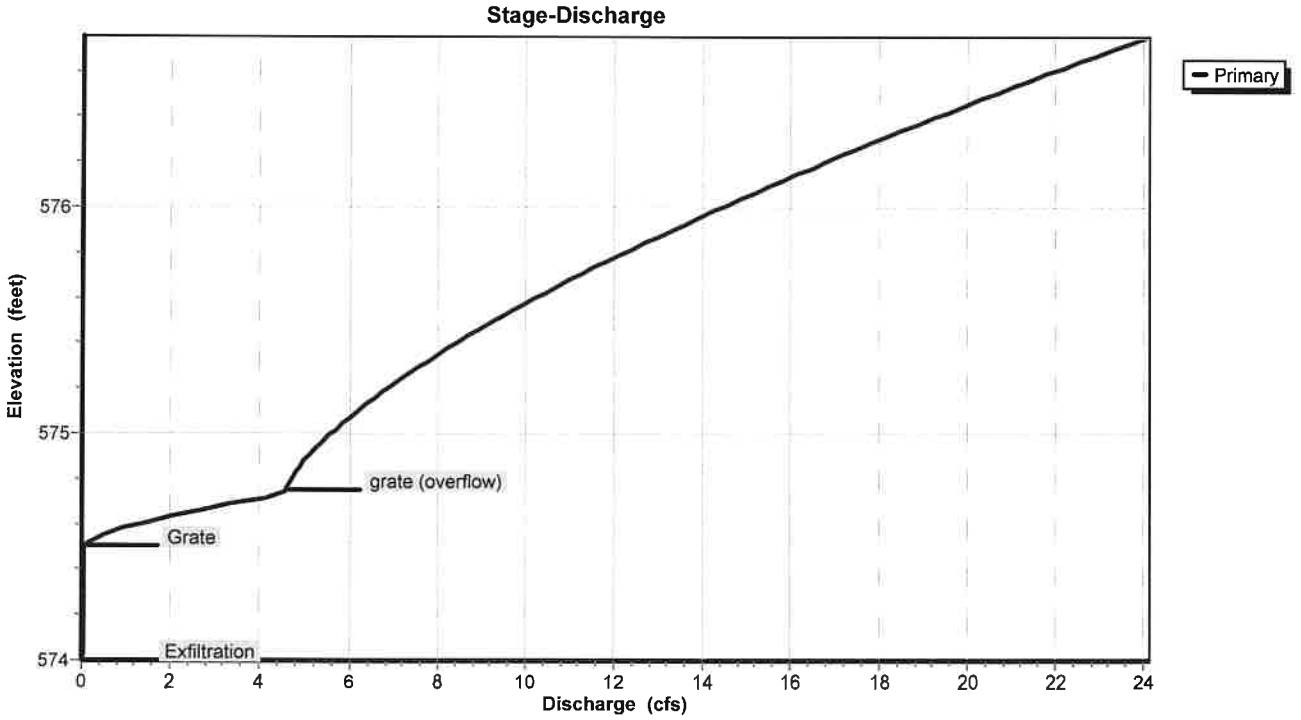
Primary OutFlow Max=0.42 cfs @ 12.29 hrs HW=574.54' (Free Discharge)
- **1=8" pipe** (Passes 0.42 cfs of 4.43 cfs potential flow)
  - **2=Grate** (Weir Controls 0.39 cfs @ 0.69 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3

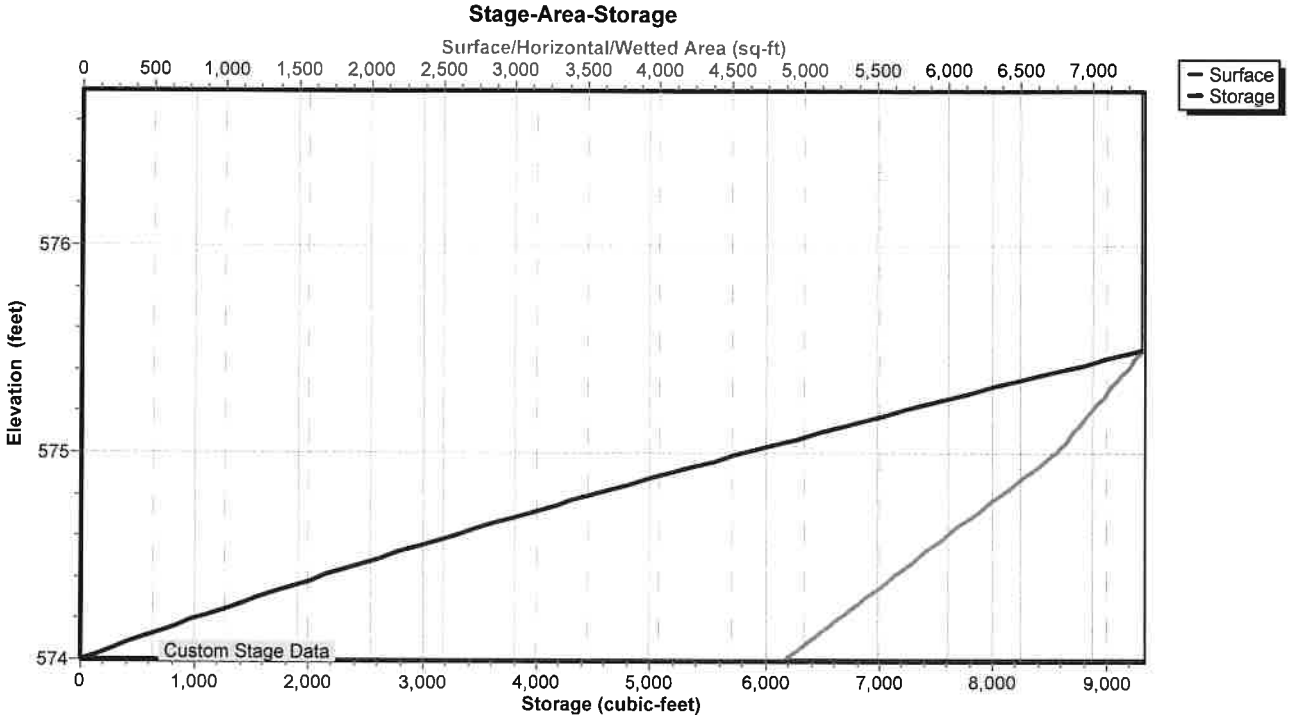


Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.00	0	574.00	0.00
8.00	0.01	9	574.00	0.00
10.00	0.03	70	574.01	0.01
12.00	**2.63**	**1,806**	**574.35**	**0.03**
14.00	**0.09**	**2,731**	**574.51**	**0.11**
16.00	0.06	2,688	574.50	0.06
18.00	0.04	2,673	574.50	0.05
20.00	0.03	2,662	574.50	0.03
22.00	0.03	2,636	574.50	0.03
24.00	0.03	2,594	574.49	0.03
26.00	0.00	2,362	574.45	0.03
28.00	0.00	2,119	574.40	0.03
30.00	0.00	1,881	574.36	0.03
32.00	0.00	1,647	574.32	0.03
34.00	0.00	1,417	574.28	0.03
36.00	0.00	1,190	574.23	0.03
38.00	0.00	968	574.19	0.03
40.00	0.00	750	574.15	0.03
42.00	0.00	536	574.11	0.03
44.00	0.00	326	574.07	0.03
46.00	0.00	120	574.02	0.03
48.00	0.00	26	574.01	0.01
50.00	0.00	6	574.00	0.00
52.00	0.00	1	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)
574.00	0.00
574.02	0.03
574.04	0.03
574.06	0.03
574.08	0.03
574.10	0.03
574.12	0.03
574.14	0.03
574.16	0.03
574.18	0.03
574.20	0.03
574.22	0.03
574.24	0.03
574.26	0.03
574.28	0.03
574.30	0.03
574.32	0.03
574.34	0.03
574.36	0.03
574.38	0.03
574.40	0.03
574.42	0.03
574.44	0.03
574.46	0.03
574.48	0.03
574.50	0.03
574.52	0.15
574.54	0.36
574.56	0.64
574.58	0.97
574.60	1.34
574.62	1.74
574.64	2.19
574.66	2.67
574.68	3.18
574.70	3.71
574.72	4.28
574.74	4.59
574.76	4.61
574.78	4.65
574.80	4.70
574.82	4.77
574.84	4.84
574.86	4.91
574.88	4.99
574.90	5.08
574.92	5.17
574.94	5.27
574.96	5.37
574.98	5.48
575.00	5.59
575.02	5.70
575.04	5.81
575.06	5.93
575.08	6.06
575.10	6.18
575.12	6.31
575.14	6.45
575.16	6.58
575.18	6.72
575.20	6.87
575.22	7.01
575.24	7.16
575.26	7.31
575.28	7.46
575.30	7.62
575.32	7.78
575.34	7.94
575.36	8.10
575.38	8.26
575.40	8.43
575.42	8.60
575.44	8.78
575.46	8.95
575.48	9.13
575.50	9.31
575.52	9.49
575.54	9.67
575.56	9.86
575.58	10.05
575.60	10.24
575.62	10.43
575.64	10.62
575.66	10.82
575.68	11.02
575.70	11.22
575.72	11.42
575.74	11.62
575.76	11.83
575.78	12.04
575.80	12.25
575.82	12.46
575.84	12.67
575.86	12.89
575.88	13.10
575.90	13.32
575.92	13.54
575.94	13.76
575.96	13.99
575.98	14.21
576.00	14.44
576.02	14.67
576.04	14.90
576.06	15.13
576.08	15.37
576.10	15.60
576.12	15.84
576.14	16.08
576.16	16.32
576.18	16.56
576.20	16.81
576.22	17.05
576.24	17.30
576.26	17.55
576.28	17.80
576.30	18.05
576.32	18.30
576.34	18.56
576.36	18.81
576.38	19.07
576.40	19.33
576.42	19.59
576.44	19.85
576.46	20.11
576.48	20.38
576.50	20.64
576.52	20.91
576.54	21.18
576.56	21.45
576.58	21.72
576.60	22.00
576.62	22.27
576.64	22.55
576.66	22.83
576.68	23.10
576.70	23.38
576.72	23.67
576.74	**23.95**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.34"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=3.03 cfs 0.190 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.42"
Flow Length=345' Tc=9.1 min CN=92 Runoff=3.32 cfs 0.177 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.46' Storage=5,990 cf Inflow=4.15 cfs 0.367 af
Outflow=0.68 cfs 0.324 af

Pond 9P: Bioretention Area 3 Peak Elev=574.60' Storage=3,274 cf Inflow=3.32 cfs 0.177 af
Outflow=1.41 cfs 0.177 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.367 af Average Runoff Depth = 1.38"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 8S: Front Area 2

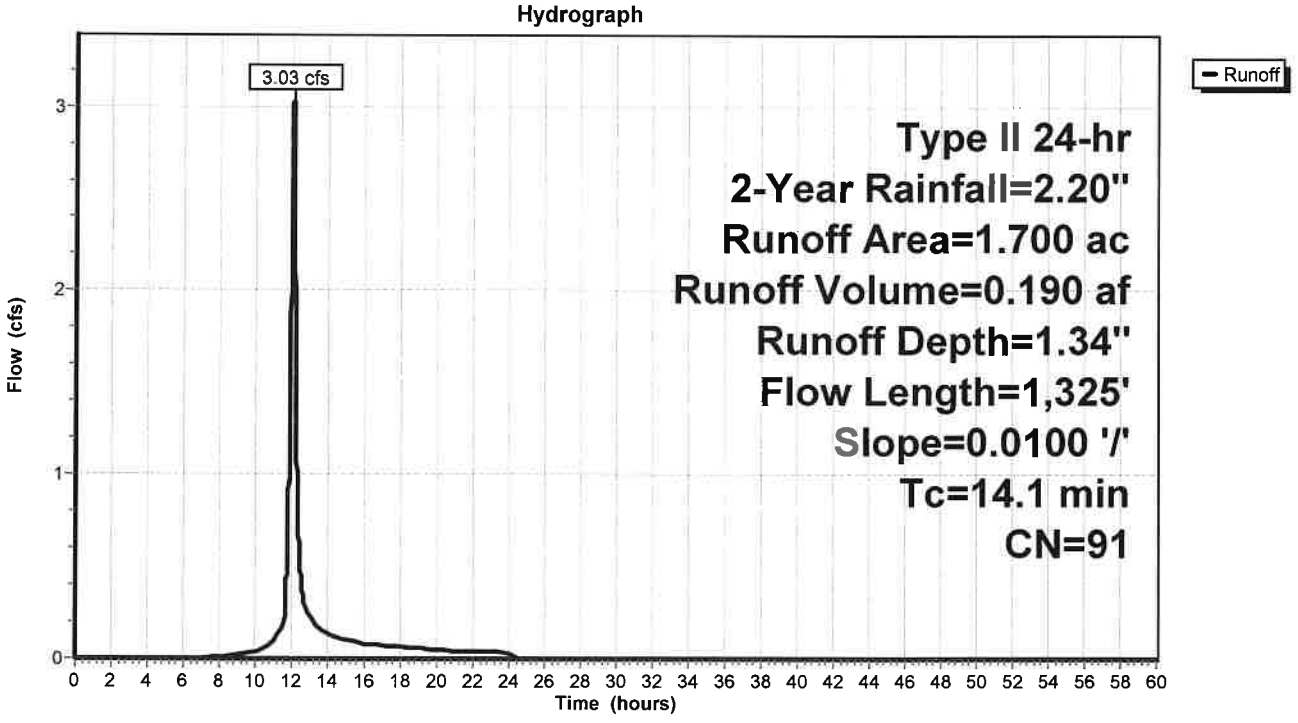
Runoff = 3.03 cfs @ 12.06 hrs, Volume= 0.190 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass**
					Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.01
9.00	0.32	0.01	0.02
10.00	0.40	0.03	0.04
11.00	0.52	0.08	0.10
12.00	1.46	0.71	**2.64**
13.00	1.70	0.90	**0.23**
14.00	1.80	0.99	0.13
15.00	1.88	1.06	0.10
16.00	1.94	1.11	0.08
17.00	1.98	1.15	0.07
18.00	2.03	1.19	0.06
19.00	2.06	1.22	0.05
20.00	2.09	1.25	0.05
21.00	2.12	1.27	0.04
22.00	2.15	1.30	0.04
23.00	2.18	1.32	0.04
24.00	**2.20**	**1.34**	0.04
25.00	2.20	1.34	0.00
26.00	2.20	1.34	0.00
27.00	2.20	1.34	0.00
28.00	2.20	1.34	0.00
29.00	2.20	1.34	0.00
30.00	2.20	1.34	0.00
31.00	2.20	1.34	0.00
32.00	2.20	1.34	0.00
33.00	2.20	1.34	0.00
34.00	2.20	1.34	0.00
35.00	2.20	1.34	0.00
36.00	2.20	1.34	0.00
37.00	2.20	1.34	0.00
38.00	2.20	1.34	0.00
39.00	2.20	1.34	0.00
40.00	2.20	1.34	0.00
41.00	2.20	1.34	0.00
42.00	2.20	1.34	0.00
43.00	2.20	1.34	0.00
44.00	2.20	1.34	0.00
45.00	2.20	1.34	0.00
46.00	2.20	1.34	0.00
47.00	2.20	1.34	0.00
48.00	2.20	1.34	0.00
49.00	2.20	1.34	0.00
50.00	2.20	1.34	0.00
51.00	2.20	1.34	0.00
52.00	2.20	1.34	0.00
53.00	2.20	1.34	0.00
54.00	2.20	1.34	0.00
55.00	2.20	1.34	0.00
56.00	2.20	1.34	0.00
57.00	2.20	1.34	0.00
58.00	2.20	1.34	0.00
59.00	2.20	1.34	0.00
60.00	2.20	1.34	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 10S: Rear Area 2

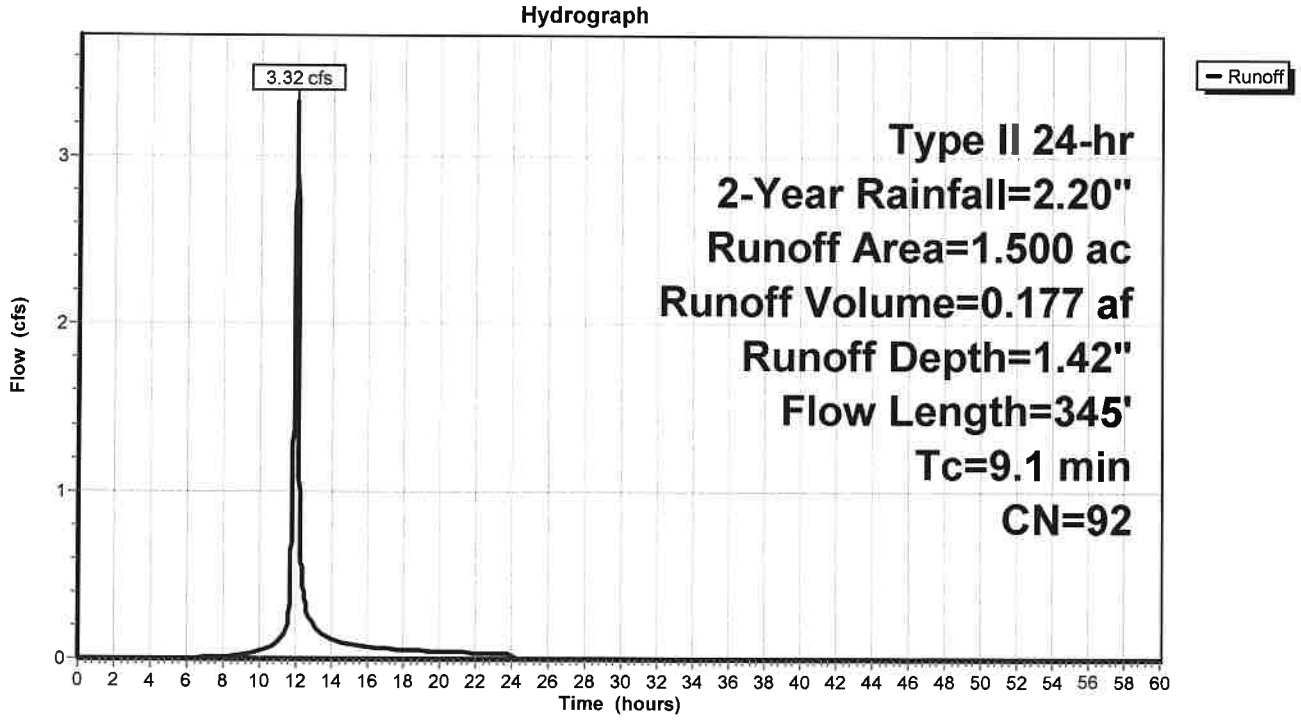
Runoff = 3.32 cfs @ 12.00 hrs, Volume= 0.177 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	2.20	1.42	0.00
1.00	0.02	0.00	0.00	53.00	2.20	1.42	0.00
2.00	0.05	0.00	0.00	54.00	2.20	1.42	0.00
3.00	0.08	0.00	0.00	55.00	2.20	1.42	0.00
4.00	0.11	0.00	0.00	56.00	2.20	1.42	0.00
5.00	0.14	0.00	0.00	57.00	2.20	1.42	0.00
6.00	0.18	0.00	0.00	58.00	2.20	1.42	0.00
7.00	0.22	0.00	0.01	59.00	2.20	1.42	0.00
8.00	0.26	0.01	0.01	60.00	2.20	1.42	0.00
9.00	0.32	0.02	0.03				
10.00	0.40	0.05	0.04				
11.00	0.52	0.10	0.10				
12.00	1.46	0.77	**3.32**				
13.00	1.70	0.97	0.20				
14.00	1.80	1.06	0.12				
15.00	1.88	1.13	0.09				
16.00	1.94	1.18	0.07				
17.00	1.98	1.22	0.06				
18.00	2.03	1.26	0.05				
19.00	2.06	1.29	0.05				
20.00	2.09	1.32	0.04				
21.00	2.12	1.35	0.04				
22.00	2.15	1.37	0.04				
23.00	2.18	1.40	0.03				
24.00	**2.20**	**1.42**	0.03				
25.00	2.20	1.42	0.00				
26.00	2.20	1.42	0.00				
27.00	2.20	1.42	0.00				
28.00	2.20	1.42	0.00				
29.00	2.20	1.42	0.00				
30.00	2.20	1.42	0.00				
31.00	2.20	1.42	0.00				
32.00	2.20	1.42	0.00				
33.00	2.20	1.42	0.00				
34.00	2.20	1.42	0.00				
35.00	2.20	1.42	0.00				
36.00	2.20	1.42	0.00				
37.00	2.20	1.42	0.00				
38.00	2.20	1.42	0.00				
39.00	2.20	1.42	0.00				
40.00	2.20	1.42	0.00				
41.00	2.20	1.42	0.00				
42.00	2.20	1.42	0.00				
43.00	2.20	1.42	0.00				
44.00	2.20	1.42	0.00				
45.00	2.20	1.42	0.00				
46.00	2.20	1.42	0.00				
47.00	2.20	1.42	0.00				
48.00	2.20	1.42	0.00				
49.00	2.20	1.42	0.00				
50.00	2.20	1.42	0.00				
51.00	2.20	1.42	0.00				

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.38" for 2-Year event
Inflow = 4.15 cfs @ 12.10 hrs, Volume= 0.367 af
Outflow = 0.68 cfs @ 12.65 hrs, Volume= 0.324 af, Atten= 84%, Lag= 33.2 min
Primary = 0.68 cfs @ 12.65 hrs, Volume= 0.324 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.46' @ 12.65 hrs Surf.Area= 10,145 sf Storage= 5,990 cf

Plug-Flow detention time= 401.0 min calculated for 0.324 af (88% of inflow)
Center-of-Mass det. time= 229.7 min (1,287.9 - 1,058.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

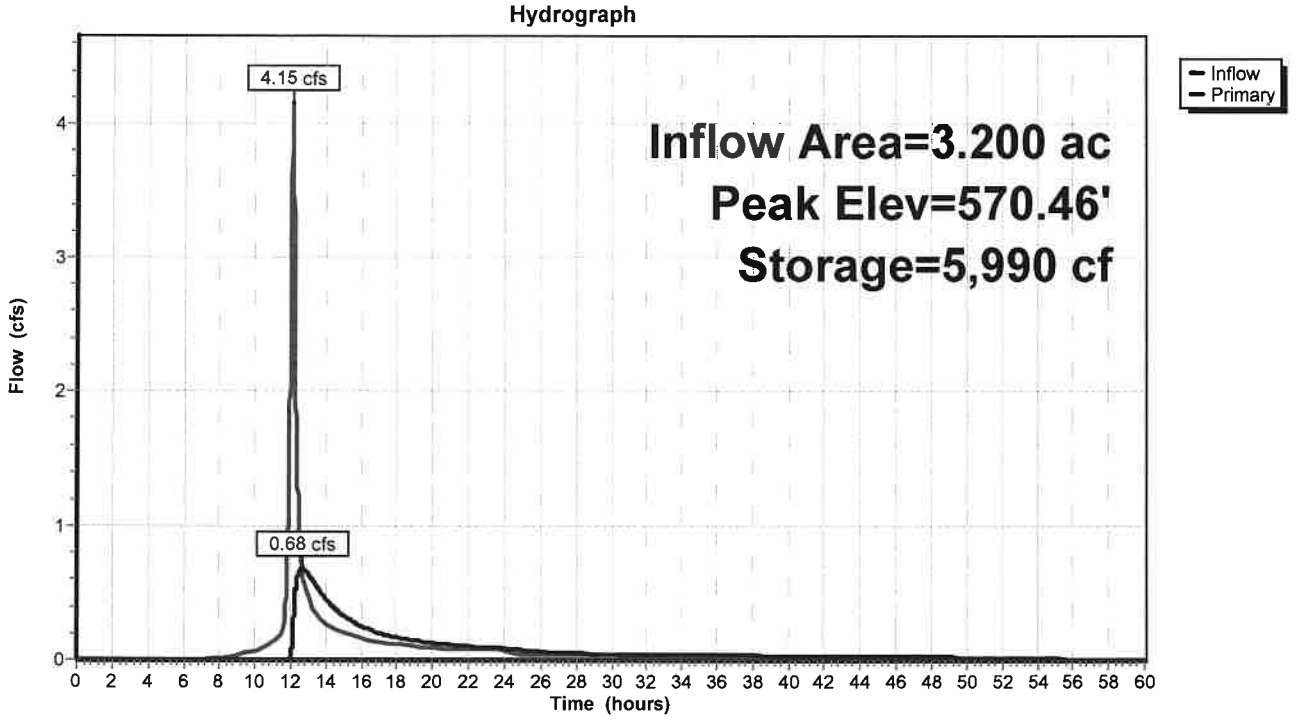
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

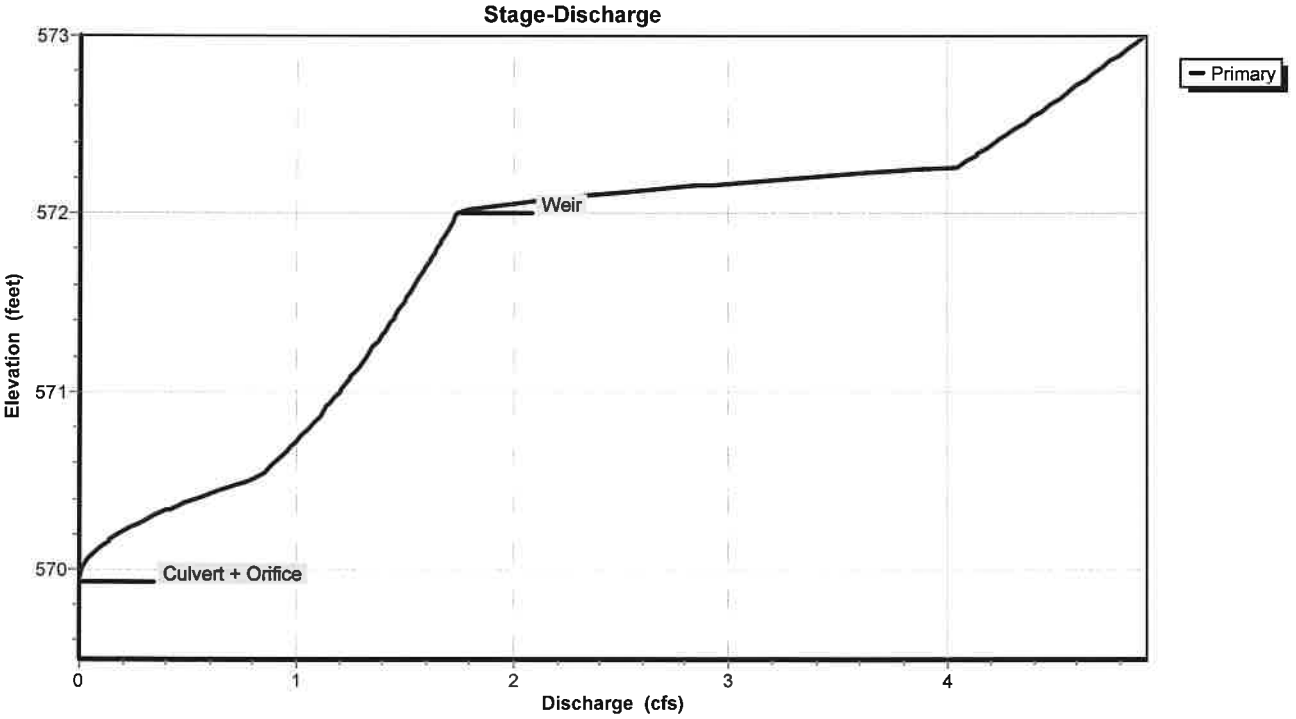
Primary OutFlow Max=0.68 cfs @ 12.65 hrs HW=570.46' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.68 cfs @ 2.31 fps)
↑—**2=Orifice** (Passes 0.68 cfs of 0.76 cfs potential flow)
—**3=Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)

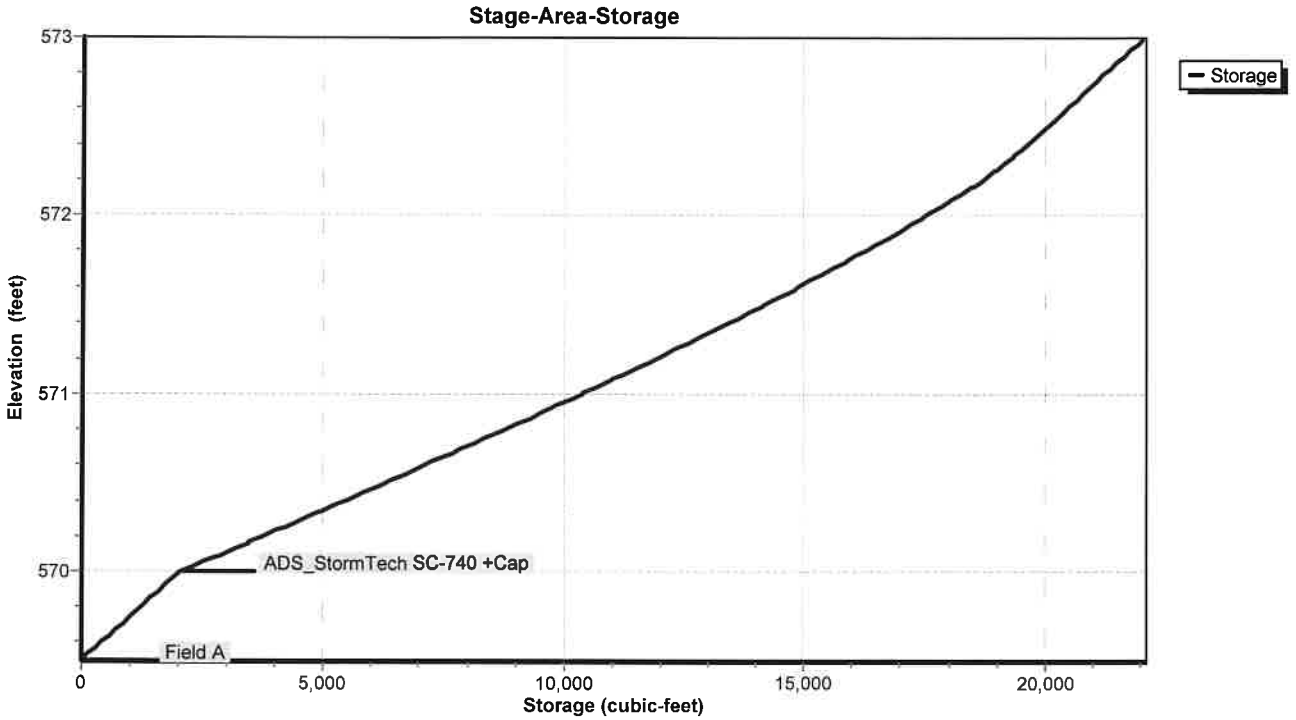


Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	0	569.50	0.00
8.00	0.01	32	569.51	0.00
10.00	0.06	286	569.57	0.00
12.00	**2.68**	**2,414**	**570.04**	**0.03**
14.00	**0.27**	**5,111**	**570.36**	**0.45**
16.00	0.16	4,155	570.25	0.25
18.00	0.12	3,660	570.19	0.17
20.00	0.09	3,359	570.15	0.12
22.00	0.08	3,149	570.13	0.10
24.00	0.07	3,029	570.12	0.09
26.00	0.03	2,788	570.09	0.06
28.00	0.03	2,647	570.07	0.05
30.00	0.03	2,566	570.06	0.04
32.00	0.03	2,517	570.06	0.04
34.00	0.03	2,484	570.05	0.04
36.00	0.03	2,459	570.05	0.03
38.00	0.03	2,441	570.05	0.03
40.00	0.03	2,426	570.05	0.03
42.00	0.03	2,413	570.04	0.03
44.00	0.03	2,402	570.04	0.03
46.00	0.03	2,392	570.04	0.03
48.00	0.01	2,323	570.03	0.03
50.00	0.00	2,199	570.02	0.02
52.00	0.00	2,091	570.01	0.01
54.00	0.00	2,010	570.00	0.01
56.00	0.00	1,957	569.98	0.01
58.00	0.00	1,919	569.97	0.00
60.00	0.00	1,891	569.97	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.42" for 2-Year event
Inflow = 3.32 cfs @ 12.00 hrs, Volume= 0.177 af
Outflow = 1.41 cfs @ 12.13 hrs, Volume= 0.177 af, Atten= 58%, Lag= 7.6 min
Primary = 1.41 cfs @ 12.13 hrs, Volume= 0.177 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.60' @ 12.13 hrs Surf.Area= 5,993 sf Storage= 3,274 cf

Plug-Flow detention time= 499.6 min calculated for 0.177 af (100% of inflow)
Center-of-Mass det. time= 499.8 min (1,311.6 - 811.8)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

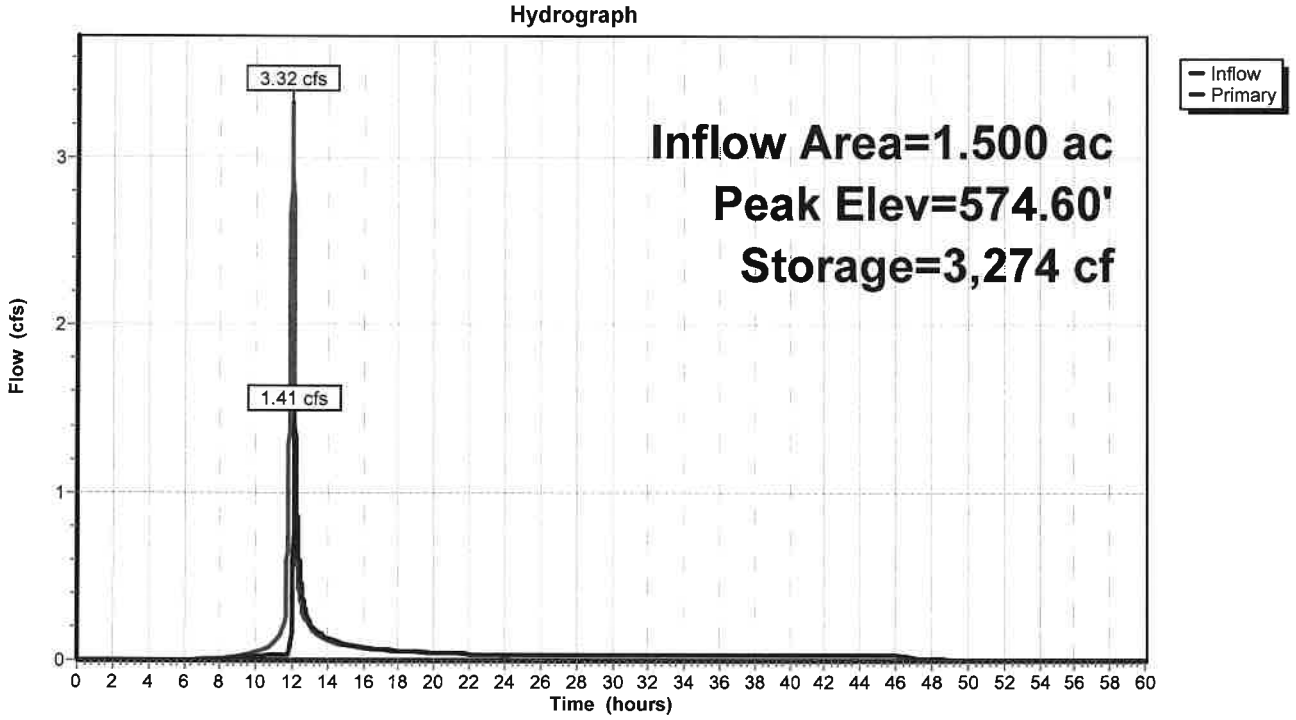
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

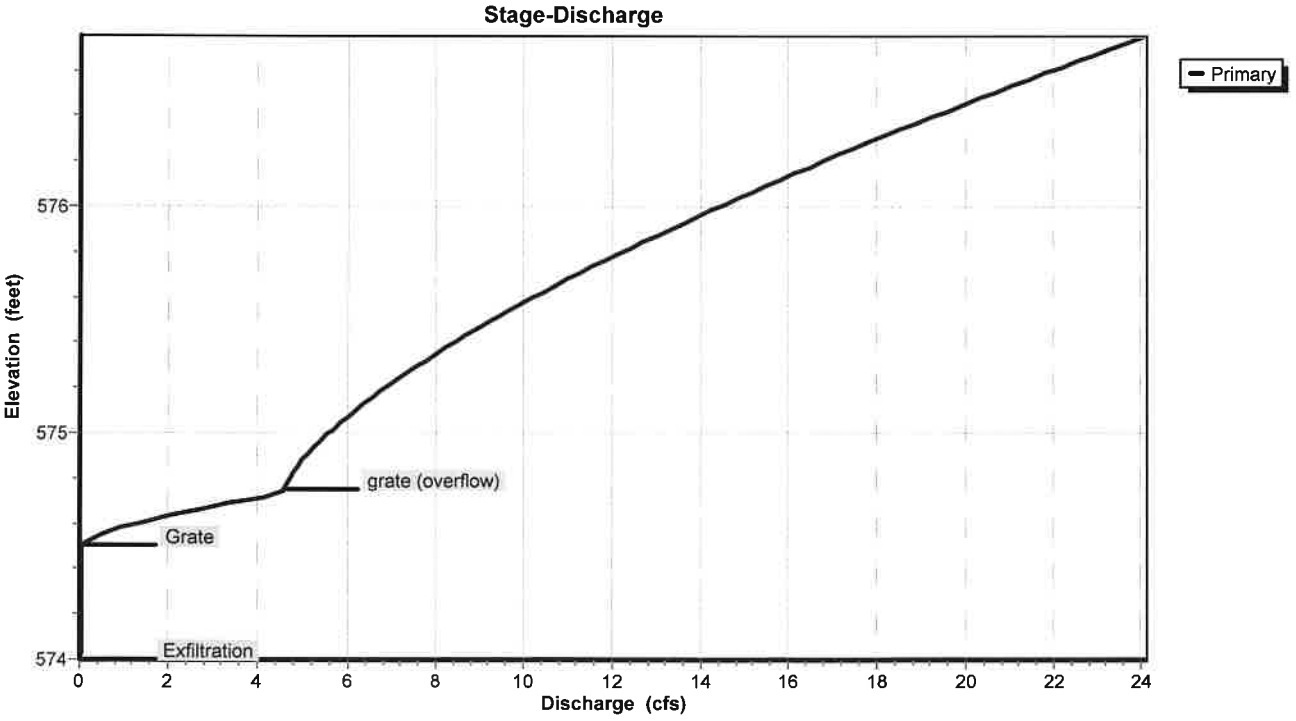
Primary OutFlow Max=1.41 cfs @ 12.13 hrs HW=574.60' (Free Discharge)
└**1=8" pipe** (Passes 1.41 cfs of 4.48 cfs potential flow)
  └**2=Grate** (Weir Controls 1.37 cfs @ 1.05 fps)
  └**3=Exfiltration** (Controls 0.04 cfs)
└**4=grate (overflow)** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3

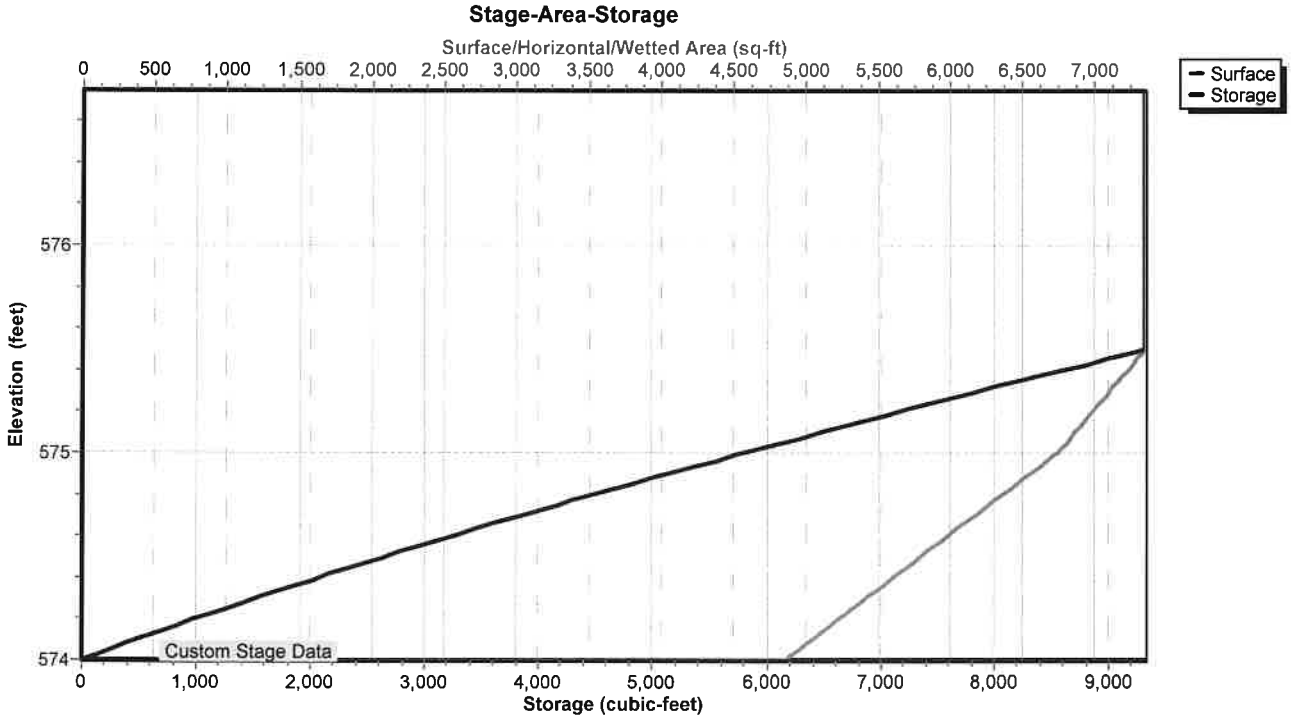


Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.00	0	574.00	0.00
8.00	0.01	26	574.01	0.01
10.00	0.04	116	574.02	0.02
12.00	**3.32**	**2,442**	**574.46**	**0.03**
14.00	0.12	**2,754**	**574.52**	**0.13**
16.00	0.07	2,701	574.51	0.08
18.00	0.05	2,683	574.50	0.06
20.00	0.04	2,669	574.50	0.04
22.00	0.04	2,664	574.50	0.04
24.00	0.03	2,661	574.50	0.03
26.00	0.00	2,430	574.46	0.03
28.00	0.00	2,186	574.42	0.03
30.00	0.00	1,947	574.37	0.03
32.00	0.00	1,712	574.33	0.03
34.00	0.00	1,480	574.29	0.03
36.00	0.00	1,253	574.25	0.03
38.00	0.00	1,030	574.20	0.03
40.00	0.00	810	574.16	0.03
42.00	0.00	595	574.12	0.03
44.00	0.00	384	574.08	0.03
46.00	0.00	176	574.04	0.03
48.00	0.00	40	574.01	0.01
50.00	0.00	9	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.79"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=4.02 cfs 0.254 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.88"
Flow Length=345' Tc=9.1 min CN=92 Runoff=4.35 cfs 0.235 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.79' Storage=8,639 cf Inflow=7.03 cfs 0.489 af
Outflow=1.05 cfs 0.446 af

Pond 9P: Bioretention Area 3 Peak Elev=574.68' Storage=3,708 cf Inflow=4.35 cfs 0.235 af
Outflow=3.06 cfs 0.235 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.489 af Average Runoff Depth = 1.83"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 8S: Front Area 2

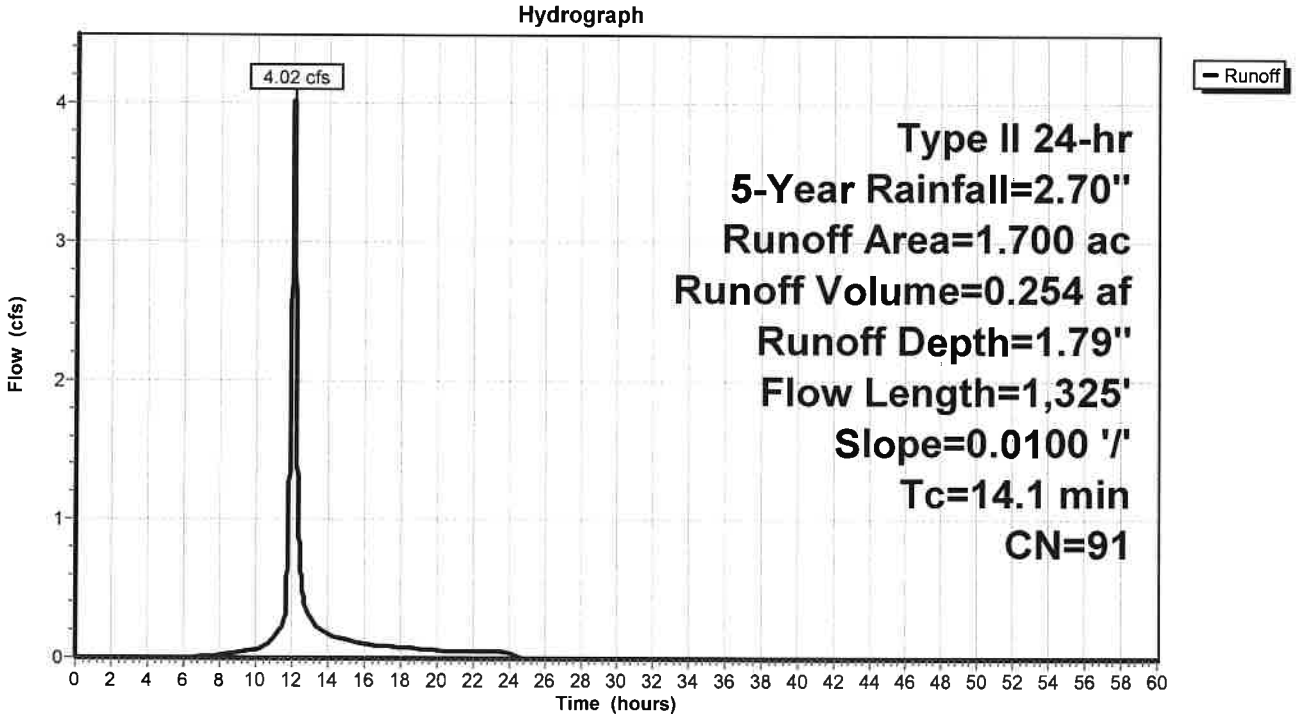
Runoff = 4.02 cfs @ 12.06 hrs, Volume= 0.254 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.01
8.00	0.32	0.01	0.02
9.00	0.40	0.03	0.04
10.00	0.49	0.07	0.06
11.00	0.63	0.13	0.14
12.00	1.79	0.98	**3.54**
13.00	2.08	1.24	**0.30**
14.00	2.21	1.35	0.17
15.00	2.30	1.43	0.13
16.00	2.38	1.50	0.10
17.00	2.43	1.55	0.09
18.00	2.49	1.60	0.08
19.00	2.53	1.64	0.07
20.00	2.57	1.67	0.06
21.00	2.60	1.71	0.05
22.00	2.64	1.74	0.05
23.00	2.67	1.77	0.05
24.00	**2.70**	**1.79**	0.05
25.00	2.70	1.79	0.00
26.00	2.70	1.79	0.00
27.00	2.70	1.79	0.00
28.00	2.70	1.79	0.00
29.00	2.70	1.79	0.00
30.00	2.70	1.79	0.00
31.00	2.70	1.79	0.00
32.00	2.70	1.79	0.00
33.00	2.70	1.79	0.00
34.00	2.70	1.79	0.00
35.00	2.70	1.79	0.00
36.00	2.70	1.79	0.00
37.00	2.70	1.79	0.00
38.00	2.70	1.79	0.00
39.00	2.70	1.79	0.00
40.00	2.70	1.79	0.00
41.00	2.70	1.79	0.00
42.00	2.70	1.79	0.00
43.00	2.70	1.79	0.00
44.00	2.70	1.79	0.00
45.00	2.70	1.79	0.00
46.00	2.70	1.79	0.00
47.00	2.70	1.79	0.00
48.00	2.70	1.79	0.00
49.00	2.70	1.79	0.00
50.00	2.70	1.79	0.00
51.00	2.70	1.79	0.00
52.00	2.70	1.79	0.00
53.00	2.70	1.79	0.00
54.00	2.70	1.79	0.00
55.00	2.70	1.79	0.00
56.00	2.70	1.79	0.00
57.00	2.70	1.79	0.00
58.00	2.70	1.79	0.00
59.00	2.70	1.79	0.00
60.00	2.70	1.79	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 10S: Rear Area 2

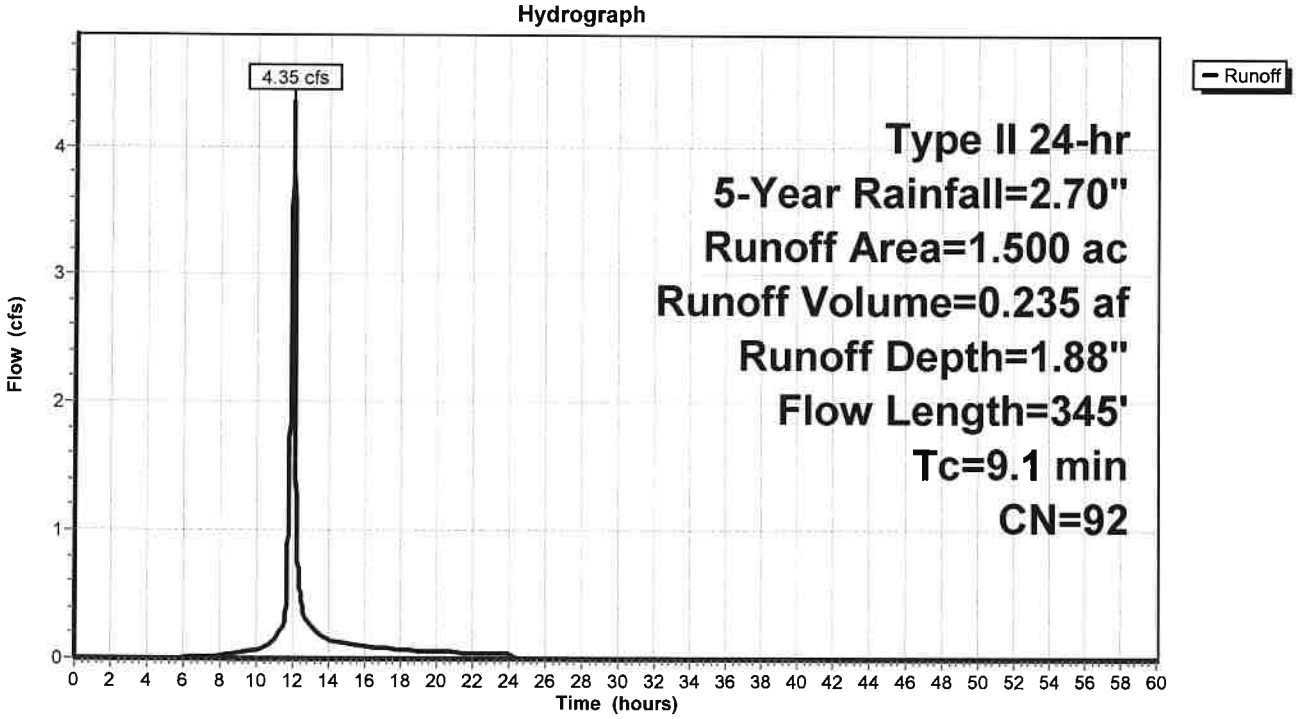
Runoff = 4.35 cfs @ 12.00 hrs, Volume= 0.235 af, Depth= 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.01
7.00	0.27	0.01	0.01
8.00	0.32	0.02	0.02
9.00	0.40	0.05	0.04
10.00	0.49	0.08	0.07
11.00	0.63	0.16	0.15
12.00	1.79	1.05	**4.35**
13.00	2.08	1.31	0.25
14.00	2.21	1.43	0.15
15.00	2.30	1.51	0.12
16.00	2.38	1.58	0.09
17.00	2.43	1.63	0.08
18.00	2.49	1.68	0.07
19.00	2.53	1.72	0.06
20.00	2.57	1.76	0.05
21.00	2.60	1.79	0.05
22.00	2.64	1.82	0.05
23.00	2.67	1.85	0.04
24.00	**2.70**	**1.88**	0.04
25.00	2.70	1.88	0.00
26.00	2.70	1.88	0.00
27.00	2.70	1.88	0.00
28.00	2.70	1.88	0.00
29.00	2.70	1.88	0.00
30.00	2.70	1.88	0.00
31.00	2.70	1.88	0.00
32.00	2.70	1.88	0.00
33.00	2.70	1.88	0.00
34.00	2.70	1.88	0.00
35.00	2.70	1.88	0.00
36.00	2.70	1.88	0.00
37.00	2.70	1.88	0.00
38.00	2.70	1.88	0.00
39.00	2.70	1.88	0.00
40.00	2.70	1.88	0.00
41.00	2.70	1.88	0.00
42.00	2.70	1.88	0.00
43.00	2.70	1.88	0.00
44.00	2.70	1.88	0.00
45.00	2.70	1.88	0.00
46.00	2.70	1.88	0.00
47.00	2.70	1.88	0.00
48.00	2.70	1.88	0.00
49.00	2.70	1.88	0.00
50.00	2.70	1.88	0.00
51.00	2.70	1.88	0.00
52.00	2.70	1.88	0.00
53.00	2.70	1.88	0.00
54.00	2.70	1.88	0.00
55.00	2.70	1.88	0.00
56.00	2.70	1.88	0.00
57.00	2.70	1.88	0.00
58.00	2.70	1.88	0.00
59.00	2.70	1.88	0.00
60.00	2.70	1.88	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.83" for 5-Year event
Inflow = 7.03 cfs @ 12.07 hrs, Volume= 0.489 af
Outflow = 1.05 cfs @ 12.55 hrs, Volume= 0.446 af, Atten= 85%, Lag= 29.0 min
Primary = 1.05 cfs @ 12.55 hrs, Volume= 0.446 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.79' @ 12.55 hrs Surf.Area= 10,145 sf Storage= 8,639 cf

Plug-Flow detention time= 321.6 min calculated for 0.446 af (91% of inflow)
Center-of-Mass det. time= 190.4 min (1,183.7 - 993.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

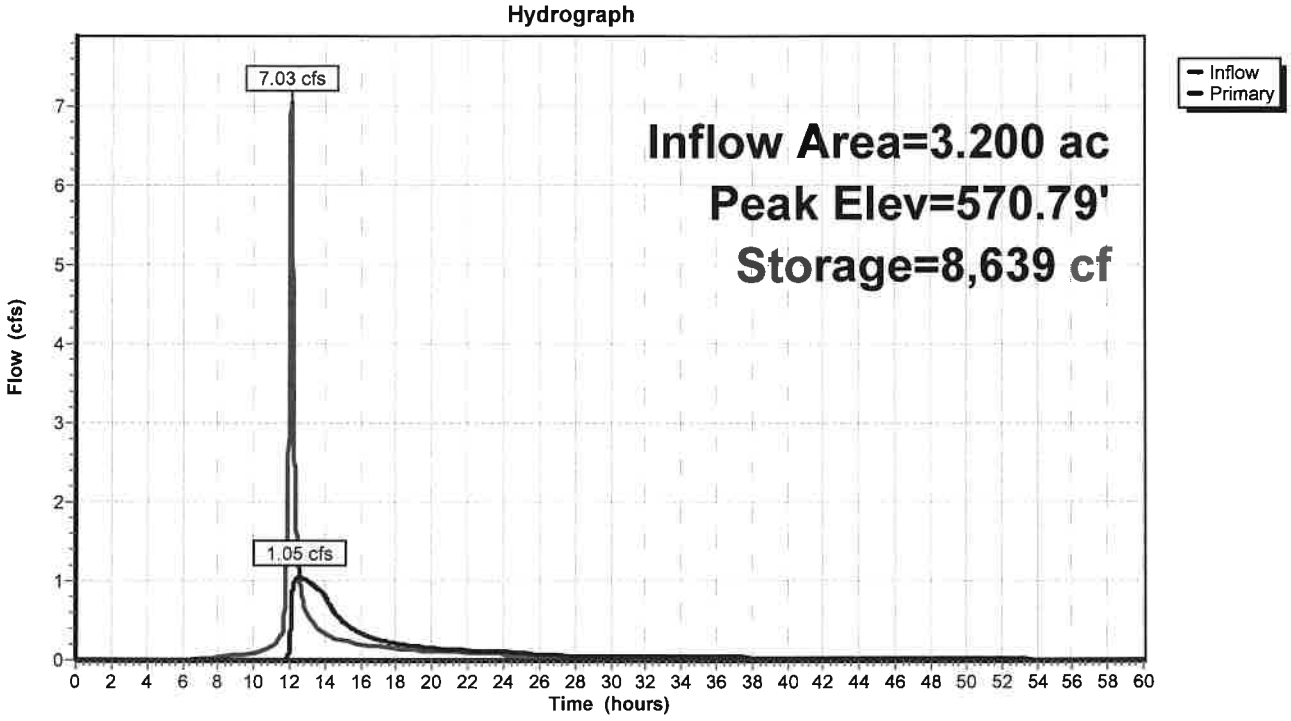
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

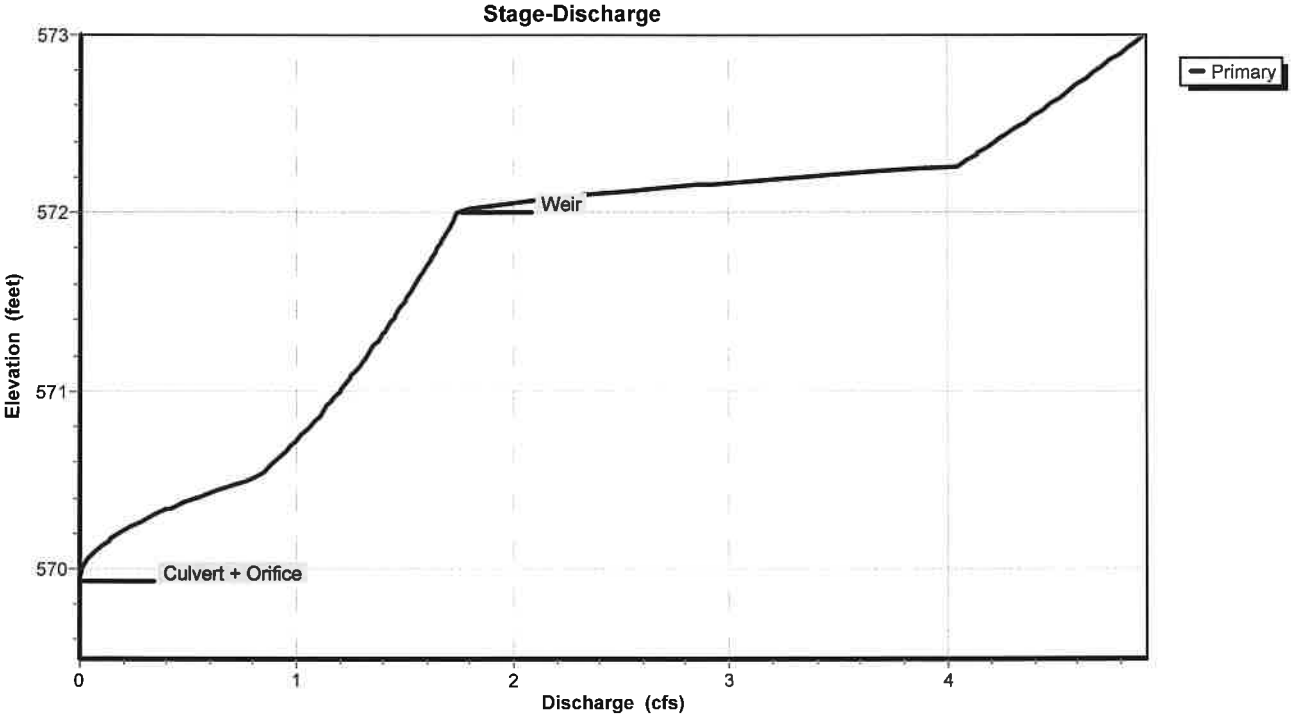
Primary OutFlow Max=1.05 cfs @ 12.55 hrs HW=570.79' (Free Discharge)
↑—**1=Culvert** (Passes 1.05 cfs of 1.53 cfs potential flow)
↑—**2=Orifice** (Orifice Controls 1.05 cfs @ 4.00 fps)
—**3=Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)

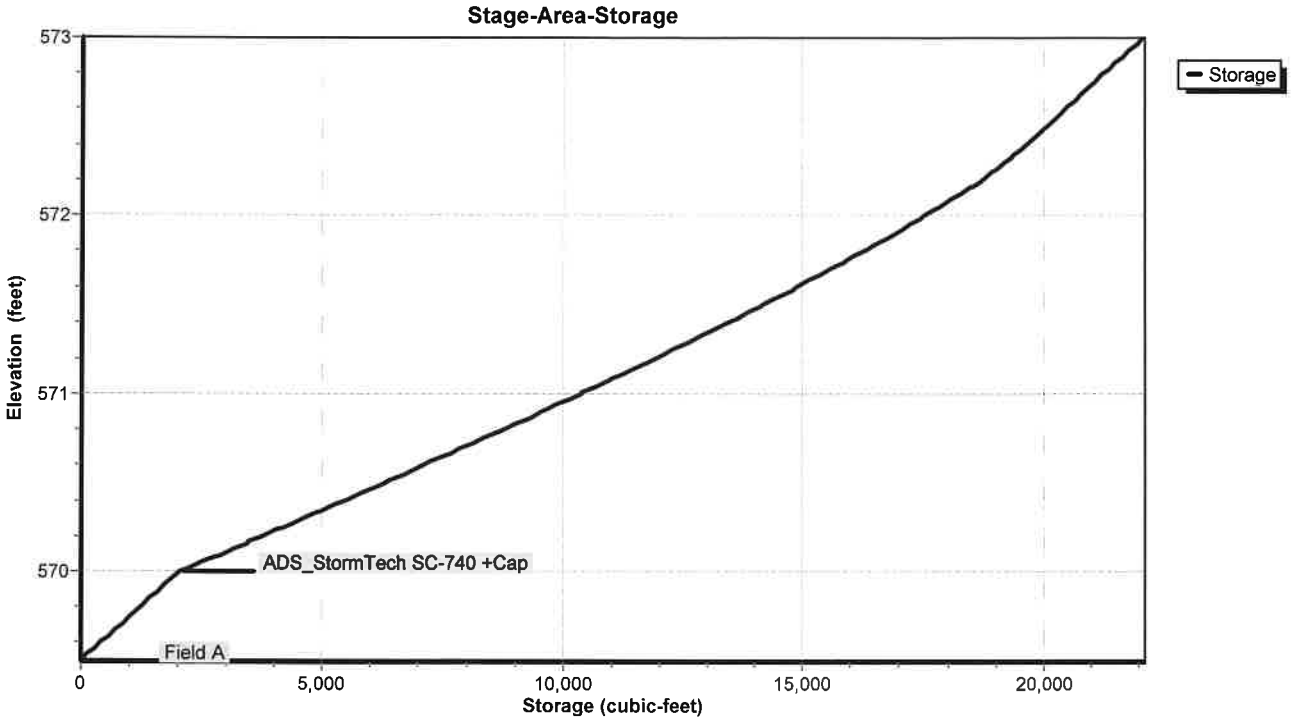


Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	2	569.50	0.00
8.00	0.03	119	569.53	0.00
10.00	0.09	566	569.64	0.00
12.00	**5.13**	**3,593**	**570.18**	**0.16**
14.00	**0.33**	**6,444**	**570.52**	**0.81**
16.00	0.20	4,602	570.30	0.34
18.00	0.15	3,932	570.22	0.21
20.00	0.11	3,570	570.18	0.15
22.00	0.10	3,332	570.15	0.12
24.00	0.09	3,200	570.14	0.10
26.00	0.03	2,873	570.10	0.07
28.00	0.03	2,693	570.08	0.05
30.00	0.03	2,592	570.07	0.04
32.00	0.03	2,532	570.06	0.04
34.00	0.03	2,493	570.05	0.04
36.00	0.03	2,465	570.05	0.03
38.00	0.03	2,445	570.05	0.03
40.00	0.03	2,428	570.05	0.03
42.00	0.03	2,415	570.04	0.03
44.00	0.03	2,403	570.04	0.03
46.00	0.03	2,393	570.04	0.03
48.00	0.01	2,328	570.03	0.03
50.00	0.00	2,203	570.02	0.02
52.00	0.00	2,095	570.01	0.01
54.00	0.00	2,013	570.00	0.01
56.00	0.00	1,959	569.98	0.01
58.00	0.00	1,920	569.97	0.00
60.00	0.00	1,892	569.97	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.88" for 5-Year event
Inflow = 4.35 cfs @ 12.00 hrs, Volume= 0.235 af
Outflow = 3.06 cfs @ 12.08 hrs, Volume= 0.235 af, Atten= 30%, Lag= 4.6 min
Primary = 3.06 cfs @ 12.08 hrs, Volume= 0.235 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.68' @ 12.08 hrs Surf.Area= 6,129 sf Storage= 3,708 cf

Plug-Flow detention time= 384.2 min calculated for 0.235 af (100% of inflow)
Center-of-Mass det. time= 384.1 min (1,187.9 - 803.8)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

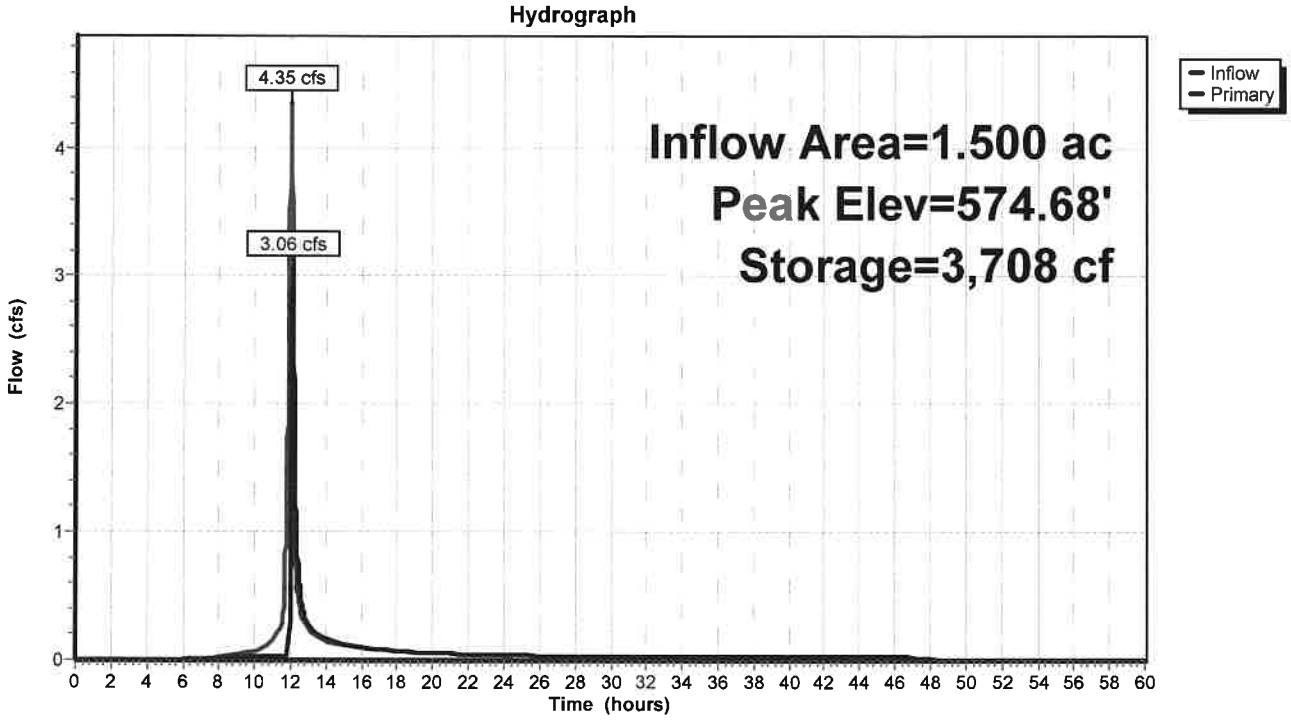
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

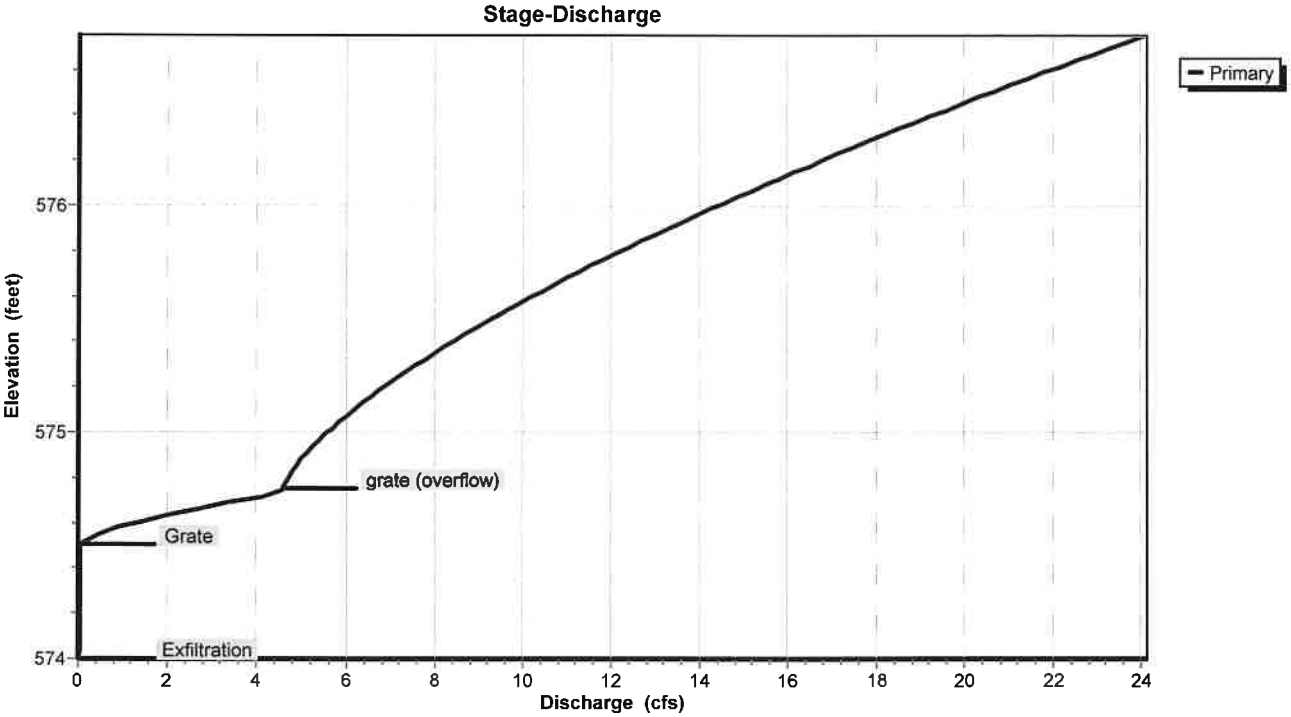
Primary OutFlow Max=3.05 cfs @ 12.08 hrs HW=574.68' (Free Discharge)
- **1=8" pipe** (Passes 3.05 cfs of 4.54 cfs potential flow)
  - **2=Grate** (Weir Controls 3.02 cfs @ 1.37 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3

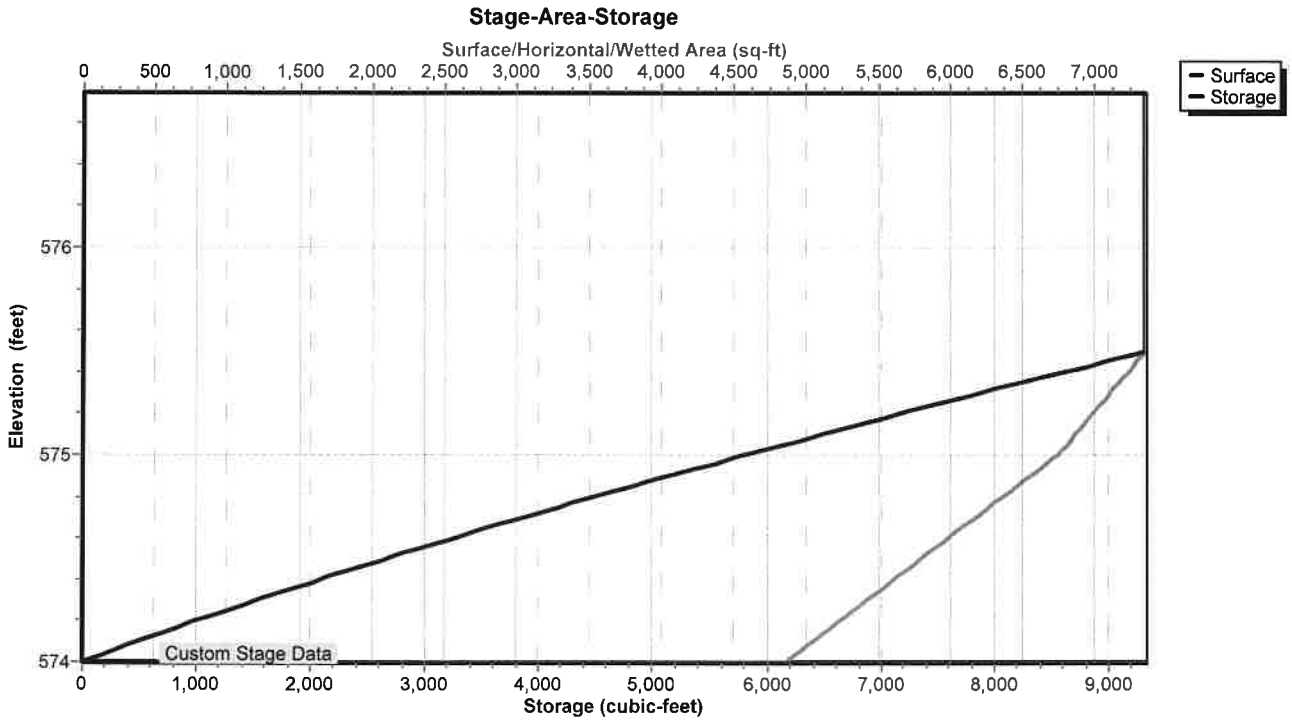


Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.01	6	574.00	0.00
8.00	0.02	61	574.01	0.01
10.00	0.07	208	574.04	0.03
12.00	**4.35**	**3,326**	**574.61**	**1.59**
14.00	0.15	**2,783**	**574.52**	**0.16**
16.00	0.09	2,721	574.51	0.10
18.00	0.07	2,697	574.51	0.07
20.00	0.05	2,679	574.50	0.05
22.00	0.05	2,673	574.50	0.05
24.00	0.04	2,670	574.50	0.04
26.00	0.00	2,439	574.46	0.03
28.00	0.00	2,196	574.42	0.03
30.00	0.00	1,956	574.38	0.03
32.00	0.00	1,720	574.33	0.03
34.00	0.00	1,489	574.29	0.03
36.00	0.00	1,262	574.25	0.03
38.00	0.00	1,038	574.21	0.03
40.00	0.00	819	574.16	0.03
42.00	0.00	603	574.12	0.03
44.00	0.00	392	574.08	0.03
46.00	0.00	184	574.04	0.03
48.00	0.00	42	574.01	0.01
50.00	0.00	9	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=2.21"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=4.91 cfs 0.313 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=2.30"
Flow Length=345' Tc=9.1 min CN=92 Runoff=5.28 cfs 0.288 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=571.13' Storage=11,342 cf Inflow=9.17 cfs 0.601 af
Outflow=1.28 cfs 0.558 af

Pond 9P: Bioretention Area 3 Peak Elev=574.72' Storage=4,001 cf Inflow=5.28 cfs 0.288 af
Outflow=4.27 cfs 0.288 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.601 af Average Runoff Depth = 2.25"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 8S: Front Area 2

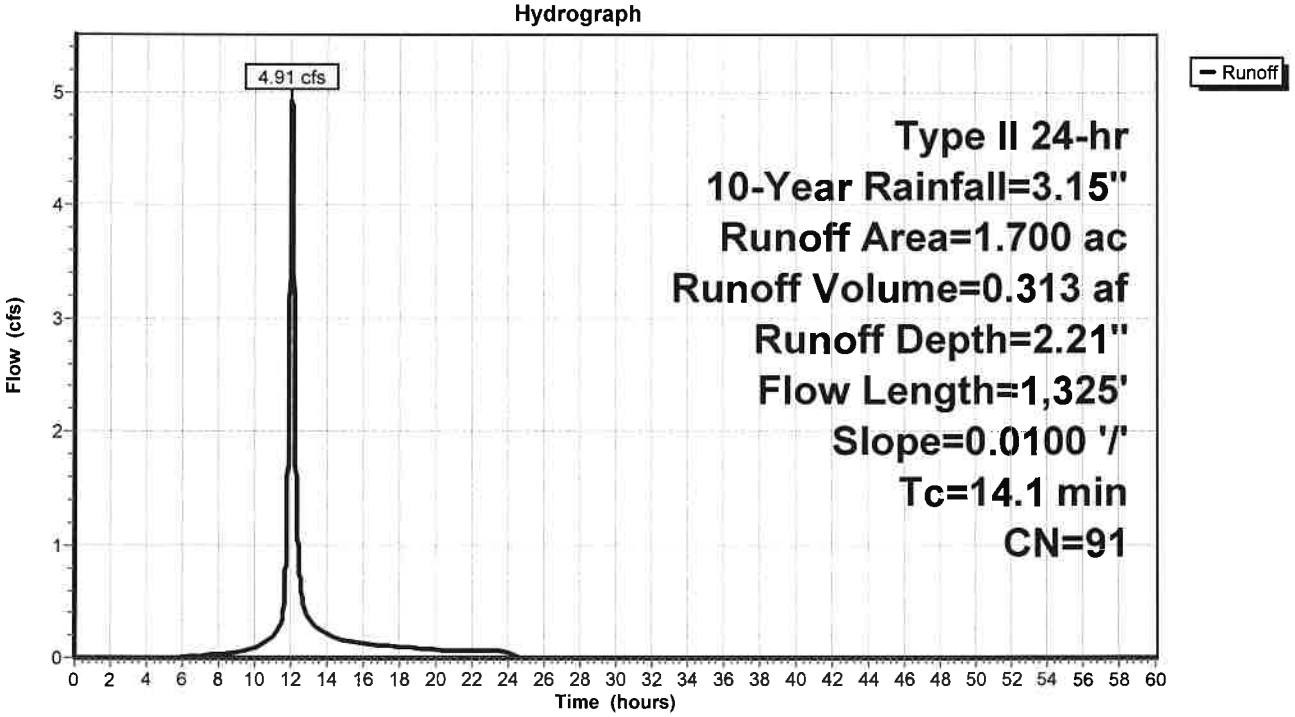
Runoff = 4.91 cfs @ 12.05 hrs, Volume= 0.313 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.15	2.21	0.00
1.00	0.03	0.00	0.00	53.00	3.15	2.21	0.00
2.00	0.07	0.00	0.00	54.00	3.15	2.21	0.00
3.00	0.11	0.00	0.00	55.00	3.15	2.21	0.00
4.00	0.15	0.00	0.00	56.00	3.15	2.21	0.00
5.00	0.20	0.00	0.00	57.00	3.15	2.21	0.00
6.00	0.25	0.00	0.01	58.00	3.15	2.21	0.00
7.00	0.31	0.01	0.02	59.00	3.15	2.21	0.00
8.00	0.38	0.03	0.03	60.00	3.15	2.21	0.00
9.00	0.46	0.06	0.06				
10.00	0.57	0.10	0.09				
11.00	0.74	0.19	0.19				
12.00	2.09	1.24	**4.35**				
13.00	2.43	1.55	**0.35**				
14.00	2.58	1.69	0.20				
15.00	2.69	1.78	0.16				
16.00	2.77	1.86	0.12				
17.00	2.84	1.92	0.11				
18.00	2.90	1.98	0.09				
19.00	2.95	2.03	0.08				
20.00	3.00	2.07	0.07				
21.00	3.04	2.11	0.06				
22.00	3.08	2.14	0.06				
23.00	3.11	2.18	0.06				
24.00	**3.15**	**2.21**	0.06				
25.00	3.15	2.21	0.00				
26.00	3.15	2.21	0.00				
27.00	3.15	2.21	0.00				
28.00	3.15	2.21	0.00				
29.00	3.15	2.21	0.00				
30.00	3.15	2.21	0.00				
31.00	3.15	2.21	0.00				
32.00	3.15	2.21	0.00				
33.00	3.15	2.21	0.00				
34.00	3.15	2.21	0.00				
35.00	3.15	2.21	0.00				
36.00	3.15	2.21	0.00				
37.00	3.15	2.21	0.00				
38.00	3.15	2.21	0.00				
39.00	3.15	2.21	0.00				
40.00	3.15	2.21	0.00				
41.00	3.15	2.21	0.00				
42.00	3.15	2.21	0.00				
43.00	3.15	2.21	0.00				
44.00	3.15	2.21	0.00				
45.00	3.15	2.21	0.00				
46.00	3.15	2.21	0.00				
47.00	3.15	2.21	0.00				
48.00	3.15	2.21	0.00				
49.00	3.15	2.21	0.00				
50.00	3.15	2.21	0.00				
51.00	3.15	2.21	0.00				

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 10S: Rear Area 2

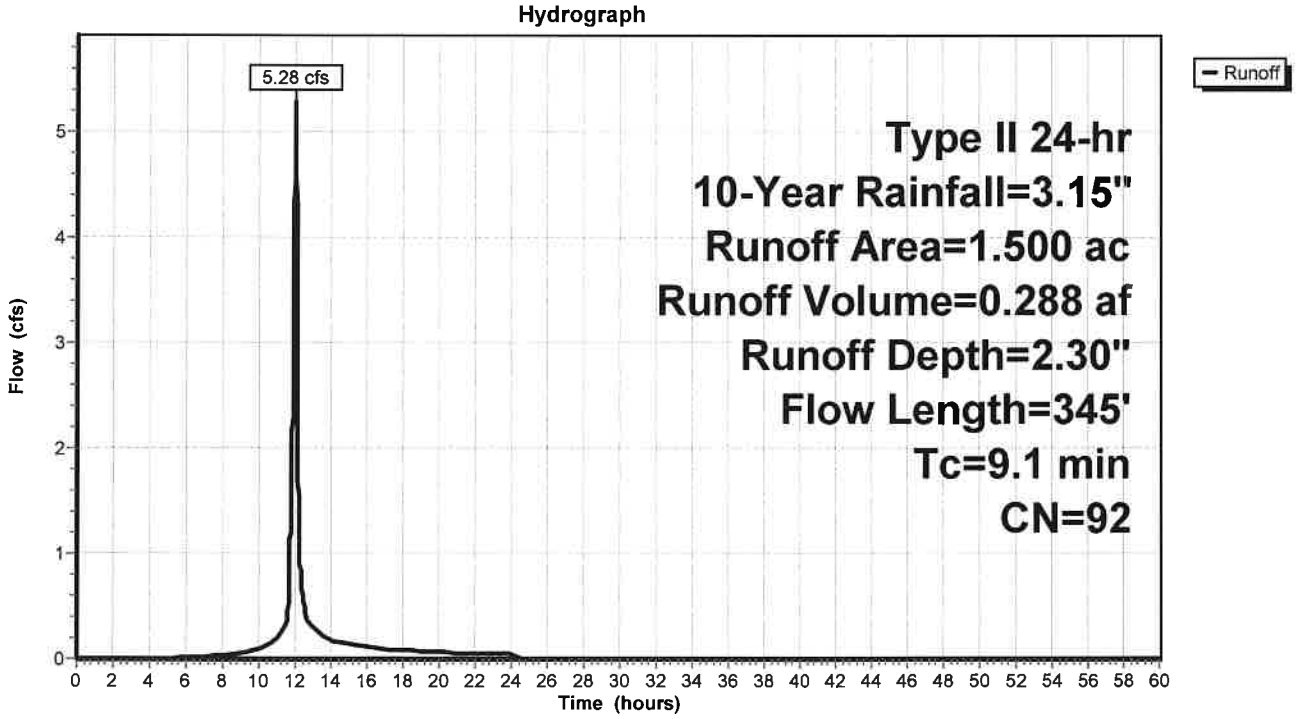
Runoff = 5.28 cfs @ 12.00 hrs, Volume= 0.288 af, Depth= 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.01	0.01
7.00	0.31	0.02	0.02
8.00	0.38	0.04	0.03
9.00	0.46	0.07	0.06
10.00	0.57	0.12	0.09
11.00	0.74	0.22	0.20
12.00	2.09	1.32	**5.27**
13.00	2.43	1.63	0.30
14.00	2.58	1.77	0.18
15.00	2.69	1.87	0.14
16.00	2.77	1.95	0.11
17.00	2.84	2.01	0.09
18.00	2.90	2.07	0.08
19.00	2.95	2.12	0.07
20.00	3.00	2.16	0.06
21.00	3.04	2.20	0.06
22.00	3.08	2.23	0.05
23.00	3.11	2.27	0.05
24.00	**3.15**	**2.30**	0.05
25.00	3.15	2.30	0.00
26.00	3.15	2.30	0.00
27.00	3.15	2.30	0.00
28.00	3.15	2.30	0.00
29.00	3.15	2.30	0.00
30.00	3.15	2.30	0.00
31.00	3.15	2.30	0.00
32.00	3.15	2.30	0.00
33.00	3.15	2.30	0.00
34.00	3.15	2.30	0.00
35.00	3.15	2.30	0.00
36.00	3.15	2.30	0.00
37.00	3.15	2.30	0.00
38.00	3.15	2.30	0.00
39.00	3.15	2.30	0.00
40.00	3.15	2.30	0.00
41.00	3.15	2.30	0.00
42.00	3.15	2.30	0.00
43.00	3.15	2.30	0.00
44.00	3.15	2.30	0.00
45.00	3.15	2.30	0.00
46.00	3.15	2.30	0.00
47.00	3.15	2.30	0.00
48.00	3.15	2.30	0.00
49.00	3.15	2.30	0.00
50.00	3.15	2.30	0.00
51.00	3.15	2.30	0.00
52.00	3.15	2.30	0.00
53.00	3.15	2.30	0.00
54.00	3.15	2.30	0.00
55.00	3.15	2.30	0.00
56.00	3.15	2.30	0.00
57.00	3.15	2.30	0.00
58.00	3.15	2.30	0.00
59.00	3.15	2.30	0.00
60.00	3.15	2.30	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 2.25" for 10-Year event
Inflow = 9.17 cfs @ 12.06 hrs, Volume= 0.601 af
Outflow = 1.28 cfs @ 12.54 hrs, Volume= 0.558 af, Atten= 86%, Lag= 29.2 min
Primary = 1.28 cfs @ 12.54 hrs, Volume= 0.558 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 571.13' @ 12.54 hrs Surf.Area= 10,145 sf Storage= 11,342 cf

Plug-Flow detention time= 284.1 min calculated for 0.558 af (93% of inflow)
Center-of-Mass det. time= 176.3 min (1,132.0 - 955.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

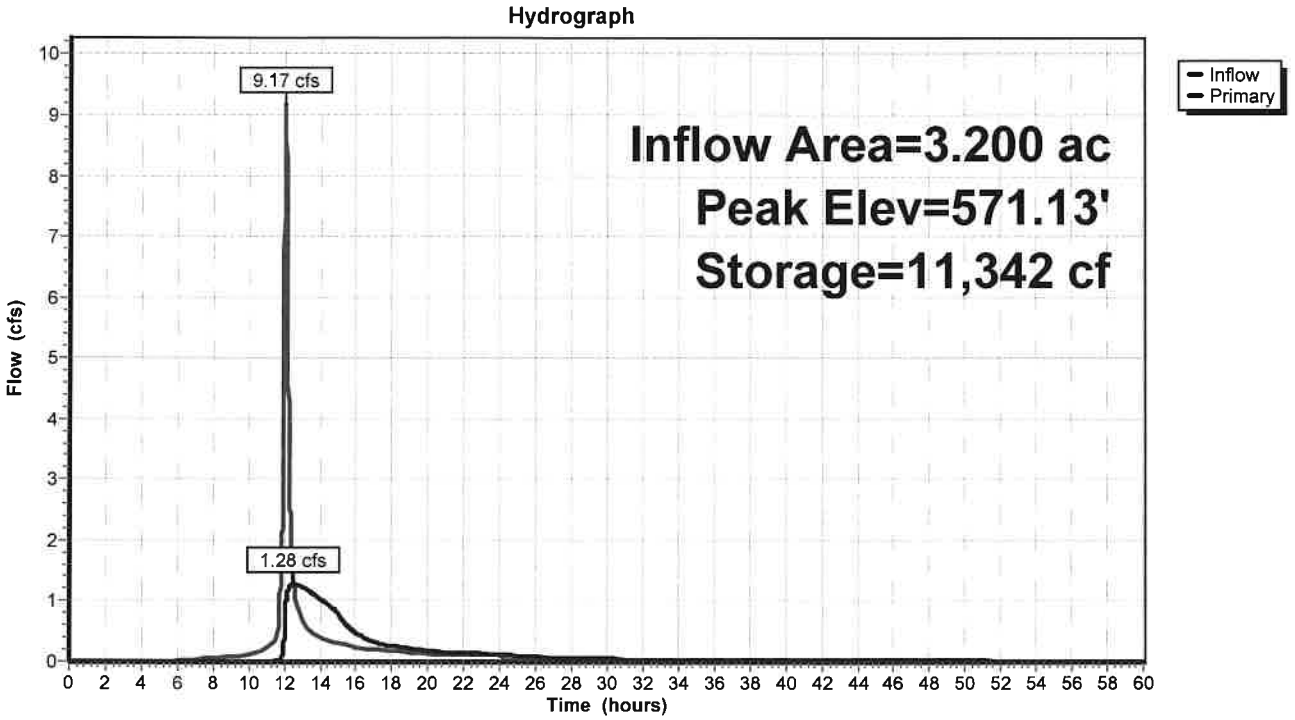
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

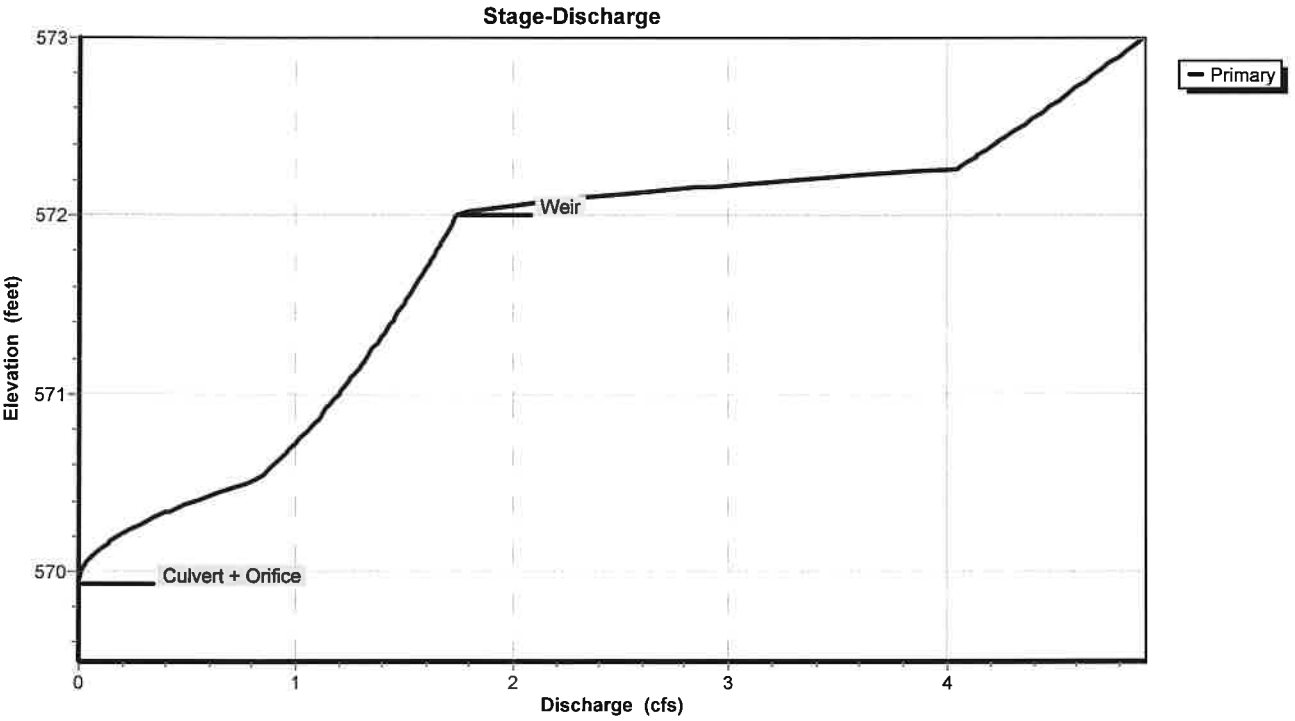
Primary OutFlow Max=1.28 cfs @ 12.54 hrs HW=571.13' (Free Discharge)
└**1=Culvert** (Passes 1.28 cfs of 2.37 cfs potential flow)
├**2=Orifice** (Orifice Controls 1.28 cfs @ 4.88 fps)
└**3=Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)

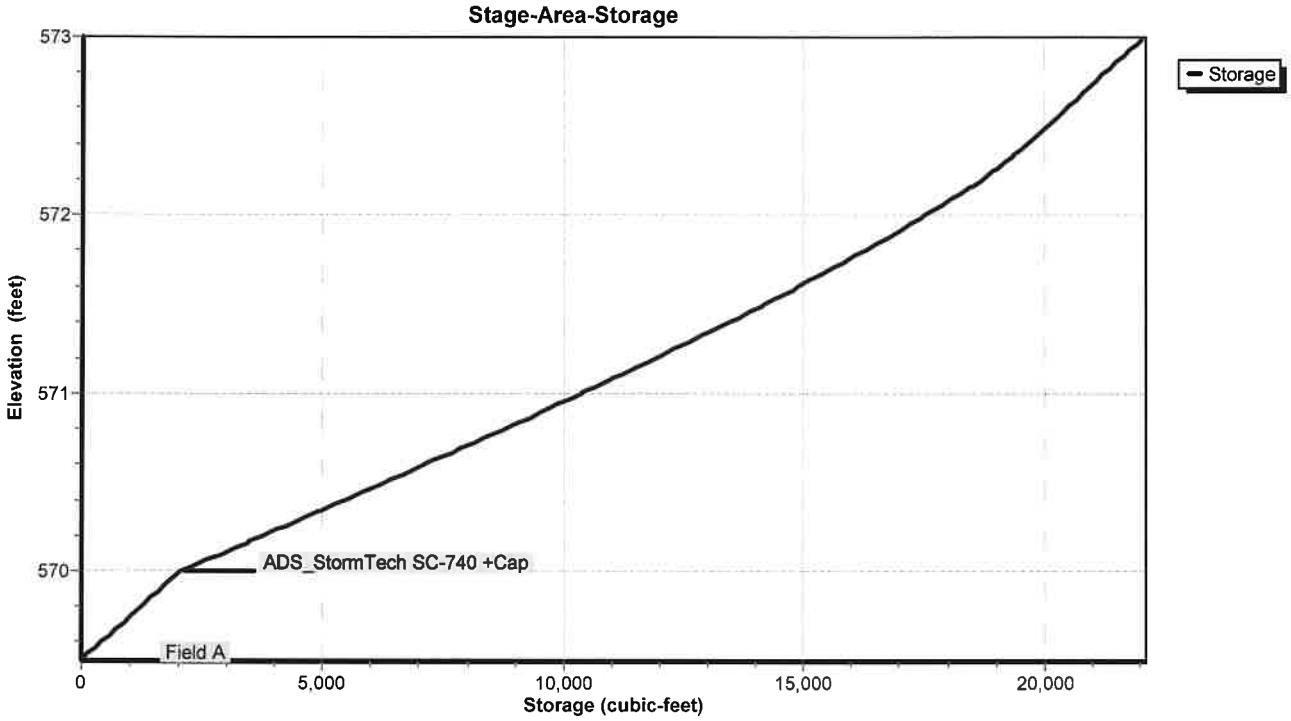


Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.01	18	569.50	0.00
8.00	0.05	241	569.56	0.00
10.00	0.12	846	569.71	0.00
12.00	**7.80**	**5,030**	**570.35**	**0.43**
14.00	**0.39**	**8,504**	**570.77**	**1.03**
16.00	0.24	5,183	570.37	0.47
18.00	0.18	4,195	570.25	0.26
20.00	0.13	3,754	570.20	0.18
22.00	0.12	3,484	570.17	0.14
24.00	0.11	3,343	570.15	0.12
26.00	0.03	2,942	570.11	0.08
28.00	0.03	2,728	570.08	0.05
30.00	0.03	2,611	570.07	0.05
32.00	0.03	2,544	570.06	0.04
34.00	0.03	2,500	570.05	0.04
36.00	0.03	2,470	570.05	0.03
38.00	0.03	2,448	570.05	0.03
40.00	0.03	2,430	570.05	0.03
42.00	0.03	2,416	570.05	0.03
44.00	0.03	2,404	570.04	0.03
46.00	0.03	2,393	570.04	0.03
48.00	0.01	2,331	570.04	0.03
50.00	0.00	2,206	570.02	0.02
52.00	0.00	2,098	570.01	0.01
54.00	0.00	2,015	570.00	0.01
56.00	0.00	1,960	569.98	0.01
58.00	0.00	1,921	569.97	0.00
60.00	0.00	1,893	569.97	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 2.30" for 10-Year event
Inflow = 5.28 cfs @ 12.00 hrs, Volume= 0.288 af
Outflow = 4.27 cfs @ 12.06 hrs, Volume= 0.288 af, Atten= 19%, Lag= 3.5 min
Primary = 4.27 cfs @ 12.06 hrs, Volume= 0.288 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.72' @ 12.06 hrs Surf.Area= 6,219 sf Storage= 4,001 cf

Plug-Flow detention time= 318.6 min calculated for 0.288 af (100% of inflow)
Center-of-Mass det. time= 318.8 min (1,116.8 - 798.1)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

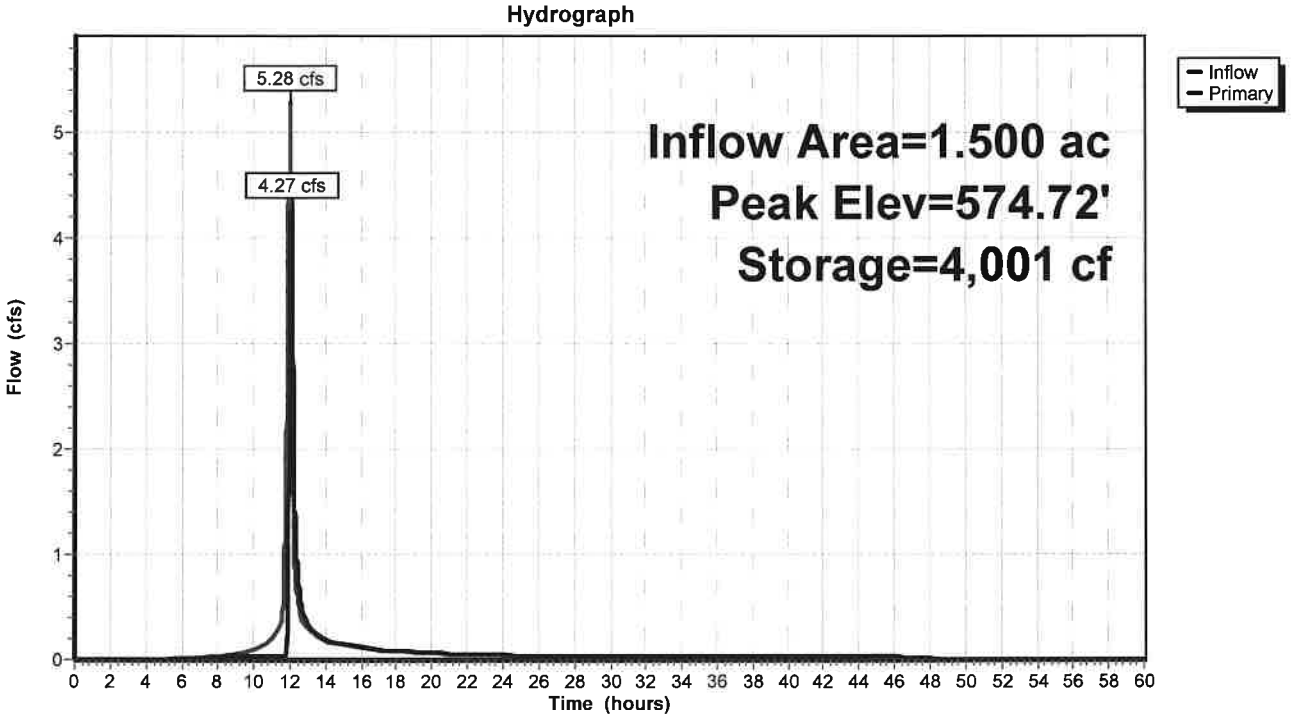
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

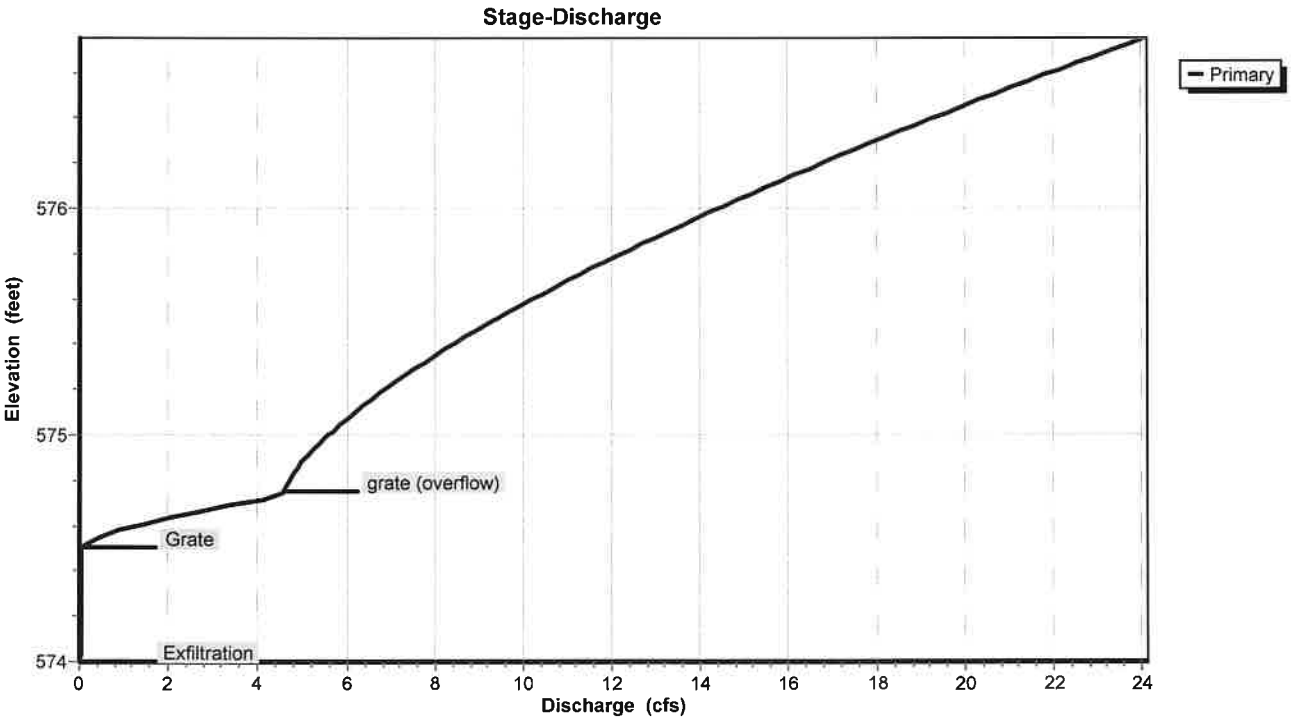
Primary OutFlow Max=4.36 cfs @ 12.06 hrs HW=574.72' (Free Discharge)
- **1=8" pipe** (Passes 4.36 cfs of 4.57 cfs potential flow)
  - **2=Grate** (Weir Controls 4.32 cfs @ 1.54 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3

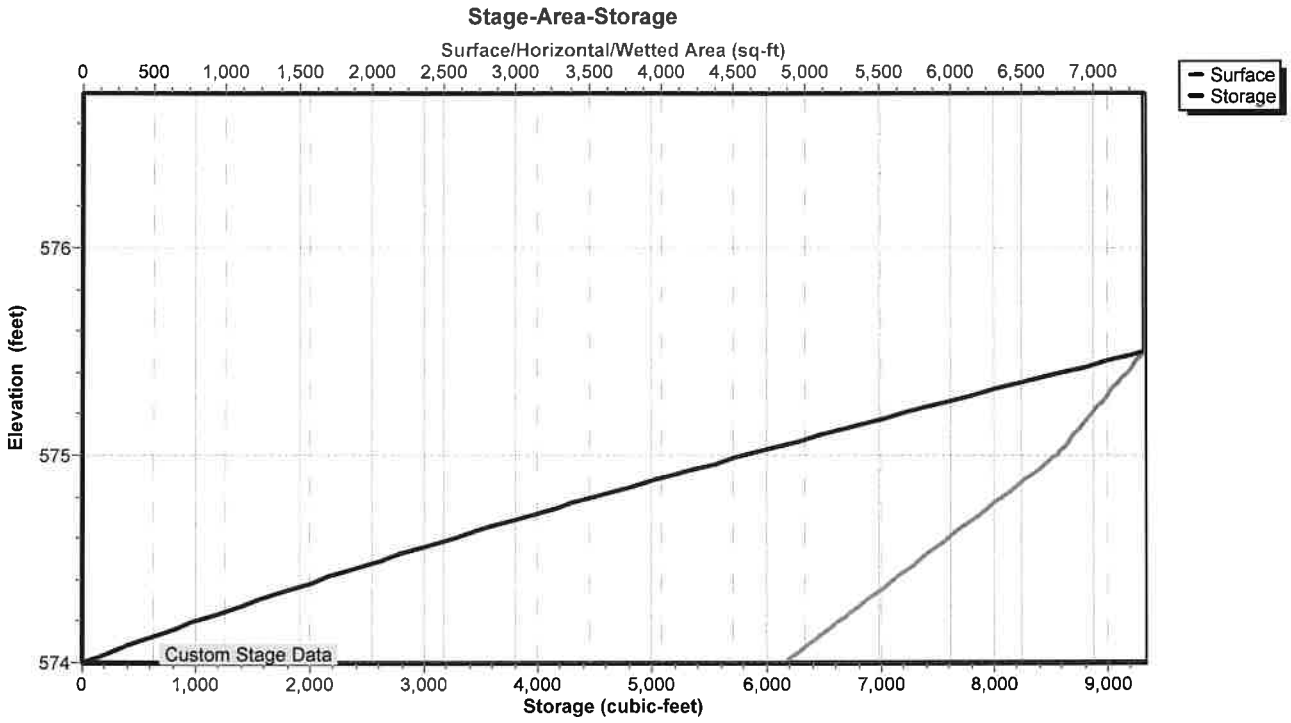


Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.01	21	574.00	0.00
8.00	0.03	99	574.02	0.02
10.00	0.09	335	574.07	0.03
12.00	**5.27**	**3,799**	**574.69**	**3.45**
14.00	0.18	**2,801**	**574.52**	**0.19**
16.00	0.11	2,738	574.51	0.12
18.00	0.08	2,710	574.51	0.09
20.00	0.06	2,689	574.50	0.06
22.00	0.05	2,681	574.50	0.06
24.00	0.05	2,677	574.50	0.05
26.00	0.00	2,445	574.46	0.03
28.00	0.00	2,201	574.42	0.03
30.00	0.00	1,961	574.38	0.03
32.00	0.00	1,726	574.33	0.03
34.00	0.00	1,494	574.29	0.03
36.00	0.00	1,267	574.25	0.03
38.00	0.00	1,043	574.21	0.03
40.00	0.00	824	574.16	0.03
42.00	0.00	608	574.12	0.03
44.00	0.00	397	574.08	0.03
46.00	0.00	189	574.04	0.03
48.00	0.00	44	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=2.89"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=6.35 cfs 0.410 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=2.99"
Flow Length=345' Tc=9.1 min CN=92 Runoff=6.75 cfs 0.374 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=571.73' Storage=15,804 cf Inflow=11.11 cfs 0.784 af
Outflow=1.61 cfs 0.740 af

Pond 9P: Bioretention Area 3 Peak Elev=574.82' Storage=4,638 cf Inflow=6.75 cfs 0.374 af
Outflow=4.78 cfs 0.374 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.784 af Average Runoff Depth = 2.94"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 8S: Front Area 2

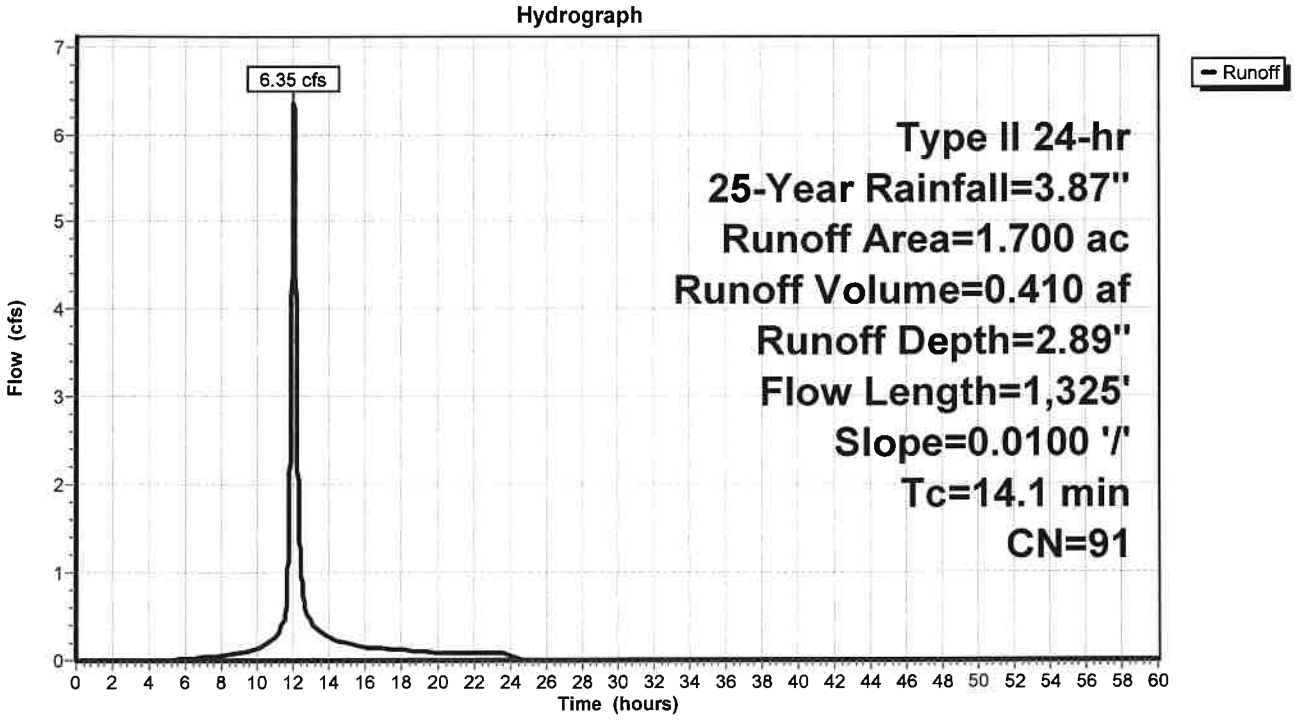
Runoff = 6.35 cfs @ 12.05 hrs, Volume= 0.410 af, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.01
6.00	0.31	0.01	0.02
7.00	0.38	0.03	0.04
8.00	0.46	0.06	0.05
9.00	0.57	0.10	0.09
10.00	0.70	0.17	0.13
11.00	0.91	0.30	0.27
12.00	2.57	1.67	**5.66**
13.00	2.99	2.06	**0.45**
14.00	3.17	2.23	0.26
15.00	3.30	2.36	0.20
16.00	3.41	2.45	0.15
17.00	3.49	2.53	0.13
18.00	3.56	2.60	0.12
19.00	3.63	2.66	0.10
20.00	3.68	2.72	0.09
21.00	3.73	2.76	0.08
22.00	3.78	2.81	0.08
23.00	3.83	2.85	0.07
24.00	**3.87**	**2.89**	0.07
25.00	3.87	2.89	0.00
26.00	3.87	2.89	0.00
27.00	3.87	2.89	0.00
28.00	3.87	2.89	0.00
29.00	3.87	2.89	0.00
30.00	3.87	2.89	0.00
31.00	3.87	2.89	0.00
32.00	3.87	2.89	0.00
33.00	3.87	2.89	0.00
34.00	3.87	2.89	0.00
35.00	3.87	2.89	0.00
36.00	3.87	2.89	0.00
37.00	3.87	2.89	0.00
38.00	3.87	2.89	0.00
39.00	3.87	2.89	0.00
40.00	3.87	2.89	0.00
41.00	3.87	2.89	0.00
42.00	3.87	2.89	0.00
43.00	3.87	2.89	0.00
44.00	3.87	2.89	0.00
45.00	3.87	2.89	0.00
46.00	3.87	2.89	0.00
47.00	3.87	2.89	0.00
48.00	3.87	2.89	0.00
49.00	3.87	2.89	0.00
50.00	3.87	2.89	0.00
51.00	3.87	2.89	0.00
52.00	3.87	2.89	0.00
53.00	3.87	2.89	0.00
54.00	3.87	2.89	0.00
55.00	3.87	2.89	0.00
56.00	3.87	2.89	0.00
57.00	3.87	2.89	0.00
58.00	3.87	2.89	0.00
59.00	3.87	2.89	0.00
60.00	3.87	2.89	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 10S: Rear Area 2

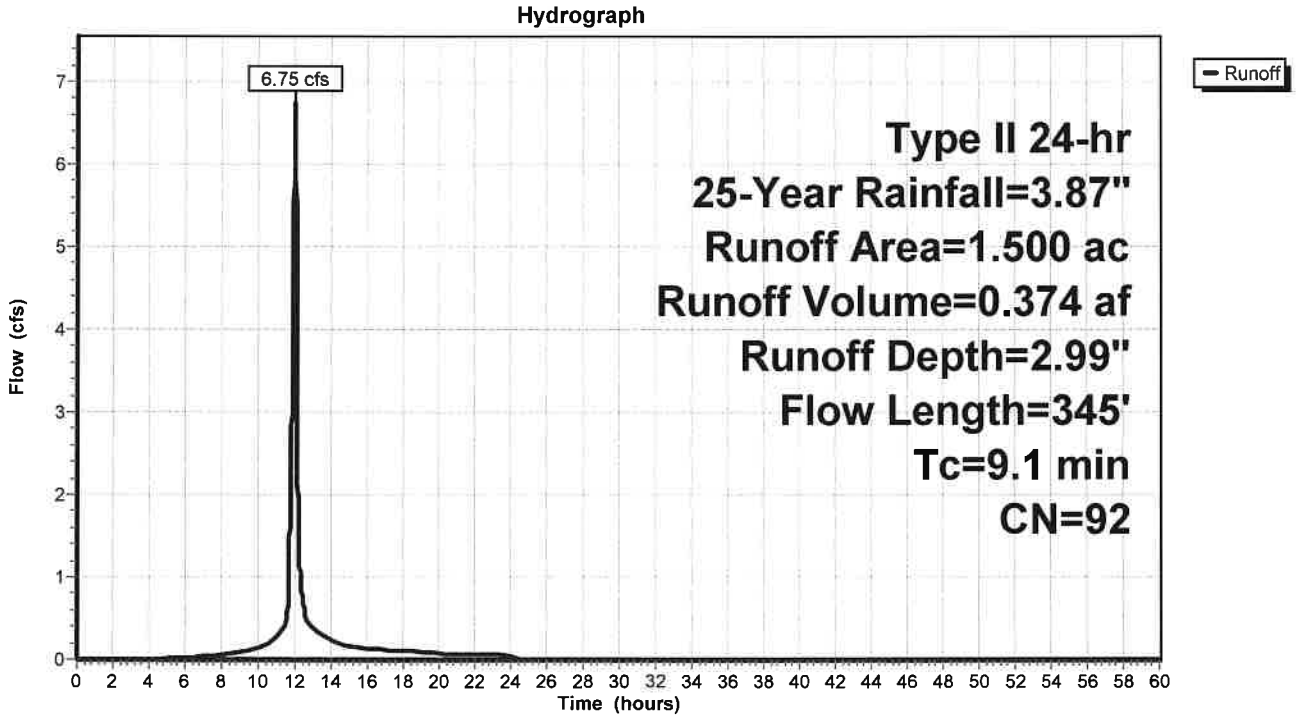
Runoff = 6.75 cfs @ 12.00 hrs, Volume= 0.374 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.01	0.01
6.00	0.31	0.02	0.02
7.00	0.38	0.04	0.04
8.00	0.46	0.07	0.05
9.00	0.57	0.12	0.09
10.00	0.70	0.20	0.13
11.00	0.91	0.34	0.27
12.00	2.57	1.75	**6.75**
13.00	2.99	2.15	0.38
14.00	3.17	2.33	0.22
15.00	3.30	2.45	0.17
16.00	3.41	2.55	0.13
17.00	3.49	2.63	0.12
18.00	3.56	2.70	0.10
19.00	3.63	2.76	0.09
20.00	3.68	2.81	0.08
21.00	3.73	2.86	0.07
22.00	3.78	2.91	0.07
23.00	3.83	2.95	0.07
24.00	**3.87**	**2.99**	0.06
25.00	3.87	2.99	0.00
26.00	3.87	2.99	0.00
27.00	3.87	2.99	0.00
28.00	3.87	2.99	0.00
29.00	3.87	2.99	0.00
30.00	3.87	2.99	0.00
31.00	3.87	2.99	0.00
32.00	3.87	2.99	0.00
33.00	3.87	2.99	0.00
34.00	3.87	2.99	0.00
35.00	3.87	2.99	0.00
36.00	3.87	2.99	0.00
37.00	3.87	2.99	0.00
38.00	3.87	2.99	0.00
39.00	3.87	2.99	0.00
40.00	3.87	2.99	0.00
41.00	3.87	2.99	0.00
42.00	3.87	2.99	0.00
43.00	3.87	2.99	0.00
44.00	3.87	2.99	0.00
45.00	3.87	2.99	0.00
46.00	3.87	2.99	0.00
47.00	3.87	2.99	0.00
48.00	3.87	2.99	0.00
49.00	3.87	2.99	0.00
50.00	3.87	2.99	0.00
51.00	3.87	2.99	0.00
52.00	3.87	2.99	0.00
53.00	3.87	2.99	0.00
54.00	3.87	2.99	0.00
55.00	3.87	2.99	0.00
56.00	3.87	2.99	0.00
57.00	3.87	2.99	0.00
58.00	3.87	2.99	0.00
59.00	3.87	2.99	0.00
60.00	3.87	2.99	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 2.94" for 25-Year event
Inflow = 11.11 cfs @ 12.06 hrs, Volume= 0.784 af
Outflow = 1.61 cfs @ 12.54 hrs, Volume= 0.740 af, Atten= 85%, Lag= 29.2 min
Primary = 1.61 cfs @ 12.54 hrs, Volume= 0.740 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 571.73' @ 12.54 hrs Surf.Area= 10,145 sf Storage= 15,804 cf

Plug-Flow detention time= 252.2 min calculated for 0.740 af (94% of inflow)
Center-of-Mass det. time= 168.6 min (1,084.7 - 916.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

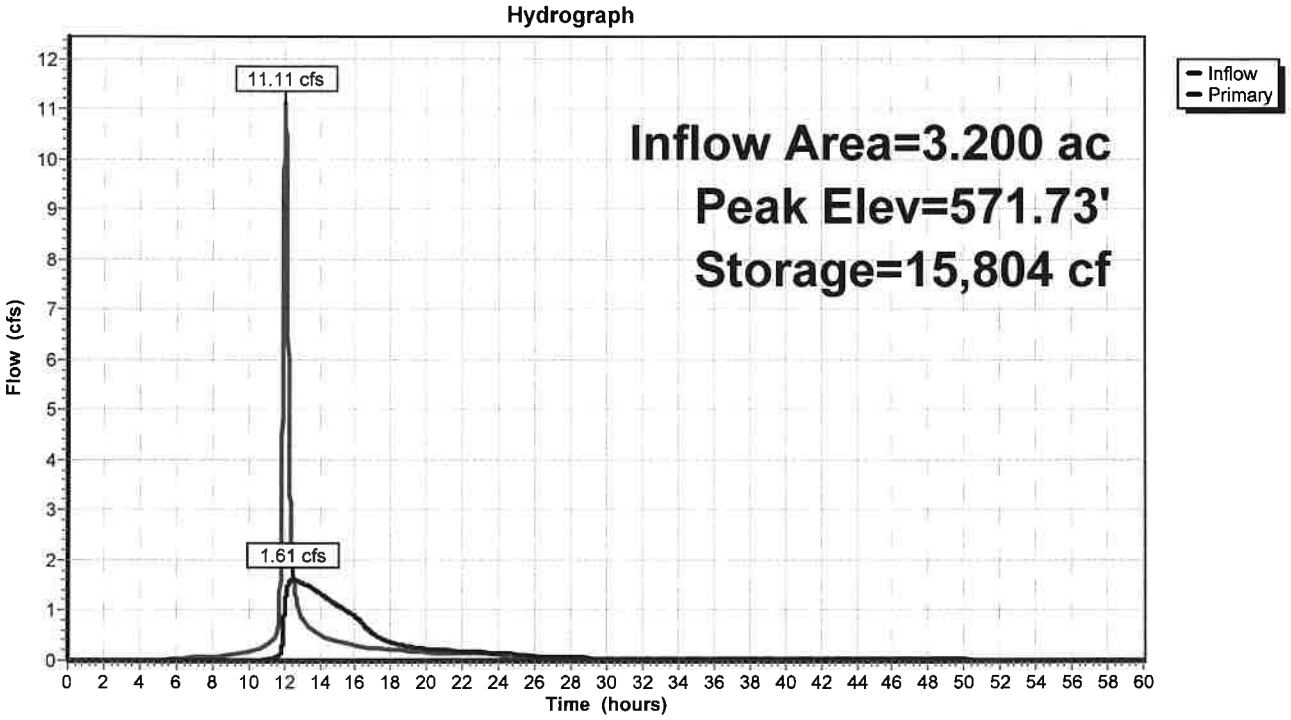
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

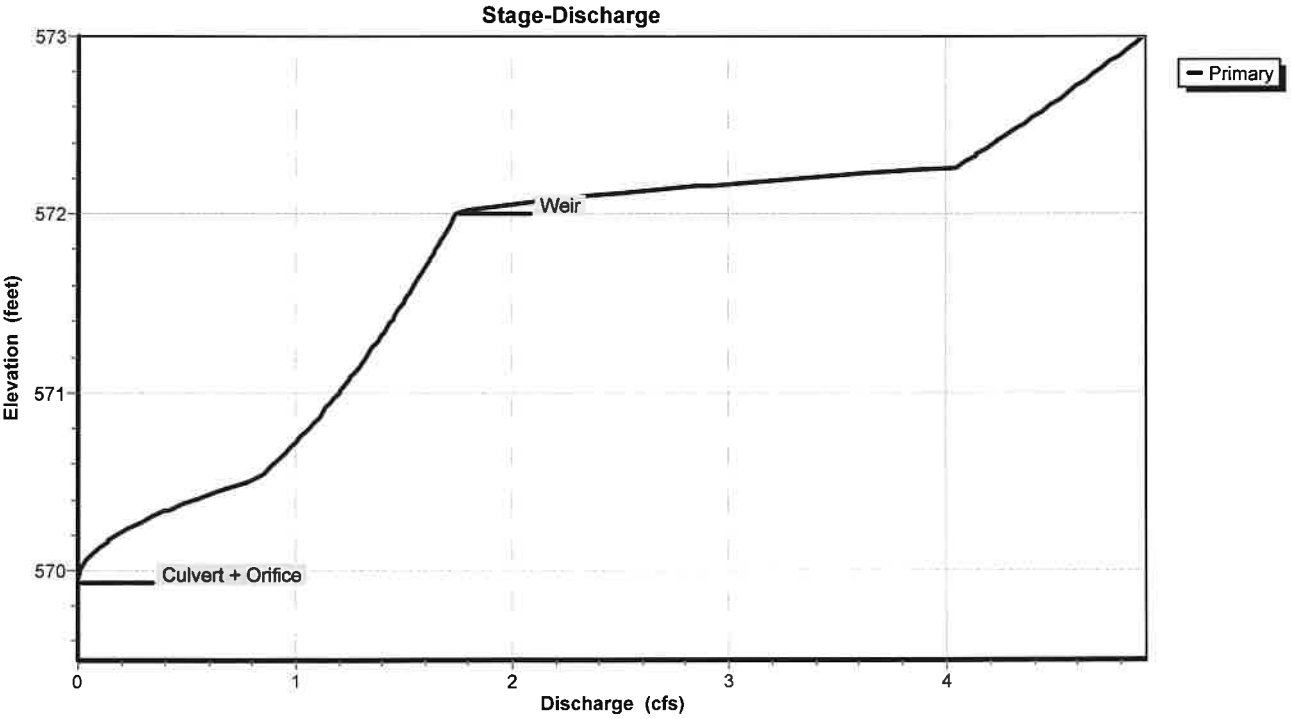
Primary OutFlow Max=1.61 cfs @ 12.54 hrs HW=571.73' (Free Discharge)
└**1=Culvert** (Passes 1.61 cfs of 3.29 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 1.61 cfs @ 6.16 fps)
  └**3=Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)

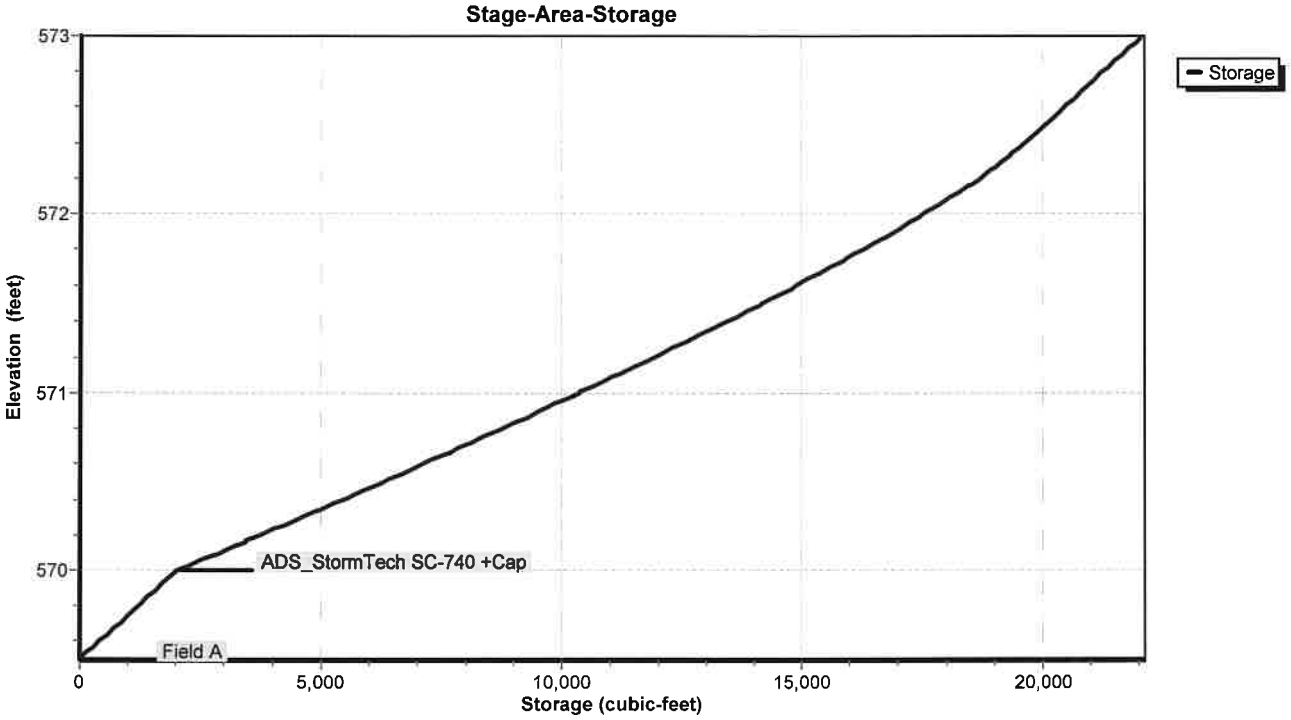


Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.03	85	569.52	0.00
8.00	0.08	499	569.62	0.00
10.00	0.16	1,337	569.83	0.00
12.00	**10.28**	**7,562**	**570.65**	**0.94**
14.00	**0.49**	**12,132**	**571.23**	**1.34**
16.00	0.30	6,914	570.58	0.87
18.00	0.22	4,703	570.31	0.36
20.00	0.16	4,045	570.24	0.23
22.00	0.15	3,711	570.20	0.17
24.00	0.13	3,549	570.18	0.15
26.00	0.03	3,038	570.12	0.09
28.00	0.03	2,775	570.09	0.06
30.00	0.03	2,637	570.07	0.05
32.00	0.03	2,558	570.06	0.04
34.00	0.03	2,510	570.06	0.04
36.00	0.03	2,476	570.05	0.04
38.00	0.03	2,451	570.05	0.03
40.00	0.03	2,433	570.05	0.03
42.00	0.03	2,418	570.05	0.03
44.00	0.03	2,405	570.04	0.03
46.00	0.03	2,394	570.04	0.03
48.00	0.01	2,335	570.04	0.03
50.00	0.00	2,210	570.02	0.02
52.00	0.00	2,101	570.01	0.01
54.00	0.00	2,017	570.00	0.01
56.00	0.00	1,961	569.98	0.01
58.00	0.00	1,922	569.97	0.00
60.00	0.00	1,894	569.97	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 2.99" for 25-Year event
Inflow = 6.75 cfs @ 12.00 hrs, Volume= 0.374 af
Outflow = 4.78 cfs @ 12.08 hrs, Volume= 0.374 af, Atten= 29%, Lag= 4.5 min
Primary = 4.78 cfs @ 12.08 hrs, Volume= 0.374 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.82' @ 12.08 hrs Surf.Area= 6,409 sf Storage= 4,638 cf

Plug-Flow detention time= 252.6 min calculated for 0.374 af (100% of inflow)
Center-of-Mass det. time= 252.8 min (1,043.6 - 790.7)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

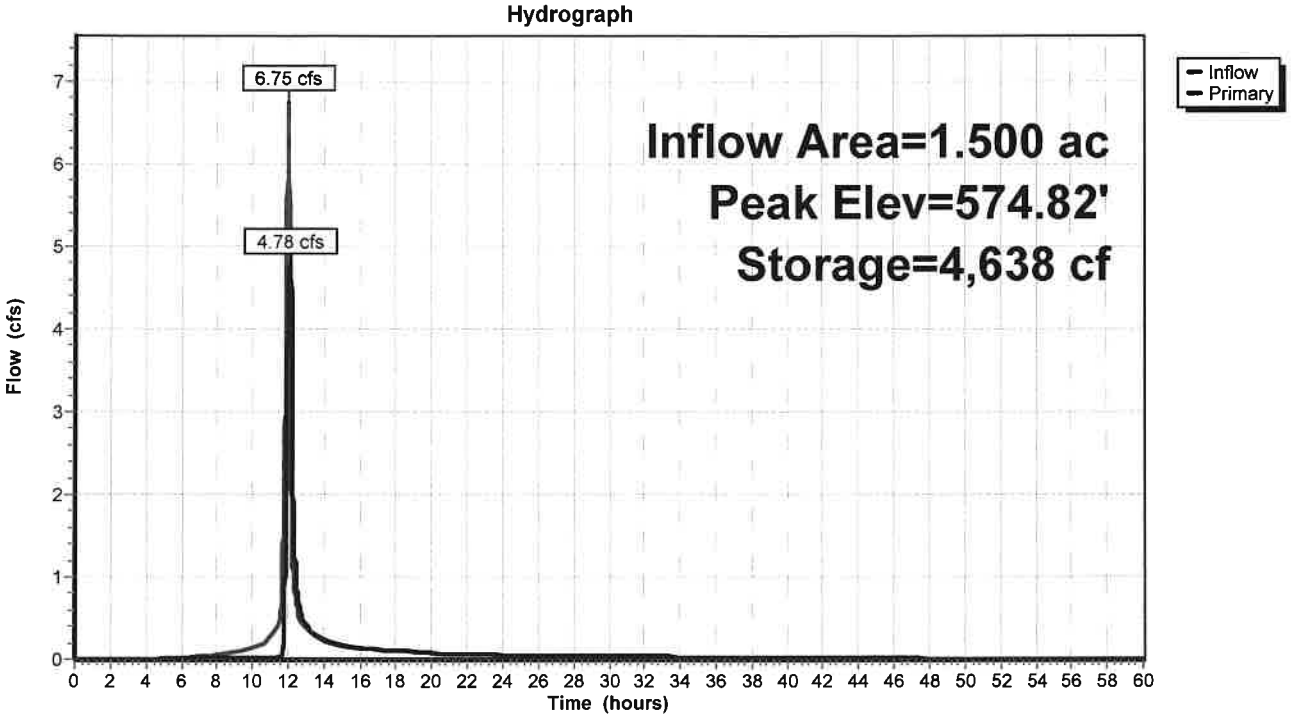
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

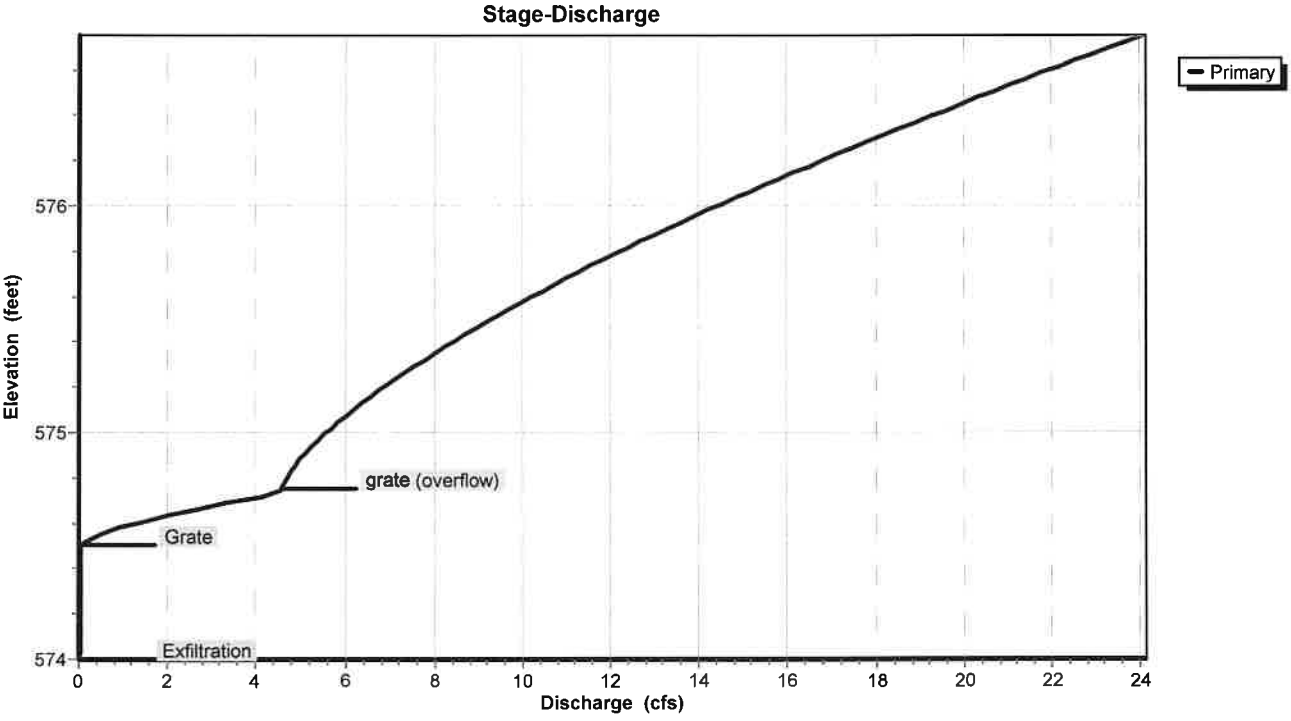
Primary OutFlow Max=4.78 cfs @ 12.08 hrs HW=574.82' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.65 cfs @ 5.92 fps)
  - **2=Grate** (Passes < 5.74 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 0.13 cfs @ 0.87 fps)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3

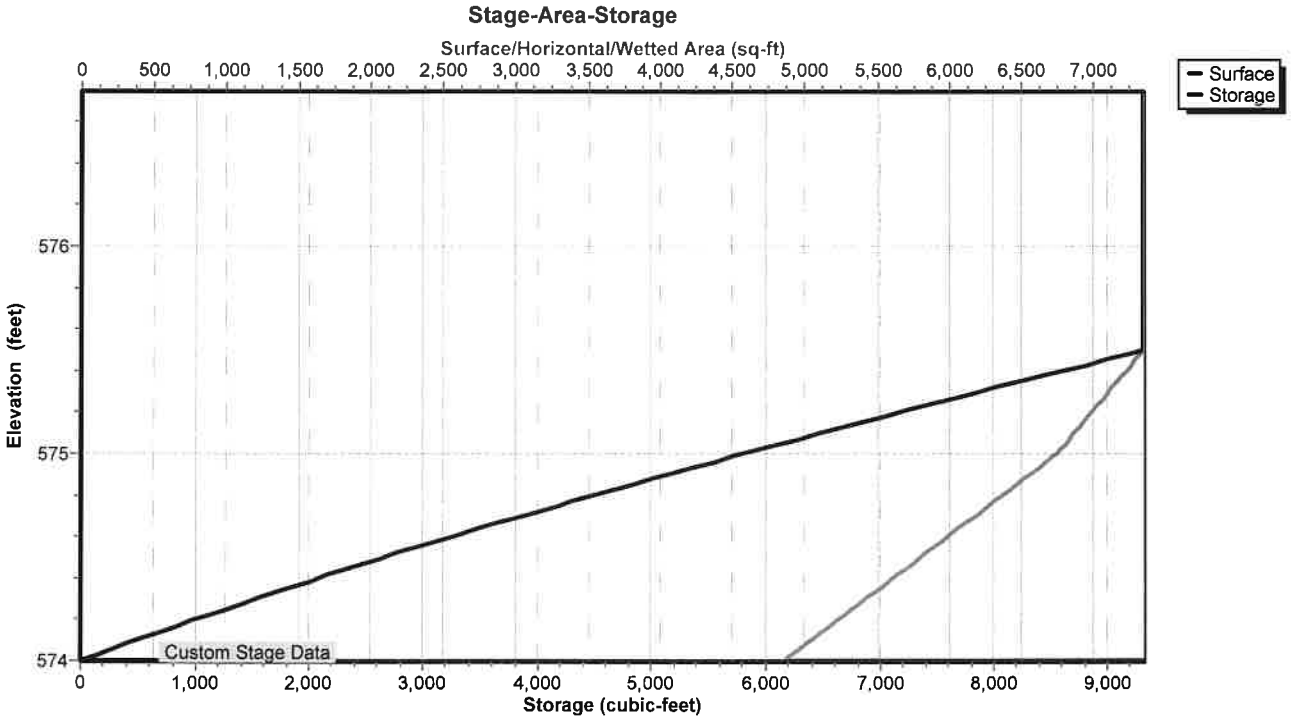


Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.02	55	574.01	0.01
8.00	0.05	177	574.04	0.03
10.00	0.13	612	574.12	0.03
12.00	**6.75**	**4,265**	**574.77**	**4.62**
14.00	0.22	**2,825**	**574.53**	**0.24**
16.00	0.13	2,765	574.52	0.14
18.00	0.10	2,730	574.51	0.11
20.00	0.08	2,704	574.51	0.08
22.00	0.07	2,694	574.51	0.07
24.00	0.06	2,689	574.50	0.06
26.00	0.00	2,452	574.46	0.03
28.00	0.00	2,208	574.42	0.03
30.00	0.00	1,968	574.38	0.03
32.00	0.00	1,733	574.34	0.03
34.00	0.00	1,501	574.29	0.03
36.00	0.00	1,273	574.25	0.03
38.00	0.00	1,050	574.21	0.03
40.00	0.00	830	574.17	0.03
42.00	0.00	614	574.12	0.03
44.00	0.00	403	574.08	0.03
46.00	0.00	195	574.04	0.03
48.00	0.00	46	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=3.52"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=7.64 cfs 0.498 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=3.62"
Flow Length=345' Tc=9.1 min CN=92 Runoff=8.07 cfs 0.453 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=572.23' Storage=18,837 cf Inflow=12.80 cfs 0.951 af
Outflow=3.61 cfs 0.907 af

Pond 9P: Bioretention Area 3 Peak Elev=574.93' Storage=5,333 cf Inflow=8.07 cfs 0.453 af
Outflow=5.22 cfs 0.453 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.951 af Average Runoff Depth = 3.57"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 8S: Front Area 2

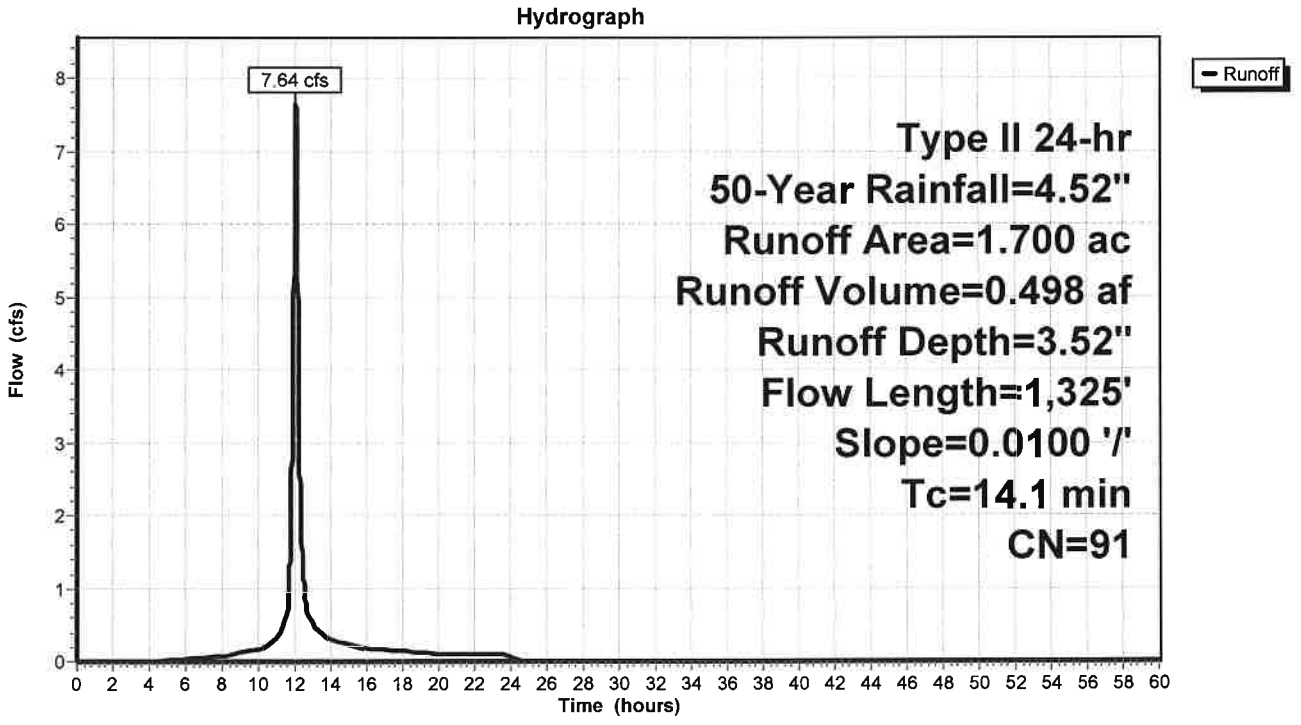
Runoff = 7.64 cfs @ 12.05 hrs, Volume= 0.498 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.00
5.00	0.28	0.01	0.02
6.00	0.36	0.02	0.03
7.00	0.45	0.05	0.05
8.00	0.54	0.09	0.07
9.00	0.66	0.15	0.12
10.00	0.82	0.24	0.17
11.00	1.06	0.40	0.34
12.00	3.00	2.07	**6.84**
13.00	3.49	2.53	**0.53**
14.00	3.71	2.74	0.30
15.00	3.86	2.88	0.23
16.00	3.98	3.00	0.18
17.00	4.08	3.09	0.16
18.00	4.16	3.17	0.14
19.00	4.24	3.25	0.12
20.00	4.30	3.31	0.10
21.00	4.36	3.36	0.09
22.00	4.42	3.42	0.09
23.00	4.47	3.47	0.09
24.00	**4.52**	**3.52**	0.08
25.00	4.52	3.52	0.00
26.00	4.52	3.52	0.00
27.00	4.52	3.52	0.00
28.00	4.52	3.52	0.00
29.00	4.52	3.52	0.00
30.00	4.52	3.52	0.00
31.00	4.52	3.52	0.00
32.00	4.52	3.52	0.00
33.00	4.52	3.52	0.00
34.00	4.52	3.52	0.00
35.00	4.52	3.52	0.00
36.00	4.52	3.52	0.00
37.00	4.52	3.52	0.00
38.00	4.52	3.52	0.00
39.00	4.52	3.52	0.00
40.00	4.52	3.52	0.00
41.00	4.52	3.52	0.00
42.00	4.52	3.52	0.00
43.00	4.52	3.52	0.00
44.00	4.52	3.52	0.00
45.00	4.52	3.52	0.00
46.00	4.52	3.52	0.00
47.00	4.52	3.52	0.00
48.00	4.52	3.52	0.00
49.00	4.52	3.52	0.00
50.00	4.52	3.52	0.00
51.00	4.52	3.52	0.00
52.00	4.52	3.52	0.00
53.00	4.52	3.52	0.00
54.00	4.52	3.52	0.00
55.00	4.52	3.52	0.00
56.00	4.52	3.52	0.00
57.00	4.52	3.52	0.00
58.00	4.52	3.52	0.00
59.00	4.52	3.52	0.00
60.00	4.52	3.52	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 10S: Rear Area 2

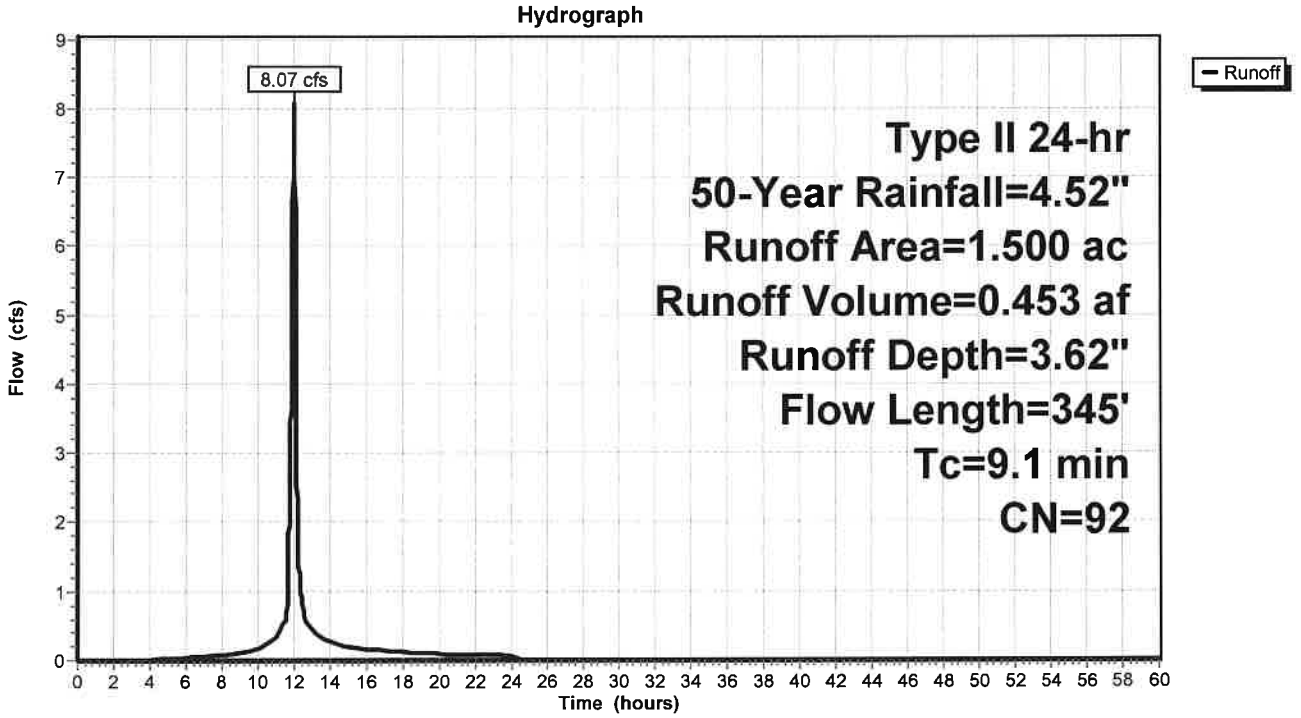
Runoff = 8.07 cfs @ 12.00 hrs, Volume= 0.453 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.01
5.00	0.28	0.01	0.02
6.00	0.36	0.03	0.04
7.00	0.45	0.07	0.06
8.00	0.54	0.11	0.07
9.00	0.66	0.18	0.12
10.00	0.82	0.27	0.17
11.00	1.06	0.45	0.34
12.00	3.00	2.16	**8.07**
13.00	3.49	2.63	0.45
14.00	3.71	2.83	0.26
15.00	3.86	2.98	0.20
16.00	3.98	3.10	0.16
17.00	4.08	3.19	0.14
18.00	4.16	3.28	0.12
19.00	4.24	3.35	0.11
20.00	4.30	3.41	0.09
21.00	4.36	3.47	0.08
22.00	4.42	3.52	0.08
23.00	4.47	3.57	0.08
24.00	**4.52**	**3.62**	0.07
25.00	4.52	3.62	0.00
26.00	4.52	3.62	0.00
27.00	4.52	3.62	0.00
28.00	4.52	3.62	0.00
29.00	4.52	3.62	0.00
30.00	4.52	3.62	0.00
31.00	4.52	3.62	0.00
32.00	4.52	3.62	0.00
33.00	4.52	3.62	0.00
34.00	4.52	3.62	0.00
35.00	4.52	3.62	0.00
36.00	4.52	3.62	0.00
37.00	4.52	3.62	0.00
38.00	4.52	3.62	0.00
39.00	4.52	3.62	0.00
40.00	4.52	3.62	0.00
41.00	4.52	3.62	0.00
42.00	4.52	3.62	0.00
43.00	4.52	3.62	0.00
44.00	4.52	3.62	0.00
45.00	4.52	3.62	0.00
46.00	4.52	3.62	0.00
47.00	4.52	3.62	0.00
48.00	4.52	3.62	0.00
49.00	4.52	3.62	0.00
50.00	4.52	3.62	0.00
51.00	4.52	3.62	0.00
52.00	4.52	3.62	0.00
53.00	4.52	3.62	0.00
54.00	4.52	3.62	0.00
55.00	4.52	3.62	0.00
56.00	4.52	3.62	0.00
57.00	4.52	3.62	0.00
58.00	4.52	3.62	0.00
59.00	4.52	3.62	0.00
60.00	4.52	3.62	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 3.57" for 50-Year event
Inflow = 12.80 cfs @ 12.06 hrs, Volume= 0.951 af
Outflow = 3.61 cfs @ 12.36 hrs, Volume= 0.907 af, Atten= 72%, Lag= 17.7 min
Primary = 3.61 cfs @ 12.36 hrs, Volume= 0.907 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 572.23' @ 12.36 hrs Surf.Area= 10,145 sf Storage= 18,837 cf

Plug-Flow detention time= 228.3 min calculated for 0.907 af (95% of inflow)
Center-of-Mass det. time= 158.8 min (1,051.4 - 892.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

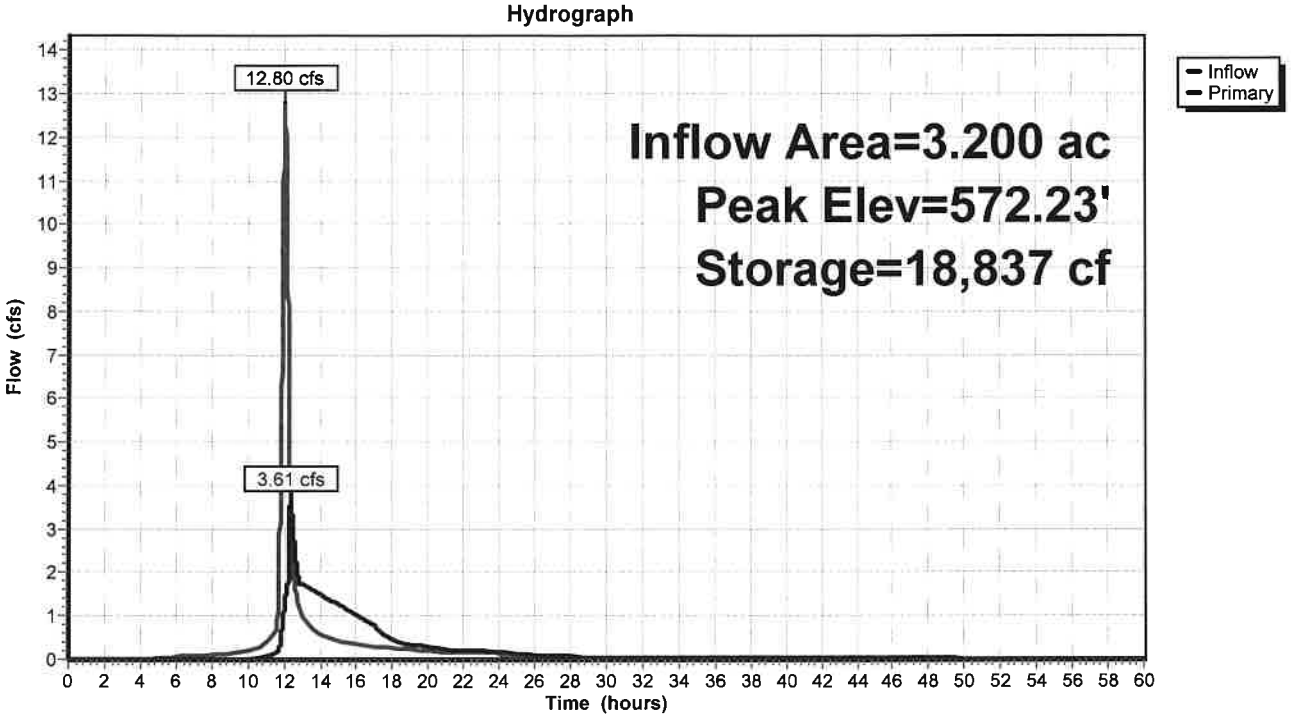
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

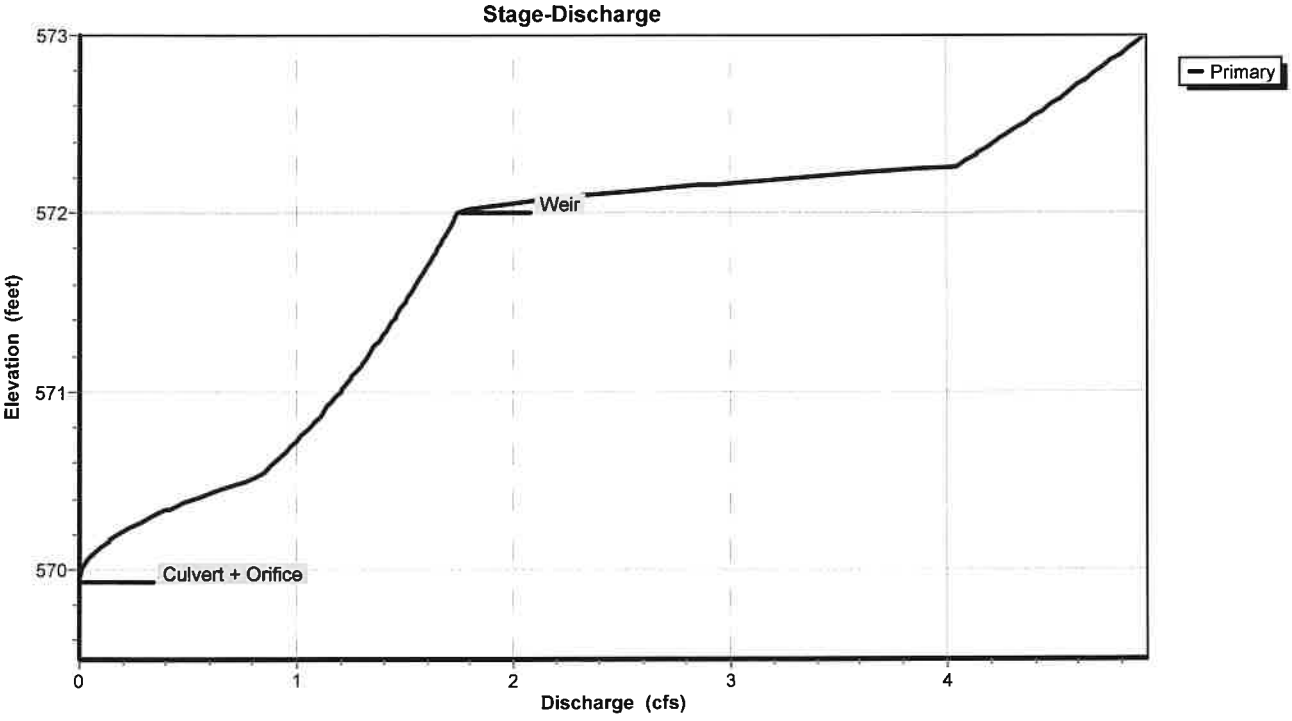
Primary OutFlow Max=3.60 cfs @ 12.36 hrs HW=572.23' (Free Discharge)
└**1=Culvert** (Passes 3.60 cfs of 4.00 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 1.84 cfs @ 7.03 fps)
  └**3=Weir** (Weir Controls 1.76 cfs @ 1.56 fps)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)

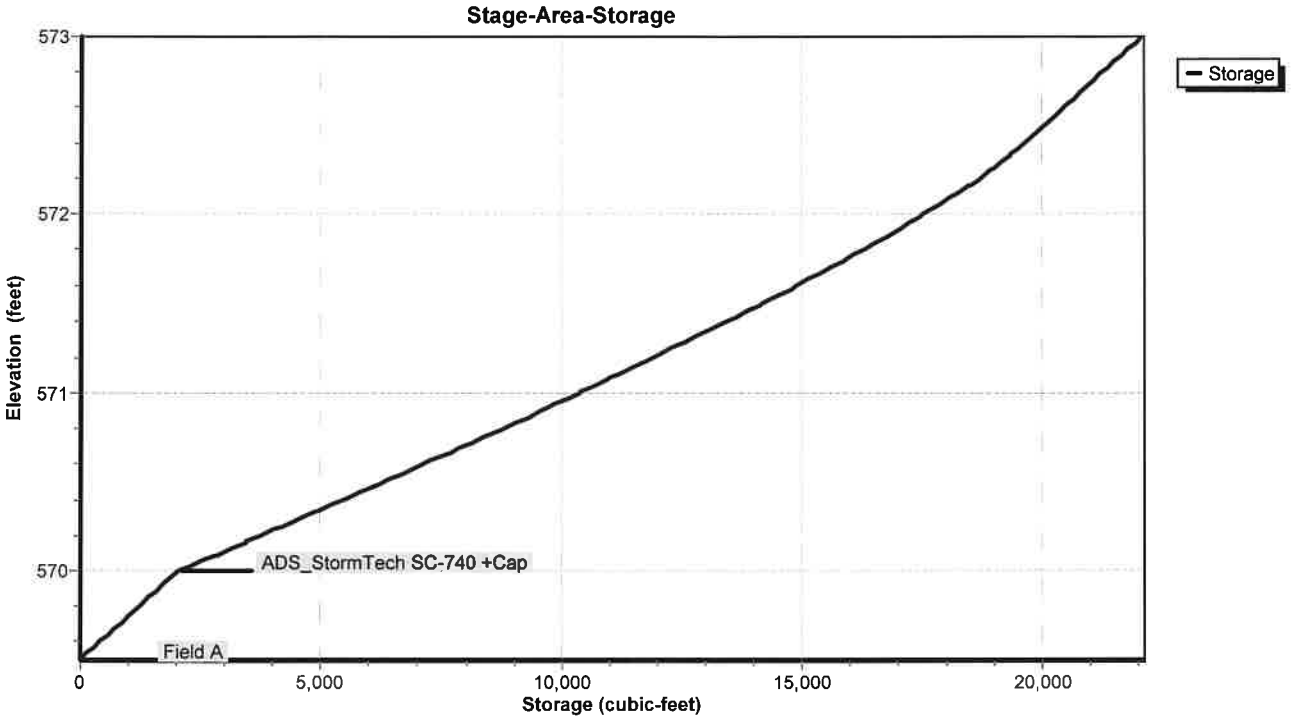


Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	1	569.50	0.00
6.00	0.05	184	569.55	0.00
8.00	0.10	755	569.69	0.00
10.00	0.20	1,811	569.95	0.00
12.00	**11.66**	**9,752**	**570.92**	**1.15**
14.00	**0.59**	**14,219**	**571.51**	**1.50**
16.00	0.35	8,385	570.75	1.02
18.00	0.26	5,166	570.37	0.47
20.00	0.19	4,282	570.26	0.27
22.00	0.17	3,893	570.22	0.20
24.00	0.16	3,718	570.20	0.18
26.00	0.03	3,113	570.13	0.09
28.00	0.03	2,810	570.09	0.06
30.00	0.03	2,657	570.07	0.05
32.00	0.03	2,569	570.06	0.04
34.00	0.03	2,516	570.06	0.04
36.00	0.03	2,480	570.05	0.04
38.00	0.03	2,454	570.05	0.03
40.00	0.03	2,435	570.05	0.03
42.00	0.03	2,419	570.05	0.03
44.00	0.03	2,406	570.04	0.03
46.00	0.03	2,395	570.04	0.03
48.00	0.01	2,338	570.04	0.03
50.00	0.00	2,213	570.02	0.02
52.00	0.00	2,103	570.01	0.01
54.00	0.00	2,018	570.00	0.01
56.00	0.00	1,962	569.98	0.01
58.00	0.00	1,923	569.97	0.00
60.00	0.00	1,894	569.97	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 3.62" for 50-Year event
Inflow = 8.07 cfs @ 12.00 hrs, Volume= 0.453 af
Outflow = 5.22 cfs @ 12.09 hrs, Volume= 0.453 af, Atten= 35%, Lag= 5.1 min
Primary = 5.22 cfs @ 12.09 hrs, Volume= 0.453 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.93' @ 12.09 hrs Surf.Area= 6,611 sf Storage= 5,333 cf

Plug-Flow detention time= 214.9 min calculated for 0.453 af (100% of inflow)
Center-of-Mass det. time= 215.2 min (1,000.7 - 785.5)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

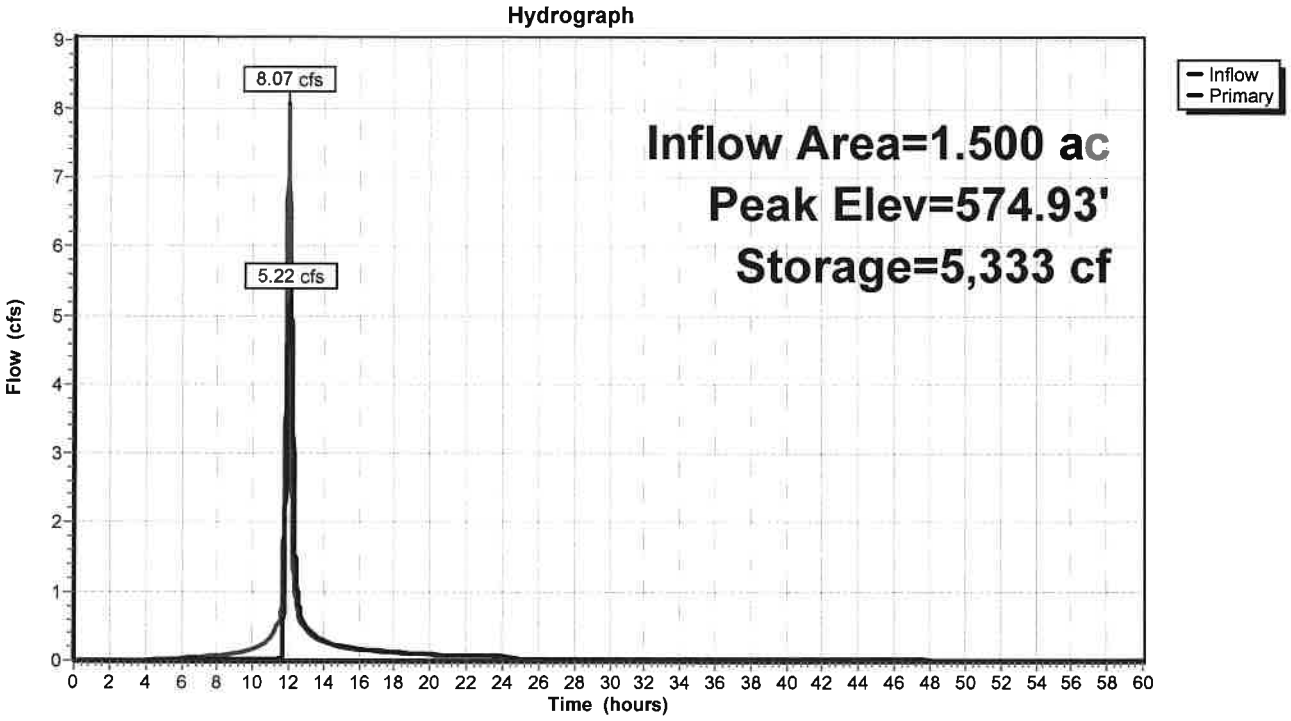
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

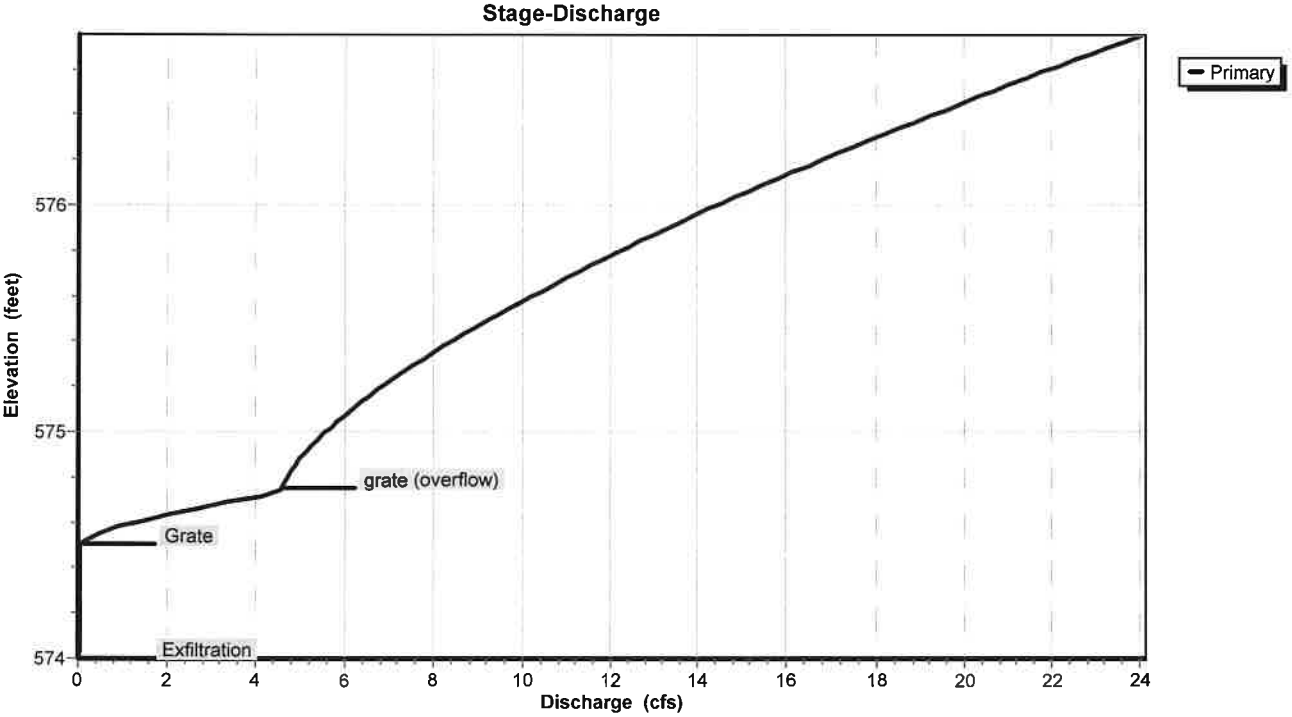
Primary OutFlow Max=5.22 cfs @ 12.09 hrs HW=574.93' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.73 cfs @ 6.02 fps)
  - **2=Grate** (Passes < 6.61 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 0.49 cfs @ 1.36 fps)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3

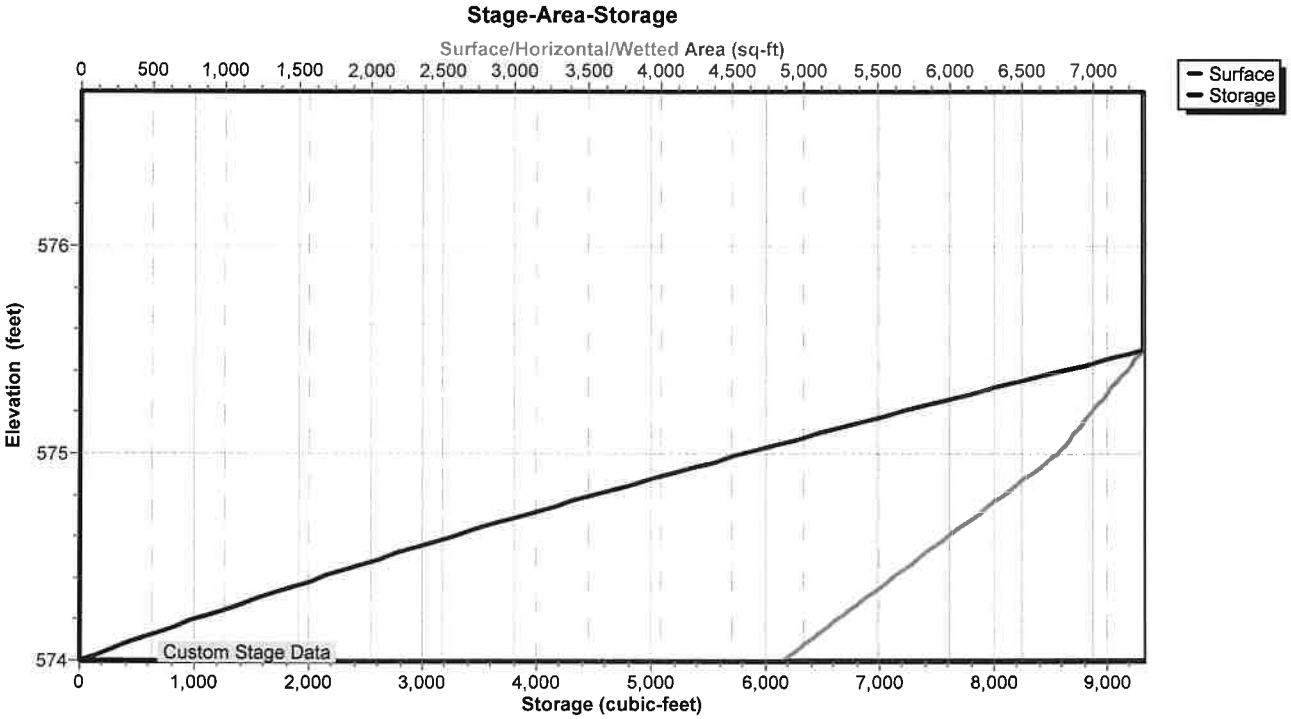


Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.01	6	574.00	0.00
6.00	0.04	95	574.02	0.02
8.00	0.07	296	574.06	0.03
10.00	0.17	928	574.18	0.03
12.00	**8.07**	**4,720**	**574.84**	**4.83**
14.00	0.26	**2,846**	**574.53**	**0.28**
16.00	0.16	2,787	574.52	0.17
18.00	0.12	2,748	574.51	0.13
20.00	0.09	2,717	574.51	0.09
22.00	0.08	2,706	574.51	0.08
24.00	0.07	2,699	574.51	0.07
26.00	0.00	2,457	574.46	0.03
28.00	0.00	2,213	574.42	0.03
30.00	0.00	1,974	574.38	0.03
32.00	0.00	1,738	574.34	0.03
34.00	0.00	1,506	574.29	0.03
36.00	0.00	1,278	574.25	0.03
38.00	0.00	1,055	574.21	0.03
40.00	0.00	835	574.17	0.03
42.00	0.00	619	574.12	0.03
44.00	0.00	407	574.08	0.03
46.00	0.00	199	574.04	0.03
48.00	0.00	47	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=4.25"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=9.15 cfs 0.603 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=4.36"
Flow Length=345' Tc=9.1 min CN=92 Runoff=9.61 cfs 0.545 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=572.92' Storage=21,772 cf Inflow=14.92 cfs 1.148 af
Outflow=4.83 cfs 1.105 af

Pond 9P: Bioretention Area 3 Peak Elev=575.05' Storage=6,150 cf Inflow=9.61 cfs 0.545 af
Outflow=5.89 cfs 0.545 af

Total Runoff Area = 3.200 ac Runoff Volume = 1.148 af Average Runoff Depth = 4.31"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 8S: Front Area 2

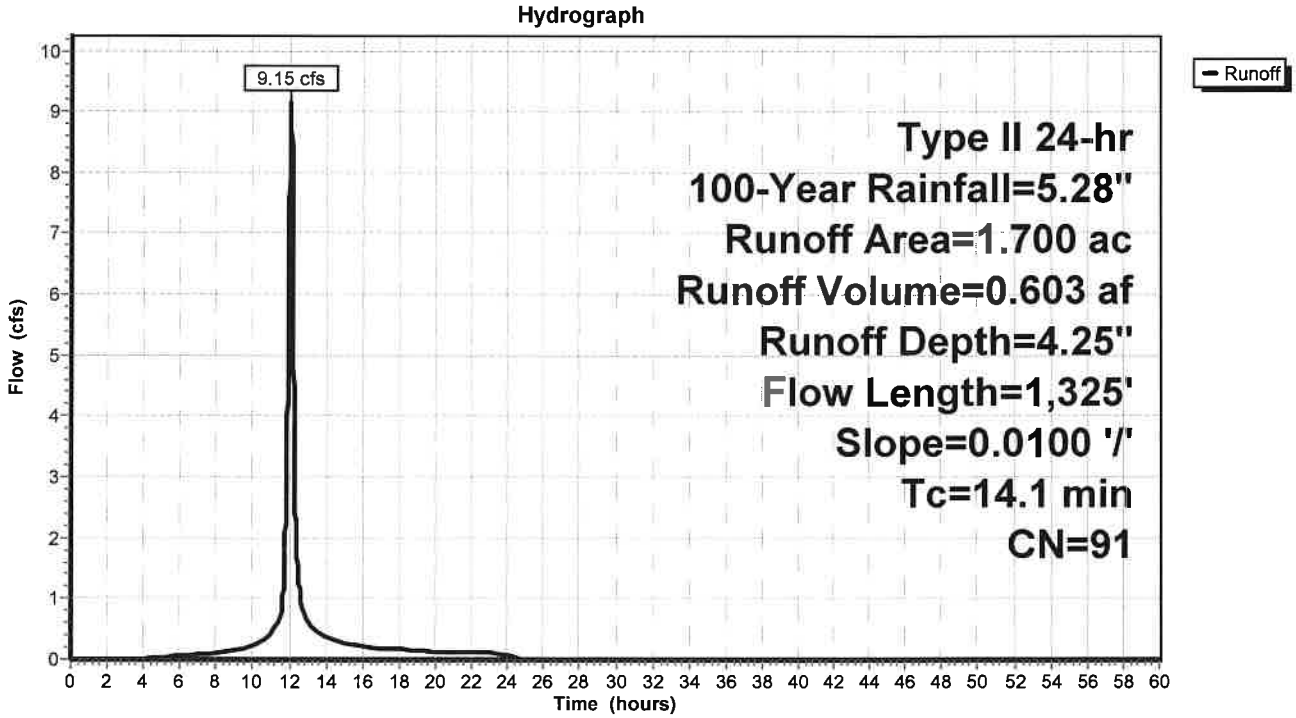
Runoff = 9.15 cfs @ 12.05 hrs, Volume= 0.603 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.28	4.25	0.00
1.00	0.06	0.00	0.00	53.00	5.28	4.25	0.00
2.00	0.12	0.00	0.00	54.00	5.28	4.25	0.00
3.00	0.18	0.00	0.00	55.00	5.28	4.25	0.00
4.00	0.25	0.00	0.01	56.00	5.28	4.25	0.00
5.00	0.33	0.02	0.03	57.00	5.28	4.25	0.00
6.00	0.42	0.04	0.05	58.00	5.28	4.25	0.00
7.00	0.52	0.08	0.07	59.00	5.28	4.25	0.00
8.00	0.63	0.13	0.10	60.00	5.28	4.25	0.00
9.00	0.78	0.21	0.16				
10.00	0.96	0.33	0.22				
11.00	1.24	0.54	0.43				
12.00	3.50	2.54	**8.21**				
13.00	4.08	3.09	**0.63**				
14.00	4.33	3.33	0.36				
15.00	4.51	3.50	0.28				
16.00	4.65	3.64	0.21				
17.00	4.76	3.75	0.18				
18.00	4.86	3.85	0.16				
19.00	4.95	3.93	0.14				
20.00	5.03	4.01	0.12				
21.00	5.09	4.07	0.11				
22.00	5.16	4.14	0.11				
23.00	5.22	4.20	0.10				
24.00	**5.28**	**4.25**	0.10				
25.00	5.28	4.25	0.00				
26.00	5.28	4.25	0.00				
27.00	5.28	4.25	0.00				
28.00	5.28	4.25	0.00				
29.00	5.28	4.25	0.00				
30.00	5.28	4.25	0.00				
31.00	5.28	4.25	0.00				
32.00	5.28	4.25	0.00				
33.00	5.28	4.25	0.00				
34.00	5.28	4.25	0.00				
35.00	5.28	4.25	0.00				
36.00	5.28	4.25	0.00				
37.00	5.28	4.25	0.00				
38.00	5.28	4.25	0.00				
39.00	5.28	4.25	0.00				
40.00	5.28	4.25	0.00				
41.00	5.28	4.25	0.00				
42.00	5.28	4.25	0.00				
43.00	5.28	4.25	0.00				
44.00	5.28	4.25	0.00				
45.00	5.28	4.25	0.00				
46.00	5.28	4.25	0.00				
47.00	5.28	4.25	0.00				
48.00	5.28	4.25	0.00				
49.00	5.28	4.25	0.00				
50.00	5.28	4.25	0.00				
51.00	5.28	4.25	0.00				

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 10S: Rear Area 2

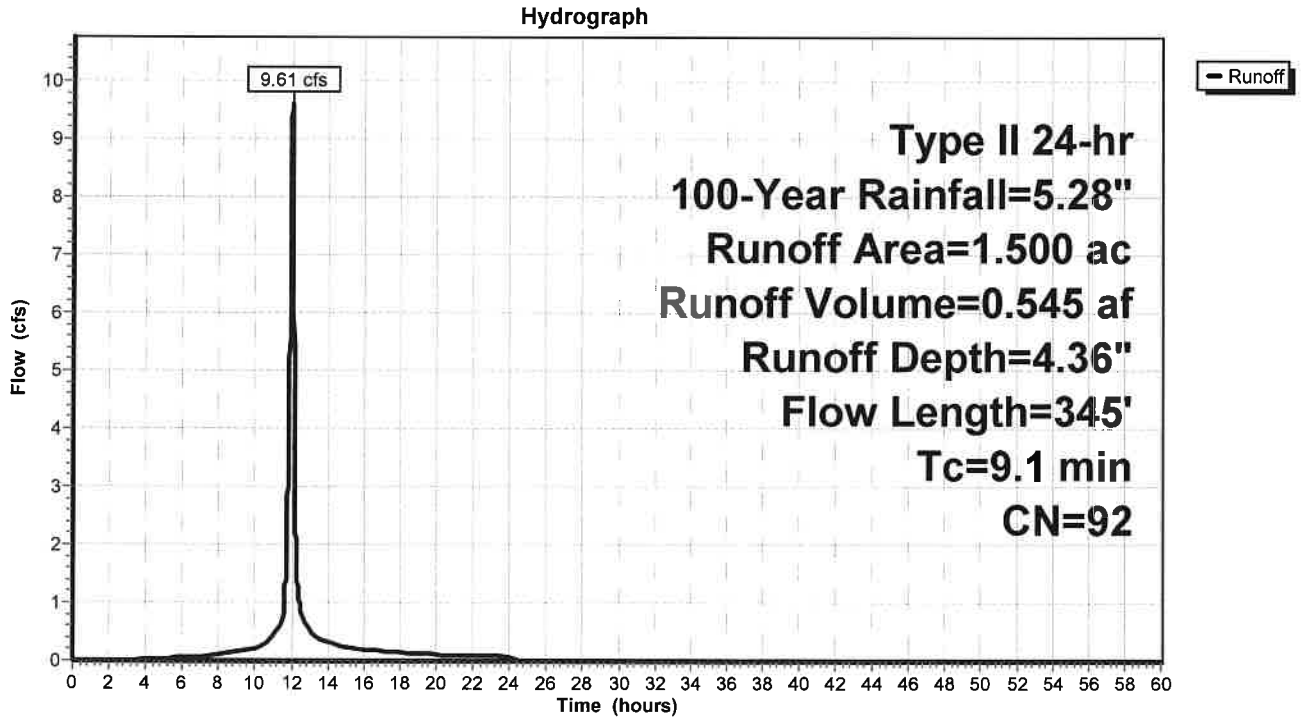
Runoff = 9.61 cfs @ 12.00 hrs, Volume= 0.545 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.18	0.00	0.00
4.00	0.25	0.01	0.02
5.00	0.33	0.02	0.03
6.00	0.42	0.06	0.05
7.00	0.52	0.10	0.08
8.00	0.63	0.16	0.10
9.00	0.78	0.25	0.16
10.00	0.96	0.37	0.22
11.00	1.24	0.59	0.42
12.00	3.50	2.64	**9.61**
13.00	4.08	3.19	0.53
14.00	4.33	3.44	0.31
15.00	4.51	3.61	0.24
16.00	4.65	3.74	0.19
17.00	4.76	3.86	0.16
18.00	4.86	3.96	0.14
19.00	4.95	4.04	0.12
20.00	5.03	4.12	0.10
21.00	5.09	4.18	0.10
22.00	5.16	4.24	0.09
23.00	5.22	4.30	0.09
24.00	**5.28**	**4.36**	0.09
25.00	5.28	4.36	0.00
26.00	5.28	4.36	0.00
27.00	5.28	4.36	0.00
28.00	5.28	4.36	0.00
29.00	5.28	4.36	0.00
30.00	5.28	4.36	0.00
31.00	5.28	4.36	0.00
32.00	5.28	4.36	0.00
33.00	5.28	4.36	0.00
34.00	5.28	4.36	0.00
35.00	5.28	4.36	0.00
36.00	5.28	4.36	0.00
37.00	5.28	4.36	0.00
38.00	5.28	4.36	0.00
39.00	5.28	4.36	0.00
40.00	5.28	4.36	0.00
41.00	5.28	4.36	0.00
42.00	5.28	4.36	0.00
43.00	5.28	4.36	0.00
44.00	5.28	4.36	0.00
45.00	5.28	4.36	0.00
46.00	5.28	4.36	0.00
47.00	5.28	4.36	0.00
48.00	5.28	4.36	0.00
49.00	5.28	4.36	0.00
50.00	5.28	4.36	0.00
51.00	5.28	4.36	0.00
52.00	5.28	4.36	0.00
53.00	5.28	4.36	0.00
54.00	5.28	4.36	0.00
55.00	5.28	4.36	0.00
56.00	5.28	4.36	0.00
57.00	5.28	4.36	0.00
58.00	5.28	4.36	0.00
59.00	5.28	4.36	0.00
60.00	5.28	4.36	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 4.31" for 100-Year event
Inflow = 14.92 cfs @ 12.06 hrs, Volume= 1.148 af
Outflow = 4.83 cfs @ 12.36 hrs, Volume= 1.105 af, Atten= 68%, Lag= 18.1 min
Primary = 4.83 cfs @ 12.36 hrs, Volume= 1.105 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 572.92' @ 12.36 hrs Surf.Area= 10,145 sf Storage= 21,772 cf

Plug-Flow detention time= 201.7 min calculated for 1.105 af (96% of inflow)
Center-of-Mass det. time= 143.6 min (1,016.5 - 873.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

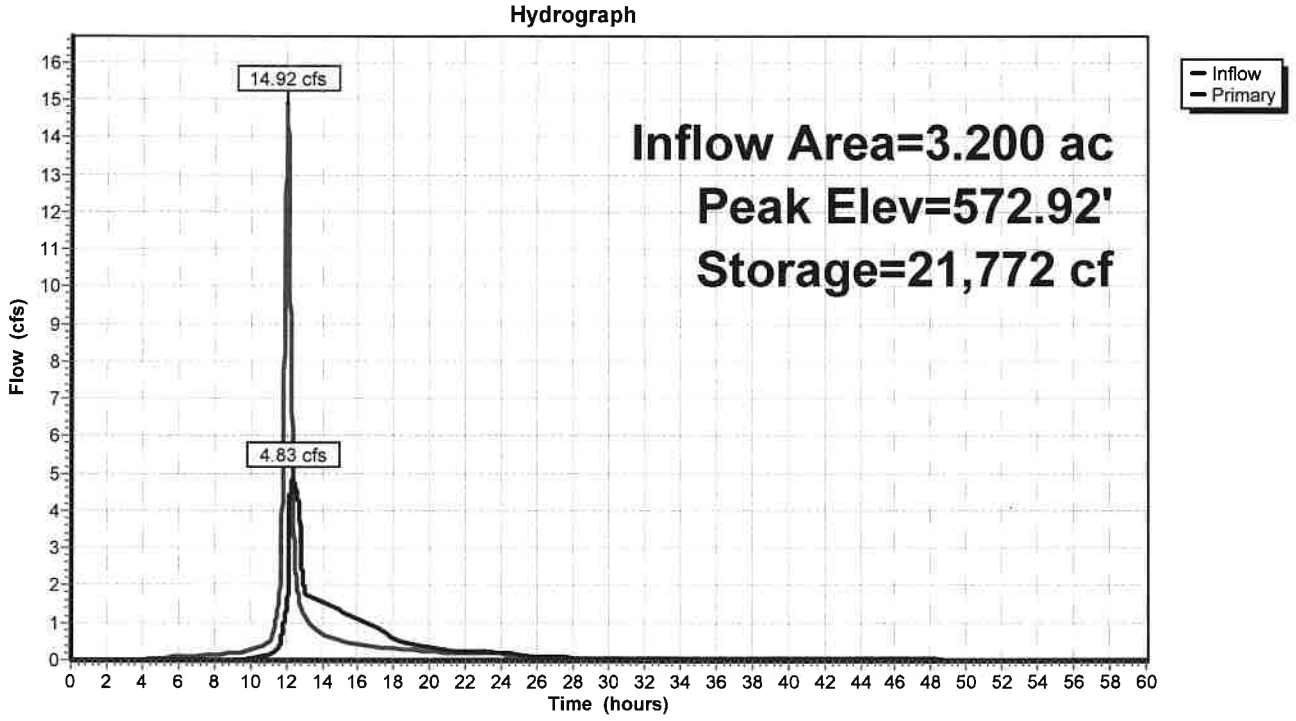
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

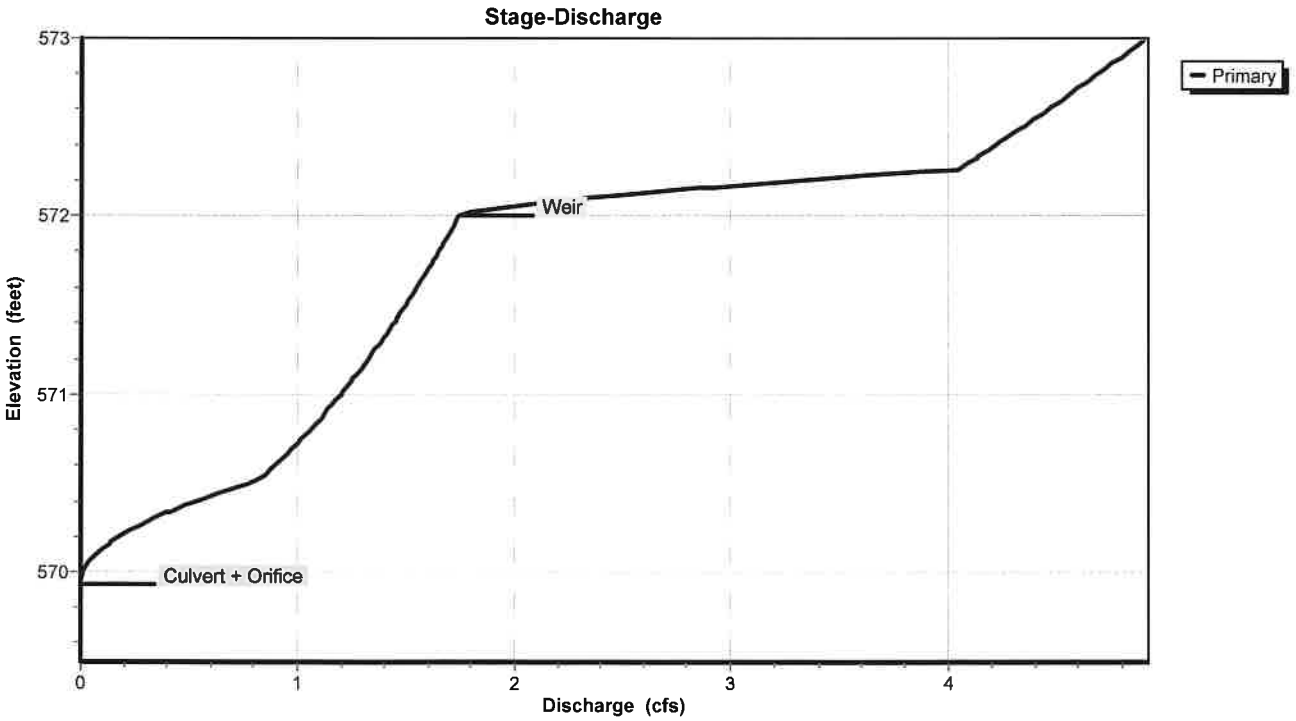
Primary OutFlow Max=4.83 cfs @ 12.36 hrs HW=572.92' (Free Discharge)
↑**1=Culvert** (Barrel Controls 4.83 cfs @ 6.16 fps)
↑**2=Orifice** (Passes < 2.12 cfs potential flow)
3=Weir (Passes < 13.95 cfs potential flow)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)

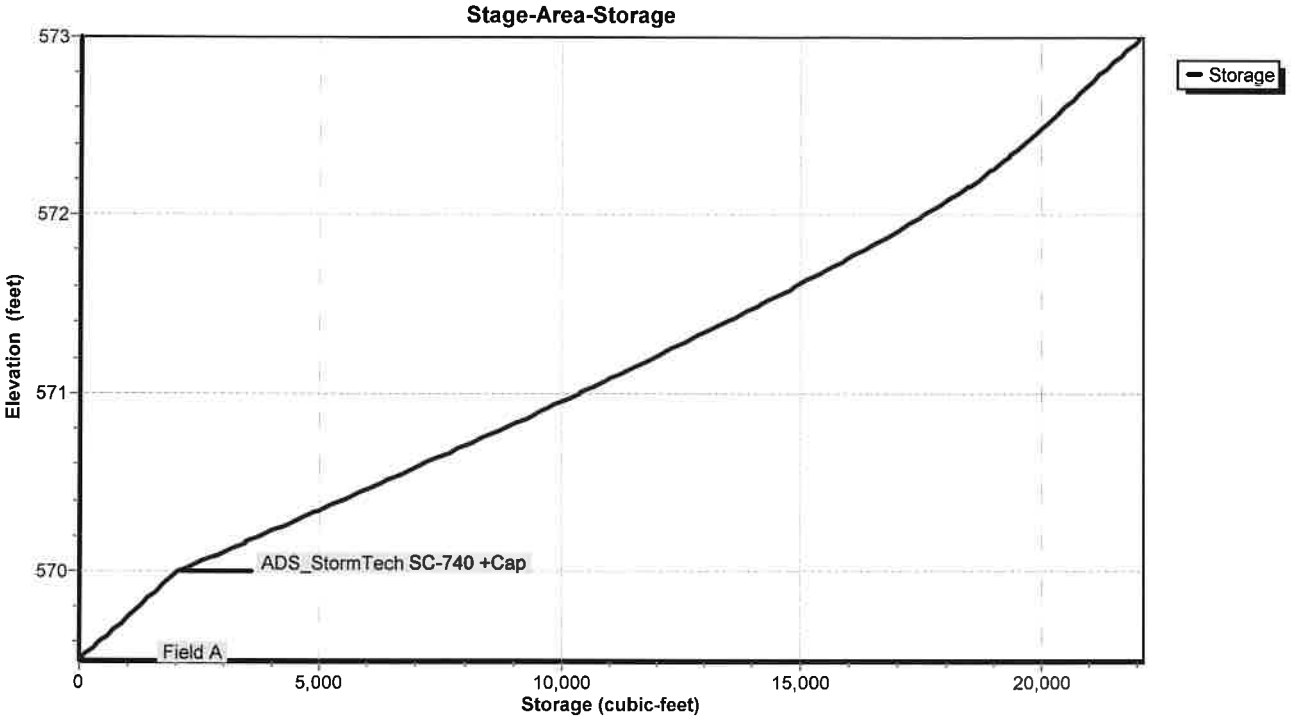


Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.01	16	569.50	0.00
6.00	0.08	340	569.58	0.00
8.00	0.13	1,076	569.77	0.00
10.00	0.25	2,364	570.04	0.03
12.00	**13.40**	**12,150**	**571.23**	**1.34**
14.00	**0.69**	**15,059**	**571.63**	**1.56**
16.00	0.41	9,280	570.86	1.10
18.00	0.31	5,592	570.42	0.57
20.00	0.23	4,514	570.29	0.32
22.00	0.20	4,084	570.24	0.24
24.00	0.19	3,896	570.22	0.21
26.00	0.03	3,188	570.13	0.10
28.00	0.03	2,846	570.09	0.07
30.00	0.03	2,675	570.08	0.05
32.00	0.03	2,579	570.06	0.04
34.00	0.03	2,522	570.06	0.04
36.00	0.03	2,484	570.05	0.04
38.00	0.03	2,457	570.05	0.03
40.00	0.03	2,436	570.05	0.03
42.00	0.03	2,420	570.05	0.03
44.00	0.03	2,407	570.04	0.03
46.00	0.03	2,395	570.04	0.03
48.00	0.01	2,341	570.04	0.03
50.00	0.00	2,216	570.02	0.02
52.00	0.00	2,105	570.01	0.01
54.00	0.00	2,020	570.00	0.01
56.00	0.00	1,963	569.98	0.01
58.00	0.00	1,923	569.97	0.00
60.00	0.00	1,895	569.97	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 4.36" for 100-Year event
Inflow = 9.61 cfs @ 12.00 hrs, Volume= 0.545 af
Outflow = 5.89 cfs @ 12.09 hrs, Volume= 0.545 af, Atten= 39%, Lag= 5.5 min
Primary = 5.89 cfs @ 12.09 hrs, Volume= 0.545 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.05' @ 12.09 hrs Surf.Area= 6,805 sf Storage= 6,150 cf

Plug-Flow detention time= 184.7 min calculated for 0.545 af (100% of inflow)
Center-of-Mass det. time= 185.0 min (965.5 - 780.5)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

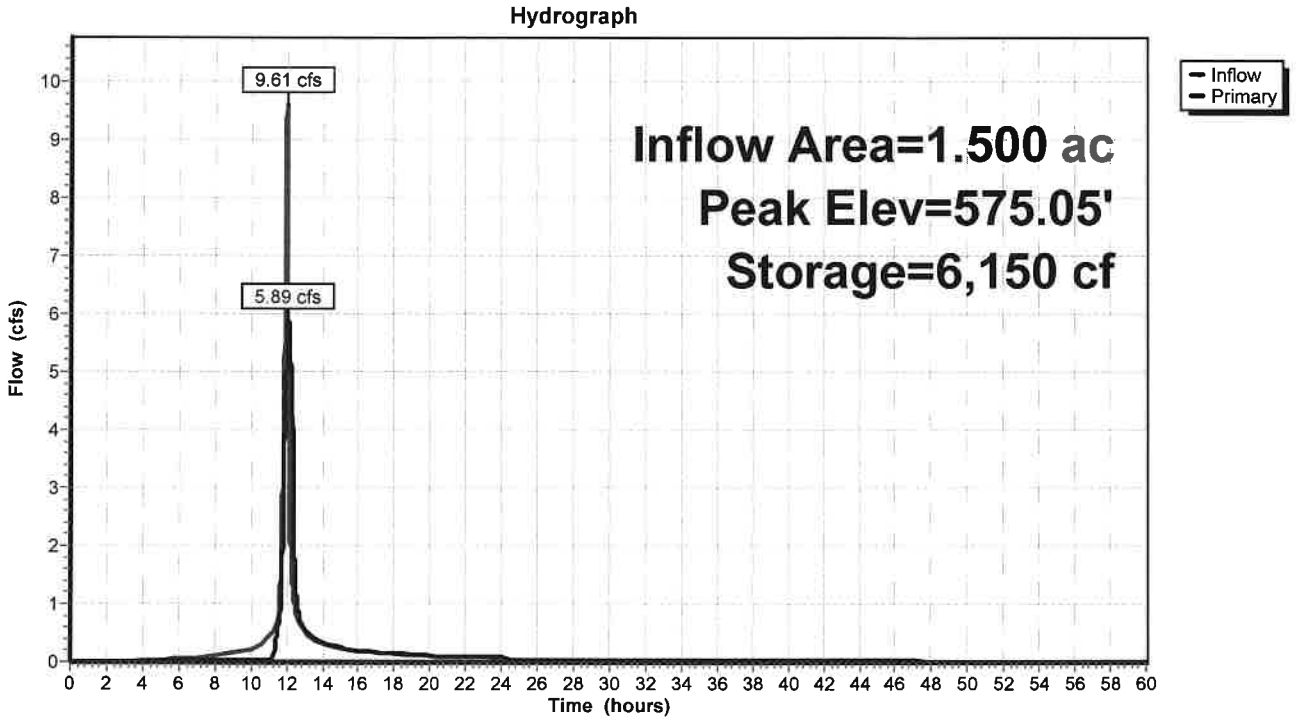
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

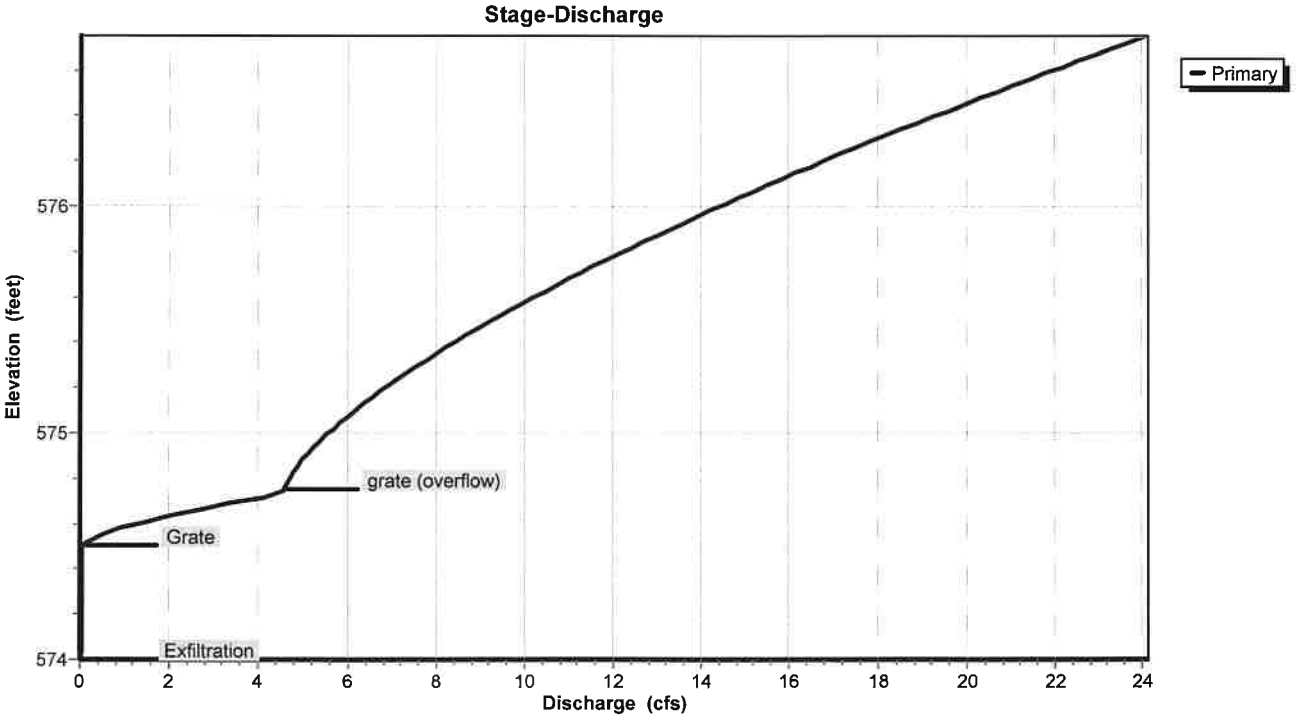
Primary OutFlow Max=5.88 cfs @ 12.09 hrs HW=575.05' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.82 cfs @ 6.14 fps)
  - **2=Grate** (Passes < 7.49 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 1.06 cfs @ 1.76 fps)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3

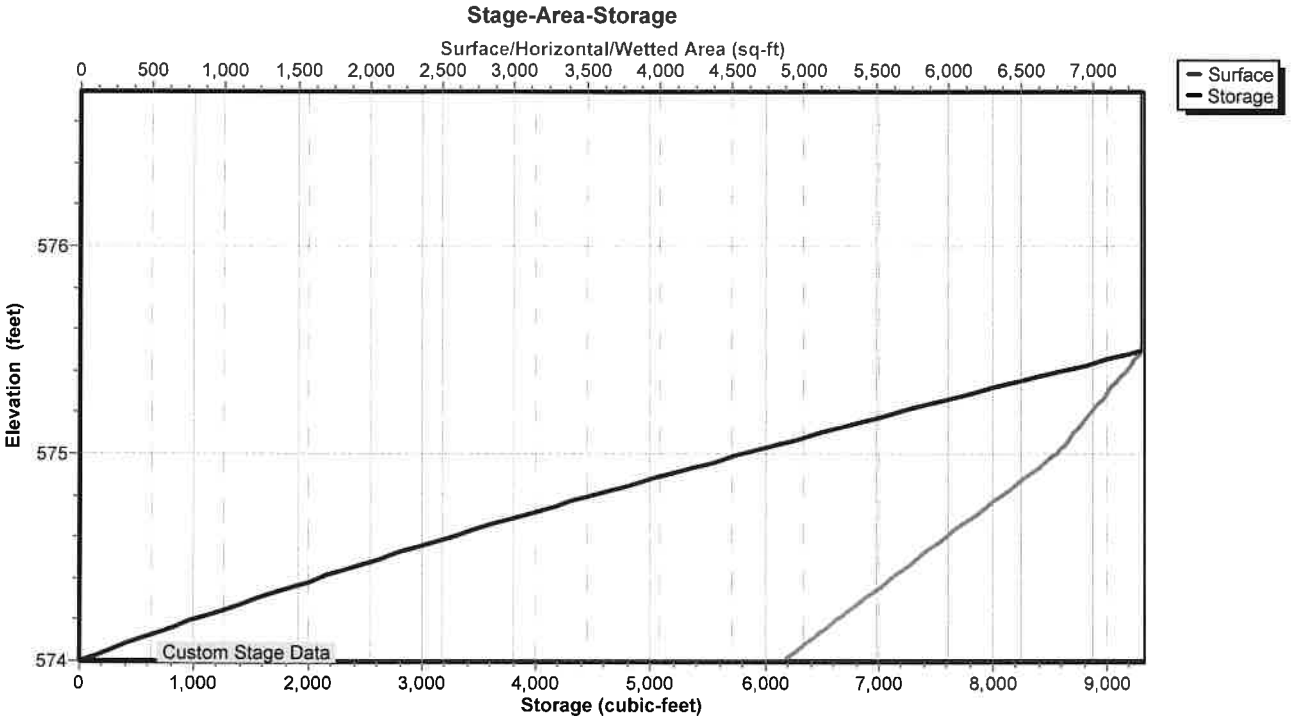


Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.02	22	574.00	0.00
6.00	0.05	149	574.03	0.03
8.00	0.10	484	574.10	0.03
10.00	0.22	1,353	574.27	0.03
12.00	**9.61**	**5,288**	**574.92**	**5.19**
14.00	0.31	**2,872**	**574.54**	**0.33**
16.00	0.19	2,803	574.52	0.19
18.00	0.14	2,769	574.52	0.15
20.00	0.10	2,732	574.51	0.11
22.00	0.09	2,719	574.51	0.10
24.00	0.09	2,712	574.51	0.09
26.00	0.00	2,463	574.47	0.03
28.00	0.00	2,219	574.42	0.03
30.00	0.00	1,979	574.38	0.03
32.00	0.00	1,743	574.34	0.03
34.00	0.00	1,511	574.29	0.03
36.00	0.00	1,283	574.25	0.03
38.00	0.00	1,059	574.21	0.03
40.00	0.00	839	574.17	0.03
42.00	0.00	624	574.13	0.03
44.00	0.00	412	574.08	0.03
46.00	0.00	204	574.04	0.03
48.00	0.00	49	574.01	0.01
50.00	0.00	11	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	1	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Green Infrastructure & Water Quality Calculations

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Version 1.7
Last Updated: 2/22/21

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	

Design Point:	1	
P=	1.00	*inch*

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	6.10	3.30	54%	0.54	11,888	
2	1.00	0.00	0%	0.05	182	
3	4.40	2.70	61%	0.60	9,620	
4	1.70	1.00	59%	0.58	3,576	
5	1.50	1.00	67%	0.65	3,539	
6						
7						
8						
9						
10						
Subtotal (1-30)	14.70	8.00	54%	0.54	**28,804**	**Subtotal 1**
Total	14.70	8.00	54%	0.54	**28,804**	**Initial WQv**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	1.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**1.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	14.70	8.00	54%	0.54	28,804
Subtract Area	-1.00	0.00			
WQv adjusted after Area Reductions	**13.70**	**8.00**	58%	0.58	28,623
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	13.70	8.00	58%	0.58	**28,623**
WQv reduced by Area Reduction techniques					182

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Total Water Quality Volume Calculation

WQv(acre-feet) = [(P)(Rv)(A)] /12

All Subcatchments						
Catchment	Total Area (Acres)	Impervious Cover (Acres)	Percent Impervious %	Runoff Coefficient Rv	WQv (ft^3)	Description
1	6.10	3.30	0.54	0.54	11888.25	
2	1.00	0.00	0.00	0.05	182	
3	4.40	2.70	0.61	0.60	9619.50	
4	1.70	1.00	0.59	0.58	3575.55	
5	1.50	1.00	0.67	0.65	3539.25	
6						
7						
8						
9						
10						
11						
12						
13						
14						
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16						
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Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	6.10	3.30	0.54	0.54	11888.25	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	54%	0.54	11,888	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		11,888	*ft^3*	
Enter Depth of Soil Media	*df*	1.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**8916**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	100	*ft*	
Filter Length	110	*ft*	
Filter Area	11000	*ft^2*	
Actual Volume Provided	14667	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?			Select Practice	
RRv	5,867			
RRv applied	**5,867**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	6,022	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Bioretention Worksheet

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor & Schueler, 1996)

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
5	1.50	1.00	0.67	0.65	3539.25	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	67%	0.65	3,539	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		3,539	*ft^3*	
Enter Depth of Soil Media	*df*	1.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**2654**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	49	*ft*	
Filter Length	100	*ft*	
Filter Area	4900	*ft^2*	
Actual Volume Provided	6533	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?		No	Select Practice	
RRv	2,613			
RRv applied	**2,613**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	926	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

(For use on HSG C or D Soils with underdrains)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Conservation of Natural Areas

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice

Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft^3)	Precipitation (in)	Description
2	1.00	0.00	0.00	0.05	181.50	1.00	

Design Elements

Is Contiguous Area ≥ 10,000 ft2?	*Yes*
Will limits of disturbance be clearly shown on all construction drawings and marked in field/project development site with structural barriers?	*Yes*
Is the Conservation area located in an acceptable conservation easement instrument that ensures perpetual protection of proposed area?	*Yes*
Does the easement specify how the natural area vegetation will be managed and boundaries will be marked?	*Yes*
Does the conservation area receive runoff from other contributing areas?	*No*
Does Conservation Area drain to a Design Point?	*No*
Is Sheet Flow to Riparian Buffer or another area based practice already being Used for this area?	*No*

Are All Criteria in Section 5.3.1 Met?	*Yes*

Area Reduction Adjustments

Subtract	***1.00***	***Acres from Total Area***
Subtract	***0.00***	***Acres from Total Impervious Area***

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A		55%
B		40%
C		30%
D	**17.40**	20%
Total Area	17.4	
Calculate the Minimum RRv		
S =	**0.20**	
Impervious =	8.00	*acre*
Precipitation	1	*in*
Rv	0.95	
Minimum RRv	**5,518**	***ft3***
	0.13	af

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	28804	*0.661*
30	Total RRV Provided	8662	*0.199*
31	Is RRv Provided ≥WQv Required?	No	
32	Minimum RRv	5518	*0.127*
32a	Is RRv Provided ≥ Minimum RRv Required?	Yes	
33a	Total WQv Treated	159626	*3.664*
34	Sum of Volume Reduced & Treated	168287	*3.863*
34	Sum of Volume Reduced and Treated	168287	*3.863*
35	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes	

Apply Peak Flow Attenuation			
36	Channel Protection	*Cpv*	
37	Overbank	*Qp*	
37	Extreme Flood Control	*Qf*	
	Are Quantity Control requirements met?		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		Total Contributing Area	Total Contributing Impervious Area	WQv Reduced (RRv)	WQv Treated
			(acres)	(acres)	cf	cf
Area/Volume Reduction	Conservation of Natural Areas	RR-1	1.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4	0.00			
	Bioretention & Infiltration Bioretention	F-5	7.60	4.30	8480	6948
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5	9.8	3.40		152678.000
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction →			1.00	0.00	182	
Totals by Volume Reduction →			0.00	0.00	0	
Totals by Standard SMP w/RRV →			7.60	4.30	8480	6948
Totals by Standard SMP →			9.80	3.40		152678
Totals (Area + Volume + all SMPs) →			18.40	7.70	8,662	159,626
	Impervious Cover √	error				

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Stage-Area-Storage for Pond 6P: WQv

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
563.00	710	0
563.15	776	111
563.30	843	233
563.45	909	364
563.60	975	506
563.75	1,042	657
563.90	1,108	818
564.05	1,181	989
564.20	1,267	1,173
564.35	1,353	1,369
564.50	1,439	1,579
564.65	1,524	1,801
564.80	1,610	2,036
564.95	1,696	2,284
565.10	1,796	2,546
565.25	1,901	2,823
565.40	2,007	3,116
565.55	2,113	3,425
565.70	2,219	3,750
565.85	2,324	4,090
566.00	2,430	4,447
566.15	2,561	4,821
566.30	2,692	5,215
566.45	2,822	5,629
566.60	2,953	6,062
566.75	3,084	6,515
566.90	3,215	6,987
567.05	3,356	7,479
567.20	3,519	7,995
567.35	3,681	8,535
567.50	3,844	9,100
567.65	4,007	9,688
567.80	4,169	10,301
567.95	4,332	10,939
568.10	4,731	11,613
568.25	5,249	12,361
568.40	5,767	13,188
568.55	6,285	14,091
568.70	6,802	15,073
568.85	7,320	16,132
569.00	7,838	17,269
569.15	8,402	18,487
569.30	8,965	19,790
569.45	9,529	21,177
569.60	10,093	22,648
569.75	10,657	24,204
569.90	11,220	25,845
570.05	11,796	27,571
570.20	12,398	29,385
570.35	13,000	31,290
570.50	13,601	33,285
570.65	14,202	35,371
570.80	14,804	37,546
570.95	15,406	39,812
571.10	16,056	42,170
571.25	16,731	44,629
571.40	17,406	47,189
571.55	18,081	49,851
571.70	18,756	52,614
571.85	19,431	55,478
572.00	20,106	58,443
572.15	20,820	61,512
572.30	21,534	64,689
572.45	22,248	67,973
572.60	22,961	71,363
572.75	23,675	74,861
572.90	24,389	78,466
573.05	25,107	82,178
573.20	25,834	85,998
573.35	26,561	89,928
573.50	27,288	93,967
573.65	28,014	98,114
573.80	28,741	102,371
573.95	29,468	106,737
574.10	32,660	111,335
574.25	37,086	116,565
574.40	41,511	122,460
574.55	45,937	129,019
574.70	50,362	136,241
574.85	54,788	144,127
575.00	**59,213**	**152,678**

WQv

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September 15, 2021
Project No. WB-21-054
(SJB Project No. BE-21-054

William T. Severyn
Severyn Development, Inc.
43 Central Avenue
Lancaster, New York 14086

Re: Geotechnical Engineering Report
Proposed Site Development
Sawyer's Landing
Sweet Home Road and Dodge Road
Amherst, New York

Dear Mr. Severyn:

Empire Geotechnical Engineering Services (Empire), is pleased to submit the enclosed Geotechnical Engineering Report for the above referenced project to Severyn Development, on behalf of SJB Services, Inc. (SJB). An electronic copy (pdf file format) of this report has also been emailed, for your use and for distribution, as appropriate.

Please contact me should you have any questions or wish to discuss this report. Thank you for considering SJB/Empire for this work and we look forward to working with you throughout the completion of this project.

Sincerely,

Empire Geotechnical Engineering Services

Wanda M. Allen, P.E.
Geotechnical Engineer

Enc.: Geotechnical Engineering Report

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Geotechnical Evaluation Report for Proposed Site Development Sawyer's Landing Sweet Home Road and Dodge Road Amherst, New York

Prepared For:

Severyn Development, Inc.
43 Central Avenue
Lancaster, New York 14086

Prepared By:

WMA Engineering, DPC dba
Empire Geotechnical Engineering Services
5167 South Park Avenue
Hamburg, New York 14075

Project No.: WB-21-054
Ref. SJB Project No.: BE-21-054
September 2021

A Woman Owned Firm

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APPENDIX B – LABORATORY TEST DATA
APPENDIX C – FILL MATERIAL AND EARTHWORK RECOMMENDATIONS
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1.00 INTRODUCTION

1.10 GENERAL

This report summarizes the results of a subsurface exploration program and geotechnical engineering evaluation completed by Empire Geotechnical Engineering Services (Empire) for the proposed Sawyers Landing Housing project planned at Sweet Home Road and Dodge Road in Amherst, New York.

The geotechnical engineering evaluation was completed by Empire at the request of and as authorized by SJB Services, Inc. (SJB), our affiliated drilling and testing company, who was retained by Severyn Development, Inc. (Severyn) to complete this work. Our evaluation and recommendations are based on a total of seven (7) test borings completed by SJB at the proposed project site. In addition, SJB competed laboratory testing on selected soil samples to aid in our evaluation.

Empire prepared this report, which summarizes the subsurface conditions encountered by the test borings and presents geotechnical engineering considerations and recommendations to assist Severyn in the development of the site.

1.20 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The proposed Sawyer's Landing Housing project site is located off the north side of Dodge Road, east of Sweet Home Road in Amherst, Erie County, New York. The entrance to the project site is located at the northeast corner of the intersection of Sweet Home Road and Dodge Road. The approximate location of the project site is shown on Figure No. 1. The project site is heavily wooded.

The proposed site development is planned to include construction of forty-nine, two-story, wood framed duplex structures. Three, four-story apartment buildings are also planned which will consist of a combination of steel and wood framed construction. The proposed housing structures are planned to be supported on a shallow spread foundation system. The duplexes may contain a basement structure. The ground floors will be constructed as slab-on-grade.

Based on the subsurface conditions encountered, it appears a shallow spread foundation system should be conducive for the lightly loaded, wood frame type buildings provided the site grade filling is limited and/or completed in a controlled manner with sufficient time provided to allow consolidation of the underlying very soft clay soils, as discussed further below. Depending on the actual wall and column loads, a deep foundation system to support the proposed four-story apartment buildings may be necessary.

The site appears to be relatively level based on the ground surface elevations (El.) obtained at the test boring locations which vary from El. 570.8 feet (B-1) and 571.8 feet (B-3 and B-5). It is our understanding the existing site grades are to be raised six feet, and therefore, if sufficient time is not allotted for consolidation of the underlying very soft clay soils due to site grade fill, then a deep foundation may also be necessary to support the duplex structures, as discussed further below.

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A Google Earth™ aerial photograph of the existing site conditions, along with the test boring locations, is presented as Figure 2. A site plan, showing the proposed site development, along with the test boring locations completed as part of this study, is presented on Figure 3.

2.00 SUBSURFACE EXPLORATION

The subsurface exploration program completed consisted of a total of seven (7) test borings, designated as B-1 through B-7. The test borings were completed by SJB between June 1st and 4th, 2021.

The test boring locations were established by Empire on a site plan provided by Severyn. The borings were located to provide general coverage of the proposed site. SJB then established the coordinates of the exploration locations using Google Earth™. The exploration locations were then located / staked in the field, using a handheld GPS instrument with slight modifications for access. The GPS coordinates of the boring locations were then obtained and recorded and used to prepare Figure 2 using a Google Earth™ aerial photograph. The aerial was then overlaid on the site plan provided by Severyn to create Figure 3. The GPS coordinates are summarized on Figure 2. The locations should be considered approximate based on the methodologies utilized.

A laser level was used to determine the ground surface elevation at the test boring locations using the top of the fire hydrant located off the east side of Dodge Road, near the northwest corner of the project site, as a benchmark. The approximate benchmark location is shown on Figure 3. The benchmark has a reported elevation (El.) of 577.69 feet.

The test borings were made with a Central Mine Equipment model 550X, rubber tire all-terrain type vehicle mounted drill rig. The borings were advanced in the overburden soils using hollow stem auger and split spoon sampling techniques until a depth of at least 25 feet below the existing ground surface. Test borings B-1 and B-4 were further advanced until auger refusal was met at depths of 58.0 feet and 59.0 feet, respectively. Split spoon samples and Standard Penetration Tests (SPTs) were taken continuously from the ground surface to a depth of 16 feet or 18 feet and then in intervals of five feet or less until boring completion or until sample spoon refusal was met at depths of 56.1 feet and 56.2 feet. The split spoon samples and SPTs were completed in general accordance with *ASTM D1586 – "Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils"*.

A relatively undisturbed Shelby tube sample of the very soft clay soils was obtained between depths of 30.0 feet and 32.0 feet from test boring B-4 for laboratory testing. The Shelby tube sample was obtained in general accordance with *ASTM D 1587 - "Standard Practice for Thin-Walled Tube Geotechnical Sampling of Soils"*.

The refusal material encountered in boring B-4 was cored using a NQ size double tube core barrel in accordance with *ASTM D 2113 – "Standard Practice for Rock core Drilling and Sampling of Rock for Site Investigation"*. Three (3) feet of the refusal material was cored at this location after reaching auger refusal.

A geologist from SJB prepared the test boring logs based on visual observation of the recovered soil and rock samples and review of the driller's field notes. The soil samples were described based on visual/manual estimation of the grain size distribution, along with characteristics such as color,

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relative density, consistency, moisture, etc. In addition, the Unified Soil Classification System (USCS) group symbols were also established and are presented on the logs for the soil types encountered. The recovered core sample was also described, including characteristics such as color, rock type, hardness, weathering, bedding thickness, core recovery and rock quality designation (RQD). The test boring logs are presented in Appendix A, along with general information and a key of terms and symbols used to prepare the logs.

3.00 LABORATORY TESTING

Selected recovered soil samples from the test borings, including the clay soil collected from the Shelby tube sample were tested in SJB's geotechnical testing laboratory to confirm soil classifications and provide index properties to aid in our recommendations. The laboratory testing program included the following tests:

- Moisture content testing in general accordance with *ASTM D 2216 – "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass"*;

- Grain size analysis in general accordance with *ASTM D 6913 – "Standard Test Method for Particle-Size Distribution (Gradation) of Soils using Sieve Analysis"*;

- Liquid limit, plastic limit and plasticity index of cohesive fine grained soil samples in accordance with *ASTM D 4318 – "Standard Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils"*;

- Torvane shear and pocket penetrometer testing of undisturbed portions of the clay soil extracted from the Shelby tube sample to provide an estimated indication of the undrained shear strength of the clay soil. The torvane shear testing was performed in general accordance with *ASTM D 4648 – Standard Test Method for Laboratory Miniature Vane Shear Test for Saturated Fine-Grained Cohesive Soils*;

- Consolidation testing of an undisturbed portion of the clay soil extracted from the Shelby tube sample in accordance with *ASTM D 2435 – "Standard Test Method for One-Dimensional Consolidation Properties of Soils Using Incremental Loading";* and

The results of the laboratory test data are summarized further below and are presented in Appendix B.

4.00 SUBSURFACE CONDITIONS

The general stratigraphy encountered in the test borings consisted of surface topsoil followed by indigenous sand, silty clay and gravel soil deposits overlying Shale rock. Man placed fill soils were not apparent at the test boring locations. However, it should be expected that fill soils and/or possible reworked indigenous soils will be encountered near the adjacent, previously developed properties. The soil and bedrock stratigraphy encountered, and the groundwater conditions observed are described in more detail below and on the test boring logs in Appendix A.

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The upper indigenous soils consisted predominately of brown to gray, fine to coarse sand with varying amounts of silt, clay and gravel. Beneath the sand soils, at depths varying from about 2 feet to 8 feet, brown to brown-gray, silty clay soil deposits were encountered. The silty clay soils extend to boring completion at the shallower test boring locations. At test boring locations B-1 and B-4, brown to gray, fine gravel intermixed with varying proportions of fine-coarse sand and silty clay was recovered in the split spoons collected below depths of about 40 feet. The indigenous soils are classified as CL, SC-SM, SM-SC, SP-SW, GC-GM and GP group soils using the Unified Soil Classification System (ASTM D2488).

The SPT "N" values obtained in the indigenous silty clay soil deposits ranged from "w.o.h. - weight of hammer" (i.e. the sample spoon was advanced with only the weight of the drop hammer and drill rods applied statically to the sample spoon) to 22, indicating the cohesive soils vary from a very soft to very stiff consistency. The medium to very soft consistency clay soils were encountered generally at and below a depth of about 10 to 12 feet at the test boring locations. The relative density of the upper sand soils varies from loose to firm based on SPT "N" values ranging from 5 to 25. The underlying, gravel soil deposits are of a firm to very compact relative density based on SPT "N" values ranging from 21 to greater than 50. Sample Spoon Refusal – "REF" (i.e. 50 blows to advance the split spoon with 6-inches or less of penetration) was also encountered within the gravel soil deposits which can be an indication that some cobbles and boulders are present.

Auger refusal was encountered in test borings B-1 and B-4 at depths of 58.0 feet and 59.0 feet, respectively, corresponding to El. 512.8 feet and El. 512.6 feet. The refusal material encountered at boring B-4 was cored after auger refusal was met.

The upper 6-inches or so of the material recovered consisted of brown, fine-coarse sand with some silty clay and little fine gravel. Beneath the sand, gray Shale rock was recovered. The Shale rock is described as gray, hard, highly weathered, laminated to bedded. Both natural and mechanical fractures were noted within the rock core recovered. The core recovery for the Shale rock was 83%, while the rock quality designation (RQD) value was 14%, indicating the recovered rock core has a very poor rock mass quality.

Water level measurements were made in the test borings at the completion of overburden drilling and soil sampling and are noted on the subsurface exploration logs in Appendix A. Freestanding water was present in borings B-1 and B-4 at depths of about 6 feet and 10.8 feet, respectively. Freestanding water was not present in the remaining test holes immediately following the completion of drilling operations. Given the fine grained indigenous clay soils present, which can partially seal the sides of the boreholes, it appears groundwater did not have sufficient time to accumulate or fully stabilize in the boring holes within the time that had elapsed from the completion of drilling operations and the time of the observations/measurements. It appears that the clay soils are saturated at a depth of about 10 feet and below, based on the moist-wet to wet nature and relatively softer consistency of the clay soils obtained at and below this depth.

In addition, based on the moist-wet to wet nature of the upper sand soil deposits, it should be expected that some zones of perched or trapped groundwater could be present at various times and locations in the upper more permeable indigenous sand soils, which overlie the less permeable clay soil deposits. Perched groundwater conditions can be particularly more prevalent following heavy or extended periods of precipitation and during seasonally wet periods.

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The installation of a groundwater observation well(s) would help to better define the groundwater conditions present on the site. It should be expected that groundwater conditions could vary with location and with changes in soil conditions, precipitation and seasonal conditions, including site drainage conditions.

5.00 LABORATORY TESTING RESULTS

The grain size analyses of the samples obtained at test boring locations B-5 and B-7 generally confirmed our visual soil classifications as summarized on test boring logs included in Appendix A.

The moisture content of the silty clay soil samples tested from test boring B-4, between depths of about 8 feet to 37 feet, generally increase with depth from 23.9% to 48.9% The moisture content, liquid limit, plastic limit and plasticity index of the silty clay soil samples tested from the borings are as follows:

Summary of Moisture Contents and Atterberg Limits

Boring	Sample Depth	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
B-1	10’-12’	39.4 %	44	18	26
B-4	14’-16’	40.0 %	36	17	19
B-4	30’-32'	46.5 %	49	23	26

The plasticity indices indicate the silty clay deposits vary from a medium (plasticity index less than 20) to high plasticity (plasticity index greater than 20).

Consolidation testing and the undrained shear strength (Torvane and Pocket Penetrometer values) of the Shelby tube sample obtained within the very soft clay soil (B-4, 30’-32’), suggest that these soil deposits have a pre-consolidation pressure in the range of about 0.7 to 1.0 tsf. Based on the current overburden stress, the stratum of soft to very soft silty clay is considered to be normally consolidated. Accordingly, the settlement from placement of the site grading fill load is expected to the result in predominately virgin consolidation within this stratum.

The modified recompression index ($C_r/1+e_o$), obtained from the consolidation test was 0.026 and the modified compression index ($C_c/1+e_o$) was 0.141. The time rate coefficient of consolidation within the virgin loading range of around 1.5 tsf was about 0.05 ft^2/day.

The Torvane shear strength and Pocket Penetrometer unconfined compressive strength tests performed on the Shelby tube samples resulted in an undrained shear strength in the range of 180 (psf) to 280 psf. The Torvane and Pocket Penetrometer tests are considered to be a crude test indicator and therefore may not be fully representative of the undrained shear strength.

Refer to the laboratory test data presented in Appendix B for additional information.

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6.00 GEOTECHNICAL CONSIDERATIONS AND RECOMMENDATIONS

6.10 GENERAL

Development of the proposed Sawyer's Landing project site will be impacted primarily by the very soft to medium clay soils encountered at and below a depth of about 10 to 12 feet. These soil conditions are considered marginal for the support of building structures on a spread foundation system, particularly if heavier structure loads would be planned, such as associated with multiple story steel frame and concrete/masonry buildings and large spans. Support of the relatively lightly loaded, wood framed building structures, as currently planned, however, can be accomplished using a spread foundation system, provided a relatively low bearing pressure [1,250 pounds per square foot (psf)] is used for the spread foundation design and that net site grade fills are limited to around 1 to 2 feet or less.

In addition, foundations should also not be designed to bear at grades lower than about El. 564 feet to provide sufficient separation from the underlying very soft to medium clay soils with regard to bearing capacity and settlement. Continuous wall footings should also not be greater than 2.5 feet in width, and column footings should not be greater than 5.0 feet in width, in order to limit potential bearing/shearing failure and excess settlement. Accordingly, the wall and column loads would be limited to about 3.1 kips per square feet and 31 kips, respectively.

In all cases a minimum of 30-inches of separation between the bottom of the footings and the very soft to soft clay soils will need to be maintained. Accordingly, if the foundations are to be constructed below an elevation of about 564 feet, corresponding to a depth of about 7 to 8 feet below existing site grades, the existing soils would need to be removed a minimum of 30-inches and replaced with Engineered fill (i.e. compacted Structural Fill or flowable fill), to provide the necessary separation between the bottom of the footings and the softer clay soils.

As mentioned above, currently about 6 feet of site grade fill is planned for site development. Therefore, it does not appear any of the building foundations will bear below about El. 564 feet. However, the proposed site grading should be reviewed for each individual building to determine if undercutting maybe required. Additional test borings, or excavation of test pits at the time of construction, could be completed to determine the actual depth/elevation of the medium to very soft clay soils as compared to the proposed bearing grade elevations, at each building location where footings may bear near El. 564 feet. In addition, due to the upper generally loose soil conditions in correlation with the poorly graded silty sand soils, which are highly sensitive to disturbance and strength degradation when groundwater is present, it should be anticipated that the foundation bearing grades may need to be undercut in localized areas to establish a firm and stable subgrade for the foundations. The subsurface conditions between and away from the test boring locations are also expected to vary and may require adjustments in the suitable subgrade elevation based on actual conditions encountered at the time of construction. Accordingly, close inspection of the foundation bearing grades by qualified geotechnical personnel should be required at the time of construction.

Placement of subgrade fill to raise site grades, as anticipated, will need to proceed sufficiently ahead of foundation and slab on grade construction. Currently, net grade increases of about 6 feet of fill are planned across the proposed project site.

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The surcharge weight of approximately 2 feet of fill is expected to result in a total of around 2-inches of consolidation settlement within the underlying soft to very soft clay soil deposits. It is estimated that 6 feet of fill could potentially result in a total of about 5 to 6-inches of consolidation settlement. The settlement from the surcharge weight of the site grading fill placement will be independent of the additional settlement (i.e. about ¾-inch) that will occur from the duplexes' structural loads.

It is anticipated that where site grade increases within an individual building structure is generally uniform, the settlement should be relatively uniform and therefore would have minimal impacts on the building foundations and ground floor slabs. However, if the site grade fill within an individual building would vary from about nil to 2 feet, differential settlement on the order of 2-inches could occur and therefore may result in cracking and distortion of the building foundations and floor slabs. The Structural Engineer should be consulted to determine a tolerable range for differential settlement.

The time rate for about 60% to 70% of the consolidation settlement to occur from the site filling is estimated to be about 3 to 4 years. "Surcharging" the building site(s) to decrease the time allotted for consolidation of the clay soils could be considered. Accordingly, the site grade fill could be overbuilt 4 to 5 feet above the finished floor grades to provide some additional surcharging to further induce, and help accelerate, the settlement. Any additional fill should extend out about 20 feet from the building limits and should then be removed a few weeks prior to the foundation and building construction. The site grade fill can proceed following proper preparation of the subgrades as summarized in Section 6.70.3. All fill placement and compaction should be closely monitored and tested on a "full-time" basis by qualified geotechnical personnel, as recommended in Appendix C.

The installation of wick drains could also be considered to shorten the time period to allow consolidation settlement to occur. A settlement monitoring program (i.e. installation of settlement plates and piezometers) should be implemented for the fill construction to monitor the settlement and confirm that the settlement has generally stabilized. This should be implemented especially in any areas at which the amount of fill placement within an individual building will vary by more than 2 feet to limit differential settlement effects.

If the project schedule cannot accommodate a preloading waiting period, load compensation with geofoam blocks or depressed raft foundations may be a possible alternative. In this way, the geofoam block or raft foundation would be used in place of normal weight fill and used to replace existing soils as necessary such that there is no increase in net load beneath the foundations and floor slabs. Lightweight aggregate fill may also be an option to mitigate settlement.

Alternatively, support of the building foundations and floor slabs (structural floor) on a deep foundation system could be considered. However, negative skin friction (downdrag forces) due to the site filling settlement would need to be considered in the design of deep foundations. It should be anticipated that on-going maintenance of the pavement areas and underground utilities may also be necessary due to consolidation of the underlying subgrade soils if these areas are not preloaded.

Empire can be consulted to further assist in planning the site grade fill options (surcharging/wick drains/settlement monitoring plates and piezometers) to ensure the majority of the consolidation settlement will occur prior to foundation and slab on grade floor construction, or the options for use of a deep foundation system.

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More detailed recommendations to assist in planning for site development and design of building foundations and slab-on-grade floor construction are provided in the following report sections.

6.20 SPREAD FOUNDATION DESIGN

Spread foundations should bear on suitable, relatively undisturbed, indigenous soil subgrades or they can bear on Engineered Fill (i.e. compacted Structural Fill or Flowable Backfill) placed over suitable indigenous soil subgrades. Suitable indigenous soil bearing grades should consist of generally stiff, silty clay and firm silty sand soil deposits, which are free of topsoil, fill, organics, loose, soft, wet, "mucky" or otherwise deleterious conditions.

Suitable indigenous bearing subgrades at the test boring locations were generally encountered at a depth of about 2 feet below existing site grades. However, as noted above, foundations should not be designed to bear below about El. 564 feet, corresponding to a depth of about 7 to 8 feet below existing site grades, due to influence of the softer clay soils with regard to bearing capacity and settlement.

In areas where the proposed foundations will bear on site grade fill, it is recommended the final 1.5 feet of fill consist of Structural fill. If Structural Fill is placed beneath spread foundations, it should extend beyond the foundation limits a horizontal distance equal to at least 0.75 times the thickness of the Structural Fill layer beneath the foundation. Excavations, therefore, will need to be planned and sized accordingly. Recommendations for Structural Fill material along with its placement and compaction are presented in Appendix C. An underlying stabilization geotextile (i.e. Mirafi 500X or suitable equivalent) should be placed beneath the compacted Structural Fill material.

Flowable backfill material, if used as Engineered fill beneath foundations, should consist of a non-swelling cement - fine aggregate type material and should have a minimum 28-day compressive strength (f'c) of 250 pounds per square inch (psi). The flowable backfill should extend at least 12 inches horizontally beyond the foundation limits for its entire depth.

Spread foundations constructed on suitable indigenous soil bearing grades or on properly constructed Engineered Fill materials placed over the suitable soil bearing grades can be sized based on a maximum net allowable bearing pressure of 1,250 psf. However, it is recommended that continuous wall footers not exceed 2.5 feet in width and isolated column foundations not exceed 5.0 feet in width.

Interior building foundations should be embedded a minimum of 1.0 foot below the finished floor elevation to develop adequate bearing capacity. Exterior foundations should be embedded a minimum of 4.0 feet below finished exterior grades for frost protection. All foundations, however, must bear on suitable bearing grades in accordance with our recommendations.

It is estimated that spread foundations sized and properly constructed in accordance with our site preparation recommendations would undergo normal consolidation settlement of around ¾-inch. The foundation settlement is independent from the settlement due to the surcharge weight of site grade fill, as discussed above.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

6.30 SLAB-ON-GRADE FLOOR DESIGN

The slab-on-grade floor for the proposed buildings can be constructed over the existing soil subgrades or on properly placed and compacted site grade fill, which is placed to raise site grades following proper subgrade preparation, as outlined in Section 6.70.3. If any organic soils are present at the subgrade elevation, they should be removed and replaced with compacted Suitable Granular Fill or Structural Fill as described in Appendix C.

A minimum of 8 inches of Subbase Stone is recommended beneath the lightly loaded floor slabs. The subbase stone should be increased to 12 inches where heavier loading conditions are anticipated (i.e. mechanical rooms, storage areas, etc.). Recommendations for Subbase Stone are presented in Appendix C. A suitable stabilization/separation geotextile, such as Mirafi 500X, should be placed over the existing soil subgrades prior to placement of Suitable Granular Fill to raise the site grades, where necessary, or the subbase stone layer.

The floor slabs may be designed as slab-on-grade using a modulus of subgrade reaction of 150 pounds per cubic inch (pci) at the top of the subbase layer. It is recommended that the slab-on-grade floors be constructed such that they float on the subbase and subgrades and are not structurally connected to, or resting directly on, perimeter walls or column footings in order to limit potential differential settlement effects, unless the slab / wall or column interface is designed with sufficient reinforcement to bridge potential differential settlement effects at these interfaces.

It is noted that the above subbase stone thicknesses are not designed for carrying construction vehicle loads. Therefore, it may be desirable for the Contractor to temporarily increase the Subbase Stone thickness within the building pad areas to provide a suitable working surface to stage the construction, carry construction vehicle loads and protect the underlying subgrades. This will be particularly important if construction proceeds during seasonally wet periods. The additional subbase stone material could then be removed in preparation for the actual floor construction and re-used as foundation backfill, pavement subbase, or as otherwise determined appropriate.

6.40 LATERAL EARTH PRESSURES FOR BELOW GRADE WALL DESIGN

The below grade walls of the basement structure should be designed based on lateral earth pressures caused by the load of backfill against the wall and the surcharge effects from any permanent or temporary loads. In addition, due to the possible presence of perched groundwater conditions, foundation drains to relieve potential hydrostatic pressure against the walls, along with damp proofing, as discussed below, should be incorporated into the design. Alternatively, basement structures could be designed to resist potential full hydrostatic pressure. In such case it should also be waterproofed.

Below grade walls should be designed to resist “at rest” lateral earth pressure computed on the basis of an “equivalent fluid unit weight” of 65 pounds per cubic foot (pcf). This is based on the assumption that suitable perimeter exterior foundation drainage will be provided, and the wall backfill beyond the drainage system is a Suitable Granular Fill or Structural Fill, as described in Appendix C.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

6.50 FOUNDATION DRAINS

Depressed foundation walls should include a foundation drainage system to intercept any perched groundwater and relieve potential hydrostatic pressures from developing against the walls. The foundation drainage system should be properly designed, installed and maintained for long-term performance and should drain to a sump and pump system or gravity drain to a down slope relief point. The foundation drainage system design should include the following:

1. It is recommended that the exterior of the foundation walls be coated with an appropriate damp proofing material.

2. The foundation drainage system should include a drainage/separation geotextile installed around drainage stone, which surrounds a slotted under-drainpipe. The drainage stone should be sized in accordance with the pipe slotting. A crushed aggregate conforming to NYSDOT Standard Specifications Section 703-02, Size Designation No. 1 (½-inch washed gravel or stone) is generally acceptable for slotted under-drainpipe. The foundation under-drainpipes should be set at a depth of about 1 foot below the top of the finish floor grade.

3. A pervious granular backfill or a suitable geosynthetic drainage composite (i.e. Miradrain, Delta MS, etc.) should be placed against the foundation wall, above the drainage system, to allow infiltration to the drainage system. Concrete Sand, which meets the minimum requirements of NYSDOT Standard Specifications Section 703-07 (100 percent passing 3/8 inch sieve to maximum of 3 percent passing a No. 200 sieve), is generally acceptable as pervious granular backfill. Crusher run stone Structural Fill is also acceptable. The pervious granular backfill against the wall should be a nominal 2 feet in width and should extend to about 1 to 2 feet below the finished grade surface, where it may be capped off with the on-site soil.

6.60 SEISMIC DESIGN CONSIDERATIONS

Based on the subsurface conditions encountered in the test borings, the proposed Sawyer's Landing Housing project site should be classified as Seismic Site Class "E" in accordance with ASCE 7-16, Table 20.3-1, as referenced in the 2020 Building Code of New York State (IBC 2018). Therefore, seismic design can be based on this seismic site classification.

The spectral response accelerations at the project site were obtained by Empire using the SEAOC / OSHPD web site application https://seismicmaps.org/. Using the site location, the spectral response accelerations are 0.169g for the short period (0.2 second) response (S_S) and 0.045g for the one second response (S_1). For design purposes, these spectral response accelerations must be adjusted for the Seismic Site Class "E" soil profile determined for the project site.

Accordingly, the adjusted spectral response accelerations for Site Class "E" are as follows:

- Short Period Response (S_{MS}) - 0.406g
- 1 Second Period Response (S_{M1}) - 0.190g

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

The corresponding five percent damped design spectral response accelerations (S_{DS} and S_{D1}) are as follows:

- S_{DS} - 0.271g
- S_{D1} - 0.126g

6.70 SITE PREPARATION AND CONSTRUCTION

6.70.1 Construction Dewatering

It is anticipated permanent groundwater conditions are present at a depth of about 8 to 10 feet below existing site grades. Therefore, deeper utility excavations may encounter permanent groundwater conditions. It is anticipated that shallow excavations will encounter perched groundwater. Accordingly, construction dewatering will be required for surface water control and for excavations, which encounter groundwater conditions.

Surface water should be diverted away from and prevented from accumulating on exposed soil subgrades. The exposed soil subgrades will be susceptible to strength degradation in the presence of excess moisture. Surface water should be controlled with diversion berms, swales, and proper site grading.

Dewatering should be implemented in conjunction with excavation work such that the work generally proceeds in the dry. Groundwater levels should be maintained at least 1 to 2 feet below the bottom of the foundation excavations. It is anticipated that diversion berms, proper site grading, and sump and pump methods of dewatering will be sufficient to control surface water and perched groundwater conditions, if encountered. Placement of a working mat of drainage stone, in the bottom of the excavation, in conjunction with sumps and pumps placed in the drainage layer, will also aid in dewatering these excavations. Surface water and groundwater dewatering plans should include implementation of measures to control erosion, sedimentation and the migration of soil fines.

6.70.2 Excavation and Foundation Construction

All topsoil, organics, disturbed soils, and any soft, loose, wet or otherwise deleterious indigenous soil material, beneath the proposed foundation bearing grades, should be undercut and removed. Resulting excavations should be backfilled with controlled Structural Fill or flowable backfill.

Excavation to the proposed foundation bearing grades should be performed using a method, which reduces disturbance to the indigenous soil bearing grades, such as a backhoe equipped with a smooth blade bucket. The proposed foundation bearing grades should be observed and evaluated by qualified geotechnical personnel, prior to placement of Engineered Fill and/or the foundation. Any placement and compaction of Structural Fill beneath foundations should be observed and tested by qualified personnel.

All soil bearing grades for foundation construction should be protected from precipitation and surface water. Water should not be allowed to accumulate on the soil bearing grades and the bearing grades should not be allowed to freeze, either prior to or after construction of foundations. If bearing grades are not protected and degrade, they must be undercut/removed accordingly.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

After completion of the foundation construction, the excavations should be backfilled as soon as possible and prior to construction of the superstructure. It is recommended that the foundation excavations, within slab-on-grade and pavement areas, be backfilled with a Suitable Granular Fill or Structural Fill, as described in Appendix C.

6.70.3 Subgrade Preparation for Slab-On-Grade Construction

The site preparation work should be performed during dry periods to minimize potential degradation of the subgrade soils and undercuts which may be required to establish a stable base for construction. It should be understood that the existing subgrade soils will be sensitive and can be expected to degrade and lose strength when they are wet and disturbed by construction equipment traffic.

Accordingly, efforts should be made to maintain the subgrades in a dry and stable condition at all times and minimize construction traffic directly over these soils. These efforts should include installation of drainage swales and underdrains (i.e. “French drains”) to intercept and divert surface runoff and groundwater away from the construction areas, proper grading and sloping of the subgrade and “sealing” of the surface, at the end of each day or when rain is anticipated, with a smooth drum roller to promote runoff, and restricting construction equipment traffic from traveling directly over the subgrade surfaces, especially when they are wet.

All trees, stumps, tree root matter, vegetation, topsoil, and any other deleterious materials within the proposed slab-on-grade and pavement areas should be removed. It is noted that the upper surface soils (i.e. above a depth of about 2 feet) are relatively loose/soft. Standing water was also noted across the project site. In addition, organics were noted within the upper soil samples. Therefore, it should be anticipated that stripping the site beyond the topsoil layer will be necessary to remove the soft/wet and/or organic soils present. As noted, the site preparation work should be performed during seasonal dry periods to minimize potential degradation of the subgrade soils and undercuts which may be required to establish a stable base for construction. In addition, the surface soils are considered to have generally very poor drainage characteristics, and therefore, proper grading of the project site should be considered during the development of the project.

Following stripping of the surface materials and underlying organic indigenous soils, the exposed subgrades should be proof-rolled. The proof-rolling should be performed, prior to the any overlying fill placement, using a smooth drum roller weighing at least 10 tons. The roller should be operated in the static mode and complete at least two (2) passes over the exposed subgrades. The subgrade proof-rolling should be done under the guidance of, and observed by, qualified geotechnical personnel. It may be necessary to waive the proof-rolling requirement if wet subgrades are present. Any undercuts, which may be required as the result of the proof-rolling, should be performed based on guidance and evaluation of the conditions of qualified geotechnical personnel.

The placement of an initial lift of oversized stone fill material (i.e. "6-inch minus crusher run stone", No.3 & No.4 Stone, etc.), encased in stabilization geotextile (i.e. Mirafi 500X or suitable equivalent) top and bottom, as appropriate, can also be used to help stabilize subgrades prior placement of site grade fil or subbase material, if any of the existing subgrades are found to be in a soft/wet condition.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Subgrade fill placement may proceed following preparation and acceptance of the existing subgrades. As mentioned above, the fill required to raise site grades in the proposed building areas will need to proceed sufficiently prior to the foundation construction. This would allow the settlement associated with the site grade increases to occur prior to the foundation construction and thus minimize post construction foundation settlement. Suitable Granular Fill or Structural Fill, as described in Appendix C can be used as subgrade fill to raise the site grades, beneath the Subbase Stone course for slab-on-grade and pavement construction. Fill containing topsoil, organics, man-made rubble constituents, and otherwise unsuitable soils should not be used for subgrade fill within the building and pavement areas. All fill placement and compaction should be closely monitored and tested on a "full-time" basis by qualified geotechnical personnel.

In general, depending on the time of year (predominantly summer months), the on-site soils can be used for constructing the fills for establishing the building pad and pavement areas, provided they can be properly placed and compacted in a controlled manner and to a stable well engineered condition. However, it should be expected that the use of the fine grained on-site soils for site filling will be difficult to work with (i.e. dry for proper compaction) versus an imported Suitable Granular Fill or Structural fill, particularly during seasonally inclement or wet weather, which could delay construction.

In all cases, subgrade fill should be placed to a stable condition and should not "pump" or show signs of movement or significant deflection (i.e. unstable conditions) as it is being constructed. The contractor should take precautions to limit construction traffic over the subgrades. Any subgrades, including existing soil subgrades or new subbase, which become damaged, rutted or unstable should be undercut and repaired as necessary prior to placement of the subbase course or pavement. The fill subgrades should also be properly graded, drained and protected from moisture and frost. Placement of fill over wet, soft, snow covered, or frozen subgrades is not acceptable.

7.00 CONCLUDING REMARKS

This report was prepared to assist in development of the Sawyers Landing Housing Project planned at Sweet Home Road and Dodge Road in Amherst, New York. The report has been prepared for the exclusive use of Severyn Development, Inc. and other members of the design team, for specific application to this site and this project only.

The project information and recommendations presented in this report were prepared based on Empire's understanding of the proposed project and the subsurface exploration work completed by SJB Services, Inc. as described herein, and through the application of generally accepted soils and foundation engineering practices. Empire should be consulted with any questions regarding the interpretation of the findings of our work, and/or the geotechnical considerations and recommendations presented. In addition, the recommendations presented are provided as guidance to the designer and should not be considered a project specification. No warranties expressed or implied are made regarding the subsurface conditions present, or by the conclusions, opinions, recommendations or services provided.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Additional information regarding the use and interpretation of this report is presented in Appendix D.

Respectfully Submitted:

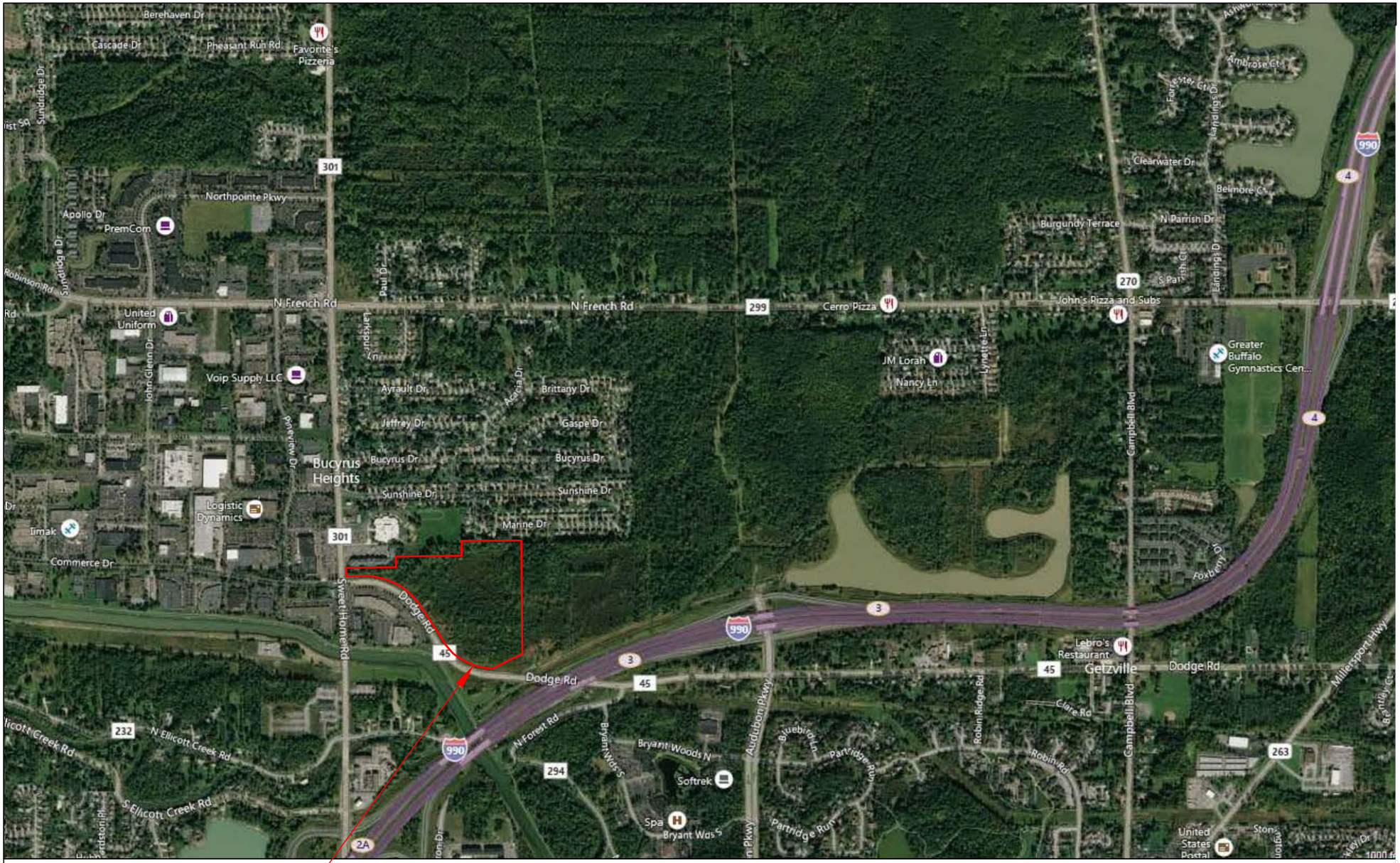
WMA Engineering, DPC dba
EMPIRE GEOTECHNICAL ENGINEERING SERVICES

Wanda M. Allen, P.E.
Senior Geotechnical Engineer

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

FIGURES

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



APPROXIMATE LIMITS OF PROPOSED DEVELOPMENT

N

NOTE:

SITE LOCATION PLAN DEVELOPED FROM BING MAPS

WMA ENGINEERING DPC|DBA
EMPIRE GEOTECHNICAL ENGINEERING SERVICES

PROPOSED SITE DEVELOPMENT
SAWYER'S LANDING
SWEET HOME ROAD & DODGE ROAD
AMHERST, NEW YORK

SITE LOCATION PLAN

DR BY: WMA	SCALE: NTS	PROJECT NO.: WB-21-054
CHKD BY: WMA	DATE: 06/10/2021	FIGURE NO

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

BORING	LATITUDE	LONGITUDE
B-1	43° 1' 37.1"	-78° 47' 46.6"
B-2	43° 1' 37.4"	-78° 47' 41.9"
B-3	43° 1' 39.3"	-78° 47' 37.9"
B-4	43° 1' 39.3"	-78° 47' 33.9"
B-5	43° 1' 37.7"	-78° 47' 37.6"
B-6	43° 1' 35.4"	-78° 47' 36.7"
B-7	43° 1' 35.4"	-78° 47' 41.9"

LEGEND:

B-1 INDICATES APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING.

NOTE:

FIGURE DEVELOPED FROM GOOGLE EARTH

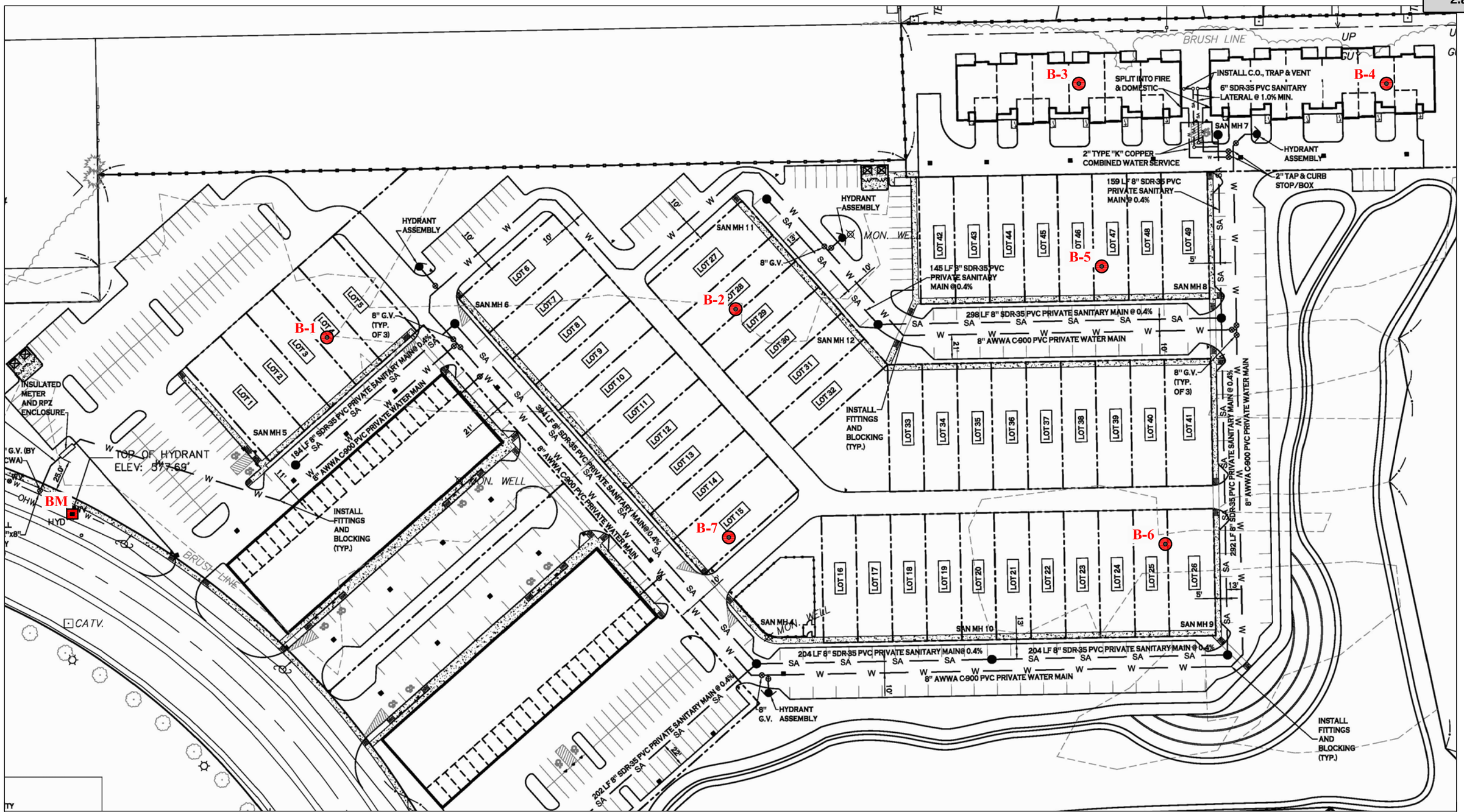
WMA ENGINEERING DPC|DBA
EMPIRE GEOTECHNICAL ENGINEERING SERVICES

PROPOSED SITE DEVELOPMENT
SAWYER'S LANDING
SWEET HOME ROAD & DODGE ROAD
AMHERST, NEW YORK

SUBSURFACE EXPLORATION PLAN
(EXISTING SITE CONDITIONS)

DR BY: WMA	SCALE: NTS	PROJECT NO.: WB-21-054
CHKD BY: WMA	DATE: 06/10/2021	FIGURE

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



LEGEND:

B-1 ◉ INDICATES APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING.

BM ■ BENCHMARK: TOP OF FIRE HYDRANT. REPORTED ELEVATION = 577.69 FEET.

NOTE:

FIGURE DEVELOPED FROM 2/15/21 "UTILITY PLAN" PREPARED BY CARMINA WOOD MORRIS, DPC.

N

80 0 80
SCALE FEET

WMA ENGINEERING DPC|DBA
EMPIRE GEO TECHNICAL ENGINEERING SERVICES

PROPOSED SITE DEVELOPMENT
SAWYER'S LANDING
SWEET HOME ROAD & DODGE ROAD
AMHERST, NEW YORK

SUBSURFACE EXPLORATION PLAN (PROPOSED SITE DEVELOPMENT)	DR BY: WMA	SCALE: 1" ~ 80'	PROJECT NO.: WB-21-054
	CHKD BY: WMA	DATE: 06/10/2021	FIGURE NO:

Attachment: Z-2002-09E_application_0827247 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

APPENDIX A

SUBSURFACE EXPLORATION LOGS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

GENERAL INFORMATION & KEY TO SUBSURFACE LOGS

The Subsurface Logs attached to this report present the observations and mechanical data collected by the driller at the site, supplemented by classification of the material removed from the borings as determined through visual identification by technicians in the laboratory. It is cautioned that the materials removed from the borings represent only a fraction of the total volume of the deposits at the site and may not necessarily be representative of the subsurface condition between adjacent borings or between the sampled intervals. The data presented of the Subsurface Logs together with the recovered samples provide a basis for evaluating the character of the subsurface conditions relative to the project. The evaluation must consider all the recorded details and their procedures to more accurately evaluate the subsurface conditions. Any evaluation of the contents of this report and recovered samples must be performed by qualified professionals. The following information defines some of the procedures and terms used of the Subsurface Logs to describe the conditions encountered, consistent with the numbered identifiers shown on the Key opposite this page.

1. **The figures in the Depth column define the scale of the Subsurface Log.**
2. **The Samples column shows, graphically, the depth range from which a sample was recovered. See Table I for descriptions of the symbols used to represent the various types of samples.**
3. **The Sample No. is used for identification on sample containers and/or Laboratory Test Reports.**
4. **Blows on Sampler – shows the results of the "Penetration Test", recording the number of blows required to drive a split spoon sampler into the soil. The number of blows required for each six inches is recorded. The first 6 inches of penetration is considered a seating drive. The number of blows required for the second and third 6 inches of penetration is termed the penetration resistance, N**
5. **Blows on Casing – Shows the number of blows required to advance the casing a distance of 12 inches. The casing size, hammer weight, and length of drop are noted at the bottom of the Subsurface Log. If the casing is advanced by means other than driving, the method of advancement will be indicated in the Notes column or under the Method of Investigation at the bottom of the Subsurface Log. Alternatively, sample recovery may be shown in this column or other data consistent with the column heading.**
6. **All recovered soil samples are reviewed in the laboratory by an engineering technician, geologist, or geotechnical engineer, unless noted otherwise. Visual descriptions are made on the basis of a combination of the driller's field descriptions and noted observations together with the sample as received in the laboratory. The method of visual classification is based primarily on the Unified Soil Classification System (ASTM D 2487) with regard to the particle size and plasticity (See Table No. II), and the Unified Soil Classification System group symbols for the soil types are sometimes included with the soil classification. Additionally, the relative portion, by weight, of two or more soil types is described for granular soils in accordance with "Suggested Methods of Test for Identification of Soils" by D.M. Burmister, ASTM Special Technical Publication 479, June 1970. (See Table No. III). Description of the relative soil density or consistency is based upon the penetration records as defined in Table No. IV. The description of the soil moisture is based upon the relative wetness of the soil as recovered and is described as dry, moist, wet, and saturated. Water introduced into the boring either naturally or during drilling may have affected the moisture condition of the recovered sample. Special terms are used as required to describe soil deposition in greater detail; several such terms are listed in Table V. When sampling gravelly soils with a standard two inch diameter split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter. The presence of boulders and large gravel is sometimes, but not necessarily, detected by an evaluation of the casing and sampler blows or through the "action" of the drill rig as reported by the driller.**
7. **Rock description is based on review of the recovered rock core and the driller's notes. Frequently used rock classification terms are included in Table VI.**
8. **The stratification lines represent the approximate boundary between soil types and the transition may be gradual. Solid stratification lines delineate apparent changes in soil type, based upon review of recovered soil samples and the driller's notes. Dashed lines convey a lesser degree of certainty with respect to either a change in soil type or where such change may occur.**
9. **Miscellaneous observations and procedures noted by the driller are shown in this column, including water level observations. It is important to realize the reliability of the water level observations depends upon the soil type (water does not readily stabilize in a hole through fine grained soils), and that any drill water used to advance the boring may have influenced the observations. The ground water level will fluctuate seasonally, typically. One or more perched or trapped water levels may exist in the ground seasonally. All the available readings should be evaluated. If definite conclusions cannot be made, it is often prudent to examine the conditions more thoroughly through test pit excavations or groundwater observation wells.**
10. **The length of core run is defined as the length of penetration of the core barrel. Core recovery is the length of core recovered divided by the core run. The RQD (Rock Quality Designation) is the total length of pieces of NX core exceeding 4 inches divided by the core run. The size core barrel used is also noted in the Method of Investigation at the bottom of the Subsurface Log.**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

DATE

STARTED _____

FINISHED _____

SHEET _____ OF _____

SJB SERVICES, INC.
SUBSURFACE LOG

PROJ. No. _____

HOLE No. _____

SURF. ELEV. _____

G.W. DEPTH _____

PROJECT _____ LOCATION _____

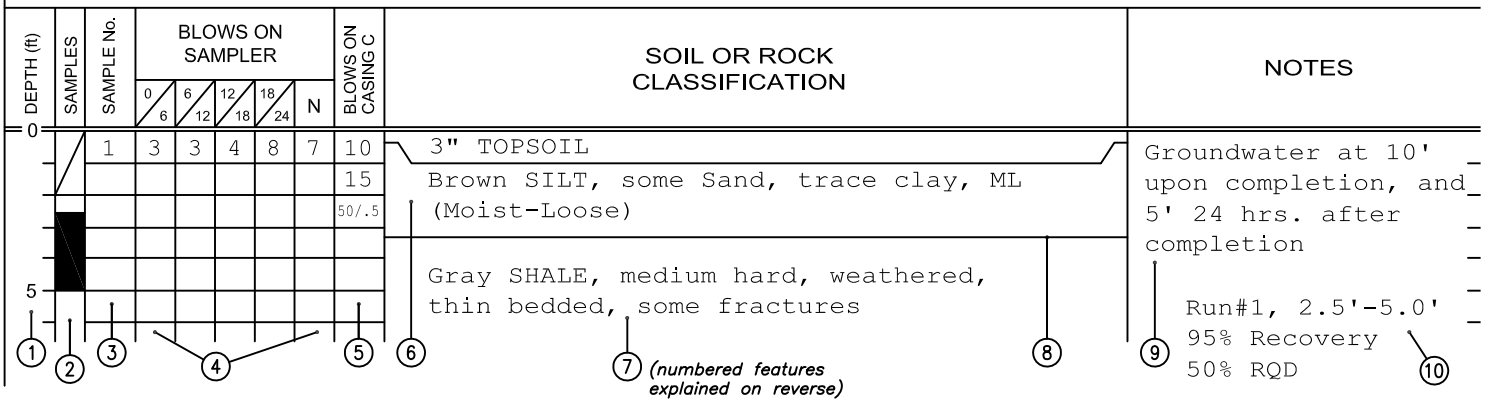


TABLE I

- Split Spoon Sample
- Shelby Tube Sample
- Geoprobe Macro-Core
- Auger or Test Pit Sample
- Rock Core

TABLE II

Identification of soil type is made on basis of an estimate of particle sizes, and in the case of fine grained soils also on basis of plasticity.

Soil Type	Soil Particle Size	
Boulder	>12"	Coarse Grained (Granular)
Cobble	3" - 12"	
Gravel - Coarse	3" - 3/4"	
- Fine	3/4" - #4	
Sand - Coarse	#4 - #10	
- Medium	#10 - #40	
- Fine	#40 - #200	
Silt - Non Plastic (Granular) Clay - Plastic (Cohesive)	<#200	Fine Grained

TABLE III

The following terms are used in classifying soils consisting of mixtures of two or more soil types. The estimate is based on weight of total sample.

Term	Percent of Total Sample
"and"	35 - 50
"some"	20 - 35
"little"	10 - 20
"trace"	less than 10

(When sampling gravelly soils with a standard split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter.)

TABLE IV

The relative compactness or consistency is described in accordance with the following terms:

Granular Soils		Cohesive Soils	
Term	**Blows per Foot, N**	**Term**	**Blows per Foot, N**
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Firm	10 - 30	Medium	4 - 8
Compact	30 - 50	Stiff	8 - 15
Very Compact	>50	Very Stiff	15 - 30
		Hard	>30

(Large particles in the soils will often significantly influence the blows per foot recorded during the penetration test)

TABLE V

Varved	Horizontal uniform layers or seams of soil(s).
Layer	Soil deposit more than 6" thick.
Seam	Soil deposit less than 6" thick.
Parting	Soil deposit less than 1/8" thick.
Laminated	Irregular, horizontal and angled seams and partings of soil(s).

TABLE VI

Rock Classification Term		Meaning
Hardness	- Soft	Scratched by fingernail
	- Medium Hard	Scratched easily by penknife
	- Hard	Scratched with difficulty by penknife
	- Very Hard	Cannot be scratched by penknife
Weathering	- Very Weathered	Judged from the relative amounts of disintegration, iron staining, core recovery, clay seams, etc.
	- Weathered	
	- Sound	

Rock Classification Term		Meaning	
Bedding	- Laminated	(<1")	Natural breaks in Rock Layers
	- Thin Bedded	(1" - 4")	
	- Bedded	(4" - 12")	
	- Thick Bedded	(12" - 36")	
	- Massive	(>36")	

(Fracturing refers to natural breaks in the rock oriented at some angle to the rock layers)

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

DATE:
START 6/1/2021
FINISH 6/1/2021
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-1
SURF. ELEV 570.8'
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	1			Brown-Gray Silty CLAY, some fine Sand, tr. organics	
		3	2		4	(moist, medium, CL)	
	2	4	5			Brown f-m SAND, little Clayey Silt, tr. organics	
		4	4		9	(wet, loose, SM-SC)	
5	3	5	4			Brown-Gray Silty CLAY, some fine Sand, tr. organics	S-3: Contains Wood
		6	6		10	(moist-wet, stiff, CL)	
	4	7	10			Contains little fine Sand, no organics (v. stiff)	
		12	15		22		
	5	1	4			Contains tr. sand (stiff)	
10		7	8		11		
	6	1	2			Becomes Brown (wet, medium)	
		2	4		4		
	7	1	2			(moist-wet)	
		2	2		4		
15	8	2	1			(wet, soft)	
		1	2		2		
20							
	9	WOH/2.0				(v. soft)	WOH = Weight of Hammer and Rods
					WOH		
25							
	10	WOH/2.0				Contains tr. gravel	
					WOH		
30							
	11	WOH/2.0					
					WOH		
35							
	12	WOH/2.0				Contains no gravel	
					WOH		
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

DATE
START 6/1/2021
FINISH 6/1/2021
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-1
SURF. ELEV 570.8'
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
40	13	WOH	1			Brown fine GRAVEL, some Silty Clay, little f-c Sand	
		20	25		21	(moist, firm, GC-GM)	WOH = Weight of Hammer and Rods
45	14	50/0.4			REF		S-14: No Recovery
							REF = Sample Spoon Refusal
	15	40	50			Gray fine GRAVEL, some f-c Sand, tr. silty clay	
50		40	45		90	(moist, compact, GP)	
55	16	40	45			Brown fine GRAVEL, some Silty Clay, little f-c Sand	
		50/0.2			REF	(moist, v. compact, GC-GM)	
						Boring Complete at 58.0' with Auger Refusal	Free Standing Water recorded at 6.0' at boring completion
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

DATE:
START 6/2/2021
FINISH 6/2/2021
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-2
SURF. ELEV 571.1'
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	2			TOPSOIL	Driller noted Topsoil at the surface
		3	5		5	Brown-Gray f-m SAND, little Silty Clay, tr. organics	
	2	6	6			(moist, loose, SC-SM)	
		5	6		11	Brown f-m SAND, little Clayey Silt (wet, firm, SM-SC)	
5	3	7	7			Gray f-c SAND, tr. clayey silt (wet, firm, SP-SW)	
		7	7		14		
	4	6	8			Brown Silty CLAY, tr. sand, Silt Partings	
		10	10		18	(wet, firm, CL)	
	5	3	4			(moist-wet, stiff)	
10		6	8		10		
	6	3	3			(medium)	
		4	3		7		
	7	4	4			Contains no Silt Partings (wet)	
		2	2		6		
15	8	1	1			(soft)	
		1	1		2		WOH = Weight of
	9	WOH/2.0				(v. soft)	Hammer and Rods
					WOH		
20							
	10	WOH/2.0					
					WOH		
	11	WOH/2.0					
25					WOH		
						Boring Complete at 25.0'	No Free Standing Water encountered at boring completion
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

DATE:
START 6/3/2021
FINISH 6/3/2021
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-3
SURF. ELEV 571.8'
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	2			TOPSOIL	Driller noted Topsoil at the surface
		3	3		5	Brown Silty CLAY, some f-m Sand, tr. organics	
	2	5	5			(moist, medium, CL)	
		6	7		11	Brown f-m SAND, little Clayey Silt (wet, firm, SM-SC)	
5	3	6	8			Brown-Gray f-m SAND, tr. clayey silt	
		11	11		19	(wet, firm, SP-SW)	
	4	7	5			Becomes Gray (moist-wet)	
		4	4		9	Brown Silty CLAY, tr. sand, Silt Partings	
	5	2	3			(moist, stiff, CL)	
10		5	6		8		
	6	2	3				
		6	6		9		
	7	3	4			(moist-wet)	
		4	3		8		
15	8	WOH/2.0				(wet, v. soft)	
					WOH		WOH = Weight of Hammer and Rods
20							
	9	WOH/2.0					
					WOH		
	10	WOH/2.0					
25					WOH		
						Boring Complete at 25.0'	No Free Standing Water encountered at boring completion
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

DATE:
START 6/3/2021
FINISH 6/4/2021
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-4
SURF. ELEV 571.6
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	2			TOPSOIL	Driller noted Topsoil at the surface
		4	5		6	Brown-Gray Silty CLAY, some f-m Sand, tr. organics	
	2	4	7			(moist, medium, CL)	
		7	5		14	Brown f-m SAND, little Clayey Silt (wet, firm, SM-SC)	
5	3	6	6				
		8	8		14		
	4	11	9			Gray f-m SAND, tr. clayey silt (moist-wet, firm, SP)	
		8	6		17		
	5	6	8			Brown Silty CLAY, tr. sand, Silt Partings	
10		9	8		17	(moist, v. stiff, CL)	
	6	2	3			(moist-wet, stiff)	
		5	5		8		
	7	3	3			Contains no Silt Partings (medium)	
		2	2		5		
15	8	WOH/1.5				(wet, v. soft)	
			2		WOH		WOH = Weight of Hammer and Rods
20							
	9	WOH/2.0					
					WOH		
25							
	10	WOH/1.0					
		WOH	1		WOH		
30							
	11	Shelby Tube					Shelby Tube T-1: 30'-32'
		T-1					REC: 2.0'
35							
	12	WOH/2.0					
					WOH		
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

DATE
START 6/3/2021
FINISH 6/3/2021
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-4
SURF. ELEV 571.6'
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
40	13	WOH	7			Brown fine GRAVEL, some Silty Clay, little f-c Sand (moist-wet, compact, GC-GM)	
		28	50/0.2		21		WOH = Weight of Hammer and Rods
45	14	50/0.3			REF	Gray fine GRAVEL, little f-c Sand, tr. silty clay (moist, v. compact, GP)	REF = Sample Spoon Refusal
50	15	50/0.4			REF	Brown fine GRAVEL, some f-c Sand, little Silty Clay (moist, v. compact, GC-GM)	
55	16	27	45			Brown Silty CLAY, some fine Gravel, little f-c Sand (moist, hard, CL)	
		50/0.1			REF		NQ '2' Size Rock Core
60						Brown f-c SAND, some Silty Clay, little fine Gravel (moist-wet)	Run #1: 59' - 62' REC = 83% RQD = 14%
						Gray SHALE Rock, hard, highly weathered, laminated to bedded, both natural and mechanical fractures	
65						Boring Complete at 62.0'	Free Standing Water recorded at 10.8' before coring
70							Free Standing Water recorded at 14.0' after coring
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

DATE:
START 6/3/2021
FINISH 6/3/2021
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-5
SURF. ELEV 571.8'
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	WOH	3			TOPSOIL	Driller noted Topsoil at the surface
		4	5		7	Brown-Gray f-m SAND, little Silty Clay, tr. organics	
	2	4	5			(moist-wet, loose, SC-SM)	
		7	10		12	Brown f-m SAND, little Clayey Silt (wet, firm, SM-SC)	
5	3	8	10			Contains "and" Clayey Silt	
		11	7		21		
	4	6	8			Brown Silty CLAY, tr. sand, Silt Partings	
		8	10		16	(moist-wet, v. stiff, CL)	
	5	4	5			(stiff)	
10		7	7		12		
	6	2	4				
		4	4		8		
	7	3	3			Contains no Silt Partings (wet, medium)	
		2	2		5		
15	8	WOH/2.0				(v. soft)	
					WOH		WOH = Weight of Hammer and Rods
20							
	9	WOH/2.0					
					WOH		
	10	WOH/2.0					
25					WOH		
						Boring Complete at 25.0'	No Free Standing Water encountered at boring completion
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

DATE:
START 6/2/2021
FINISH 6/2/2021
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-6
SURF. ELEV 571.6'
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	WOH	5			TOPSOIL	Driller noted Topsoil at the surface
		7	7		12	Brown-Gray f-m SAND, little Silty Clay, tr. organics	
	2	7	8			(moist, firm, SC-SM)	
		10	13		18	Brown f-m SAND, little Clayey Silt (wet, firm, SM-SC)	
5	3	5	6			Brown Silty CLAY, tr. sand, Silt Parings	
		5	5		11	(moist, stiff, CL)	
	4	5	6				
		6	6		12		
	5	4	6			Becomes Brown-Gray (v. stiff)	
10		10	10		16		
	6	4	4			(moist-wet, medium)	
		3	5		7		
	7	3	2			Contains no Silt Partings (wet)	
		3	2		5		
15	8	WOH/1.0				Becomes Brown (v. soft)	
		WOH	1		WOH		WOH = Weight of Hammer and Rods
20							
	9	WOH/1.0				(soft)	
		2	1		2		
	10	WOH	1				
25		1	1		2		
						Boring Complete at 25.0'	No Free Standing Water encountered at boring completion
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

DATE:
START 6/2/2021
FINISH 6/2/2021
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-7
SURF. ELEV 571.2'
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	2			TOPSOIL	Driller noted Topsoil at the surface
		3	4		5	Brown-Gray f-m SAND, some Silty Clay, little fine Gravel, tr. organics (moist, loose, SC-SM)	
	2	4	6				
		7	6		13	Brown f-m SAND, some Clayey Silt, tr. organics (wet, firm, SM-SC)	
5	3	5	12				
		13	13		25	Gray f-m SAND, tr. clayey silt (wet, firm, SP) (moist-wet)	
	4	5	7				
		10	11		17	Brown Silty CLAY, tr. sand, Silt Partings (moist, v. stiff, CL)	
	5	5	7				
10		7	6		14	(stiff)	
	6	2	5			Becomes Brown-Gray, Contains no Silt Partings (moist-wet)	
		6	6		11		
	7	4	3			Becomes Brown (wet, medium)	
		3	3		6		
15	8	1	1			Contains tr. gravel (soft)	
		1	1		2		WOH = Weight of Hammer and Rods
20							
	9	WOH/1.0				Contains no gravel (v. soft)	
		WOH	1		WOH		
	10	1	1			(soft)	
25		1	1		2		
						Boring Complete at 25.0'	No Free Standing Water encountered at boring completion
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

APPENDIX B

LABORATORY TEST DATA

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Sawyer's Landing**

CLIENT: **Severyn Development**

DATE: **June 24, 2021**

PROJECT NO.: BE-21-054
REPORT NO.: LTR-1
Page 1 of 3

SJB Sample Number: 21-302
Sample Location: B-1, S-6: 10' - 12'

ASTM D-2216:Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
39.4 %	44	18	26

ASTM D-2216:Laboratory Determination of Water (Moisture) Content of Soil &Rock

SJB Sample Number	Sample Location	Moisture Content
21-303	B-4, S-5: 8' – 10'	23.9 %
21-304	B-4, S-6: 10' – 12'	29.1 %
21-305	B-4, S-7: 12' – 14'	39.2 %
21-306	B-4, S-8: 14' – 16'	40.0 %
21-307	B-4, S-9: 20' – 22'	48.9 %
21-308	B-4, S-10: 25' – 27'	46.0 %
21-309	B-4, T-1: 30' – 32'	46.5 %
21-310	B-4, S-12: 35' – 37'	38.7 %

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

The results of this report relate only to the items inspected or tested.
The report shall not be reproduced, except in full, without the written approval of SJB Services, Inc.

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Sawyer's Landing**

CLIENT: **Severyn Development**

DATE: **June 24, 2021**

PROJECT NO.: BE-21-054
REPORT NO.: LTR-1

SJB Sample Number: 21-306
Sample Location: B-4, S-8: 14' – 16'

ASTM D-2216:Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
40.0 %	36	17	19

SJB Sample Number: 21-309
Sample Location: B-4, T-1: 30' – 32'

ASTM D-2216:Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
46.5 %	49	23	26

ASTM D 4648: Standard Test Method for Laboratory Miniature Vane Shear Test for Saturated Fine-Grained Clayey Soil
EGE TM-1: Measure of Approximate Unconfined Compressive Strength of Cohesive Soils

Undrained Shear Strength = 0.14 tons/ft^2
Approximate Unconfined Compressive Strength = 0.18 tons/ft^2

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: Sawyer's Landing
CLIENT: Severyn Development
DATE: June 24, 2021

PROJECT NO.: BE-21-054
REPORT NO.: LTR-1

SJB Sample Number: 21-311
Sample Location: B-5, S-3: 4' - 6'

ASTM D-2216:Laboratory Determination of Water (Moisture) Content of Soil &Rock
Moisture Content = 21.0 %

ASTM D-6913: Particle Size Distribution (Gradation) of Soils Using Sieve Analysis

Sieve Size	*Percent Passing*
¼"	100.0
#4	99.7
#10	98.8
#20	96.8
#40	94.3
#100	79.5
#200	39.0

SJB Sample Number: 21-312
Sample Location: B-7, S-2: 2' - 4'

ASTM D-2216:Laboratory Determination of Water (Moisture) Content of Soil &Rock
Moisture Content = 19.5 %

ASTM D-6913: Particle Size Distribution (Gradation) of Soils Using Sieve Analysis

Sieve Size	*Percent Passing*
¼"	100.0
#4	99.9
#10	99.5
#20	98.8
#40	94.8
#100	42.0
#200	22.7

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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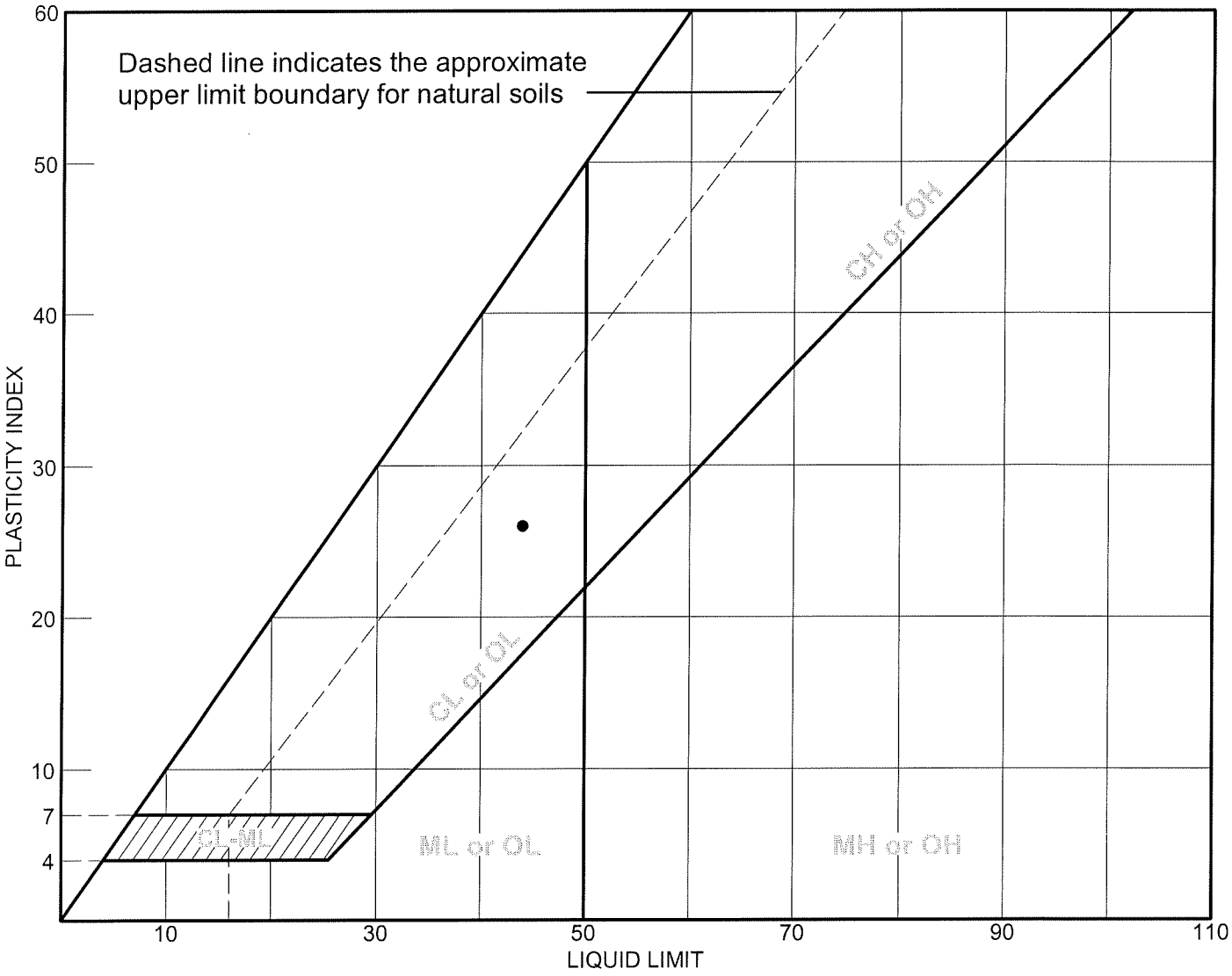
LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-1	S-6	10' - 12'	39.4 %	18	44	26	

LIQUID AND PLASTIC LIMITS TEST REPORT

SJB SERVICES, INC.

Client: SEVERYN DEVELOPMENT

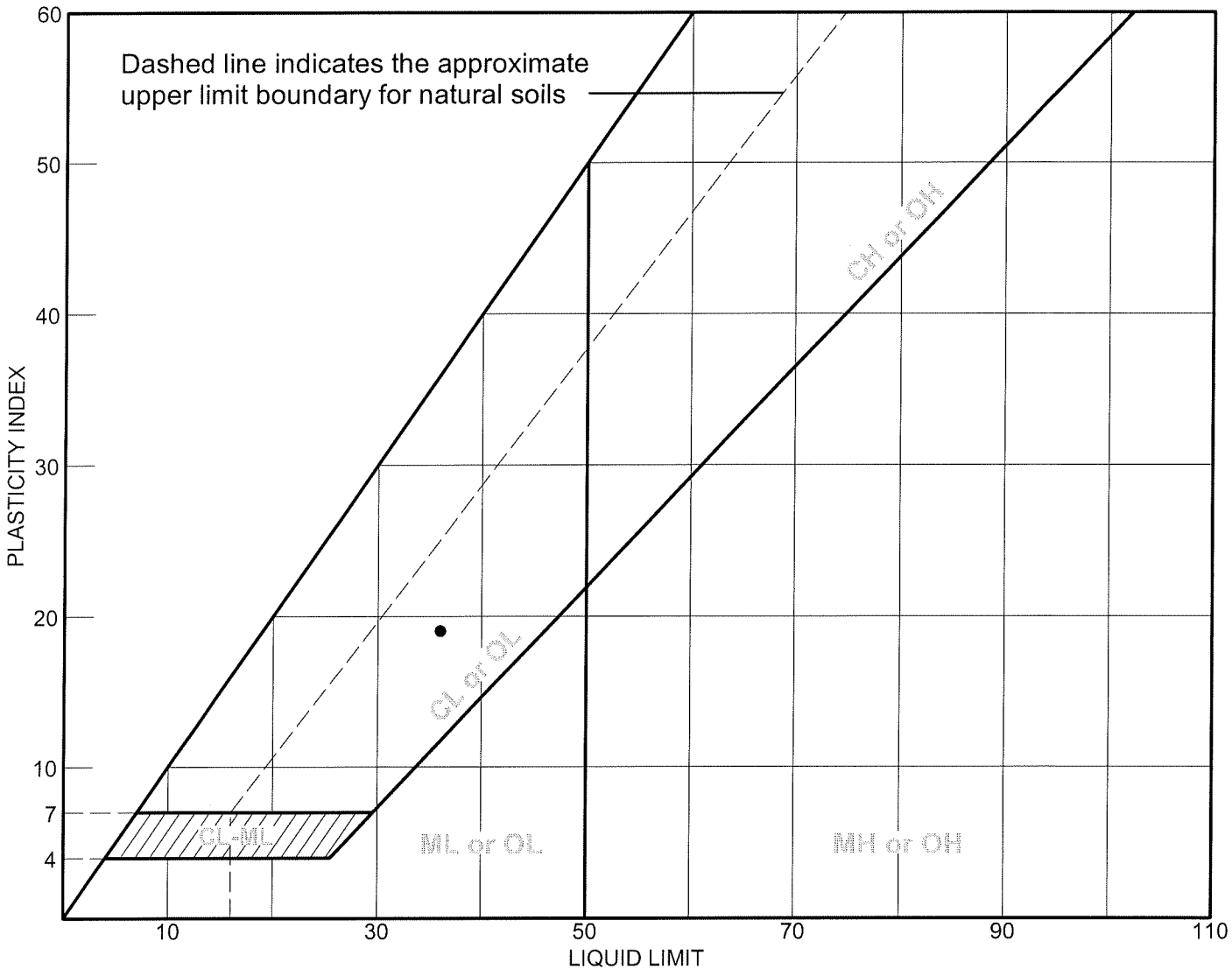
Project: SAWYER'S LANDING

Project No.: BE-21-054

Plate

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-4	S-8	14' - 16'	40.0 %	17	36	19	

LIQUID AND PLASTIC LIMITS TEST REPORT

SJB SERVICES, INC.

Client: SEVERYN DEVELOPMENT

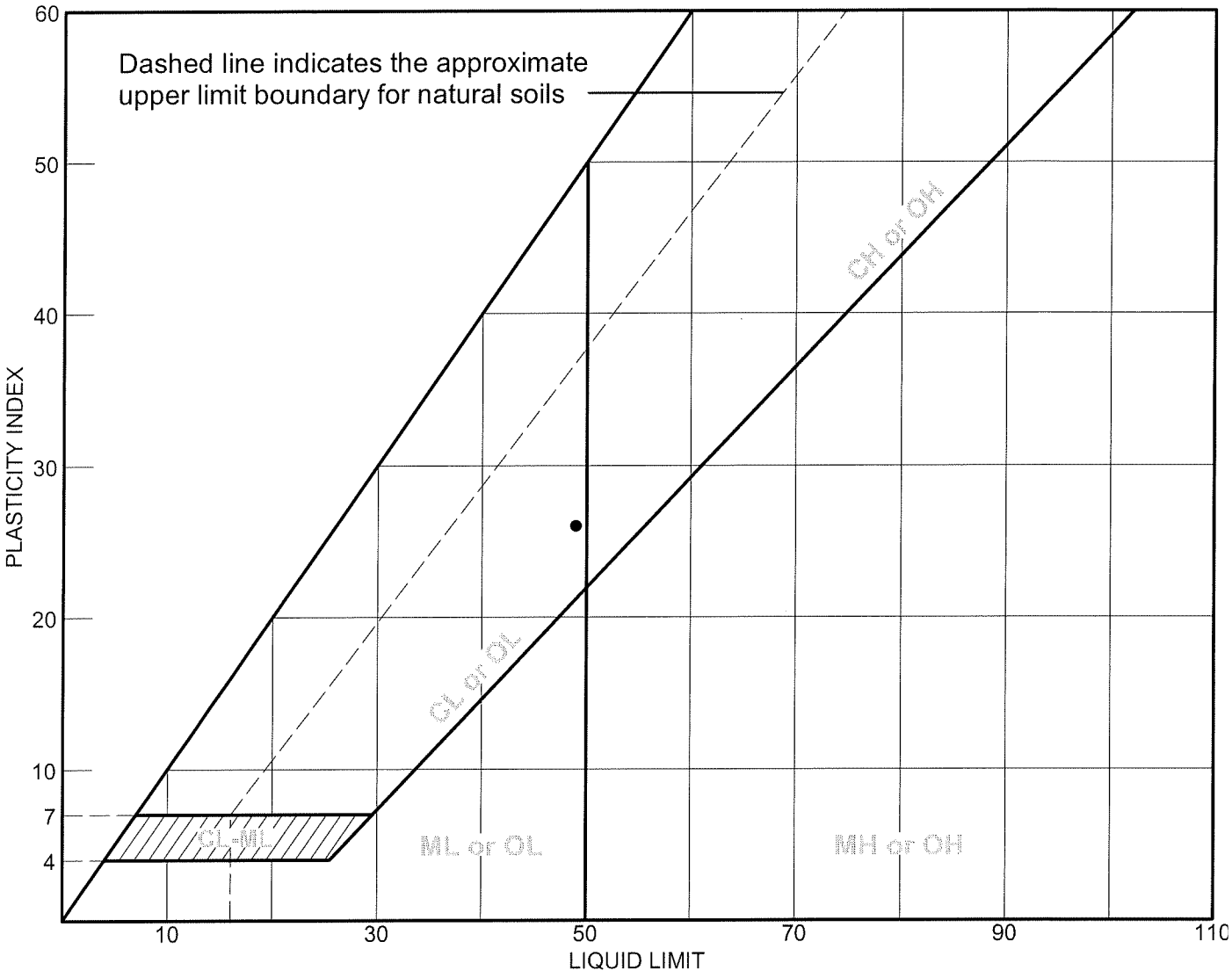
Project: SAWYER'S LANDING

Project No.: BE-21-054

Plate

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-4	T-1	30' - 32'	46.5 %	23	49	26	

LIQUID AND PLASTIC LIMITS TEST REPORT

SJB SERVICES, INC.

Client: SEVERYN DEVELOPMENT

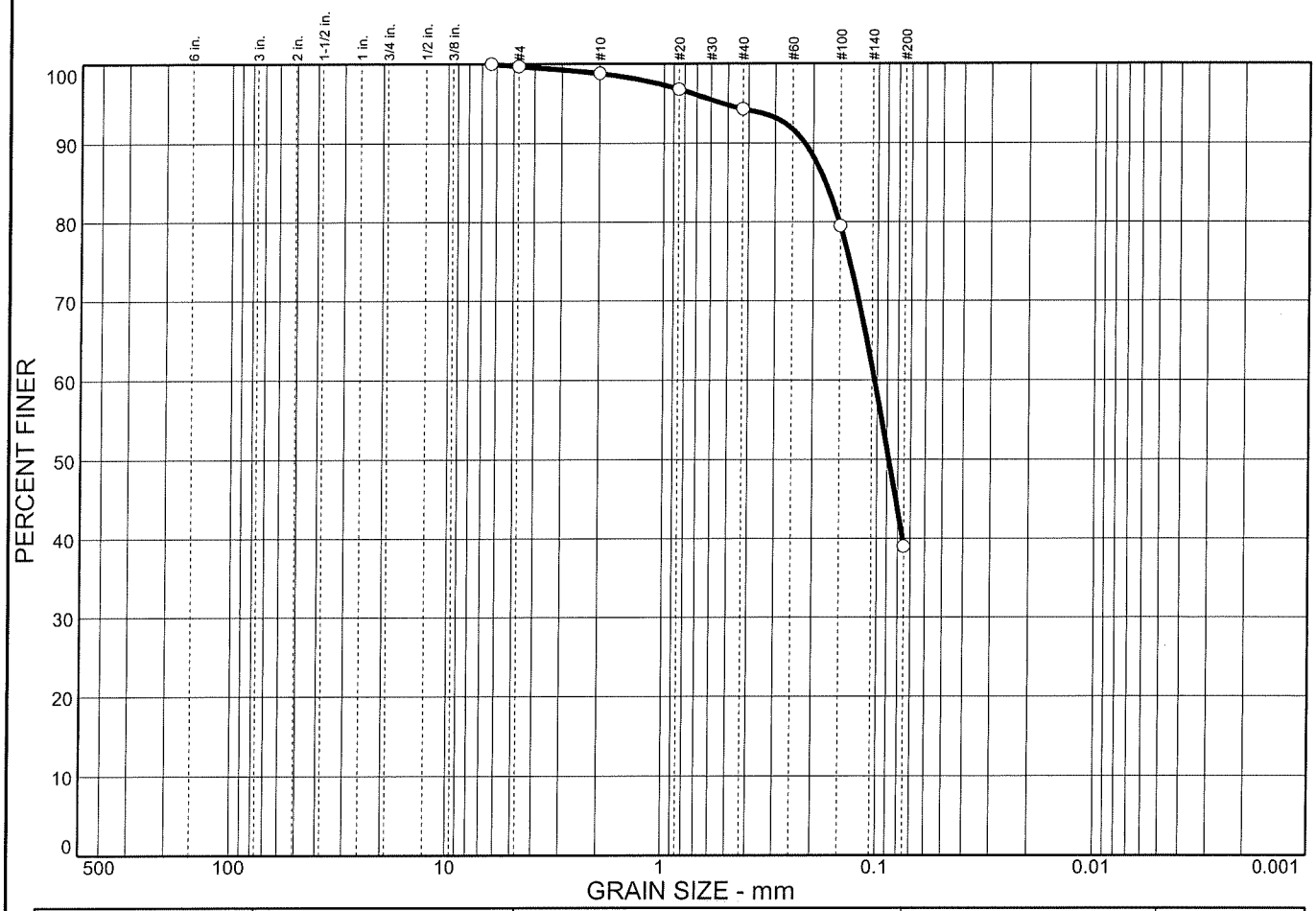
Project: SAWYER'S LANDING

Project No.: BE-21-054

Plate

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Particle Size Distribution Report ASTM D-6913



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.3	60.7	39.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.25 in.	100.0		
#4	99.7		
#10	98.8		
#20	96.8		
#40	94.3		
#100	79.5		
#200	39.0		

* (no specification provided)

Soil Description

B-5, S-3: 4' - 6'

MOISTURE CONTENT = 21.0 %

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.176 D_{60}= 0.103 D_{50}= 0.0884
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

LTR-1
SAMPLE NUMBER: 21-311

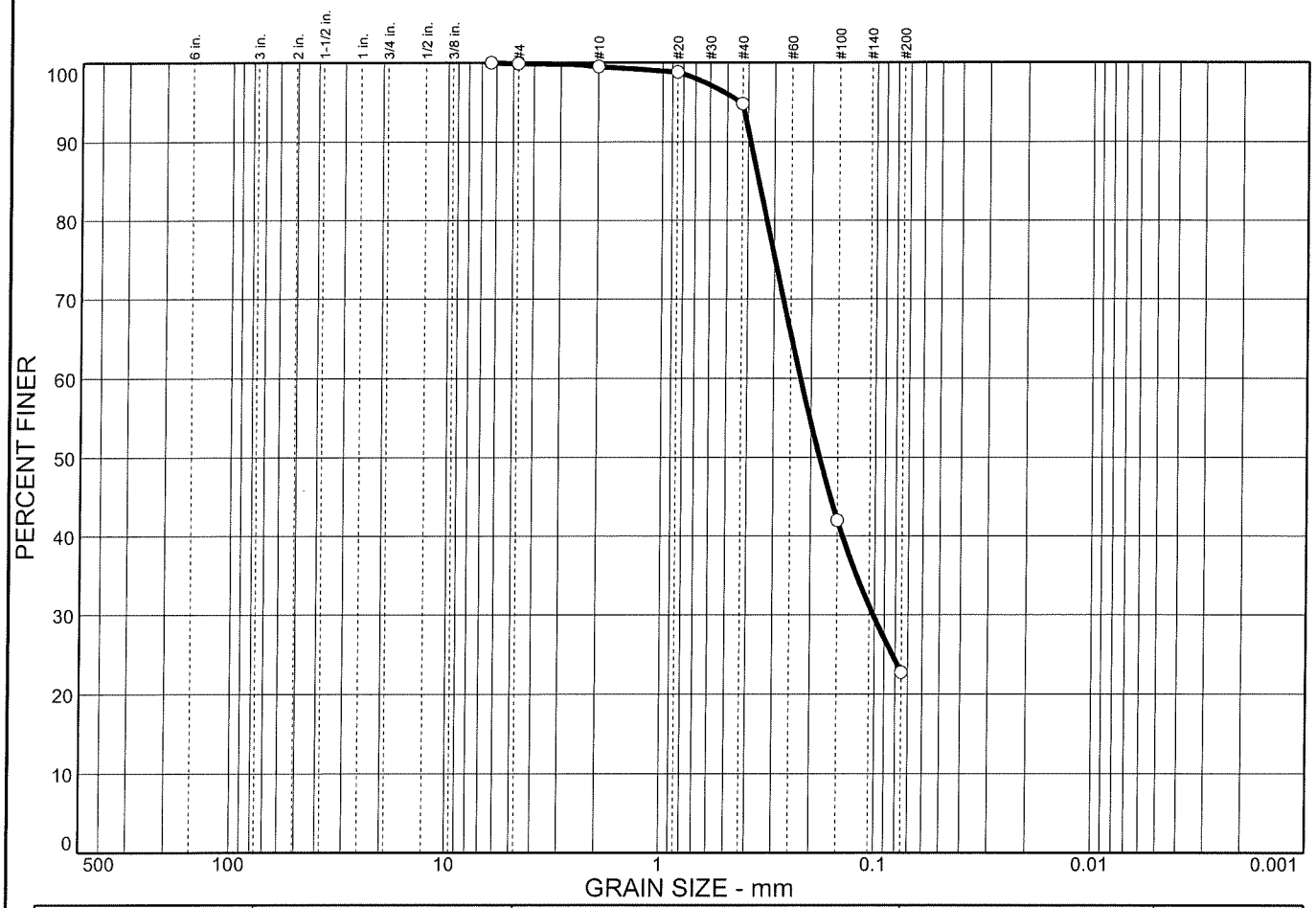
Sample No.: S-3 **Source of Sample:** B-5 **Date:** 6-21-2021
Location: B-5, S-3: 4' - 6' **Elev./Depth:** 4' - 6'

SJB SERVICES, INC.

Client: SEVERYN DEVELOPMENT
Project: SAWYER'S LANDING
Project No: BE-21-054 **Plate**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Particle Size Distribution Report ASTM D-6913



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.1	77.2	22.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.25 in.	100.0		
#4	99.9		
#10	99.5		
#20	98.8		
#40	94.8		
#100	42.0		
#200	22.7		

* (no specification provided)

Soil Description

B-7, S-2: 2' - 4'

MOISTURE CONTENT = 19.5 %

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.357 D_{60}= 0.225 D_{50}= 0.182
D_{30}= 0.102 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

LTR-1
SAMPLE NUMBER: 21-312

Sample No.: S-2 **Source of Sample:** B-7 **Date:** 6-21-2021
Location: B-7, S-2: 2' - 4' **Elev./Depth:** 2' - 4'

SJB SERVICES, INC.

Client: SEVERYN DEVELOPMENT
Project: SAWYER'S LANDING
Project No: BE-21-054 **Plate**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Sawyer's Landing**

CLIENT: **Severyn Development**

DATE: **July 7, 2021**

PROJECT NO.: BE-21-054
REPORT NO.: LTR-2
Page 1 of 1

SJB Sample Number: 21-309
Sample Location: B-4, T-1: 30' – 32'

ASTM D-2216:Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
46.5 %	49	23	26

ASTM D 4648: Standard Test Method for Laboratory Miniature Vane Shear Test for Saturated Fine-Grained Clayey Soil
EGE TM-1: Measure of Approximate Unconfined Compressive Strength of Cohesive Soils

Undrained Shear Strength = 0.14 tons/ft^2
Approximate Unconfined Compressive Strength = 0.18 tons/ft^2

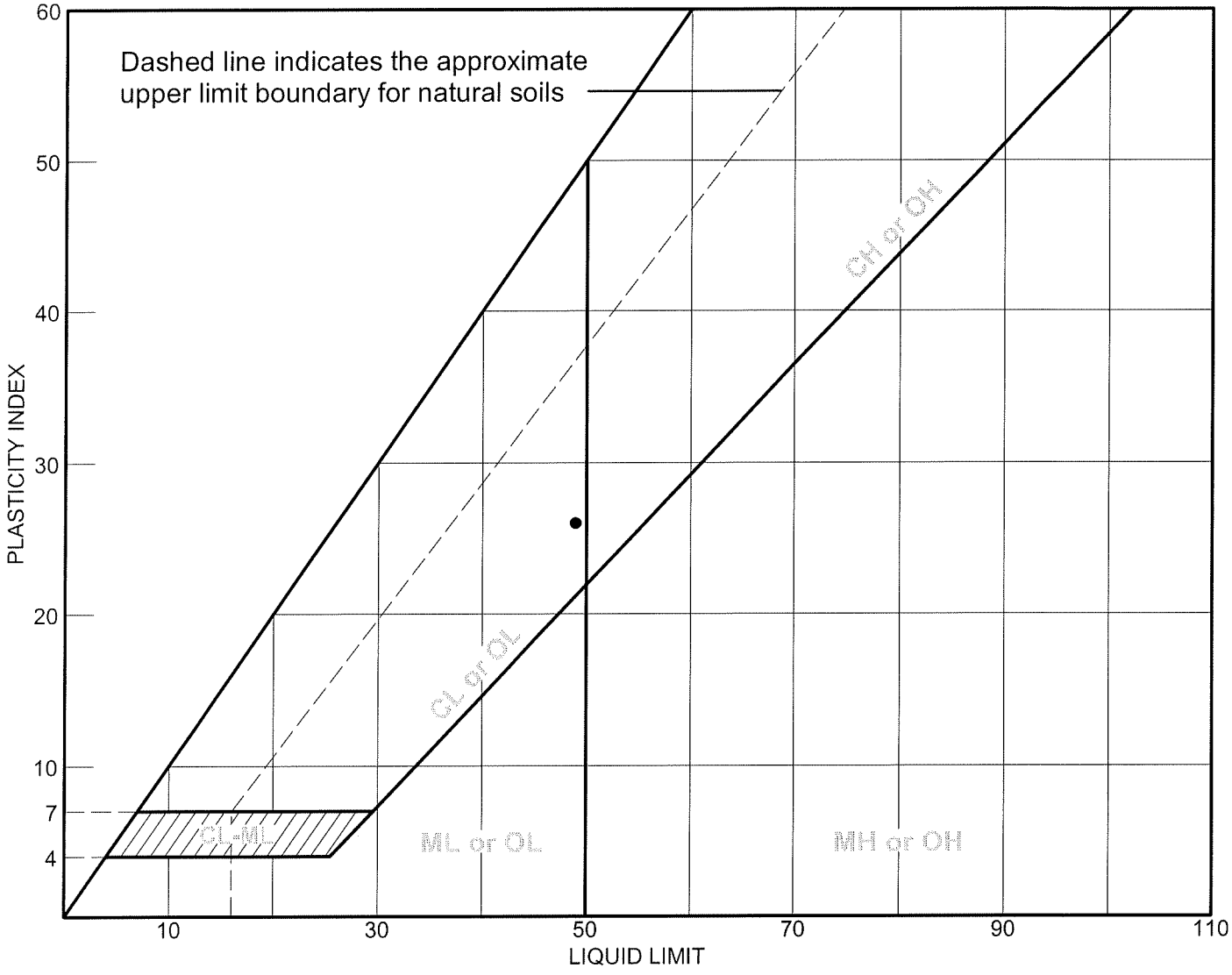
ASTM D-2435
One-Dimensional Consolidation Properties of Soils Using Incremental Loading

Refer to attached paperwork for test results

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

The results of this report relate only to the items inspected or tested.
The report shall not be reproduced, except in full, without the written approval of SJB Services, Inc.

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-4	T-1	30' - 32'	46.5 %	23	49	26	

LIQUID AND PLASTIC LIMITS TEST REPORT

SJB SERVICES, INC.

Client: SEVERYN DEVELOPMENT

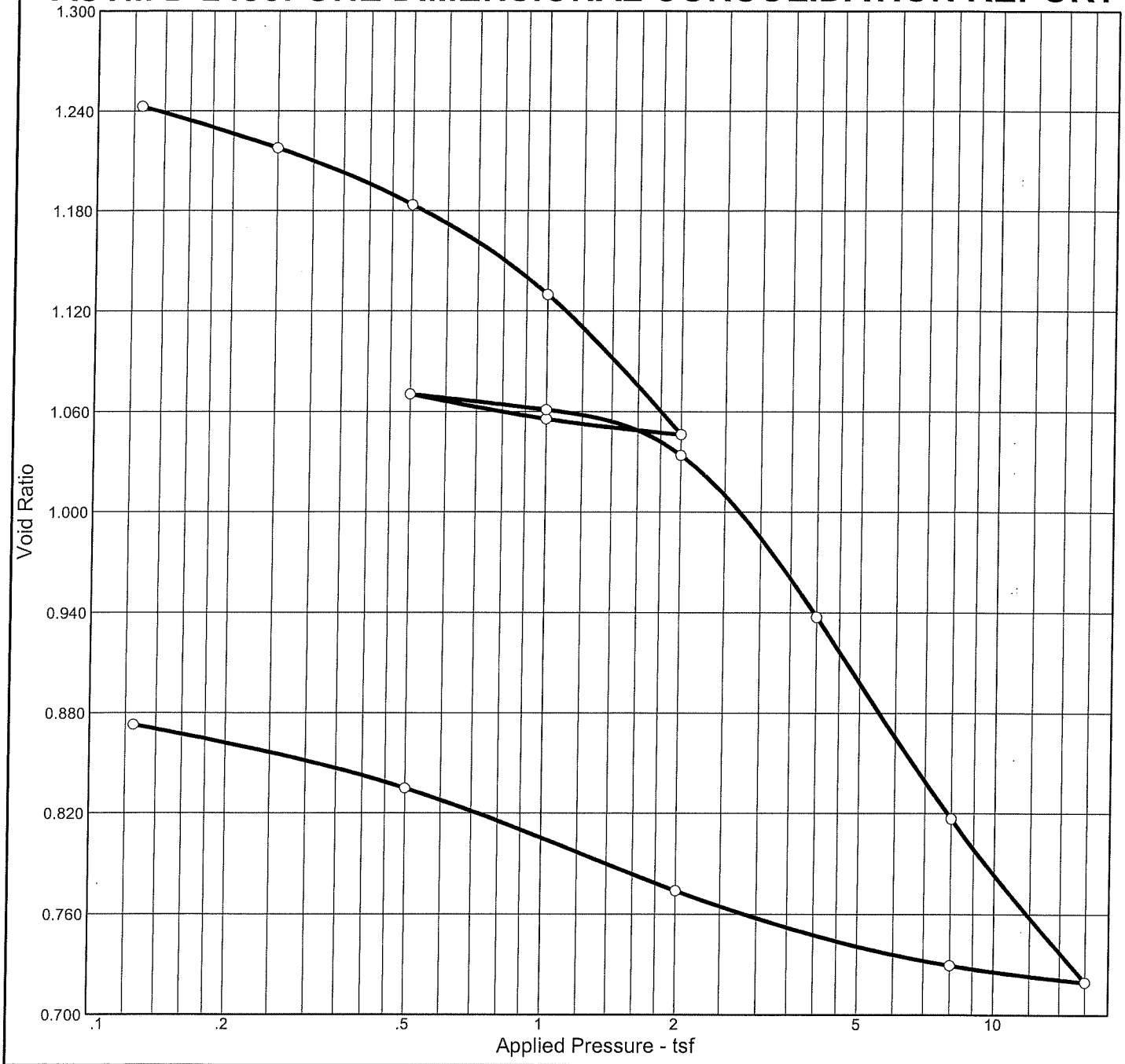
Project: SAWYER'S LANDING

Project No.: BE-21-054

Plate

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

ASTM D-2435: ONE DIMENSIONAL CONSOLIDATION REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Swell Press. (tsf)	Heave %	e_o
Sat.	Moist.											
99.2 %	46.5 %	74.5	49	26	2.7		0.72	0.32				1.267

MATERIAL DESCRIPTION	USCS	AASHTO
B-4, T-1: 30' - 32'		

Project No. BE-21-054 **Client:** SEVERYN DEVELOPMENT

Project: SAWYER'S LANDING

Location: B-4, T-1: 30' - 32'

Remarks:

LTR-2
SAMPLE NUMBER: 21-309

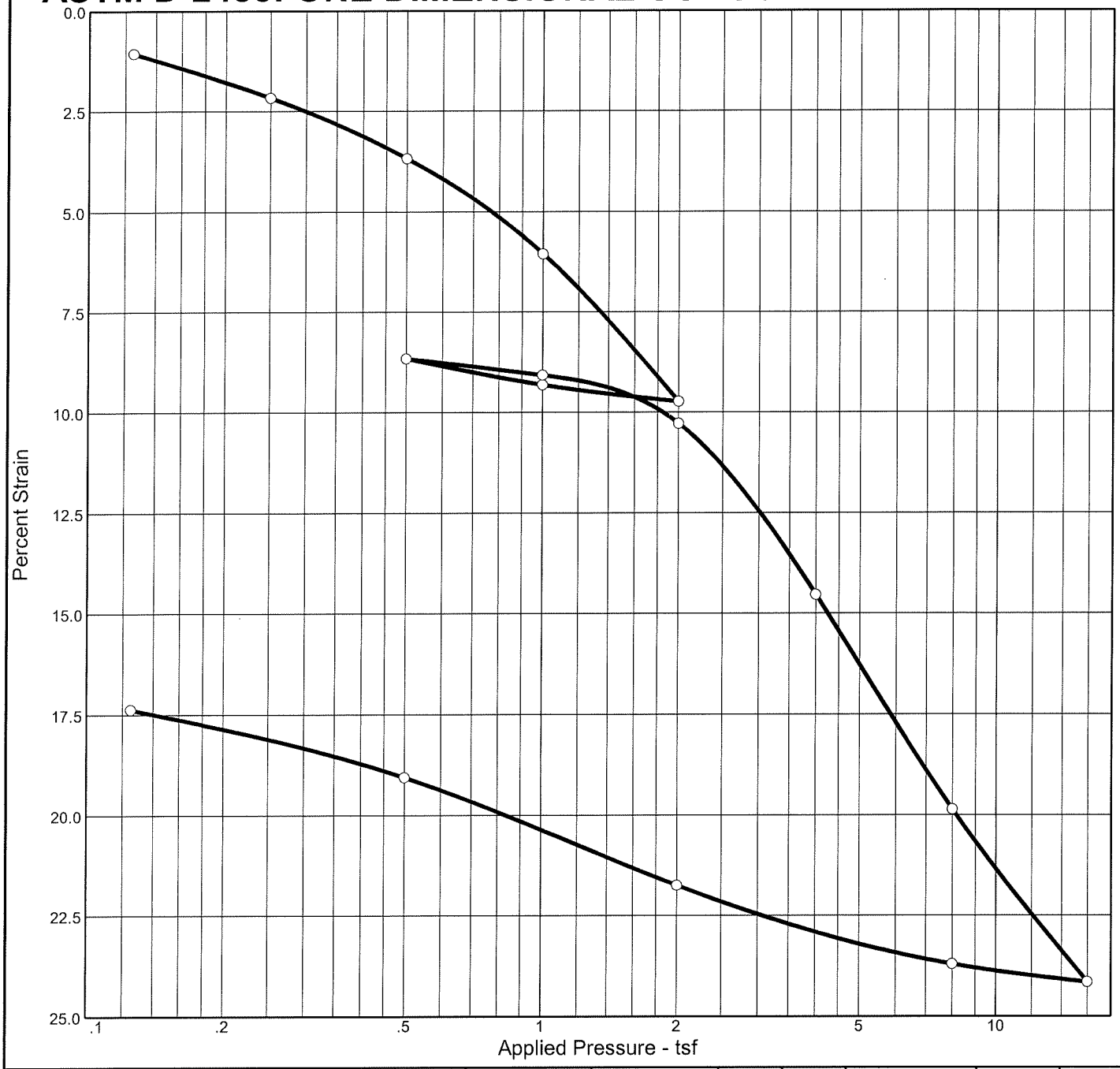
ASTM D-2435: ONE DIMENSIONAL CONSOLIDATION REPORT

SJB SERVICES, INC.

Plate

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

ASTM D-2435: ONE DIMENSIONAL CONSOLIDATION REPORT



Natural Sat.	Natural Moist.	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Swell Press. (tsf)	Heave %	e_o
99.2 %	46.5 %	74.5	49	26	2.7		0.72	0.32				1.267

MATERIAL DESCRIPTION	USCS	AASHTO
B-4, T-1: 30' - 32'		

Project No. BE-21-054 **Client:** SEVERYN DEVELOPMENT

Project: SAWYER'S LANDING

Location: B-4, T-1: 30' - 32'

Remarks:

LTR-2
SAMPLE NUMBER: 21-309

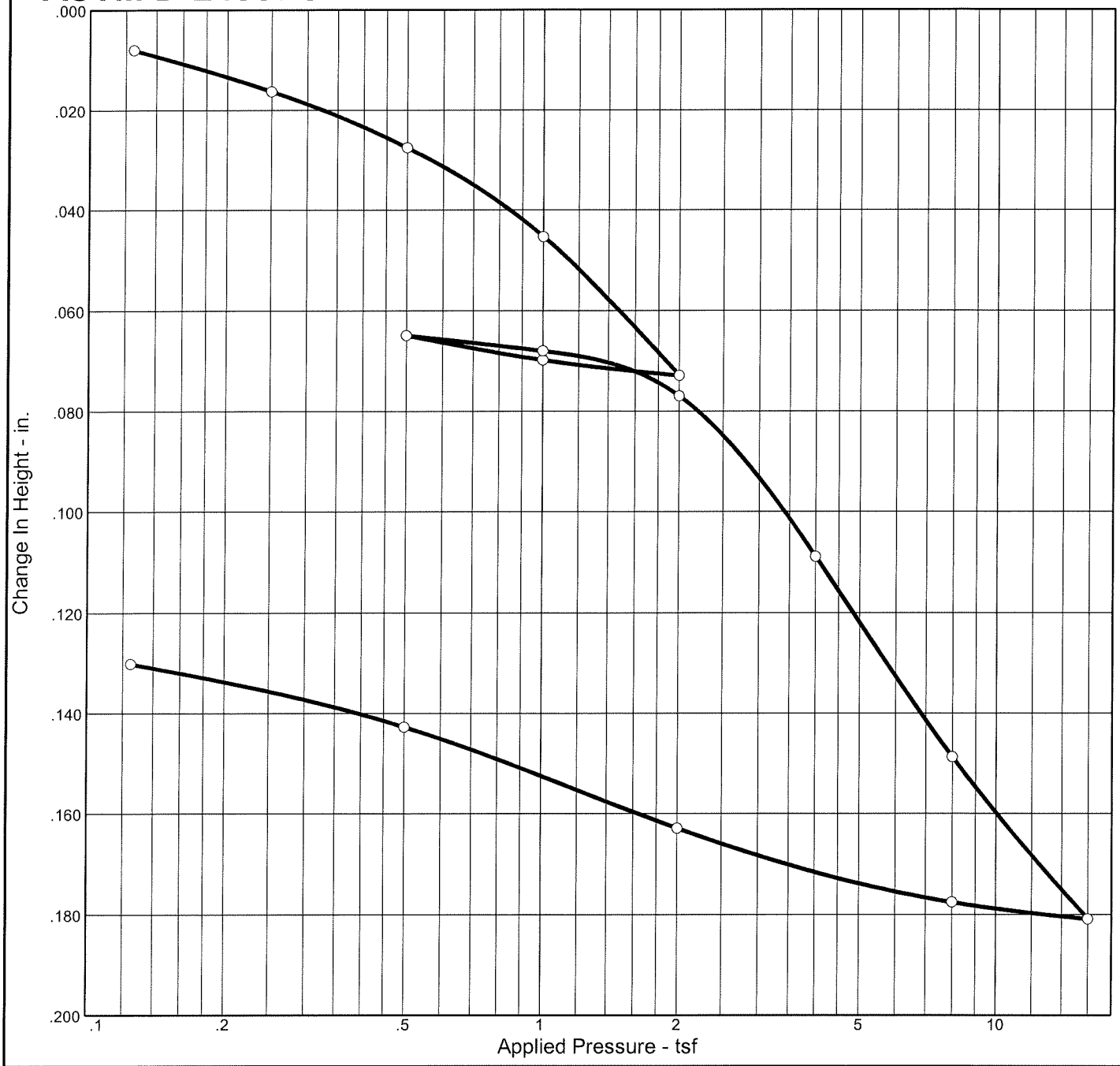
ASTM D-2435: ONE DIMENSIONAL CONSOLIDATION REPORT

SJB SERVICES, INC.

Plate

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

ASTM D-2435: ONE DIMENSIONAL CONSOLIDATION REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Swell Press. (tsf)	Heave %	e_o
Sat.	Moist.											
99.2 %	46.5 %	74.5	49	26	2.7		0.72	0.32				1.267

MATERIAL DESCRIPTION	USCS	AASHTO
B-4, T-1: 30' - 32'		

Project No. BE-21-054 **Client:** SEVERYN DEVELOPMENT

Project: SAWYER'S LANDING

Location: B-4, T-1: 30' - 32'

Remarks:

LTR-2
SAMPLE NUMBER: 21-309

ASTM D-2435: ONE DIMENSIONAL CONSOLIDATION REPORT

SJB SERVICES, INC.

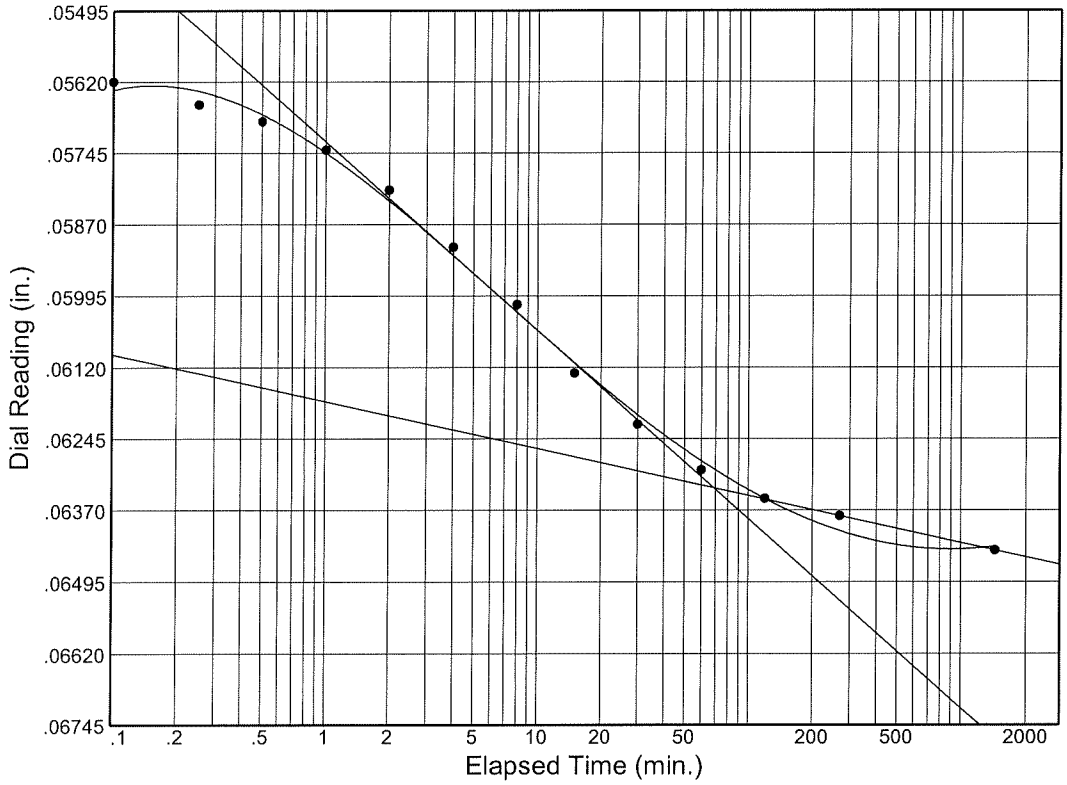
Plate

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Dial Reading vs. Time

Project No.: BE-21-054
Project: SAWYER'S LANDING

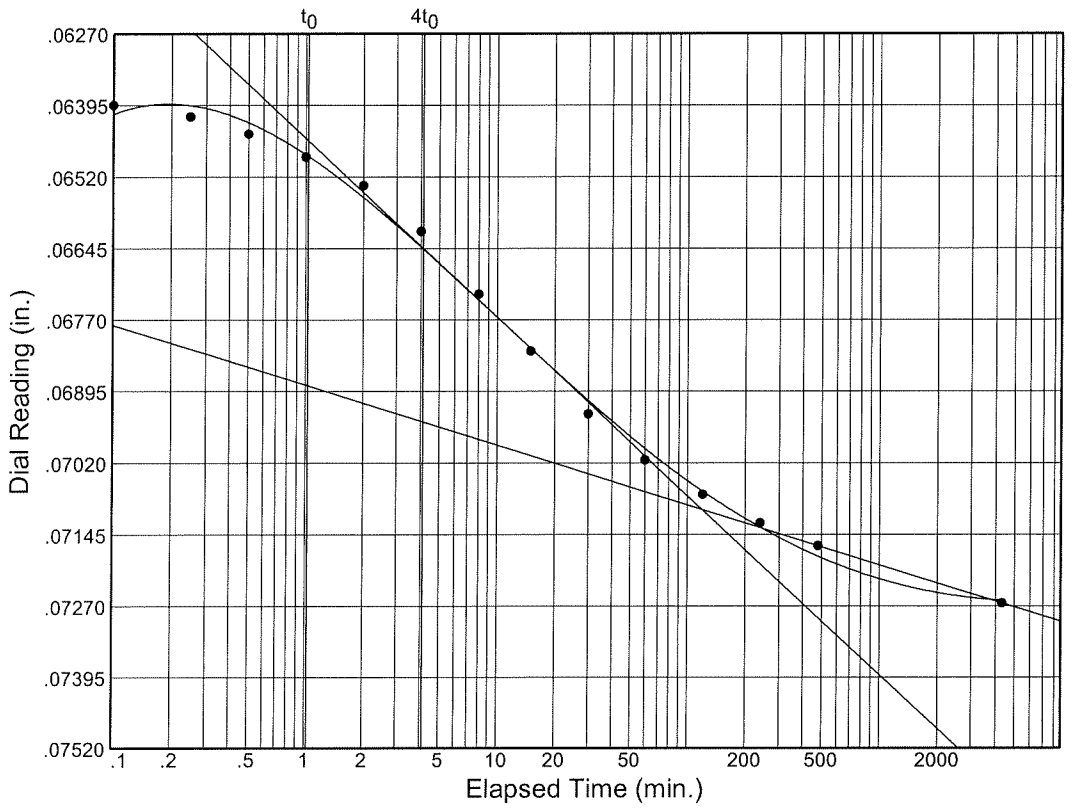
Location: B-4, T-1: 30' - 32'



Load No.= 1
Load= 0.13 tsf
D_0 = 0.05640
D_{50} = 0.05985
D_{100} = 0.06331
T_{50} = 6.13 min.

C_v @ T_{50}
0.04 ft.^{2}/day

C_α = 0.001



Load No.= 2
Load= 0.25 tsf
D_0 = 0.06321
D_{50} = 0.06711
D_{100} = 0.07101
T_{50} = 6.69 min.

C_v @ T_{50}
0.04 ft.^{2}/day

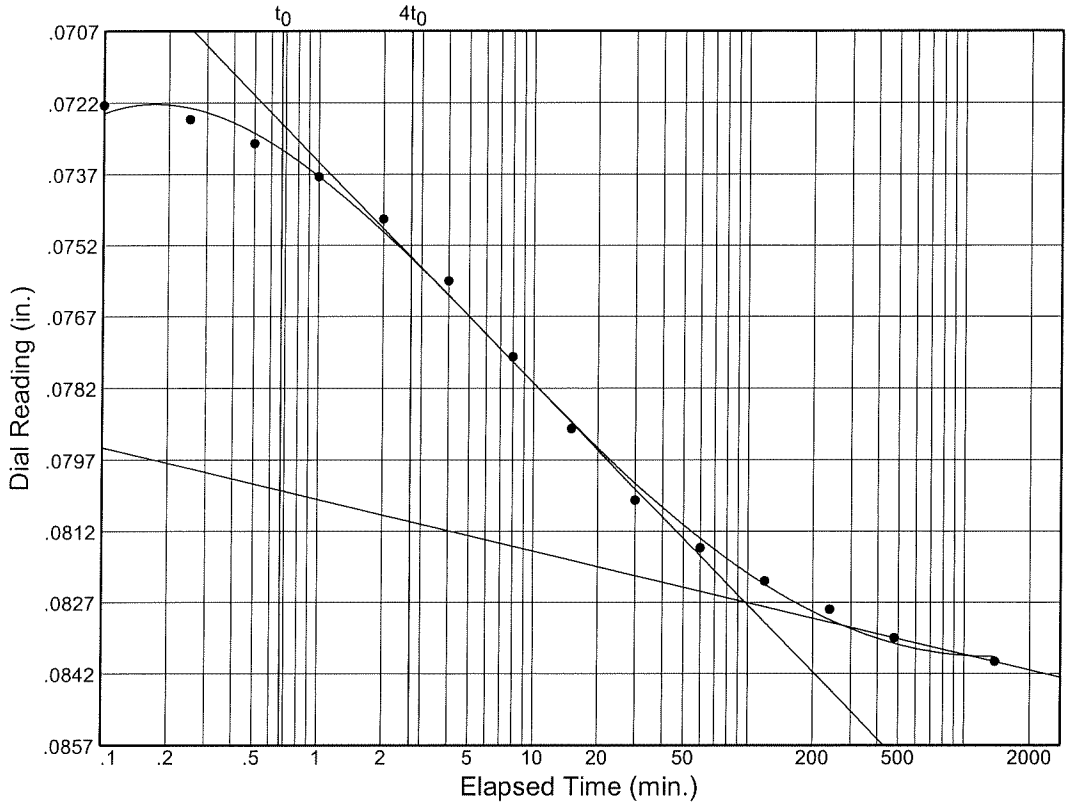
C_α = 0.001

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Dial Reading vs. Time

Project No.: BE-21-054
Project: SAWYER'S LANDING

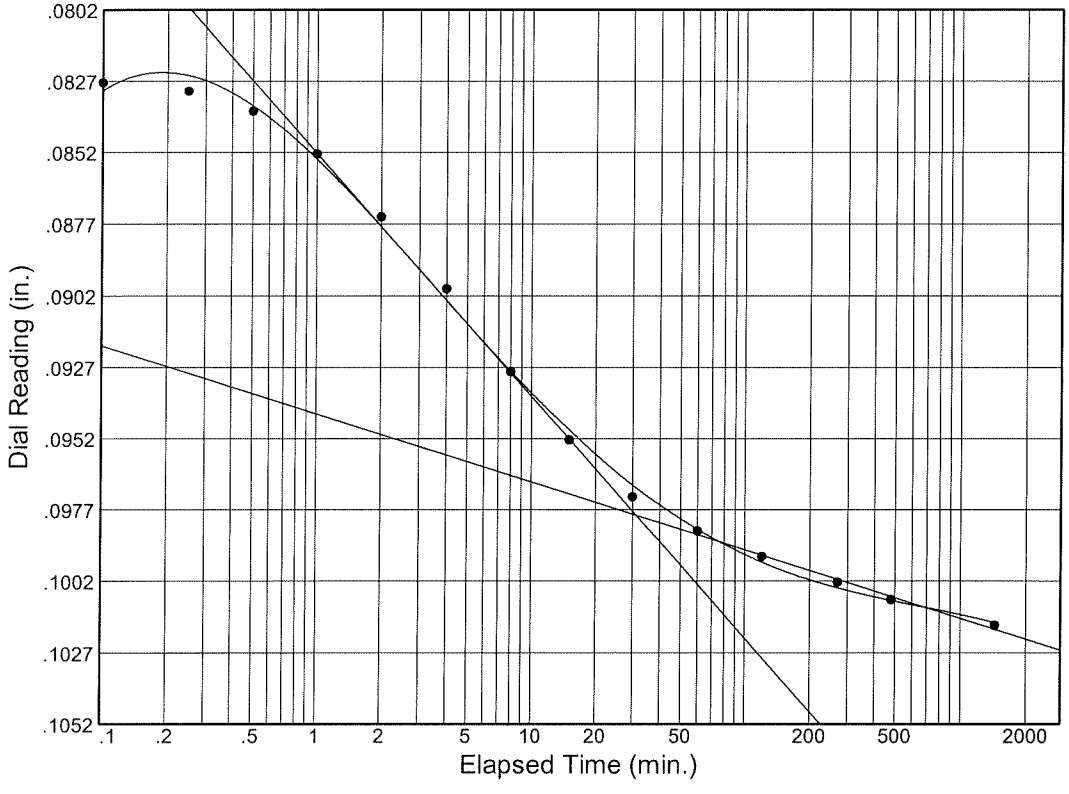
Location: B-4, T-1: 30' - 32'



Load No.= 3
Load= 0.50 tsf
D_0 = 0.07089
D_{50} = 0.07679
D_{100} = 0.08269
T_{50} = 5.22 min.

C_v @ T_{50}
0.05 ft.^{2}/day

C_α = 0.001



Load No.= 4
Load= 1.00 tsf
D_0 = 0.08395
D_{50} = 0.09092
D_{100} = 0.09790
T_{50} = 4.69 min.

C_v @ T_{50}
0.05 ft.^{2}/day

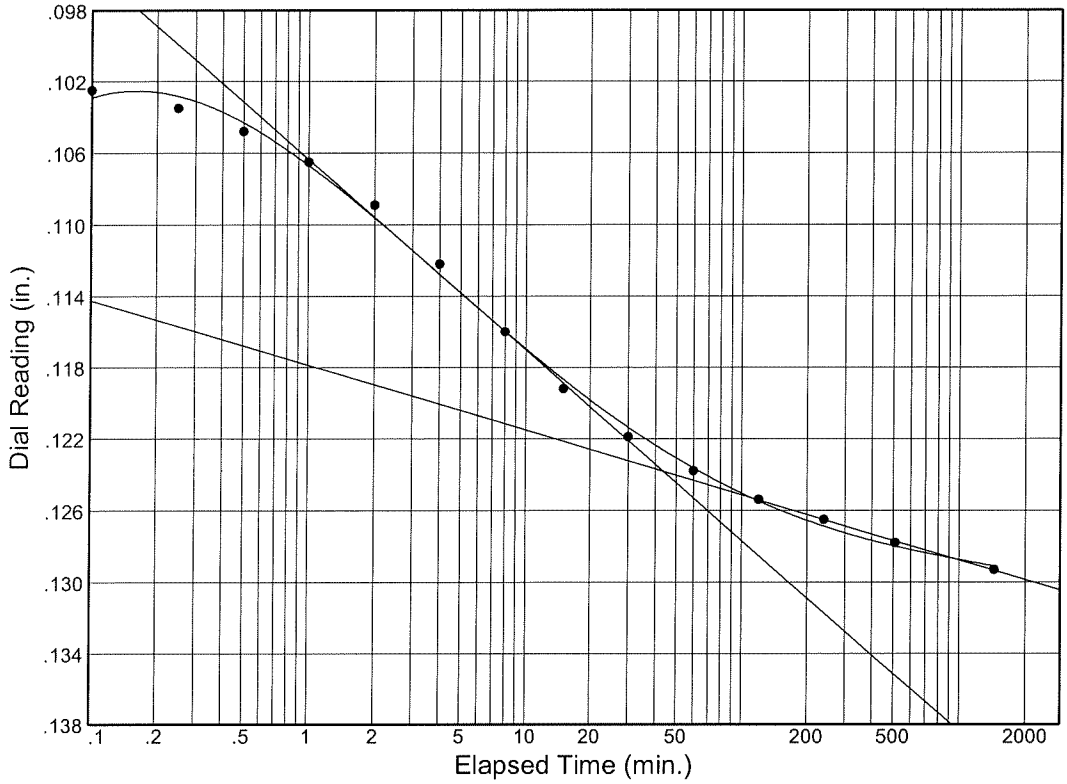
C_α = 0.003

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Dial Reading vs. Time

Project No.: BE-21-054
Project: SAWYER'S LANDING

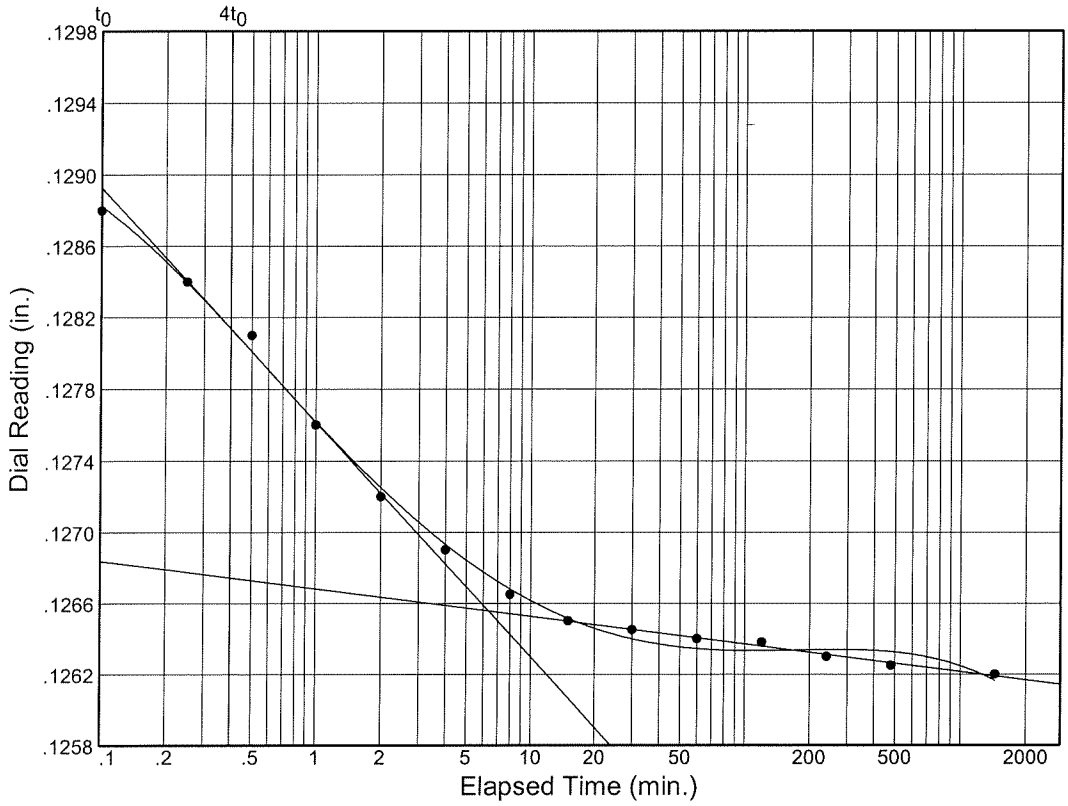
Location: B-4, T-1: 30' - 32'



Load No.= 5
Load= 2.00 tsf
D_0 = 0.10175
D_{50} = 0.11278
D_{100} = 0.12382
T_{50} = 3.99 min.

C_v @ T_{50}
0.06 ft.^{2}/day

C_α = 0.005



Load No.= 6
Load= 1.00 tsf
D_0 = 0.12951
D_{50} = 0.12803
D_{100} = 0.12656
T_{50} = 0.48 min.

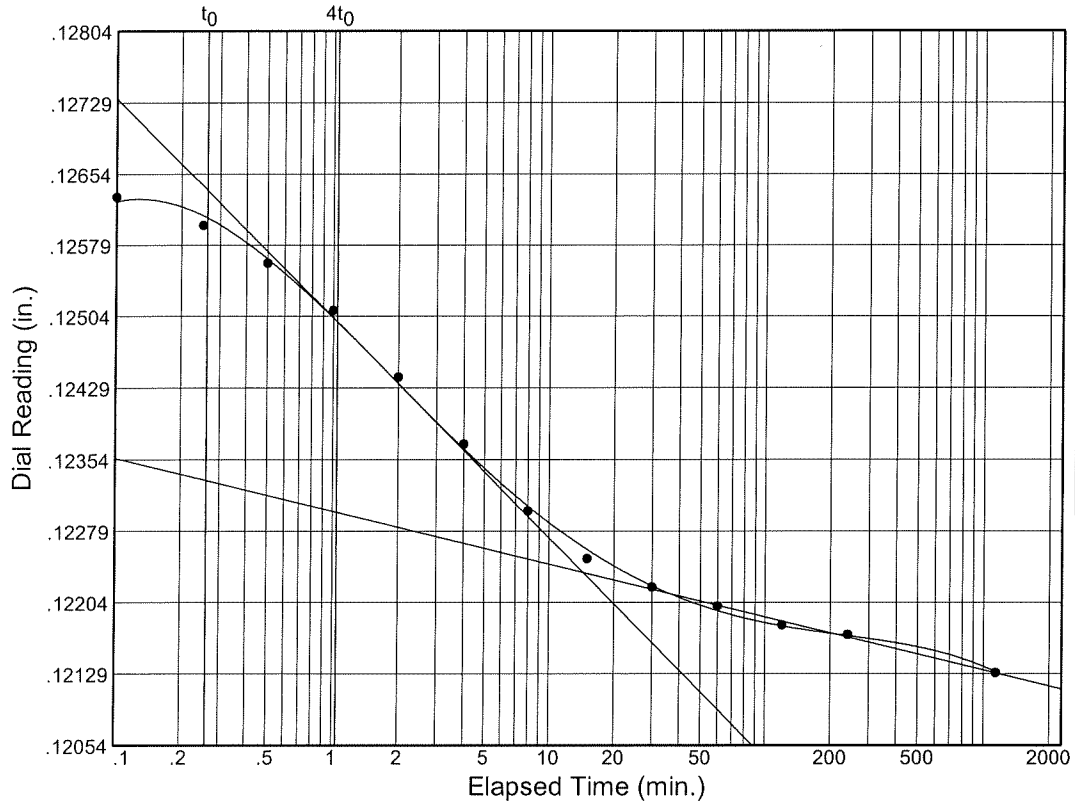
C_v @ T_{50}
0.47 ft.^{2}/day

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Dial Reading vs. Time

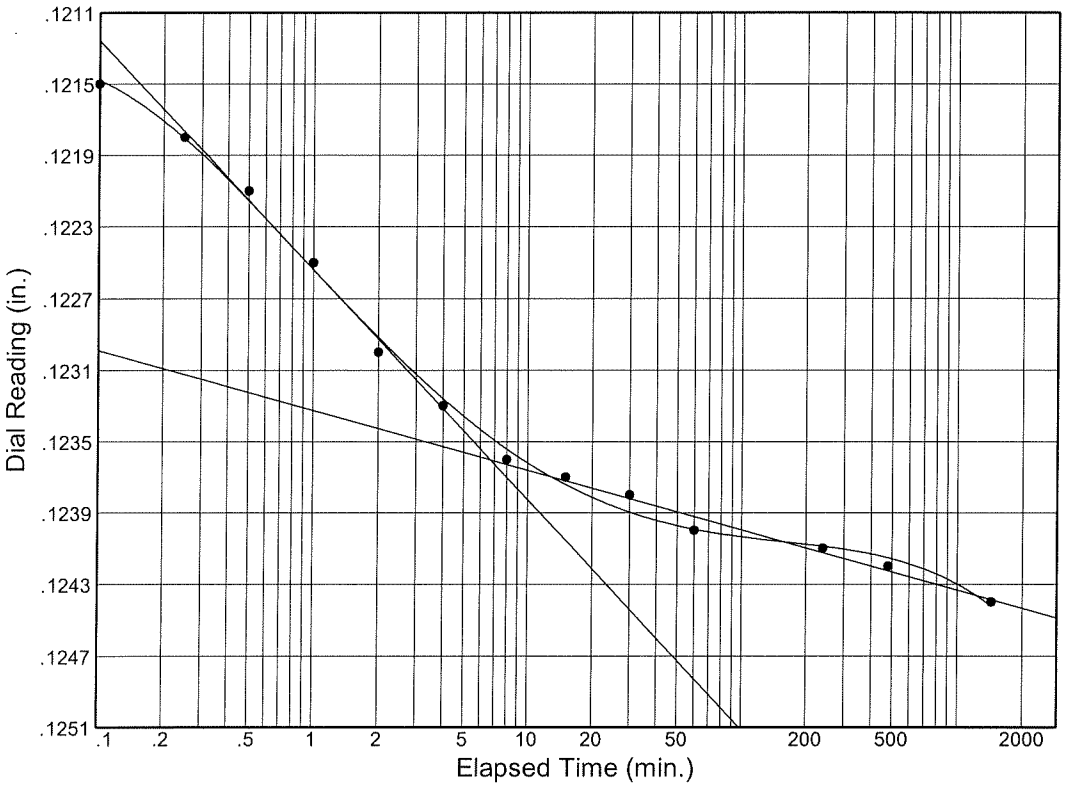
Project No.: BE-21-054
Project: SAWYER'S LANDING

Location: B-4, T-1: 30' - 32'



Load No.= 7
Load= 0.50 tsf
D_0 = 0.12718
D_{50} = 0.12477
D_{100} = 0.12236
T_{50} = 1.29 min.

C_v @ T_{50}
0.18 ft.^{2}/day



Load No.= 8
Load= 1.00 tsf
D_0 = 0.12130
D_{50} = 0.12245
D_{100} = 0.12360
T_{50} = 0.85 min.

C_v @ T_{50}
0.27 ft.^{2}/day

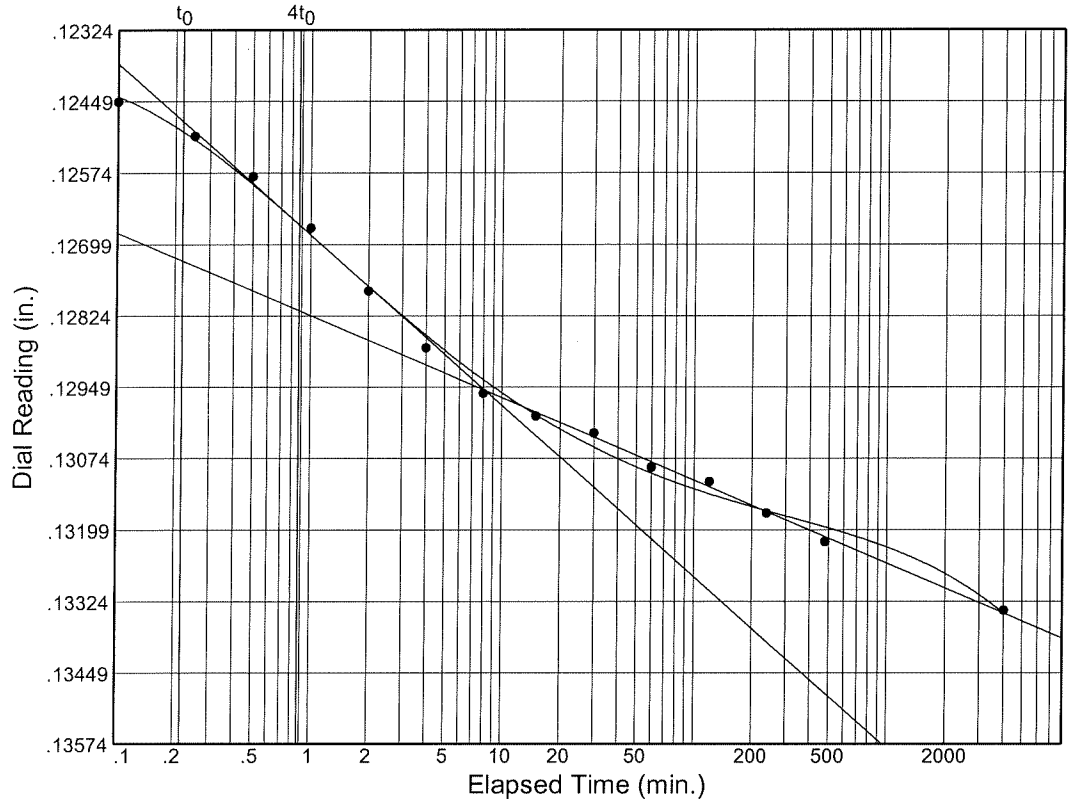
C_α = 0.000

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Dial Reading vs. Time

Project No.: BE-21-054
Project: SAWYER'S LANDING

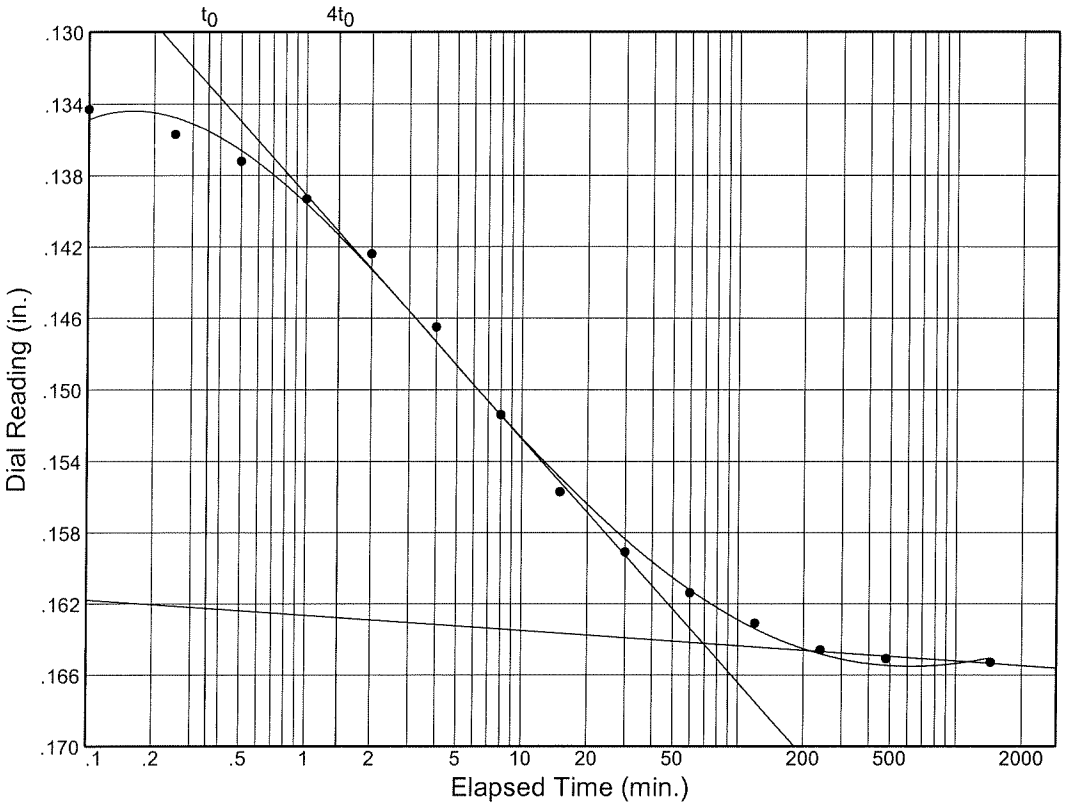
Location: B-4, T-1: 30' - 32'



Load No.= 9
Load= 2.00 tsf
D_0 = 0.12340
D_{50} = 0.12647
D_{100} = 0.12955
T_{50} = 0.76 min.

C_v @ T_{50}
0.30 ft.^{2}/day

C_α = 0.002



Load No.= 10
Load= 4.00 tsf
D_0 = 0.12966
D_{50} = 0.14694
D_{100} = 0.16423
T_{50} = 3.75 min.

C_v @ T_{50}
0.06 ft.^{2}/day

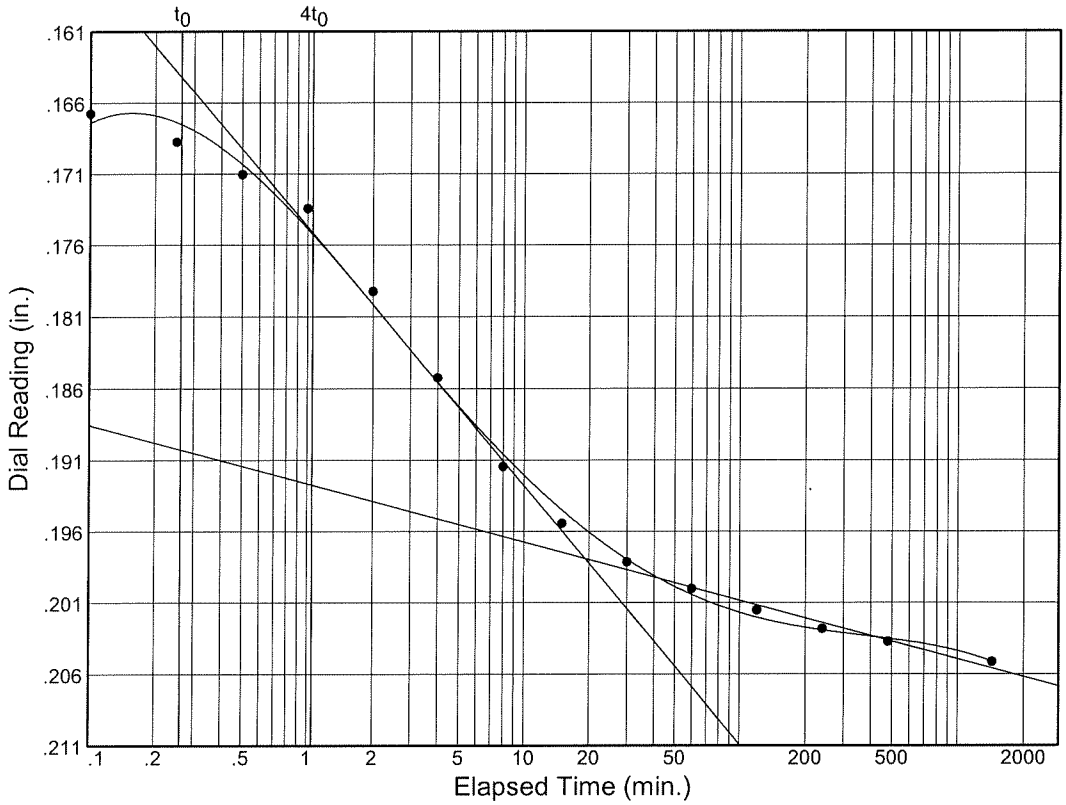
C_α = 0.001

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Dial Reading vs. Time

Project No.: BE-21-054
Project: SAWYER'S LANDING

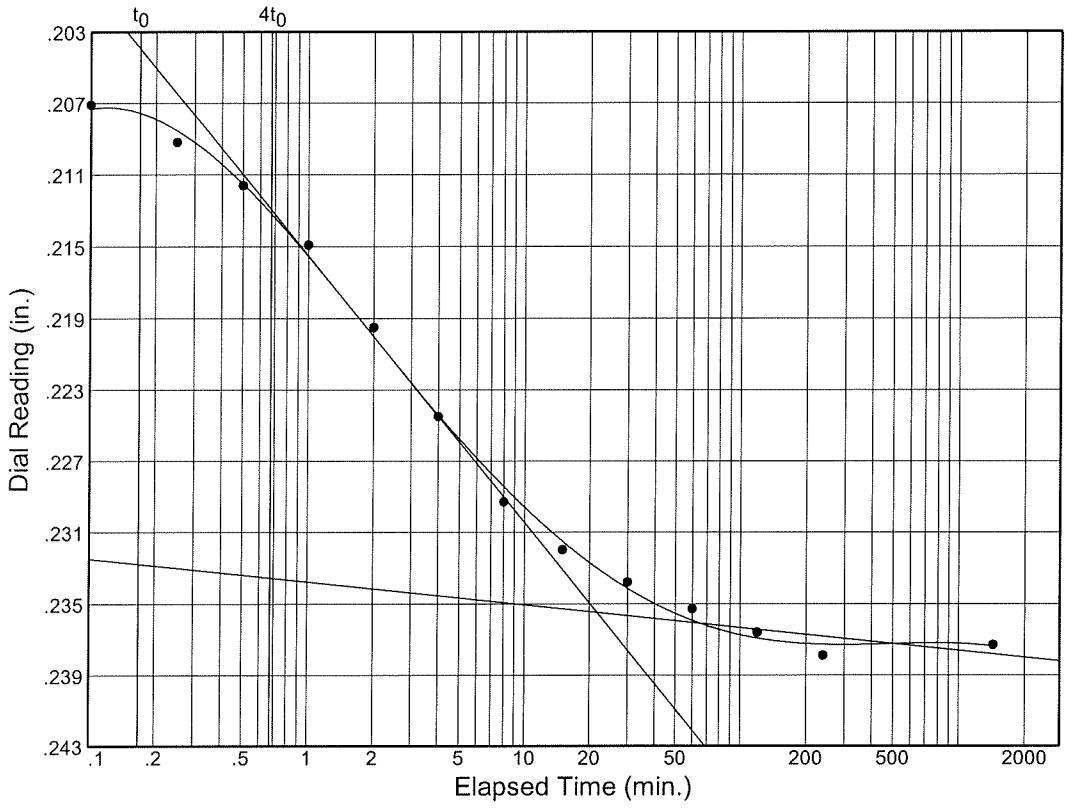
Location: B-4, T-1: 30' - 32'



Load No.= 11
Load= 8.00 tsf
D_0 = 0.15978
D_{50} = 0.17884
D_{100} = 0.19791
T_{50} = 1.69 min.

C_v @ T_{50}
0.11 ft.^{2}/day

C_α = 0.006



Load No.= 12
Load= 16.00 tsf
D_0 = 0.20193
D_{50} = 0.21870
D_{100} = 0.23548
T_{50} = 1.64 min.

C_v @ T_{50}
0.10 ft.^{2}/day

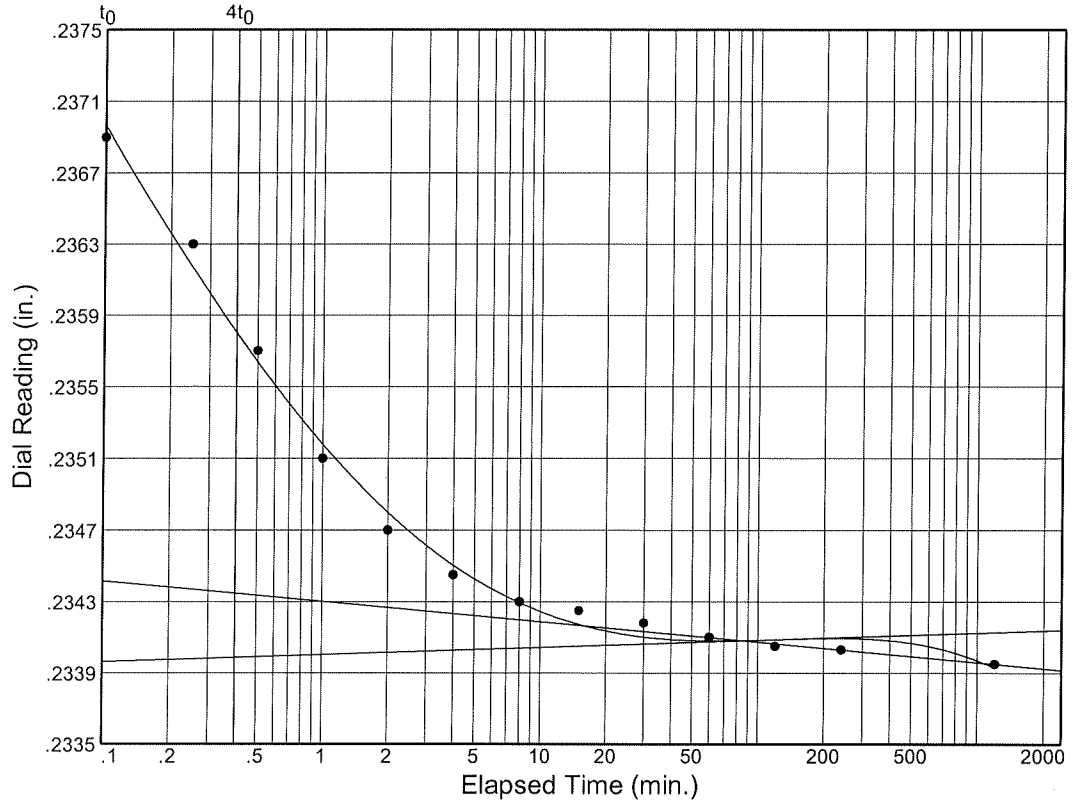
C_α = 0.002

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Dial Reading vs. Time

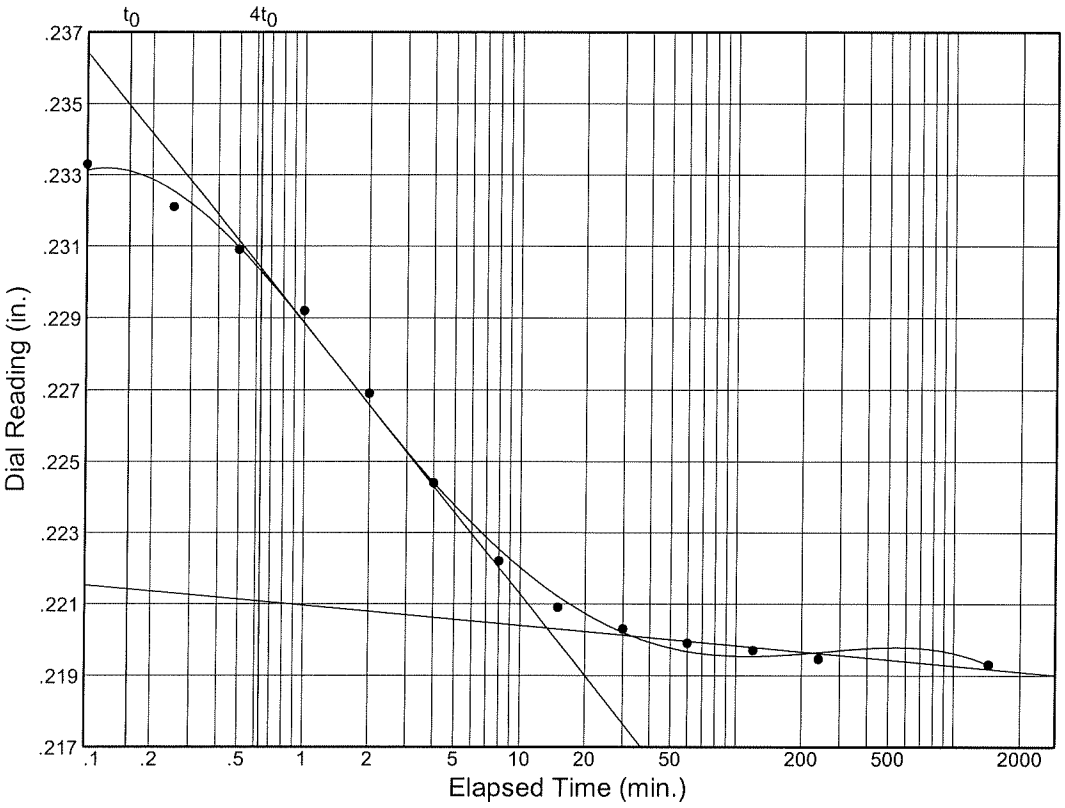
Project No.: BE-21-054
Project: SAWYER'S LANDING

Location: B-4, T-1: 30' - 32'



Load No.= 13
Load= 8.00 tsf
D_0 = 0.23813
D_{50} = 0.23611
D_{100} = 0.23408
T_{50} = 0.24 min.

C_v @ T_{50}
0.66 ft.^{2}/day



Load No.= 14
Load= 2.00 tsf
D_0 = 0.23592
D_{50} = 0.22812
D_{100} = 0.22032
T_{50} = 1.25 min.

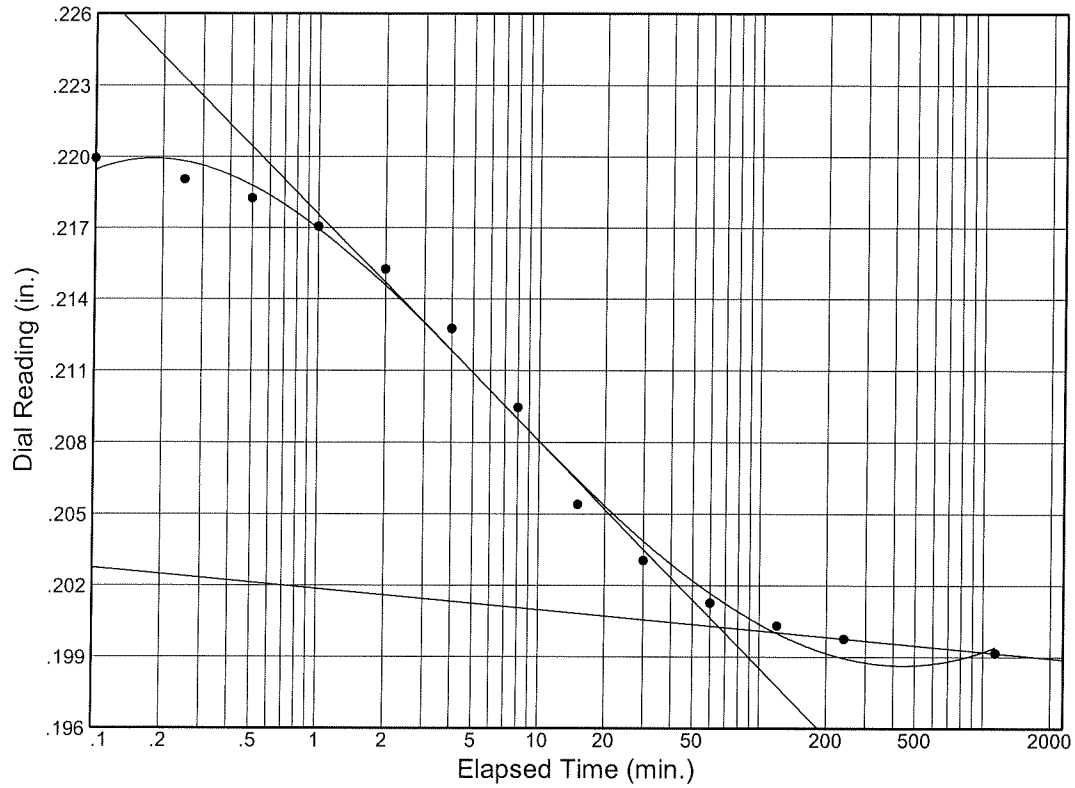
C_v @ T_{50}
0.13 ft.^{2}/day

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Dial Reading vs. Time

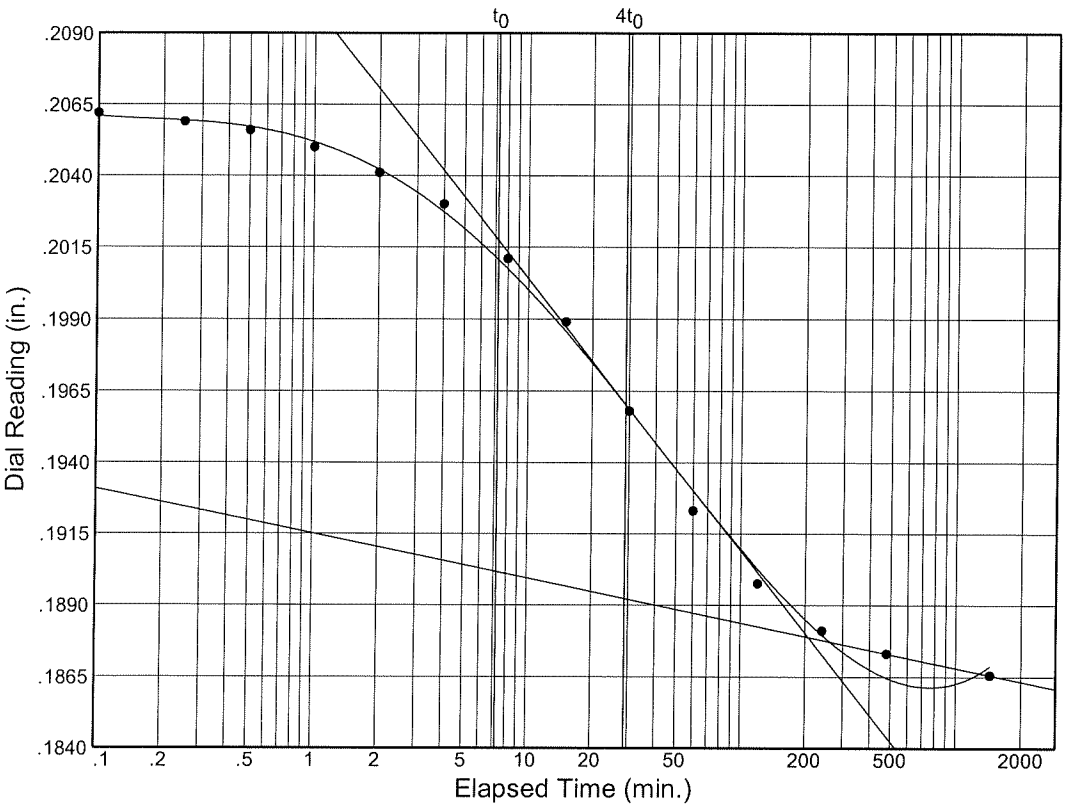
Project No.: BE-21-054
Project: SAWYER'S LANDING

Location: B-4, T-1: 30' - 32'



Load No.= 15
Load= 0.50 tsf
D_0 = 0.21930
D_{50} = 0.20977
D_{100} = 0.20025
T_{50} = 6.58 min.

C_v @ T_{50}
0.03 ft.^{2}/day



Load No.= 16
Load= 0.13 tsf
D_0 = 0.20613
D_{50} = 0.19700
D_{100} = 0.18787
T_{50} = 22.51 min.

C_v @ T_{50}
0.01 ft.^{2}/day

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

APPENDIX C

FILL MATERIAL AND EARTHWORK RECOMMENDATIONS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

APPENDIX C

FILL MATERIAL AND EARTHWORK RECOMMENDATIONS

I. Material Recommendations

A. Structural Fill

Structural Fill should consist of a crusher run stone, free of clay, organics and friable or deleterious particles. As a minimum, the crusher stone should meet the requirements of New York State Department of Transportation, Standard Specifications, Item 304.12 – Type 2 Subbase, with the following gradation requirements.

Sieve Size Distribution	Percent Finer by Weight
2 inch	100
¼ inch	25-60
No. 40	5-40
No. 200	0-10

B. Subbase Stone

The subbase stone course placed as the aggregate course beneath slab-on-grade and pavement construction should conform to the same material requirements as Structural Fill as stated above.

C. Suitable Granular Fill

Suitable soil material, which is well graded from coarse to fine, and classified as GW, GP, GM, SW, SP and SM soils using the Unified Soil Classification System (ASTM D-2487) and having no more than 85- percent by weight material passing the No. 4 sieve, no more than 20- percent by weight material passing the No. 200 sieve and which is generally free of particles greater than 4 inches, will be acceptable as Suitable Granular Fill. It should also be free of topsoil, asphalt, concrete rubble, wood, debris, clay and other deleterious materials. Suitable Granular Fill can be used as foundation backfill and as subgrade fill to raise site grades beneath slab-on-grade and pavement construction.

Material meeting the requirements of New York State Department of Transportation, Standard Specifications, Item 203.07 – Select Granular Fill is acceptable for use as Suitable Granular Fill.

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II. Placement and Compaction Requirements

Structural Fill placed beneath foundations, slab on grade floors and pavement, or used as foundation backfill should be compacted to a minimum of 95 percent of the maximum dry density as measured by the modified Proctor test (ASTM D1557). Fill placed in non-loaded grass areas can be compacted to a minimum of 90 percent of the maximum dry density (ASTM D1557).

Placement of fill should not exceed a maximum loose lift thickness of 8 to 10 inches with the exception of subgrade undercuts and the subbase courses beneath slab-on-grade and pavement construction, which can be placed in a single or initial lift not exceeding 12 inches. The loose lift thickness should be reduced in conjunction with the compaction equipment used so that the required density is attained.

Fill should have a moisture content within two percent of the optimum moisture content prior to compaction. Subgrades should be properly drained and protected from moisture and frost. Placement of fill on frozen subgrades is not acceptable. It is recommended that all fill placement and compaction be monitored and tested by a representative of Empire Geotechnical Engineering Services.

III. Quality Assurance Testing

The following minimum laboratory and field quality assurance testing frequencies are recommended to confirm fill material quality and post placement and compaction conditions. These minimum frequencies are based on generally uniform material properties and placement conditions. Should material properties vary or conditions at the time of placement vary (i.e. moisture content, placement and compaction, procedures or equipment, etc.) Then additional testing is recommended. Additional testing, which may be necessary, should be determined by qualified geotechnical personnel, based on evaluation of the actual fill material and construction conditions.

A. Laboratory Testing of Material Properties

- Moisture content (ASTM D-2216) - 1 test per 2,000 cubic yards or no less than 2 tests per each material type.
- Grain Size Analysis (ASTM D-422) - 1 test per 3,000 cubic yards or no less than 2 tests per each material type.
- Liquid and Plastic Limits (ASTM D-4318) 1 test per 3,000 cubic yards or no less than 2 tests per each material type. Liquid and Plastic Limit testing is necessary only if appropriate, based on material composition (i.e. clayey or silty soils).

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- Modified Proctor Moisture Density Relationship (ASTM D-1557) 1 test per 4,000 cubic yards or no less than 1 test per each material type. A maximum/minimum density relationship (ASTM D-4253 and ASTM D-4254) may be an appropriate substitute for ASTM D-1557 depending on material gradation.

B. Field In-Place Moisture/Density Testing (ASTM D-3017 and ASTM D-2922)

- Backfilling along trenches and foundation walls - 1 test per 50 lineal feet per lift.
- Backfilling Isolated Excavations (i.e. column foundations, manholes, etc.) 1 test per lift.
- Filling in open areas for slab-on-grade and pavement construction - 1 test per 2,500 square feet per lift.

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APPENDIX D

GEOTECHNICAL REPORT LIMITATIONS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

GEOTECHNICAL REPORT LIMITATIONS

WMA Engineering DPC / DBA Empire Geotechnical Engineering Services (Empire) has endeavored to meet the generally accepted standard of care for the services completed, and in doing so is obliged to advise the geotechnical report user of our report limitations. Empire believes that providing information about the report preparation and limitations is essential to help the user reduce geotechnical-related delays, cost over-runs, and other problems that can develop during the design and construction process. Empire would be pleased to answer any questions regarding the following limitations and use of our report to assist the user in assessing risks and planning for site development and construction.

PROJECT SPECIFIC FACTORS: The conclusions and recommendations provided in our geotechnical report were prepared based on project specific factors described in the report, such as size, loading, and intended use of structures; general configuration of structures, roadways, and parking lots; existing and proposed site grading; and any other pertinent project information. Changes to the project details may alter the factors considered in development of the report conclusions and recommendations. *Accordingly, Empire cannot accept responsibility for problems which may develop if we are not consulted regarding any changes to the project specific factors that were assumed during the report preparation.*

SUBSURFACE CONDITIONS: The site exploration investigated subsurface conditions only at discrete test locations. Empire has used judgement to infer subsurface conditions between the discrete test locations, and on this basis the conclusions and recommendations in our geotechnical report were developed. It should be understood that the overall subsurface conditions inferred by Empire may vary from those revealed during construction, and these variations may impact on the assumptions made in developing the report conclusions and recommendations. *For this reason, Empire should be retained during construction to confirm that conditions are as expected, and to refine our conclusions and recommendations in the event that conditions are encountered that were not disclosed during the site exploration program.*

USE OF GEOTECHNICAL REPORT: Unless indicated otherwise, our geotechnical report has been prepared for the use of our client for specific application to the site and project conditions described in the report. *Without consulting with Empire, our geotechnical report should not be applied by any party to other sites or for any uses other than those originally intended.*

CHANGES IN SITE CONDITIONS: Surface and subsurface conditions are subject to change at a project site subsequent to preparation of the geotechnical report. Changes may include, but are not limited to, floods, earthquakes, groundwater fluctuations, and construction activities at the site and/or adjoining properties. *Empire should be informed of any such changes to determine if additional investigative and/or evaluation work is warranted.*

MISINTERPRETATION OF REPORT: The conclusions and recommendations contained in our geotechnical report are subject to misinterpretation. *To limit this possibility, Empire should review project plans and specifications relative to geotechnical issues to confirm that the recommendations contained in our report have been properly interpreted and applied.*

Subsurface exploration logs and other report data are also subject to misinterpretation by others if they are separated from the geotechnical report. This often occurs when copies of logs are given to contractors during the bid preparation process. *To minimize the potential for misinterpretation, the subsurface logs should not be separated from our geotechnical report and the use of excerpted or incomplete portions of the report should be avoided.*

OTHER LIMITATIONS: Geotechnical engineering is less exact than other design disciplines, as it is based partly on judgement and opinion. For this reason, our geotechnical report may include clauses that identify the limits of Empire's responsibility, or that may describe other limitations specific to a project. These clauses are intended to help all parties recognize their responsibilities and to assist them in assessing risks and decision making. Empire would be pleased to discuss these clauses and to answer any questions that may arise.

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TRAFFIC IMPACT REPORT UPDATE

June 24, 2024

20243845.0001

SAWYER'S LANDING DEVELOPMENT UPDATE

TOWN OF AMHERST, NY

PREPARED FOR:
Severyn Development, Inc.
Attn: William Severyn // Chief Executive Officer
43 Central Ave Suite 300
Lancaster, New York 14086

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242 West Main Street, Suite 100 | Rochester, NY 14614 | 585.325.1000 | www.passero.com

PASSERO engineering architecture

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1.0 EXECUTIVE SUMMARY

The purpose of this updated report is to evaluate the potential traffic impacts related to the proposed Sawyer's Landing development to be located on the property at 50 Dodge Road, which is along the north side of Dodge Road in the Town of Amherst, NY (Commonly referred to as Site "A" of the Muir Woods Project Site"). Within this report, the operating characteristics of the proposed access points and impacts to the adjacent roadway network are evaluated and mitigating measures are identified (if needed) to minimize operational concerns.

To define traffic impact, this analysis establishes existing baseline traffic conditions, projects background traffic flow including area growth, and determines the traffic operations that would result from the proposed project.

Project Location and Description

The project site is located along the north side of Dodge Road, west of Interstate 990, in the Town of Amherst, Erie County, New York. The project site is bounded by a residential development and Heritage Heights Elementary School to the north, vacant land to the east, offices to the south, and a medical plaza to the west. Land uses in the vicinity of the project site include residential, office, medical, and educational uses. The project site currently consists of a vacant building.

The proposed Sawyer's Landing development will consist of constructing:

- Mixed-Use Building 1 (four-stories)
  - 51 Mid-Rise apartment units,
  - a ±3,901 square foot (SF) restaurant,
  - a ±432 SF leasing office,
  - and an ±8,002 SF membership-based gym
- Mixed-Use Building 2 (four-stories)
  - 51 Mid-Rise apartment units,
  - a ±3,901 square foot (SF) retail store,
  - a ±8,953 square foot (SF) retail store,
  - and a ±2,300 SF office
- a four-story ±26,400 SF self-storage building (±105,600 SF in total),
- 22 two-story duplex townhome buildings containing two units each for a total of 44 duplex townhome units,
- 63 two-story townhomes with attached garages.

Access to the site will be provided via one enter only driveway and one exit only driveway along Dodge Rd and one full access driveway along Dodge Rd to the south of the enter only driveway. There will also be an emergency access driveway along Dodge Road to the north of the exit only driveway with an emergency gate.

Study Area

To ensure a comprehensive analysis of potential traffic impacts, a study area was selected consisting of the following two (2) intersections:

1. Dodge Road/Sweet Home Road
2. Dodge Road/North Forest Road

Existing and Background Conditions

Turning movement traffic counts were collected by Passero Associates on Thursday, March 3, 2022, at the Dodge Rd/North Forest Rd study intersection for both the weekday AM and PM peak hour periods. Turning movement traffic counts were collected by the Town of Amherst on Tuesday May 14, 2024, at the Dodge Rd/Sweet Home Rd study

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intersection for both the weekday AM and PM peak hour periods. Traffic counts were conducted between 7:00-9:00 AM for the weekday AM peak period and 4:00-6:00 PM for the weekday PM peak period. The peak hour traffic periods generally occurred between 7:30-8:30 AM and 4:30-5:30 PM.

Construction of the proposed project is anticipated to reach full build-out within approximately two years. The widely accepted methodology for preparing traffic impact studies requires that any projects in the study area that are currently approved and/or under construction must be considered in the traffic analysis. Projects that are contemplated but not yet approved are not included in a traffic analysis. Local municipal personnel were contacted to discuss any other specific projects that are currently approved or under construction that would generate additional traffic in the study area. The following projects were identified and are listed below:

- Aspen Heights Student Housing – Traffic generated by this student housing development was added to the study intersections.
- 480 Dodge Road - Traffic generated by this approved but not yet constructed multifamily project was added to the study intersections.
- 775 John James Audubon Pkwy – Traffic generated by this approved project is included in the background growth rate.

A review of available historical NYSDOT traffic volume data in the vicinity of the site indicates that traffic has decreased between 2010 and 2019 in the study area. To account for normal increases in background traffic growth, including the approved development noted above as well as any unforeseen developments in the study area, a growth rate of 1.0% per year was applied to the existing traffic volumes for the two-year build out period.

Conclusions and Recommendations

This updated Traffic Impact Study identified and evaluated the potential traffic impacts that can be expected from the proposed Sawyer's Landing development to be located on the property at 50 Dodge Road, which is along the north side of Dodge Road in the Town of Amherst, NY (Commonly referred to as Site "A" of the Muir Woods Project Site"). The results of this study determined that the existing transportation network can adequately accommodate the projected traffic volumes and resulting minor impacts to study area intersections. The following sets forth the conclusions and recommendations based upon the results of the analyses:

Conclusions

1. The proposed project is expected to generate approximately 76 entering/102 exiting vehicle trips during the AM peak hour and 163 entering/136 exiting vehicle trips during the PM peak hour.

2. However, not all these driveway volumes are new, but instead a portion of the proposed volumes will visit more than one land use during one trip to the site. Thus, based upon internal capture rates from the NCHRP 684 model and professional judgement, the proposed site is expected to generate approximately 69 entering/92 exiting new vehicle trips during the AM peak hour and 133 entering/110 exiting new vehicle trips during the PM peak hour.

3. Based upon the results of the traffic signal warrant at the Dodge Rd/North Forest Rd intersection, a traffic signal is not warranted at this intersection.

4. All movements generally operate at an acceptable LOS "D" or better under existing, projected background, and full build conditions (with proposed development) during both peak hours at all study intersections except for the northbound left approach at the Sweet Home Rd/Dodge Rd intersection during the AM peak hour, which

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operates at LOS "F" under background and full build conditions. There are no LOS changes at any of the study intersections that require mitigation.

5. The detailed analysis contained in this Traffic Impact Study demonstrates the proposed project will not result in any potentially significant adverse environmental impacts for the purpose of the environmental review of the project pursuant to the State Environmental Quality Review Act ("SEQRA").

Recommendations

1. The proposed exit driveway along Dodge Rd should be designed to provide one exiting lane.

2. The proposed enter driveway along Dodge Rd should be designed to provide one entering lane.

3. The proposed southerly driveway along Dodge Rd should be designed to provide one entering and one exiting lane.

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2.0 INTRODUCTION

2.1 Study Purpose and Objectives

The purpose of this updated report is to evaluate the potential traffic impacts related to the proposed Sawyer's Landing development to be l located on the property at 50 Dodge Road, which is along the north side of Dodge Road in the Town of Amherst, NY (Commonly referred to as Site "A" of the Muir Woods Project Site"). Within this report, the operating characteristics of the proposed access points and impacts to the adjacent roadway network are evaluated and mitigating measures are identified (if needed) to minimize operational concerns.

To define traffic impact, this analysis establishes existing baseline traffic conditions, projects background traffic flow including area growth, and determines the traffic operations that would result from the proposed project.

2.2 Project Location

The project site is located along the north side of Dodge Road, west of Interstate 990, in the Town of Amherst, Erie County, New York. The project site is bounded by a residential development and Heritage Heights Elementary School to the north, vacant land to the east, offices to the south, and a medical plaza to the west. Land uses in the vicinity of the project site include residential, office, medical, and educational uses. The project site currently consists of a vacant building.

Study Area

To ensure a comprehensive analysis of potential traffic impacts, a study area was selected consisting of the following two (2) intersections:

1. Dodge Road/Sweet Home Road
2. Dodge Road/North Forest Road

The project site location and study area are illustrated in **Figure 1** (all figures are included at the end of this report).

3.0 TRANSPORTATION SETTING

3.1 Description of Study Area Roadways

The information outlined in **Table 1** provides a description of the existing roadway network within the study area. **Figure 2** illustrates the lane geometry and traffic control at each of the study intersections and the Annual Average Daily Traffic (AADT) volumes on the study roadways. The AADTs reflect the most recently collected data obtained from the NYSDOT.

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Table 1: *Existing Highway System*

ROADWAY	CLASS[1]	AGENCY[2]	SPEED LIMIT[3]	TRAVEL LANES[4]	ORIENTATION OF TRAVEL	AADT[5]
Dodge Road	16	ECDPW	40	2	Two-Way/ East-West	6,738 NYSDOT (2017)
Sweet Home Road	16	ECDPW	45	4	Two-way/ North-South	18,050 NYSDOT (2019)
North Forest Road	19	Town of Amherst	35	2	Two-way/ North-South	1,797 NYSDOT (2019)

Notes:
1. State functional classification of roadway
2. Jurisdictional agency of roadway.
3. Posted or statewide limit in miles per hour (mph).
4. Number of travel lanes. Excludes turning/auxiliary lanes developed at intersections.
5. Estimated AADT in vehicles per day (vpd). AADT source (Year).

The Highway Functional Classification System defines the role a roadway plays in the overall road network. Functional classification of highways within the study area is determined by the NYSDOT and the Federal Highway Administration (FHWA).

Urban Minor Arterial (Class 16)

An urban minor arterial interconnects and augments the higher-level arterials as well as serves trips of moderate length at a somewhat lower level of travel mobility than Principal Arterials. They distribute traffic to smaller geographic areas than those served by higher-level Arterials and provide more land access than Principal Arterials without penetrating identifiable neighborhoods. They also provide urban connections for Rural Collectors.

Urban Local (Class 19)

According to the FHWA, this class of roadway includes all facilities not in one of the higher systems (e.g., arterial, collector, etc.). It primarily permits direct access to abutting lands and connections to the higher order systems and is not intended for use in long distance travel. As public roads, they should be accessible for public use throughout the year. Generally, the streets carry little to no through-traffic flows.

3.2 Description of Multimodal Network

Table 2 summarizes the traffic controls, pedestrian, bicycle, and transit accommodations within the study area.

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Table 2: *Multimodal Network*

INTERSECTION	Dodge Rd/Sweet Home Rd	Dodge Rd/North Forest Rd
Intersection Control Type	Signalized	Unsignalized
Sidewalks	◍	○
Crosswalks	●	○
Curb Ramps	●	○
Pedestrian Signal	●	○
Pedestrian Push Button	●	○
Pedestrian Countdown	●	○
Bicycle Facilities	○	○
Street Lighting	●	○
Transit Route	N/A	N/A

● Present at entire intersection
◍ Present at portion of intersection
○ Not present at intersection

3.3 Planned/Programmed Highway Improvements

There are no planned highway improvement projects in the study area.

4.0 EXISTING CONDITIONS ANALYSIS

4.1 Peak Intervals for Analysis

Given the functional characteristics of the corridors, adjacent land uses, and the proposed land use for the project site, the peak hours selected for analysis are the weekday AM and weekday PM peak periods. The combination of site traffic and adjacent street traffic produces the greatest demand during these time periods.

4.2 Existing Traffic Volume Data

Turning movement traffic counts were collected by Passero Associates on Thursday, March 3, 2022, at the Dodge Rd/North Forest Rd study intersection for both the weekday AM and PM peak hour periods. Turning movement traffic counts were collected by the Town of Amherst on Tuesday May 14, 2024, at the Dodge Rd/Sweet Home Rd study intersection for both the weekday AM and PM peak hour periods. Traffic counts were conducted between 7:00-9:00 AM for the weekday AM peak period and 4:00-6:00 PM for the weekday PM peak period. The peak hour traffic periods generally occurred between 7:30-8:30 AM and 4:30-5:30 PM.

All turning movement count data was collected on a typical weekday while local schools were in session. No adverse weather conditions impacted the traffic counts. The traffic volumes were reviewed for seasonality and to confirm the accuracy and relative balance of the collective traffic counts. The actual differences in traffic volumes can be attributed to temporal variations in traffic volumes as well as activity related to driveways located in the segments between the study intersections. Additionally, the volumes at the Dodge Rd/North Forest Rd intersection were increased using a

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0.5% growth rate based on the historical traffic data described in Section 5.0 to account for any growth in traffic between the time of data collection and now. The existing peak hour traffic volumes are shown in **Figure 3**.

4.3 Existing Crash Investigation

The purpose of this crash analysis is to identify inherent safety issues by studying and quantifying historical crashes at the study intersections and identifying potential crash patterns and clusters.

A crash cluster is defined as an abnormal occurrence of similar crash types occurring at approximately the same location or involving the same geometric features. The severity of the crashes should also be considered. A history of crashes is an indication that further analysis is required to determine the cause(s) of the crash(es) and to identify what actions, if any, could be taken to mitigate the crashes.

A crash investigation within the study area was conducted to assess the safety history from January 1, 2019, through December 31, 2023.

Reportable (non-injury, injury, and fatal injury) type crashes are defined as damage to one person's property in the amount of $1,001 or more. The Non-Reportable type crashes result in property damage of $1,000 or less. Crash rates were computed for the study intersections and compared with NYSDOT average crash rates for similar intersections, as summarized in **Table 3**. Intersection rates are listed as crashes per million entering vehicle (CR/MEV).

Table 3: *Intersection Crash Rate Analysis*

INTERSECTION	NUMBER OF CRASHES	NUMBER OF ENTERING VEHICLES	ACTUAL CRASH RATE	STATEWIDE AVERAGE CRASH RATE
Sweet Home Rd at Dodge Rd	30	29,442 vpd	0.56	0.26
Dodge Rd at North Forest Rd	6	6,379 vpd	0.52	0.19

Notable crash clusters are approaches with three or greater identifiable consistent crash types.

1. **Sweet Home Rd at Dodge Rd**

As shown in **Table 3**, the intersection has a crash rate that is approximately 2.15 times higher than the statewide average crash rate for similar intersections. The following crashes occurred: rear end (7), left turn (9), right angle (8), sideswipe (3), and backing (2). The following crash patterns were reported:

- Left Turn
  - Northbound (three crashes)
  - Southbound (four crashes)
- Rear End
  - Southbound (three crashes)
- Right Angle
  - Northbound (five crashes)

The reported rear end crashes (23%) are characteristic of moderate to heavily trafficked signalized intersections. The causes of the rear end crashes were generally due to driver inattention, driver error, unsafe speeds, or following too closely. The causes of the left turn crashes were generally due to failure to yield the right of way. The causes of the right angle crashes were generally driver inattention, driver error, and brake failure. Flashing yellow left turn arrows were installed sometime after June 2022 based on review of historical aerial imagery of the intersection. Based on the

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descriptions in the MV-104 crash reports, there has only been one left turn crash and three right angle crashes at the intersection since the new traffic signal was installed. No other discernible crash patterns exist; thus, no geometric improvements are recommended.

2. **Dodge Rd at North Forest Rd**

As shown in **Table 3**, the intersection has a crash rate that is approximately 2.73 times higher than the statewide average crash rate for similar intersections. The following crashes occurred: rear end (2), right angle (1), and fixed object (3). No discernible crash patterns exist; thus, no geometric improvements are recommended.

5.0 BACKGROUND (NO BUILD) CONDITIONS

Construction of the proposed project is anticipated to reach full build-out within approximately two years. The widely accepted methodology for preparing traffic impact studies requires that any projects in the study area that are currently approved and/or under construction must be considered in the traffic analysis. Projects that are contemplated but not yet approved are not included in a traffic analysis. Local municipal personnel were contacted to discuss any other specific projects that are currently approved or under construction that would generate additional traffic in the study area. The following projects were identified and are listed below:

- Aspen Heights Student Housing – Traffic generated by this student housing development was added to the study intersections.
- 480 Dodge Road - Traffic generated by this approved but not yet constructed multifamily project was added to the study intersections.
- 775 John James Audubon Pkwy – Traffic generated by this approved project is included in the background growth rate.

A review of available historical NYSDOT traffic volume data in the vicinity of the site indicates that traffic has decreased between 2010 and 2019 in the study area. To account for normal increases in background traffic growth, including the approved development noted above as well as any unforeseen developments in the study area, a growth rate of 1.0% per year was applied to the existing traffic volumes for the two-year build out period. The background traffic volumes are depicted in **Figure 4.**

6.0 PROPOSED DEVELOPMENT CONDITIONS

6.1 Project Description

The proposed Sawyer's Landing development will consist of constructing:

- Mixed-Use Building 1 (four-stories)
  - 51 Mid-Rise apartment units,
  - a ±3,901 square foot (SF) restaurant,
  - a ±432 SF leasing office,
  - and an ±8,002 SF membership-based gym
- Mixed-Use Building 2 (four-stories)
  - 51 Mid-Rise apartment units,
  - a ±3,901 square foot (SF) retail store,
  - a ±8,953 square foot (SF) retail store,

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  - and a ±2,300 SF office
- a four-story ±26,400 SF self-storage building (±105,600 SF in total),
- 22 two-story duplex townhome buildings containing two units each for a total of 44 duplex townhome units,
- 63 two-story townhomes with attached garages.

Access to the site will be provided via one enter only driveway and one exit only driveway along Dodge Rd and one full access driveway along Didge Rd, to the south of the enter only driveway. There will also be an emergency access driveway along Dodge Road to the north of the exit only driveway with an emergency gate.

6.2 Proposed Traffic Generation

The volume of traffic generated by a site is dependent on the intended land use and size of the development. Trip generation is an estimate of the number of trips generated by a specific building or land use. These trips represent the volume of traffic entering and exiting the development. *Trip Generation Manual* (11th Edition) published by the Institute of Transportation Engineers (ITE) is used as a reference for this information. The trip rate for the peak hour of the generator may or may not coincide in time or volume with the trip rate for the peak hour of adjacent street traffic. Volumes generated during the peak hour of the adjacent street traffic and proposed land uses, in this case, the weekday commuter AM and PM peak hours, represent a more critical volume when analyzing the capacity of the system; those intervals will provide the basis of this analysis.

The proposed project consists of multiple different land uses (residential, office, retail, and restaurant) and is considered mixed-use (multi-use). According to the Institute of Transportation Engineers Trip Generation Handbook, (3rd Edition), "…a multi-use development is typically a single real-estate project that consists of two or more ITE land use classifications between which trips can be made without using the off-site road system. Because of the nature of these land uses, the trip-making characteristics are interrelated, and some trips are made among the on-site uses. This capture of trips internal to the site has the net effect of reducing vehicle trip generation between the overall development site and the external street system (compared to the total number of trips generated by comparable, standalone sites)." "In some multi-use developments, these internal trips can be made by walking or by vehicles entirely on internal pathways or internal roadways without using streets external to the site."

The Handbook indicates internal capture rates for trips within a multi-use development to vary between residential, office, retail, restaurant, and entertainment and recreational uses during the AM and PM peak hours. Given the proposed land use components and interconnection between these components, multi-use total volume trips will likely occur.

Methodology contained in National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Development was consulted to perform the mixed-use adjustment. The interactive spreadsheet considers baseline mode shares and vehicle occupancy factors for the proposed land uses, as described in the Handbook, as well as average land use interchange distances (feet walking distance) to determine the internal capture percentage. In order to accurately capture the internal site trips that will occur in the site, the existing office land use that will remain was included in the internal capture calculations. This completed spreadsheet model is included in the Appendices.

The NCHRP 684 model reported an internal baseline capture percentage of 13% during the AM peak hour, and 26% during the PM peak hour. In order to be conservative, an internal baseline capture percentage of 10% was used during the AM peak hour, and 20% was used during the PM peak hour. These multi-use trip projection adjustments were applied to the respective site generated trips and subtracted from the traffic entering and exiting the site during the peak periods.

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Table 4 shows the estimated site generated trips that will be added to the existing roadway system under full project development.

Table 4: *Site Generated Trips*

DESCRIPTION	ITE LUC[1]	SIZE	PM PEAK HOUR		SAT PEAK HOUR	
			ENTER	EXIT	ENTER	EXIT
General Office Building	710	±2,300 sf	6	1	1	6
Strip Retail Plaza (<40k)	822	±12,854 sf	18	12	47	47
High-Turnover (Sit-Down) Restaurant	932	±3,901 sf	21	17	22	14
Single Family Attached Housing	215	107 units	12	37	36	25
Multifamily Housing (Mid-Rise)	221	102 units	8	26	24	16
Mini-Warehouse	151	±105,600 sf	6	4	7	8
Health/Fitness Club	492	±8,002 sf	5	5	26	20
Total Site Generated Trips			**76**	**102**	**163**	**136**
Internal Capture Adjustment			*-7*	*-10*	*-30*	*-26*
Total Primary Site Generated Trips			**69**	**92**	**133**	**110**

Note:
1. LUC = Land Use Code.

The proposed project is expected to generate approximately 76 entering/102 exiting vehicle trips during the AM peak hour and 163 entering/136 exiting vehicle trips during the PM peak hour. However, not all these driveway volumes are new, but instead a portion of the proposed volumes will visit more than one land use during one trip to the site. Thus, based upon internal capture rates from the NCHRP 684 model and professional judgement, the proposed site is expected to generate approximately 69 entering/92 exiting new vehicle trips during the AM peak hour and 133 entering/110 exiting new vehicle trips during the PM peak hour.

6.3 Trip Distribution

The cumulative effect of site-generated traffic on the transportation network is dependent on the origins and destinations of that traffic and the location of the access drives serving the site. The proposed arrival/departure distribution of traffic generated by the proposed project is considered a function of several parameters, including:

- Employment centers in the local area and region.
- Population centers in the local area and region.
- Proximity and access to Interstate 990.
- Proximity to the North Campus of the University at Buffalo.
- Site access drive locations and internal roadway circulation.
- Existing highway network.
- Existing traffic patterns.
- Existing traffic conditions and controls.

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Figure 5 shows the anticipated trip distribution pattern percentage for the project site. **Figures 6** illustrate the total peak hour site-generated traffic.

6.4 Full Development Volumes

The proposed design hour traffic volumes are developed for the peak hours by combining the background traffic conditions (Figure 4) and the new site-generated traffic volumes (Figure 6) to yield the traffic volumes under full development conditions. **Figure 7** illustrates the total peak hour volumes anticipated for the proposed project under full build-out conditions.

7.0 TRAFFIC OPERATIONS AND ANALYSIS

7.1 Traffic Signal Warrant Investigation

A traffic signal warrant analysis was conducted at the existing Dodge Rd/North Forest Rd intersection under full build conditions. The evaluation is based on traffic exiting North Forest Rd (i.e. northbound traffic). The need for a traffic signal is determined by comprehensive investigation of existing traffic conditions and physical characteristics at the location. The *Standard Specifications Update for the adoption of the National MUTCD (FHWA)* and the *New York State Supplement* were reviewed to investigate the need for a traffic control signal at this location. There are nine (9) warrants, and they are as follows:

- Warrant 1 Eight-Hour Vehicular Volume
- Warrant 2 Four-Hour Vehicular Volume
- Warrant 3 Peak Hour Vehicular Volume
- Warrant 4 Pedestrian Volume
- Warrant 5 School Crossing
- Warrant 6 Coordinated Signal System
- Warrant 7 Crash Experience
- Warrant 8 Roadway Network
- Warrant 9 Intersection Near a Grade Crossing

Prior to applying warrants, the MUTCD suggests consideration of the effects of right-turn volumes on the minor street approach, a 20% reduction was taken in the number of right turning vehicles to be conservative. ITE data and the trip distribution percentages from Figure 5 were used to project the hourly distribution of traffic going to and from the proposed project through this intersection. The posted speed limit on Dodge Rd is 40 MPH, thus 70% thresholds in Table 4C-1, Figure 4C-2, and Figure 4C-4 are used as a basis for analysis.

1. Warrant 1 is subdivided into Condition A and Condition B. The Minimum Vehicular Volume, Condition A, is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal. The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street. These conditions are satisfied when, for each of any eight hours of an average day, anticipated volumes on the artery and side road are more than the minimum values presented in Tables 4C-1 in the MUTCD. **The warrant for Condition A is not met, and the warrant for Condition B is not met.**

2. Warrant 2, the Four-Hour Vehicular Volume signal warrant conditions, are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. This warrant

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stipulates that for any four hours of a day, minimum threshold volumes are met on the artery and side road. **This warrant is not met.**

3. Warrant 3 is intended for application where minor street traffic suffers undue delay in entering or crossing the major street for one hour of the day. It stipulates that the warrant shall be applied in unusual cases (high-occupancy vehicle facilities – i.e., shopping centers, office parks) where a large number of vehicles discharge over a short period of time. **This warrant is not met.**

4. Warrant 4 is met when pedestrians experience excessive delay in crossing the major street because the traffic volumes are so heavy. The intersection currently has low pedestrian activity and is not likely to increase significantly under future development phases. **This warrant is not met.**

5. Warrant 5 is met when a sufficient number of gaps in traffic do not exist for certain size and frequency of school children to cross the major roadway. **This warrant is not met.**

6. Warrant 6 is met when a traffic signal is needed to maintain progressive movement and vehicle platooning in a coordinated signal system. The intersection would likely be coordinated with adjacent signals, if warranted. There is currently no issue with platooning along the Dodge Rd corridor, therefore, **this warrant is not met.**

7. Warrant 7 is intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal. The need for a traffic control signal shall be considered if *all* of the following criteria are met:

    a. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce crash frequency.

    b. Five (5) or more reported crashes, of types susceptible to correction by a traffic signal, to have occurred within a 12-month period, each crash involving a personal injury or property damage.

    This warrant is not met.

8. Warrant 8 is met when a traffic signal might encourage concentration and organization of traffic flow on a roadway network. This warrant primarily focuses on two major intersecting roadways, which is not the case at the study intersection. **This warrant is not met.**

9. Warrant 9 is applicable when an intersection is located near an at-grade rail crossing. **This warrant is not met.**

Table 5: *Signal Warrant Analysis Results*

WARRANT	SATISFACTION OF WARRANTS
1A – Eight-Hour Condition A	NO
1B – Eight-Hour Condition B	NO
2 – Four-Hour	NO
3 – Peak-Hour	NO
4 – Pedestrian Volume	NO
5 – School Crossing	NO
6 – Coordinated Signal System	NO

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WARRANT	SATISFACTION OF WARRANTS
7 – Crash Experience	NO
8 – Roadway Network	NO
9 – Intersection Near a Grade Crossing	NO

Table 5 summarizes the signal warrant findings at the existing Dodge Rd/North Forest Rd intersection under full build conditions. Based upon the results, a traffic signal is not warranted at this intersection.

7.2 Description of Capacity Analysis

Capacity analysis is a technique used for determining a measure of effectiveness for a section of roadway and/or intersection based on the number of vehicles during a specific time period. The measure of effectiveness used for the capacity analysis is referred to as a Level of Service (LOS). Levels of service are calculated to provide an indication of the amount of delay that a motorist experiences while traveling along a roadway or through an intersection. Since the most amount of delay to motorists usually occurs at intersections, capacity analysis focuses on intersections, as opposed to highway segments.

The standard procedure for capacity analysis of signalized and unsignalized intersections is outlined in the *Highway Capacity Manual* (HCM) 7th Edition published by the Transportation Research Board (TRB). Traffic analysis software, Synchro 12, which is based on procedures and methodologies contained in the HCM, was used to analyze operating conditions at study area intersections. The procedure yields a level of service based on the HCM as an indicator of how well intersections operate.

Six levels of service are defined for analysis purposes. They are assigned letter designations, from "A" to "F", with LOS "A" representing the conditions with little to no delay, and LOS "F" conditions with very long delays. Suggested ranges of service capacity and an explanation of levels of service are included in the Appendices. LOS "C" or better is desirable, but LOS "D" for signalized locations and LOS "E" for unsignalized locations are generally thresholds of acceptable operation during peak periods so long as the volume to capacity ratio (v/c) is below 1.0. **Table 6** depicts level of service criteria for both signalized and unsignalized intersections.

Table 6: *Level of Service Criteria*

LEVEL OF SERVICE	SIGNALIZED CONTROL DELAY PER VEHICLE (seconds)	STOP CONTROL DELAY PER VEHICLE (seconds)
A	< 10	< 10
B	10 – 20	10 – 15
C	20 – 35	15 – 25
D	35 – 55	25 – 35
E	55 – 80	35 – 50
F	> 80	> 50

LOS for signalized intersections is defined in terms of delay specifically, average total delay per vehicle for a 15-minute analysis period. LOS for unsignalized intersections, however, are different from a signalized intersection. The primary reason for this is driver expectation that a signalized intersection is designed to carry higher volumes than an unsignalized intersection. Unsignalized intersections are also associated with more uncertainty for users, as delays are less predictable than they are at signals.

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The v/c ratio, also referred to as degree of saturation, represents the sufficiency of an intersection to accommodate the vehicular demand. A v/c ratio less than 0.85 generally indicates that adequate capacity is available, and vehicles are not expected to experience significant queues and delays. As the v/c ratio approaches 1.0, traffic flow may become unstable, and delay and queuing conditions may occur.

7.3 Capacity Analysis Results

Existing and background operating conditions during the peak study periods are evaluated to determine a basis for comparison with the projected future conditions. The future traffic conditions generated by the project were analyzed to assess the operation of the study area intersections. Capacity results for existing, background, and full development conditions are listed in **Table 7**. The discussion following the table summarizes capacity conditions. The detailed Synchro capacity analysis worksheets are contained in the Appendices.

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TABLE 7: CAPACITY ANALYSIS RESULTS

INTERSECTION	2024 EXISTING BASE CONDITIONS				2026 BACKGROUND CONDITIONS				2026 FULL BUILD CONDITIONS			
	AM		PM		PM		SAT		PM		SAT	
1. Sweet Home Rd/Dodge Rd/Commerce Dr (S)												
EB Left - Commmerce Dr	C	20.7	C	21.3	C	20.7	C	21.5	C	20.4	C	22.7
EB Thru/Right - Commerce Dr	C	31.9	C	34.3	C	33.4	C	34.6	C	34.0	D	36.1
WB Left - Dodge Rd	A	8.9	B	16.4	A	9.1	B	19.2	A	9.0	C	21.5
WB Thru - Dodge Rd	C	21.7	C	22.9	C	22.1	C	24.0	C	23.0	C	27.0
WB Right - Dodge Rd	C	25.3	C	21.1	C	25.2	C	25.4	C	25.7	C	30.4
NB Left - Sweet Home Rd	E	72.5	B	15.6	F	106.1	B	16.0	F	112.6	B	16.3
NB Thru/Right - Sweet Home Rd	B	19.2	D	36.2	C	20.5	D	38.2	C	21.4	D	45.4
SB Left- Sweet Home Rd	B	11.4	C	21.9	B	12.8	C	22.9	B	14.4	C	27.7
SB Thru/Right - Sweet Home Rd	C	24.2	C	25.3	C	26.0	C	25.7	C	26.7	C	25.5
Overall LOS	**C**	**29.6**	**C**	**27.1**	**D**	**36.0**	**C**	**28.9**	**D**	**37.1**	**C**	**32.7**
Volume-to-Capacity (v/c) Ratio	**1.03**		**0.83**		**1.12**		**0.86**		**1.14**		**0.92**	
2. Dodge Rd/Proposed Exit Only Driveway (U)												
SB - Proposed Exit Only Driveway	N/A		N/A		N/A		N/A		B	11.6	B	12.8
4. Dodge Rd/Proposed Southerly Driveway (U)												
EB Left - Dodge Rd	N/A		N/A		N/A		N/A		A	7.9	A	8.3
SB - Proposed Southerly Driveway									B	12.1	B	13.6
5. Dodge Rd/N Forest Rd (U)												
WB Left - Dodge Rd	A	7.9	A	7.8	A	7.9	A	7.9	A	8.0	A	8.0
NB - N Forest Rd	B	11.9	B	14.5	B	12.4	C	15.9	B	13.1	C	18.7

Notes:

1. A(2.8) = Level of Service (Delay in seconds per vehicle)
2. NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound
3. (S) = Signalized; (U) = Unsignalized
4. N/A = Approach does not exist and/or was not analyzed during this condition
5. Green shaded cells indicate low delays, yellow shaded cells indicate moderate delays, red shaded cells indicate long delays.

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Dodge Road/Sweet Home Road (Signalized)
All approaches operate at LOS "D" or better under all conditions during both peak hours with the exception of the northbound left approach which operates at LOS "F" during the AM peak hour under background and full build conditions. In between background and full build conditions, the eastbound thru/right approach is projected to change from LOS "C" to "D" during the PM peak hour period, however, this is considered a borderline condition as the threshold between LOS "C" and "D" is 35.0 seconds per vehicle and the actual increase in delay projected is 1.5 seconds per vehicle. Also, between background and full build conditions, the westbound left approach is projected to change from LOS "B" to "C" during the PM peak hour period, however, this is also considered a borderline condition as the threshold between LOS "B" and "C" is 20.0 seconds per vehicle and the actual increase in delay projected is 2.3 seconds per vehicle. No other changes in levels of service are anticipated and no improvements are warranted nor recommended at this location.

Dodge Road/Proposed Exit Driveway (Unsignalized)
The southbound approach operates at LOS "B" under full build conditions during both peak hours. The proposed exit driveway should consist of one exiting lane.

Dodge Road/Proposed Southerly Driveway (Unsignalized)
All approaches operate at LOS "B" or better under full build conditions during both peak hours. The proposed southerly driveway should consist of one entering and one exiting lane.

Dodge Road/North Forest Road (Signalized)
All approaches operate at LOS "C" or better under all conditions during both peak hours. No changes in level of service are anticipated and no improvements are warranted nor recommended at this location.

8.0 CONCLUSIONS AND RECOMMENDATIONS

This updated Traffic Impact Study identified and evaluated the potential traffic impacts that can be expected from the proposed Sawyer's Landing development to be located on the property at 50 Dodge Road, which is along the north side of Dodge Road in the Town of Amherst, NY (Commonly referred to as Site "A" of the Muir Woods Project Site"). The results of this study determined that the existing transportation network can adequately accommodate the projected traffic volumes and resulting minor impacts to study area intersections. The following sets forth the conclusions and recommendations based upon the results of the analyses:

Conclusions

1. The proposed project is expected to generate approximately 76 entering/102 exiting vehicle trips during the AM peak hour and 163 entering/136 exiting vehicle trips during the PM peak hour.

2. However, not all these driveway volumes are new, but instead a portion of the proposed volumes will visit more than one land use during one trip to the site. Thus, based upon internal capture rates from the NCHRP 684 model and professional judgement, the proposed site is expected to generate approximately 69 entering/92 exiting new vehicle trips during the AM peak hour and 133 entering/110 exiting new vehicle trips during the PM peak hour.

3. Based upon the results of the traffic signal warrant at the Dodge Rd/North Forest Rd intersection, a traffic signal is not warranted at this intersection.

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4. All movements generally operate at an acceptable LOS "D" or better under existing, projected background, and full build conditions (with proposed development) during both peak hours at all study intersections except for the northbound left approach at the Sweet Home Rd/Dodge Rd intersection during the AM peak hour, which operates at LOS "F" under background and full build conditions. There are no LOS changes at any of the study intersections that require mitigation.

5. The detailed analysis contained in this Traffic Impact Study demonstrates the proposed project will not result in any potentially significant adverse environmental impacts for the purpose of the environmental review of the project pursuant to the State Environmental Quality Review Act ("SEQRA").

Recommendations

1. The proposed exit driveway along Dodge Rd should be designed to provide one exiting lane.

2. The proposed enter driveway along Dodge Rd should be designed to provide one entering lane.

3. The proposed southerly driveway along Dodge Rd should be designed to provide one entering and one exiting lane.

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9.0 REFERENCES

- Synchro 12 Software. Cubic ITS.
- Highway Capacity Manual (HCM 7th Edition). Transportation Research Board (TRB). Washington, DC. 2016.
- Highway Functional Classification Concepts, Criteria, and Procedures. FHWA. 2013.
- Trip Generation (11th Edition). Institute of Transportation Engineers (ITE). Washington, DC. 2021.
- OnTheMap. US Census Bureau. 2023.
- NCHRP Report 684 Enhancing Internal Trip Capture Estimation for Mixed-Use Develpoments. TRB. 1985.
- Traffic Data Viewer. New York State Department of Transportation (NYSDOT). 2023.

10.0 FIGURES

Figures 1 through 7 are included on the following pages.

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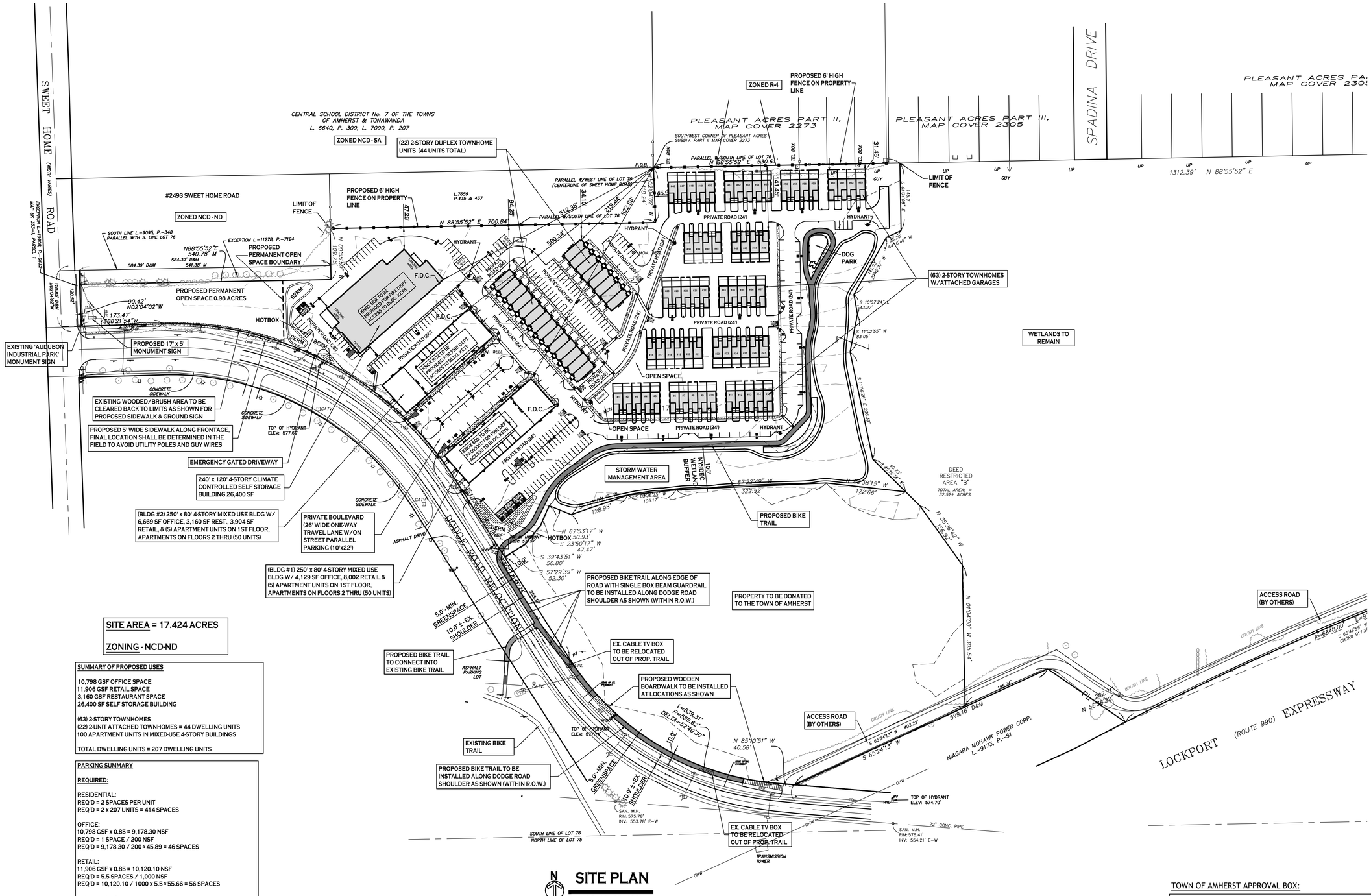
SWEET HOME ROAD (MAIN STREET)
#2493 SWEET HOME ROAD
ZONED NCD-ND
LIMIT OF FENCE
PROPOSED 6' HIGH FENCE ON PROPERTY LINE
CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 6640, P. 309, L. 7090, P. 207
ZONED NCD-SA
(22) 2-STORY DUPLEX TOWNHOME UNITS (44 UNITS TOTAL)
ZONED R-4
PROPOSED 6' HIGH FENCE ON PROPERTY LINE
PLEASANT ACRES PART II, MAP COVER 2273
PLEASANT ACRES PART III, MAP COVER 2305
SPADINA DRIVE
PLEASANT ACRES PART III, MAP COVER 2305
SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273
P.O.B.
PARALLEL W/SOUTH LINE OF LOT 76 N 88°55'52" E 530.61'
PARALLEL W/WEST LINE OF LOT 76 (CENTERLINE OF SWEET HOME ROAD)
PARALLEL W/SOUTH LINE OF LOT 76
N 88°55'52" E 700.84
LIMIT OF FENCE
1312.39' N 88°55'52" E
PROPOSED PERMANENT OPEN SPACE BOUNDARY
PROPOSED PERMANENT OPEN SPACE 0.98 ACRES
EXISTING 'AUDUBON INDUSTRIAL PARK' MONUMENT SIGN
PROPOSED 17' x 5' MONUMENT SIGN
EXISTING WOODED/BRUSH AREA TO BE CLEARED BACK TO LIMITS AS SHOWN FOR PROPOSED SIDEWALK & GROUND SIGN
PROPOSED 5' WIDE SIDEWALK ALONG FRONTAGE, FINAL LOCATION SHALL BE DETERMINED IN THE FIELD TO AVOID UTILITY POLES AND GUY WIRES
EMERGENCY GATED DRIVEWAY
240' x 120' 4-STORY CLIMATE CONTROLLED SELF STORAGE BUILDING 26,400 SF
(BLDG #2) 250' x 80' 4-STORY MIXED USE BLDG W/ 6,669 SF OFFICE, 3,160 SF REST., 3,904 SF RETAIL, & (5) APARTMENT UNITS ON 1ST FLOOR, APARTMENTS ON FLOORS 2 THRU (50 UNITS)
PRIVATE BOULEVARD (26' WIDE ONE-WAY TRAVEL LANE W/ON STREET PARALLEL PARKING (10'x22')
(BLDG #1) 250' x 80' 4-STORY MIXED USE BLDG W/ 4,129 SF OFFICE, 8,002 RETAIL & (5) APARTMENT UNITS ON 1ST FLOOR, APARTMENTS ON FLOORS 2 THRU (50 UNITS)
PROPOSED BIKE TRAIL TO CONNECT INTO EXISTING BIKE TRAIL
EXISTING BIKE TRAIL
PROPOSED BIKE TRAIL TO BE INSTALLED ALONG DODGE ROAD SHOULDER AS SHOWN (WITHIN R.O.W.)
PROPOSED BIKE TRAIL ALONG EDGE OF ROAD WITH SINGLE BOX BEAM GUARDRAIL TO BE INSTALLED ALONG DODGE ROAD SHOULDER AS SHOWN (WITHIN R.O.W.)
PROPERTY TO BE DONATED TO THE TOWN OF AMHERST
EX. CABLE TV BOX TO BE RELOCATED OUT OF PROP. TRAIL
PROPOSED WOODEN BOARDWALK TO BE INSTALLED AT LOCATIONS AS SHOWN
EX. CABLE TV BOX TO BE RELOCATED OUT OF PROP. TRAIL
(63) 2-STORY TOWNHOMES W/ATTACHED GARAGES
WETLANDS TO REMAIN
STORM WATER MANAGEMENT AREA
100' NYSDEC WETLAND BUFFER
PROPOSED BIKE TRAIL
DEED RESTRICTED AREA "B" TOTAL AREA = 32.52± ACRES
ACCESS ROAD (BY OTHERS)
ACCESS ROAD (BY OTHERS)
NIAGARA MOHAWK POWER CORP. L-9173, P.-51
LOCKPORT (ROUTE 990) EXPRESSWAY
DOG PARK
OPEN SPACE
OPEN SPACE
PRIVATE ROAD (24')
PRIVATE ROAD (26')
F.D.C.
HYDRANT
HOTBOX
BERM
CONCRETE SIDEWALK
ASPHALT DRIVE
ASPHALT PARKING LOT
DODGE ROAD RELOCATION
5.0' MIN. GREENSPACE
10.0' ± EX. SHOULDER
TOP OF HYDRANT ELEV: 577.68'
TOP OF HYDRANT ELEV: 574.70'
TOP OF HYDRANT ELEV: 577.14'
SAN. M.H. RIM: 575.78' INV: 553.78' E-W
SAN. M.H. RIM: 576.41' INV: 554.21' E-W
72" CONC. PIPE
SOUTH LINE OF LOT 76
NORTH LINE OF LOT 75
TRANSMISSION TOWER
SOUTH LINE L.-9095, P.-348 PARALLEL WITH S. LINE LOT 76
EXCEPTION L.-11278, P.-7124
L 7659 P.435 & 437
N88°55'52"E 540.78' M 584.39' D&M 541.38' M
584.39' D&M
N 00°04'08" W 1320.00'
N02°04'02"W 90.42'
S88°21'54"W 173.47'
S 67°53'17" W 128.98'
S 85°36'25" W 105.17'
S 67°53'17" W HOTBOX 50.93'
S 23°01'17" W 47.47'
S 39°43'51" W 50.80'
S 67°29'39" W 52.30'
N 85°10'51" W 40.58'
L=539.31' R=566.82' DEL.TA=52°40'30"
S 65°24'13" W 403.22'
S 65°24'13" W 599.16' D&M
N 88°55'52" E 262.71'
N 58°18'24" E
R=6648.00' L=9.
S 58°46'59" W CHORD 917.3
N 01°04'08" W 305.54'
S 10°07'24" E 43.27'
S 11°02'55" W 83.05'
S 11°39'28" E 236.39'
N 35°38'40" W 58.95'
N 38°15' W 122.66'
N 87°22'49" W 322.92'
N 88°55'52" E 530.61'
S 01°04'08" E 1320.00'
S 01°04'08" E 1320.00'
N 01°04'08" W 1320.00'
N 01°04'08" W 305.54

Figure 1

PASSERO engineering architecture

Sawyer's Landing Development | Town of Amherst, Erie County, NY

0 400 800 1,600 Feet N

Site Location and Study Area

Key:
- # Study Intersection
- # Proposed Intersection

Proje

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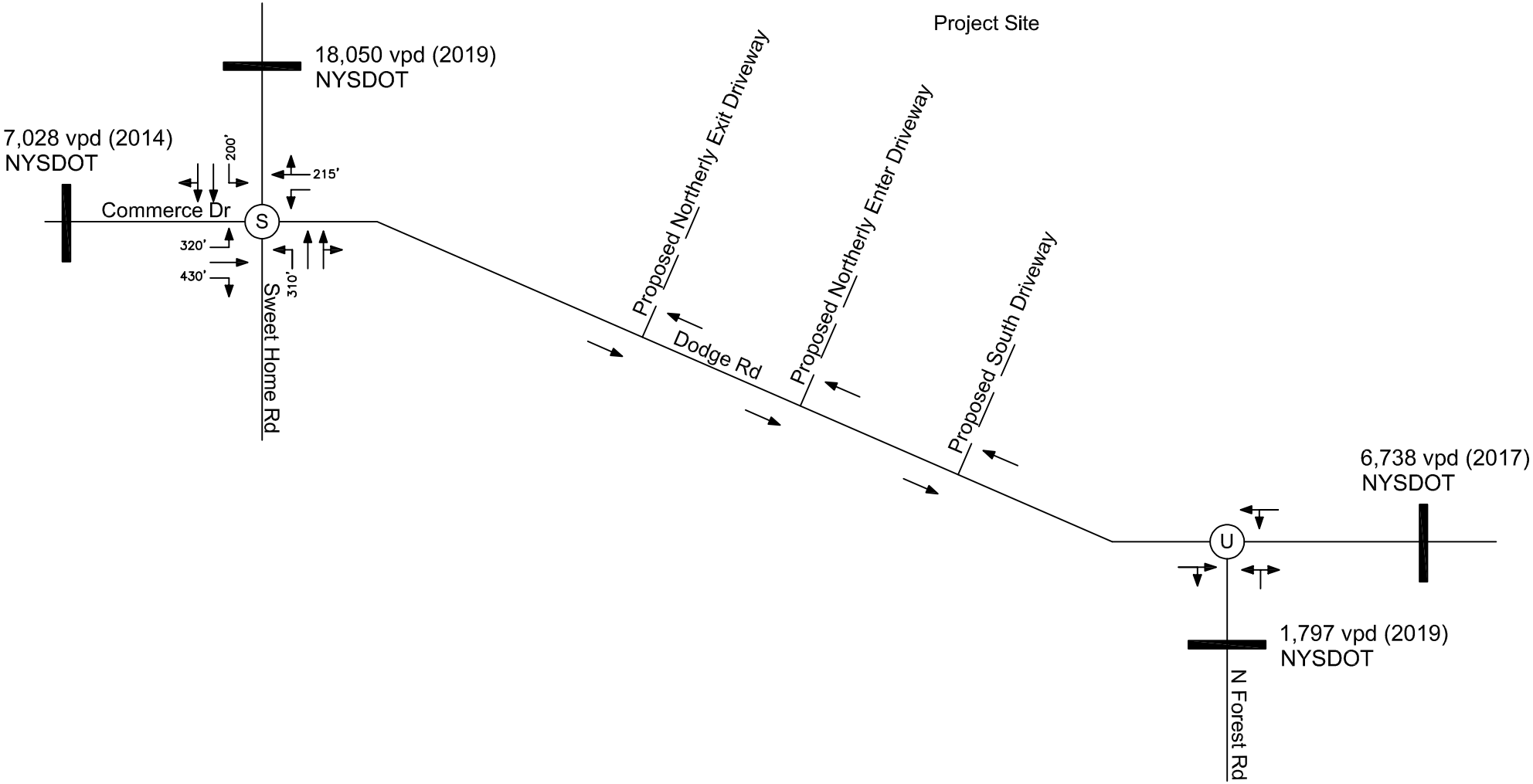
Figure 2

PASSERO engineering architecture

Notes:
1. All AADT volumes by those noted:
   1.1. NYSDOT = New York State Department of Transportation.
2. vpd = Vehicles per day.
3. The planned NYSDOT project will include the indicated storage lengths.



N
NOT TO SCALE

Sawyer's Landing Development | Town of Amherst, NY

Lane Geometry and Intersection Control

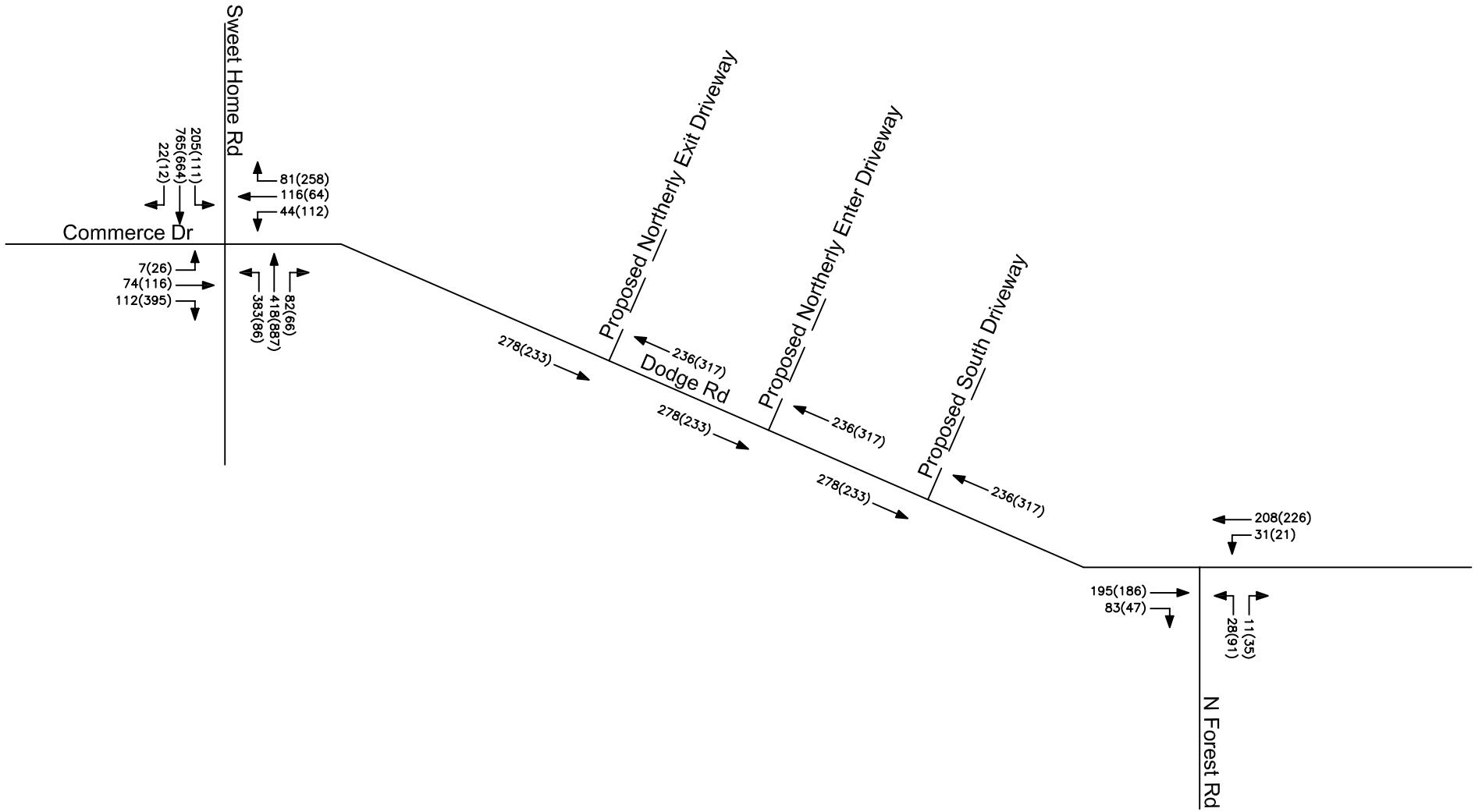
KEY:
– – – Proposed Access
U = Unsignalized

Project

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Figure 3

PASSERO
engineering architecture



Sawyer's Landing Development | Town of Amherst, NY

Peak Hour Volumes
2024 Existing Base Conditions

N
NOT TO SCALE

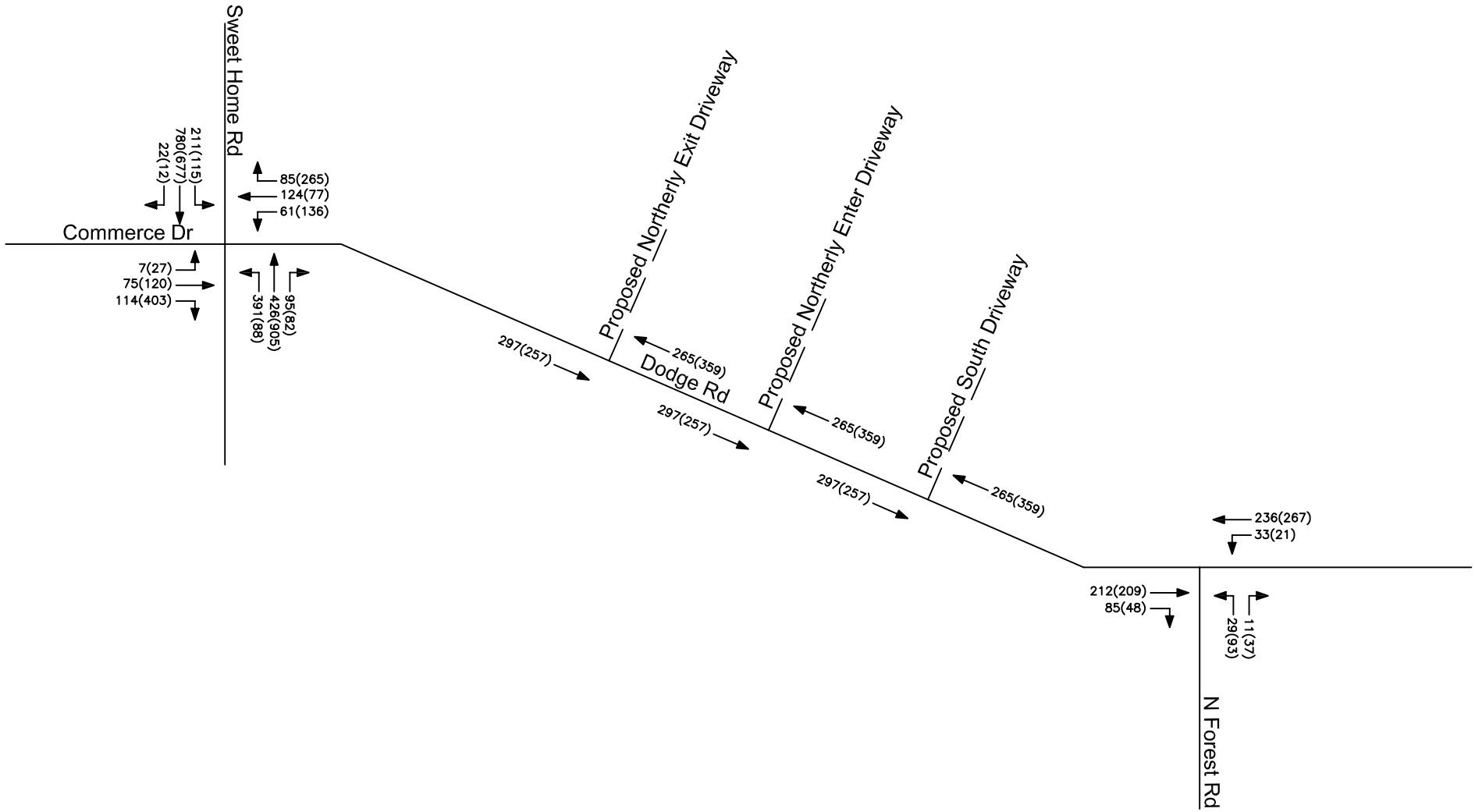
KEY:
00(00) = AM(PM)
– – – Proposed Access

Project

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Figure 4

PASSERO
engineering architecture



Sawyer's Landing Development | Town of Amherst, NY

Peak Hour Volumes
2026 Background Conditions

N
NOT TO SCALE

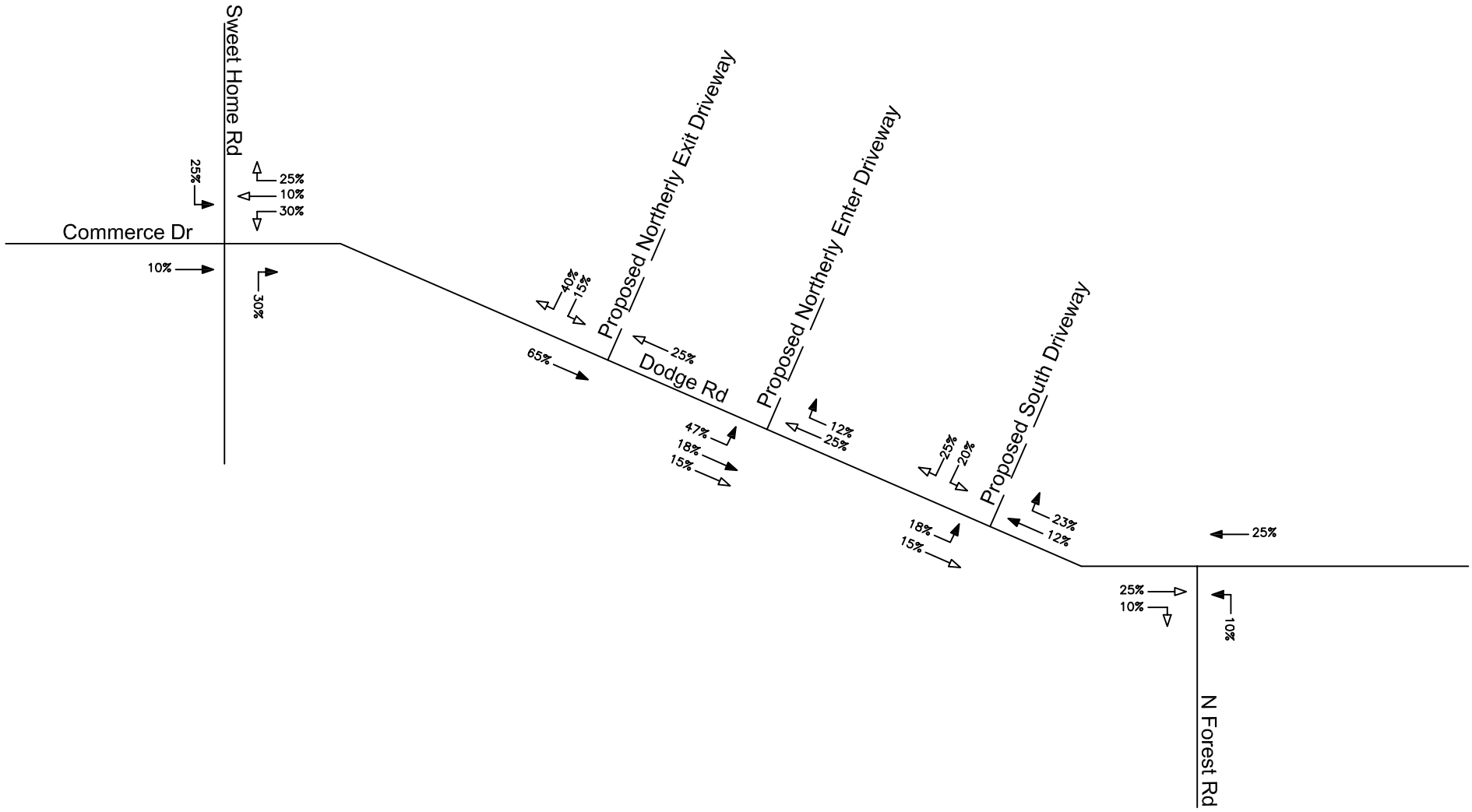
KEY:
00(00) = AM(PM)
– – – Proposed Access

Project

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Figure 5

PASSERO
engineering architecture



Sawyer's Landing Development | Town of Amherst, NY

Trip Distribution

N
NOT TO SCALE

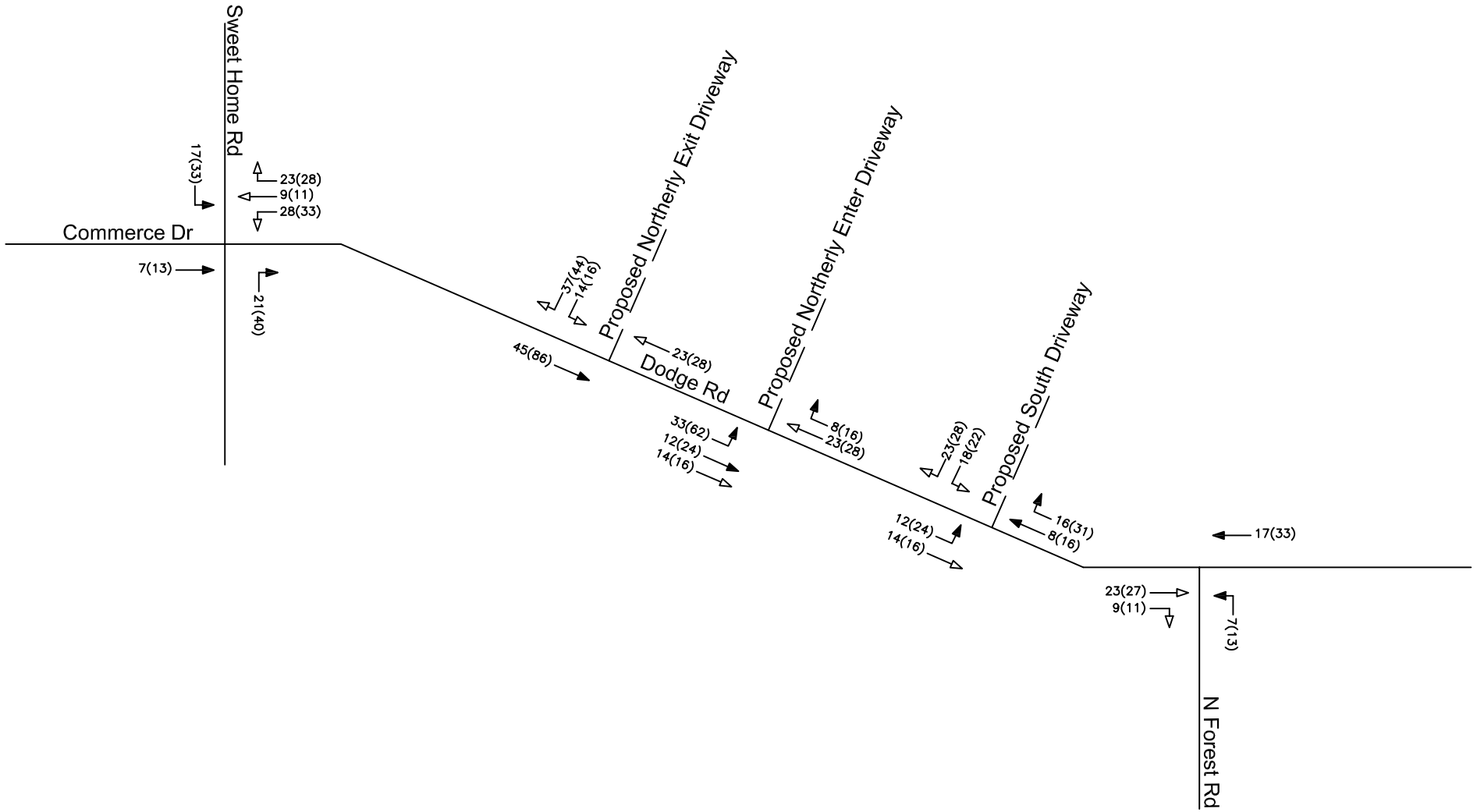
KEY:
00(00) = AM(PM)
→ Entering Trip

Project

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Figure 6

PASSERO
engineering architecture



Sawyer's Landing Development | Town of Amherst, NY

Site Generated Trips

N
NOT TO SCALE

KEY:
00(00) = AM(PM)
→ Entering Trip

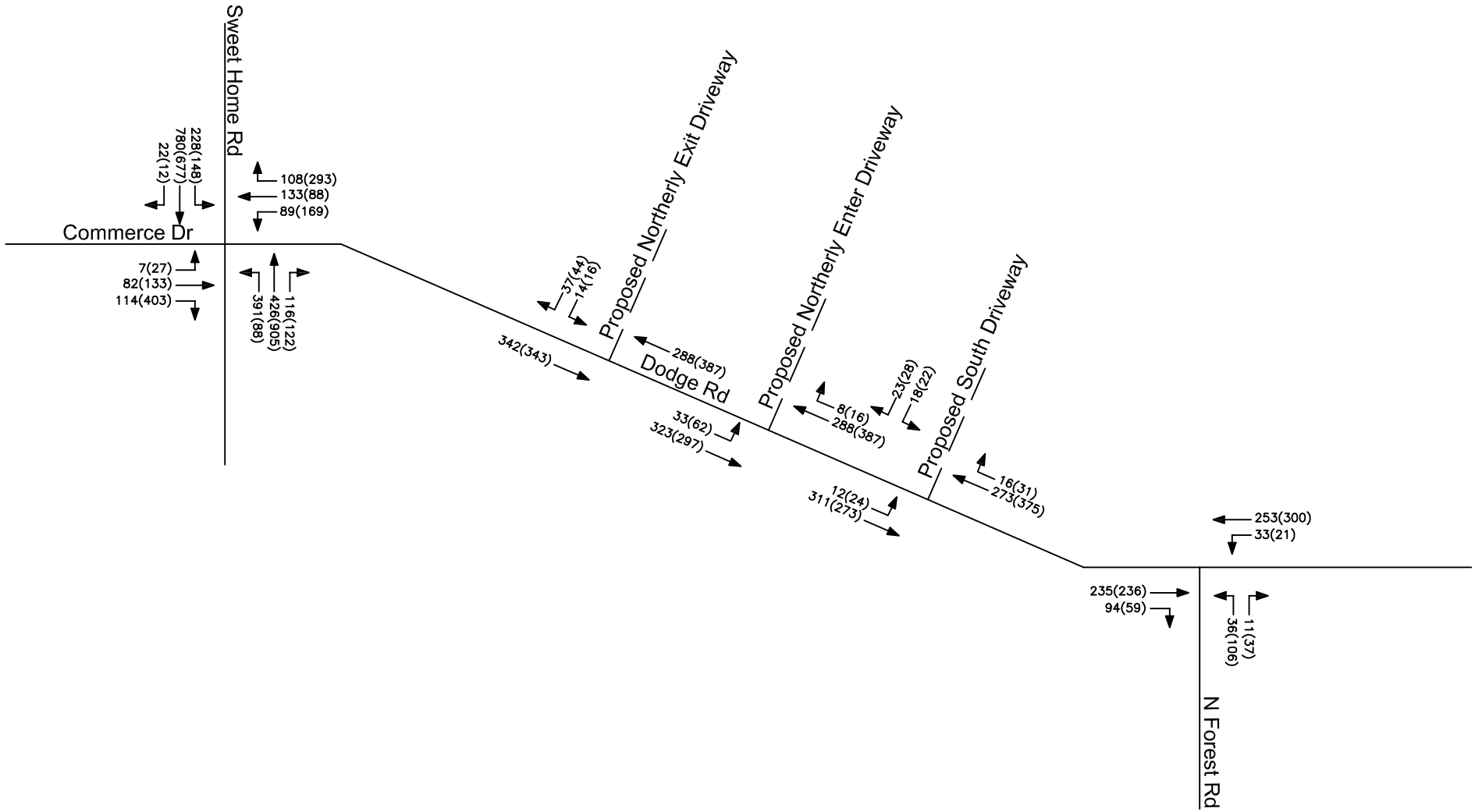
Project

:cess

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Figure 7

PASSERO
engineering architecture



Sawyer's Landing Development | Town of Amherst, NY

Peak Hour Volumes
Full Development Conditions

N
NOT TO SCALE

KEY:
00(00) = AM(PM)
– – – Proposed Access

Project

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

APPENDICES

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

APPENDIX A: EXISTING TRAFFIC COUNT DATA

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022
Full Length (7 AM-7 PM)
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US

Leg / Direction	Dodge Rd Westbound					N.Forest Rd Northbound					Dodge Rd Eastbound					
Time	T	L	U	App	Ped*	R	L	U	App	Ped*	R	T	U	App	Ped*	Int
2022-03-03 7:00AM	23	2	0	**25**	0	2	4	0	**6**	0	9	25	0	**34**	0	**65**
7:15AM	27	6	0	**33**	0	0	1	0	**1**	0	14	38	0	**52**	0	**86**
7:30AM	54	5	0	**59**	0	3	6	0	**9**	0	23	48	0	**71**	0	**139**
7:45AM	56	9	0	**65**	0	0	5	0	**5**	0	24	44	0	**68**	0	**138**
Hourly Total	160	22	0	**182**	0	5	16	0	**21**	0	70	155	0	**225**	0	**428**
8:00AM	48	12	0	**60**	0	4	8	0	**12**	0	17	50	0	**67**	0	**139**
8:15AM	48	5	0	**53**	0	4	9	0	**13**	0	18	51	0	**69**	0	**135**
8:30AM	35	5	0	**40**	0	2	9	0	**11**	0	13	46	0	**59**	0	**110**
8:45AM	41	3	0	**44**	0	6	10	0	**16**	0	18	56	0	**74**	0	**134**
Hourly Total	172	25	0	**197**	0	16	36	0	**52**	0	66	203	0	**269**	0	**518**
9:00AM	37	3	0	**40**	0	0	7	0	**7**	0	10	38	0	**48**	0	**95**
9:15AM	35	4	0	**39**	0	5	9	0	**14**	0	18	41	0	**59**	0	**112**
9:30AM	30	6	0	**36**	0	2	5	0	**7**	0	15	46	0	**61**	0	**104**
9:45AM	35	7	0	**42**	0	4	9	0	**13**	0	8	32	0	**40**	0	**95**
Hourly Total	137	20	0	**157**	0	11	30	0	**41**	0	51	157	0	**208**	0	**406**
10:00AM	27	6	0	**33**	0	5	14	0	**19**	0	10	34	0	**44**	0	**96**
10:15AM	35	4	0	**39**	0	3	9	0	**12**	0	8	32	0	**40**	0	**91**
10:30AM	32	3	0	**35**	0	2	13	0	**15**	0	11	32	0	**43**	0	**93**
10:45AM	26	2	0	**28**	0	2	8	0	**10**	0	13	35	0	**48**	0	**86**
Hourly Total	120	15	0	**135**	0	12	44	0	**56**	0	42	133	0	**175**	0	**366**
11:00AM	34	1	0	**35**	0	2	13	0	**15**	0	11	31	0	**42**	0	**92**
11:15AM	32	5	0	**37**	0	3	12	0	**15**	0	9	38	0	**47**	0	**99**
11:30AM	33	4	0	**37**	0	3	12	0	**15**	0	12	29	0	**41**	0	**93**
11:45AM	31	7	0	**38**	0	4	17	0	**21**	0	16	38	0	**54**	0	**113**
Hourly Total	130	17	0	**147**	0	12	54	0	**66**	0	48	136	0	**184**	0	**397**
12:00PM	40	6	0	**46**	0	4	12	0	**16**	0	17	41	0	**58**	0	**120**
12:15PM	31	6	0	**37**	0	7	13	0	**20**	0	15	36	0	**51**	0	**108**
12:30PM	36	2	0	**38**	0	5	22	0	**27**	0	19	38	0	**57**	0	**122**
12:45PM	32	6	0	**38**	0	2	13	0	**15**	0	10	40	0	**50**	0	**103**
Hourly Total	139	20	0	**159**	0	18	60	0	**78**	0	61	155	0	**216**	0	**453**
1:00PM	42	7	0	**49**	0	5	12	2	**19**	0	13	25	0	**38**	0	**106**
1:15PM	40	6	0	**46**	0	1	15	0	**16**	0	20	36	0	**56**	0	**118**
1:30PM	32	5	0	**37**	0	6	16	0	**22**	0	7	21	0	**28**	0	**87**
1:45PM	35	2	0	**37**	0	2	15	0	**17**	0	12	34	0	**46**	0	**100**
Hourly Total	149	20	0	**169**	0	14	58	2	**74**	0	52	116	0	**168**	0	**411**
2:00PM	36	2	0	**38**	0	7	14	0	**21**	0	11	38	0	**49**	0	**108**
2:15PM	39	5	0	**44**	0	3	18	0	**21**	0	10	31	0	**41**	0	**106**
2:30PM	38	3	0	**41**	0	6	13	0	**19**	0	18	44	0	**62**	0	**122**
2:45PM	34	6	0	**40**	0	4	13	0	**17**	0	7	39	0	**46**	0	**103**
Hourly Total	147	16	0	**163**	0	20	58	0	**78**	0	46	152	0	**198**	0	**439**
3:00PM	49	8	0	**57**	0	4	20	0	**24**	0	11	49	0	**60**	0	**141**
3:15PM	42	2	0	**44**	0	5	15	0	**20**	0	14	43	0	**57**	0	**121**
3:30PM	43	6	0	**49**	0	6	12	0	**18**	0	15	49	0	**64**	0	**131**
3:45PM	51	5	0	**56**	0	6	15	0	**21**	0	15	50	0	**65**	0	**142**
Hourly Total	185	21	0	**206**	0	21	62	0	**83**	0	55	191	0	**246**	0	**535**
4:00PM	48	2	0	**50**	0	15	36	0	**51**	0	14	47	0	**61**	0	**162**
4:15PM	47	3	0	**50**	0	5	14	0	**19**	0	14	51	0	**65**	0	**134**
4:30PM	56	5	0	**61**	0	10	22	0	**32**	0	14	47	0	**61**	0	**154**
4:45PM	59	3	0	**62**	0	8	23	0	**31**	0	7	36	0	**43**	0	**136**
Hourly Total	210	13	0	**223**	0	38	95	0	**133**	0	49	181	0	**230**	0	**586**
5:00PM	62	8	0	**70**	0	13	28	0	**41**	0	17	53	0	**70**	0	**181**
5:15PM	47	5	0	**52**	0	4	17	0	**21**	0	9	48	0	**57**	0	**130**
5:30PM	38	4	0	**42**	0	5	15	0	**20**	0	2	39	0	**41**	0	**103**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

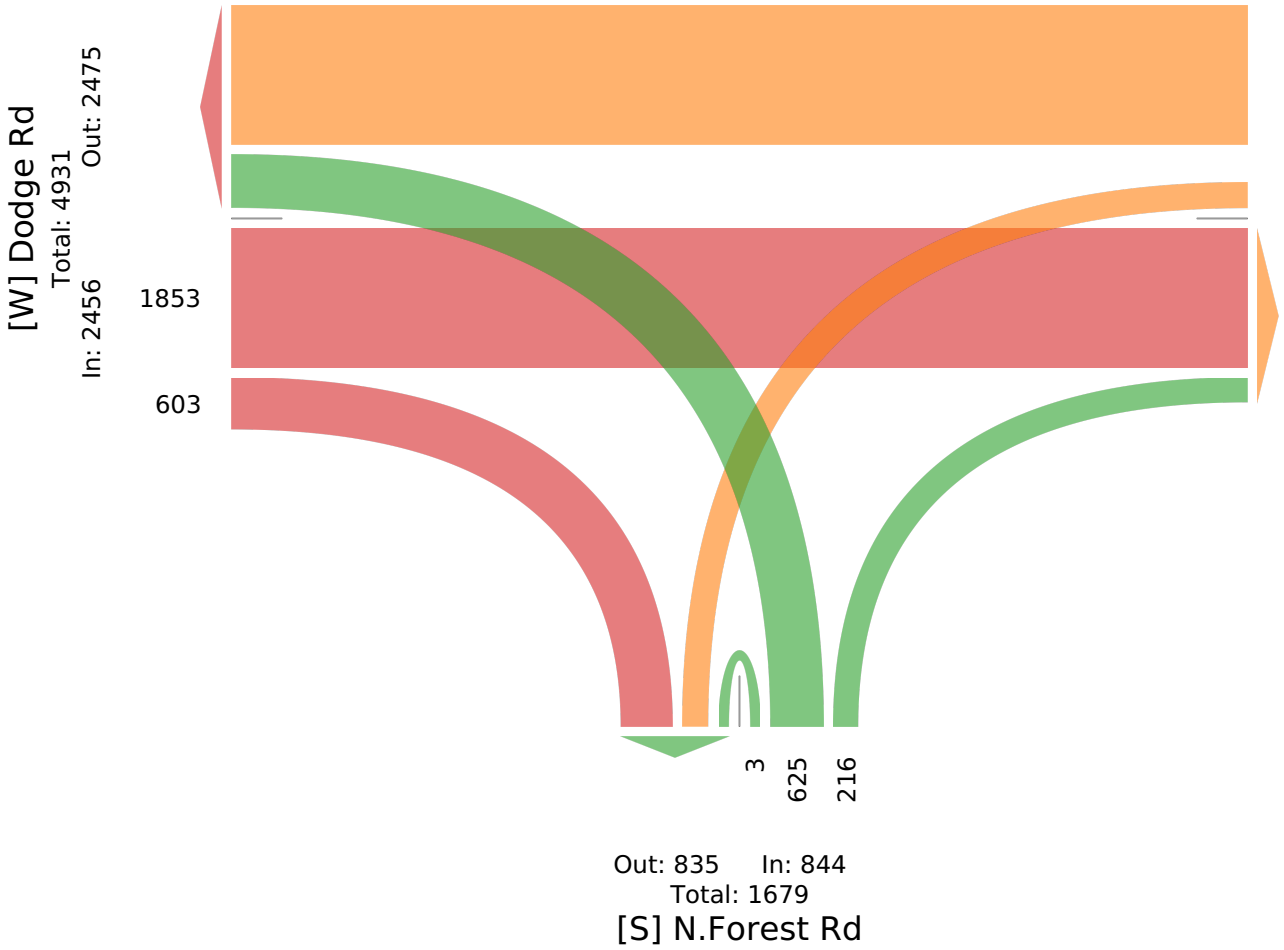
Leg	Dodge Rd					N.Forest Rd					Dodge Rd					
Direction	Westbound					Northbound					Eastbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
5:45PM	37	4	0	**41**	0	3	7	0	**10**	0	10	31	0	**41**	0	**92**
Hourly Total	184	21	0	**205**	0	25	67	0	**92**	0	38	171	0	**209**	0	**506**
6:00PM	33	2	0	**35**	0	8	19	1	**28**	0	6	27	0	**33**	0	**96**
6:15PM	23	3	0	**26**	0	6	7	0	**13**	0	8	29	0	**37**	0	**76**
6:30PM	34	6	0	**40**	0	4	13	0	**17**	0	9	26	0	**35**	0	**92**
6:45PM	27	8	0	**35**	0	6	6	0	**12**	0	2	21	0	**23**	0	**70**
Hourly Total	117	19	0	**136**	0	24	45	1	**70**	0	25	103	0	**128**	0	**334**
Total	1850	229	0	**2079**	0	216	625	3	**844**	0	603	1853	0	**2456**	0	**5379**
% Approach	89.0%	11.0%	0%	**-**	-	25.6%	74.1%	0.4%	**-**	-	24.6%	75.4%	0%	**-**	-	-
% Total	34.4%	4.3%	0%	**38.7%**	-	4.0%	11.6%	0.1%	**15.7%**	-	11.2%	34.4%	0%	**45.7%**	-	-
Motorcycles	0	0	0	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Motorcycles	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Lights	1808	227	0	**2035**	-	211	616	3	**830**	-	591	1796	0	**2387**	-	5252
% Lights	97.7%	99.1%	0%	**97.9%**	-	97.7%	98.6%	100%	**98.3%**	-	98.0%	96.9%	0%	**97.2%**	-	97.6%
Heavy	42	2	0	**44**	-	5	9	0	**14**	-	12	57	0	**69**	-	127
% Heavy	2.3%	0.9%	0%	**2.1%**	-	2.3%	1.4%	0%	**1.7%**	-	2.0%	3.1%	0%	**2.8%**	-	2.4%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC
Thu Mar 3, 2022
Full Length (7 AM-7 PM)
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022
AM Peak (7:30 AM - 8:30 AM)
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US

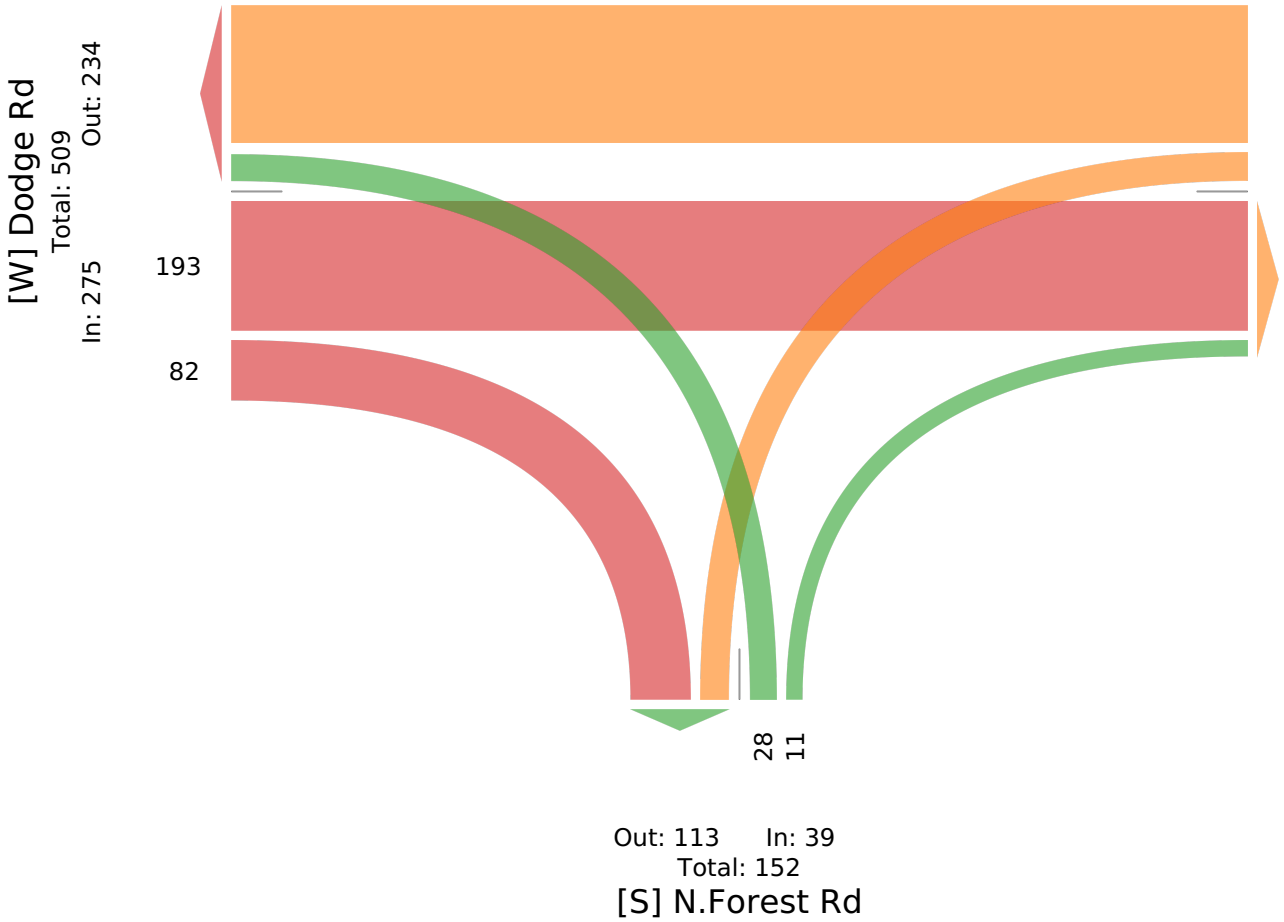
Leg Direction	Dodge Rd Westbound					N.Forest Rd Northbound					Dodge Rd Eastbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2022-03-03 7:30AM	54	5	0	**59**	0	3	6	0	**9**	0	23	48	0	**71**	0	**139**
7:45AM	56	9	0	**65**	0	0	5	0	**5**	0	24	44	0	**68**	0	**138**
8:00AM	48	12	0	**60**	0	4	8	0	**12**	0	17	50	0	**67**	0	**139**
8:15AM	48	5	0	**53**	0	4	9	0	**13**	0	18	51	0	**69**	0	**135**
Total	206	31	0	**237**	0	11	28	0	**39**	0	82	193	0	**275**	0	**551**
% Approach	86.9%	13.1%	0%	**-**	-	28.2%	71.8%	0%	**-**	-	29.8%	70.2%	0%	**-**	-	-
% Total	37.4%	5.6%	0%	**43.0%**	-	2.0%	5.1%	0%	**7.1%**	-	14.9%	35.0%	0%	**49.9%**	-	-
PHF	0.920	0.646	-	**0.912**	-	0.688	0.778	-	**0.750**	-	0.854	0.946	-	**0.968**	-	0.991
Motorcycles	0	0	0	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Motorcycles	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Lights	202	31	0	**233**	-	11	27	0	**38**	-	81	188	0	**269**	-	540
% Lights	98.1%	100%	0%	**98.3%**	-	100%	96.4%	0%	**97.4%**	-	98.8%	97.4%	0%	**97.8%**	-	98.0%
Heavy	4	0	0	**4**	-	0	1	0	**1**	-	1	5	0	**6**	-	11
% Heavy	1.9%	0%	0%	**1.7%**	-	0%	3.6%	0%	**2.6%**	-	1.2%	2.6%	0%	**2.2%**	-	2.0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC
Thu Mar 3, 2022
AM Peak (7:30 AM - 8:30 AM)
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022
Midday Peak (11:45 AM - 12:45 PM)
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US

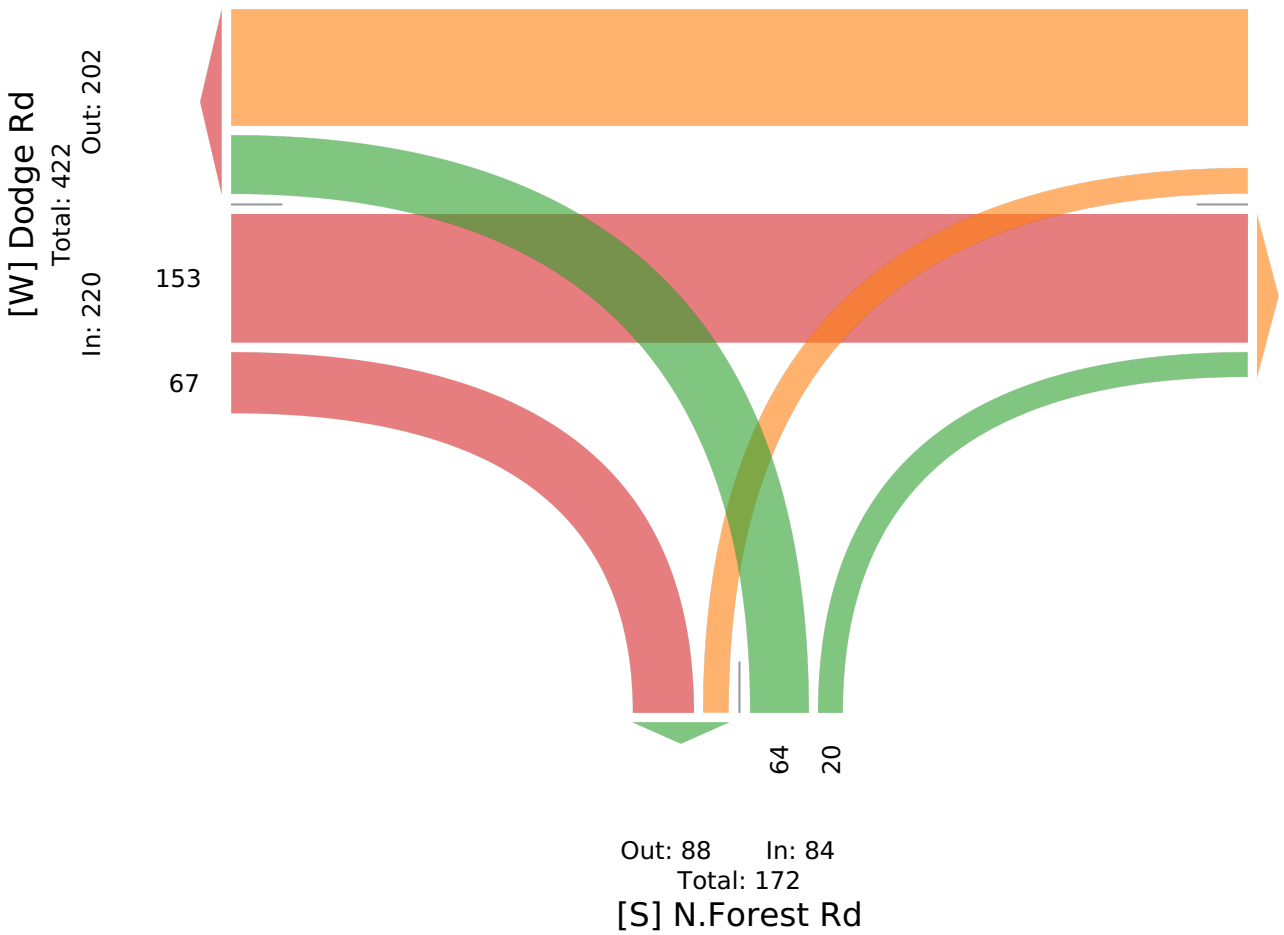
Leg Direction	Dodge Rd Westbound					N.Forest Rd Northbound					Dodge Rd Eastbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2022-03-03 11:45AM	31	7	0	**38**	0	4	17	0	**21**	0	16	38	0	**54**	0	**113**
12:00PM	40	6	0	**46**	0	4	12	0	**16**	0	17	41	0	**58**	0	**120**
12:15PM	31	6	0	**37**	0	7	13	0	**20**	0	15	36	0	**51**	0	**108**
12:30PM	36	2	0	**38**	0	5	22	0	**27**	0	19	38	0	**57**	0	**122**
Total	138	21	0	**159**	0	20	64	0	**84**	0	67	153	0	**220**	0	**463**
% Approach	86.8%	13.2%	0%	**-**	-	23.8%	76.2%	0%	**-**	-	30.5%	69.5%	0%	**-**	-	-
% Total	29.8%	4.5%	0%	**34.3%**	-	4.3%	13.8%	0%	**18.1%**	-	14.5%	33.0%	0%	**47.5%**	-	-
PHF	0.863	0.750	-	**0.864**	-	0.714	0.727	-	**0.778**	-	0.882	0.933	-	**0.948**	-	0.949
Motorcycles	0	0	0	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Motorcycles	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Lights	137	21	0	**158**	-	18	62	0	**80**	-	65	150	0	**215**	-	453
% Lights	99.3%	100%	0%	**99.4%**	-	90.0%	96.9%	0%	**95.2%**	-	97.0%	98.0%	0%	**97.7%**	-	97.8%
Heavy	1	0	0	**1**	-	2	2	0	**4**	-	2	3	0	**5**	-	10
% Heavy	0.7%	0%	0%	**0.6%**	-	10.0%	3.1%	0%	**4.8%**	-	3.0%	2.0%	0%	**2.3%**	-	2.2%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC
Thu Mar 3, 2022
Midday Peak (11:45 AM - 12:45 PM)
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US

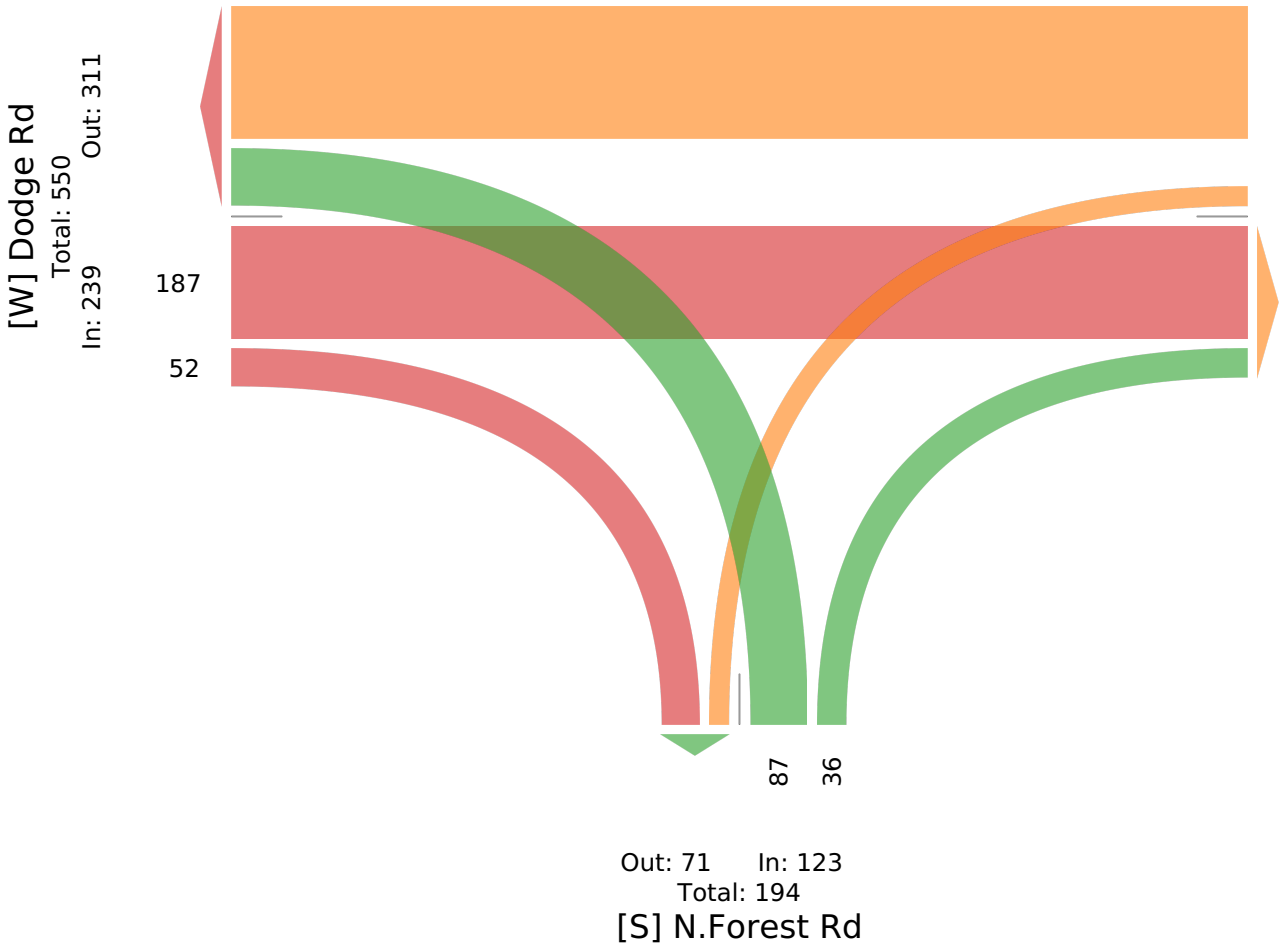
Leg Direction	Dodge Rd Westbound					N.Forest Rd Northbound					Dodge Rd Eastbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2022-03-03 4:15PM	47	3	0	**50**	0	5	14	0	**19**	0	14	51	0	**65**	0	**134**
4:30PM	56	5	0	**61**	0	10	22	0	**32**	0	14	47	0	**61**	0	**154**
4:45PM	59	3	0	**62**	0	8	23	0	**31**	0	7	36	0	**43**	0	**136**
5:00PM	62	8	0	**70**	0	13	28	0	**41**	0	17	53	0	**70**	0	**181**
Total	224	19	0	**243**	0	36	87	0	**123**	0	52	187	0	**239**	0	**605**
% Approach	92.2%	7.8%	0%	**-**	-	29.3%	70.7%	0%	**-**	-	21.8%	78.2%	0%	**-**	-	-
% Total	37.0%	3.1%	0%	**40.2%**	-	6.0%	14.4%	0%	**20.3%**	-	8.6%	30.9%	0%	**39.5%**	-	-
PHF	0.903	0.594	-	**0.868**	-	0.692	0.777	-	**0.750**	-	0.765	0.882	-	**0.854**	-	0.836
Motorcycles	0	0	0	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Motorcycles	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Lights	221	19	0	**240**	-	36	86	0	**122**	-	52	185	0	**237**	-	599
% Lights	98.7%	100%	0%	**98.8%**	-	100%	98.9%	0%	**99.2%**	-	100%	98.9%	0%	**99.2%**	-	99.0%
Heavy	3	0	0	**3**	-	0	1	0	**1**	-	0	2	0	**2**	-	6
% Heavy	1.3%	0%	0%	**1.2%**	-	0%	1.1%	0%	**0.8%**	-	0%	1.1%	0%	**0.8%**	-	1.0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC
Thu Mar 3, 2022
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022
Forced Peak (4:30 PM - 5:30 PM)
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US

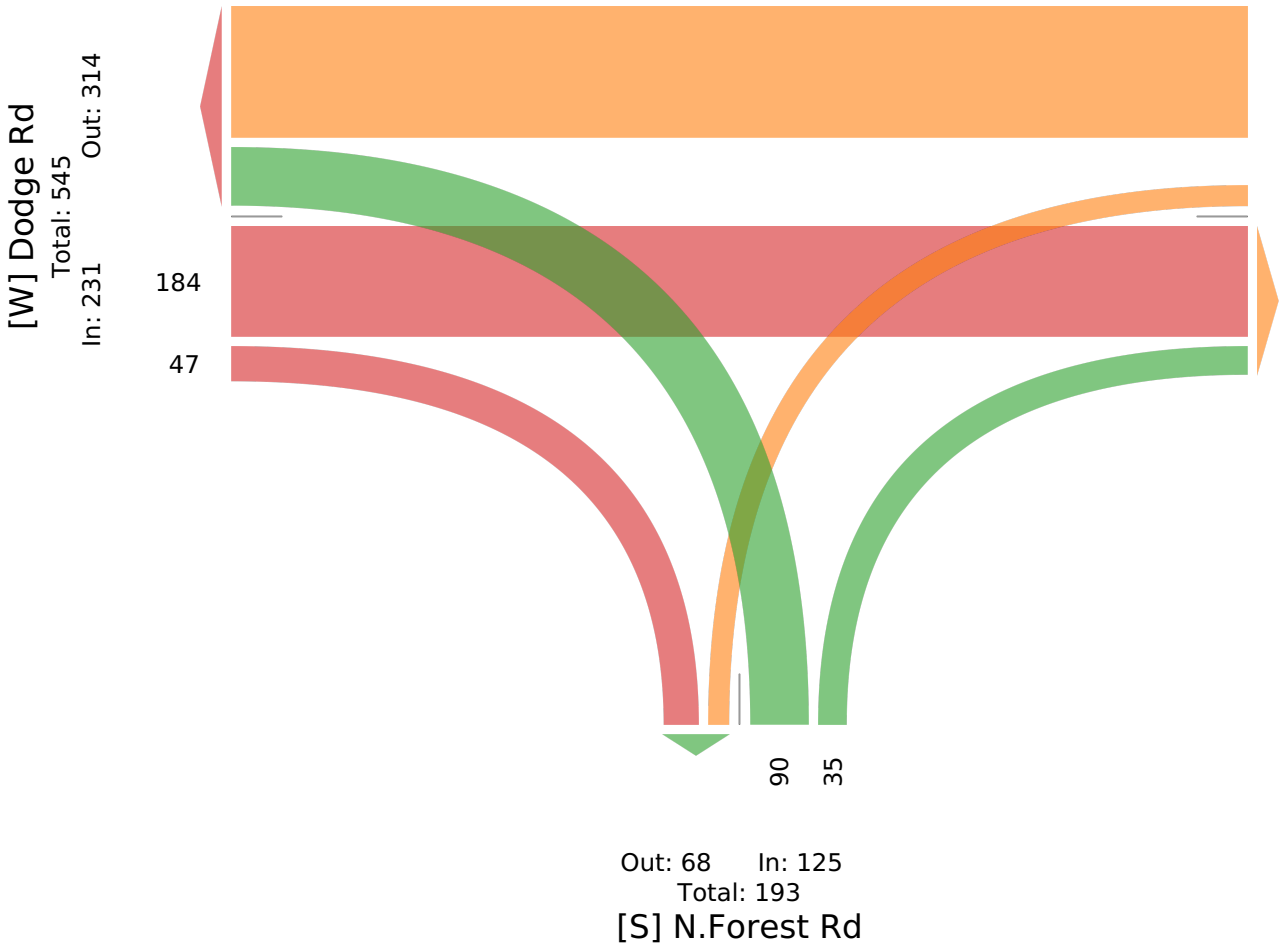
Leg Direction	Dodge Rd Westbound					N.Forest Rd Northbound					Dodge Rd Eastbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2022-03-03 4:30PM	56	5	0	**61**	0	10	22	0	**32**	0	14	47	0	**61**	0	**154**
4:45PM	59	3	0	**62**	0	8	23	0	**31**	0	7	36	0	**43**	0	**136**
5:00PM	62	8	0	**70**	0	13	28	0	**41**	0	17	53	0	**70**	0	**181**
5:15PM	47	5	0	**52**	0	4	17	0	**21**	0	9	48	0	**57**	0	**130**
Total	224	21	0	**245**	0	35	90	0	**125**	0	47	184	0	**231**	0	**601**
% Approach	91.4%	8.6%	0%	**-**	-	28.0%	72.0%	0%	**-**	-	20.3%	79.7%	0%	**-**	-	-
% Total	37.3%	3.5%	0%	**40.8%**	-	5.8%	15.0%	0%	**20.8%**	-	7.8%	30.6%	0%	**38.4%**	-	-
PHF	0.903	0.656	-	**0.875**	-	0.673	0.804	-	**0.762**	-	0.691	0.868	-	**0.825**	-	0.830
Motorcycles	0	0	0	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Motorcycles	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Lights	223	21	0	**244**	-	35	89	0	**124**	-	47	183	0	**230**	-	598
% Lights	99.6%	100%	0%	**99.6%**	-	100%	98.9%	0%	**99.2%**	-	100%	99.5%	0%	**99.6%**	-	99.5%
Heavy	1	0	0	**1**	-	0	1	0	**1**	-	0	1	0	**1**	-	3
% Heavy	0.4%	0%	0%	**0.4%**	-	0%	1.1%	0%	**0.8%**	-	0%	0.5%	0%	**0.4%**	-	0.5%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC
Thu Mar 3, 2022
Forced Peak (4:30 PM - 5:30 PM)
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary	
Study Name	Sweet Home Road @ Dodge Rd. & Commerce Rd.
Project	
Project Code	
Legs and Movements	
Bin Size	15 minutes
Time Zone	
Start Time	2024-05-14 00:00:00 +0000
End Time	2024-05-17 00:00:00 +0000
Location	Sweet Home Road @ Dodge Rd. & Commerce Rd.
Latitude and Longitude	43.02669108,-78.79913032

AM Peak	7:30-8:30
Midday Peak	15:00-16:00
PM Peak (Overall Peak Hour)	16:30-17:30

ArticulatedTruck

Entry	North				East			South				West			
Direction	Southbound				Westbound			Northbound				Eastbound			
Start Time	Left	Thru	Right	U-Turn	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right	
2024-05-14 07:00:00 +0000	0	1	0	0	0	0	0	0	0	0	0	0	1		
2024-05-14 07:15:00 +0000	0	0	0	0	0	0	0	1	0	0	0	0	1		
2024-05-14 07:30:00 +0000	0	1	0	0	0	0	0	1	1	0	0	0	0	3	
2024-05-14 07:45:00 +0000	0	0	0	0	0	0	0	1	0	0	0	0	1	2	
2024-05-14 08:00:00 +0000	0	1	0	0	0	0	0	2	1	0	0	0	0	4	
2024-05-14 08:15:00 +0000	0	0	0	0	0	0	0	1	1	0	0	0	2	4	
2024-05-14 08:30:00 +0000	0	0	0	0	0	0	0	0	1	0	0	0	0		
2024-05-14 08:45:00 +0000	0	0	0	0	0	0	0	1	1	0	0	0	1		
2024-05-14 16:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0		
2024-05-14 16:15:00 +0000	0	1	0	0	0	0	0	1	1	0	0	0	1		
2024-05-14 16:30:00 +0000	0	0	0	0	0	1	0	0	0	0	0	0	0	1	
2024-05-14 16:45:00 +0000	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
2024-05-14 17:00:00 +0000	0	1	0	0	0	0	0	0	0	0	0	0	1	2	
2024-05-14 17:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
2024-05-14 17:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	1		
2024-05-14 17:45:00 +0000	0	0	0	0	0	1	0	0	1	0	0	0	1	0	
7:30-8:30	0	2	0	0	0	0	0	5	3	0	0	0	0	3	
4:30-5:30	0	2	0	0	0	1	0	0	0	0	0	0	0	2	

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Bicycle															
Entry	North				East			South				West			
Direction	Southbound				Westbound			Northbound				Eastbound			
Start Time	Left	Thru	Right	U-Turn	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right	
2024-05-14 07:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 07:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 07:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 07:45:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 08:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 08:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 08:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 08:45:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 16:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 16:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 16:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 16:45:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 17:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 17:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 17:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 17:45:00 +0000	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30-5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Bus																
Entry	North				East			South				West				
Direction	Southbound				Westbound			Northbound				Eastbound				
Start Time	Left	Thru	Right	U-Turn	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right		
2024-05-14 07:00:00 +0000	0	15	1	0	0	0	0	0	3	0	0	0	0	1		
2024-05-14 07:15:00 +0000	1	1	0	0	0	0	1	0	9	0	0	1	0	0		
2024-05-14 07:30:00 +0000	0	4	1	0	0	0	0	0	5	0	0	0	0	0	10	
2024-05-14 07:45:00 +0000	1	2	0	0	0	0	1	0	3	1	0	1	0	0	9	
2024-05-14 08:00:00 +0000	0	8	0	0	0	0	0	2	6	0	0	0	0	0	16	
2024-05-14 08:15:00 +0000	0	3	0	0	0	0	0	3	3	0	0	1	0	0	10	
2024-05-14 08:30:00 +0000	0	5	1	0	0	0	0	3	4	0	0	1	1	4		
2024-05-14 08:45:00 +0000	0	8	0	0	0	3	0	3	2	0	0	2	7	4		
2024-05-14 16:00:00 +0000	0	6	1	0	0	0	0	0	10	0	0	0	0	0		
2024-05-14 16:15:00 +0000	0	8	0	0	0	0	0	0	2	0	0	1	0	1		
2024-05-14 16:30:00 +0000	1	3	1	0	0	0	0	0	1	0	0	0	0	1	7	
2024-05-14 16:45:00 +0000	0	1	0	0	0	0	0	0	1	0	0	1	0	0	3	
2024-05-14 17:00:00 +0000	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	
2024-05-14 17:15:00 +0000	0	1	1	0	0	0	0	0	1	0	0	1	0	0	4	
2024-05-14 17:30:00 +0000	0	1	0	0	0	0	0	0	0	0	0	0	0	0		
2024-05-14 17:45:00 +0000	0	0	1	0	0	0	0	0	1	0	0	1	0	0		
7:30-8:30	1	17	1	0	0	0	1	5	17	1	0	2	0	0		
4:30-5:30	1	5	2	0	0	0	0	0	4	0	0	2	0	2		

Lights																
Entry	North				East			South				West				
Direction	Southbound				Westbound			Northbound				Eastbound				
Start Time	Left	Thru	Right	U-Turn	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right		
2024-05-14 07:00:00 +0000	27	164	3	0	3	14	9	60	61	7	0	1	7	38		
2024-05-14 07:15:00 +0000	35	183	3	0	6	13	15	76	97	11	0	3	14	30		
2024-05-14 07:30:00 +0000	49	202	5	0	7	19	21	78	99	15	0	1	27	32	555	
2024-05-14 07:45:00 +0000	58	194	6	0	6	39	20	113	96	18	0	0	18	21	589	
2024-05-14 08:00:00 +0000	47	150	5	0	10	32	19	93	97	17	0	1	16	27	514	
2024-05-14 08:15:00 +0000	47	190	5	0	8	26	18	84	103	17	0	3	13	24	538	
2024-05-14 08:30:00 +0000	40	162	1	0	12	22	22	71	84	19	0	3	10	30		
2024-05-14 08:45:00 +0000	41	158	5	0	7	18	19	65	101	21	0	1	14	24		
2024-05-14 16:00:00 +0000	27	141	3	0	22	13	56	21	222	15	0	7	20	88		
2024-05-14 16:15:00 +0000	20	141	2	0	26	14	52	19	208	13	0	4	19	69		
2024-05-14 16:30:00 +0000	26	160	2	0	25	12	68	19	221	17	0	11	28	104	693	
2024-05-14 16:45:00 +0000	29	155	4	0	28	13	59	19	226	16	0	2	29	92	672	
2024-05-14 17:00:00 +0000	24	176	1	0	34	18	80	21	208	17	0	6	37	131	753	
2024-05-14 17:15:00 +0000	29	163	1	0	24	17	50	22	222	16	0	5	22	59	630	
2024-05-14 17:30:00 +0000	28	170	4	0	18	10	54	17	207	19	0	5	17	47		
2024-05-14 17:45:00 +0000	27	142	3	0	20	9	42	15	174	12	0	3	15	35		
7:30-8:30	201	736	21	0	31	116	78	368	395	67	0	5	74	104		
4:30-5:30	108	654	8	0	111	60	257	81	877	66	0	24	116	386		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

MotorizedVehicle															
Entry	North				East			South				West			
Direction	Southbound				Westbound			Northbound				Eastbound			
Start Time	Left	Thru	Right	U-Turn	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right	
2024-05-14 07:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2024-05-14 07:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2024-05-14 07:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 07:45:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 08:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 08:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 08:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2024-05-14 08:45:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2024-05-14 16:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2024-05-14 16:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2024-05-14 16:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 16:45:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 17:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 17:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 17:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2024-05-14 17:45:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:30-5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

SingleUnitTruck

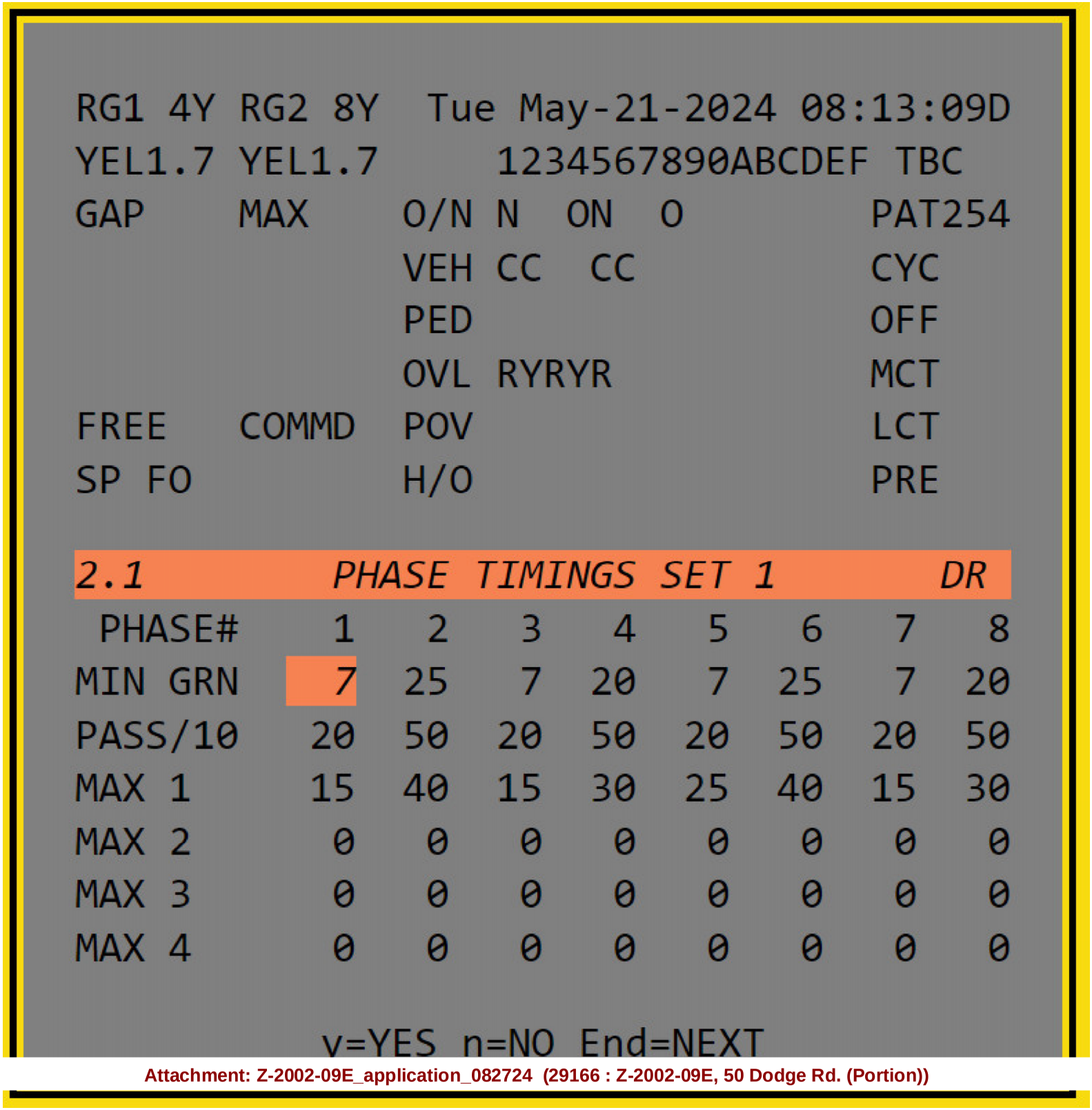
Entry	North				East				South				West			
Direction	Southbound				Westbound				Northbound				Eastbound			
Start Time	Left	Thru	Right	U-Turn	Left	Thru	Right		Left	Thru	Right	U-Turn	Left	Thru	Right	
2024-05-14 07:00:00 +0000	0	1	0	0	1	0	0		0	1	1	0	0	1	2	
2024-05-14 07:15:00 +0000	0	1	0	0	2	0	0		1	0	2	0	0	0	2	
2024-05-14 07:30:00 +0000	0	3	0	0	3	0	1		0	0	5	0	0	0	2	14
2024-05-14 07:45:00 +0000	1	1	0	0	3	0	0		1	0	4	0	0	0	1	11
2024-05-14 08:00:00 +0000	1	3	0	0	4	0	1		2	1	2	0	0	0	1	15
2024-05-14 08:15:00 +0000	1	3	0	0	3	0	0		2	2	3	0	0	0	1	15
2024-05-14 08:30:00 +0000	2	1	0	0	3	0	1		3	3	3	0	0	0	2	
2024-05-14 08:45:00 +0000	0	4	0	0	2	0	2		2	2	2	0	0	0	2	
2024-05-14 16:00:00 +0000	0	2	0	0	0	1	0		2	2	0	0	0	0	1	
2024-05-14 16:15:00 +0000	1	1	0	0	0	1	0		1	1	0	0	1	0	1	
2024-05-14 16:30:00 +0000	0	1	0	0	0	1	1		1	2	0	0	0	0	2	8
2024-05-14 16:45:00 +0000	1	2	0	0	0	2	0		1	1	0	0	0	0	1	8
2024-05-14 17:00:00 +0000	1	0	1	0	0	0	0		1	1	0	0	0	0	1	5
2024-05-14 17:15:00 +0000	0	0	1	0	1	0	0		2	2	0	0	0	0	1	7
2024-05-14 17:30:00 +0000	0	1	1	0	0	2	1		0	1	0	0	0	0	0	
2024-05-14 17:45:00 +0000	0	2	0	0	0	0	0		1	1	0	0	0	0	1	
7:30-8:30	3	10	0	0	13	0	2		5	3	14	0	0	0	5	
4:30-5:30	2	3	2	0	1	3	1		5	6	0	0	0	0	5	

Direction	Southbound				Westbound				Northbound				Eastbound		
Start Time	Left	Thru	Right	U-Turn	Left	Thru	Right		Left	Thru	Right	U-Turn	Left	Thru	Right
AM Peak	205	765	22	0	44	116	81		383	418	82	0	7	74	112
PM Peak	111	664	12	0	112	64	258		86	887	66	0	26	116	395
AM HV%	2.00%	3.80%	4.50%	#DIV/0!	29.50%	0.00%	3.70%		3.90%	5.50%	18.30%	#DIV/0!	28.60%	0.00%	7.10%
PM HV%	2.70%	1.50%	33.30%	#DIV/0!	0.90%	6.30%	0.40%		5.80%	1.10%	0.00%	#DIV/0!	7.70%	0.00%	2.30%

AM PHF:	582	PM PHF:	709
	611		684
	549		762
	567		642
	0.944763		0.917651

APPENDIX B: MISCELLANEOUS CALCULATIONS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



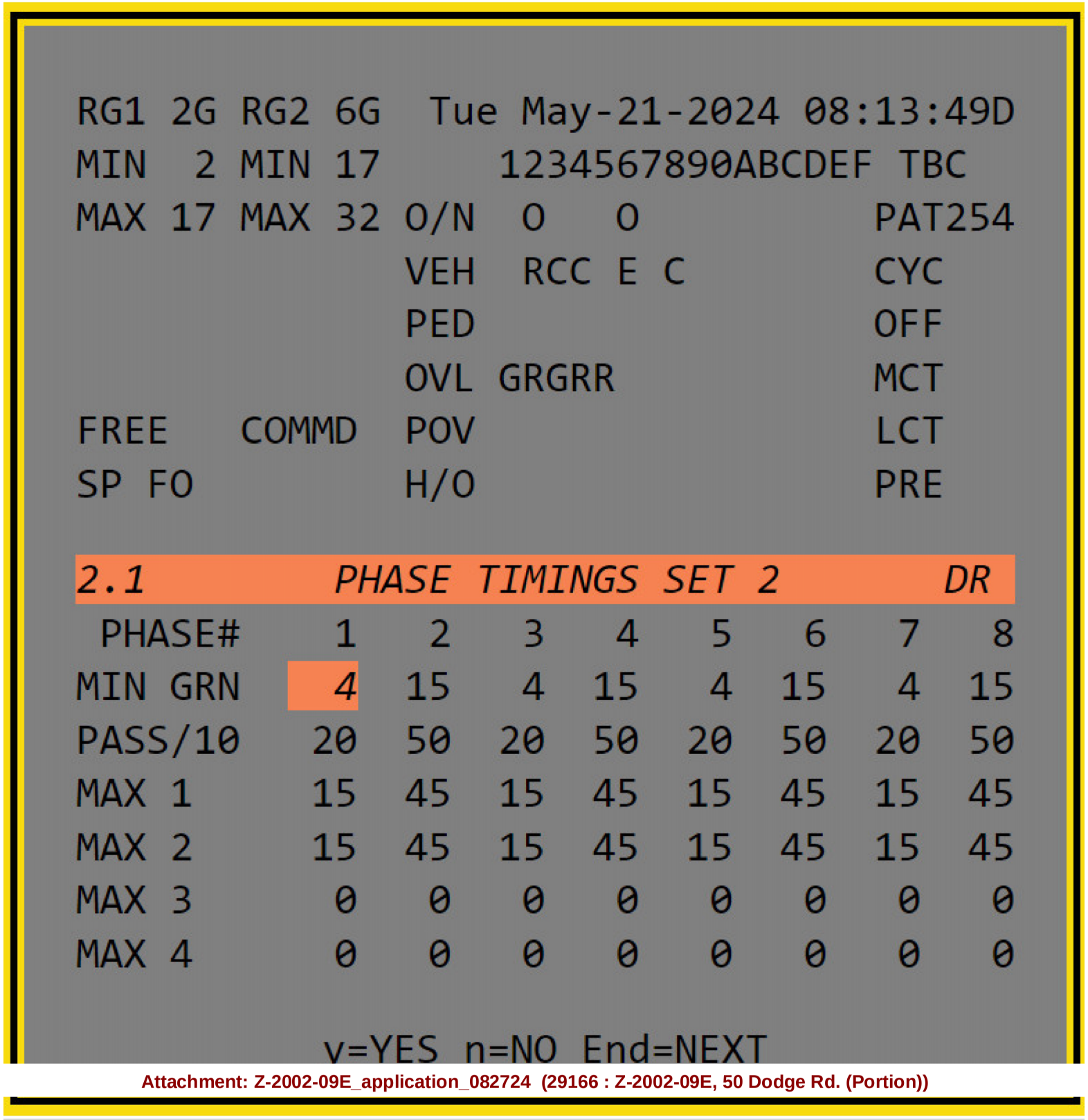
Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

```
RG1 2G RG2 5G  Tue May-21-2024 08:13:29D
MIN 23 EXT2.0      1234567890ABCDEF TBC
MAX 38 MAX 10 O/N  O  O              PAT254
               VEH  EC EC C          CYC
               PED                   OFF
               OVL GR RG             MCT
FREE   COMMD   POV                   LCT
SP FO          H/O                   PRE
```

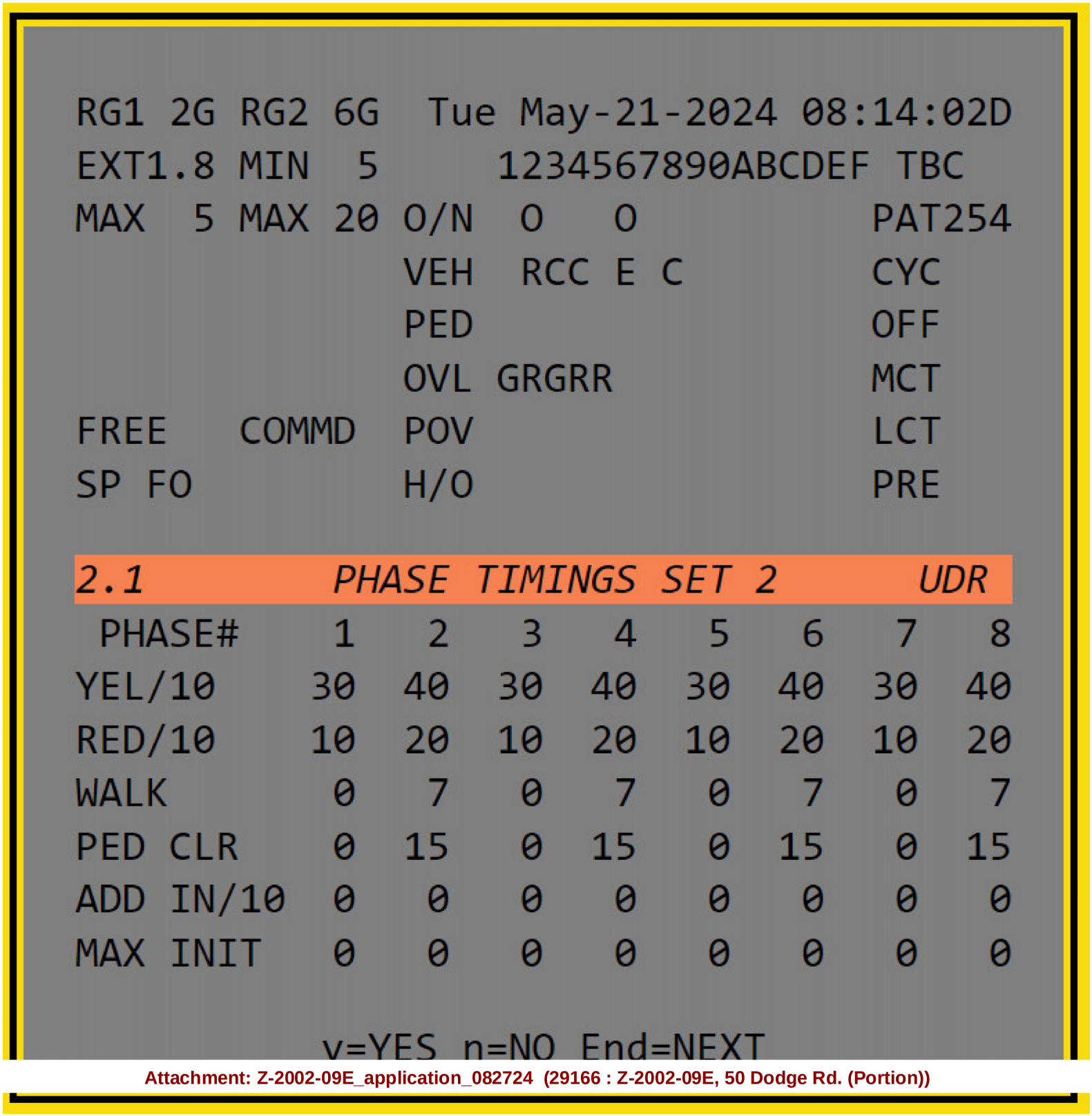
2.1 PHASE TIMINGS SET 1 UDR

PHASE#	1	2	3	4	5	6	7	8
YEL/10	40	40	40	40	40	40	40	40
RED/10	20	20	20	20	20	20	20	20
WALK	0	7	0	7	0	7	0	0
PED CLR	0	15	0	15	0	15	0	0
ADD IN/10	0	0	0	0	0	0	0	0
MAX INIT	0	0	0	0	0	0	0	0

```
v=YES n=NO End=NEXT
```



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

PASSERO
engineering architecture

Sawyer's Landing Development, Town of Amherst, NY

Documentation of Ambient Traffic Volume Growth

Roadway	Segment starts at	Segment end at	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Annual Growth
North Forest Rd	Turtle Creek Apts	Dodge Rd			2,189			1,809		1,825	1,845		-2.81%
Dodge Rd	Sweet Home Rd	Campbell Rd			5,440				7,058	6,738			-4.53%
Sweet Home Rd	Commerce Dr	North French Rd		16,606		15,052			16,008			18,050	2.07%
Sweet Home Rd	N Ellicott Rd	Commerce Dr	21,021						21,437				0.33%
												AVERAGE	**-1.24%**

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection Crash Rate Calculations
Sawyer's Landing Development

Intersection #1:	Sweet Home Rd at Dodge Rd
Date of Count:	Tuesday, May 14, 2024
Number of Crashes:	30
Number of Injuries:	11
Number of Fatalities:	0
Entering Vehicles (PM):	2797
ADT:	29442
Start Date:	January 1, 2019
End Date:	December 31, 2023
Number of Years:	5
Intersection Type:	4 Legged
Area Type:	Urban
Control Type:	Signal w/ Left Turn 5 or More Lanes

crash rate = Number of Crashes x 1 Million / ADT x 365 Days per Year x Number of Years

crash rate = 30 x 1,000,000 / 29442 x 365 x 5

	Crash Rate		Fatality Rate	Injury Rate
Study Intersection	**0.56**	**cr/mve**	**0%**	**37%**
Statewide Average*	**0.26**	**cr/mve**		

ADT = Average Daily Total vehicles entering intersection
cr/mve = crashes per million entering vehicles
* Most recent available 2019 Average Crash Rates for State Highways by Facility Type

	Direction					
Type	Northbound	Southbound	Eastbound	Westbound	Unknown	Totals
Left turn	3	4		2		9
Rear-end	1	3	2	1		7
Overtaking						0
Right Angle	5	1	1	1		8
Right Turn				1		1
Head On						0
Side-swipe	1	1	1			3
Fixed Object						0
Backing		1	1			2
Other						0
Bike/Ped						0
Animal						0
Totals	10	10	5	5	0	30

PDO	19
Injury	11
Injury + PDO	
Fatal	
NR	
Total	30

Intersection Crash Rate Calculations
Sawyer's Landing Development

Intersection #5:	Dodge Rd at North Forest Rd
Date of Count:	Thursday, March 3, 2022
Number of Crashes:	6
Number of Injuries:	0
Number of Fatalities:	0
Entering Vehicles (PM):	606
ADT:	6379
Start Date:	January 1, 2019
End Date:	December 31, 2023
Number of Years:	5
Intersection Type:	3 Legged
Area Type:	Urban
Control Type:	Sign 1-3 Lanes

crash rate = Number of Crashes x 1 Million / ADT x 365 Days per Year x Number of Years

crash rate = 6 x 1,000,000 / 6379 x 365 x 5

	Crash Rate		Fatality Rate	Injury Rate
Study Intersection	**0.52**	**cr/mve**	**0%**	**0%**
Statewide Average*	**0.19**	**cr/mve**		

ADT = Average Daily Total vehicles entering intersection
cr/mve = crashes per million entering vehicles
* Most recent available 2019 Average Crash Rates for State Highways by Facility Type

	Direction					
Type	Northbound	Southbound	Eastbound	Westbound	Unknown	Totals
Left turn						0
Rear-end	1			1		2
Overtaking						0
Right Angle	1					1
Right Turn						0
Head On						0
Side-swipe						0
Fixed Object	2		1			3
Backing						0
Other						0
Bike/Ped						0
Animal						0
Totals	4	0	1	1	0	6

PDO	6
Injury	
Injury + PDO	
Fatal	
NR	
Total	6

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

PROPOSED SAWYER'S LANDING DEVELOPMENT
TOWN OF AMHERST, NY
AM PEAK

			Fig 3				Fig 4	Fig 6				Fig 7	Fig 8
				Num of yrs									
				2									
LOCATION NUMBER	INTERSECTION DESCRIPTION	Existing Volumes	2024 Existing Volumes	2026 Bkgd Vol	Aspen Heights	480 Dodge Rd	2026 Bkgrd Volumes	Sawyer's Landing				Total Site Trips	FULL Build Volumes
				1.00%				Enter Dist. %	Exit Dist. %	Trips IN 69	Trips OUT 92		
1	Sweet Home Road												
	Dodge Road/Commerce Drive												
	SR	22	22	22			22						22
	ST	765	765	780			780						780
	SL	205	205	209		2	211	25%		17		17	228
	WR	81	81	83		2	85		25%		23	23	108
	WT	116	116	118	3	3	124		10%		9	9	133
	WL	44	44	45	15	1	61		30%		28	28	89
	NR	82	82	84	11		95	30%		21		21	116
	NT	418	418	426			426						426
	NL	383	383	391			391						391
	ER	112	112	114			114						114
	ET	74	74	75			75	10%		7		7	82
	EL	7	7	7			7						7
2	Dodge Road												
	Proposed Northerly Exit Driveway												
	SR								40%		37	37	37
	ST												
	SL								15%		14	14	14
	WR												
	WT	234	236	241	18	6	265		25%		23	23	288
	WL												
	NR												
	NT												
	NL												
	ER												
	ET	275	278	284	11	2	297	65%		45		45	342
	EL												
3	Dodge Road												
	Proposed Northerly Enter Driveway												
	SR												
	ST												
	SL												
	WR							12%		8		8	8
	WT	234	236	241	18	6	265		25%		23	23	288
	WL												
	NR												
	NT												
	NL												
	ER												
	ET	275	278	284	11	2	297	18%	15%	12	14	26	323
	EL							47%		33		33	33
4	Dodge Road												
	Proposed South Driveway												
	SR								25%		23	23	23
	ST												
	SL								20%		18	18	18
	WR							23%		16		16	16
	WT	234	236	241	18	6	265	12%		8		8	273
	WL												
	NR												
	NT												
	NL												
	ER												
	ET	275	278	284	11	2	297		15%		14	14	311
	EL							18%		12		12	12
5	Dodge Road		0.5%										
	North Forest Road		2										
	SR												
	ST												
	SL												
	WR												
	WT	206	208	212	18	6	236	25%		17		17	253
	WL	31	31	32		1	33						33
	NR	11	11	11			11						11
	NT												
	NL	28	28	29			29	10%		7		7	36
	ER	82	83	85			85		10%		9	9	94
	ET	193	195	199	11	2	212		25%		23	23	235
	EL												

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

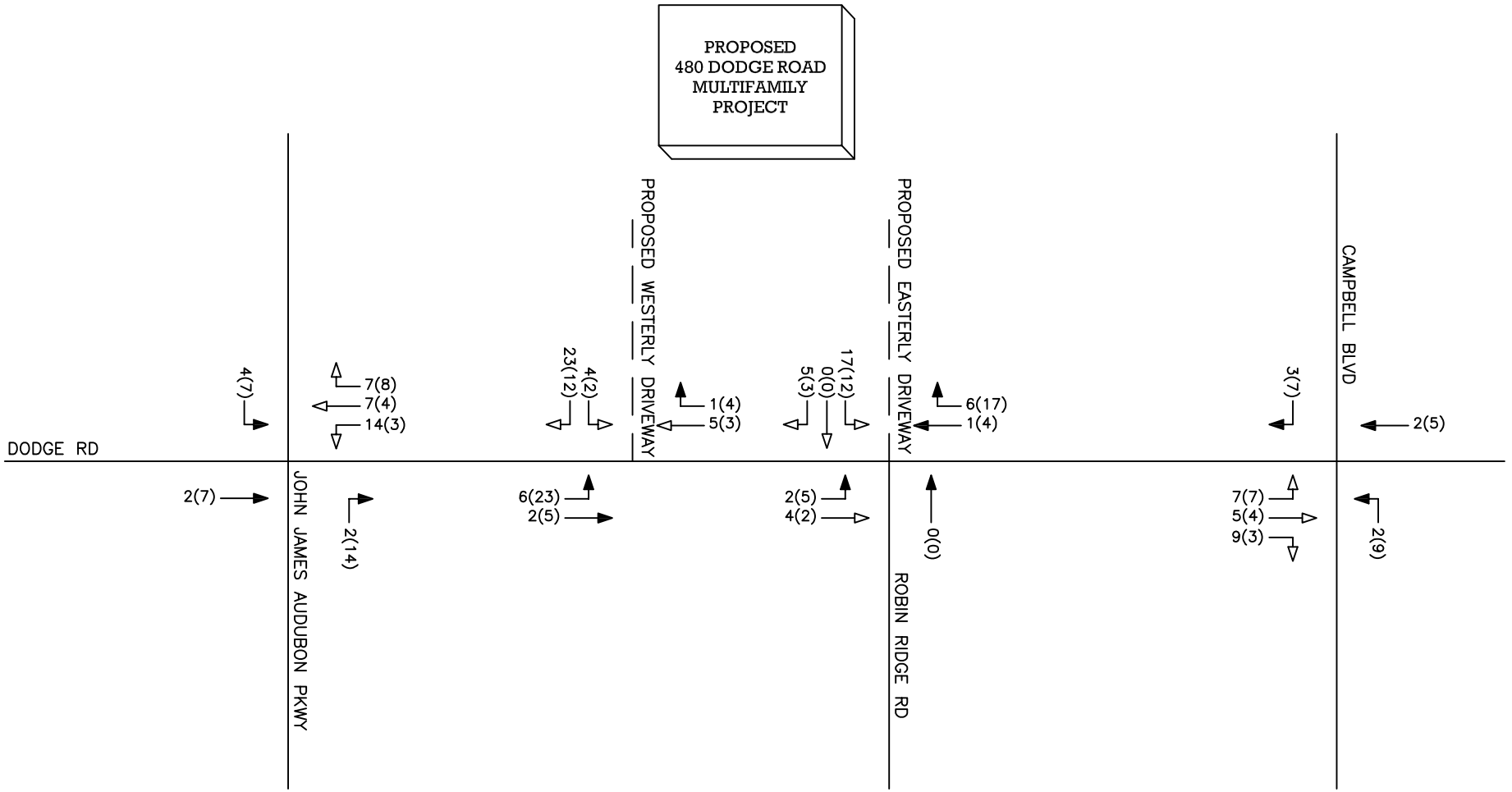
PROPOSED SAWYER'S LANDING DEVELOPMENT
TOWN OF AMHERST, NY
PM PEAK

Fig 3 Fig 4 Fig 6 Fig 7 Fig 8

Num of yrs: 2

LOCATION NUMBER	INTERSECTION DESCRIPTION	Existing Volumes	2024 Existing Volumes	2026 Bkgd Vol 1.00%	Aspen Heights	480 Dodge Rd	2026 Bkgrd Volume	Sawyer's Landing Enter Dist. %	Sawyer's Landing Exit Dist. %	Sawyer's Landing Trips IN 133	Sawyer's Landing Trips OUT 110	Total Site Trips	FULL Build Volumes
1	Sweet Home Road Dodge Road/Commerce Drive												
	SR	12	12	12			12						12
	ST	664	664	677			677						677
	SL	111	111	113		2	115	25%		33		33	148
	WR	258	258	263		2	265		25%		28	28	293
	WT	64	64	65	11	1	77		10%		11	11	88
	WL	112	112	114	21	1	136		30%		33	33	169
	NR	66	66	67	13	2	82	30%		40		40	122
	NT	887	887	905			905						905
	NL	86	86	88			88						88
	ER	395	395	403			403						403
	ET	116	116	118		2	120	10%		13		13	133
	EL	26	26	27			27						27
2	Dodge Road Proposed Northerly Exit Driveway												
	SR								40%		44	44	44
	ST												
	SL								15%		16	16	16
	WR												
	WT	314	317	323	32	4	359		25%		28	28	387
	WL												
	NR												
	NT												
	NL												
	ER												
	ET	231	233	238	13	6	257	65%		86		86	343
	EL												
3	Dodge Road Proposed Northerly Enter Driveway												
	SR												
	ST												
	SL												
	WR							12%		16		16	16
	WT	314	317	323	32	4	359		25%		28	28	387
	WL												
	NR												
	NT												
	NL												
	ER												
	ET	231	233	238	13	6	257	18%	15%	24	16	40	297
	EL							47%		62		62	62
4	Dodge Road Proposed South Driveway												
	SR								25%		28	28	28
	ST												
	SL								20%		22	22	22
	WR							23%		31		31	31
	WT	314	317	323	32	4	359	12%		16		16	375
	WL												
	NR												
	NT												
	NL												
	ER												
	ET	231	233	238	13	6	257		15%		16	16	273
	EL							18%		24		24	24
5	Dodge Road North Forest Road		0.5% 2										
	SR												
	ST												
	SL												
	WR												
	WT	224	226	231	32	4	267	25%		33		33	300
	WL	21	21	21			21						21
	NR	35	35	36		1	37						37
	NT												
	NL	90	91	93			93	10%		13		13	106
	ER	47	47	48			48		10%		11	11	59
	ET	184	186	190	13	6	209		25%		27	27	236
	EL												

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



N

NOT TO SCALE

FIGURE 7

TOTAL SITE GENERATED TRIPS

PROPOSED 480 DODGE ROAD MULTIFAMILY PROJECT
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)

→ = ENTERING TRIPS

→ = EXITING TRIPS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

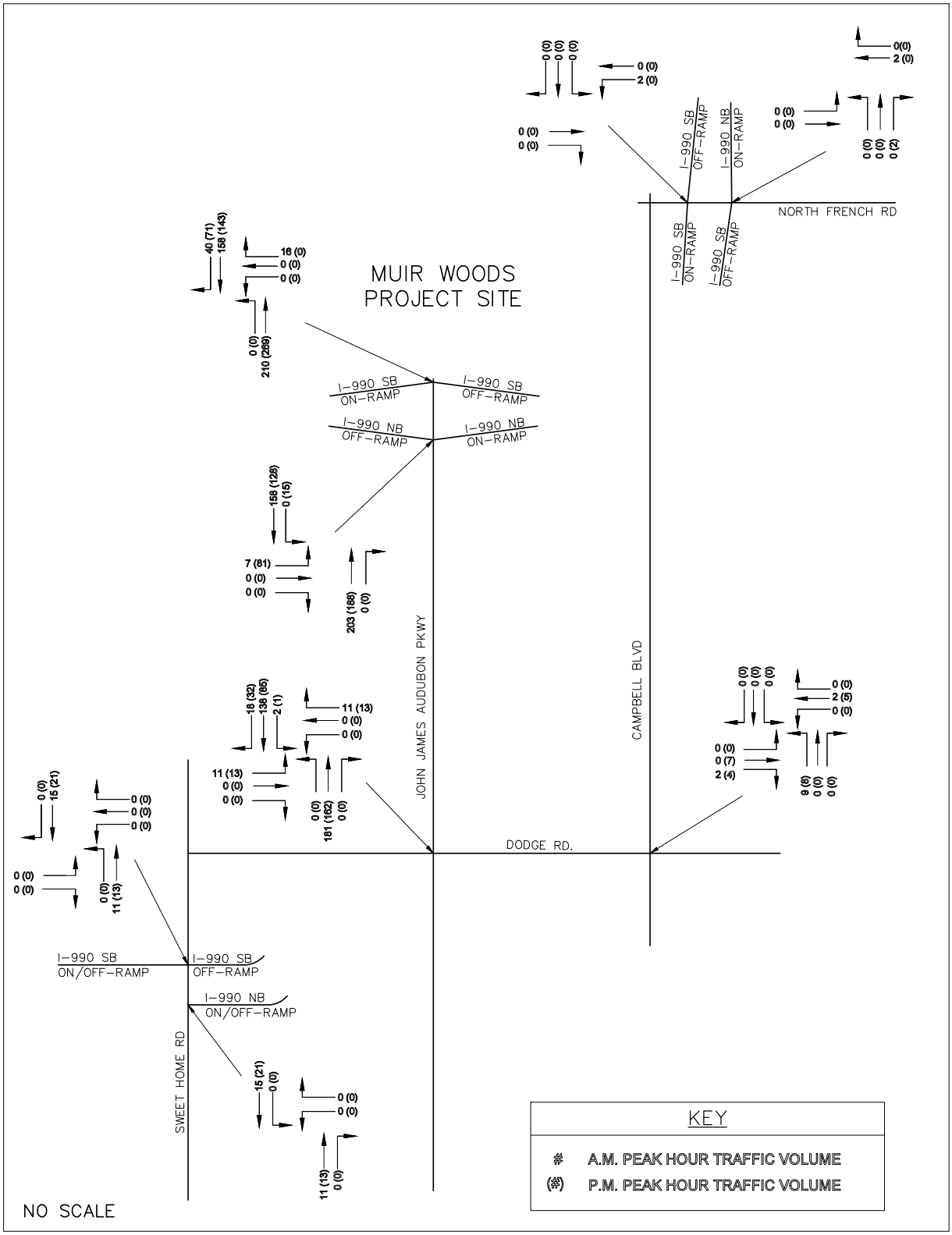


EXHIBIT VII
SITE GENERATED TRAFFIC

Greenman-Pedersen, Inc.
Engineering and Construction Services
Engineering - Surveying - Planning
BUFFALO (716) 852-4644 • ROCHESTER (585) 486-4555 • JAMESTOWN (716) 484-3503

BUF-2013062 MARCH 2020

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

PROJECT DETAILS

Project Name:	Sawyers Landing	Type of Project:	
Project No:		City:	
Country:		Built-up Area(Sq.ft):	
Analyst Name:	Amy Dake	Clients Name:	
Date:	5/24/2024	ZIP/Postal Code:	
State/Province:		No. of Scenarios:	2
Analysis Region:			

SCENARIO SUMMARY

Scenarios	Name	No. of Land Uses	Phases of Development	No. of Years to Project Traffic	User Group	Estimated New Vehicle Trips		
						Entry	Exit	Total
Scenario - 1	AM Peak	7	1	0		76	102	178
Scenario - 2	PM Peak	7	1	0		163	136	299

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Scenario - 1

Scenario Name: AM Peak
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method	Entry	Exit	Total
					Rate/Equation	Split%	Split%	
710 - General Office Building	General	1000 Sq. Ft. GFA	2.3	Weekday, Peak Hour of	Best Fit (LOG)	6	1	7
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	Ln(T) =0.86Ln(X) + 1.16	88%	12%	
822 - Strip Retail Plaza (<40k)	General	1000 Sq. Ft. GLA	12.85	Weekday, Peak Hour of	Average	18	12	30
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	2.36	60%	40%	
151 - Mini-Warehouse	General	1000 Sq. Ft. GFA	105.6	Weekday, Peak Hour of	Average	6	4	10
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	0.09	59%	41%	
215 - Single-Family Attached Housing	General	Dwelling Units	107	Weekday, Peak Hour of	Best Fit (LIN)	12	37	49
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	T = 0.52(X) - 5.70	25%	75%	
221 - Multifamily Housing (Mid-Rise) - Not	General	Dwelling Units	102	Weekday, Peak Hour	Best Fit (LIN)	8	26	34
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			of Adjacent Street	T = 0.44(X) - 11.61	23%	77%	
932 - High-Turnover (Sit-Down) Restaurant	General	1000 Sq. Ft. GFA	3.90	Weekday, Peak Hour of	Average	21	17	38
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	9.57	55%	45%	
492 - Health/Fitness Club	General	1000 Sq. Ft. GFA	8.00	Weekday, Peak Hour of	Average	5	5	10
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	1.31	51%	49%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
710 - General Office Building	99	100	1.1	1.1	88	12
822 - Strip Retail Plaza (<40k)	100	100	1	1	60	40
151 - Mini-Warehouse	100	100	1	1	59	41
215 - Single-Family Attached Housing	100	100	1	1	25	75
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	100	100	1	1	23	77
932 - High-Turnover (Sit-Down) Restaurant	100	100	1	1	55	45
492 - Health/Fitness Club	100	100	1	1	51	49

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
710 - General Office Building	6	1	0	0	6	1
	7		0		7	
822 - Strip Retail Plaza (<40k)	18	12	0	0	18	12
	30		0		30	
151 - Mini-Warehouse	6	4	0	0	6	4
	10		0		10	
215 - Single-Family Attached Housing	12	37	0	0	12	37
	49		0		49	
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	8	26	0	0	8	26
	34		0		34	
932 - High-Turnover (Sit-Down) Restaurant	21	17	0	0	21	17

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

932 - High-Turnover (Sit-Down) Restaurant	38		0		38	
492 - Health/Fitness Club	5	5	0	0	5	5
	10		0		10	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
710 - General Office Building	6	1	7
822 - Strip Retail Plaza (<40k)	18	12	30
151 - Mini-Warehouse	6	4	10
215 - Single-Family Attached Housing	12	37	49
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	8	26	34
932 - High-Turnover (Sit-Down) Restaurant	21	17	38
492 - Health/Fitness Club	5	5	10

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	76	102	178
External Vehicle Trips	76	102	178
New Vehicle Trips	76	102	178

Packet Pg. 648

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

2.a

Scenario - 2

Scenario Name: PM Peak
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method Rate/Equation	Entry Split%	Exit Split%	Total
710 - General Office Building	General	1000 Sq. Ft. GFA	2.3	Weekday, Peak Hour of	Best Fit (LOG)	1	6	7
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	Ln(T) =0.83Ln(X) + 1.29	17%	83%	
822 - Strip Retail Plaza (<40k)	General	1000 Sq. Ft. GLA	12.85	Weekday, Peak Hour of	Best Fit (LOG)	47	47	94
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	Ln(T) =0.71Ln(X) + 2.72	50%	50%	
151 - Mini-Warehouse	General	1000 Sq. Ft. GFA	105.6	Weekday, Peak Hour of	Average	7	8	15
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	0.15	47%	53%	
215 - Single-Family Attached Housing	General	Dwelling Units	107	Weekday, Peak Hour of	Best Fit (LIN)	36	25	61
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	T = 0.60(X) - 3.93	59%	41%	
221 - Multifamily Housing (Mid-Rise) - Not	General	Dwelling Units	102	Weekday, Peak Hour	Best Fit (LIN)	24	16	40
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			of Adjacent Street	T = 0.39(X) + 0.34	61%	39%	
932 - High-Turnover (Sit-Down) Restaurant	General	1000 Sq. Ft. GFA	3.90	Weekday, Peak Hour of	Average	22	14	36
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	9.05	61%	39%	
492 - Health/Fitness Club	General	1000 Sq. Ft. GFA	8.00	Weekday, Peak Hour of	Best Fit (LOG)	26	20	46
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	Ln(T) =0.67Ln(X) + 2.44	57%	43%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
710 - General Office Building	100	99	1.1	1.1	17	83
822 - Strip Retail Plaza (<40k)	100	100	1	1	50	50
151 - Mini-Warehouse	100	100	1	1	47	53
215 - Single-Family Attached Housing	100	100	1	1	59	41
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	100	100	1	1	61	39
932 - High-Turnover (Sit-Down) Restaurant	100	100	1	1	61	39
492 - Health/Fitness Club	100	100	1	1	57	43

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
710 - General Office Building	1	7	0	0	1	7
	8		0		8	
822 - Strip Retail Plaza (<40k)	47	47	0	0	47	47
	94		0		94	
151 - Mini-Warehouse	7	8	0	0	7	8
	15		0		15	
215 - Single-Family Attached Housing	36	25	0	0	36	25
	61		0		61	
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	24	16	0	0	24	16
	40		0		40	
932 - High-Turnover (Sit-Down) Restaurant	22	14	0	0	22	14

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932 - High-Turnover (Sit-Down) Restaurant	36		0		36	
492 - Health/Fitness Club	26	20	0	0	26	20
	46		0		46	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
710 - General Office Building	1	6	7
822 - Strip Retail Plaza (<40k)	47	47	94
151 - Mini-Warehouse	7	8	15
215 - Single-Family Attached Housing	36	25	61
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	24	16	40
932 - High-Turnover (Sit-Down) Restaurant	22	14	36
492 - Health/Fitness Club	26	20	46

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	163	136	299
External Vehicle Trips	163	136	299
New Vehicle Trips	163	136	299

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Sawyer's Landing Development	**Organization:**	Passero Associates
Project Location:	Town of Amherst, NY	**Performed By:**	Nick Merrifield
Scenario Description:		**Date:**	May 2024
Analysis Year:	2026	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	2,300	SF	7	6	1
Retail	822	12,854	SF	30	18	12
Restaurant	932	3,901	SF	38	21	17
Cinema/Entertainment				0		
Residential	215/221	209	Units	83	20	63
Hotel				0		
All Other Land Uses[2]	492/151	8,002/105,600	SF	20	11	9
Total				178	76	102

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.06	0%	1%	1.06	0%	0%
Retail	1.17	0%	0%	1.16	0%	0%
Restaurant	1.41	0%	1%	1.39	0%	2%
Cinema/Entertainment						
Residential	1.13	0%	3%	1.09	0%	2%
Hotel						
All Other Land Uses[2]	1.00	0%	0%	1.00	0%	0%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		2	0	0	0
Restaurant	1	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	6	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	208	91	117
Internal Capture Percentage	13%	14%	11%
External Vehicle-Trips[3]	156	66	90
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	2	1	1

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	17%	0%
Retail	14%	14%
Restaurant	27%	17%
Cinema/Entertainment	N/A	N/A
Residential	4%	10%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Project Name:	Sawyer's Landing Development
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.06	6	6	1.06	1	1
Retail	1.17	18	21	1.16	12	14
Restaurant	1.41	21	30	1.39	17	24
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.13	20	23	1.09	63	69
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	1	0	0	0
Retail	4		2	0	2	0
Restaurant	7	3		0	1	1
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	14	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		7	7	0	0	0
Retail	0		15	0	0	0
Restaurant	1	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	4	6	0		0
Hotel	0	1	2	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	5	6	5	0	0
Retail	3	18	21	15	0	0
Restaurant	8	22	30	16	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	22	23	19	0	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	11	11	11	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	1	1	1	0	0
Retail	2	12	14	10	0	0
Restaurant	4	20	24	14	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	7	62	69	56	0	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	9	9	9	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Sawyer's Landing Development	**Organization:**	Passero Associates
Project Location:	Town of Amherst, NY	**Performed By:**	Nick Merrifield
Scenario Description:		**Date:**	May 2024
Analysis Year:	2026	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	2,300	SF	7	1	6
Retail	822	12,854	SF	94	47	47
Restaurant	932	3,901	SF	36	22	14
Cinema/Entertainment				0		
Residential	215/221	209	Units	101	60	41
Hotel				0		
All Other Land Uses[2]	492/151	8,002/105,600	SF	61	33	28
Total				299	163	136

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.11	0%	0%	1.07	0%	0%
Retail	1.21	0%	0%	1.18	0%	0%
Restaurant	1.41	0%	1%	1.39	0%	2%
Cinema/Entertainment						
Residential	1.15	0%	3%	1.21	0%	4%
Hotel						
All Other Land Uses[2]	1.00	0%	0%	1.00	0%	0%

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	194		283	
Retail					283	
Restaurant					283	
Cinema/Entertainment						
Residential		283	283			
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	0		9	0	14	0
Restaurant	0	8		0	3	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	6	4	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	349	191	158
Internal Capture Percentage	26%	24%	28%
External Vehicle-Trips[3]	222	125	97
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	4	2	2

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	0%	17%
Retail	26%	42%
Restaurant	42%	58%
Cinema/Entertainment	N/A	N/A
Residential	25%	20%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Project Name:	Sawyer's Landing Development
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.11	1	1	1.07	6	6
Retail	1.21	47	57	1.18	47	55
Restaurant	1.41	22	31	1.39	14	19
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.15	60	69	1.21	41	50
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	1		16	2	14	3
Restaurant	1	8		2	3	1
Cinema/Entertainment	0	0	0		0	0
Residential	2	20	10	0		2
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	1	0	3	0
Retail	0		9	0	32	0
Restaurant	0	29		0	11	0
Cinema/Entertainment	0	2	1		3	0
Residential	1	6	4	0		0
Hotel	0	1	2	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	1	1	1	0	0
Retail	15	42	57	35	0	0
Restaurant	13	18	31	13	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	17	52	69	43	0	2
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	33	33	33	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	5	6	5	0	0
Retail	23	32	55	27	0	0
Restaurant	11	8	19	6	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	10	40	50	31	0	2
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	28	28	28	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Table 7.1a Adjusted Internal Trip Capture Rates for Trip Origins within a Multi-Use Development			
Land Use Pairs		Weekday	
		AM Peak Hour	PM Peak Hour
From OFFICE	To Office	0.0%	0.0%
	To Retail	28.0%	20.0%
	To Restaurant	63.0%	4.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	1.0%	2.0%
	To Hotel	0.0%	0.0%
From RETAIL	To Office	29.0%	2.0%
	To Retail	0.0%	0.0%
	To Restaurant	13.0%	29.0%
	To Cinema/Entertainment	0.0%	4.0%
	To Residential	14.0%	26.0%
	To Hotel	0.0%	5.0%
From RESTAURANT	To Office	31.0%	3.0%
	To Retail	14.0%	41.0%
	To Restaurant	0.0%	0.0%
	To Cinema/Entertainment	0.0%	8.0%
	To Residential	4.0%	18.0%
	To Hotel	3.0%	7.0%
From CINEMA/ENTERTAINMENT	To Office	0.0%	2.0%
	To Retail	0.0%	21.0%
	To Restaurant	0.0%	31.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	8.0%
	To Hotel	0.0%	2.0%
From RESIDENTIAL	To Office	2.0%	4.0%
	To Retail	1.0%	41.0%
	To Restaurant	20.0%	20.5%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	0.0%
	To Hotel	0.0%	3.0%
From HOTEL	To Office	75.0%	0.0%
	To Retail	14.0%	16.0%
	To Restaurant	9.0%	68.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	2.0%
	To Hotel	0.0%	0.0%

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Table 7.2a Adjusted Internal Trip Capture Rates for Trip Destinations within a Multi-Use Development			
Land Use Pairs		Weekday	
		AM Peak Hour	PM Peak Hour
To OFFICE	From Office	0.0%	0.0%
	From Retail	4.0%	31.0%
	From Restaurant	14.0%	30.0%
	From Cinema/Entertainment	0.0%	6.0%
	From Residential	3.0%	57.0%
	From Hotel	3.0%	0.0%
To RETAIL	From Office	32.0%	8.0%
	From Retail	0.0%	0.0%
	From Restaurant	8.0%	50.0%
	From Cinema/Entertainment	0.0%	4.0%
	From Residential	17.0%	9.8%
	From Hotel	4.0%	2.0%
To RESTAURANT	From Office	23.0%	2.0%
	From Retail	50.0%	29.0%
	From Restaurant	0.0%	0.0%
	From Cinema/Entertainment	0.0%	3.0%
	From Residential	20.0%	13.7%
	From Hotel	6.0%	5.0%
To CINEMA/ENTERTAINMENT	From Office	0.0%	1.0%
	From Retail	0.0%	26.0%
	From Restaurant	0.0%	32.0%
	From Cinema/Entertainment	0.0%	0.0%
	From Residential	0.0%	0.0%
	From Hotel	0.0%	0.0%
To RESIDENTIAL	From Office	0.0%	4.0%
	From Retail	2.0%	46.0%
	From Restaurant	5.0%	16.0%
	From Cinema/Entertainment	0.0%	4.0%
	From Residential	0.0%	0.0%
	From Hotel	0.0%	0.0%
To HOTEL	From Office	0.0%	0.0%
	From Retail	0.0%	17.0%
	From Restaurant	4.0%	71.0%
	From Cinema/Entertainment	0.0%	1.0%
	From Residential	0.0%	12.0%
	From Hotel	0.0%	0.0%

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Project: **Sawyer's Landing Development**
Location: **Town of Amherst, NY**

Description	ITE LUC	SIZE/ UNITS	AM PEAK HOUR Enter	AM PEAK HOUR Exit	PM PEAK HOUR Enter	PM PEAK HOUR Exit	% of Total Trips AM	% of Total Trips PM
General Office Building	710	2,300 SF	6	1	1	6	4%	2%
Strip Retail Plaza (<40k)	822	12,854 SF	18	12	47	47	17%	31%
High-Turnover (Sit-Down) Restaurant	932	3,901 SF	21	17	22	14	21%	12%
Single Family Attached Housing	215	107 Units	12	37	36	25	28%	20%
Multifamily Housing (Mid-Rise)	221	102 Units	8	26	24	16	19%	13%
Mini-Warehouse	151	105,600 SF	6	4	7	8	6%	5%
Health/Fitness Club	492	8,002 SF	5	5	26	20	6%	15%
Sub-Total Site Generated Trips			**76**	**102**	**163**	**136**	100%	100%
General Office Building	710	2,300 SF	5	1	1	5	4%	3%
Strip Retail Plaza (<40k)	822	12,854 SF	16	10	37	33	17%	29%
High-Turnover (Sit-Down) Restaurant	932	3,901 SF	17	14	14	8	19%	9%
Single Family Attached Housing	215	107 Units	12	34	29	21	28%	21%
Multifamily Housing (Mid-Rise)	221	102 Units	8	24	19	14	20%	14%
Mini-Warehouse	151	105,600 SF	6	4	7	8	6%	6%
Health/Fitness Club	492	8,002 SF	5	5	26	20	6%	19%
Total Net Site Generated Trips			**69**	**92**	**133**	**110**	100%	100%
Multi-use Trips			7	10	30	26		

Base Internal Capture Percentages

AM PEAK HOUR Enter	AM PEAK HOUR Exit	PM PEAK HOUR Enter	PM PEAK HOUR Exit
17%	0%	0%	17%
14%	14%	26%	42%
27%	17%	42%	58%
4%	10%	25%	20%
4%	10%	25%	20%
0%	0%	0%	0%
0%	0%	0%	0%

Adjusted Internal Capture Percentages

12%	0%	0%	12%
10%	13%	22%	30%
19%	15%	35%	41%
3%	9%	21%	14%
3%	9%	21%	14%
0%	0%	0%	0%
0%	0%	0%	0%

enter	exit	enter	exit	
14%	11%	24%	28%	**Base %**
10%	10%	20%	20%	**Adjusted %**
29%	9%	17%	29%	**% change**

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Traffic Signal Warrant Analysis

Dodge Rd/North Forest Rd - Full Build Conditions

Town of Amherst, Erie County, NY

Hour			2026 Background Volumes on Dodge Rd	Hourly Fluctuation	**2026 Full Build Artery Volume on Dodge Rd**	2026 Background Volumes on North Forest Rd	**Total Hourly Volumes Exiting North Forest Rd under Full Build Conditions**	Warrant 1 - Condition A	Warrant 1 - Condition B	Warrant 2 - 4 hour	Warrant 3 - Peak hour
			Two-Way	Two-Way	**Total**	SB		350/105	525/53	60 vph	75 vph
7:00 AM	to	8:00 AM	419	5.14%	**464**	20	**28**	N	N	N	N
8:00 AM	to	9:00 AM	480	4.65%	**521**	50	**57**	N	N	N	N
9:00 AM	to	10:00 AM	376	4.04%	**412**	40	**46**	N	N	N	N
10:00 AM	to	11:00 AM	319	4.40%	**358**	55	**61**	N	N	N	N
11:00 AM	to	12:00 PM	341	5.90%	**393**	65	**74**	N	N	N	N
12:00 PM	to	1:00 PM	387	6.65%	**446**	77	**87**	N	N	N	N
1:00 PM	to	2:00 PM	347	6.20%	**402**	71	**80**	N	N	N	N
2:00 PM	to	3:00 PM	372	6.72%	**431**	77	**87**	N	N	N	N
3:00 PM	to	4:00 PM	466	6.90%	**527**	82	**92**	N	Y	N	N
4:00 PM	to	5:00 PM	467	8.63%	**543**	130	**143**	Y	Y	Y	N
5:00 PM	to	6:00 PM	426	9.81%	**513**	90	**104**	N	N	N	N
6:00 PM	to	7:00 PM	272	7.94%	**342**	66	**78**	N	N	N	N
								1	2	1	0

1471

ASSERO
ginee

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

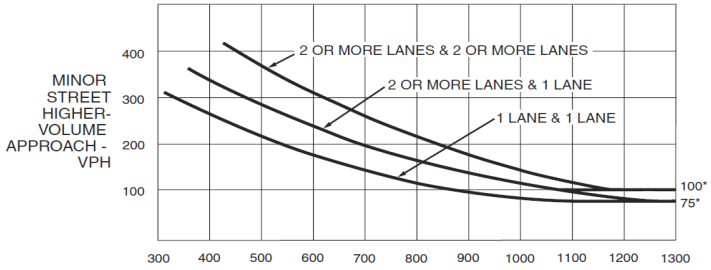
Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

[a] Basic minimum hourly volume
[b] Used for combination of Conditions A and B after adequate trial of other remedial measures
[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000
[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

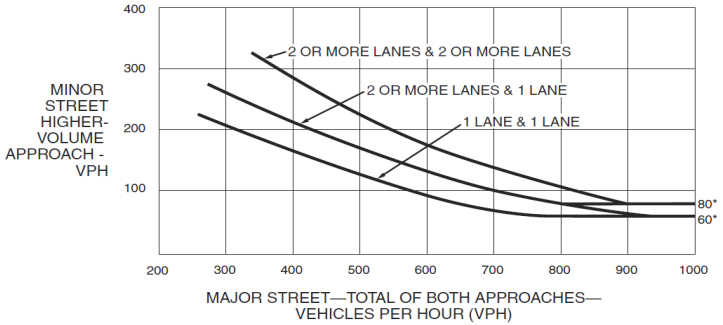
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

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PROJECT DETAILS

Project Name:	Sawyers Landing - Full Day	Type of Project:	
Project No:		City:	
Country:		Built-up Area(Sq.ft):	
Analyst Name:	Amy Dake	Clients Name:	
Date:	5/24/2024	ZIP/Postal Code:	
State/Province:		No. of Scenarios:	1
Analysis Region:			

SCENARIO SUMMARY

Scenarios	Name	No. of Land Uses	Phases of Development	No. of Years to Project Traffic	User Group	Estimated New Vehicle Trips		
						Entry	Exit	Total
Scenario - 1	Full Day	6	1	0		1260	1260	2520

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Scenario - 1

Scenario Name: Full Day
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method / Rate/Equation	Entry / Split%	Exit / Split%	Total
710 - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	2.3	Weekday	Best Fit (LOG)	22	22	44
Data Source: Trip Generation Manual, 11th Ed					Ln(T) =0.87Ln(X) + 3.05	50%	50%	
822 - Strip Retail Plaza (<40k)	General Urban/Suburban	1000 Sq. Ft. GLA	12.85	Weekday	Average	350	350	700
Data Source: Trip Generation Manual, 11th Ed					54.45	50%	50%	
151 - Mini-Warehouse	General Urban/Suburban	1000 Sq. Ft. GFA	105.6	Weekday	Average	77	77	154
Data Source: Trip Generation Manual, 11th Ed					1.45	50%	50%	
215 - Single-Family Attached Housing	General Urban/Suburban	Dwelling Units	107	Weekday	Best Fit (LIN)	382	382	764
Data Source: Trip Generation Manual, 11th Ed					T = 7.62(X) - 50.48	50%	50%	
221 - Multifamily Housing (Mid-Rise) - Not	General Urban/Suburban	Dwelling Units	102	Weekday	Best Fit (LIN)	220	220	440
Data Source: Trip Generation Manual, 11th Ed					T = 4.77(X) - 46.46	50%	50%	
932 - High-Turnover (Sit-Down) Restaurant	General Urban/Suburban	1000 Sq. Ft. GFA	3.90	Weekday	Average	209	209	418
Data Source: Trip Generation Manual, 11th Ed					107.20	50%	50%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
710 - General Office Building	100	100	1.1	1.1	50	50
822 - Strip Retail Plaza (<40k)	100	100	1	1	50	50
151 - Mini-Warehouse	100	100	1.6	1.6	50	50
215 - Single-Family Attached Housing	100	100	1	1	50	50
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	100	100	1	1	50	50
932 - High-Turnover (Sit-Down) Restaurant	100	100	1.5	1.5	50	50

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
710 - General Office Building	24	24	0	0	24	24
	48		0		48	
822 - Strip Retail Plaza (<40k)	350	350	0	0	350	350
	700		0		700	
151 - Mini-Warehouse	122	122	0	0	122	122
	244		0		244	
215 - Single-Family Attached Housing	382	382	0	0	382	382
	764		0		764	
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	220	220	0	0	220	220
	440		0		440	
932 - High-Turnover (Sit-Down) Restaurant	314	314	0	0	314	314
	628		0		628	

NEW VEHICLE TRIPS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Land Use	New Vehicle Trips		
	Entry	Exit	Total
710 - General Office Building	22	22	44
822 - Strip Retail Plaza (<40k)	350	350	700
151 - Mini-Warehouse	77	77	154
215 - Single-Family Attached Housing	382	382	764
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	220	220	440
932 - High-Turnover (Sit-Down) Restaurant	209	209	418

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	1260	1260	2520
External Vehicle Trips	1260	1260	2520
New Vehicle Trips	1260	1260	2520

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

PASSERO ASSOCIATES
engineering architecture

PROJECT: _____ SHEET: ____ OF ____
PROJECT NO: _____ COMPUTED BY: _____
SUBJECT: _____ CHECKED BY: _____
_____ DATE: _____

Health/fitness PM Exiting Trips = 26

% of total weekday vols = 12.3%

Weekday Trips = $\frac{26}{.123}$ = 211

Sawyers Landing Total Trips = 211 + 1260

= 1471

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

APPENDIX C: LOS CALCULATIONS – EXISTING CONDITIONS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	74	112	44	116	81	383	418	82	205	765	22
Future Volume (vph)	7	74	112	44	116	81	383	418	82	205	765	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.938			0.975			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1399	1900	1509	1388	1753	0	1736	3260	0	1770	3456	0
Flt Permitted	0.627			0.597			0.197			0.423		
Satd. Flow (perm)	923	1900	1509	873	1753	0	360	3260	0	788	3456	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			119		31			20			2	
Link Speed (mph)		30			40			45			45	
Link Distance (ft)		684			420			772			679	
Travel Time (s)		15.5			7.2			11.7			10.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	29%	0%	7%	30%	0%	4%	4%	6%	18%	2%	4%	5%
Adj. Flow (vph)	7	79	119	47	123	86	407	445	87	218	814	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	79	119	47	209	0	407	532	0	218	837	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

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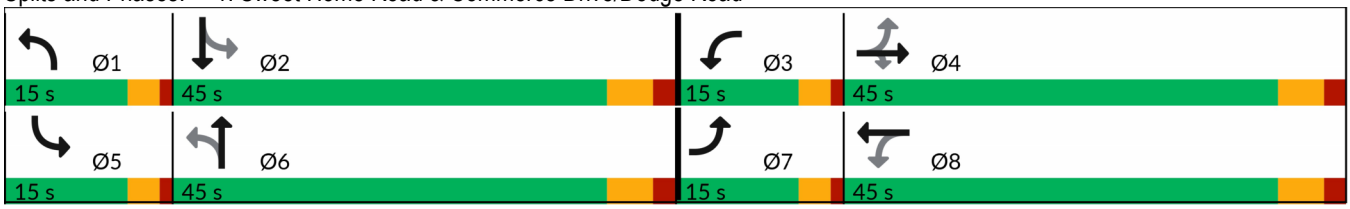
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	8.0	28.0	28.0	8.0	28.0		8.0	28.0		8.0	28.0	
Total Split (s)	15.0	45.0	45.0	15.0	45.0		15.0	45.0		15.0	45.0	
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%		12.5%	37.5%		12.5%	37.5%	
Maximum Green (s)	11.0	39.0	39.0	11.0	39.0		11.0	39.0		11.0	39.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	21.0	16.1	16.1	24.3	20.8		43.8	30.4		40.8	29.0	
Actuated g/C Ratio	0.27	0.20	0.20	0.31	0.26		0.55	0.38		0.52	0.37	
v/c Ratio	0.02	0.20	0.29	0.15	0.43		1.02	0.41		0.41	0.66	
Control Delay (s/veh)	20.7	31.9	8.9	21.7	25.3		72.5	19.2		11.4	24.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	20.7	31.9	8.9	21.7	25.3		72.5	19.2		11.4	24.2	
LOS	C	C	A	C	C		E	B		B	C	
Approach Delay (s/veh)		18.2			24.7			42.3			21.6	
Approach LOS		B			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 79.1			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay (s/veh): 29.6		Intersection LOS: C	
Intersection Capacity Utilization 68.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	195	83	31	208	28	11
Future Volume (vph)	195	83	31	208	28	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.960				0.962	
Flt Protected				0.994	0.965	
Satd. Flow (prot)	1781	0	0	1856	1715	0
Flt Permitted				0.994	0.965	
Satd. Flow (perm)	1781	0	0	1856	1715	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	3%	1%	0%	2%	4%	0%
Adj. Flow (vph)	197	84	31	210	28	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	281	0	0	241	39	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	195	83	31	208	28	11
Future Vol, veh/h	195	83	31	208	28	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	1	0	2	4	0
Mvmt Flow	197	84	31	210	28	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	281	0	512	239
Stage 1	-	-	-	-	239	-
Stage 2	-	-	-	-	273	-
Critical Hdwy	-	-	4.1	-	6.44	6.2
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.2	-	3.536	3.3
Pot Cap-1 Maneuver	-	-	1293	-	519	805
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	769	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1293	-	504	805
Mov Cap-2 Maneuver	-	-	-	-	504	-
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	747	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.02	11.86
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	564	-	-	233	-
HCM Lane V/C Ratio	0.07	-	-	0.024	-
HCM Control Delay (s/veh)	11.9	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

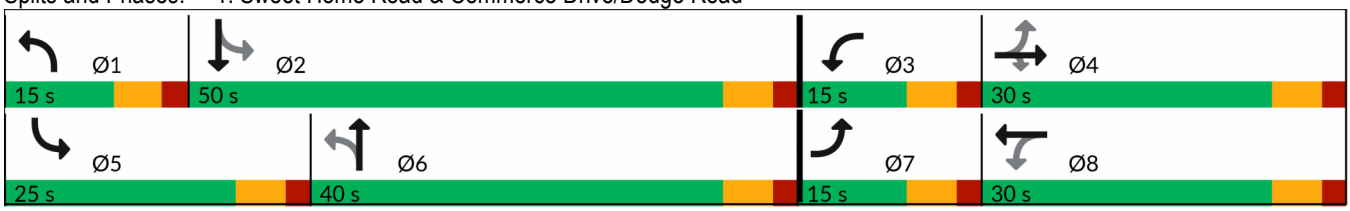
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	116	395	112	64	258	86	887	66	111	664	12
Future Volume (vph)	26	116	395	112	64	258	86	887	66	111	664	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.880			0.990			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	1900	1583	1787	1652	0	1703	3541	0	1752	3510	0
Flt Permitted	0.384			0.574			0.285			0.107		
Satd. Flow (perm)	676	1900	1583	1080	1652	0	511	3541	0	197	3510	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			327		167			7			2	
Link Speed (mph)		30			40			45			45	
Link Distance (ft)		684			420			772			679	
Travel Time (s)		15.5			7.2			11.7			10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	0%	2%	1%	6%	0%	6%	1%	0%	3%	2%	33%
Adj. Flow (vph)	28	126	429	122	70	280	93	964	72	121	722	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	126	429	122	350	0	93	1036	0	121	735	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	25.0		7.0	25.0	
Minimum Split (s)	13.0	28.0	28.0	13.0	28.0		13.0	31.0		13.0	31.0	
Total Split (s)	15.0	30.0	30.0	15.0	30.0		15.0	40.0		25.0	50.0	
Total Split (%)	13.6%	27.3%	27.3%	13.6%	27.3%		13.6%	36.4%		22.7%	45.5%	
Maximum Green (s)	9.0	24.0	24.0	9.0	24.0		9.0	34.0		19.0	44.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	28.0	21.0	21.0	32.9	27.7		41.1	33.4		45.0	37.5	
Actuated g/C Ratio	0.29	0.22	0.22	0.34	0.29		0.43	0.35		0.47	0.39	
v/c Ratio	0.10	0.30	0.71	0.28	0.58		0.29	0.83		0.50	0.53	
Control Delay (s/veh)	21.3	34.3	16.4	22.9	21.1		15.6	36.2		21.9	25.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	21.3	34.3	16.4	22.9	21.1		15.6	36.2		21.9	25.3	
LOS	C	C	B	C	C		B	D		C	C	
Approach Delay (s/veh)		20.6			21.6			34.5			24.8	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 95.7			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay (s/veh): 27.1		Intersection LOS: C	
Intersection Capacity Utilization 69.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	186	47	21	226	91	35
Future Volume (vph)	186	47	21	226	91	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.973				0.963	
Flt Protected				0.996	0.965	
Satd. Flow (prot)	1834	0	0	1892	1753	0
Flt Permitted				0.996	0.965	
Satd. Flow (perm)	1834	0	0	1892	1753	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	1%	0%	0%	0%	1%	0%
Adj. Flow (vph)	224	57	25	272	110	42
Shared Lane Traffic (%)						
Lane Group Flow (vph)	281	0	0	297	152	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.9%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	186	47	21	226	91	35
Future Vol, veh/h	186	47	21	226	91	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	1	0	0	0	1	0
Mvmt Flow	224	57	25	272	110	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	281	0	575	252
Stage 1	-	-	-	-	252	-
Stage 2	-	-	-	-	323	-
Critical Hdwy	-	-	4.1	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-	3.509	3.3
Pot Cap-1 Maneuver	-	-	1293	-	481	791
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	736	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1293	-	470	791
Mov Cap-2 Maneuver	-	-	-	-	470	-
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	719	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.67	14.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	530	-	-	153	-
HCM Lane V/C Ratio	0.287	-	-	0.02	-
HCM Control Delay (s/veh)	14.5	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	0.1	-

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

APPENDIX D: LOS CALCULATIONS – BACKGROUND CONDITIONS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	75	114	61	124	85	391	426	95	211	780	22
Future Volume (vph)	7	75	114	61	124	85	391	426	95	211	780	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.939			0.973			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1399	1900	1509	1388	1756	0	1736	3247	0	1770	3456	0
Flt Permitted	0.620			0.579			0.181			0.398		
Satd. Flow (perm)	913	1900	1509	846	1756	0	331	3247	0	741	3456	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121		30			24			2	
Link Speed (mph)		30			40			45			45	
Link Distance (ft)		684			420			772			679	
Travel Time (s)		15.5			7.2			11.7			10.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	29%	0%	7%	30%	0%	4%	4%	6%	18%	2%	4%	5%
Adj. Flow (vph)	7	80	121	65	132	90	416	453	101	224	830	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	80	121	65	222	0	416	554	0	224	853	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	8.0	28.0	28.0	8.0	28.0		8.0	28.0		8.0	28.0	
Total Split (s)	15.0	45.0	45.0	15.0	45.0		15.0	45.0		15.0	45.0	
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%		12.5%	37.5%		12.5%	37.5%	
Maximum Green (s)	11.0	39.0	39.0	11.0	39.0		11.0	39.0		11.0	39.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	21.9	16.0	16.0	27.2	23.5		44.1	30.8		41.4	29.4	
Actuated g/C Ratio	0.27	0.19	0.19	0.33	0.29		0.54	0.37		0.50	0.36	
v/c Ratio	0.02	0.21	0.30	0.19	0.42		1.12	0.45		0.45	0.68	
Control Delay (s/veh)	20.7	33.4	9.1	22.1	25.2		106.1	20.5		12.8	26.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	20.7	33.4	9.1	22.1	25.2		106.1	20.5		12.8	26.0	
LOS	C	C	A	C	C		F	C		B	C	
Approach Delay (s/veh)		18.9			24.5			57.2			23.3	
Approach LOS		B			C			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 82.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay (s/veh): 36.0		Intersection LOS: D	
Intersection Capacity Utilization 69.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	212	85	33	236	29	11
Future Volume (vph)	212	85	33	236	29	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.961				0.963	
Flt Protected				0.994	0.965	
Satd. Flow (prot)	1783	0	0	1856	1716	0
Flt Permitted				0.994	0.965	
Satd. Flow (perm)	1783	0	0	1856	1716	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	3%	1%	0%	2%	4%	0%
Adj. Flow (vph)	214	86	33	238	29	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	300	0	0	271	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.9%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	212	85	33	236	29	11
Future Vol, veh/h	212	85	33	236	29	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	1	0	2	4	0
Mvmt Flow	214	86	33	238	29	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	300	0	562	257
Stage 1	-	-	-	-	257	-
Stage 2	-	-	-	-	305	-
Critical Hdwy	-	-	4.1	-	6.44	6.2
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.2	-	3.536	3.3
Pot Cap-1 Maneuver	-	-	1273	-	485	786
Stage 1	-	-	-	-	781	-
Stage 2	-	-	-	-	743	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1273	-	470	786
Mov Cap-2 Maneuver	-	-	-	-	470	-
Stage 1	-	-	-	-	781	-
Stage 2	-	-	-	-	721	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.97	12.37
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	529	-	-	221	-
HCM Lane V/C Ratio	0.076	-	-	0.026	-
HCM Control Delay (s/veh)	12.4	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

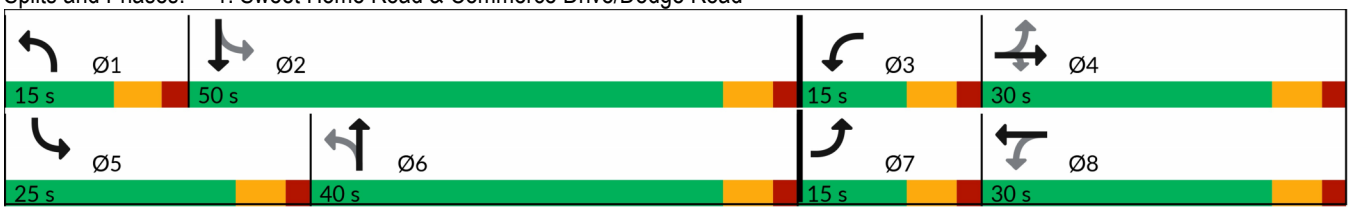
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	120	403	136	77	265	88	905	82	115	677	12
Future Volume (vph)	27	120	403	136	77	265	88	905	82	115	677	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.884			0.988			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	1900	1583	1787	1657	0	1703	3534	0	1752	3510	0
Flt Permitted	0.347			0.569			0.277			0.105		
Satd. Flow (perm)	610	1900	1583	1070	1657	0	497	3534	0	194	3510	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			311		144			9			2	
Link Speed (mph)		30			40			45			45	
Link Distance (ft)		684			420			772			679	
Travel Time (s)		15.5			7.2			11.7			10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	0%	2%	1%	6%	0%	6%	1%	0%	3%	2%	33%
Adj. Flow (vph)	29	130	438	148	84	288	96	984	89	125	736	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	130	438	148	372	0	96	1073	0	125	749	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	25.0		7.0	25.0	
Minimum Split (s)	13.0	28.0	28.0	13.0	28.0		13.0	31.0		13.0	31.0	
Total Split (s)	15.0	30.0	30.0	15.0	30.0		15.0	40.0		25.0	50.0	
Total Split (%)	13.6%	27.3%	27.3%	13.6%	27.3%		13.6%	36.4%		22.7%	45.5%	
Maximum Green (s)	9.0	24.0	24.0	9.0	24.0		9.0	34.0		19.0	44.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	28.4	21.3	21.3	33.4	28.2		41.9	34.1		45.9	38.2	
Actuated g/C Ratio	0.29	0.22	0.22	0.34	0.29		0.43	0.35		0.47	0.39	
v/c Ratio	0.11	0.31	0.74	0.34	0.63		0.30	0.86		0.52	0.54	
Control Delay (s/veh)	21.5	34.6	19.2	24.0	25.4		16.0	38.2		22.9	25.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	21.5	34.6	19.2	24.0	25.4		16.0	38.2		22.9	25.7	
LOS	C	C	B	C	C		B	D		C	C	
Approach Delay (s/veh)		22.7			25.0			36.4			25.3	
Approach LOS		C			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 97.1			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay (s/veh): 28.9		Intersection LOS: C	
Intersection Capacity Utilization 71.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	209	48	21	267	93	37
Future Volume (vph)	209	48	21	267	93	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.975				0.961	
Flt Protected				0.996	0.966	
Satd. Flow (prot)	1838	0	0	1892	1751	0
Flt Permitted				0.996	0.966	
Satd. Flow (perm)	1838	0	0	1892	1751	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	1%	0%	0%	0%	1%	0%
Adj. Flow (vph)	252	58	25	322	112	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	310	0	0	347	157	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.5%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	209	48	21	267	93	37
Future Vol, veh/h	209	48	21	267	93	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	1	0	0	0	1	0
Mvmt Flow	252	58	25	322	112	45

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	310	0	653	281
Stage 1	-	-	-	-	281	-
Stage 2	-	-	-	-	372	-
Critical Hdwy	-	-	4.1	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-	3.509	3.3
Pot Cap-1 Maneuver	-	-	1262	-	434	763
Stage 1	-	-	-	-	769	-
Stage 2	-	-	-	-	699	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1262	-	423	763
Mov Cap-2 Maneuver	-	-	-	-	423	-
Stage 1	-	-	-	-	769	-
Stage 2	-	-	-	-	682	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.58	15.94
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	484	-	-	131	-
HCM Lane V/C Ratio	0.323	-	-	0.02	-
HCM Control Delay (s/veh)	15.9	-	-	7.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	0.1	-

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

APPENDIX E: LOS CALCULATIONS – FULL BUILD CONDITIONS

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	82	114	89	133	108	391	426	116	228	780	22
Future Volume (vph)	7	82	114	89	133	108	391	426	116	228	780	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.933			0.968			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1399	1900	1509	1388	1741	0	1736	3219	0	1770	3456	0
Flt Permitted	0.601			0.578			0.184			0.373		
Satd. Flow (perm)	885	1900	1509	845	1741	0	336	3219	0	695	3456	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121		36			30			2	
Link Speed (mph)		30			40			45			45	
Link Distance (ft)		684			420			772			679	
Travel Time (s)		15.5			7.2			11.7			10.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	29%	0%	7%	30%	0%	4%	4%	6%	18%	2%	4%	5%
Adj. Flow (vph)	7	87	121	95	141	115	416	453	123	243	830	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	87	121	95	256	0	416	576	0	243	853	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

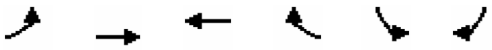
Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	8.0	28.0	28.0	8.0	28.0		8.0	28.0		8.0	28.0	
Total Split (s)	15.0	45.0	45.0	15.0	45.0		15.0	45.0		15.0	45.0	
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%		12.5%	37.5%		12.5%	37.5%	
Maximum Green (s)	11.0	39.0	39.0	11.0	39.0		11.0	39.0		11.0	39.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	22.3	16.4	16.4	28.5	24.8		44.7	31.3		42.6	30.3	
Actuated g/C Ratio	0.26	0.19	0.19	0.34	0.29		0.53	0.37		0.50	0.36	
v/c Ratio	0.02	0.23	0.31	0.28	0.47		1.14	0.47		0.50	0.68	
Control Delay (s/veh)	20.4	34.0	9.0	23.0	25.7		112.6	21.4		14.4	26.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	20.4	34.0	9.0	23.0	25.7		112.6	21.4		14.4	26.7	
LOS	C	C	A	C	C		F	C		B	C	
Approach Delay (s/veh)		19.5			25.0			59.7			24.0	
Approach LOS		B			C			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 84.4			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay (s/veh): 37.1		Intersection LOS: D	
Intersection Capacity Utilization 70.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	342	288	0	14	37
Future Volume (vph)	0	342	288	0	14	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.902	
Flt Protected					0.987	
Satd. Flow (prot)	0	1845	1863	0	1658	0
Flt Permitted					0.987	
Satd. Flow (perm)	0	1845	1863	0	1658	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		161	84		307	
Travel Time (s)		2.6	1.4		7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	0	372	313	0	15	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	372	313	0	55	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.0%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	0.9

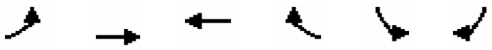
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↾	
Traffic Vol, veh/h	0	342	288	0	14	37
Future Vol, veh/h	0	342	288	0	14	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	2	2	2
Mvmt Flow	0	372	313	0	15	40

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	685	313
Stage 1	-	-	-	-	313	-
Stage 2	-	-	-	-	372	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	414	727
Stage 1	0	-	-	0	741	-
Stage 2	0	-	-	0	697	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	414	727
Mov Cap-2 Maneuver	-	-	-	-	414	-
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	697	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	11.58
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	602
HCM Lane V/C Ratio	-	-	0.092
HCM Control Delay (s/veh)	-	-	11.6
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.3

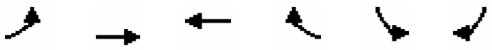
Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	33	323	288	8	0	0
Future Volume (vph)	33	323	288	8	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.996			
Flt Protected		0.995				
Satd. Flow (prot)	0	1837	1855	0	0	0
Flt Permitted		0.995				
Satd. Flow (perm)	0	1837	1855	0	0	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		84	108		365	
Travel Time (s)		1.4	1.8		8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	36	351	313	9	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	387	322	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	12	311	273	16	18	23
Future Volume (vph)	12	311	273	16	18	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.993		0.925	
Flt Protected		0.998			0.978	
Satd. Flow (prot)	0	1842	1850	0	1685	0
Flt Permitted		0.998			0.978	
Satd. Flow (perm)	0	1842	1850	0	1685	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		108	576		362	
Travel Time (s)		1.8	9.8		8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	13	338	297	17	20	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	351	314	0	45	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.1%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	311	273	16	18	23
Future Vol, veh/h	12	311	273	16	18	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	2	2	2
Mvmt Flow	13	338	297	17	20	25

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	314	0	-	0	670	305
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	364	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1246	-	-	-	422	734
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	703	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1246	-	-	-	417	734
Mov Cap-2 Maneuver	-	-	-	-	417	-
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	703	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.29	0	12.12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	67	-	-	-	550
HCM Lane V/C Ratio	0.01	-	-	-	0.081
HCM Control Delay (s/veh)	7.9	0	-	-	12.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	235	94	33	253	36	11
Future Volume (vph)	235	94	33	253	36	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.961				0.968	
Flt Protected				0.994	0.963	
Satd. Flow (prot)	1783	0	0	1856	1718	0
Flt Permitted				0.994	0.963	
Satd. Flow (perm)	1783	0	0	1856	1718	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	3%	1%	0%	2%	4%	0%
Adj. Flow (vph)	237	95	33	256	36	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	332	0	0	289	47	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.6%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	235	94	33	253	36	11
Future Vol, veh/h	235	94	33	253	36	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	1	0	2	4	0
Mvmt Flow	237	95	33	256	36	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	332	0	607	285
Stage 1	-	-	-	-	285	-
Stage 2	-	-	-	-	322	-
Critical Hdwy	-	-	4.1	-	6.44	6.2
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.2	-	3.536	3.3
Pot Cap-1 Maneuver	-	-	1238	-	456	759
Stage 1	-	-	-	-	759	-
Stage 2	-	-	-	-	730	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1238	-	442	759
Mov Cap-2 Maneuver	-	-	-	-	442	-
Stage 1	-	-	-	-	759	-
Stage 2	-	-	-	-	707	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.92	13.14
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	490	-	-	208	-
HCM Lane V/C Ratio	0.097	-	-	0.027	-
HCM Control Delay (s/veh)	13.1	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

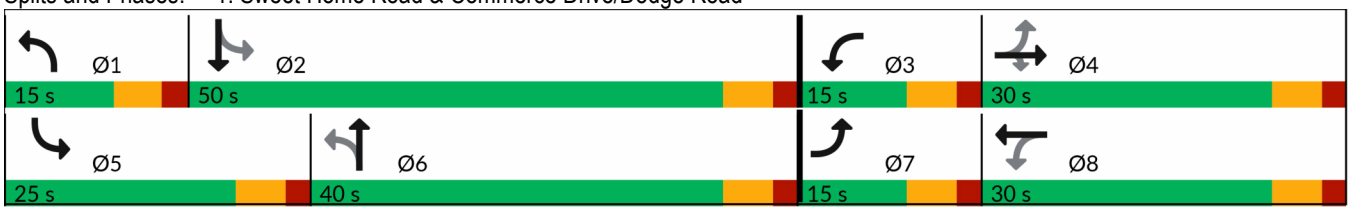
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	133	403	169	88	293	88	905	122	148	677	12
Future Volume (vph)	27	133	403	169	88	293	88	905	122	148	677	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.885			0.982			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	1900	1583	1787	1658	0	1703	3514	0	1752	3510	0
Flt Permitted	0.273			0.539			0.293			0.100		
Satd. Flow (perm)	480	1900	1583	1014	1658	0	525	3514	0	184	3510	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			295		139			14			2	
Link Speed (mph)		30			40			45			45	
Link Distance (ft)		684			420			772			679	
Travel Time (s)		15.5			7.2			11.7			10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	0%	2%	1%	6%	0%	6%	1%	0%	3%	2%	33%
Adj. Flow (vph)	29	145	438	184	96	318	96	984	133	161	736	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	145	438	184	414	0	96	1117	0	161	749	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

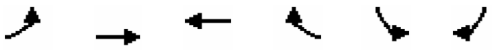
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	25.0		7.0	25.0	
Minimum Split (s)	13.0	28.0	28.0	13.0	28.0		13.0	31.0		13.0	31.0	
Total Split (s)	15.0	30.0	30.0	15.0	30.0		15.0	40.0		25.0	50.0	
Total Split (%)	13.6%	27.3%	27.3%	13.6%	27.3%		13.6%	36.4%		22.7%	45.5%	
Maximum Green (s)	9.0	24.0	24.0	9.0	24.0		9.0	34.0		19.0	44.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	29.0	22.0	22.0	34.3	29.1		41.9	34.1		49.2	40.0	
Actuated g/C Ratio	0.29	0.22	0.22	0.34	0.29		0.42	0.34		0.49	0.40	
v/c Ratio	0.12	0.34	0.75	0.44	0.71		0.30	0.92		0.61	0.53	
Control Delay (s/veh)	22.7	36.1	21.5	27.0	30.4		16.3	45.4		27.7	25.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	22.7	36.1	21.5	27.0	30.4		16.3	45.4		27.7	25.5	
LOS	C	D	C	C	C		B	D		C	C	
Approach Delay (s/veh)		25.1			29.4			43.2			26.0	
Approach LOS		C			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 99.7			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay (s/veh): 32.7		Intersection LOS: C	
Intersection Capacity Utilization 85.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road



Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	343	387	0	16	44
Future Volume (vph)	0	343	387	0	16	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.900	
Flt Protected					0.987	
Satd. Flow (prot)	0	1881	1792	0	1655	0
Flt Permitted					0.987	
Satd. Flow (perm)	0	1881	1792	0	1655	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		134	50		272	
Travel Time (s)		3.0	1.1		6.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	1%	6%	2%	2%	2%
Adj. Flow (vph)	0	373	421	0	17	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	373	421	0	65	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.6%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	1

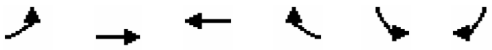
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↾	
Traffic Vol, veh/h	0	343	387	0	16	44
Future Vol, veh/h	0	343	387	0	16	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	1	6	2	2	2
Mvmt Flow	0	373	421	0	17	48

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	793	421
Stage 1	-	-	-	-	421	-
Stage 2	-	-	-	-	373	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	357	633
Stage 1	0	-	-	0	662	-
Stage 2	0	-	-	0	697	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	357	633
Mov Cap-2 Maneuver	-	-	-	-	357	-
Stage 1	-	-	-	-	662	-
Stage 2	-	-	-	-	697	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	12.83
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	525
HCM Lane V/C Ratio	-	-	0.124
HCM Control Delay (s/veh)	-	-	12.8
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.4

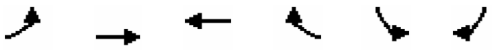
Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	62	297	387	16	0	0
Future Volume (vph)	62	297	387	16	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995			
Flt Protected		0.991				
Satd. Flow (prot)	0	1846	1853	0	0	0
Flt Permitted		0.991				
Satd. Flow (perm)	0	1846	1853	0	0	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		50	136		277	
Travel Time (s)		0.9	2.3		6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	67	323	421	17	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	390	438	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.1%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	273	375	31	22	28
Future Volume (vph)	24	273	375	31	22	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.990		0.925	
Flt Protected		0.996			0.978	
Satd. Flow (prot)	0	1855	1844	0	1685	0
Flt Permitted		0.996			0.978	
Satd. Flow (perm)	0	1855	1844	0	1685	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		136	606		319	
Travel Time (s)		2.3	10.3		7.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	297	408	34	24	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	323	442	0	54	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.2%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	24	273	375	31	22	28
Future Vol, veh/h	24	273	375	31	22	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	297	408	34	24	30

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	441	0	-	0	773	424
Stage 1	-	-	-	-	424	-
Stage 2	-	-	-	-	349	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1119	-	-	-	367	630
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	714	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1119	-	-	-	357	630
Mov Cap-2 Maneuver	-	-	-	-	357	-
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	714	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.67	0	13.63
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	145	-	-	-	471
HCM Lane V/C Ratio	0.023	-	-	-	0.115
HCM Control Delay (s/veh)	8.3	0	-	-	13.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	236	59	21	300	106	37
Future Volume (vph)	236	59	21	300	106	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.973				0.965	
Flt Protected				0.997	0.964	
Satd. Flow (prot)	1834	0	0	1894	1755	0
Flt Permitted				0.997	0.964	
Satd. Flow (perm)	1834	0	0	1894	1755	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	1%	0%	0%	0%	1%	0%
Adj. Flow (vph)	284	71	25	361	128	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	355	0	0	386	173	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	236	59	21	300	106	37
Future Vol, veh/h	236	59	21	300	106	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	1	0	0	0	1	0
Mvmt Flow	284	71	25	361	128	45

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	355	0	732	320
Stage 1	-	-	-	-	320	-
Stage 2	-	-	-	-	412	-
Critical Hdwy	-	-	4.1	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-	3.509	3.3
Pot Cap-1 Maneuver	-	-	1214	-	390	726
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	671	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1214	-	380	726
Mov Cap-2 Maneuver	-	-	-	-	380	-
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	653	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.53	18.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	433	-	-	118	-
HCM Lane V/C Ratio	0.398	-	-	0.021	-
HCM Control Delay (s/veh)	18.7	-	-	8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.9	-	-	0.1	-

Attachment: Z-2002-09E_application_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York
SITE DEVELOPMENT DRAWINGS

AGENCIES

ENGINEERING DEPARTMENT
NAME/TITLE: JEFFERY BURROUGHS, P.E. – TOWN ENGINEER
COMPANY/DEPT: TOWN OF AMHERST ENGINEERING DEPARTMENT
ADDRESS: 1100 NORTH FOREST ROAD
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–631–7154

PLANNING & ZONING DEPARTMENT
NAME/TITLE: DANIEL HOWARD – PLANNING DIRECTOR
COMPANY/DEPT: TOWN OF AMHERST PLANNING DEPARTMENT
ADDRESS: 5583 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–631–7051

LAND SURVEYOR
NAME/TITLE: GPI ENGINEERING, LANDSCAPE ARCHITECTURE SURVEYING, LLP
COMPANY/DEPT: 4950 GENESEE STREET, SUITE 100
ADDRESS: BUFFALO, NEW YORK 14225
TELEPHONE 716–633–4844

UTILITIES

NATURAL GAS
COMPANY/DEPT:. NATIONAL FUEL GAS CORP.
ADDRESS: 6363 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221
TELEPHONE 716–857–7000

TELEPHONE COMPANY
COMPANY/DEPT: VERIZON
ADDRESS: 65 FRANKLIN STREET
BUFFALO, NEW YORK 14203
TELEPHONE 716–840–8748

CABLE COMPANY
COMPANY/DEPT: TIME WARNER
ADDRESS: 789 CHURCH ROAD
WEST SENECA, NEW YORK
TELEPHONE 716–558–8615

ELECTRIC COMPANY
COMPANY/DEPT: NATIONAL GRID
ADDRESS: 144 KENSINGTON AVENUE
BUFFALO, NEW YORK 14214
TELEPHONE 716–236–2738

WATER
COMPANY/DEPT:. ERIE COUNTY WATER AUTHORITY
ADDRESS: 3030 UNION ROAD
CHEEKTOWAGA, NEW YORK 14227
TELEPHONE 716–684–1510

DIG SAFELY NEW YORK
TELEPHONE 1–800–962–7962

OWNER/DEVELOPER

NAME: Sawyer's Landing LLC
ADDRESS 43 Central Ave Suite #300
Lancaster, NY 14086
TELEPHONE 716 818-0207

ENGINEER

Carmina • Wood • Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

May 2024

REVISIONS:

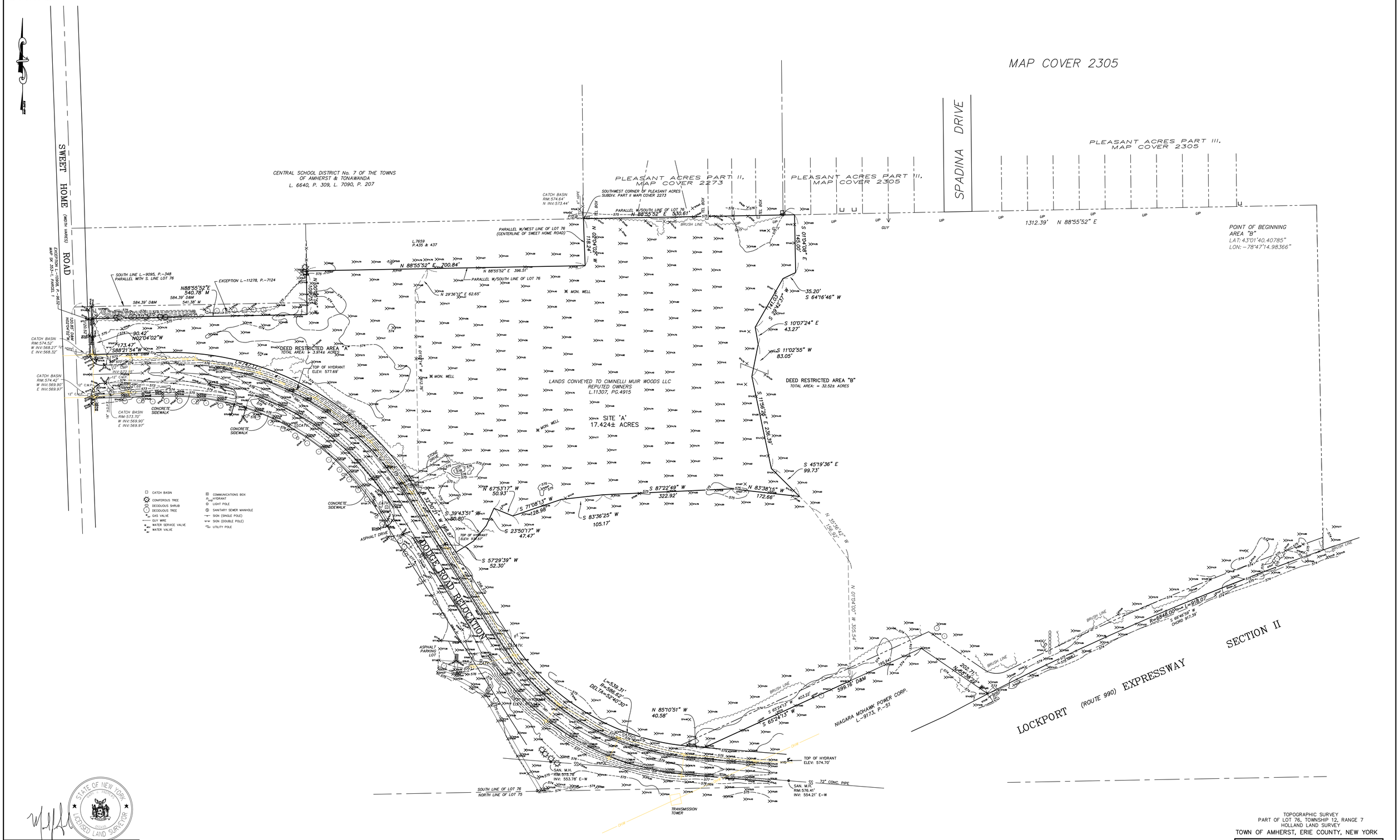
No.	Description	Date

DWG NO.	DRAWING TITLE
–	COVER SHEET
–	TOPOGRAPHIC MAP
–	BOUNDARY SURVEY
C–001	DEMOLITION & EROSION CONTROL PLAN
C–002	DEMOLITION & EROSION CONTROL DETAILS
C–100	OVERALL SITE PLAN
C–101	SITE PLAN
C–102	PARCEL MAP
C–103	ROAD & BIKE PATH LAYOUT PLAN
C–104	SITE DETAILS
C–105	SITE DETAILS
C–106	SITE DETAILS
C–107	SITE DETAILS
C–200	GRADING PLAN
C–201	GRADING PLAN – RECREATION TRAIL
C–300	STORM DRAINAGE PLAN
C–301	STORM DRAINAGE DETAILS
C–302	STORM DRAINAGE DETAILS
C–303	STORM DRAINAGE DETAILS
C–400	UTILITY PLAN
C–401	SANITARY SEWER DETAILS
C–402	SANITARY SEWER DETAILS
C–403	SANITARY SEWER GENERAL NOTES
C–404	WATER DETAILS
C–405	WATER DETAILS
C–406	WATER DETAILS & NOTES
C–407	INSULATED ENCLOSURE DETAIL
L–100	LANDSCAPE PLAN
LP–100	PHOTOMETRIC PLAN
LP–101	PHOTOMETRIC DETAILS
TT–100	FIRE TRUCK PLAN

Attachment: Z-2002-09E drawings. 082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.
● SET OR EX. 5/8" REBAR

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.



DATE	REVISION/TYPE

TOPOGRAPHIC SURVEY
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: DECEMBER 22, 2020
Scale: 1" = 100' TAX No. 40.08-3-13.1 (PART OF)

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

SWEET HOME (WIDTH VARIES) ROAD

CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA
L. 6640, P. 309, L. 7090, P. 207

PLEASANT ACRES PART II, MAP COVER 2273

PLEASANT ACRES PART III, MAP COVER 2305

SOUTHWEST CORNER OF PLEASANT ACRES SUBDIV. PART II MAP COVER 2273

P.O.B.

TEL BOX

UP

GUY

N 88°55'52" E 530.61'
PARALLEL W/SOUTH LINE OF LOT 76

PARALLEL W/WEST LINE OF LOT 76
(CENTERLINE OF SWEET HOME ROAD)

N 02°04'02" W
118.24'

L.7659
P.435 & 437

N 88°55'52" E 700.84'

N 88°55'52" E 396.51'
PARALLEL W/SOUTH LINE OF LOT 76

N 29°36'12" E 62.65'

S 01°04'08" E
145.00'

35.20'
S 64°16'46" W

141.03'
S 29°42'37" W

S 10°07'24" E
43.27'

S 11°02'55" W
83.05'

S 11°56'26" E 236.39'

S 45°19'36" E
93.73'

N 83°38'15" W
172.66'

S 87°22'49" W
322.92'

S 83°36'25" W
105.17'

S 71°08'13" W
128.98'

N 67°53'17" W
50.93'

S 39°43'51" W
50.80'

S 23°50'17" W
47.47'

N 32°30'21" W 198.87'

N 32°30'21" W 457.24'

S 57°29'39" W
52.30'

258.37'

PT

N 35°36'42" W
156.92'

N 01°04'00" W 305.54'

195.94'

599.16' D&M

S 65°24'13" W 403.22'

S 65°24'13" W

L=539.31'
R=586.62'
DELTA=52°40'30"

32

N 85°10'51" W
40.58'

SOUTH LINE OF LOT 76
NORTH LINE OF LOT 75

SOUTH LINE L.-9095, P.-348
PARALLEL WITH S. LINE LOT 76

EXCEPTION L.-11278, P.-7124

584.39' D&M
541.38' M

540.78' M

N88°55'52"E

N 00°55'59" W
109.75'

EXCEPTION L.-10908, P.-9632
MAP SK 353-1, PARCEL 1

120.85' D&M
N02°04'02"W

120.52'

N02°04'02"W
90.42'

173.47'
S88°21'54"W
216.48' D&M

DEED RESTRICTED AREA "A"
TOTAL AREA: = 3.914± ACRES

N 01°03'14" W 512.26'

LANDS CONVEYED TO CIMINELLI MUIR WOODS LLC
REPUTED OWNERS
L.11307, PG.4915

SITE 'A'
17.424± ACRES

DEED RESTRICTED AREA "B"
TOTAL AREA: = 32.52± ACRES

L=747.17

R=724.00

DODGE ROAD RELOCATION

NIAGARA MOHAWK POWER CORP.
L.-9173, P.-51

STATE OF NEW YORK
MARK J. ANDREWS
050455
LICENSED LAND SURVEYOR

DATE	REVISION/TYPE
12/4/20	REVISE PARCEL BOUNDARY

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.

● SET OR EX. 5/8" REBAR

SURVEY OF
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: JUNE 27, 2019
Scale: 1" = 100' TAX No.

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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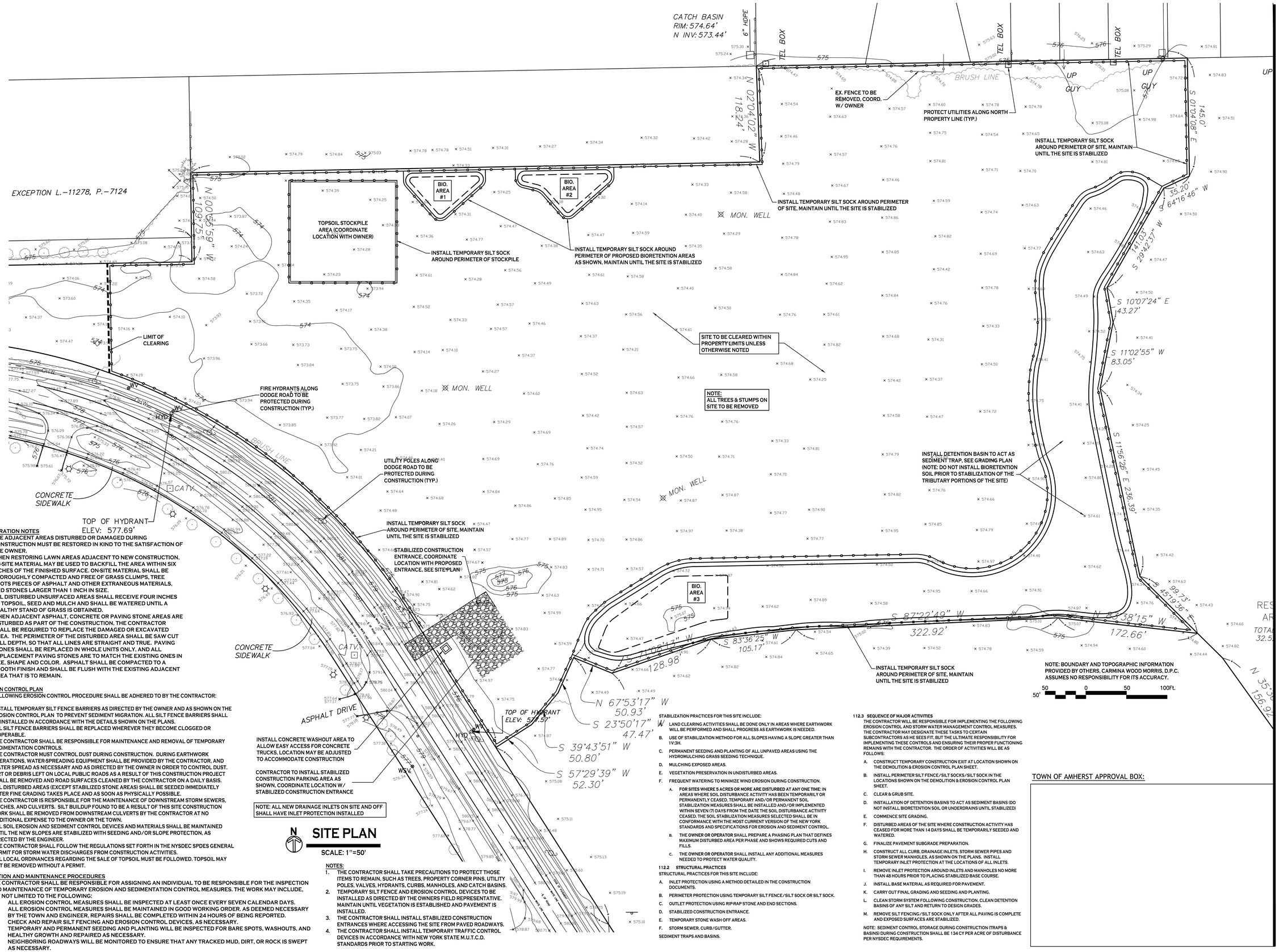

RESTORATION NOTES

1. THE ADJACENT AREAS DISTURBED OR DAMAGED DURING CONSTRUCTION MUST BE RESTORED IN KIND TO THE SATISFACTION OF THE OWNER.
2. WHEN RESTORING LAWN AREAS ADJACENT TO NEW CONSTRUCTION, ON-SITE MATERIAL MAY BE USED TO BACKFILL THE AREA WITHIN SIX INCHES OF THE FINISHED SURFACE. ON-SITE MATERIAL SHALL BE THOROUGHLY COMPACTED AND FREE OF GRASS CLUMPS, TREE ROOTS PIECES OF ASPHALT AND OTHER EXTRANEOUS MATERIALS, AND STONES LARGER THAN 1 INCH IN SIZE.
3. ALL DISTURBED UNSURFACED AREAS SHALL RECEIVE FOUR INCHES OF TOPSOIL, SEED AND MULCH AND SHALL BE WATERED UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.
4. WHEN ADJACENT ASPHALT, CONCRETE OR PAVING STONE AREAS ARE DISTURBED AS PART OF THE CONSTRUCTION, THE CONTRACTOR SHALL BE REQUIRED TO REPLACE THE DAMAGED OR EXCAVATED AREA. THE PERIMETER OF THE DISTURBED AREA SHALL BE SAW CUT FULL DEPTH, SO THAT ALL LINES ARE STRAIGHT AND TRUE. PAVING STONES SHALL BE REPLACED IN WHOLE UNITS ONLY, AND ALL REPLACEMENT PAVING STONES ARE TO MATCH THE EXISTING ONES IN SIZE, SHAPE AND COLOR. ASPHALT SHALL BE COMPACTED TO A SMOOTH FINISH AND SHALL BE FLUSH WITH THE EXISTING ADJACENT AREA THAT IS TO REMAIN.

EROSION CONTROL PLAN

THE FOLLOWING EROSION CONTROL PROCEDURE SHALL BE ADHERED TO BY THE CONTRACTOR:

1. INSTALL TEMPORARY SILT FENCE BARRIERS AS DIRECTED BY THE OWNER AND AS SHOWN ON THE EROSION CONTROL PLAN TO PREVENT SEDIMENT MIGRATION. ALL SILT FENCE BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS.
2. ALL SILT FENCE BARRIERS SHALL BE REPLACED WHEREVER THEY BECOME CLOGGED OR INOPERABLE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND REMOVAL OF TEMPORARY SEDIMENTATION CONTROLS.
4. THE CONTRACTOR MUST CONTROL DUST DURING CONSTRUCTION. DURING EARTHWORK OPERATIONS, WATER-SPREADING EQUIPMENT SHALL BE PROVIDED BY THE CONTRACTOR, AND WATER SPREAD AS NECESSARY AND AS DIRECTED BY THE OWNER IN ORDER TO CONTROL DUST.
5. DIRT OR DEBRIS LEFT ON LOCAL PUBLIC ROADS AS A RESULT OF THIS CONSTRUCTION PROJECT SHALL BE REMOVED AND ROAD SURFACES CLEANED BY THE CONTRACTOR ON A DAILY BASIS.
6. ALL DISTURBED AREAS (EXCEPT STABILIZED STONE AREAS) SHALL BE SEEDED IMMEDIATELY AFTER FINE GRADING TAKES PLACE AND AS SOON AS PHYSICALLY POSSIBLE.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF DOWNSTREAM STORM SEWERS, DITCHES, AND CULVERTS. SILT BUILDUP FOUND TO BE A RESULT OF THIS SITE CONSTRUCTION WORK SHALL BE REMOVED FROM DOWNSTREAM CULVERTS BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER OR THE TOWN.
8. ALL SOIL EROSION AND SEDIMENT CONTROL DEVICES AND MATERIALS SHALL BE MAINTAINED UNTIL THE NEW SLOPES ARE STABILIZED WITH SEEDING AND/OR SLOPE PROTECTION, AS DIRECTED BY THE ENGINEER.
9. THE CONTRACTOR SHALL FOLLOW THE REGULATIONS SET FORTH IN THE NYSDEC SPDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES.
10. ALL LOCAL ORDINANCES REGARDING THE SALE OF TOPSOIL MUST BE FOLLOWED. TOPSOIL MAY NOT BE REMOVED WITHOUT A PERMIT.

INSPECTION AND MAINTENANCE PROCEDURES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASSIGNING AN INDIVIDUAL TO BE RESPONSIBLE FOR THE INSPECTION AND MAINTENANCE OF TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES. THE WORK MAY INCLUDE, BUT NOT LIMITED TO THE FOLLOWING:
   - 1.1. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS.
   - 1.2. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD WORKING ORDER. AS DEEMED NECESSARY BY THE TOWN AND ENGINEER, REPAIRS SHALL BE COMPLETED WITHIN 24 HOURS OF BEING REPORTED.
   - 1.3. CHECK AND REPAIR SILT FENCING AND EROSION CONTROL DEVICES, AS NECESSARY.
   - 1.4. TEMPORARY AND PERMANENT SEEDING AND PLANTING WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH AND REPAIRED AS NECESSARY.
   - 1.5. NEIGHBORING ROADWAYS WILL BE MONITORED TO ENSURE THAT ANY TRACKED MUD, DIRT, OR ROCK IS SWEPT AS NECESSARY.

NOTES:

1. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT THOSE ITEMS TO REMAIN, SUCH AS TREES, PROPERTY CORNER PINS, UTILITY POLES, VALVES, HYDRANTS, CURBS, MANHOLES, AND CATCH BASINS.
2. TEMPORARY SILT FENCE AND EROSION CONTROL DEVICES TO BE INSTALLED AS DIRECTED BY THE OWNERS FIELD REPRESENTATIVE. MAINTAIN UNTIL VEGETATION IS ESTABLISHED AND PAVEMENT IS INSTALLED.
3. THE CONTRACTOR SHALL INSTALL STABILIZED CONSTRUCTION ENTRANCES WHERE ACCESSING THE SITE FROM PAVED ROADWAYS.
4. THE CONTRACTOR SHALL INSTALL TEMPORARY TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH NEW YORK STATE M.U.T.C.D. STANDARDS PRIOR TO STARTING WORK.

STABILIZATION PRACTICES FOR THIS SITE INCLUDE:

A. LAND CLEARING ACTIVITIES SHALL BE DONE ONLY IN AREAS WHERE EARTHWORK WILL BE PERFORMED AND SHALL PROGRESS AS EARTHWORK IS NEEDED.
B. USE OF STABILIZATION METHOD FOR ALL SLOPES HAVING A SLOPE GREATER THAN 1V:3H.
C. PERMANENT SEEDING AND PLANTING OF ALL UNPAVED AREAS USING THE HYDROMULCHING GRASS SEEDING TECHNIQUE.
D. MULCHING EXPOSED AREAS.
E. VEGETATION PRESERVATION IN UNDISTURBED AREAS.
F. FREQUENT WATERING TO MINIMIZE WIND EROSION DURING CONSTRUCTION.
   - A. FOR SITES WHERE 5 ACRES OR MORE ARE DISTURBED AT ANY ONE TIME IN AREAS WHERE SOIL DISTURBANCE ACTIVITY HAS BEEN TEMPORARILY OR PERMANENTLY CEASED, TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES SHALL BE INSTALLED AND/OR IMPLEMENTED WITHIN SEVEN (7) DAYS FROM THE DATE THE SOIL DISTURBANCE ACTIVITY CEASED. THE SOIL STABILIZATION MEASURES SELECTED SHALL BE IN CONFORMANCE WITH THE MOST CURRENT VERSION OF THE NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.
   - B. THE OWNER OR OPERATOR SHALL PREPARE A PHASING PLAN THAT DEFINES MAXIMUM DISTURBED AREA PER PHASE AND SHOWS REQUIRED CUTS AND FILLS.
   - C. THE OWNER OR OPERATOR SHALL INSTALL ANY ADDITIONAL MEASURES NEEDED TO PROTECT WATER QUALITY.

112.2 STRUCTURAL PRACTICES

STRUCTURAL PRACTICES FOR THIS SITE INCLUDE:

A. INLET PROTECTION USING A METHOD DETAILED IN THE CONSTRUCTION DOCUMENTS.
B. PERIMETER PROTECTION USING TEMPORARY SILT FENCE/SILT SOCK OR SILT SOCK.
C. OUTLET PROTECTION USING RIP-RAP STONE AND END SECTIONS.
D. STABILIZED CONSTRUCTION ENTRANCE.
E. TEMPORARY STONE WASH OFF AREAS.
F. STORM SEWER, CURB/GUTTER.

SEDIMENT TRAPS AND BASINS.

112.3 SEQUENCE OF MAJOR ACTIVITIES

THE CONTRACTOR WILL BE RESPONSIBLE FOR IMPLEMENTING THE FOLLOWING EROSION CONTROL AND STORM WATER MANAGEMENT CONTROL MEASURES. THE CONTRACTOR MAY DESIGNATE THESE TASKS TO CERTAIN SUBCONTRACTORS AS HE SEES FIT, BUT THE ULTIMATE RESPONSIBILITY FOR IMPLEMENTING THESE CONTROLS AND ENSURING THEIR PROPER FUNCTIONING REMAINS WITH THE CONTRACTOR. THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS:

A. CONSTRUCT TEMPORARY CONSTRUCTION EXIT AT LOCATION SHOWN ON THE DEMOLITION & EROSION CONTROL PLAN SHEET.
B. INSTALL PERIMETER SILT FENCE/SILT SOCKS/SILT SOCK IN THE LOCATIONS SHOWN ON THE DEMOLITION & EROSION CONTROL PLAN SHEET.
C. CLEAR & GRUB SITE.
D. INSTALLATION OF DETENTION BASINS TO ACT AS SEDIMENT BASINS (DO NOT INSTALL BIORETENTION SOIL OR UNDERDRAINS UNTIL STABILIZED)
E. COMMENCE SITE GRADING.
F. DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN 14 DAYS SHALL BE TEMPORARILY SEEDED AND WATERED.
G. FINALIZE PAVEMENT SUBGRADE PREPARATION.
H. CONSTRUCT ALL CURB, DRAINAGE INLETS, STORM SEWER PIPES AND STORM SEWER MANHOLES, AS SHOWN ON THE PLANS. INSTALL TEMPORARY INLET PROTECTION AT THE LOCATIONS OF ALL INLETS.
I. REMOVE INLET PROTECTION AROUND INLETS AND MANHOLES NO MORE THAN 48 HOURS PRIOR TO PLACING STABILIZED BASE COURSE.
J. INSTALL BASE MATERIAL AS REQUIRED FOR PAVEMENT.
K. CARRY OUT FINAL GRADING AND SEEDING AND PLANTING.
L. CLEAN STORM SYSTEM FOLLOWING CONSTRUCTION, CLEAN DETENTION BASINS OF ANY SILT AND RETURN TO DESIGN GRADES.
M. REMOVE SILT FENCING/SILT SOCK ONLY AFTER ALL PAVING IS COMPLETE AND EXPOSED SURFACES ARE STABILIZED.

NOTE: SEDIMENT CONTROL STORAGE DURING CONSTRUCTION (TRAPS & BASINS) DURING CONSTRUCTION SHALL BE 134 CY PER ACRE OF DISTURBANCE PER NYSDEC REQUIREMENTS.

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STATE OF NEW YORK
R. CHRISTOPHER WOOD
076304
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Demolition & Erosion Control Plan

DRAWING NO.

C-001

Project no.: 21-011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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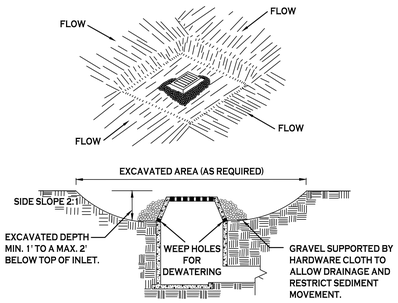


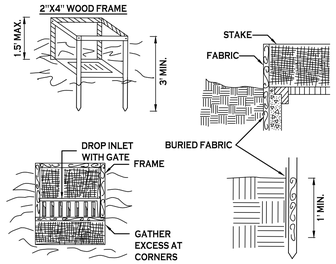
CONSTRUCTION SPECIFICATIONS

1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.

   MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 1

NOT TO SCALE



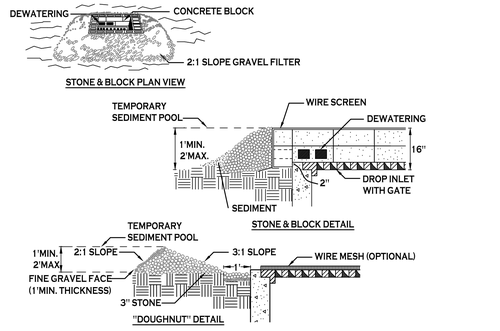
CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2" x 4" WOOD OR EQUIVALENT. METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18 INCHES DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

   MAXIMUN DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 2

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

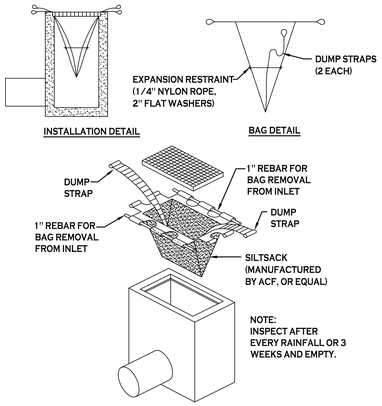
1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

   MAXIMUM DRAINAGE AREA 1 ACRE

INLET PROTECTION DETAIL 3

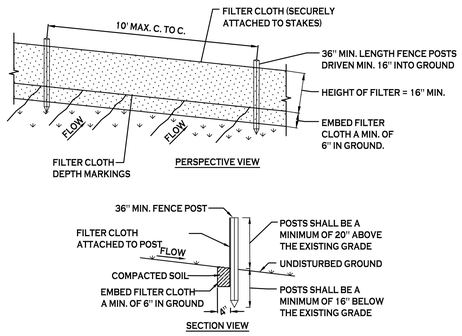
NOT TO SCALE

NOTE: INSTALL ONE OF THE INLET PROTECTION OPTIONS SHOWN PRIOR TO CONSTRUCTION



SILT SACK DETAIL

NOT TO SCALE

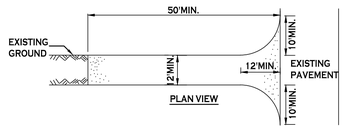


CONSTRUCTION SPECIFICATIONS

1. WOVEN FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE DETAIL

NOT TO SCALE

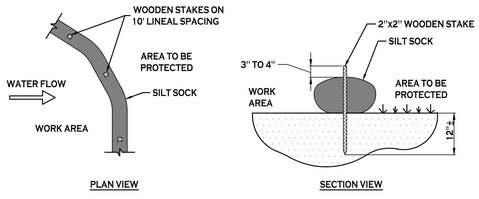


CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STABILIZED CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE



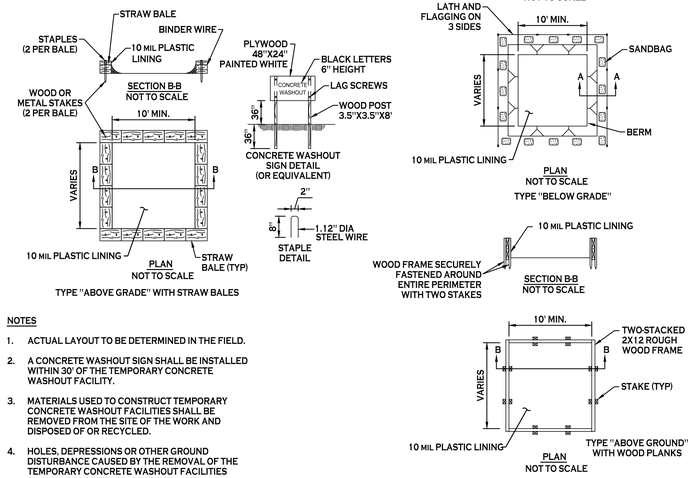
NOTES:

CONTRACTOR SHALL INSPECT AND MAINTAIN SILT SOCK AS NEEDED DURING THE DURATION OF CONSTRUCTION PROJECT.

CONTRACTOR SHALL REMOVE SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK WHEN IT HAS REACHED $\frac{1}{2}$ OF THE EXPOSED HEIGHT OF THE SILT SOCK. ALTERNATIVELY, RATHER THAN CREATE A SOIL DISTURBING ACTIVITY, THE ENGINEER MAY CALL FOR ADDITIONAL SILT SOCK TO BE ADDED AT AREAS OF HIGH SEDIMENTATION, PLACED IMMEDIATELY ON TOP OF THE EXISTING SEDIMENT LADEN SILT SOCK.

SILT SOCK DETAIL

NOT TO SCALE



NOTES

1. ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD.
2. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF OR RECYCLED.
4. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED, REPAIRED, AND STABILIZED TO PREVENT EROSION.

CONCRETE WASHOUT DETAIL

NOT TO SCALE

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STATE OF NEW YORK — R. CHRISTOPHER WOOD — 075394 — LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Demolition & Erosion Control Details

DRAWING NO.

C-002

Project no.: 21-011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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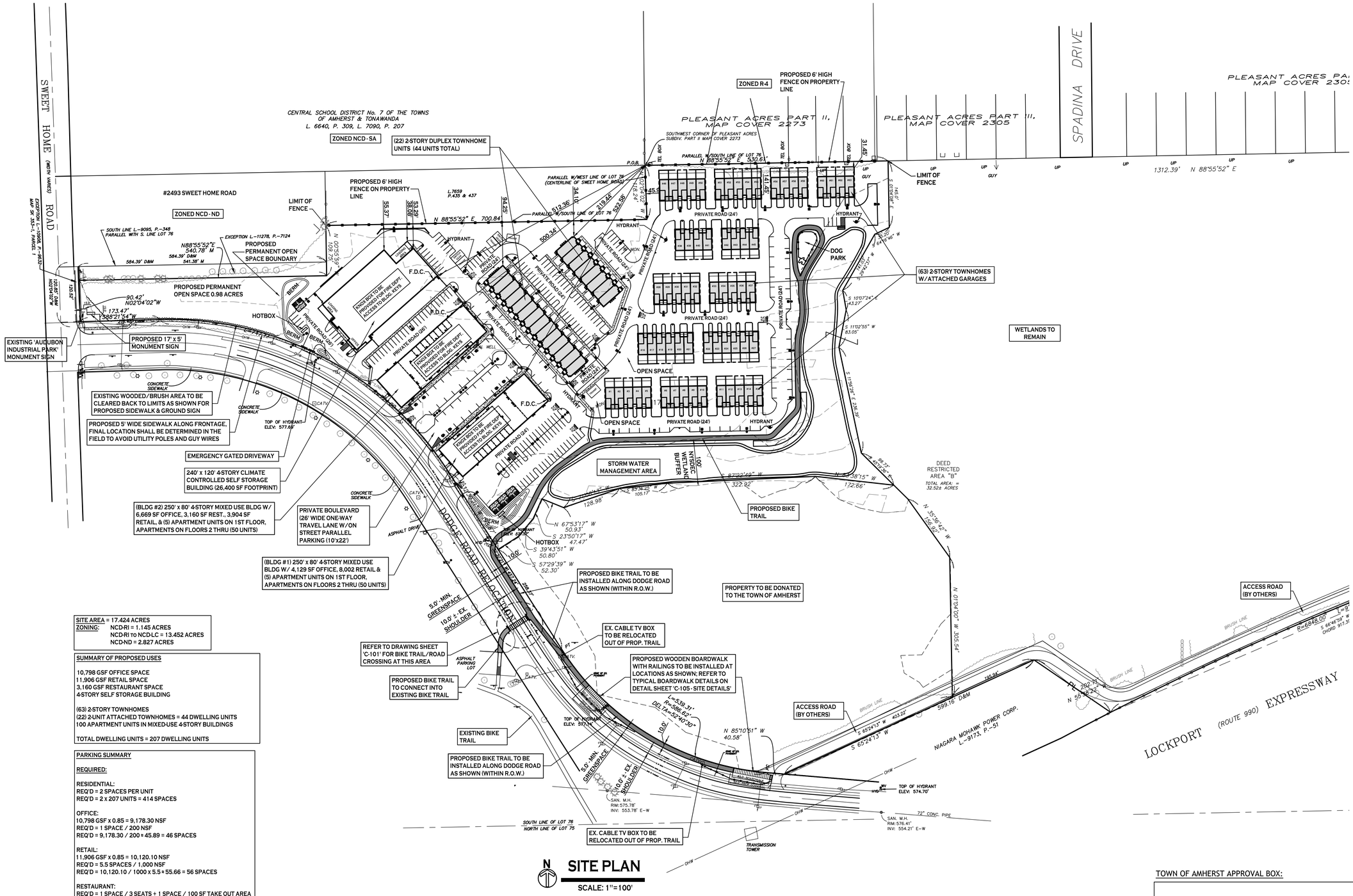

SITE PLAN

SCALE: 1"=100'

SITE AREA	= 17.424 ACRES
ZONING:	NCD-RI = 1.145 ACRES
	NCD-RI TO NCD-LC = 13.452 ACRES
	NCD-ND = 2.827 ACRES

SUMMARY OF PROPOSED USES

10,798 GSF OFFICE SPACE
11,906 GSF RETAIL SPACE
3,160 GSF RESTAURANT SPACE
4-STORY SELF STORAGE BUILDING

(63) 2-STORY TOWNHOMES
(22) 2-UNIT ATTACHED TOWNHOMES = 44 DWELLING UNITS
100 APARTMENT UNITS IN MIXED-USE 4-STORY BUILDINGS

TOTAL DWELLING UNITS = 207 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 207 UNITS = 414 SPACES

OFFICE:
10,798 GSF x 0.85 = 9,178.30 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 9,178.30 / 200 = 45.89 = 46 SPACES

RETAIL:
11,906 GSF x 0.85 = 10,120.10 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 10,120.10 / 1000 x 5.5 = 55.66 = 56 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

SELF STORAGE:
REQ'D = 1 SPACE / 5,000 AREA DEVOTED TO STORAGE
REQ'D = (26,400 SF x 4) / 5,000 SF = 22 SPACES

TOTAL REQ'D = 576 SPACES

PROVIDED:

94 PARALLEL PARKING SPACES
171 9'x19' SPACES
63 TOWNHOUSE GARAGE SPACES
63 SPACES IN FRONT OF TOWNHOUSE GARAGE SPACES
16 GARAGE SPACES IN 4-STORY BLDGS.
407 TOTAL SPACES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 0.98 ACRES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

TOWN OF AMHERST APPROVAL BOX:

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STATE OF NEW YORK · CHRISTOPHER WOOD · 076304 · LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Rev. per Amherst T.S.B. 03/07/24 Comments	03/13/24
2	Rev. per ECDPW 03/28/24 Comments	04/02/24

PROJECT NAME:

Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/22/24
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Overall Site Plan

DRAWING NO.
C-100

Project no.: 21.011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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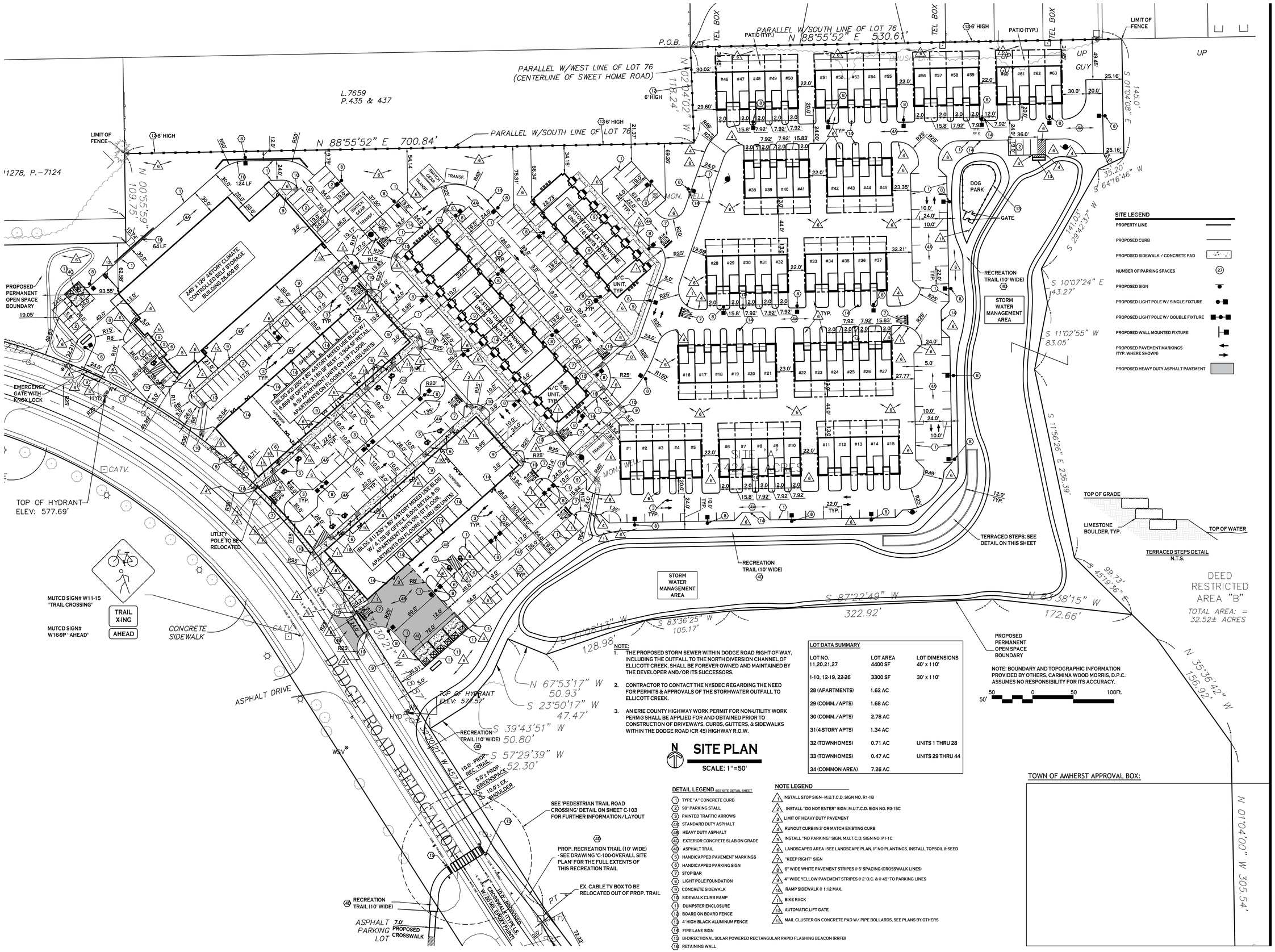

SITE LEGEND

- PROPERTY LINE
- PROPOSED CURB
- PROPOSED SIDEWALK / CONCRETE PAD
- NUMBER OF PARKING SPACES (27)
- PROPOSED SIGN
- PROPOSED LIGHT POLE W/ SINGLE FIXTURE
- PROPOSED LIGHT POLE W/ DOUBLE FIXTURE
- PROPOSED WALL MOUNTED FIXTURE
- PROPOSED PAVEMENT MARKINGS (TYP. WHERE SHOWN)
- PROPOSED HEAVY DUTY ASPHALT PAVEMENT

NOTE:
1. THE PROPOSED STORM SEWER WITHIN DODGE ROAD RIGHT-OF-WAY, INCLUDING THE OUTFALL TO THE NORTH DIVERSION CHANNEL OF ELLICOTT CREEK, SHALL BE FOREVER OWNED AND MAINTAINED BY THE DEVELOPER AND/OR ITS SUCCESSORS.
2. CONTRACTOR TO CONTACT THE NYSDEC REGARDING THE NEED FOR PERMITS & APPROVALS OF THE STORMWATER OUTFALL TO ELLICOTT CREEK.
3. AN ERIE COUNTY HIGHWAY WORK PERMIT FOR NON-UTILITY WORK PERM3 SHALL BE APPLIED FOR AND OBTAINED PRIOR TO CONSTRUCTION OF DRIVEWAYS, CURBS, GUTTERS, & SIDEWALKS WITHIN THE DODGE ROAD (CR 45) HIGHWAY R.O.W.

SITE PLAN
SCALE: 1"=50'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 0 50 100Ft.

LOT DATA SUMMARY

LOT NO.	LOT AREA	LOT DIMENSIONS
11,20,21,27	4400 SF	40' x 110'
1-10, 12-19, 22-26	3300 SF	30' x 110'
28 (APARTMENTS)	1.62 AC	
29 (COMM./APTS)	1.68 AC	
30 (COMM./APTS)	2.78 AC	
31 (4-STORY APTS)	1.34 AC	
32 (TOWNHOMES)	0.71 AC	UNITS 1 THRU 28
33 (TOWNHOMES)	0.47 AC	UNITS 29 THRU 44
34 (COMMON AREA)	7.26 AC	

DETAIL LEGEND (SEE SITE DETAIL SHEET)

1. TYPE "A" CONCRETE CURB
2. 90° PARKING STALL
3. PAINTED TRAFFIC ARROWS
4A. STANDARD DUTY ASPHALT
4B. HEAVY DUTY ASPHALT
4C. EXTERIOR CONCRETE SLAB ON GRADE
4D. ASPHALT TRAIL
5. HANDICAPPED PAVEMENT MARKINGS
6. HANDICAPPED PARKING SIGN
7. STOP BAR
8. LIGHT POLE FOUNDATION
9. CONCRETE SIDEWALK
10. SIDEWALK CURB RAMP
11. DUMPSTER ENCLOSURE
12. BOARD ON BOARD FENCE
13. 4' HIGH BLACK ALUMINUM FENCE
14. FIRE LANE SIGN
15. BI-DIRECTIONAL SOLAR POWERED RECTANGULAR RAPID FLASHING BEACON (RRFB)
16. RETAINING WALL

NOTE LEGEND

1. INSTALL STOP SIGN - M.U.T.C.D. SIGN NO. R1-1B
2. INSTALL "DO NOT ENTER" SIGN, M.U.T.C.D. SIGN NO. R3-15C
3. LIMIT OF HEAVY DUTY PAVEMENT
4. RUNOUT CURB IN 3' OR MATCH EXISTING CURB
5. INSTALL "NO PARKING" SIGN, M.U.T.C.D. SIGN NO. P1-1C
6. LANDSCAPED AREA - SEE LANDSCAPE PLAN, IF NO PLANTINGS, INSTALL TOPSOIL & SEED
7. "KEEP RIGHT" SIGN
8. 6" WIDE WHITE PAVEMENT STRIPES @ 5' SPACING (CROSSWALK LINES)
9. 4" WIDE YELLOW PAVEMENT STRIPES @ 2' O.C. & @ 45° TO PARKING LINES
10. RAMP SIDEWALK @ 1:12 MAX.
11. BIKE RACK
12. AUTOMATIC LIFT GATE
13. MAIL CLUSTER ON CONCRETE PAD W/ PIPE BOLLARDS, SEE PLANS BY OTHERS

TOWN OF AMHERST APPROVAL BOX:

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
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STATE OF NEW YORK — CHRISTOPHER WOOD — 076304 — LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Rev. per ECDPW 03/28/24 Comments	04/02/24
2	Rev. per Ryan Homes Comments	04/08/24

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/22/24
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site Plan

DRAWING NO.
C-101

Project no.: 21-011

Attachment: Z-2002-09E drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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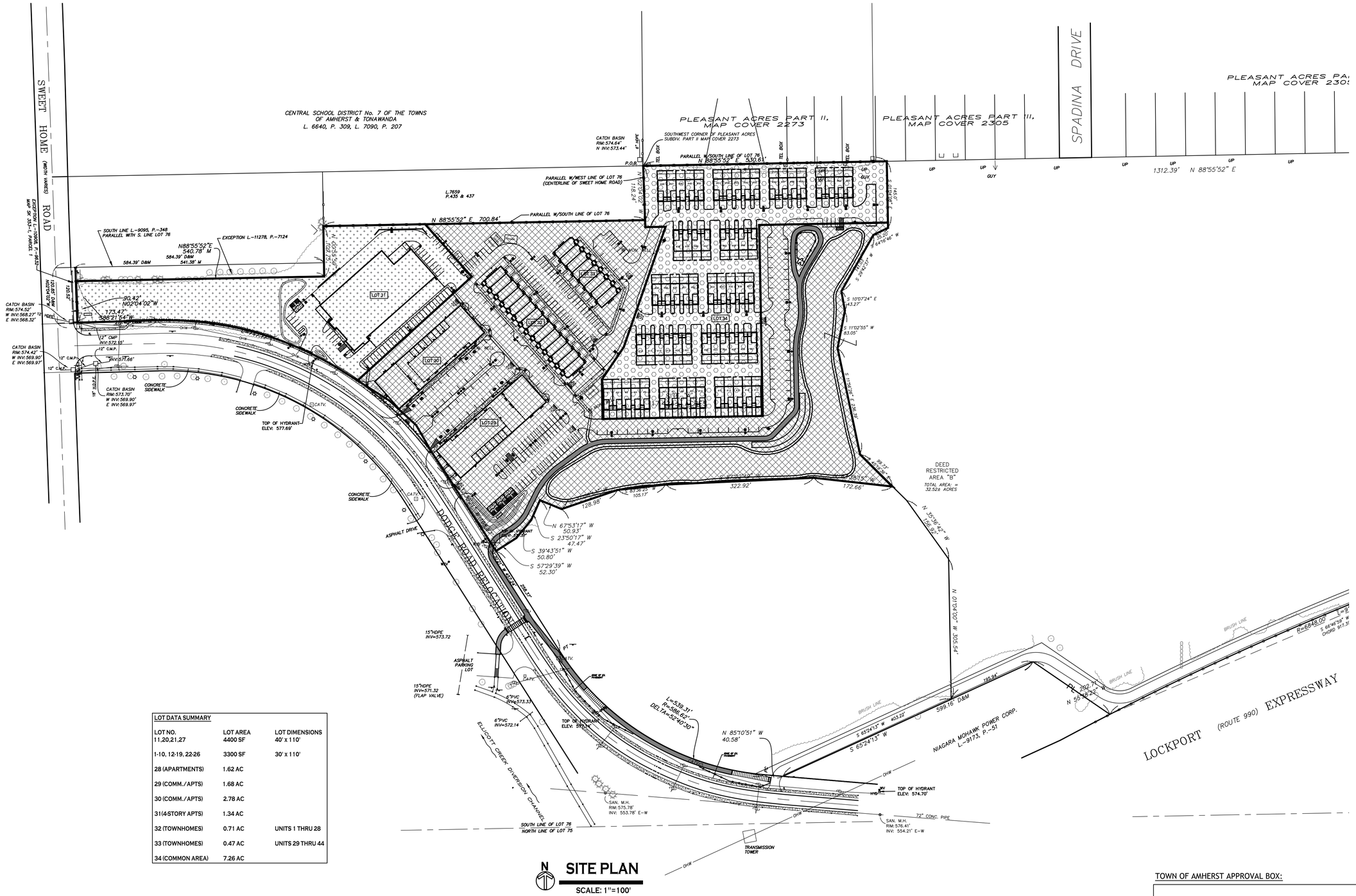

SITE PLAN

SCALE: 1"=100'

LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
11,20,21,27	4400 SF	40' x 110'
1-10, 12-19, 22-26	3300 SF	30' x 110'
28 (APARTMENTS)	1.62 AC	
29 (COMM./APTS)	1.68 AC	
30 (COMM./APTS)	2.78 AC	
31 (4-STORY APTS)	1.34 AC	
32 (TOWNHOMES)	0.71 AC	UNITS 1 THRU 28
33 (TOWNHOMES)	0.47 AC	UNITS 29 THRU 44
34 (COMMON AREA)	7.26 AC	

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

TOWN OF AMHERST APPROVAL BOX:

Carmina Wood Morris DPC
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P 716.842.3165
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STATE OF NEW YORK R. CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22
3	Plan rev. per town 07/29/22 comments	03/27/23
4	Plan rev. per 09/13/23 Fire Safety comments	03/27/23
5	Plan rev. per 10/20/23 Town comments	10/31/23
6	Plan revised per Town/Client comments	05/28/24

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Parcel Map

DRAWING NO.

C-102

Project no.: 21-011

Attachment: 2-2002-09E_drawings_082724 (29166 : 2-2002-09E, 50 Dodge Rd. (Portion))

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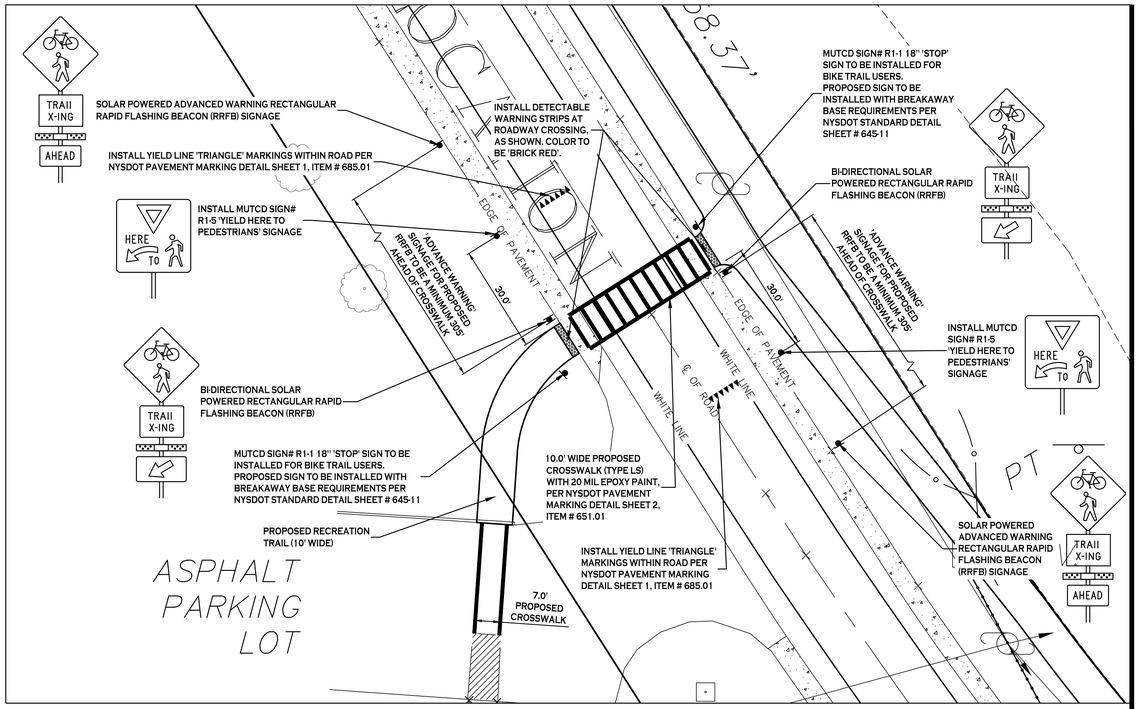
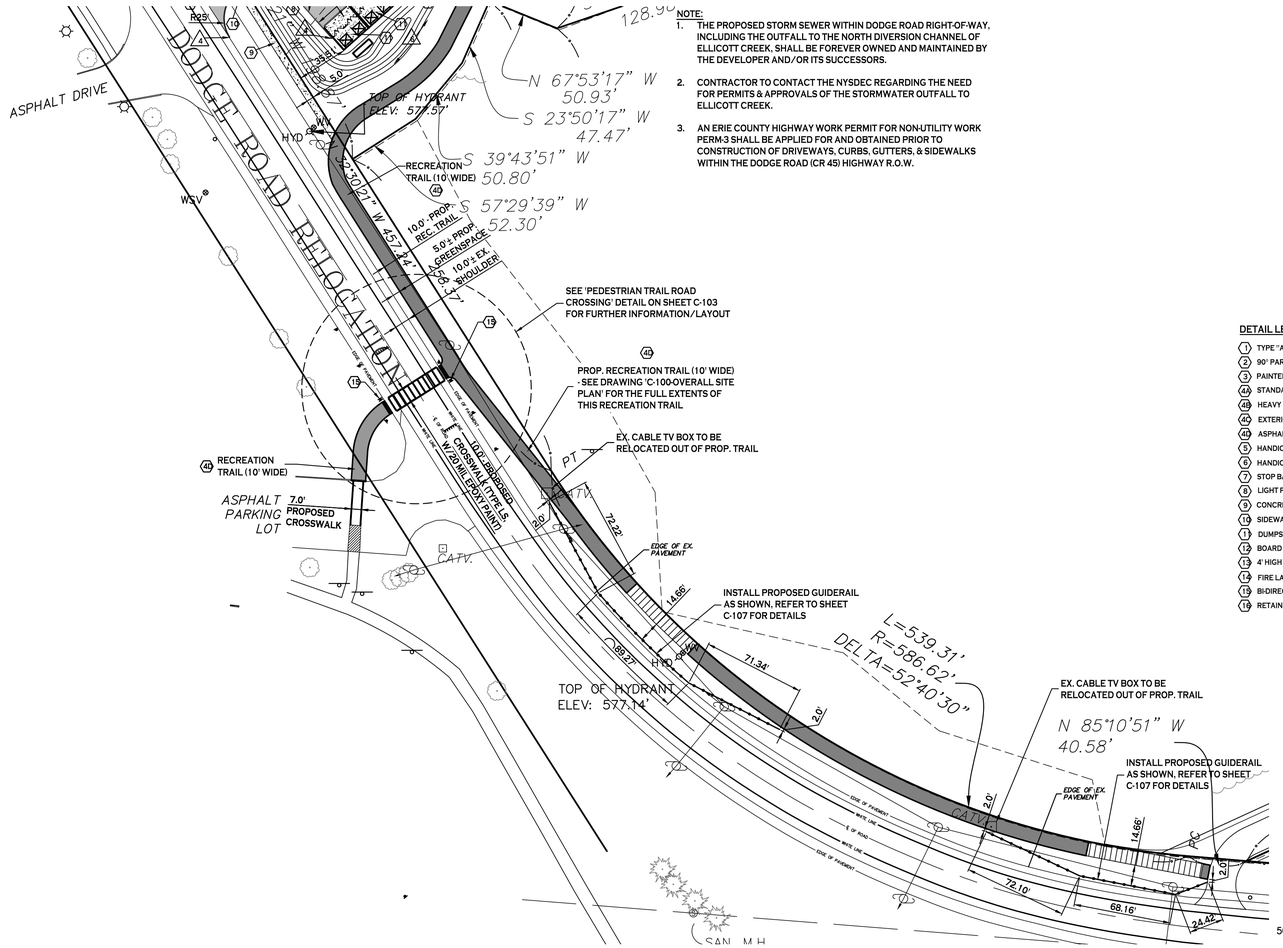


PEDESTRIAN TRAIL ROAD CROSSING

SCALE: 1"=20'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

20' 0 20 40Ft.



NOTE:

1. THE PROPOSED STORM SEWER WITHIN DODGE ROAD RIGHT-OF-WAY, INCLUDING THE OUTFALL TO THE NORTH DIVERSION CHANNEL OF ELLICOTT CREEK, SHALL BE FOREVER OWNED AND MAINTAINED BY THE DEVELOPER AND/OR ITS SUCCESSORS.
2. CONTRACTOR TO CONTACT THE NYSDEC REGARDING THE NEED FOR PERMITS & APPROVALS OF THE STORMWATER OUTFALL TO ELLICOTT CREEK.
3. AN ERIE COUNTY HIGHWAY WORK PERMIT FOR NON-UTILITY WORK PERM-3 SHALL BE APPLIED FOR AND OBTAINED PRIOR TO CONSTRUCTION OF DRIVEWAYS, CURBS, GUTTERS, & SIDEWALKS WITHIN THE DODGE ROAD (CR 45) HIGHWAY R.O.W.

DETAIL LEGEND SEE SITE DETAIL SHEET

1	TYPE "A" CONCRETE CURB
2	90° PARKING STALL
3	PAINTED TRAFFIC ARROWS
4A	STANDARD DUTY ASPHALT
4B	HEAVY DUTY ASPHALT
4C	EXTERIOR CONCRETE SLAB ON GRADE
4D	ASPHALT TRAIL
5	HANDICAPPED PAVEMENT MARKINGS
6	HANDICAPPED PARKING SIGN
7	STOP BAR
8	LIGHT POLE FOUNDATION
9	CONCRETE SIDEWALK
10	SIDEWALK CURB RAMP
11	DUMPSTER ENCLOSURE
12	BOARD ON BOARD FENCE
13	4' HIGH BLACK ALUMINUM FENCE
14	FIRE LANE SIGN
15	BI-DIRECTIONAL SOLAR POWERED RECTANGULAR RAPID FLASHING BEACON (RRFB)
16	RETAINING WALL

NOTE LEGEND

1	INSTALL STOP SIGN - M.U.T.C.D. SIGN NO. R1-1B
2	INSTALL "DO NOT ENTER" SIGN, M.U.T.C.D. SIGN NO. R3-15C
3	LIMIT OF HEAVY DUTY PAVEMENT
4	RUNOUT CURB IN 3' OR MATCH EXISTING CURB
5	INSTALL "NO PARKING" SIGN, M.U.T.C.D. SIGN NO. P1-1C
6	LANDSCAPED AREA - SEE LANDSCAPE PLAN, IF NO PLANTINGS, INSTALL TOPSOIL & SEED
7	"KEEP RIGHT" SIGN
8	6" WIDE WHITE PAVEMENT STRIPES @ 5' SPACING (CROSSWALK LINES)
9	4" WIDE YELLOW PAVEMENT STRIPES @ 2' O.C. & @ 45° TO PARKING LINES
10	RAMP SIDEWALK @ 1:12 MAX.
11	BIKE RACK
12	AUTOMATIC LIFT GATE
13	MAIL CLUSTER ON CONCRETE PAD W/ PIPE BOLLARDS, SEE PLANS BY OTHERS

SITE LEGEND

PROPERTY LINE	
PROPOSED CURB	
PROPOSED SIDEWALK / CONCRETE PAD	
NUMBER OF PARKING SPACES	(27)
PROPOSED SIGN	
PROPOSED LIGHT POLE W/ SINGLE FIXTURE	
PROPOSED LIGHT POLE W/ DOUBLE FIXTURE	
PROPOSED WALL MOUNTED FIXTURE	
PROPOSED PAVEMENT MARKINGS (TYP. WHERE SHOWN)	
PROPOSED HEAVY DUTY ASPHALT PAVEMENT	

SITE PLAN

SCALE: 1"=50'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

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STATE OF NEW YORK — CHRISTOPHER WOOD — LICENSED PROFESSIONAL ENGINEER — 076304

REVISIONS:

No.	Description	Date
1	Plan rev. per 04/19/24 Passero comments	04/19/24
2	Plan rev. per 04/29/24 ECDPW comments	04/29/24

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/22/24
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Plan
Roadway & Bike Path Area

DRAWING NO.

C-103

Project no.: 21-011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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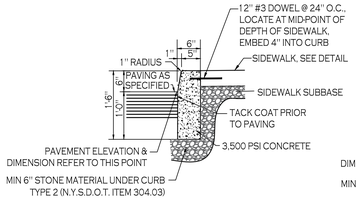
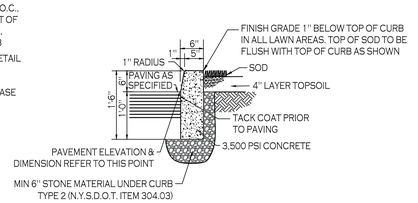


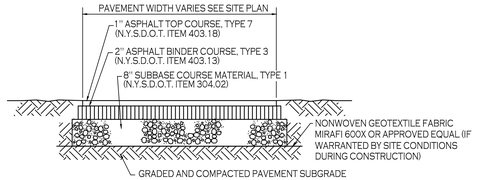
ABUTTING SIDEWALK



ABUTTING LANDSCAPE/GRASS

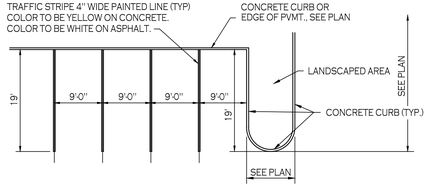
NOTES:
1. CONTROL JOINTS TO BE 2" DEEP AT 15'-0" O.C. - SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. WHERE THE CURB DROPS IS FLUSH WITH ASPHALT) THE DEPTH OF CURB BELOW GRADE SHALL BE INCREASED TO 1'-6" AND OTHER DIMENSIONS ADJUSTED ACCORDINGLY.

TYPE "A" CONCRETE CURB - 1

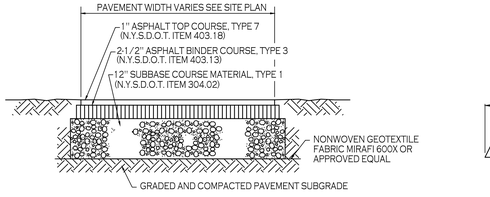


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

STANDARD DUTY ASPHALT SECTION - 4A

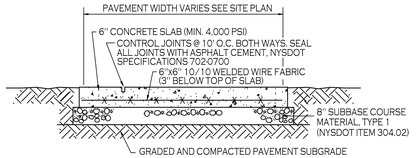


90° PARKING STALL LAYOUT - 2



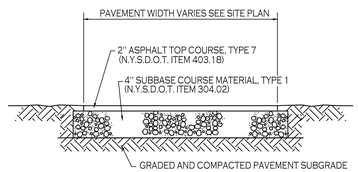
NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

HEAVY DUTY ASPHALT SECTION - 4B



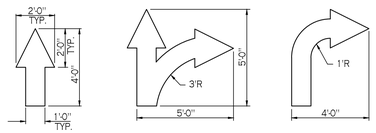
NOTE: CONCRETE PAVEMENT MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 502-3.

EXTERIOR CONCRETE SLAB-ON-GRADE SECTION - 4C

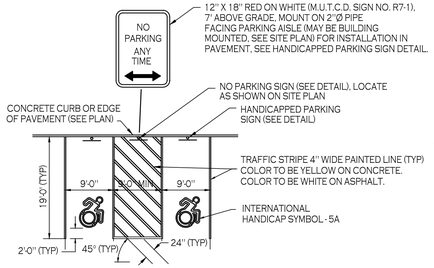


NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

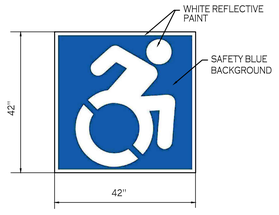
ASPHALT TRAIL SECTION - 4D



PAINTED TRAFFIC ARROWS - 3

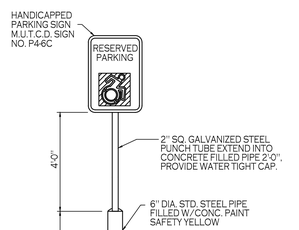


HANDICAPPED PAVEMENT MARKINGS & SIGNAGE - 5



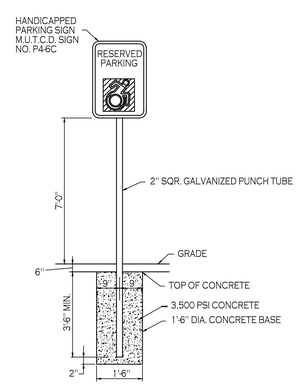
SYMBOL TO BE CENTERED IN PARKING SPACE

INTERNATIONAL HANDICAP SYMBOL - 5A



HANDICAPPED PARKING SIGN - 6

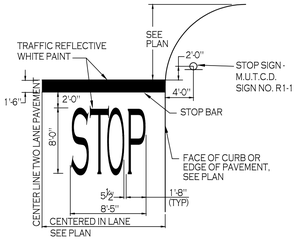
INSTALLED IN PAVEMENT



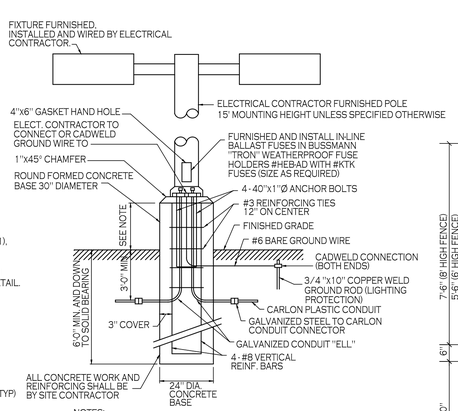
NOTES:
1. HANDICAPPED PARKING SIGN SHALL CONFORM WITH CURRENT STATE AND LOCAL CODES AND REGULATIONS.

HANDICAP PARKING SIGNS - 6

INSTALLED IN GRASS/LANDSCAPED AREA



STOP BAR DETAIL - 7



NOTES:
1. FOR LOCATIONS OF FOUNDATIONS SEE SITE PLAN
2. FOR LIGHT FIXTURE ORDERING INFORMATION SEE SITE LIGHTING PLAN
3. LIGHT POLE BASE EXPOSURE ABOVE GRADE SHALL BE:
   IN CURBED ISLANDS: 6" ABOVE TOP OF CURB ELEVATION
   IN PAVEMENT: 3' ABOVE GRADE
   IN NONCURBED GRASS AREAS: 6" ABOVE GRADE

LIGHT POLE FOUNDATION - 8

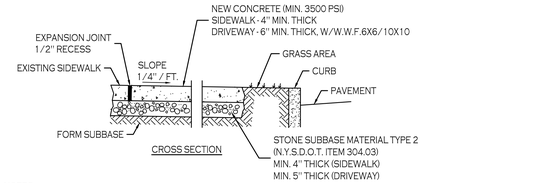
USE FOR 15' MOUNTING HEIGHT L.E.D. FIXTURES

SIZE:	12" X 18"
LINE 1:	3"
LINE 2:	3"
LINE 3:	2"
LINE 4:	ARROW
BACKGROUND:	WHITE
LEGEND:	RED
MARGIN:	3/8 "
BORDER:	3/8 "

INSTALLATION

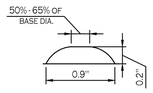
1) SIGNS SHALL BE LOCATED ON THE RIGHT SIDE OF THE ROADWAY FACING APPROACHING TRAFFIC.
2) SIGNS SHALL BE INSTALLED APPROXIMATELY TWO FEET OFF OF PAVEMENT EDGE OR FACE OF CURB.
3) THE HEIGHT OF THE SIGN SHALL BE A MINIMUM OF SEVEN (7) FEET, MEASURED FROM THE BOTTOM OF THE SIGN TO THE GROUND.
4) ALL SIGNS SHALL BE INSTALLED FACING TRAFFIC AT AN ANGLE OF BETWEEN 30 AND 45 DEGREES WITH A LINE PARALLEL TO THE FLOW OF TRAFFIC. THE SIGN LEGENDS SHALL INCLUDE SINGLE-HEADED ARROWS POINTING IN THE DIRECTION OF THE REGULATION IF THE SIGNS ARE AT THE END OF THE ZONE, OR DOUBLE-HEADED ARROWS POINTING IN BOTH DIRECTIONS IF THE SIGNS ARE AT INTERMEDIATE POINTS WITHIN A ZONE.
5) BUILDING MOUNT WHERE REQUIRED @ 50' O.C..

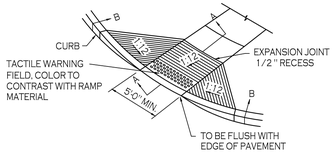
FIRE LANE SIGN - 14

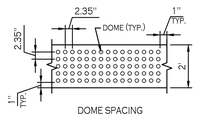


NOTES:
1. CONTROL JOINTS TO BE AT 5'-0" O.C., BOTH WAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
2. CONCRETE SIDEWALK AND DRIVEWAY MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 608-3.
3. SUBBASE GRADE SHALL FOLLOW THE PROPOSED GRADE OF THE SIDEWALK AND SLOPE AWAY FROM BUILDING WHERE APPLICABLE, PROVIDE CONTINUOUS STONE PATH TO CURB UNDERDRAIN WHERE PROVIDED.
4. FULL DEPTH EXPANSION JOINTS SHALL BE INSTALLED EVERY 20' O.C., BOTHWAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700.
5. SEE CURB DETAIL FOR DOWLING REQUIREMENTS WHERE ABUTTING CURB.
6. INSTALL 6" LONG #3 DOWELS @ 12" O.C. WHERE SIDEWALK ABUTS A BUILDING WALL AT AN ENTRANCE, THICKEN SIDEWALK TO 6" AT BUILDING WALL AND INSTALL DOWEL CENTERED IN THE 6" DEPTH. DOWELS AND THICKENING OF SIDEWALK SHALL EXTEND 18" EITHER SIDE OF ENTRANCE.
7. INSTALL 1/2" PREMOLDED EXPANSION JOINT WITH BACKER ROD & SEALANT WHERE SIDEWALK ABUTS BUILDING OR OTHER STRUCTURE.

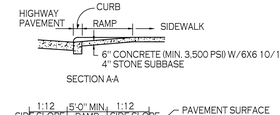
CONCRETE SIDEWALK - 9

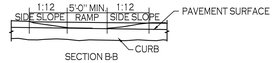




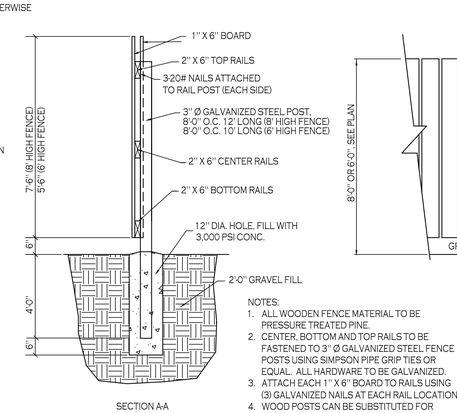


NOTE: TACTILE WARNING DEVICES SHALL BE PER ICC/ANSI A117.1-1998, SECTION 705.3.1.2 OR CURRENT UPDATE



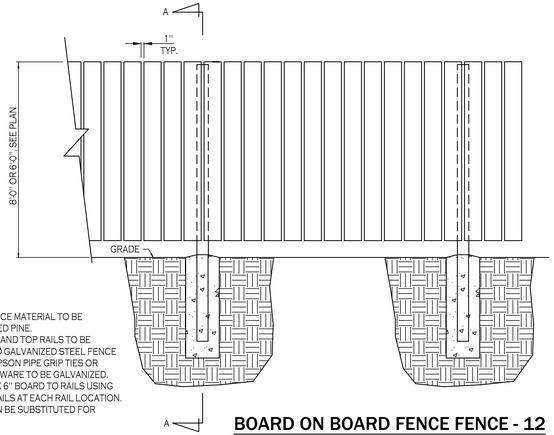


SIDEWALK CURB RAMP - 10



SECTION A-A

NOTES:
1. ALL WOODEN FENCE MATERIAL TO BE PRESSURE TREATED PINE.
2. CENTER, BOTTOM AND TOP RAILS TO BE FASTENED TO 3" Ø GALVANIZED STEEL FENCE POSTS USING SIMPSON PIPE GRIP TIES OR EQUAL. ALL HARDWARE TO BE GALVANIZED.
3. ATTACH EACH 1" X 6" BOARD TO RAILS USING (3) GALVANIZED NAILS AT EACH RAIL LOCATION.
4. WOOD POSTS CAN BE SUBSTITUTED FOR STEEL.



BOARD ON BOARD FENCE FENCE - 12

TOWN OF AMHERST APPROVAL BOX:

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0963

STATE OF NEW YORK R. CHRISTOPHER WOOD LICENSED 076394 PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22
3	Plan rev. per 04/19/24 Passero comments	04/19/24

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site Details

DRAWING NO.
C-104

Project no.: 21-011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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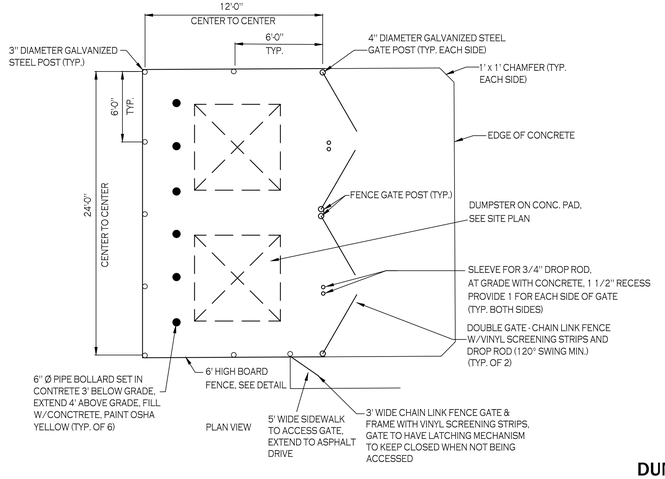
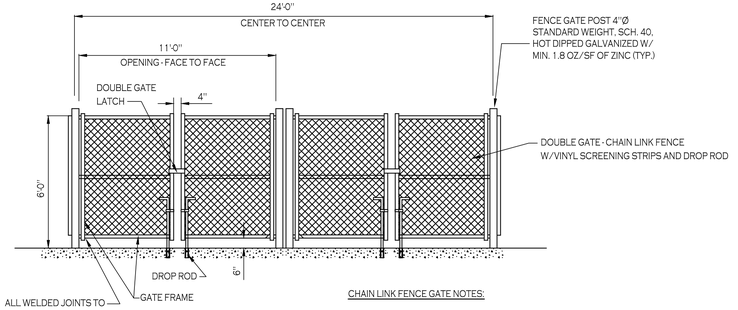
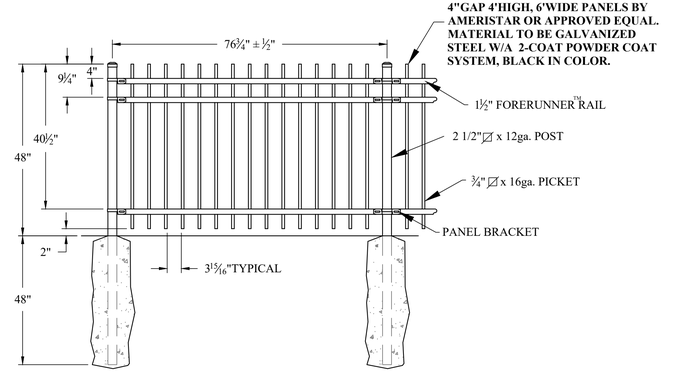




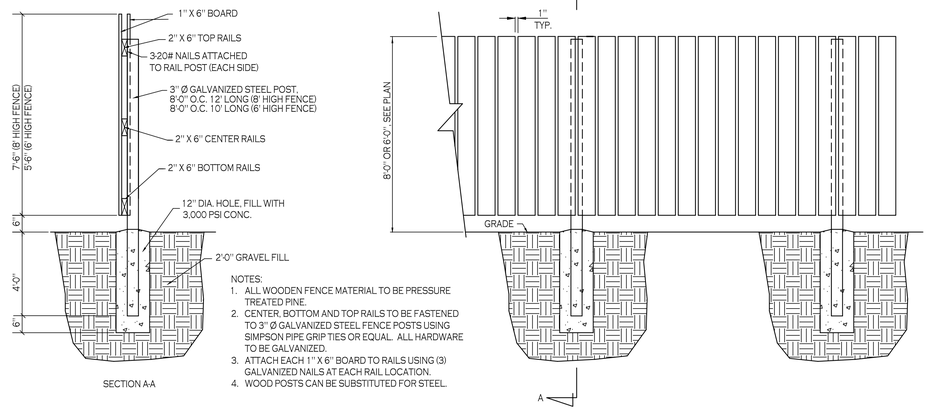
CHAIN LINK FENCE GATE NOTES:

1. GATE POST FOOTINGS TO BE MIN. 36" DEEP x (4x) POST DIAMETER, EXTEND POST TO WITHIN 6" OF BOTTOM.
2. GATE FRAMES TO BE 2" SQ. GALVANIZED STEEL, WEIGHING 2.60 LB/FT IN ACCORDANCE WITH ASTM F 900.
3. CHAIN LINK FENCE FABRIC SHALL BE 2" MESH, 9 GAUGE, ZINC COATED STEEL CORE WIRE. INSTALL MESH WITH HOOK BOLTS AND TENSION BARS ON ALL 4 SIDES, ATTACH AT 15" MAX.
4. DOUBLE GATE LATCH TO BE FORKED TYPE CAPABLE OF RETAINING GATE IN CLOSED POSITION AND HAVE PROVISION FOR PAD LOCK. LATCH SHALL BE OPERABLE FROM EITHER SIDE OF GATE.
5. ALL HARDWARE TO BE HOT DIPPED GALVANIZED STEEL TO SUIT GATE SIZE.

DUMPSTER ENCLOSURE - 11

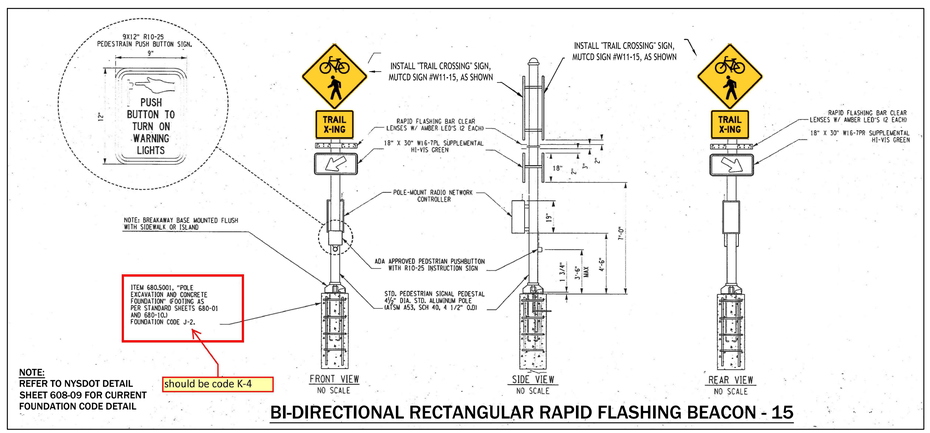


4' HIGH BLACK ALUMINUM FENCE - 13



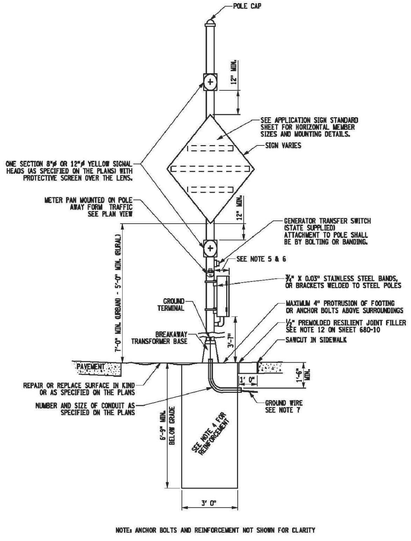
NOTES:
1. ALL WOODEN FENCE MATERIAL TO BE PRESSURE TREATED PINE.
2. CENTER, BOTTOM AND TOP RAILS TO BE FASTENED TO 3" Ø GALVANIZED STEEL FENCE POSTS USING SIMPSON PIPE GRIP TIES OR EQUAL. ALL HARDWARE TO BE GALVANIZED.
3. ATTACH EACH 1" X 6" BOARD TO RAILS USING (3) GALVANIZED NAILS AT EACH RAIL LOCATION.
4. WOOD POSTS CAN BE SUBSTITUTED FOR STEEL.

BOARD ON BOARD FENCE FENCE - FOR DUMPSTER ENCLOSURE



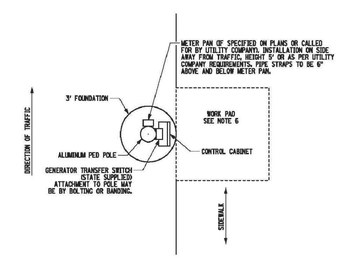
NOTE:
REFER TO NYSDOT DETAIL SHEET 608-09 FOR CURRENT FOUNDATION CODE DETAIL

BI-DIRECTIONAL RECTANGULAR RAPID FLASHING BEACON - 15

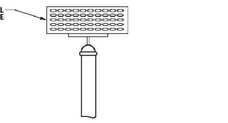


FLASHING BEACON SIGN ASSEMBLY
NOT TO SCALE

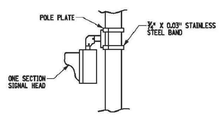
NOTES:
1. FOR SPECIFIC FOOTING DETAILS SEE STANDARD SHEET 680-01TITLED "TRAFFIC SIGNAL POLE FOUNDATIONS".
2. FOR SPECIFIC GROUNDING DETAILS SEE STANDARD SHEET 680-04 TITLED "PULL BOX, CONDUIT AND GROUND ROD INSTALLATION DETAILS".
3. FOR SPECIFIC POLE DETAILS SEE THE STANDARD SHEETS 680-06 TITLED "STANDARD TRAFFIC SIGNAL POLES - SHEET 1 OF 2" AND "STANDARD TRAFFIC SIGNAL POLES - SHEET 2 OF 2".
4. AN APPROVED BREAKAWAY TRANSFORMER BASE SUITABLE FOR USE WITH THE ASSEMBLY WEIGHT SHALL BE INSTALLED WITH THE FLASHING BEACON ASSEMBLY. THE FOUNDATION WIDTH SHALL BE 36" WIDE AND REINFORCED AS PER FOUNDATION CODE K-4 ON STANDARD SHEET 680-01 TITLED "TRAFFIC SIGNAL POLE FOUNDATIONS".
5. MAXIMUM ALLOWABLE ENCROACHMENT INTO ADJACENT SIDEWALK IS 12".
6. THE POLE - MOUNTED RADIO NETWORK CONTROLLER CABINET SHALL NOT INTRUDE INTO THE SIDEWALK AREA OR OBSTRUCT THE PEDESTRIAN PUSH BUTTON. THE CABINET SHALL BE MOUNTED ON THE SIDE OF THE POLE AWAY FROM APPROACHING TRAFFIC. IN UNPAVED AREAS, A CONCRETE WORK PAD SHALL BE CONSTRUCTED IN FRONT OF THE CABINET DOOR HINGED NOT TO EXCEED 5' x 5' x 4" DEEP AND SHALL ADJUT AND BE FLUSH WITH THE POLE FOUNDATION. THE CABINET SHALL BE OF SUFFICIENT SIZE TO HOUSE ALL REQUIRED EQUIPMENT.
7. SERVICE GROUND WIRE MAY VARY AS PER UTILITY REQUIREMENTS. FOR SPECIFIC INSTALLATION DETAILS SEE STANDARD SHEET 680-05 TITLED "BASE AND POLE MOUNTED CABINET INSTALLTION DETAILS".
8. ELECTRICAL SERVICE CAN BE PROVIDED UNDERGROUND AND ENTER THROUGH THE BASE AS SPECIFIED ON THE PLANS. WHERE ELECTRICAL SERVICE IS PROVIDED BY SOLAR, THE SOLAR PANEL ASSEMBLY SHALL BE AFFIXED TO THE TOP OF THE POLE AND BE CAPABLE OF ROTATING 360°. THE PANEL SHALL BE ABLE TO BE ANGLED BETWEEN 45-60°.
9. THE HAND HOLE ON THE PED/POLE BREAKAWAY BASE SHALL BE ORIENTED AWAY FROM TRAFFIC.



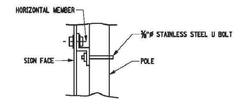
PLAN VIEW



SOLAR PANEL DETAIL OPTION
NOT TO SCALE



BEACON MOUNTING



SIGN MOUNT

NEW YORK STATE OF OPPORTUNITY. Department of Transportation

U.S. CUSTOMARY STANDARD SHEET

FLASHING BEACON INSTALLATION DETAILS

APPROVED JANUARY 4, 2022 — DEPUTY CHIEF ENGINEER DESIGN

ISSUED UNDER EI 22-001

680-09

TOWN OF AMHERST APPROVAL BOX:

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STATE OF NEW YORK — CHRISTOPHER M. WOOD — 076394 — LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22
3	Rev., per ECDPW 03/28/24 Comments	04/02/24
4	Plan rev. per 04/19/24 Passero comments	04/19/24

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site Details

DRAWING NO.
C-105

Project no.: 21-011

Attachment: Z-2002-09E drawings 082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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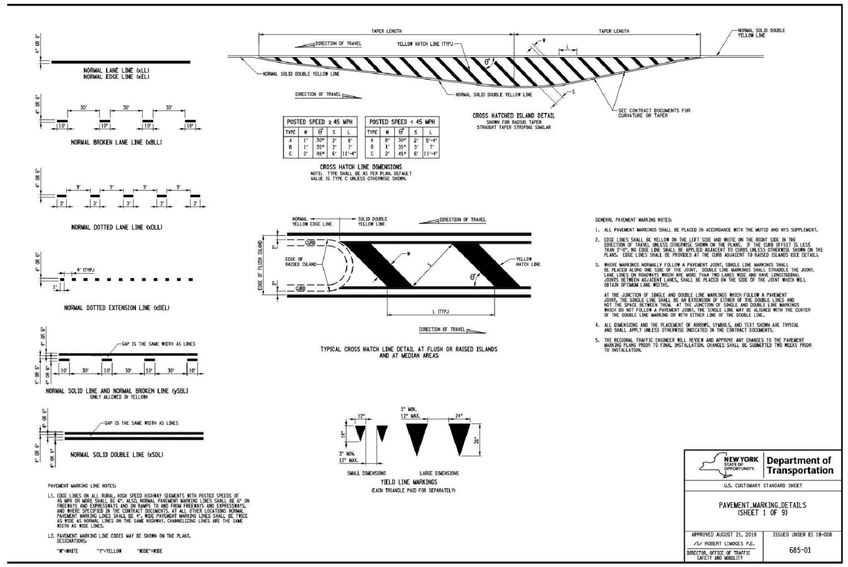


GENERAL PAVEMENT MARKING NOTES:

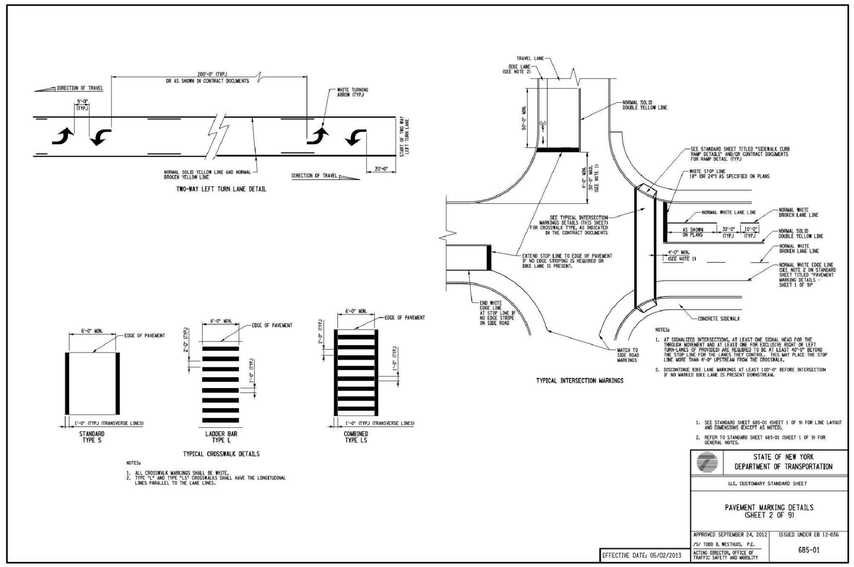
1. ALL PAVEMENT MARKINGS SHALL BE PLACED IN ACCORDANCE WITH THE MUTCD AND NYS SUPPLEMENT.
2. EDGE LINES SHALL BE YELLOW ON THE LEFT SIDE AND WHITE ON THE RIGHT SIDE IN THE DIRECTION OF TRAFFIC FLOW. WHERE THE PAVEMENT WIDTH IS 20' OR LESS AND THE ADT IS 1,500 OR LESS THAN 2'-0", NO EDGE LINE SHALL BE APPLIED ADJACENT TO CURB UNLESS OTHERWISE SHOWN ON THE PLANS. EDGE LINES SHALL BE PROVIDED AT THE CURB ADJACENT TO RAISED ISLANDS (SEE DETAIL).
3. WHERE MARKINGS NORMALLY FOLLOW A PAVEMENT JOINT, SINGLE LINE MARKINGS SHALL BE PLACED ALONG ONE SIDE OF THE JOINT. DOUBLE LINE MARKINGS SHALL STRADDLE THE JOINT. LANE LINES ON RADWAYS FOUR OR MORE THAN TWO LANES WIDE AND DIVIDE LONGITUDINAL JOINTS BETWEEN ADJACENT LANES, SHALL BE PLACED ON THE SIDE OF THE JOINT WHICH WILL OBTAIN OPTIMUM LIFE MASTER.
AT THE JUNCTION OF SINGLE AND DOUBLE LINE MARKINGS WHICH FOLLOW A PAVEMENT JOINT, THE SINGLE LINE MAY BE ALIGNED WITH THE CENTER OF THE DOUBLE LINE MARKING OR NOT. AT THE JUNCTION OF SINGLE AND DOUBLE LINE MARKINGS WHICH DO NOT FOLLOW A PAVEMENT JOINT, THE SINGLE LINE MAY BE ALIGNED WITH THE CENTER OF THE DOUBLE LINE MARKING OR WITH EITHER LINE OF THE DOUBLE LINE.
4. ALL DIMENSIONS AND THE PLACEMENT OF ARROWS, SYMBOLS, AND TEXT SIGNS ARE TYPICAL AND SHALL APPLY UNLESS OTHERWISE INDICATED IN THE CONTRACT DOCUMENTS.
5. THE REGIONAL TRAFFIC ENGINEER WILL REVIEW AND APPROVE ANY CHANGES TO THE PAVEMENT MARKING PLANS PRIOR TO FINAL INSTALLATION. CHANGES SHALL BE SUBMITTED TWO WEEKS PRIOR TO INSTALLATION.

NEW YORK STATE OF OPPORTUNITY. Department of Transportation

U.S. CUSTOMARY STANDARD SHEET

PAVEMENT MARKING DETAILS (SHEET 1 OF 9)

APPROVED AUGUST 21, 2018	ISSUED UNDER EI 18-008
/S/ ROBERT LIMMER, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY	685-01



1. SEE STANDARD SHEET 685-01 (SHEET 1 OF 9) FOR LINE LAYOUT AND DIMENSIONS (EXCEPT AS NOTED).
2. REFER TO STANDARD SHEET 685-01 (SHEET 1 OF 9) FOR GENERAL NOTES.

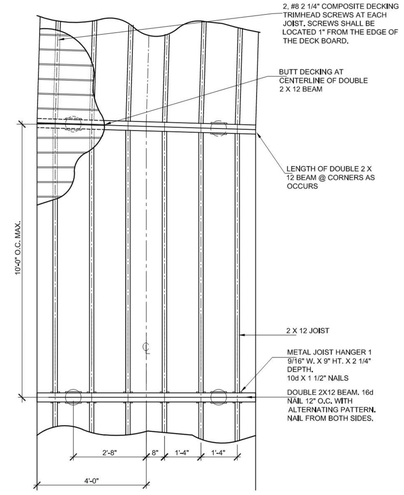
STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

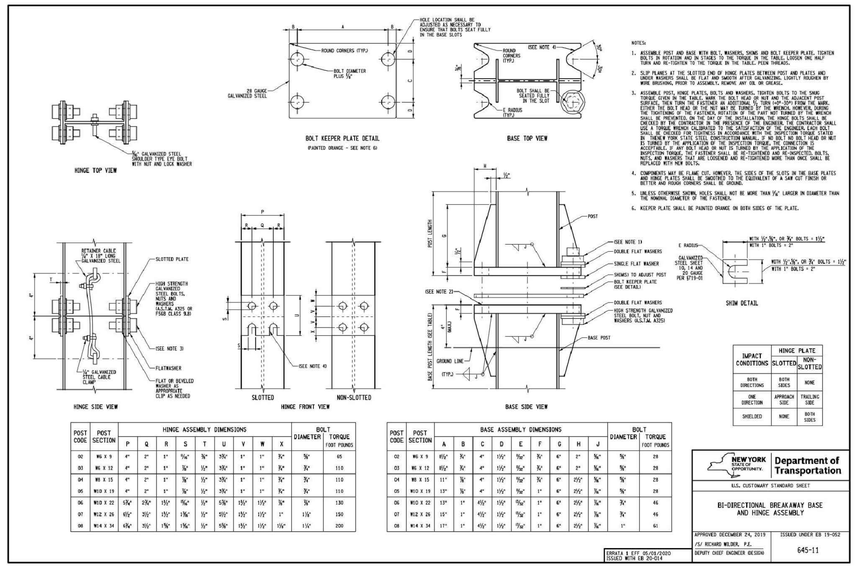
PAVEMENT MARKING DETAILS (SHEET 2 OF 9)

APPROVED SEPTEMBER 24, 2012	ISSUED UNDER EB 12-036
/S/ TODD A. WESTHUES, P.E. ACTING DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY	685-01

EFFECTIVE DATE: 05/02/2013



BOARDWALK FRAMING PLAN



IMPACT CONDITIONS	HINGE PLATE SLOTTED	HINGE PLATE NON-SLOTTED
BOTH DIRECTIONS	BOTH SIDES	NONE
ONE DIRECTION	APPROACH SIDE	TRAILING SIDE
SHIELDED	NONE	BOTH SIDES

HINGE ASSEMBLY DIMENSIONS

POST CODE	POST SECTION	P	Q	R	S	T	U	V	W	X	BOLT DIAMETER	BOLT TORQUE FOOT POUNDS
02	WG X 9	4"	2"	1"	9⅛"	⅜"	3⅝"	1"	1"	⅜"	⅝"	65
03	WG X 12	4"	2"	1"	12⅛"	⅜"	3⅝"	1"	1"	⅜"	⅝"	110
04	WB X 15	4"	2"	1"	15"	⅜"	3⅝"	1"	1"	⅜"	⅝"	110
05	WCD X 19	4"	2"	1"	18"	⅜"	3⅝"	1"	1"	⅜"	⅝"	110
06	WCD X 22	4¼"	2⅛"	1"	18¾"	⅜"	3⅝"	1⅛"	1⅛"	⅜"	⅝"	130
07	WCD X 26	4¼"	2⅛"	1"	18¾"	⅜"	3⅝"	1⅛"	1⅛"	1"	1⅛"	150
08	WCD X 34	4¼"	2⅛"	1"	18¾"	⅜"	3⅝"	1⅛"	1⅛"	1⅛"	1⅛"	200

BASE ASSEMBLY DIMENSIONS

POST CODE	POST SECTION	A	B	C	D	E	F	G	H	J	BOLT DIAMETER	BOLT TORQUE FOOT POUNDS
02	WG X 9	9⅛"	⅜"	4"	11½"	9⅛"	⅜"	4"	1"	⅜"	⅝"	28
03	WG X 12	12⅛"	⅜"	4"	11½"	9⅛"	⅜"	4"	1"	⅜"	⅝"	28
04	WB X 15	11"	⅜"	4"	11½"	9⅛"	⅜"	4"	1½"	⅜"	⅝"	28
05	WCD X 19	13"	⅜"	4"	11½"	9⅛"	1"	4"	1½"	⅜"	⅝"	28
06	WCD X 22	13"	1"	4½"	11½"	9⅛"	1"	4"	1½"	⅜"	⅜"	46
07	WCD X 26	13"	1"	4½"	11½"	9⅛"	1"	4"	2½"	⅜"	⅜"	46
08	WCD X 34	17"	1"	4½"	11½"	9⅛"	1"	4"	2½"	⅜"	1"	61

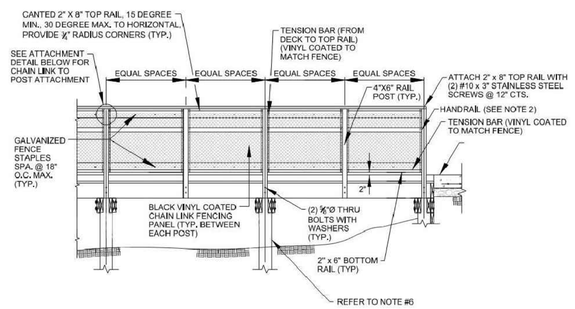
ERRATA 1 EFF. 05/05/2020 ISSUED WITH EB 20-014

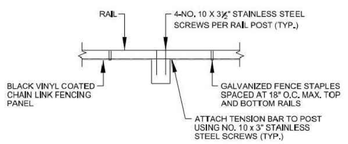
NEW YORK STATE OF OPPORTUNITY. Department of Transportation

U.S. CUSTOMARY STANDARD SHEET

BI-DIRECTIONAL BREAKAWAY BASE AND HINGE ASSEMBLY

APPROVED DECEMBER 24, 2019	ISSUED UNDER EB 19-052
/S/ RICHARD WILSON, P.E. DEPUTY CHIEF ENGINEER DESIGN	645-11



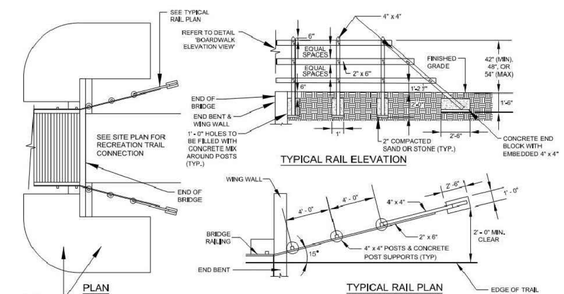


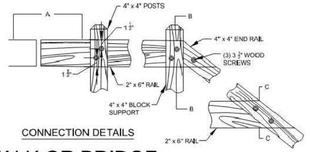
ATTACHMENT DETAIL

TYPICAL BOARDWALK RAILING ELEVATION VIEW

NOTES:

1. THE MINIMUM HEIGHT OF BRIDGE/BOARDWALK RAILING SHALL BE 42", UNLESS OTHERWISE NOTED. THE HEIGHT CAN RANGE BETWEEN 42", 48", OR 54".
2. A GRIP-ABLE, ROUND RAIL THAT WILL ACT AS BOTH A RUB RAIL AND HANDRAIL SHALL ONLY BE REQUIRED WHEN GRADES ARE GREATER THAN 5%, REFER TO DETAIL GW-30,04 FOR BRIDGE OR BOARDWALK RUB RAIL/HANDRAIL ATTACHMENT.
3. UTILIZE DETAIL GW-30,04 "BRIDGE OR BOARDWALK RUB RAIL/HANDRAIL ATTACHMENT" AS A TYPICAL RAIL ATTACHMENT DETAIL FOR HORIZONTAL RAILS TO RAIL POST CONNECTIONS.
4. BLACK VINYL COATED CHAIN LINK FENCE AND TENSION TIES SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
5. SPAN LENGTHS, JOIST SPACING, SIZING OF MEMBERS, REINFORCED CONCRETE DECK, AND OTHER DESIGN SPECIFICS SHALL BE DETERMINED BY THE ENGINEER ON A PROJECT SPECIFIC BASIS.
6. FOUNDATION SHALL CONSIST OF DRIVEN PILES, AUGURED PILES, HELICAL PIERS, OR OTHER APPLIED FOUNDATION SYSTEM, SPECIFICS SUCH AS NUMBER OF PILES, SPACING, AND HEIGHT SHALL BE DETERMINED BY ENGINEER ON A PROJECT SPECIFIC BASIS BASED ON REQUIRED LOADING.

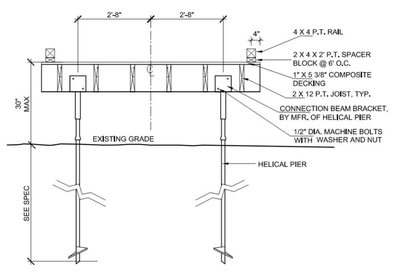




BOARDWALK OR BRIDGE TIMBER APPROACH RAILING

NOTES:

1. THE LENGTH OF THE APPROACH RAILING SHALL VARY DEPENDING ON SITE CONDITIONS.
2. THE LATERAL OFFSET OF THE RAILING SHOULD BE AT LEAST 1 FOOT FROM THE EDGE OF PATH. THE ENDS OF THE RAILING SHOULD BE FLARED AWAY FROM THE PATH EDGE.
3. THE APPROACH RAILING HEIGHT SHALL MATCH THE HEIGHT OF THE BRIDGE OR BOARDWALK RAILING, UNLESS OTHERWISE NOTED. THE RAILING HEIGHT WILL BE 42" (MIN), 48", OR 54" (MAX).
4. ALL CONCRETE FOOTERS AND END BLOCKS SHALL BE 3000 PSI MIN.



BOARDWALK SECTION

NOTES:

1. PROVIDE FULL EROSION AND SEDIMENTATION CONTROLS AROUND ALL CONSTRUCTION AREAS.
2. BOARDWALK ELEVATION VARIES.
3. CALCULATIONS FOR ALL PIER/PILE DESIGN DEPTHS BASED ON GEOTECHNICAL ANALYSIS TEST RESULTS. CONTRACTOR IS RESPONSIBLE FOR EMPLOYING AND PAYING FOR GEOTECHNICAL DESIGN SERVICES.

TOWN OF AMHERST APPROVAL BOX:

Carmina Wood Morris DPC
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Buffalo, New York 14203
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STATE OF NEW YORK CHRISTOPHER WOOD 076394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Rev. per Amherst T.S.B. 03/07/24 Comments	03/13/24
2	Rev. per ECDPW 03/28/24 Comments	04/02/24
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Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site Details

DRAWING NO.
C-106

Project no.: 21-011

Attachment: Z-2002-09E drawings. 082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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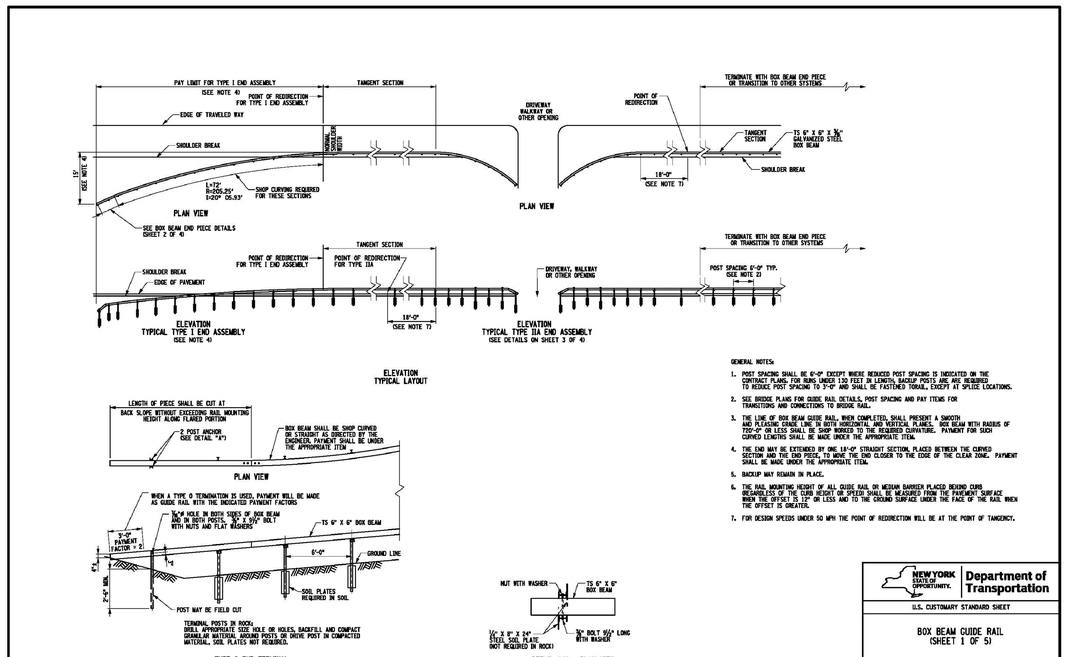
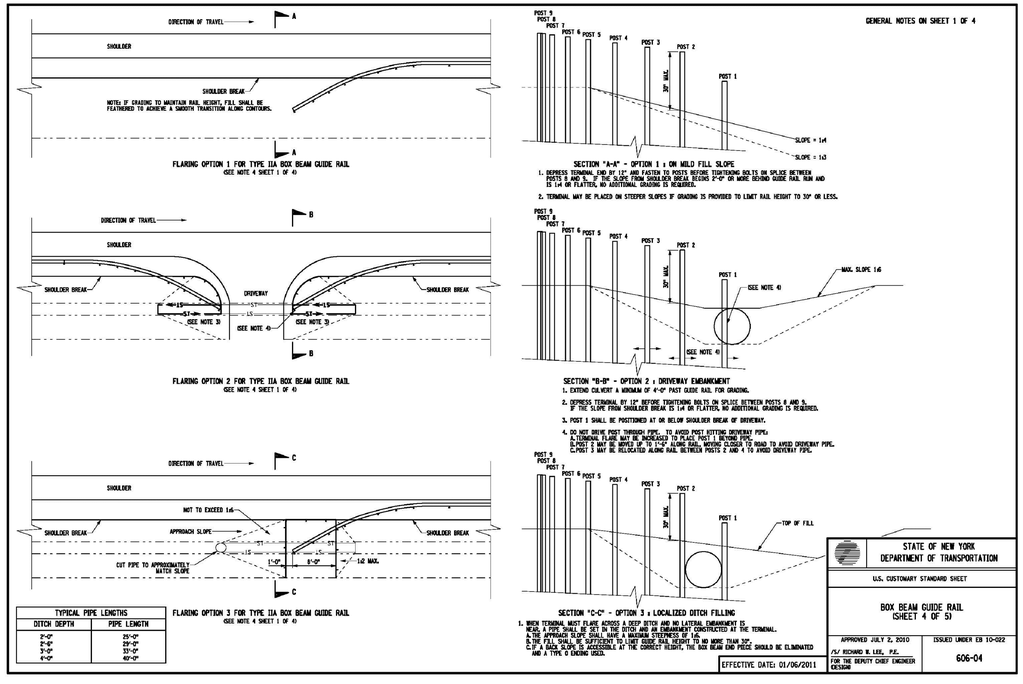


GENERAL NOTES:

1. POST SPACING SHALL BE 6'-0" EXCEPT WHERE REDUCED POST SPACING IS INDICATED ON THE CONTRACT PLANS. FOR RUNS UNDER 130 FEET IN LENGTH, BACKUP POSTS ARE ARE REQUIRED TO REDUCE POST SPACING TO 3'-0" AND SHALL BE FASTENED TOGAL, EXCEPT AT SPLICE LOCATIONS.
2. SEE BRIDGE PLANS FOR GUIDE RAIL DETAILS, POST SPACING AND PAY ITEMS FOR TRANSITIONS AND CONNECTIONS TO BRIDGE RAIL.
3. THE LINE OF BOX BEAM GUIDE RAIL, WHEN COMPLETED, SHALL PRESENT A SMOOTH LOG FLARE AND CURVE IN BOTH HORIZONTAL AND VERTICAL PLANES. BOX BEAM WITH BASRUS OF 720'-0" OR LESS SHALL BE SHOP BENDED TO THE REQUIRED CURVATURE. PAYMENT FOR SUCH CURVED LENGTHS SHALL BE MADE UNDER THE APPROPRIATE ITEM.
4. THE END MAY BE EXTENDED BY ONE 18'-0" STRAIGHT SECTION, PLACED BETWEEN THE CURVED SECTION AND THE END PIECE, TO MOVE THE END CLOSER TO THE EDGE OF THE CLEAR ZONE. PAYMENT SHALL BE MADE UNDER THE APPROPRIATE ITEM.
5. BACKUP MAY REMAIN IN PLACE.
6. THE RAIL MOUNTING HEIGHT OF ALL GUIDE RAIL OR MEDIAN BARRIER PLACED BEHIND CURB REGARDLESS OF THE CURB HEIGHT OR SPEED SHALL BE MEASURED FROM THE PAVEMENT SURFACE WHEN THE OFFSET IS 12" OR LESS AND TO THE GROUND SURFACE UNDER THE FACE OF THE RAIL WHEN THE OFFSET IS GREATER.
7. FOR DESIGN SPEEDS UNDER 50 MPH THE POINT OF REDIRECTION WILL BE AT THE POINT OF TANGENCY.

NEW YORK STATE OF OPPORTUNITY.	Department of Transportation
U.S. CUSTOMARY STANDARD SHEET	
BOX BEAM GUIDE RAIL (SHEET 1 OF 5)	
APPROVED JUNE 21, 2011 /S/ RICHARD M. LEE, P.E. DEPUTY CHIEF ENGINEER DESIGN	ISSUED UNDER EB 11-013 606-04
ERRATA 1 EFF. 01/01/2020 ISSUED WITH EB 19-041	

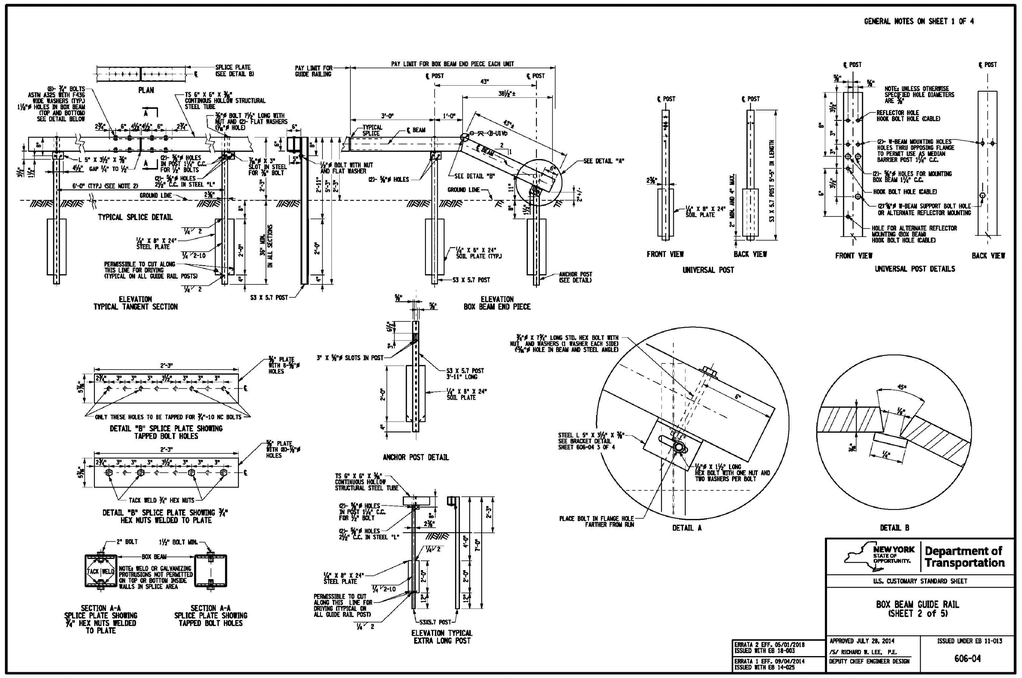


TYPICAL PIPE LENGTHS	
DITCH DEPTH	PIPE LENGTH
2'-0"	25'-0"
2'-6"	29'-0"
3'-0"	33'-0"
4'-0"	42'-0"

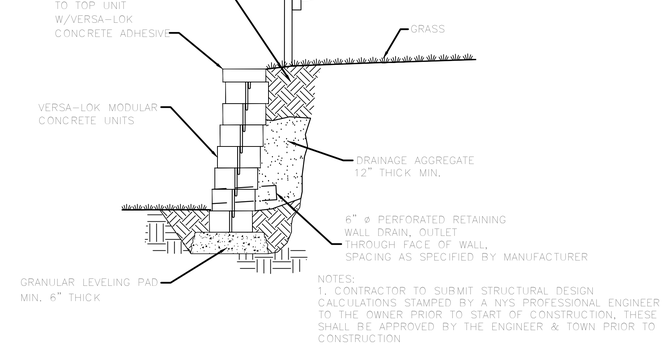
GENERAL NOTES ON SHEET 1 OF 4

NEW YORK STATE OF OPPORTUNITY.	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION
U.S. CUSTOMARY STANDARD SHEET	
BOX BEAM GUIDE RAIL (SHEET 4 OF 5)	
APPROVED JULY 2, 2010 /S/ RICHARD M. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER DESIGN	ISSUED UNDER EB 10-022 606-04
EFFECTIVE DATE: 01/06/2011	

GENERAL NOTES ON SHEET 1 OF 4



NEW YORK STATE OF OPPORTUNITY.	Department of Transportation
U.S. CUSTOMARY STANDARD SHEET	
BOX BEAM GUIDE RAIL (SHEET 2 of 5)	
APPROVED JULY 26, 2014 /S/ RICHARD M. LEE, P.E. DEPUTY CHIEF ENGINEER DESIGN	ISSUED UNDER EB 11-013 606-04
ERRATA 2 EFF. 05/01/2018 ISSUED WITH EB 18-002 ERRATA 1 EFF. 09/01/2014 ISSUED WITH EB 14-025	



TYPICAL SECTION-UNREINFORCED RETAINING WALL

SCALE: NONE

UN-REINFORCED WALLS SHALL BE USED UP TO A HEIGHT OF 4' ABOVE GRADE

RETAINING WALL - 16

TOWN OF AMHERST APPROVAL BOX:

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date
1	Plan rev. per 03/28/24 ECDPW comments	04/02/24
2	Plan rev. per 04/19/24 Passero comments	04/19/24
3	Plan rev. per 04/29/24 ECDPW comments	04/29/24

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Details

DRAWING NO.

C-107

Project no.: 21-011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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MATCHLINE A-A

CATCH BASIN
RIM: 574.64'
N INV: 573.44'

NOTE: TOWNHOMES TO HAVE A 6" STEP DOWN TO THE FRONT PORCH AND A 6" STEP DOWN TO THE REAR PATCIO

EXCEPTION L.–11278, P.–7124

N 02°04'18" E 145.04'

S 01°40'06" E 145.04'

S 64°16'46" W 35.20'

S 14°03'37" W 172.66'

S 20°43'37" W 322.92'

S 11°02'55" W

S 45°19'16" E 172.66'

S 67°53'17" W 50.93'

S 23°50'17" W 47.47'

S 39°43'51" W 50.80'

S 57°29'39" W 52.30'

S 36°36'25" W 105.28'

N 67°29'49" W 322.92'

3H:1V SLOPE (TYP.)

6" STEP (TYP.)

30' WIDE SPILLWAY WITH LIGHT STONE FILL RIP RAP, TOP OF STONE EL. 574.25

20' WIDE EMERGENCY SPILLWAY WITH LIGHT STONE FILL RIP RAP, TOP OF STONE EL. 575.80

30' WIDE SPILLWAY WITH LIGHT STONE FILL RIP RAP, TOP OF STONE EL. 575.75

END SECTION, INV 575.00

END SECTION, INV 575.00

END SECTION, INV 577.20

END SECTION INV 576.00

PERMANENT WATER EL. 575.00

PERMANENT WATER ELEVATION 575.00

AQUATIC BENCH EL. 574.50 (8' WIDE MIN.)

BIO. AREA #1

BIO. AREA #2

BIO. AREA #3

BOTTOM EL. 575.00

100' NYSDEC WETLAND BUFFER

NYSDEC WETLAND AREA

CONCRETE SIDEWALK

ASPHALT DRIVE

TOP OF HYDRANT ELEV: 577.69'

TOP OF HYDRANT ELEV: 577.57'

SLOPE SIDEWALK @ ¼"/FT TOWARDS ROAD (TYP.)

SEE SHEET 'C-201' FOR PROPOSED RECREATION TRAIL GRADING ALONG DODGE ROAD

NYSDEC WETLAND LIMITS, TYP.

NYSDEC WETLAND BUFFER IMPACT = 0.58 AC (25,453 SF) (HATCHED AREA AS SHOWN)

15"HDPE INV=573.72

CATCH BASIN
RIM: 574.42'
W INV: 569.90'
E INV: 569.97'

CATCH BASIN
RIM: 573.70'
W INV: 569.90'
E INV: 569.97'

12" CMP INV: 572.15'

12" C.M.P.

18" H.D.P.E.

MATCH EX. SIDEWALK EL. 574.9±

SWALE @ 1.2%

TOP OF BERM 582.50

TOP OF BERM 584.50

TOP OF BERM 582.50

SAN MH 1 RIM 577.17

SAN MH 2 RIM 579.00

SAN MH 3

SAN MH 4

SAN MH 5

SAN MH 6

SAN MH 6A

SAN MH 6B

SAN MH 7

SAN MH 7A

SAN MH 7B

SAN MH 8

SAN MH 9

SAN MH 10

SAN MH 11

SAN MH 12

SAN MH 12A

W.S.V.

HYD.

CATV.

OHW

MON. WELL

TEL BOX

GUY

TRANSF.

SWITCH GEAR

SWITCH GEAR TRANSF.

1ST FFE = 579.75

1ST FFE = 580.75

1ST FFE = 585.40

1ST FFE = 582.50

1ST FFE = 582.10

1ST FFE = 581.25

1ST FFE = 580.56

1ST FFE = 580.46

1ST FFE = 579.59

1ST FFE = 579.25

1ST FFE = 579.15

1ST FFE = 578.99

1ST FFE = 578.70

1ST FFE = 578.48

1ST FFE = 578.77

1ST FFE = 579.32

1ST FFE = 579.99

1ST FFE = 580.15

1ST FFE = 580.25

1ST FFE = 580.35

1ST FFE = 580.40

1ST FFE = 580.49

1ST FFE = 580.80

1ST FFE = 580.90

1ST FFE = 581.60

1ST FFE = 581.70

1ST FFE = 581.80

1ST FFE = 581.90

1ST FFE = 582.00

1ST FFE = 582.05

1ST FFE = 582.15

1ST FFE = 582.16

1ST FFE = 582.20

1ST FFE = 582.82

1ST FFE = 583.00

1ST FFE = 583.10

1ST FFE = 583.20

1ST FFE = 583.30

1ST FFE = 583.40

1ST FFE = 583.50

1ST FFE = 583.60

1ST FFE = 583.70

1ST FFE = 583.80

1ST FFE = 583.90

1ST FFE =

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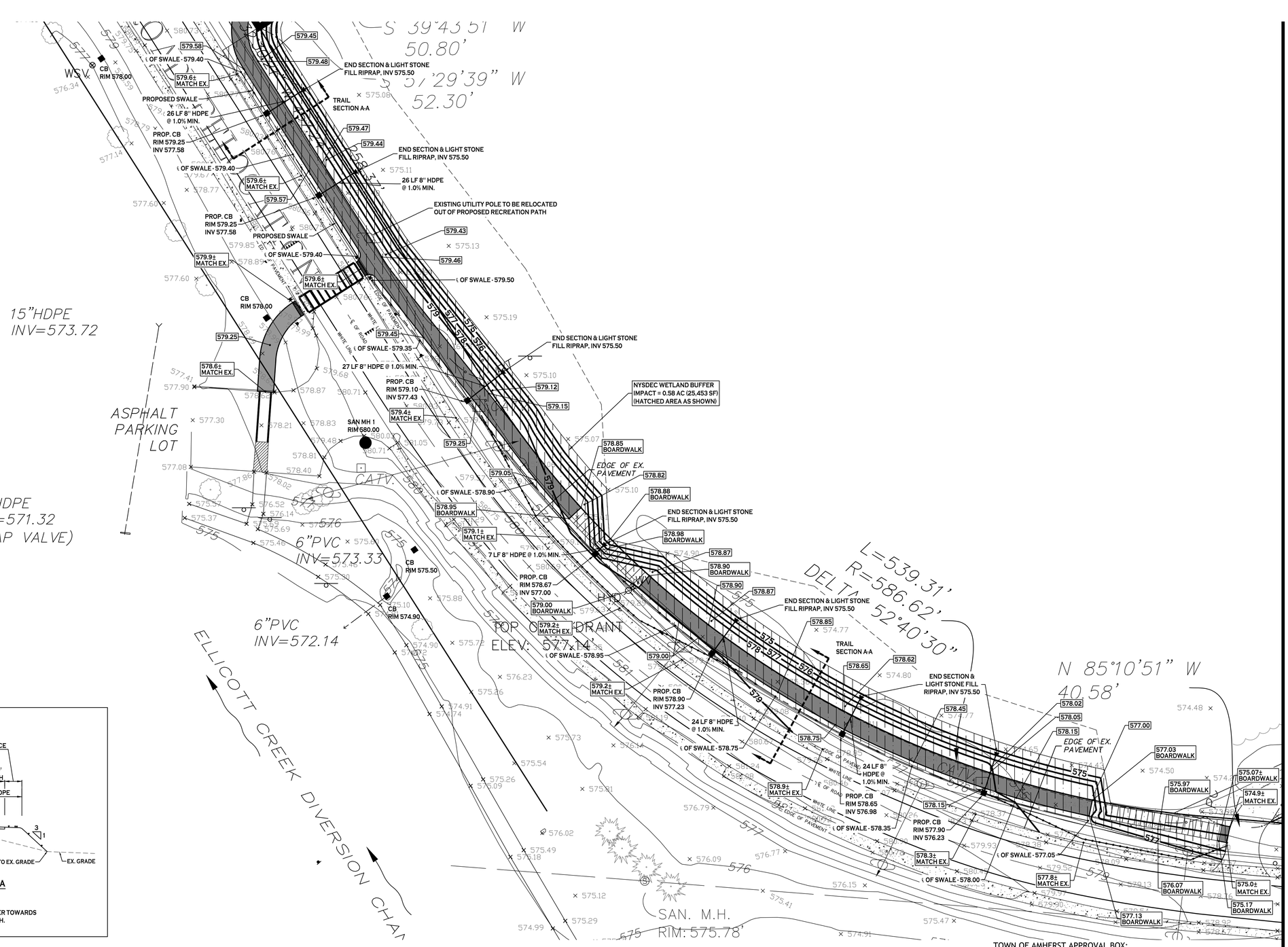

TYPICAL TRAIL SECTION A-A
N.T.S.

NOTE:
SLOPE PROPOSED AREA FROM EX. SHOULDER TOWARDS EX. WETLANDS @ 1.0%, INCLUDING BIKE PATH.

PROPOSED GRADING LEGEND

PROPOSED CONTOUR	101
PROPOSED SPOT ELEVATION	607.80
PROPOSED TOP/BOTTOM OF CURB ELEV.	TC 606.44 BC 605.94
PROPOSED CATCH BASIN	CB
PAVEMENT/GROUND SLOPE	
PROPOSED YARD DRAIN	YD
PROPOSED MANHOLE	MH

SITE PLAN
SCALE: 1"=30'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

30' 30 0 30 60Ft.

TOWN OF AMHERST APPROVAL BOX:

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F 716.842.0263

STATE OF NEW YORK
R. CHRISTOPHER WOOD
076304
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Rev. per ECDPW 03/28/24 Comments	04/02/24

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Grading Plan - Recreation Trail

DRAWING NO.
C-201

Project no.: 21-011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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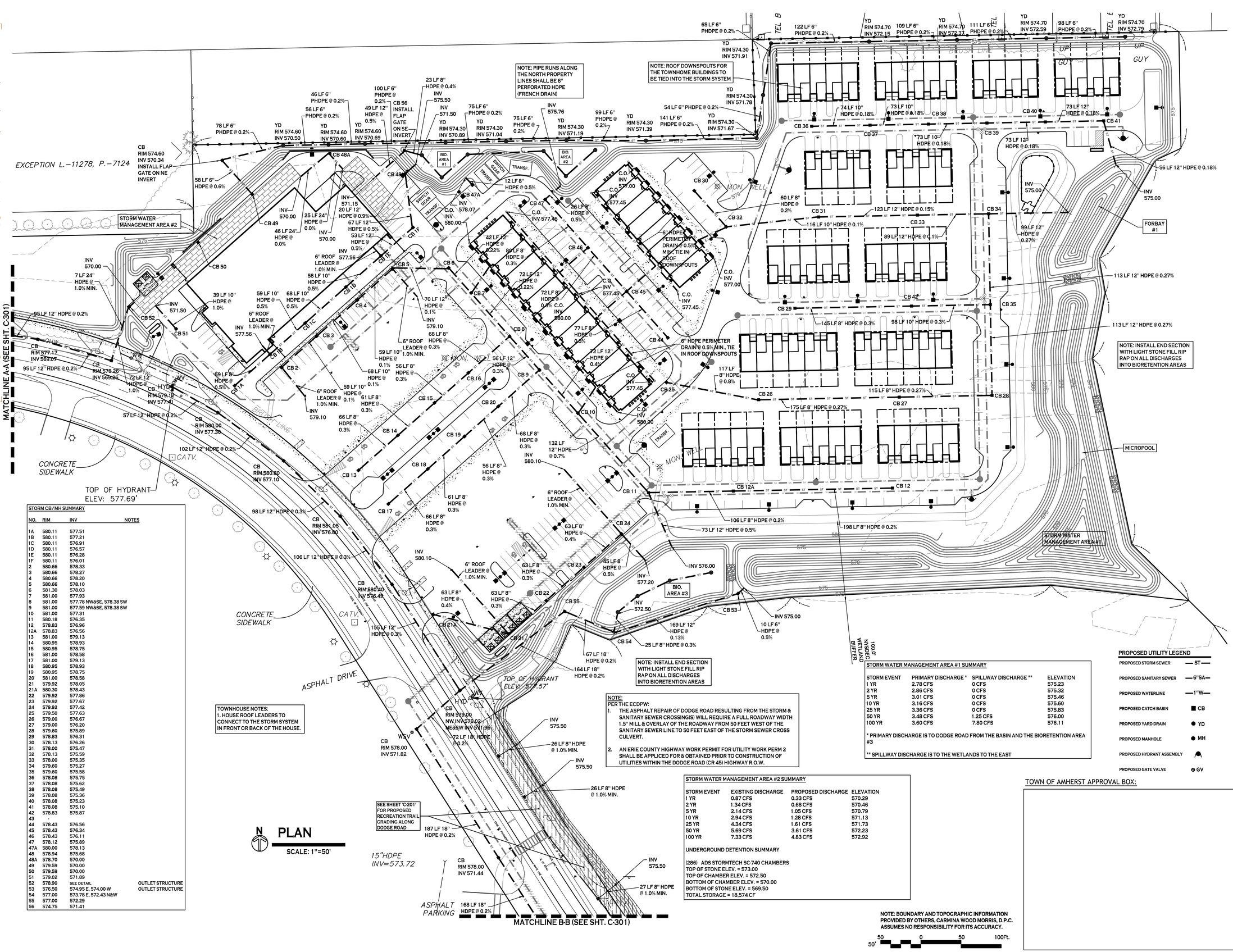

STORM CB/MH SUMMARY			
NO.	RIM	INV	NOTES
1A	580.11	577.51	
1B	580.11	577.21	
1C	580.11	576.91	
1D	580.11	576.57	
1E	580.11	576.28	
1F	580.11	576.01	
2	580.66	578.33	
3	580.66	578.27	
4	580.66	578.20	
5	580.66	578.10	
6	581.30	578.03	
7	581.00	577.93	
8	581.00	577.78 NW&SE, 578.38 SW	
9	581.00	577.59 NW&SE, 578.38 SW	
10	581.00	577.31	
11	580.18	576.35	
12	578.83	576.96	
12A	578.83	576.56	
13	581.00	579.13	
14	580.95	578.93	
15	580.95	578.75	
16	581.00	578.58	
17	581.00	579.13	
18	580.95	578.93	
19	580.95	578.75	
20	581.00	578.58	
21	579.92	578.05	
21A	580.30	578.43	
22	579.92	577.86	
23	579.92	577.67	
24	579.92	577.42	
25	579.50	577.63	
26	579.00	576.67	
27	579.00	576.20	
28	579.60	575.89	
29	578.83	576.31	
30	578.13	576.26	
31	578.00	575.47	
32	578.13	575.59	
33	578.00	575.35	
34	579.60	575.27	
35	579.60	575.58	
36	578.08	575.75	
37	578.08	575.62	
38	578.08	575.49	
39	578.08	575.36	
40	578.08	575.23	
41	578.08	575.10	
42	578.83	575.87	
43	-		
44	578.43	576.56	
45	578.43	576.34	
46	578.43	576.11	
47	578.12	575.89	
47A	580.00	578.13	
48	578.94	575.68	
48A	578.70	570.00	
49	579.59	570.00	
50	579.59	570.00	
51	579.02	571.89	
52	578.90	SEE DETAIL	OUTLET STRUCTURE
53	576.50	574.95 E, 574.00 W	OUTLET STRUCTURE
54	577.00	573.78 E, 572.43 N&W	
55	577.00	572.29	
56	574.75	571.41	

TOWNHOUSE NOTES:
1. HOUSE ROOF LEADERS TO CONNECT TO THE STORM SYSTEM IN FRONT OR BACK OF THE HOUSE.

NOTE:
PER THE ECDPW:
1. THE ASPHALT REPAIR OF DODGE ROAD RESULTING FROM THE STORM & SANITARY SEWER CROSSING(S) WILL REQUIRE A FULL ROADWAY WIDTH 1.5" MILL & OVERLAY OF THE ROADWAY FROM 50 FEET WEST OF THE SANITARY SEWER LINE TO 50 FEET EAST OF THE STORM SEWER CROSS CULVERT.
2. AN ERIE COUNTY HIGHWAY WORK PERMIT FOR UTILITY WORK PERM 2 SHALL BE APPLICED FOR & OBTAINED PRIOR TO CONSTRUCTION OF UTILITIES WITHIN THE DODGE ROAD (CR 45) HIGHWAY R.O.W.

STORM WATER MANAGEMENT AREA #1 SUMMARY

STORM EVENT	PRIMARY DISCHARGE *	SPILLWAY DISCHARGE **	ELEVATION
1 YR	2.78 CFS	0 CFS	575.23
2 YR	2.86 CFS	0 CFS	575.32
5 YR	3.01 CFS	0 CFS	575.46
10 YR	3.16 CFS	0 CFS	575.60
25 YR	3.36 CFS	0 CFS	575.83
50 YR	3.48 CFS	1.25 CFS	576.00
100 YR	3.60 CFS	7.80 CFS	576.11

* PRIMARY DISCHARGE IS TO DODGE ROAD FROM THE BASIN AND THE BIORETENTION AREA #3

** SPILLWAY DISCHARGE IS TO THE WETLANDS TO THE EAST

STORM WATER MANAGEMENT AREA #2 SUMMARY

STORM EVENT	EXISTING DISCHARGE	PROPOSED DISCHARGE	ELEVATION
1 YR	0.87 CFS	0.33 CFS	570.29
2 YR	1.34 CFS	0.68 CFS	570.46
5 YR	2.14 CFS	1.05 CFS	570.79
10 YR	2.94 CFS	1.28 CFS	571.13
25 YR	4.34 CFS	1.61 CFS	571.73
50 YR	5.69 CFS	3.61 CFS	572.23
100 YR	7.33 CFS	4.83 CFS	572.92

UNDERGROUND DETENTION SUMMARY

(286) ADS STORMTECH SC-740 CHAMBERS
TOP OF STONE ELEV. = 573.00
TOP OF CHAMBER ELEV. = 572.50
BOTTOM OF CHAMBER ELEV. = 570.00
BOTTOM OF STONE ELEV. = 569.50
TOTAL STORAGE = 18,574 CF

PROPOSED UTILITY LEGEND

PROPOSED STORM SEWER	ST
PROPOSED SANITARY SEWER	6"SA
PROPOSED WATERLINE	1"W
PROPOSED CATCH BASIN	CB
PROPOSED YARD DRAIN	YD
PROPOSED MANHOLE	MH
PROPOSED HYDRANT ASSEMBLY	
PROPOSED GATE VALVE	GV

TOWN OF AMHERST APPROVAL BOX:

N

PLAN

SCALE: 1"=50'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

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STATE OF NEW YORK · CHRISTOPHER ROSS · LICENSED PROFESSIONAL ENGINEER · 087634

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Storm Drainage Plan

DRAWING NO.

C-300

Project no.: 21-011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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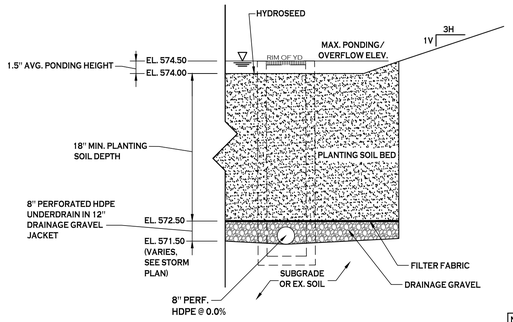
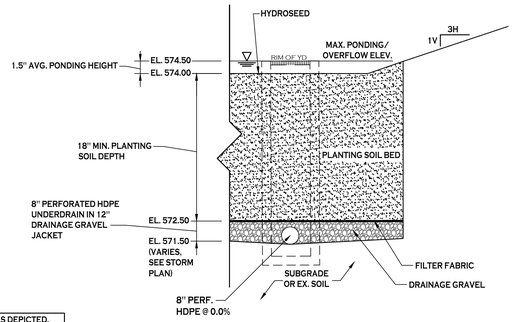
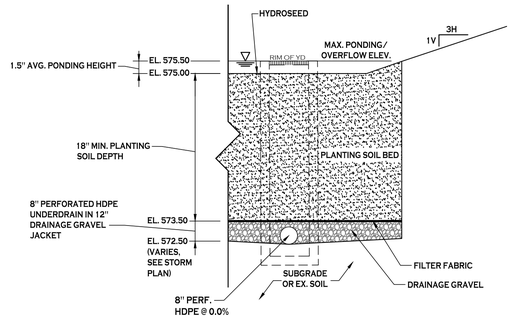


BIORETENTION AREA #1



BIORETENTION AREA #2

NOTE: AS DEPICTED, YARD DRAIN RIM ELEVATIONS ARE TO BE SET 6" ABOVE PROPOSED GRADE IN BIORETENTION AREAS.



BIORETENTION AREA #3

NOTES:
1. FILTER FABRIC TO BE NON-WOVEN CLASS 'C', MIRAFI 180-N OR APPROVED EQUIVALENT
2. MULCH TO BE SHREDDED HARDWOOD, AGED 12 MONTHS MIN.
3. DRAINAGE GRAVEL TO MEET AASHTO M-43. NO.67, SIZE 0.25" TO 0.75"
4. CONTRACTOR TO PROVIDE PLANTING SOIL SUBMITTAL SPECIFICATION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

NOTE: PLANTING SOIL SHALL BE LOAM/SAND MIX CONTAINING A MINIMUM OF 35 TO 60% SAND BY VOLUME AND LESS THAN 25% CLAY. SOIL SHOULD FALL WITHIN USCS TYPES SM OR ML WITH PERMEABILITY OF AT LEAST 0.5 FEET PER DAY. SOIL SHOULD BE FREE FROM STONES, STUMPS, ROOTS OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN LIFTS OF 12" TO 18", LOOSELY COMPACTED.

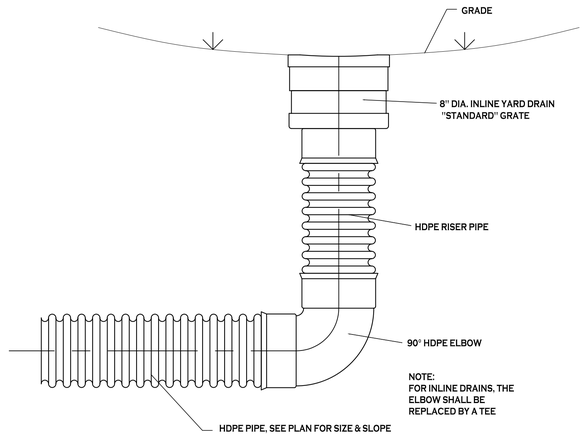
CHARACTERISTICS SHALL BE:
PH RANGE: 5.2 - 7.00
ORGANIC MATTER: 1.5 - 4.0%
MAGNESIUM: 35 LBS PER ACRE MIN.
PHOSPHORUS: 75 LBS PER ACRE MIN.
POTASSIUM: 85 LBS PER ACRE MIN.
SOLUBLE SALTS: 500 PPM
CLAY: 10 TO 25%
SILT: 30 TO 55%
SAND: 35 TO 60%

BIO-RETENTION AREA SEEDING SPEC (NORTHEAST WETLAND GRASS SEED MIX):

SEED MIXTURE	VARIETY	PERCENT BY NO. OF SEEDS
CREEPING BENTGRASS	AGROSTIS STOLONIFERA	63.0
ROUGH BLUEGRASS	POA TRIVIALIS	17.0
MEADOW FOXTAIL	ALOPECURUS ARUNDINACEUS	11.0
ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	4.5
DEERTONGUE	PANICUM CLANDESTINUM	4.5

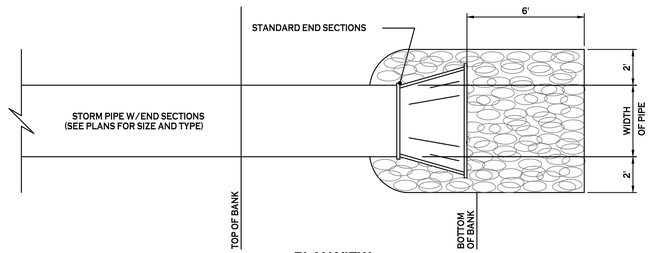
BIORETENTION AREA - TYPICAL SECTIONS

NOT TO SCALE

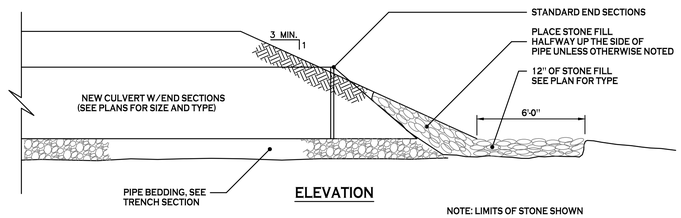


NOTE:
SEE TYPICAL TRENCH SECTION FOR BEDDING REQUIREMENTS

TYPICAL YARD DRAIN DETAIL



PLAN VIEW

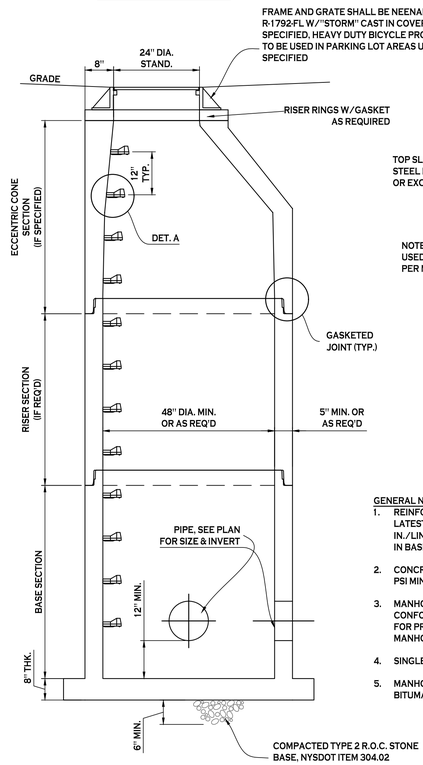


ELEVATION

NOTE: LIMITS OF STONE SHOWN ARE MINIMUMS, PLAN MAY INDICATE GREATER LIMITS

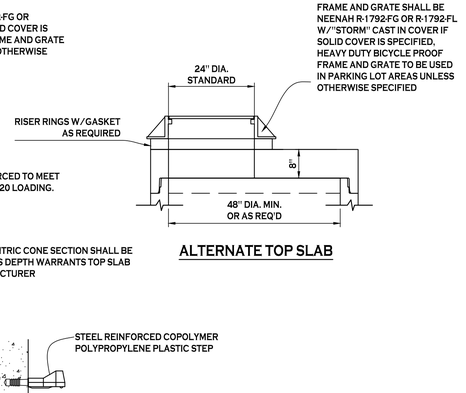
TYPICAL PIPE OUTLET W/ END SECTION & RIP RAP

NOT TO SCALE



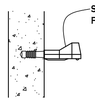
TYPICAL STORM MANHOLE DETAIL

NOT TO SCALE



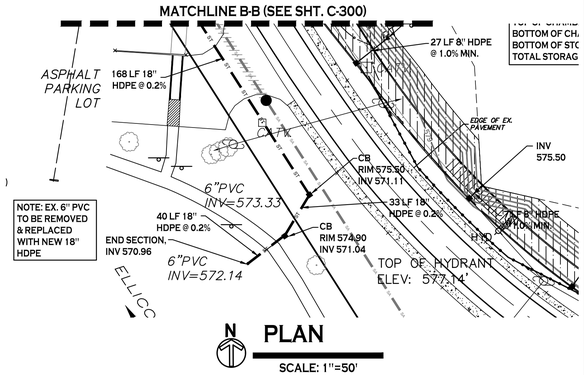
ALTERNATE TOP SLAB

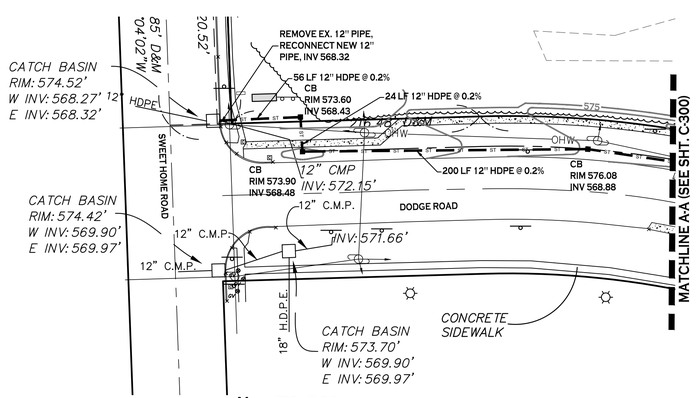
NOTE: ECCENTRIC CONE SECTION SHALL BE USED UNLESS DEPTH WARRANTS TOP SLAB PER MANUFACTURER



DETAIL A

GENERAL NOTES:
1. REINFORCED STEEL TO CONFORM TO LATEST A.S.T.M. A185 SPEC. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN. (BOTH WAYS) IN BASE SLAB.
2. CONCRETE COMPRESSIVE STRENGTH - 4000 PSI MINIMUM.
3. MANHOLE DESIGN SPECIFICATIONS TO CONFORM TO LATEST A.S.T.M. C478 SPEC. FOR PRE-CAST REINFORCED CON-CRETE MANHOLE SECTIONS.
4. SINGLE POUR MONOLITHIC BASE SECTION.
5. MANHOLE TO BE COATED ON OUTSIDE WITH BITUMASTIC SEALER.





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STATE OF NEW YORK
R. CHRISTOPHER WOOD
076364
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-301

Project no.: 21.011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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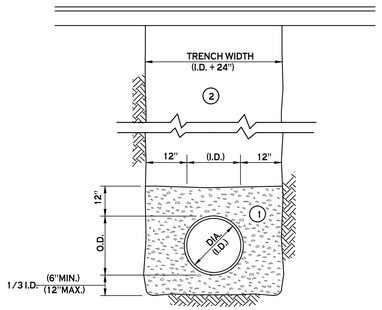


NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

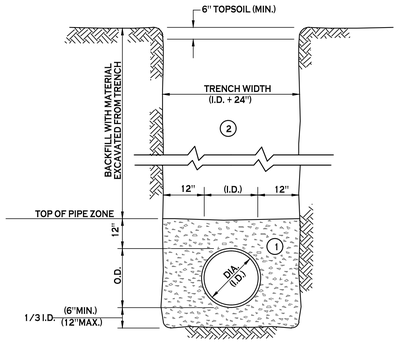
NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

(2) TYPE 2 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 2. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN TWO INCHES AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (2)

STORM SEWER TRENCH SECTION IN PAVED AREAS

NOT TO SCALE



NOTES:

A. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

B. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING.

C. TRENCH DETAILS ARE ONLY SHOWN FOR PURPOSES OF MATERIAL PLACEMENT AND MAXIMUM PAY LIMITS.

D. AN OSHA APPROVED MOVABLE PROTECTIVE TRENCH SHIELD SHALL BE USED IN ALL UNSHEETED TRENCH AREAS.

MATERIALS

PIPE BEDDING MATERIAL (NYSDOT 1985 EDITION)

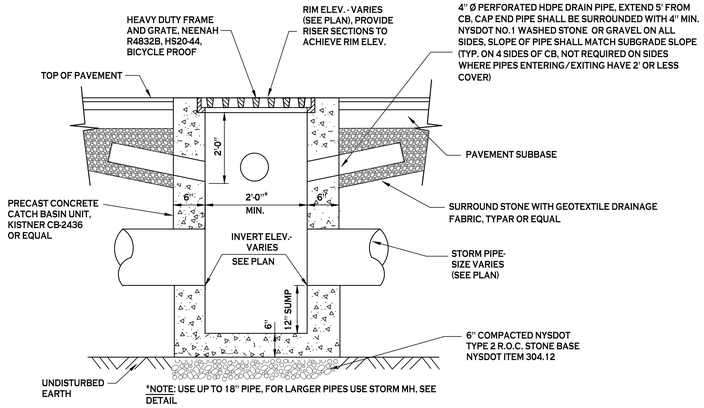
(1) NO. 1 CRUSHED STONE WITH A GRADATION CONFORMING WITH NYSDOT SECTION 703-02. THE MATERIAL SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN ONE INCH AND HAVING A MAXIMUM GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. THE BEDDING SHALL BE COMPACTED IN 6" LIFTS WITH EQUIPMENT ACCEPTABLE TO THE PIPE MANUFACTURER.

NO SLAG SHALL BE ALLOWED FOR MATERIAL (1)

(2) BACKFILL MATERIAL SHALL BE NATIVE SOIL CONTAINING NO UNSUITABLE MATERIAL COMPACTED IN 6" LIFTS.

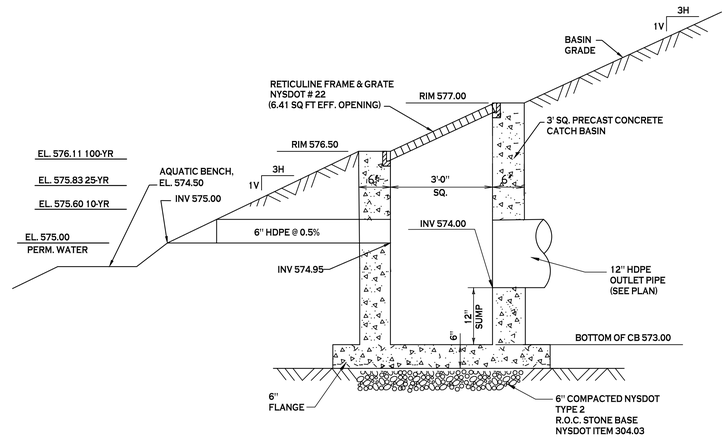
STORM SEWER TRENCH SECTION IN UNPAVED AREAS

NOT TO SCALE



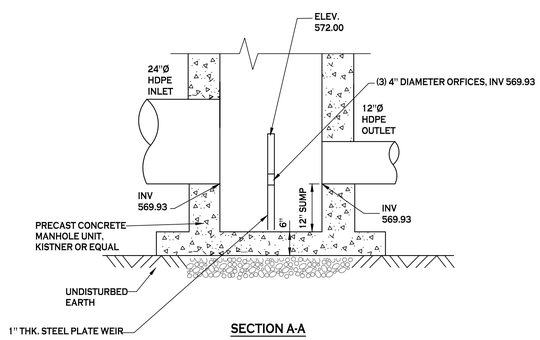
TYPICAL PRECAST CATCH BASIN

NOT TO SCALE

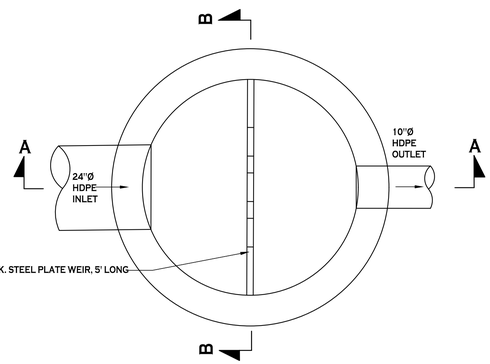


DETENTION BASIN OUTLET STRUCTURE - CB 53

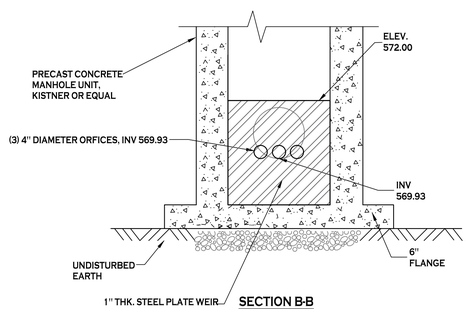
N.T.S.



SECTION A-A



PLAN



SECTION B-B

NOTES:
1. FASTEN STEEL PLATE TO CB WALL WITH ANGLE CLIPS AND BOLTS
2. STEEL PLATE, ANGLE CLIPS, AND BOLTS TO BE HOT DIPPED GALVANIZED

*NOTE: USE 5'-0" I.D. MANHOLE

OUTLET CONTROL STRUCTURE - CB 52

NOT TO SCALE

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STATE OF NEW YORK
CHRISTOPHER WOOD
LICENSED
076394
PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Storm Drainage Details

DRAWING NO.

C-302

Project no.: 21-011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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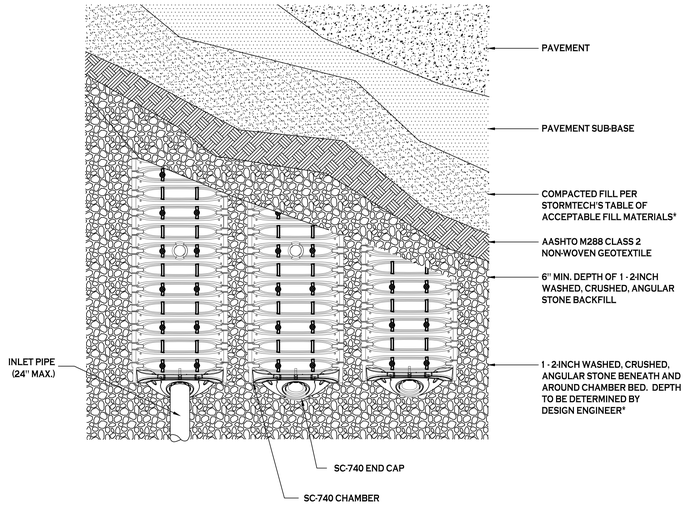
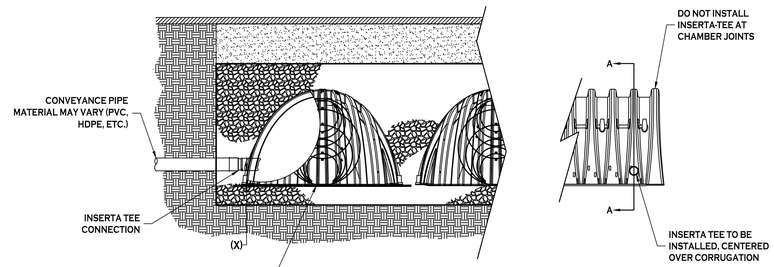


STORMTECH SC-740 CHAMBER SYSTEM
PLAN VIEW DETAIL

NOT TO SCALE

*SEE STORMTECH'S DESIGN MANUAL



SECTION A-A SIDE VIEW

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 MM)	4" (100 MM)
SC-740	10" (250 MM)	4" (100 MM)
DC-780	10" (250 MM)	4" (100 MM)
MC-3500	12" (300 MM)	6" (150 MM)
MC-4500	12" (300 MM)	8" (200 MM)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

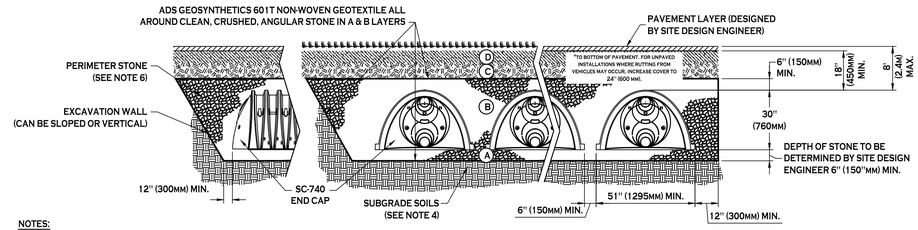
INSERTA TEE DETAIL

NOT TO SCALE

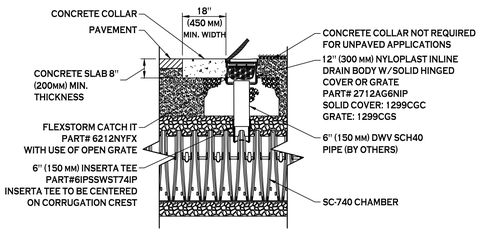
ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

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

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 MM) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



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



SC-740 6" INSPECTION PORT DETAIL

NOT TO SCALE

INSPECTION AND MAINTENANCE
STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
A. INSPECTION PORTS (IF PRESENT)
A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
B. ALL ISOLATOR ROWS
B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 M) OR MORE IS PREFERRED
B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES:
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

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STATE OF NEW YORK
R. CHRISTOPHER WOOD
076394
LICENSED PROFESSIONAL ENGINEER

REVISIONS:
No. Description Date

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: 2/24/21
Scale: As Noted

DRAWING NAME:
Storm Drainage Details

DRAWING NO.
C-303

Project no.: 21.011

Attachment: 2-2002-09E_drawings_082724 (29166 : 2-2002-09E, 50 Dodge Rd. (Portion))

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PROPOSED UTILITY LEGEND

PROPOSED STORM SEWER	ST
PROPOSED SANITARY SEWER	6"SA
PROPOSED WATERLINE	1"W
PROPOSED CATCH BASIN	CB
PROPOSED YARD DRAIN	YD
PROPOSED MANHOLE	MH
PROPOSED HYDRANT ASSEMBLY	
PROPOSED GATE VALVE	GV

TION L.–11278, P.–7124

NOTE: WATER & SEWER SERVICE SHALL ENTER/EXIT OUT THE REAR OF THESE UNITS

238 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

183 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

8" AWWA C-900 PVC PRIVATE WATER MAIN

241 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

SEE NOTE FOR WATER AND SEWER SERVICEE TO TOWNHOME BUILDING

INSTALL FITTINGS AND BLOCKING (TYP.)

298 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

209 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

158 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

204 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

204 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN@ 0.4%

268 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

197 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

132 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

184 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

65 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

202 LF 8" SDR-35 PVC PRIVATE SANITARY MAIN @ 0.4%

342 LF 8" SDR-35 PVC PUBLIC SANITARY MAIN @ 0.4%

379 LF 8" SDR-35 PVC PUBLIC SANITARY MAIN @ 0.4%

8" AWWA C-900 PVC PRIVATE WATER MAIN

8" AWWA C-900 PVC PRIVATE WATER MAIN

8" AWWA C-900 PVC PRIVATE WATER MAIN

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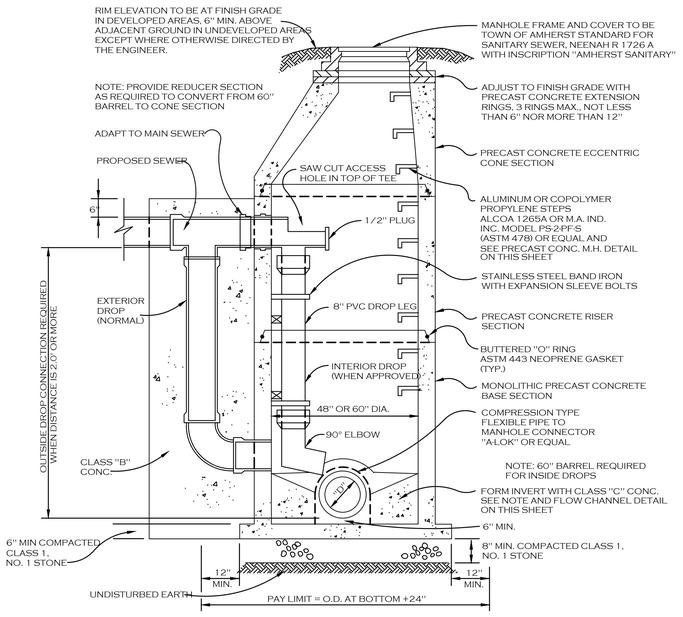
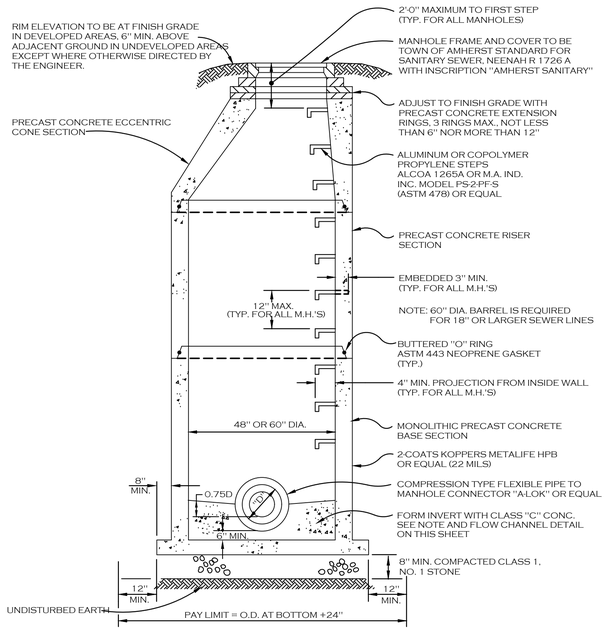
NOTIFY UNITED UNDERGROUND LOCATING SERVICE (U.U.L.S.) 72 HOURS BEFORE STARTING THE JOB

NOTIFY SUN OIL PIPELINE CORPORATION 72 HOURS BEFORE EXCAVATING (SEE DRAWING NO. 18)

PRECAST CONCRETE DROP MANHOLE

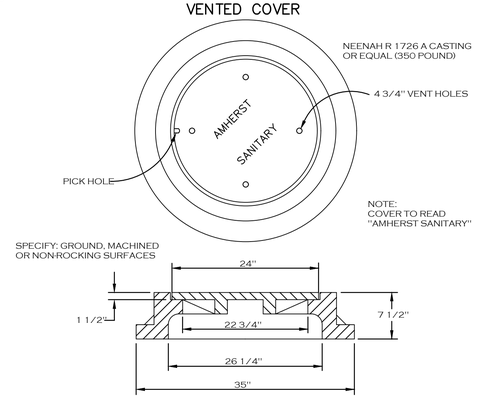


PRECAST CONCRETE MANHOLE



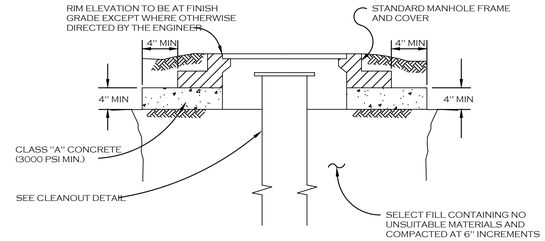
STANDARD MANHOLE FRAME AND COVER

VENTED COVER



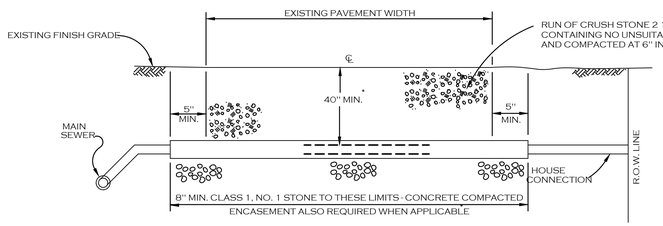
CLEANOUT WITH STANDARD MANHOLE FRAME AND COVER

(TO BE USED IN LOCATIONS ONLY AS APPROVED BY TOWN ENGINEER)



NOTE:
CLEANOUT NOT TO BE INSTALLED WHEN DISTANCE FROM M.H. EXCEEDS 150

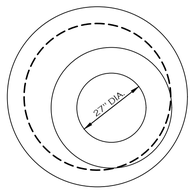
SANITARY TYPICAL PAVEMENT CROSSING FOR HOUSE CONNECTION

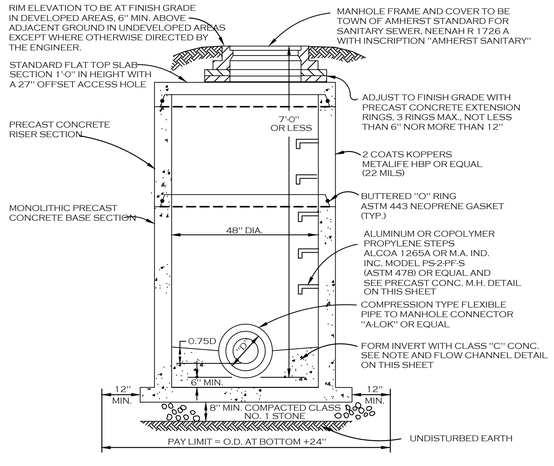


WHEN DEPTH FROM TOP OF HOUSE CONNECTION PIPE TO SURFACE IS LESS THAN 6.0 FEET, A CONCRETE ENCASEMENT WILL BE REQUIRED TO THE LIMITS SHOWN (SEE WATER CROSSING DETAIL SAN. SEWERS DWG. #4 - PG. #2 OF 4)

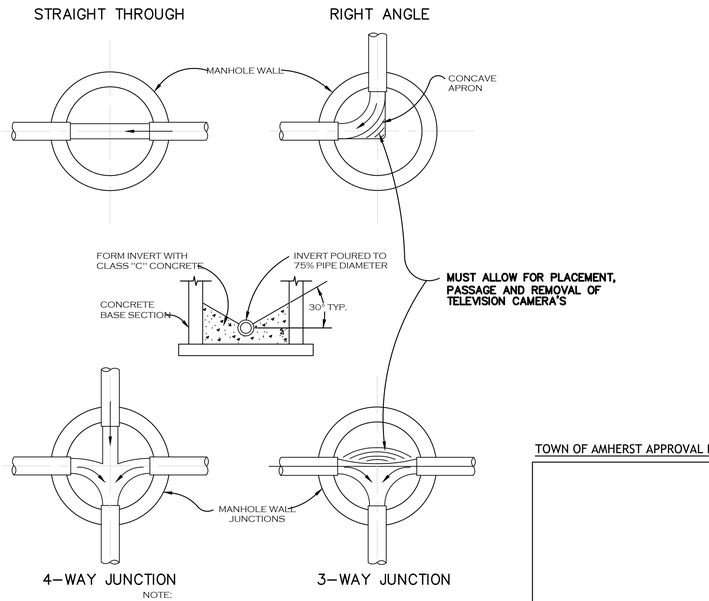
FLAT TOP MANHOLE ASSEMBLY

NOTE:
TO BE USED WHEN LOWEST INVERT TO RIM MEASUREMENT IS 7'-0" OR LESS





FLOW CHANNEL DETAIL SANITARY SEWERS



NOTE:
FLOW CHANNELS MUST ALLOW PLACEMENT, REMOVAL AND PASSAGE OF T.V. CAMERAS. THE CAMERA DIMENSIONS ARE APPROXIMATELY 26" LONG x 6 1/2" SQUARE. A BLOCK OF WOOD OF THESE DIMENSIONS MAY BE USED TO SIMULATE THE SIZE OF THE CAMERA. THIS WILL SIMPLIFY THE FORMATION OF FLOW CHANNELS AND INVERTS.

DEPTH OF ALL CHANNELS TO BE 75% OF PIPE DIAMETER.

FINISH ALL CHANNELS AT PROPER GRADE AS TO ALLOW SMOOTH & UN-OBSTRUCTED FLOW ALL INVERTS TO BE FLUSH WITH THE INSIDES.

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STATE OF NEW YORK · CHRISTOPHER WOOD · 076364 · LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/24/21
Drawn by: 12/1/21
Scale: As Noted

DRAWING NAME:
Sanitary Sewer Details

DRAWING NO.
C-401

Project no.: 21-011

Attachment: Z-2002-09E drawings 082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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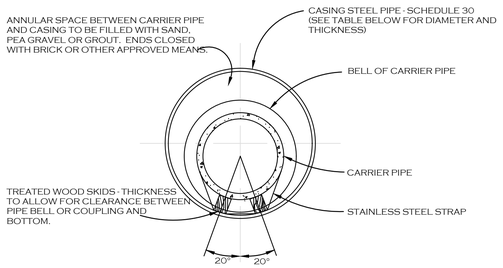
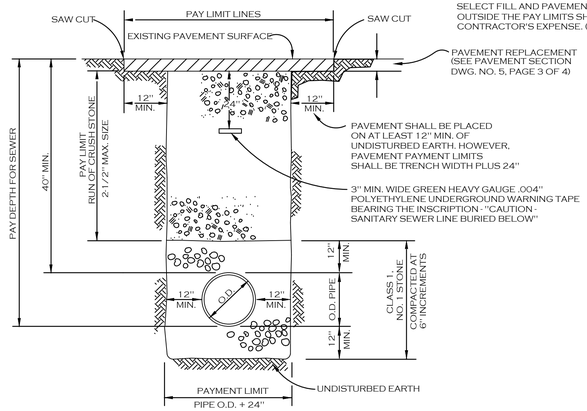
TOWN ROAD CROSSING BY JACKING AND BORING METHOD 8"–24" DIAMETER CARRIER PIPE



SCHEDULE FOR DIAMETER AND THICKNESS OF CASING PIPE

CARRIER PIPE DIAMETER	CASING PIPE DIAMETER	CASING PIPE WALL THICKNESS
8"	16" OR 20"	0.375
10"	20"	0.375
12"	24"	0.375
15"	27"	0.375 MIN.
18"	30"	0.375
21"	36"	0.469
24"	42"	0.469

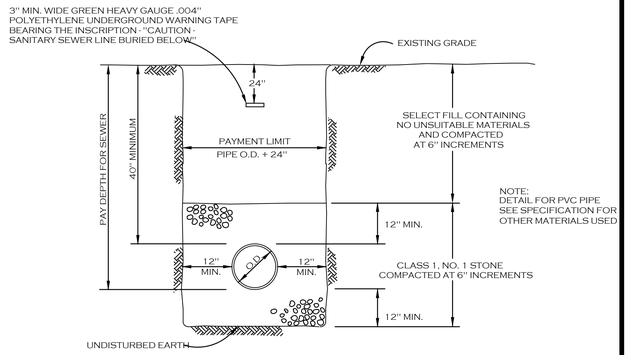
TYPICAL TRENCH DETAIL – TOWN ROAD CROSSING FOR MAIN SEWERS & HOUSE AND BUILDING CONNECTIONS



NOTE:
WHERE THE CONTRACTOR EXCAVATES BEYOND THE PAY LIMITS SHOWN; SELECT FILL AND PAVEMENT, SIDEWALK & DRIVEWAY REPLACEMENT OUTSIDE THE PAY LIMITS SHALL BE FURNISHED AND PLACED AT THE CONTRACTOR'S EXPENSE. (TYP.)

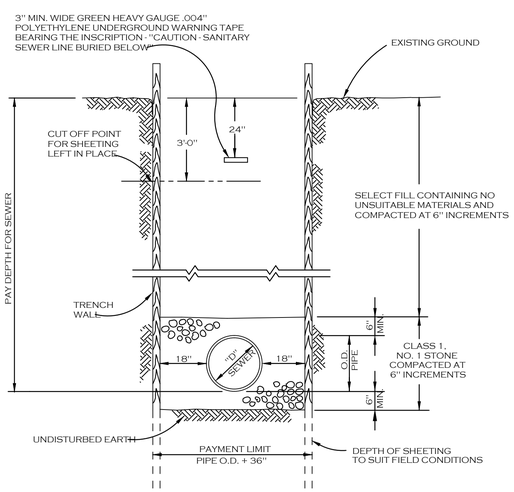
NOTE:
IF CONCRETE ENCASEMENT IS REQUIRED, IT SHALL BE INSTALLED IN PLACE OF (AND TO THE DIMENSIONS OF) THE PIPE BEDDING AND COVER TO 12" MIN. ABOVE AND BELOW THE PIPE (SEE WATER CROSSING DETAIL ON THIS SHEET)

TYPICAL EARTH TRENCH DETAIL UNPAVED AND UNTRAVELED AREAS

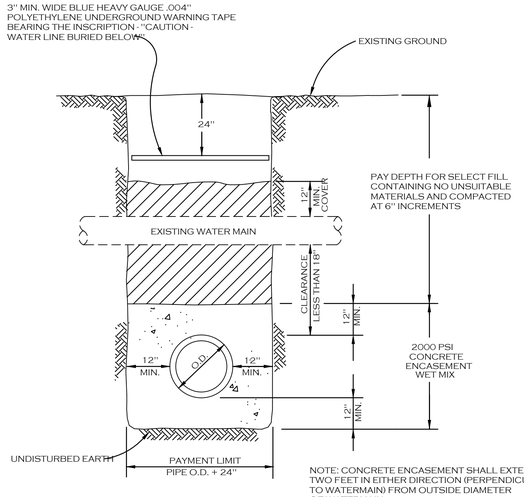


NOTE:
DETAIL FOR PVC PIPE SEE SPECIFICATION FOR OTHER MATERIALS USED

SHEETED TRENCH DETAIL

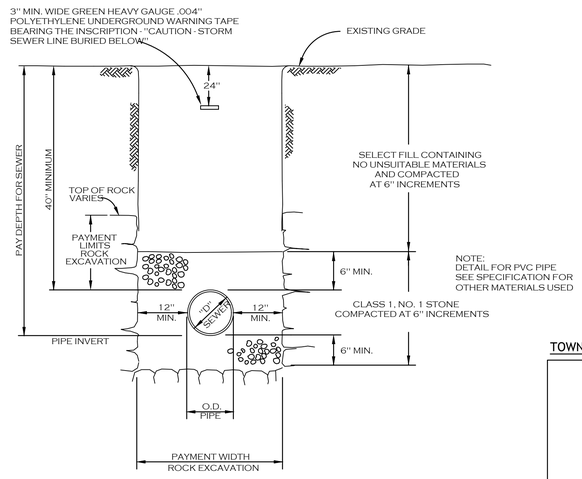


WATER CROSSING DETAIL CLEARANCE LESS THAN 18"



NOTE: CONCRETE ENCASEMENT SHALL EXTEND TWO FEET IN EITHER DIRECTION (PERPENDICULAR TO WATERMAIN) FROM OUTSIDE DIAMETER OF WATERMAIN.

TYPICAL ROCK TRENCH DETAIL



NOTE:
DETAIL FOR PVC PIPE SEE SPECIFICATION FOR OTHER MATERIALS USED

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STATE OF NEW YORK R. CHRISTOPHER ROSS LICENSED PROFESSIONAL ENGINEER 076394

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer Details

DRAWING NO.
C-402

Project no.: 21-011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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GENERAL NOTES:

01. THE CONTRACTOR SHALL COMPLY WITH THE TOWN OF AMHERST STANDARD DRAWINGS AND SPECIFICATIONS.

02. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE PROJECT ENGINEER AND THE TOWN OF AMHERST ENG. DEPT. OF ANY HAZARDOUS SUBSTANCE ENCOUNTERED DURING THE CONSTRUCTION OF THE WORK. HE SHALL AT HIS EXPENSE, CONFORM TO ALL LAWS, RULES, REGULATIONS AND DIRECTIONS AS PROMULGATED BY THE UNITED STATES DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, THE NEW YORK STATE DEPARTMENT OF HEALTH AND ANY SUCH LOCAL RULES, ORDINANCES AND LAWS WHEN ENCOUNTERING OR WORKING WITH ANY SUCH HAZARDOUS SUBSTANCE.

03. THE CONTRACTOR SHALL COMPLY IN ALL RESPECTS TO THE INDUSTRIAL CODE PART (RULE NO.) 53 RELATING TO CONSTRUCTION, EXCAVATION AND DEMOLITION OPERATIONS AT OR NEAR UNDERGROUND FACILITIES, AS ISSUED BY THE STATE OF NEW YORK DEPARTMENT OF LABOR, BOARD OF STANDARD AND APPEALS.

04. SINCE THE ERIE COUNTY WATER AUTHORITY OPERATES AND MAINTAINS THE EXISTING WATER LINES, THEY ARE TO BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF THE START OF CONSTRUCTION. ALL EXISTING VALVES ARE TO BE OPERATED BY THE ERIE COUNTY WATER AUTHORITY PERSONNEL.

05. THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AHEAD OF THE PIPE LAYING OPERATION, SO THAT, IF MINOR ADJUSTMENTS MUST BE MADE IN ELEVATION AND/OR ALIGNMENT DUE TO INTERFERENCE FROM THESE UTILITIES, SAID CHANGES CAN BE MADE IN ADVANCE OF THE WORK.

06. WHERE SUCH FACILITIES ARE UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER, HE SHALL CERTIFY TO THE ENGINEERING DEPARTMENT OF THE TOWN OF AMHERST THAT SAID FACILITIES AS CONSTRUCTED WERE SUPERVISED BY HIMSELF (HERSELF) AND THAT THE WORKS HAVE BEEN FULLY COMPLETED IN ACCORDANCE WITH THE APPROVED ENGINEERING REPORTS, PLANS, SPECIFICATIONS, CONTRACT DOCUMENTS AND ANY AND ALL ADDENDA TO SAME.

07. THE CONSTRUCTION OF THE FACILITIES SHALL BE UNDER THE SUPERVISION OF A PERSON OR FIRM QUALIFIED TO PRACTICE PROFESSIONAL ENGINEERING IN NEW YORK STATE UNDER THE EDUCATION LAW OF THE STATE, WHENEVER ENGINEERING SERVICES ARE REQUIRED BY SUCH LAW FOR SUCH PURPOSES.

08. A WRITTEN CERTIFICATE OF CONSTRUCTION COMPLIANCE, INCLUDING THE RESULTS OF HYDROSTATIC LEAKAGE TESTS, MADE BY THE PROFESSIONAL ENGINEER SUPERVISING THE CONSTRUCTION, SHALL BE SUBMITTED TO THE ERIE COUNTY DEPART. OF ENVIRONMENT PLANNING AND NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION WITHIN THIRTY (30) DAYS AFTER CONSTRUCTION COMPLETION.

09. UNSUITABLE MATERIALS SUCH AS FROZEN ORGANIC AND/OR VEGETABLE MATERIAL, DEBRIS, TREES, LUMBER, LARGE STONES OR CLODS (6.0" OR LARGER), MUCK, PEAT, ORGANIC SILT WILL NOT BE ACCEPTABLE FILL AND CERTAIN MAN-MADE DEPOSITS OF INDUSTRIAL WASTE, SLUDGE OR LANDFILL MAY ALSO BE DETERMINED AS UNSUITABLE HAZARDOUS MATERIAL.

10. THE COMPACTION OF ALL MATERIALS WILL OCCUR AT 6" INCREMENTS.

11. VERIFICATION OF ALL EXISTING EASEMENTS IS THE RESPONSIBILITY OF THE DESIGN ENGINEER AND THEY MUST BE SHOWN ALONG WITH ALL PROPOSED EASEMENTS ON PLAN DRAWINGS.

12. SHOULD A FLUID CONDITION BE ENCOUNTERED AT THE TRENCH BOTTOM, THE CONTRACTOR IS TO INSTALL ADDITIONAL STONE CRADLE AS ORDERED BY THE ENGINEER.

13. ALL PIPE CROSSING UNDER PAVED AREAS ARE TO BE BACKFILLED TO SUBGRADE WITH COMPACTED SELECT MATERIAL TO FIVE (5) FEET OUTSIDE THE PAVEMENT EDGES.

14. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A QUALIFIED TREE EXPERT TO REMOVE, WHERE NECESSARY, BRANCHES WHICH INTERFERE WITH THE CONSTRUCTION OPERATION, OR REPAIR TREES HAVING SUFFERED DAMAGE BY CONSTRUCTION ACTIVITIES. THE COST INVOLVED IN THE ABOVE IS TO BE INCLUDED IN THE VARIOUS ITEMS OF THE CONTRACT.

15. SEWERS SHALL BE LAID AT LEAST TEN (10) FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATERMAIN. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IN CASES WHERE IT IS NOT PRACTICAL TO MAINTAIN A TEN FOOT SEPARATION, THE APPROPRIATE REVIEWING AGENCY MAY ALLOW DEVIATION ON A CASE-BY-CASE BASIS, IF SUPPORTED BY DATA FROM THE DESIGN ENGINEER. SUCH DEVIATION MAY ALLOW INSTALLATION OF THE SEWER CLOSER TO A WATERMAIN, PROVIDED THAT THE WATERMAIN IS IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AND AT AN ELEVATION SO THE BOTTOM OF THE WATERMAIN IS AT LEAST 18" (46CM) ABOVE THE TOP OF THE SEWER.

16. SEWERS CROSSING WATERMAINS SHALL BE LAID TO PROVIDE MINIMUM VERTICAL DISTANCE OF 18" (46CM) BETWEEN THE OUTSIDE OF A WATERMAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHERE THE WATERMAIN IS EITHER ABOVE OR BELOW THE SEWER. THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATERMAIN JOINTS. WHERE A WATERMAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER, TO PREVENT DAMAGE TO THE WATERMAIN.

17. WHEN IT IS IMPOSSIBLE TO OBTAIN PROPER HORIZONTAL AND VERTICAL SEPARATION AS STIPULATED ABOVE, THE SEWER SHALL BE DESIGNED AND CONSTRUCTED EQUAL TO WATER PIPE AND SHALL BE PRESSURE TESTED AS TO ASSURE WATERTIGHTNESS PRIOR TO BACKFILLING.

18. THE PIPE SHALL BE P.V.C. SEWER PIPE CONFORMING TO THE LATEST REVISIONS OF ASTM DESIGNATION D-3034, SDR-35, INSTALLED IN ACCORDANCE WITH ASTM.

19. THE MANHOLE COVERS ARE TO BEAR THE INSCRIPTION "AMHERST SANITARY".

SANITARY SEWER TESTING METHODS

GENERAL NOTES

(A) LEAKAGE TESTS

01. THE TEST PERIOD WHEREIN THE MEASUREMENTS ARE TAKEN SHALL NOT BE LESS THAN 24 HOURS, REGARDLESS OF THE TEST METHOD USED.

02. THE TOTAL LEAKAGE OF ANY SECTION TESTED BY ANY TEST METHOD SHALL NOT EXCEED THE RATE OF 200 GALLONS PER MILE OF PIPE PER 24 HOURS PER INCH OF NOMINAL PIPE DIAMETER.

03. MANHOLES SHALL BE CONSIDERED AS SECTIONS OF 48" DIAMETER PIPE AND THE EQUIVALENT LEAKAGE ALLOWANCE SHALL BE COMPUTED PER NOTE 02 USING THE SUBMERGED HEIGHT OF MANHOLE AS THE LENGTH.

04. WHEN MANHOLES ARE TESTED SEPARATELY, ALL PIPE OPENINGS SHALL BE PLUGGED AND THE TEST PROCEDURES AND CRITERIA SHALL BE APPLIED IN THE SAME MANNER AS FOR TESTS INVOLVING ONLY THE PIPE OR A COMBINATION OF PIPE AND MANHOLES.

(B) INFILTRATION TEST CRITERIA FOR USE

01. THIS TEST METHOD MAY ONLY BE USED WHEN GROUND WATER LEVELS ARE AT LEAST TWO (2) FEET ABOVE THE TOP OF THE PIPE FOR THE ENTIRE LENGTH OF THE SECTION TO BE TESTED DURING THE ENTIRE PERIOD OF THE TESTS.

02. GROUND WATER LEVELS MAY BE MEASURED IN AN OPEN TRENCH OR IN STANDPIPES PREVIOUSLY PLACED IN BACKFILLED TRENCHES DURING BACKFILLING.

03. THE NUMBER OF STANDPIPES REQUIRED AND LOCATION OF THE SAME ARE TO BE AS ORDERED BY THE ENGINEER. STANDPIPES MAY BE OF ANY PIPE MATERIAL BUT MUST BE OF SUCH DIAMETER (2-1/2" MINIMUM) AS TO PERMIT THE INSERTION OF A RULE OR LEVEL ROD. CRUSHED STONE SHALL BE PLACED AROUND THE LOWER OPEN ENDS OF THE STANDPIPES.

04. STANDPIPES ARE TO BE REMOVED AT THE SATISFACTORY COMPLETION OF THE TESTS.

05. IF IN LIEU OF STANDPIPES, THE TRENCH IS TO BE LEFT OPEN FOR GROUND WATER OBSERVATION, THE LENGTH OF UNBACKFILLED TRENCH AT ANY ONE TIME MAY HAVE TO BE LIMITED FOR REASONS OF SAFETY.

(C) EXFILTRATION TEST CRITERIA FOR USE

01. THIS TEST CONSISTS OF FILLING THE PIPE WITH WATER TO PROVIDE A HEAD OF AT LEAST TWO (2) FEET ABOVE THE TOP OF THE PIPE OR ABOVE GROUND WATER WHICHEVER IS HIGHER AT THE HIGHEST POINT OF THE PIPE LINE UNDER TEST, AND THEN MEASURING THE LOSS OF WATER TO MAINTAIN THE ORIGINAL LEVEL.

02. IN THIS TEST THE PIPE LINE MUST BE FILLED WITH WATER AND ALLOWED TO REMAIN SO FILLED FOR AT LEAST 24 HOURS PRIOR TO TAKING MEASUREMENTS.

03. REGARDING GROUND WATER MEASUREMENTS: SEE NOTES 02 THROUGH 05 ABOVE.

04. REGARDING THE TEST STANDPIPE: THERE MUST BE SOME POSITIVE METHOD OF RELEASING ENTRAPPED AIR IN THE SEWER PRIOR TO TAKING MEASUREMENTS.

(D) DEFLECTION TEST FOR PVC SEWER PIPE

01. DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE GRAVITY SEWER PIPE. TESTS SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE FOR AT LEAST 30 DAYS.

02. NO PIPE SHALL EXCEED DEFLECTION OF 5%. DEFLECTION GAGE MAY BE BORROWED FROM THE TOWN ENGINEER FOR 8" AND 10" PIPE. THE DEFLECTION TEST MUST BE EXECUTED AFTER 30 DAYS OF PLACEMENT OF FINAL BACKFILL. THE TEST WILL ALSO BE DONE WITHOUT MECHANICAL PULLING DEVICES.

MANHOLE PLACEMENT AND MAINTENANCE
DURING CONSTRUCTION AND DEVELOPMENT

CONTRACTOR AND/OR DEVELOPERS SHALL CONSTRUCT ALL MANHOLE STRUCTURES IN ACCORDANCE WITH THE TOWN OF AMHERST STANDARD SPECIFICATIONS OR THE SPECIFICATIONS OF THE DESIGN ENGINEER WHEN REQUIRED BY THE TOWN.

ALL MANHOLES ARE TO BE DESIGNED AND FURNISHED WITH RIM ELEVATIONS AT FINAL FINISHED GRADES. THE CONTRACTOR, DEVELOPER, OR HOME BUILDER SHALL BE RESPONSIBLE FOR ALL CORRECTIONS, ADJUSTMENTS, AND MODIFICATIONS NEEDED FOR RAISING, LOWERING, OR REPLACING ANY AND ALL MANHOLES AS PROPOSED FOR THE FACILITY.

ALL AS-BUILT STATIONING, LINE AND GRADE IMPROVEMENTS, INVERT AND RIM ELEVATIONS, "Y" LOCATIONS, INSPECTION REPORTS, ROADWAY OR STREET NAMES, RIGHT-OF-WAY WIDTHS, AND EASEMENT LINES SHALL BE FURNISHED TO THE TOWN ON A SET OF MYLAR DRAWINGS PRIOR TO TAP-IN APPROVAL, PIP ACCEPTANCE, AND/OR RELEASE OF FINAL PAYMENT.

ALL MANHOLE STRUCTURES SHALL BE MADE ACCESSIBLE TO THE TOWN OF AMHERST TELEVISION/MAINTENANCE CREWS. THE CONTRACTOR AND/OR DEVELOPER SHALL PROVIDE A DRY, WELL COMPACTED, STABLE SURFACE FREE FROM SHOW AND OBSTRUCTIONS FOR SAFE AND OPEN ACCESS WITH TOWN VEHICLES. SHOULD THE CONTRACTOR AND/OR DEVELOPER WISH TV INSPECTIONS DURING WET WEATHER/WET SOFT SOIL CONDITIONS, HE SHALL PROVIDE ALL NECESSARY GRANULAR BACKFILL, DISTRIBUTED AND COMPACTED TO SUPPLY ACCESS TO EACH MANHOLE. THE CONTRACTOR AND/OR DEVELOPER SHALL BEAR ALL COSTS OF TOWING, DOWN TIME, CREW TIME, AND DAMAGE ALONG WITH RESTORATION, SHOULD SUCH ACCESSWAYS FAIL.

TOWN OF AMHERST APPROVAL BOX:

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F 716.842.0263

STATE OF NEW YORK
R. CHRISTOPHER WOOD
076394
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Sanitary Sewer General Notes

DRAWING NO.
C-403

Project no.: 21-011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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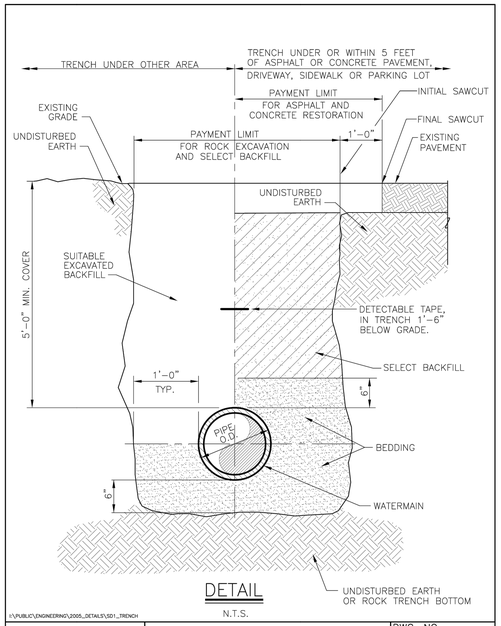
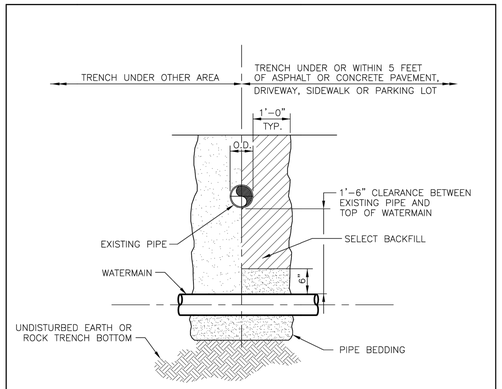


DETAIL
N.T.S.

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD1_TRENCH

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TRENCH THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD1	
		DATE 4/28/92	REVISED 10/05



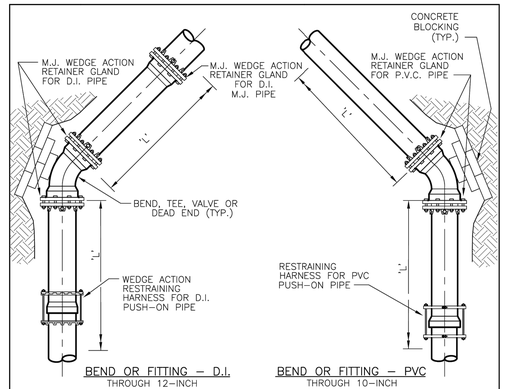
NOTES:

1. ALL EXISTING UTILITIES MUST BE SUPPORTED DURING CONSTRUCTION OF THE NEW WATERMAIN.
2. WHEN CROSSING A SEWERLINE WITH A NEW WATERMAIN, ONE FULL PIPE LENGTH (18 FT. MIN.) SHALL BE USED AT THE POINT OF CROSSING. THE WATERMAIN SHALL BE PLACED SO THAT BOTH JOINT ENDS ARE AS FAR AS POSSIBLE FROM THE EXISTING SEWERLINE.

SECTION
N.T.S.

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD2_PIPE_CROSSING

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL PIPE CROSSING	DWG. NO. SD2	
		DATE 4/28/92	REVISED 10/05



BEND OR FITTING – D.I. THROUGH 12–INCH

BEND OR FITTING – PVC THROUGH 10–INCH

RESTRAINED JOINT SCHEDULE					
PIPE SIZE	PIPE TYPE	11.25° ELBOW	22.5° ELBOW	45° ELBOW	TEE BRANCH, 90° BEND, VALVE OR DEAD END
		'L'	'L'	'L'	'L'
6"	PVC	13'	25'	50'	120' MIN.
8"	PVC	15'	30'	59'	122' MIN.
8"	D.I.P.	15'	30'	59'	122' MIN.

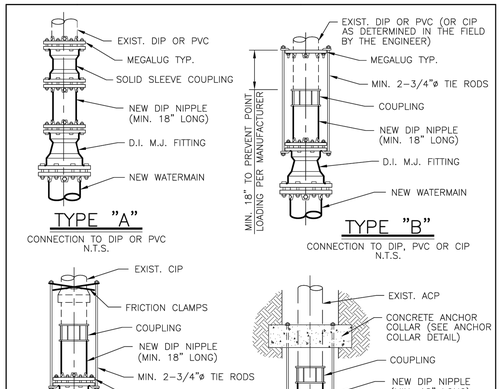
NOTES:

1. DIMENSION 'L' REPRESENTS THE LENGTH OF RESTRAINED PIPE REQUIRED IN FEET EACH SIDE OF THE PIPE FITTING.

PLAN
N.T.S.

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD4_REST_JOINT_SCHED

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL RESTRAINED JOINT SCHEDULE	DWG. NO. SD4	
		DATE 4/28/92	REVISED 10/05

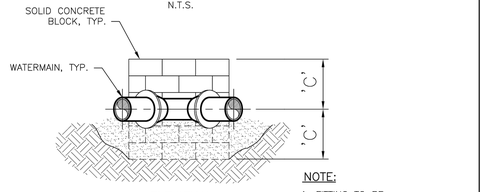


NOTES:

1. VALVES AND TEES MAY BE HARNESSED SIMILARLY.
2. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURE–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
3. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
4. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD5_CONN_EXIST_WMAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TYPICAL CONNECTION TO EXISTING WATERMAIN THROUGH 12–INCH DIAMETER WATERMAIN	DWG. NO. SD5	
		DATE 3/05	REVISED 10/05



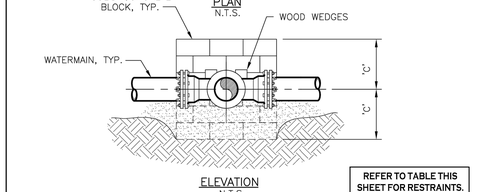
NOTE:

1. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

DIMENSION SCHEDULE											
PIPE SIZE	11.25° ELBOW			22.5° ELBOW			45° ELBOW			90° ELBOW	
	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'	'A'	'B'	'C'
8"	1.5'	1.5'	2.5'	2.5'	1.5'	2.5'	3.0'	1.5'	3.5'	3.5'	1.5'	5.0'

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD6_THRUST_BLOCKS_ELBOW

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR ELBOW FITTING	DWG. NO. SD6	
		DATE 4/28/92	REVISED 10/05



NOTES:

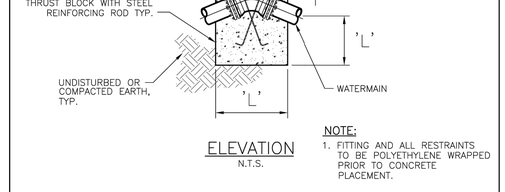
1. THRUST BLOCK REQUIRED FOR TEES, HYDRANT LATERAL TEES AND TAPPING SLEEVE INSTALLATIONS.
2. FITTING TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.

BRANCH TEE SIZE	DIMENSION SCHEDULE		
	'A'	'B'	'C'
6"	1'-0"	1'-0"	0'-6"
8"	1'-6"	1'-0"	0'-6"

REFER TO TABLE THIS SHEET FOR RESTRAINTS.

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD7_THRUST_BLOCKS_TEE

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR TEE OR "DEAD END" FITTING	DWG. NO. SD7	
		DATE 4/28/92	REVISED 10/05



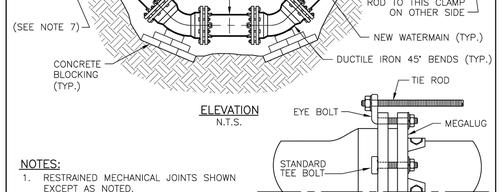
NOTE:

1. FITTING AND ALL RESTRAINTS TO BE POLYETHYLENE WRAPPED PRIOR TO CONCRETE PLACEMENT.

DIMENSION SCHEDULE													
PIPE SIZE	PIPE TYPE	11.25° ELBOW				22.5° ELBOW				45° ELBOW			
		'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø	'A'	'W'	'L'	ROD ø
8"	D.I.P	12"	1'-0"	1'-0"	1/2"	12"	1'-9"	1'-9"	1/2"	1'-6"	2'-0"	2'-0"	1/2"

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD8_THRUST_BLOCKS_VBEND

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL THRUST BLOCKS FOR VERTICAL BEND	DWG. NO. SD8	
		DATE 4/28/92	REVISED 10/05



NOTES:

1. RESTRAINED MECHANICAL JOINTS SHOWN EXCEPT AS NOTED.
2. TIE TOP BENDS BACK TO FULL LENGTH OF PIPE IN UNEXCAVATED TRENCH.
3. VALVES, TEES AND HYDRANTS MAY BE HARNESSED SIMILARLY.
4. HARNESSING IS FOR RESISTANCE TO INTERNAL PRESSURES–PIPE ITSELF MUST BE SUPPORTED ON FIRM BEDDING AND CAREFULLY BACKFILLED.
5. COAT ALL EXPOSED SURFACES OF HARNESS ASSEMBLY WITH BITUMINOUS COATING.
6. TIE RODS SHALL BE PLACED ON SIDES OF PIPE.
7. IF EXISTING PIPE IS CIP OR PVC, CONNECT TO NEW FITTING ONLY WHEN ALLOWED BY ENGINEER.

TIE ROD SCHEDULE			
PIPE SIZE	PIPE TYPE	ROD ø	NUMBER OF RODS
8"	PVC	3/4"	2

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD10_HARN_OFFSET_EXIST_WMAIN

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL HARNESSING DETAILS–INSTALL OFFSET IN EXISTING WATERMAIN	DWG. NO. SD10	
		DATE 6/00	REVISED 10/05

TOWN OF AMHERST APPROVED BOX

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

STATE OF NEW YORK R. CHRISTOPHER RODS LICENSED 070304 PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Water Details

DRAWING NO.

C-404

Project no.: 21-011

Attachment: Z-2002-09E drawings 082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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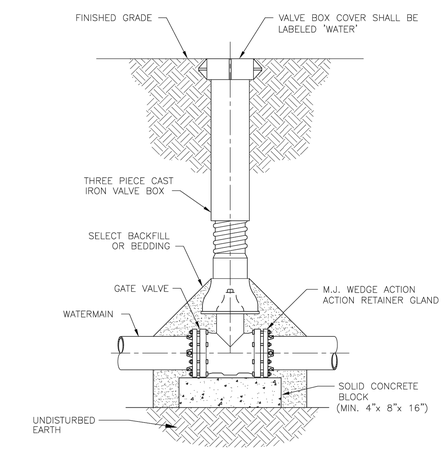


NOTES:

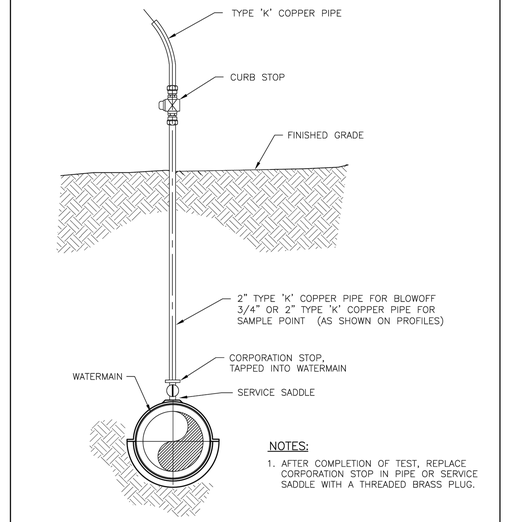
1. VALVE SHALL NOT SUPPORT VALVE BOX.
2. GATE VALVE SHALL BE INSTALLED LEVEL.
3. VALVE BOX SHALL BE PLUMB TO GRADE, WITH OPERATING NUT CENTERED IN BOX.

SECTION

N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD11_GATE_VALVE_SET

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GATE VALVE SETTING	DWG. NO. SD11	
		DATE 4/28/92	REVISED 02/17



NOTES:

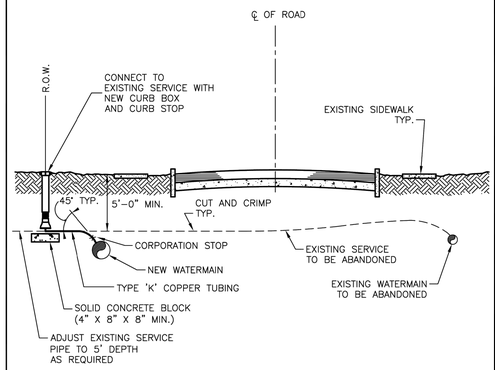
1. AFTER COMPLETION OF TEST, REPLACE CORPORATION STOP IN PIPE OR SERVICE SADDLE WITH A THREADED BRASS PLUG.

ELEVATION

N.T.S.

I:\PUBLIC\ENGINEERING\2005_DETAILS\SD17_TEMP_BO_SAMP_PT

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL TEMPORARY BLOW-OFF/SAMPLING POINT	DWG. NO. SD17	
		DATE 4/28/92	REVISED 10/05

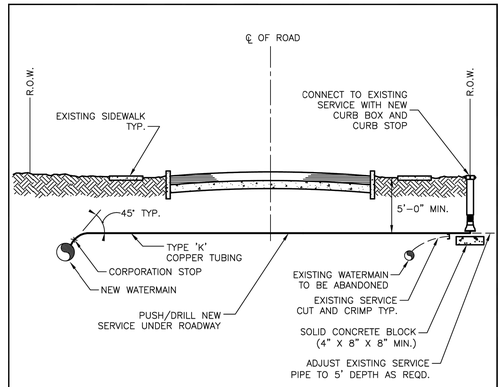


NOTES:

1. EXISTING SERVICES SHALL BE CRIMPED AND ABANDONED IN PLACE.
2. SERVICE SADDLES SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHEN SERVICES ARE PLACED ON 4" OR SMALLER PIPES.
   B. WHEN SERVICES LARGER THAN 1" ARE PLACED ON A 6" PIPE.
   C. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON AN 8" PIPE.
   D. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON DUCTILE IRON PIPE.
   E. WHEN TAPPING ALL PLASTIC (PVC) PIPE.
   F. WHEN TAPPING ALL ASBESTOS-CEMENT PIPE.
3. CURB BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, OR CURB RAMPS.
4. UNIONS ON COPPER TUBING ARE NOT ALLOWED UNLESS APPROVED BY ECWA PRIOR TO INSTALLATION.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD15_NS_SERV_REPLACE

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL NEAR SIDE SERVICE REPLACEMENT/INSTALLATION	DWG. NO. SD15	
		DATE 4/92	REVISED 09/16

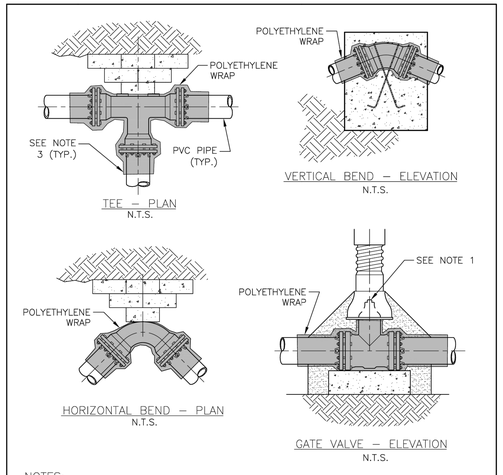


NOTES:

1. EXISTING SERVICES SHALL BE CRIMPED AND ABANDONED IN PLACE.
2. SERVICE SADDLES SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHEN SERVICES AND PLACED ON 4" OR SMALLER PIPES.
   B. WHEN SERVICES LARGER THAN 1" ARE PLACED ON A 6" PIPE.
   C. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON AN 8" PIPE.
   D. WHEN SERVICES LARGER THAN 1 1/2" ARE PLACED ON DUCTILE IRON PIPE.
   E. WHEN TAPPING ALL PLASTIC (PVC) PIPE.
   F. WHEN TAPPING ALL ASBESTOS-CEMENT PIPE.
3. CURB BOXES SHALL NOT BE PLACED IN SIDEWALKS, DRIVEWAYS, OR CURB RAMPS.
4. USE POLYETHYLENE FOR 3/4" AND 1" SERVICES GREATER THAN 100 FEET IN LENGTH, AND FOR 1-1/2" AND 2" SERVICES GREATER THAN 60 FEET IN LENGTH. ALL POLYETHYLENE SERVICES SHALL INCLUDE A TRACER WIRE FOR DETECTION BY ECWA FORCES.
5. UNIONS ON COPPER TUBING ARE NOT ALLOWED UNLESS APPROVED BY ECWA PRIOR TO INSTALLATION.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD16_FS_SERV_REPLACE

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL FAR SIDE SERVICE REPLACEMENT/INSTALLATION	DWG. NO. SD16	
		DATE 4/92	REVISED 09/16

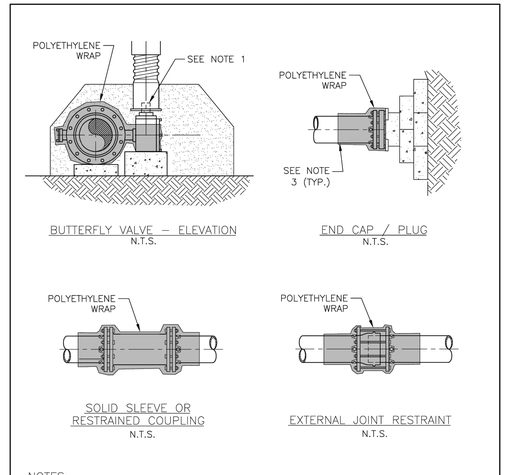


NOTES:

1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39A_POLYWRAPPING_FITTINGS

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39A	
		DATE 3/18	REVISED 12/18

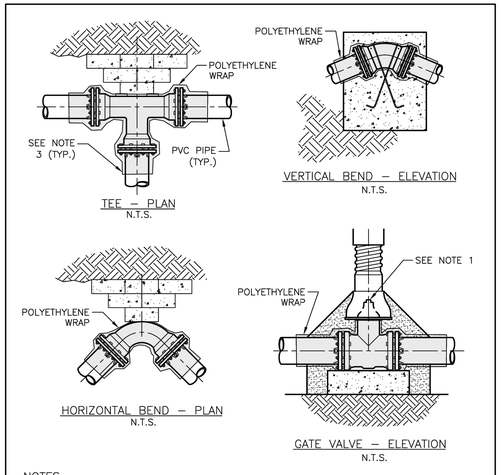


NOTES:

1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP IS NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PIPE (OR POLYWRAP IF DIP) WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39B_POLYWRAPPING_FITTINGS

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING CAST/DUCTILE IRON FITTINGS	DWG. NO. SD39B	
		DATE 12/18	REVISED

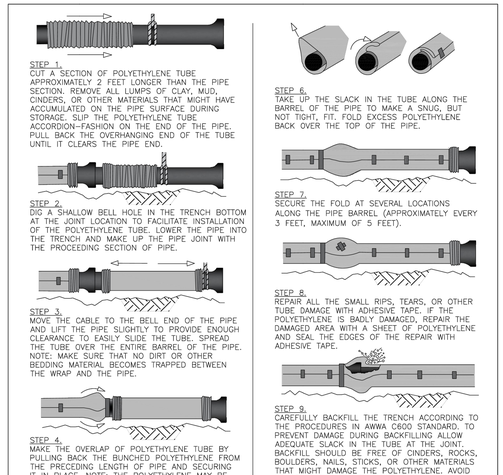


NOTES:

1. POLYETHYLENE WRAP IS TO BE PLACED AROUND THE ENTIRE FITTING, AND SECURED IN PLACE WITH POLYETHYLENE TAPE. PROVIDE SUFFICIENT SLACK SO THAT POLYETHYLENE WRAP IS NOT PUNCTURED DURING BACKFILL AND DOES NOT ENTRAP AIR. POLYETHYLENE WRAP NOT TO BE INSTALLED WITHIN 6 INCHES OF VALVE OPERATING NUT ON GATE VALVES.
2. ALL FITTINGS TO BE POLYETHYLENE WRAPPED PRIOR TO BEDDING AND CONCRETE BLOCK PLACEMENT.
3. POLYETHYLENE WRAP IS TO BE EXTENDED A MINIMUM OF 12" PAST THE FITTING ON EACH LEG AND SECURED TO THE PVC PIPE WITH AT LEAST TWO CIRCUMFERENTIAL WRAPS OF POLYETHYLENE TAPE.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD39_POLYWRAPPING_FITTINGS

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL POLYWRAPPING DUCTILE IRON FITTINGS ON PVC PIPE	DWG. NO. SD39	
		DATE 3/18	REVISED



NOTES:

1 – POLYETHYLENE WRAP (POLYWRAP) SHALL BE OF PROPER DIAMETER TO FIT OVER BELLS AND EXTERNAL WEDGE-ACTION RETAINER GLANDS.
2 – CAST AND DUCTILE IRON FITTINGS (BENDS, TEES, VALVES, ETC.) ARE TO BE WRAPPED IN POLYWRAP AND SECURED IN PLACE.
3 – DO NOT USE CHAINS, METAL WIRE, OR OTHER SUPPORTING SYSTEMS WHICH MAY DAMAGE THE POLYETHYLENE ENCASEMENT. REPLACE DAMAGED POLYWRAP ACCORDINGLY.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD32_POLY_WRAP

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	POLYETHYLENE ENCASEMENT OF DUCTILE IRON PIPE	DWG. NO. SD32	
		DATE 06/16	REVISED 02/19

TOWN OF AMHERST APPROVAL BOX:

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STATE OF NEW YORK R. CHRISTOPHER WOOD 070394 LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Water Details

DRAWING NO.

C-405

Project no.: 21-011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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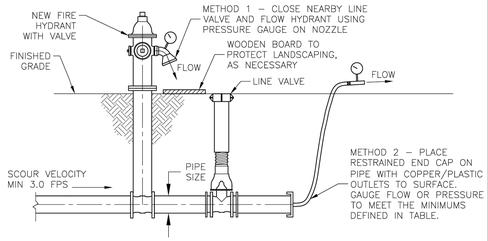


PIPE SIZE (IN)	REQUIRED FLOW (GPM)	METHOD 1 HYDRANT FLOW		METHOD 2 END CAP FLOW	
		2 1/2" NOZZLE PRESSURE (PSI)	4" NOZZLE PRESSURE (PSI)	2" I.D. PRESSURE (PSI)	3" I.D. PRESSURE (PSI)
6	275	7	1	7	2
8	500	9	2	22	5
10	750	20	4	50	10
12	1100	44	7	–	22
16	1900	–	20	–	62
20	3000	–	50	–	–

I.D. = INNER DIAMETER

NOTES:

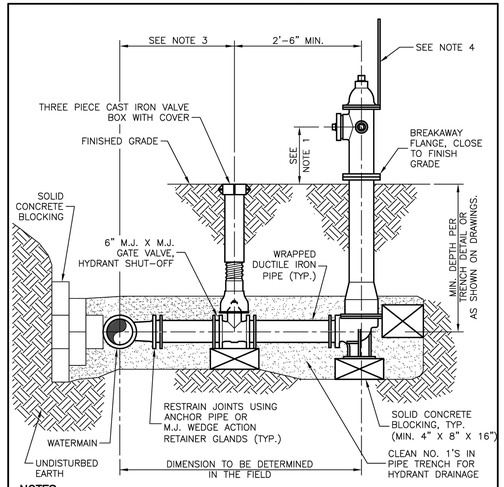
1. TO OBTAIN SCOUR VELOCITY (3.0 FPS) IN THE WATERLINE, CONTRACTOR SHALL ACHIEVE FLOWRATE AT NOZZLE DEFINED IN TABLE. PRESSURE GAUGE USED SHALL SHOW A HIGHER PRESSURE THAN THE MINIMUMS DEFINED IN THE TABLE.
2. OUTLET PRESSURE MEASURED BY PITOT GAUGE.
3. ENGINEER SHALL PROVIDE CALCULATIONS IF CONNECTIONS ARE OTHER THAN THOSE SHOWN, IF MULTIPLE CONNECTIONS ARE USED, OR AS REQUESTED BY ECWA.
4. TO FLUSH THREE PIPE VOLUMES, MINIMUM FLUSHING TIME (IN SECONDS) EQUALS THE LENGTH OF PIPE BEING FLUSHED, IN FEET.

SECTION

N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD36_WATERLINE_FLUSHING

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL WATERLINE FLUSHING	DWG. NO. SD36	
		DATE 6/16	REVISED 3/18



NOTES:

1. CENTERLINE OF THE LOWEST NOZZLE TO FINISHED GRADE SHALL BE A MIN. OF 15" & MAX. OF 18".
2. HYDRANT RISER SHALL BE INSTALLED PLUMB.
3. VALVE BOX SHALL NOT BE PLACED IN PAVEMENT.
4. RELOCATE HYDRANT MARKER (IF PRESENT), FOR WATERLINE REPLACEMENT PROJECTS ONLY.
5. HYDRANT FACE TO BE A MINIMUM OF 3' FROM THE BACK FACE OF ALL CURBS OR A MINIMUM OF 5' FROM ALL EDGES OF PAVEMENT (IF NO CURB).

SECTION

N.T.S.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD13_HYD_INST

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL FIRE HYDRANT INSTALLATION	DWG. NO. SD13	
		DATE 6/00	REVISED 11/16

NOTES

1. All elevations refer to USGS NAVD83 datum.
2. The CONTRACTOR shall obtain necessary permits and furnish copies to the ENGINEER prior to commencing work.
3. The CONTRACTOR'S work area shall be confined to the limits of the right-of-ways and easements. The CONTRACTOR shall obtain any additional easements or work releases should the CONTRACTOR require additional area to accommodate his operations.
4. The CONTRACTOR shall provide maintenance and protection of traffic in accordance with the Erie County Highway Department standards and the NYSDOT Manual of Uniform Traffic Control Devices.
5. The locations and depths of existing underground utilities as shown on the plans and profiles are approximate. Other underground utilities not shown may be encountered. The CONTRACTOR shall perform test pits to verify the location and elevation of utilities at interconnections and crossings as shown, directed, or required. The CONTRACTOR shall excavate in advance of the pipe laying operation and expose all existing underground utilities to prevent damage during construction and to determine required changes in grade necessary to install the watermain to avoid conflicts.
6. The CONTRACTOR shall install those measures required to limit erosion of areas disturbed by the work. Clearing shall be performed on an as-needed basis, phased to reduce erosion and visual impact.
7. Blasting will not be permitted.
8. No more than one connection may be made to any existing watermain prior to testing, disinfection, and approval of the Waterline Installation Completed Works Approval Report(s) by the Erie County Water Authority and the Erie County Health Department.
9. The Erie County Water Authority shall only operate existing valves and fire hydrants, including newly installed valves and fire hydrants that have been placed into service. The CONTRACTOR is advised that watertight conditions may not exist when existing valves are closed.
10. The CONTRACTOR shall have all equipment, manpower, and materials required on site and ready for use prior to commencing any shut-down or removing any existing facilities from service. The CONTRACTOR shall notify all affected customers in writing of any shut-down at least 48 hours in advance. The CONTRACTOR shall notify the appropriate fire stations 48 hours in advance prior to taking any fire hydrants out of service. Any fire hydrants not in service shall be bagged in burlap or plastic. Any shut-down shall be limited to 4 consecutive hours. It may be necessary to schedule shut-downs at night, weekends, or other off hours so as to not affect schools, businesses or other customers, as determined by the ENGINEER. Shut-down requests shall be submitted to the Erie County Water Authority a minimum of 5 business days in advance of the requested shut-down date.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD29_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD29	
		DATE 3/05	REVISED 7/17

11. All watermain piping shall be installed with a minimum of 5'-0" of cover.
12. All watermain piping shall be installed with a minimum of 1'-6" of vertical clearance and 10'-0" of horizontal clearance from sanitary and storm piping, measured from the outside of the pipes at the point of crossing.
13. If the material at the design grade is unsuitable as determined by the ENGINEER, the CONTRACTOR, when ordered in writing, shall excavate additional material to the depth necessary and shall backfill to the proposed grade with the select granular material.
14. The installation of 90 degree bends in the watermain is not allowed, unless approved by the Erie County Water Authority.
15. Thrust restraint for watermain piping through 12-inch diameter shall consist of thrust blocks and pipe joint restraint.
16. The CONTRACTOR shall notify the owner of any utility pole in advance of any excavation work that will take place within 5'-0" of the utility pole. The CONTRACTOR shall include the cost of temporary pole support in the appropriate bid item.Where utility poles are required to be supported during construction, the CONTRACTOR shall make all necessary arrangements with the utility company.
17. If materials are encountered during the construction that are suspected of being contaminated, the CONTRACTOR shall immediately notify the NYSDEC for direction regarding testing, separation, containment, and disposal procedures.
18. Existing fire hydrants removed during construction and not reinstalled as part of the work shall be scheduled and returned to the Erie County Water Authority Service Center, 3030 Union Road, Cheektowaga, New York 14227.
19. The CONTRACTOR shall cold patch all trench excavations in traveled areas including roads, driveways, sidewalks, and parking areas.
20. The CONTRACTOR shall not restrict access for school buses or any emergency vehicles.
21. The use of existing fire hydrants for any reason is prohibited without prior approval of the Erie County Water Authority. This includes newly installed fire hydrants that have been placed into service.
22. The CONTRACTOR shall submit procedures for testing and disinfection of the watermain to the ENGINEER for review prior to the start of testing.
23. The CONTRACTOR shall be present and assist in the Final Walk inspection. The CONTRACTOR shall provide sufficient personnel and equipment to demonstrate to the ENGINEER that all valves, fire hydrants, and curb stops operate as required.

I:\PUBLIC\ENGINEERING\CURRENT ECWA DETAILS\SD30_GENERAL_NOTES

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	STANDARD DETAIL GENERAL NOTES	DWG. NO. SD30	
		DATE 3/05	REVISED 7/17

TOWN OF AMHERST APPROVAL BOX:

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Buffalo, New York 14203
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F 716.842.0263

STATE OF NEW YORK · CHRISTOPHER WOOD · 076394 · LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Water Details & Notes

DRAWING NO.

C-406

Project no.: 21-011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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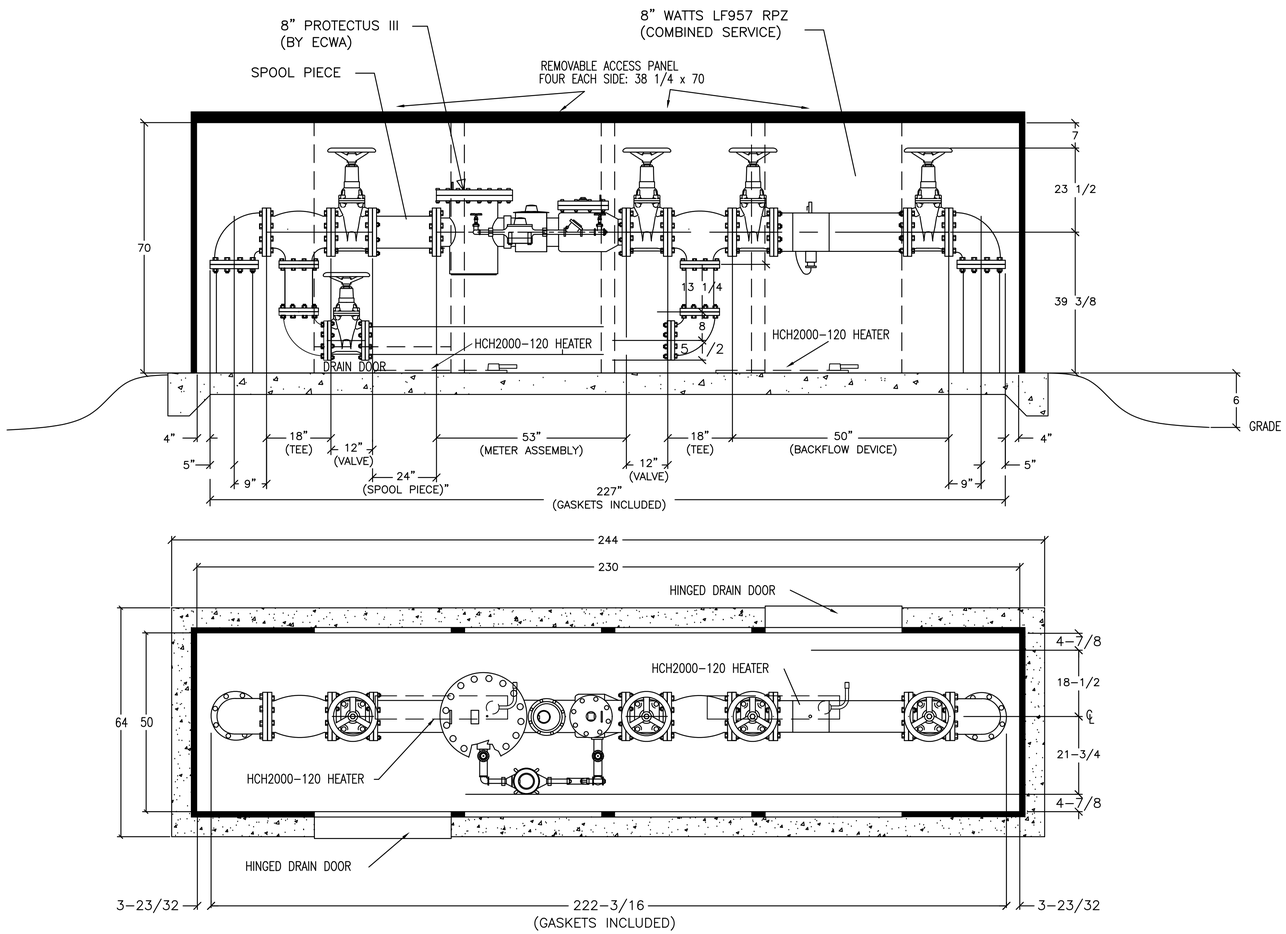

LEGEND:

REMOVABLE ACCESS PANEL 38 1/4"W x 70"H w/DRAIN DOOR

REMOVABLE ACCESS PANEL 38 1/4"W x 70"H

8"METER & RPZ INSULATED ENCLOSURE

NOTES:

1. BACKFLOW PREVENTER DIMENSIONS FURNISHED BY WATTS
2. ALL DIMENSIONS ARE IN INCHES
3. WALL & INSULATION THICKNESS IS 1-1/2"
4. ROOF & INSULATION THICKNESS IS 3"
5. ENCLOSURE SHOWN IS SAFE-T-COVER MODEL 1000D-ALC00-17
6. EXTERIOR ENCLOSURE DIMENSIONS: 53"W x 233"L x 73" H
7. CONCRETE PAD IS 64"W x 244"L x 6"THK W/W.W.F. 6X6/10X10
8. METER SHOWN: 8" PROTECTUS III, SPOOL PIECE & METER SUPPLIED BY ECWA, VERIFY DIMENSIONS PRIOR TO ORDERING
9. RPZ SHOWN: 8" WATTS LF957 RPZ
10. CONTRACTOR TO INSTALL ELECTRIC SERVICE TO ENCLOSURE, COORDINATE SOURCE WITH OWNER
11. INSTALL A 120V GFI OUTLET IN THE ENCLOSURE
12. HEATERS TO HAVE THERMOSTAT CONTROL
13. ALL 8" PIPING & FITTINGS WITHIN THE ENCLOSURE SHALL BE DUCTILE IRON
14. CONCRETE PAD TO BE 6" ABOVE ADJACENT GRADE

TOWN OF AMHERST APPROVAL BOX:

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STATE OF NEW YORK
R. CHRISTOPHER WOOD
076394
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per town comments	05/18/22
2	Plan revised per town comments	07/26/22

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Insulated Enclosure Detail

DRAWING NO.
C-407

Project no.: 21-011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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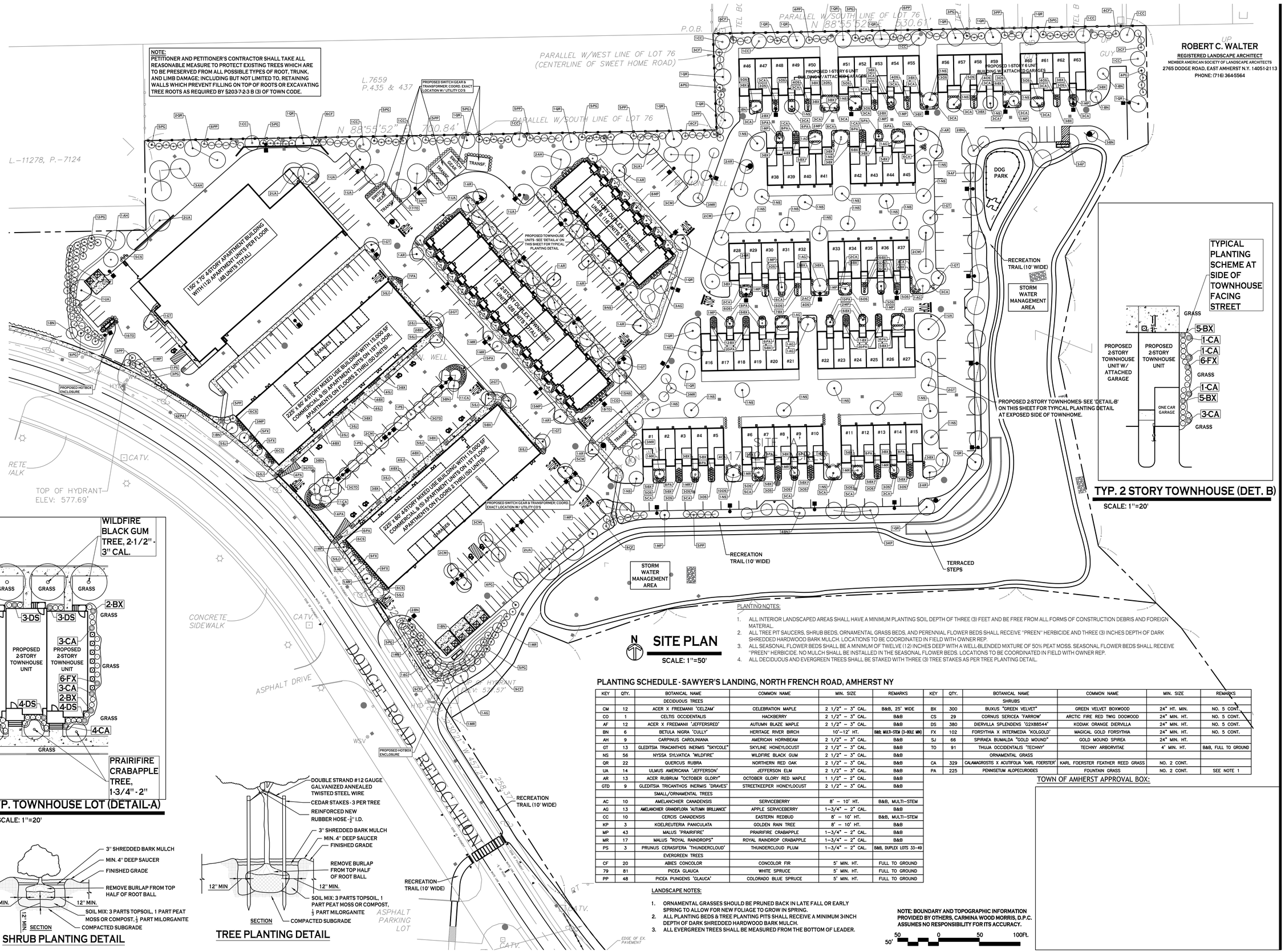
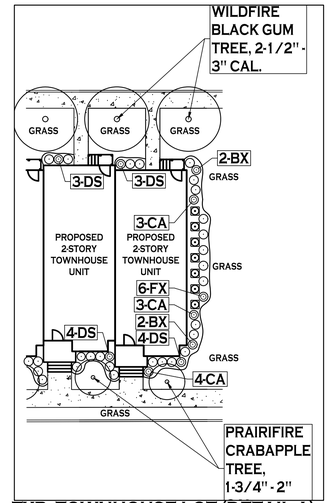
NOTE:
PETITIONER AND PETITIONER'S CONTRACTOR SHALL TAKE ALL REASONABLE MEASURE TO PROTECT EXISTING TREES WHICH ARE TO BE PRESERVED FROM ALL POSSIBLE TYPES OF ROOT, TRUNK, AND LIMB DAMAGE; INCLUDING BUT NOT LIMITED TO, RETAINING WALLS WHICH PREVENT FILLING ON TOP OF ROOTS OR EXCAVATING TREE ROOTS AS REQUIRED BY §203-7-2-3 B (3) OF TOWN CODE.



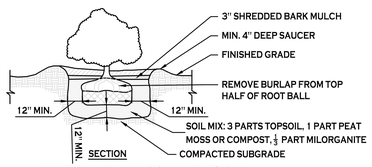
SITE PLAN

SCALE: 1"=50'



TYP. TOWNHOUSE LOT (DETAIL-A)

SCALE: 1"=20'



SHRUB PLANTING DETAIL

TREE PLANTING DETAIL

TYPICAL PLANTING SCHEME AT SIDE OF TOWNHOUSE FACING STREET

TYP. 2 STORY TOWNHOUSE (DET. B)

SCALE: 1"=20'

PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PIT SAUCERS, SHRUB BEDS, ORNAMENTAL GRASS BEDS, AND PERENNIAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE AND THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS, SEASONAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AS PER TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
CM	12	ACER X FREEMANII 'CELZAM'	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 25' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
AF	12	ACER X FREEMANII 'JEFFERSRED'	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
BN	6	BETULA NIGRA 'CULLY'	HERITAGE RIVER BIRCH	10'–12' HT.	B&B, MULTI-STEM (3-BOLE MIN)
AH	9	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
GT	13	GLEDITSIA TRIACANTHOS INERMIS "SKYCOLE"	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
NS	56	NYSSA SYLVATICA 'WILDFIRE'	WILDFIRE BLACK GUM	2 1/2" – 3" CAL.	B&B
QR	22	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	14	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
AR	13	ACER RUBRUM "OCTOBER GLORY"	OCTOBER GLORY RED MAPLE	1 1/2" – 2" CAL.	B&B
GTD	9	GLEDITSIA TRICANTHOS INERMIS 'DRAVES'	STREETKEEPER HONEYLOCUST	2 1/2" – 3" CAL.	B&B
		SMALL/ORNAMENTAL TREES			
AC	10	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
AG	13	AMELANCHIER GRANDIFLORA 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1–3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE	8' – 10' HT.	B&B
MP	43	MALUS "PRAIRIFIRE"	PRAIRIFIRE CRABAPPLE	1–3/4" – 2" CAL.	B&B
MR	17	MALUS "ROYAL RAINDROPS"	ROYAL RAINDROP CRABAPPLE	1–3/4" – 2" CAL.	B&B
PS	3	PRUNUS CERASIFERA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1–3/4" – 2" CAL.	B&B, DUPLEX LOTS 33-49
		EVERGREEN TREES			
CF	20	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
79	81	PICEA GLAUCA	WHITE SPRUCE	5' MIN. HT.	FULL TO GROUND
PP	48	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		SHRUBS			
BX	300	BUXUS "GREEN VELVET"	GREEN VELVET BOXWOOD	24" HT. MIN.	NO. 5 CONT.
CS	29	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	NO. 5 CONT.
DS	380	DIERVILLA SPLENDENS 'G2X88544'	KODIAK ORANGE DIERVILLA	24" MIN. HT.	NO. 5 CONT.
FX	102	FORSYTHIA X INTERMEDIA 'KOLGOLD'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	NO. 5 CONT.
SJ	66	SPIRAEA BUMALDA "GOLD MOUND"	GOLD MOUND SPIREA	24" MIN. HT.	
TO	91	THUJA OCCIDENTALIS 'TECHNY'	TECHNY ARBORVITAE	4' MIN. HT.	B&B, FULL TO GROUND
		ORNAMENTAL GRASS			
CA	329	CALAMAGROSTIS X ACUTIFOLIA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 2 CONT.	
PA	225	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	NO. 2 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

TOWN OF AMHERST APPROVAL BOX:

ROBERT C. WALTER
REGISTERED LANDSCAPE ARCHITECT
MEMBER AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS
2765 DODGE ROAD, EAST AMHERST N.Y. 14051-2113
PHONE: (716) 364-5564

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STATE OF NEW YORK — R. CHRISTOPHER WOOD — 07639A — LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Rev. per ECDPW 03/28/24 Comments	04/02/24
2	Rev. per Ryan Homes Comments	04/08/24

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/22/2
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Landscape Plan

DRAWING NO.
L-100

Project no.: 21-011

Attachment: Z-2002-09E drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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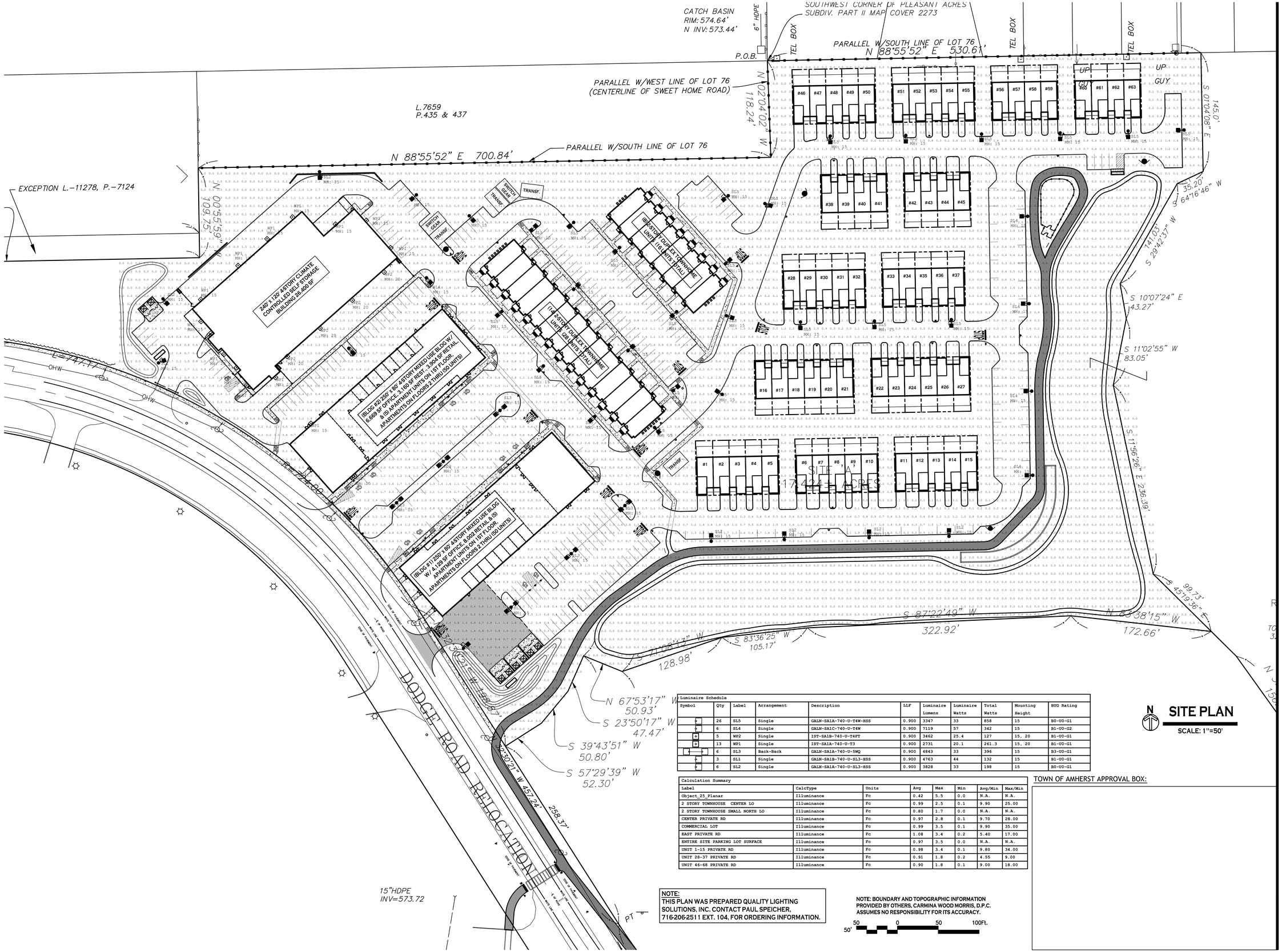

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Description	LLF	Luminaire Lumens	Luminaire Watts	Total Watts	Mounting Height	BUG Rating
	26	SL5	Single	GALN-SA1A-740-U-T4W-HSS	0.900	3347	33	858	15	B0-U0-G1
	6	SL4	Single	GALN-SA1C-740-U-T4W	0.900	7119	57	342	15	B1-U0-G2
	5	WP2	Single	IST-SA1B-740-U-T4FT	0.900	3462	25.4	127	15, 20	B1-U0-G1
	13	WP1	Single	IST-SA1A-740-U-T3	0.900	2731	20.1	261.3	15, 20	B1-U0-G1
	6	SL3	Back-Back	GALN-SA1A-740-U-5WQ	0.900	4843	33	396	15	B3-U0-G1
	3	SL1	Single	GALN-SA1B-740-U-SL3-HSS	0.900	4763	44	132	15	B1-U0-G1
	6	SL2	Single	GALN-SA1A-740-U-SL3-HSS	0.900	3828	33	198	15	B0-U0-G1

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Object_25_Planar	Illuminance	Fc	0.42	5.5	0.0	N.A.	N.A.
2 STORY TOWNHOUSE CENTER LO	Illuminance	Fc	0.99	2.5	0.1	9.90	25.00
2 STORY TOWNHOUSE SMALL NORTH LO	Illuminance	Fc	0.80	1.7	0.0	N.A.	N.A.
CENTER PRIVATE RD	Illuminance	Fc	0.97	2.8	0.1	9.70	28.00
COMMERCIAL LOT	Illuminance	Fc	0.99	3.5	0.1	9.90	35.00
EAST PRIVATE RD	Illuminance	Fc	1.08	3.4	0.2	5.40	17.00
ENTIRE SITE PARKING LOT SURFACE	Illuminance	Fc	0.97	3.5	0.0	N.A.	N.A.
UNIT 1-15 PRIVATE RD	Illuminance	Fc	0.98	3.4	0.1	9.80	34.00
UNIT 28-37 PRIVATE RD	Illuminance	Fc	0.91	1.8	0.2	4.55	9.00
UNIT 46-68 PRIVATE RD	Illuminance	Fc	0.90	1.8	0.1	9.00	18.00

NOTE:
THIS PLAN WAS PREPARED QUALITY LIGHTING SOLUTIONS, INC. CONTACT PAUL SPEICHER, 716-206-2511 EXT. 104, FOR ORDERING INFORMATION.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 0 50 100Ft.

N

SITE PLAN

SCALE: 1"=50'

TOWN OF AMHERST APPROVAL BOX:

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STATE OF NEW YORK
CHRISTOPHER WOOD
076304
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date
1	Plan revised per updated layout	05/16/24

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Photometric Plan

DRAWING NO.

LP-100

Project no.: 21-011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Project		Catalog #	Type
Prepared by		Notes	Date

McGraw-Edison

GALN Galleon II

Area / Site Luminaire

Product Features

Interactive Menu

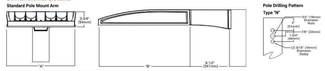
- Ordering Information page 2
- Mounting Details page 2
- Optical Distributions page 3
- Product Specifications page 4
- Energy and Performance Data page 5
- Control Options page 6

Quick Facts

- Lumen packages range from 3,300 - 73,500 (33W - 552W)
- 17 optical distributions
- Efficacy up to 159 lumens per watt

Dimensional Details

Standard Pole Mount Arm



Pole Drilling Pattern

Type "A"

Number of Light Sources	Width 'A'	Housing Length 'B'	Weight with Standard 4" Qtr Arm	EPA with Standard 4" Qtr Arm
1-4	19"	22"	29 lb	0.95
5-6	22"	22"	39 lb	0.95
7-9	22"	28 1/8"	46 lb	1.1

NOTE:
For use with mast arm assembly and additional tilt unit, see Mounting Details section.

NOTES:
1. Specification is responsible for engineering analysis to confirm unit/finish compatibility for all applications. Refer to our Powder Coat Finish Compatibility Chart for more information.
2. Not available with HS option.
3. Not available with 10kV or 20kV surge protection.
4. Not available with 480V.
5. Not available with 347V.
6. Not available with 480V or 347V.
7. Not available with 347V or 480V.
8. Not available with 347V, 480V or 10kV surge protection.
9. Not available with 347V, 480V or 20kV surge protection.
10. Not available with 347V, 480V or 10kV or 20kV surge protection.
11. Not available with 347V, 480V or 10kV or 20kV surge protection.
12. Not available with 347V, 480V or 10kV or 20kV surge protection.

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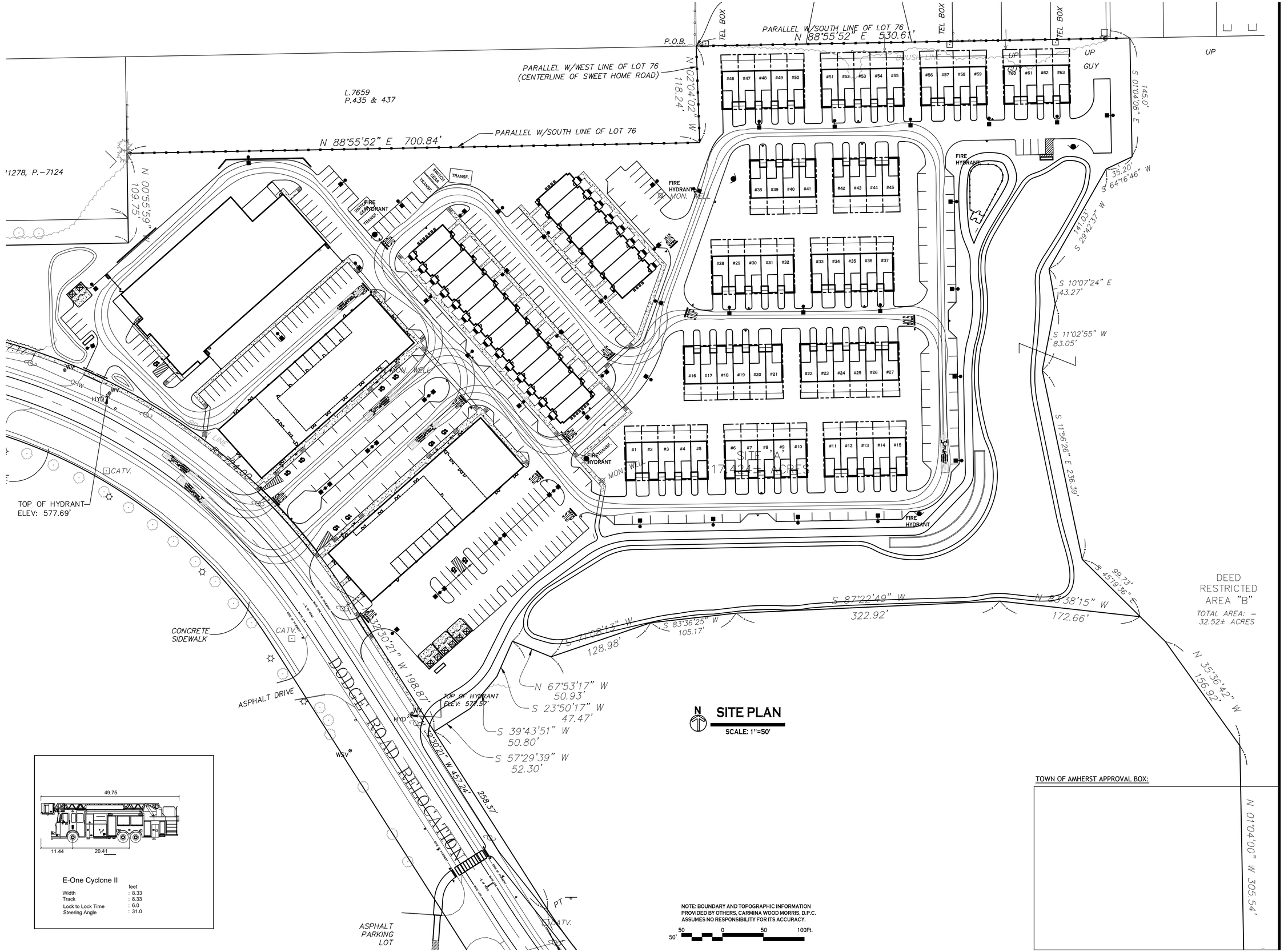

SITE PLAN

SCALE: 1"=50'

E-One Cyclone II

	feet
Width	: 8.33
Track	: 8.33
Lock to Lock Time	: 6.0
Steering Angle	: 31.0

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

TOWN OF AMHERST APPROVAL BOX:

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STATE OF NEW YORK
CHRISTOPHER WOOD
076394
LICENSED PROFESSIONAL ENGINEER

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 12/1/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Fire Truck Plan

DRAWING NO.

TT-100

Project no.: 21-011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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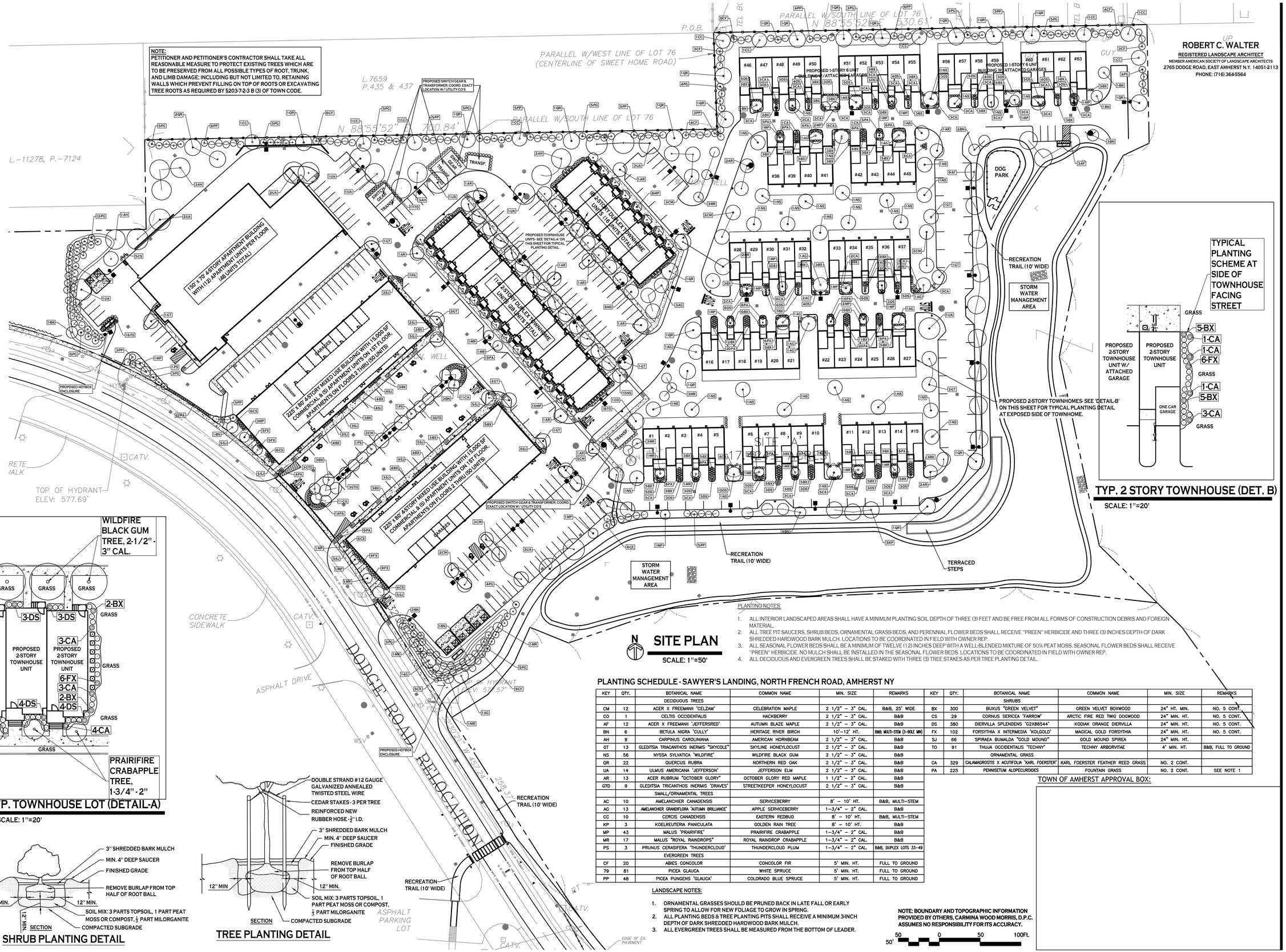
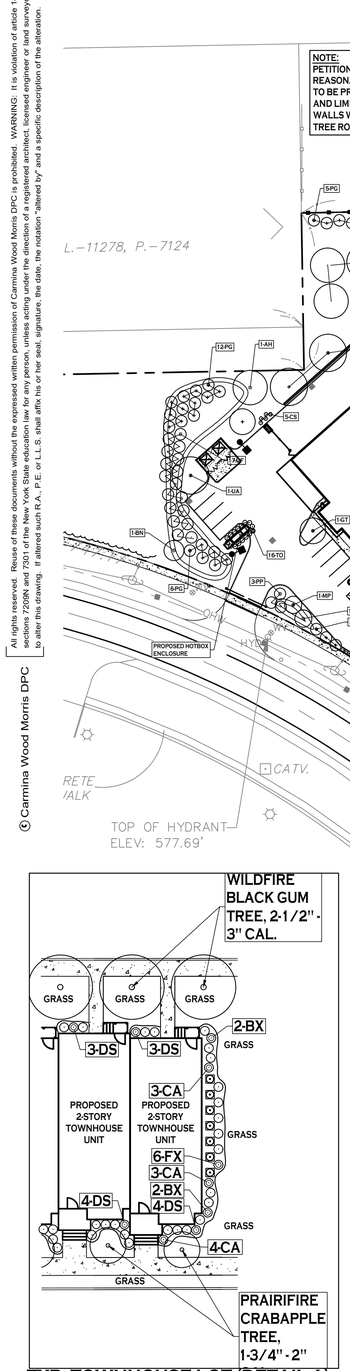
NOTE:
PETITIONER AND PETITIONER'S CONTRACTOR SHALL TAKE ALL REASONABLE MEASURE TO PROTECT EXISTING TREES WHICH ARE TO BE PRESERVED FROM ALL POSSIBLE TYPES OF ROOT, TRUNK, AND LIMB DAMAGE; INCLUDING BUT NOT LIMITED TO, RETAINING WALLS WHICH PREVENT FILLING ON TOP OF ROOTS OR EXCAVATING TREE ROOTS AS REQUIRED BY §203-7-2-3 B (3) OF TOWN CODE.

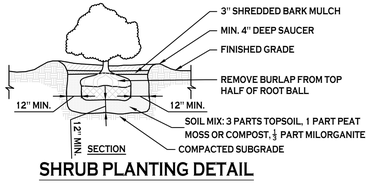


N SITE PLAN
SCALE: 1"=50'



TYP. TOWNHOUSE LOT (DETAIL-A)
SCALE: 1"=20'

TYP. 2 STORY TOWNHOUSE (DET. B)
SCALE: 1"=20'



SHRUB PLANTING DETAIL

TREE PLANTING DETAIL

PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PIT SAUCERS, SHRUB BEDS, ORNAMENTAL GRASS BEDS, AND PERENNIAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE AND THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AS PER TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
CM	12	ACER X FREEMANII 'CELZAM'	CELEBRATION MAPLE	2 1/2" – 3" CAL.	B&B, 25' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" – 3" CAL.	B&B
AF	12	ACER X FREEMANII 'JEFFERSRED'	AUTUMN BLAZE MAPLE	2 1/2" – 3" CAL.	B&B
BN	6	BETULA NIGRA 'CULLY'	HERITAGE RIVER BIRCH	10'–12' HT.	B&B; MULTI-STEM (3-RIDLE MIN)
AH	9	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" – 3" CAL.	B&B
GT	13	GLEDITSIA TRIACANTHOS INERMIS "SKYCOLE"	SKYLINE HONEYLOCUST	2 1/2" – 3" CAL.	B&B
NS	56	NYSSA SYLVATICA 'WILDFIRE'	WILDFIRE BLACK GUM	2 1/2" – 3" CAL.	B&B
QR	22	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" – 3" CAL.	B&B
UA	14	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" – 3" CAL.	B&B
AR	13	ACER RUBRUM "OCTOBER GLORY"	OCTOBER GLORY RED MAPLE	1 1/2" – 2" CAL.	B&B
GTD	9	GLEDITSIA TRICANTHOS INERMIS 'DRAVES'	STREETKEEPER HONEYLOCUST	2 1/2" – 3" CAL.	B&B
		SMALL/ORNAMENTAL TREES			
AC	10	AMELANCHIER CANADENSIS	SERVICEBERRY	8' – 10' HT.	B&B, MULTI-STEM
AG	13	AMELANCHIER GRANDIFLORA 'AUTUMN BRILLIANCE'	APPLE SERVICEBERRY	1–3/4" – 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' – 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE	8' – 10' HT.	B&B
MP	43	MALUS "PRAIRIFIRE"	PRAIRIFIRE CRABAPPLE	1–3/4" – 2" CAL.	B&B
MR	17	MALUS "ROYAL RAINDROPS"	ROYAL RAINDROP CRABAPPLE	1–3/4" – 2" CAL.	B&B
PS	3	PRUNUS CERASIFERA "THUNDERCLOUD'	THUNDERCLOUD PLUM	1–3/4" – 2" CAL.	B&B, DUPLEX LOTS 33-49
		EVERGREEN TREES			
CF	20	ABIES CONCOLOR	CONCOLOR FIR	5' MIN. HT.	FULL TO GROUND
79	81	PICEA GLAUCA	WHITE SPRUCE	5' MIN. HT.	FULL TO GROUND
PP	48	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	5' MIN. HT.	FULL TO GROUND

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		SHRUBS			
BX	300	BUXUS "GREEN VELVET"	GREEN VELVET BOXWOOD	24" HT. MIN.	NO. 5 CONT.
CS	29	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	NO. 5 CONT.
DS	380	DIERVILLA SPLENDENS 'G2X88544'	KODIAK ORANGE DIERVILLA	24" MIN. HT.	NO. 5 CONT.
FX	102	FORSYTHIA X INTERMEDIA 'KOLGOLD'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	NO. 5 CONT.
SJ	66	SPIRAEA BUMALDA "GOLD MOUND"	GOLD MOUND SPIREA	24" MIN. HT.	
TO	91	THUJA OCCIDENTALIS 'TECHNY'	TECHNY ARBORVITAE	4' MIN. HT.	B&B, FULL TO GROUND
		ORNAMENTAL GRASS			
CA	329	CALAMAGROSTIS X ACUTIFOLIA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 2 CONT.	
PA	225	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	NO. 2 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 50 0 50 100Ft.

TOWN OF AMHERST APPROVAL BOX:

ROBERT C. WALTER
REGISTERED LANDSCAPE ARCHITECT
MEMBER AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS
2765 DODGE ROAD, EAST AMHERST N.Y. 14051-2113
PHONE: (716) 364-5564

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date
1	Rev. per ECDPW 03/28/24 Comments	04/02/24
2	Rev. per Ryan Homes Comments	04/08/24

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/22/2
Drawn by: C. Wood
Scale: As Noted

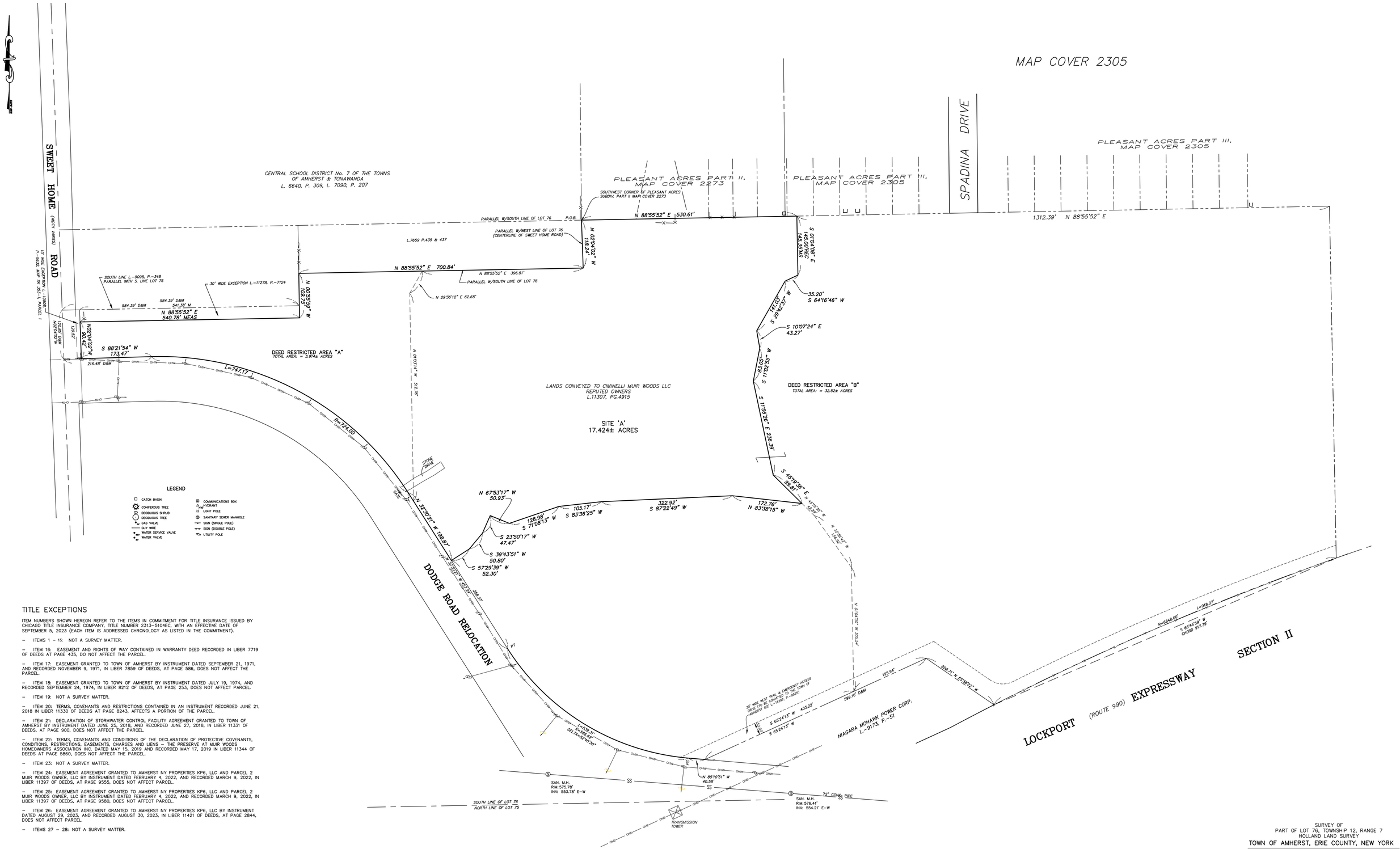
DRAWING NAME:
Landscape Plan

DRAWING NO.
L-100

Project no.: 21-011

Attachment: Z-2002-09E_drawings_082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.



LEGEND

- CATCH BASIN
- CONIFEROUS TREE
- DECIDUOUS SHRUB
- DECIDUOUS TREE
- GAS VALVE
- GUY WIRE
- WATER SERVICE VALVE
- WATER VALVE
- COMMUNICATIONS BOX
- HYDRANT
- LIGHT POLE
- SANITARY SEWER MANHOLE
- SIGN (SINGLE POLE)
- SIGN (DOUBLE POLE)
- UTILITY POLE

TITLE EXCEPTIONS

ITEM NUMBERS SHOWN HEREON REFER TO THE ITEMS IN COMMITMENT FOR TITLE INSURANCE ISSUED BY CHICAGO TITLE INSURANCE COMPANY, TITLE NUMBER 2313-5104EC, WITH AN EFFECTIVE DATE OF SEPTEMBER 5, 2023 (EACH ITEM IS ADDRESSED CHRONOLOGY AS LISTED IN THE COMMITMENT).

– ITEMS 1 – 15: NOT A SURVEY MATTER.

– ITEM 16: EASEMENT AND RIGHTS OF WAY CONTAINED IN WARRANTY DEED RECORDED IN LIBER 7719 OF DEEDS AT PAGE 435, DO NOT AFFECT THE PARCEL.

– ITEM 17: EASEMENT GRANTED TO TOWN OF AMHERST BY INSTRUMENT DATED SEPTEMBER 21, 1971, AND RECORDED NOVEMBER 9, 1971, IN LIBER 7859 OF DEEDS, AT PAGE 586, DOES NOT AFFECT THE PARCEL.

– ITEM 18: EASEMENT GRANTED TO TOWN OF AMHERST BY INSTRUMENT DATED JULY 19, 1974, AND RECORDED SEPTEMBER 24, 1974, IN LIBER 8212 OF DEEDS, AT PAGE 253, DOES NOT AFFECT PARCEL.

– ITEM 19: NOT A SURVEY MATTER.

– ITEM 20: TERMS, COVENANTS AND RESTRICTIONS CONTAINED IN AN INSTRUMENT RECORDED JUNE 21, 2018 IN LIBER 11330 OF DEEDS AT PAGE 8243, AFFECTS A PORTION OF THE PARCEL.

– ITEM 21: DECLARATION OF STORMWATER CONTROL FACILITY AGREEMENT GRANTED TO TOWN OF AMHERST BY INSTRUMENT DATED JUNE 25, 2018, AND RECORDED JUNE 27, 2018, IN LIBER 11331 OF DEEDS, AT PAGE 900, DOES NOT AFFECT THE PARCEL.

– ITEM 22: TERMS, COVENANTS AND CONDITIONS OF THE DECLARATION OF PROTECTIVE COVENANTS, CONDITIONS, RESTRICTIONS, EASEMENTS, CHARGES AND LIENS – THE PRESERVE AT MUIR WOODS HOMEOWNERS ASSOCIATION INC. DATED MAY 15, 2019 AND RECORDED MAY 17, 2019 IN LIBER 11344 OF DEEDS AT PAGE 5860, DOES NOT AFFECT THE PARCEL.

– ITEM 23: NOT A SURVEY MATTER.

– ITEM 24: EASEMENT AGREEMENT GRANTED TO AMHERST NY PROPERTIES KP6, LLC AND PARCEL 2 MUIR WOODS OWNER, LLC BY INSTRUMENT DATED FEBRUARY 4, 2022, AND RECORDED MARCH 9, 2022, IN LIBER 11397 OF DEEDS, AT PAGE 9555, DOES NOT AFFECT PARCEL.

– ITEM 25: EASEMENT AGREEMENT GRANTED TO AMHERST NY PROPERTIES KP6, LLC AND PARCEL 2 MUIR WOODS OWNER, LLC BY INSTRUMENT DATED FEBRUARY 4, 2022, AND RECORDED MARCH 9, 2022, IN LIBER 11397 OF DEEDS, AT PAGE 9580, DOES NOT AFFECT PARCEL.

– ITEM 26: EASEMENT AGREEMENT GRANTED TO AMHERST NY PROPERTIES KP6, LLC BY INSTRUMENT DATED AUGUST 29, 2023, AND RECORDED AUGUST 30, 2023, IN LIBER 11421 OF DEEDS, AT PAGE 2844, DOES NOT AFFECT PARCEL.

– ITEMS 27 – 28: NOT A SURVEY MATTER.

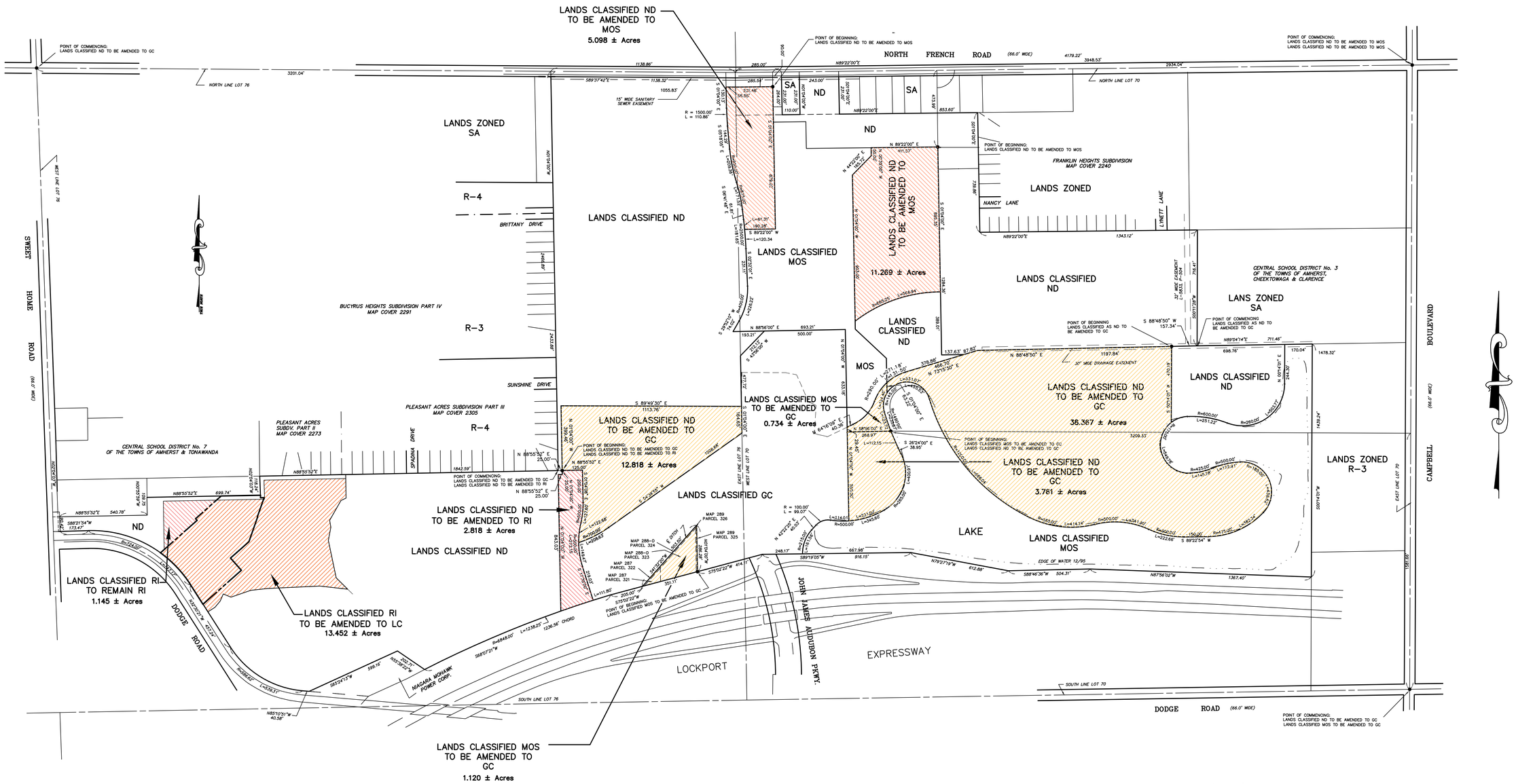
DATE	REVISION/TYPE
09/22/23	ADDED TITLE EXCEPTIONS

SURVEY OF
PART OF LOT 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP
ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE
4950 GENESEE STREET, SUITE 100
BUFFALO, NEW YORK 14225
(716) 633-4844 FAX 633-4940

Job No. 2013062-SITE A Date: JUNE 27, 2019
Scale: 1" = 100' TAX No.

Attachment: Z-2002-09E_drawings. 082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



THE ENTIRE PROJECT SITE IS ZONED NEW COMMUNITY DISTRICT (NCD)

GRAPHIC SCALE

300 0 150 300 600 1200

(IN FEET)
1 inch = 300 ft.

AMENDMENT TO AUDUBON DEVELOPMENT PLAN

PART OF LOTS 70 & 76, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI
GREENMAN-PEDERSEN, INC.
CONSULTING ENGINEERS
ENGINEERING • SURVEYING • PLANNING
SURVEYING SERVICES PERFORMED BY GPI ENGINEERING AND SURVEYING LLP
4950 GENESEE STREET SUITE 165 BUFFALO, NY 14225
(716) 633-4844 FAX (716) 633-4940

Job No. P&H 99059
GPI 2004108
Scale 1"=300'

Date: APRIL 17, 2002
REVISED: NOVEMBER 2007
REVISED: JUNE 19, 2024

059-Z3

Attachment: Z-2002-09E_drawings_082724 (23166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Application to Amend Findings Statement, Reclassify Portion of 50 Dodge Road from NCD-RI o NCD-LC & Amend Declaration of Restrictions - Site A of Muir Woods [Z-2002-9E]

Applicant: Sawyer's Landing LLC
Sean Hopkins, Esq.
Hopkins Sorgi & McCarthy PLLC
5500 Main Street, Suite 343
Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsmlegal.com

TOWN OF AMHERST PLANNING DEPARTMENT

Application for Rezoning Review and, if required Comprehensive Plan Amendment

For Official Use

File #: Z-2002-09E **Acreage** 17.424 **Fee $** $5,465.00

Address Verified by Assessor's Office _____ VERIFIED BY DATE

Materials Accepted by Town Clerk & Fee Paid ____ _____ AC CEP TB BY DATE

Materials Checked by Building Dept._____ RECEIVED BY DATE

Materials Received by Planning Dept. 8/15/2024 RECEIVED BY DATE

		Fill In Applicable Fees
2 ACRES OR LESS	**$1,250**	$1,250.00
2 – 20 ACRES **$1,250 + $250/acres or fraction thereof over 2 acres**		$3,000.00
20 – 30 ACRES **$5,700 + $150/acre or fraction thereof over 20 acres**		_____
OVER 30 ACRES **$6,900 +$75/acre or fraction thereof over 30 acres**		1,200.00
Request for Relief of/Change to Conditions of Zoning Approval [Application to Amend Findings Statement]	**$ 1,200**	
AFFIDAVIT FEE FOR PUBLIC HEARING	**$ 15.00**	$15.00
TOTAL FEE:	$ 5,465.00	

RECEIVED AUG 15 2024 TOWN OF AMHERST PLANNING DEPT.

[Note: A completed Part 1 of the Full Environmental Assessment Form is attached as Exhibit "3" of this Application.]

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

TO BE COMPLETED BY APPLICANT

1. **Petitioner:** Name: Sawyers Landing LLC

Address: c/o Sean Hopkins, Esq.
5500 Main Street, Suite 343
Williamsville, New York 14221
City State Zip Code

Phone: 510-4338 Fax:

E Mail shopkins@hsmlegal.com

2. **The undersigned hereby petitions the Honorable Town Board to rezone the following described property**

From: NCD-RI District

To: NCD-LC District

3. **Street address of land to be rezoned:** (must be verified by Town Assessor's Office)

Portion of 50 Dodge Road

SBL #: 40.08-3-13.1

4. **Area of land to be rezoned** (in acres): 13.452 Acres to be Reclassified from NCD-RI to NCD-LC

5. **Owner of Land:**

Name: Sawyers Landing LLC

Address: c/o Sean Hopkins, Esq., 5500 Main Street, Suite 343, Williamsville, NY 14221

Telephone: 510-4338

6. **Representative** (Architect, Engineer, Landscape Architect, Surveyor or Attorney):

Name: Sean W. Hopkins, Esq.

Address: 5500 Main Street, Suite 343
Williamsville, New York 14221
Tel: 716.510-4338 - E-mail: shopkins@hsmlegal.com
City State Zip Code

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7. **Petitioner's interest in property**

_____ Option to purchase

__X__ Owner

_____ Other (explain) _____

8. **The following are all others having an interest in this application and join herein with the petitioner named above:** (describe extent of interest; attach sheets as needed)

Not Applicable.

9. **Attach Survey and Legal description of land to be rezoned. The Survey must be prepared by a New York State Licensed Land Surveyor.** Legal description of portion of 50 Dodge Road to be Reclassified from NCD-LI to NCD-LC att as Exhibit 5 of the Muir Woods property is attached as Exhibit "5" and copy of the Survey of Sit [illegible] copy of Survey also attached].

10. **Said property has the following deed restrictions or Covenants:** (attach copy) Not Applicable.

Liber 13330 Page 8243

A portion of the Project Site is subject to the Declaration of Restrictions recorded at the Erie County Clerk's Office on June 21, 2018. A copy of the recorded Declaration of Restrictions is provided at Exhibit "12".

11. **Information on proposed project:**

A. Description of the character of the proposed development:

See Exhibit "6".

B. Rationale for rezoning request:

1. Why was this site chosen?

See Exhibit "6".

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2. Why cannot land be used with the existing zoning?

See Exhibit "6".

3. How will this rezoning impact surrounding properties?

See Exhibit "6".

4. How will this rezoning impact the school system?

See Exhibit "6".

12. Quantitative Data:

A. Total # of dwelling units 207

B. Distribution of dwelling units by type 63 two-story townhomes, 22 two-unit townhomes and 100 apartments in the mixed-use buildings

C. Gross Residential Density per acre 11.87 units per acre

D. Total amount of Open Space .98 acres

E. Proposed Non-Residential Floor Area 56,000 sq. ft.

Note: The large 9.81 acre wetland directly west of the Project Site that is subject to the jurisdiction of both the NYSDEC and USACE will also be preserved as Permanent Open Space.

13. Development Schedule:

Start 2024

Finish 2026 [The precise timing of the phasing and development of the Project Site as a mixed-use project will be dependent on market conditions.]

Stages (# of) 3-4

14. If any portion of the proposed development is planned to be sold or leased, please describe:

The commercial space will be leased along with the apartments in the mixed-use buildings and the single-story buildings with attached garages. The single-family townhomes will for sale. The two family townhomes will for lease.

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15. Open Space ownership and maintenance provisions (if applicable):

Greenspace and landscaping will be privately owned and maintained.

16. Basis for Findings (Sec. 8-3-5 of the Town Zoning Code) (Attach sheets and supplemental materials as necessary.)

A. <u>The proposed zoning and development plan must be generally consistent with the policies of the Comprehensive Plan and the Town Zoning Ordinance.</u>

1. State in detail why the proposed zoning is consistent with the adopted Town of Amherst Bicentennial Comprehensive Plan. Cite specific sections, maps, and/or figures in the plan that support the proposed zoning at this location (The Comprehensive Plan document is available at the Planning Department, Town Clerk's Office, Amherst libraries, or at www.amherst.ny.us). Add sheets as needed.

See Exhibit "7".

2. Pursuant to NYS Town Law Section 272a(11), "all Town land use regulations must be in accordance with a comprehensive plan adopted pursuant to this Section." The Town Board adopted the Comprehensive Plan pursuant to NYS Town Law 272 on January 2, 2007. If the rezoning is approved, the Town Board may require the Plan to be amended, as applicable.

Cite all text, map, and / or figures that must be amended to support the proposed zoning at this location (attach pages as necessary) and provide detailed suggested amendments.

See Exhibit "7".

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3. State why the proposed zoning is consistent with intent and objectives (Sec. 1-2-2) of the Zoning Ordinance:

See Exhibit "7".

B. Adequate Services and Utilities are available or are proposed to be made available with the construction of the development:

1. Sanitary Sewer
   Yes.
2. Storm Sewer/Drainage
   Yes.
3. Water
   Yes.
4. Other Yes.

C. Compatibility with the present zoning and conforming uses of nearby property and with the character of the neighborhood:

See Exhibit "7".

D. Suitability of the subject property for uses permitted by the current versus the proposed district:

See Exhibit "7".

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E. Whether the proposed change tends to improve the balance of uses, or meets a specific demand in the Town:

See Exhibit "7".

17. The petitioner encloses herewith the sum of $ 5,465.00 to pay the fee, and consents to the placement of a sign(s) at the described location identifying this request for a period of time to be determined by the Town Clerk.

18. The undersigned certifies that all information required to be disclosed pursuant to Section 809 of the General Municipal Law (see below) is as follows:

The undersigned swears or affirms that all statements made herein are true, that all drawings submitted correctly show the situation involved in this petition.

Sean Hopkins, Esq., Counsel for Petitioner
Signature of Petitioner

Subscribed and sworn to before me this 12th day of August, 20 24

Notary Public, Erie County, New York

MARIANNE BRAUTLACHT
Notary Public, State of New Yor
Qualified in Erie County
My Commission Expires 01/14/20

N.Y.S. General Municipal Law - Section 809 Disclosure in certain applications:

1. Every application, petition or request submitted for a variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license or permit, pursuant to the provision of any ordinance, local law, rule or regulation constituting the zoning and planning regulations of a municipality shall state the name, residence and the nature and extent of the interest of any state office or any office or employee of such municipality or of a municipality of which such municipality is a part, in the person, partnership or association making such application, petition or request (hereinafter called the applicant) to the extent known to such applicant.

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2. For the purpose of this section an officer or employee shall be deemed to have an interest in the applicant when he, his spouse, or their brothers, sisters, parents, children, grandchildren, or the spouse of any of them

   (a) is the applicant, or
   (b) is an officer, director, partner or employee of the applicant, or
   (c) legally or beneficially owns or controls stock of a corporate applicant or is a member of a partnership or association applicant, or
   (d) is a party to an agreement with such an applicant, express or implied, whereby he may receive any payment or other benefit, whether or not for services rendered, dependent or contingent upon the favorable approval of such applicant, petition or request.

3. In the county of Nassau the provisions of subdivisions one and two of this section shall also apply to a party officer. "Party Officer" shall mean any person holding any position or office, whether by election, appointment or otherwise, in any party as defined by subdivision four or section two of the election law.

4. Ownership of less than five per cent of the stock of a corporation whose stock is listed on the New York or American Stock Exchanges shall not constitute an interest for the purposes of this section.

5. A person who knowingly and intentionally violates this section shall be guilty of a misdemeanor.

P/CurrPlan/Applications2007/Rezoning & Comp Plan Amend App.
10/08

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TABLE OF CONTENTS

- **Exhibit 1:** Application to Amend the Findings Statement & Reclassify a Portion of 50 Dodge Road from NCD-RI to NCD-LC dated June 24, 2024
- **Exhibit 2:** Description of Requested Amendment of Findings Statement for Site "A" of the Muir Woods Project
- **Exhibit 3:** Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA") with attached Page 5[a]
- **Exhibit 4:** Survey of Portion of 50 Dodge Road to be Reclassified from NCD-RI to NCD-LC as prepared by Mark Andrews of GPI Engineering & Surveying dated June 19, 2024
- **Exhibit 4A**: Survey of 50 Dodge Road as prepared by Mark Andrews of GPI Engineering & Surveying
- **Exhibit 5:** Legal Description of Portion of 50 Dodge Road to be Reclassified from NCD-RI to NCD-LC as prepared by Mark Andrews of GPI Engineering & Surveying
- **Exhibit 6:** Responses to Questions 11A and 11B of the Application to Amend the Findings Statement & Reclassify a Portion of 50 Dodge Road from NCD-RI to NCD-LC dated June 24, 2024
- **Exhibit 7:** Responses to Questions 16A, 16C, 16D and 16E of the Application to Amend the Findings Statement & Reclassify a Portion of 50 Dodge Road from NCD-RI to NCD-LC dated June 24, 2024
- **Exhibit 8:** Amended Findings Statement issued by the Town of Amherst Town Board on September 27, 2021
- **Exhibit 9**: Reduced-Size Copy of Overall Site Plan [Drawing C-100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]
- **Exhibit 9A**: Reduced-Size Copy of Site Plan [Drawing C-100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]
- **Exhibit 9B:** Reduced-Size Copy of Landscape Plan [Drawing L-100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

- **Exhibit 9C:** Reduced-Size Copy of Landscape Plan [Drawing L-100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]

- **Exhibit 10:** Resolution 2021-818 as Adopted by the Town of Amherst Town Board on September 27, 2021 for the purpose of Issuing an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") for Mixed-Use Development on Site "A" of Muir Woods Property [Formerly 1081 North French Road – Current Address of 50 Dodge Road]

- **Exhibit 11:** Reduced-Size Copy of Parcel Plan [Drawing C-102 – Date: 05/28/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]

- **Exhibit 12:** Copy of the Declaration of Restrictions as recorded in at the Erie County Clerk's Office on June 21, 2018 at Liber 11330 of Deeds at Page 8243 for the purpose of complying with the relevant portion of the Amended Findings Statement issued by the Town Board pursuant to the State Environmental Quality Review Act ("SEQRA") on December 7, 2015

- **Exhibit 13:** No Impact Determination Letter Issued by Ruth Pierpont, Director, New York State Office of Parks, Recreation and Historic Preservation, dated October 10, 2001

- **Exhibit 14:** Amended Wetland Permit Issued by the United States Army Corps of Engineers ("USACE") dated February 25, 2021

- **Exhibit 15:** Amended Wetland Permit Issued by the New York State Department of Environmental Conservation ("NYSDEC") dated December 24, 2020

- **Exhibit 16:** Redline Draft of Proposed Amended Findings for Proposed Mixed-Use Project on Site "A" of Muir Woods Property

- **Exhibit 17:** Color Copy of Figure 6 of the Town of Amherst Comprehensive Plan titled "Conceptual Land Use Plan"

- **Exhibit 18:** Color Copy of Figure 21 of the Town of Amherst Comprehensive Plan titled "University Focal Planning Area – Concept Plan"

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 2 – Description of Requested Amendment of Findings Statement for Proposed Mixed-Use Project on Site "A" of the Muir Woods Property

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

EXHIBIT 2 OF APPLICATION TO AMEND FINDINGS STATEMENT AND RECLASSIFY PORTION OF 50 DODGE ROAD FROM NCD-RI TO NCD-LC

DESCRIPTION OF REQUEST TO AMEND THE FINDINGS STATEMENT AND TO RECLASSIFY PORTION OF 50 DODGE ROAD FROM NCD-RI TO NCD-LC

I. INTRODUCTION:

Sawyers Landing LLC ("Project Sponsor") is requesting that the Town Board approve a request to amend the Findings Statement issued by the Town Board pursuant to the State Environmental Quality Review Act ("SEQRA") on September 27, 2021 to allow the property at 50 Dodge Road to be developed as a mixed-use project in a manner consistent with the Overall Site Plan [Drawing C-100 – Date: 06/21/24] prepared by Carmina Wood Design, which includes a climate controlled storage building on the western portion of the Project Site. Reduced-size copies of the Overall Site Plan and the Site Plan are attached as Exhibits "9" and "9A".

The proposed mixed-use project consists of mixture of components including 2 four-story mixed use buildings that will each include 15,000 sq. ft. of 1st floor commercial space with 50 apartments per building, a four-story climate controlled storage building, single-family and two-family townhomes buildings and related site improvements. The layout for the proposed mixed-use project depicted on the Overall Site Plan has a total 207 residential units.

The proposed mixed-use project will also include all necessary site improvements including driveway connections to Dodge Road, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, an on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements.

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

The documentation being submitted on behalf of the Project Sponsor in connection with this Application to Amend the Findings Statement and Reclassify a portion of 50 Dodge Road from NCD-RI to NCD-LC attached to this Application consists of the following:

- **Exhibit 1:** Application to Amend the Findings Statement & Reclassify a Portion of 50 Dodge Road from NCD-RI to NCD-LC dated June 24, 2024
- **Exhibit 2:** Description of Requested Amendment of Findings Statement for Site "A" of the Muir Woods Project
- **Exhibit 3:** Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA") with attached Page 5[a]
- **Exhibit 4:** Survey of Portion of 50 Dodge Road to be Reclassified from NCD-RI to NCD-LC as prepared by Mark Andrews of GPI Engineering & Surveying dated June 19, 2024
- **Exhibit 4A**: Survey of 50 Dodge Road as prepared by Mark Andrews of GPI Engineering & Surveying
- **Exhibit 5:** Legal Description of Portion of 50 Dodge Road to be Reclassified from NCD-RI to NCD-LC as prepared by Mark Andrews of GPI Engineering & Surveying
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- **Exhibit 9B:** Reduced-Size Copy of Landscape Plan [Drawing L-100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]

- **Exhibit 9C:** Reduced-Size Copy of Landscape Plan [Drawing L-100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]

- **Exhibit 10:** Resolution 2021-818 as Adopted by the Town of Amherst Town Board on September 27, 2021 for the purpose of Issuing an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") for Mixed-Use Development on Site "A" of Muir Woods Property [Formerly 1081 North French Road – Current Address of 50 Dodge Road]

- **Exhibit 11:** Reduced-Size Copy of Parcel Plan [Drawing C-102 – Date: 05/28/24] prepared by Carmina Wood Design for the Mixed-Use Project at 50 Dodge Road [Note: Full-Size copy also attached]

- **Exhibit 12:** Copy of the Declaration of Restrictions as recorded in at the Erie County Clerk's Office on June 21, 2018 at Liber 11330 of Deeds at Page 8243 for the purpose of complying with the relevant portion of the Amended Findings Statement issued by the Town Board pursuant to the State Environmental Quality Review Act ("SEQRA") on December 7, 2015

- **Exhibit 13:** No Impact Determination Letter Issued by Ruth Pierpont, Director, New York State Office of Parks, Recreation and Historic Preservation, dated October 10, 2001

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Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 3 – Part 1 of the Full Environmental Assessment Form prepared pursuant to the State Environmental Quality Review Act ("SEQRA") with attached Page 5[a]

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Full Environmental Assessment Form
Part 1 - Project and Setting

Prepared By: Sean Hopkins, Esq. Hopkins Sorgi & McCarthy PLLC 5500 Main Street, Suite 343 Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsmlegal.com

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Mixed-Use Project - Site A of Muir Woods		
Project Location (describe, and attach a general location map): 50 Dodge Road - Town of Amherst - Erie County		
Brief Description of Proposed Action (include purpose or need): The proposed action consists of an amendment of the Findings Statement issued by the Town of Amherst Town Board ("Town Board") on September 27, 2021 pursuant to the State Environmental Quality Review Act ("SEQRA") to accommodate the updated layout for the proposed mixed-use project to be located at 50 Dodge Road. The layout of the mixed-use project is depicted on the Overall Site Plan [Drawing C-100] prepared by Carmina Wood Design. The residential density of the project has been reduced to 207 units. The action has been defined broadly to include all required discretionary approvals and permits as well as all site improvements including the proposed mixed-use and residential buildings, a climate controlled storage buildings, driveway connections, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, an on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements. The project purpose is to develop Site "A" of overall Muir Woods Project Site as a mixed-use project in a manner consistent with the Overall Site Plan for the project prepared by Carmina Wood Morris DPC prepared by Carmina Wood Design. The project is a Type I action pursuant to SEQRA and the Town Board issued an Amended Findings Statement pursuant to SEQRA on September 27, 2021. The proposed use is consistent with the Town's adopted Comprehensive Plan.		
Name of Applicant/Sponsor: Sawyers Landing LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsmlegal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville, NY	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:

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B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town Board - Amended Findings Statement and Reclassification of NCD Property	June 24, 2024
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Amended Site Plan Approval and Subdivision Approval	To be Determined
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☑Yes ☐No	Building Department - Building Permits; Town of Amherst IDA [PILOT, etc.]	To be determined
e. County agencies ☑Yes ☐No	Highway Work Permit - ECDPW; Water - ECWA	To be determined
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - Amended Wetland Permit; DSCA Approval and SPDES Permit	Amended wetland permit issued on 12/24/20 - DSCA & SPDES - To be determined
h. Federal agencies ☑Yes ☐No	USACE - Amended Wetland Permit	Issued on 02/25/21

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

[**Note**: The Town has an adopted Waterfront Revitalization Program.]

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):

NYS Heritage Areas:West Erie Canal Corridor [Note: The project will not have any impacts on the West Erie Canal Corridor.]

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

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C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Site "A" of the Muir Woods property is zoned New Community District - NCD-ND and NCD-RI pursuant to the Town of Amherst Zoning Map.

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☑ Yes ☐ No
If Yes,
i. What is the proposed new zoning for the site? The Applicant is proposing to reclassify 13.54 acres from NCD-RI to NCD-LC.

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department

d. What parks serve the project site?
Various Town Parks including Nature View Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Mixed-use project consisting of commercial space and various residential unit types.

b. a. Total acreage of the site of the proposed action? 17.424 acres
b. Total acreage to be physically disturbed? 17 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 17.424 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☑ Yes ☐ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
63 residential lots [2 family townhomes for sale]
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? 63 lots
iv. Minimum and maximum proposed lot sizes? Minimum 1,400 sq. ft. Maximum 1,400 sq ft.

e. Will the proposed action be constructed in multiple phases? ☑ Yes ☐ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated 3-4
- Anticipated commencement date of phase 1 (including demolition) Mar month 2025 year
- Anticipated completion date of final phase Mar month 2027 year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases:
The infrastructure necessary for each phase will be installed to ensure compliance with applicable technical standards including those for stormwater management.

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f. Does the project include new residential uses? [**Note**: The 63 one-family units consist of attached townhome units for sale.] ☑ Yes ☐ No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase	63	22		50
At completion of all phases	63	22		100

The build-out of the residential components will be based on market conditions.

g. Does the proposed action include new non-residential construction (including expansions)? ☑ Yes ☐ No

If Yes, There will be 15,000 sq. ft. of commercial space in each of the two mixed-use buildings.

i. Total number of structures 3

ii. Dimensions (in feet) of largest proposed structure: 55' height; 240' width; and 120' length

iii. Approximate extent of building space to be heated or cooled: 56,000 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑ Yes ☐ No

If Yes,

i. Purpose of the impoundment: Storm water management

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☑ Other specify: Storm water runoff from impervious surfaces.

iii. If other than water, identify the type of impounded/contained liquids and their source.

N/A

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: 1.5 acres

v. Dimensions of the proposed dam or impounding structure: N/A height; _____ length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

Impoundment area is an excavation consisting of earth fill.

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No

If Yes:

i .What is the purpose of the excavation or dredging?

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards):
- Over what duration of time?

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No

If yes, describe.

v. What is the total area to be dredged or excavated? _____ acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐ Yes ☐ No

ix. Summarize site reclamation goals and plan:

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐ Yes ☑ No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description):

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ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☑No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☑No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: 56,524 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: 51,385 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Tonawanda Creek Wastewater Treatment Plant
- Name of district: Town of Amherst Consolidated Sanitary Sewer District
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

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- Do existing sewer lines serve the project site? ☑Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☑No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 8 acres (impervious surface)

_____ Square feet or 17.42 acres (parcel size)

ii. Describe types of new point sources. Parking lots and roof tops

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

Stormwater runoff will be conveyed into the on-site stormwater management system to be installed per the applicable stringent stormwater quality and quantity standards of the NYS Department of Environmental Conservation ("NYSDEC")

- If to surface waters, identify receiving water bodies or wetlands: NYSDEC & Federal wetlands on the east portion of the site after on-site stormwater management system.
- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☐Yes ☑No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No

[**Note:** An updated Traffic Impact Study prepared by Passero Associates has been submitted based on the current project layout.]

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐Morning ☐Evening ☐Weekend ☐Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: To be determined

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other): National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 to 7:00
- Saturday: 8:00 to 6:00
- Sunday: As needed
- Holidays: Not Applicable

ii. During Operations:

- Monday - Friday: 8:00 to 11:00
- Saturday: 8:00 to 11:00
- Sunday: 8:00 to 10:00
- Holidays: 8:00 to 10:00

The hours of operation during "During Operations" as listed above apply to the first floor commercial space in the two mixed-use buildings. The hours are estimates since the tenants that will lease the first floor commercial space including both office and retail tenants have not yet been identified.

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

Construction activities will include the use of construction equipment during daytime hours that will exceed ambient background noise levels. The construction related noise impacts are a temporary unavoidable impact.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe:

n. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Lighting will be installed in compliance with the lighting standards contained in the Town of Amherst Zoning Code.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe:

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures:

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities:

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☑ Yes ☐ No

If Yes:

i. Describe proposed treatment(s):

Potential use of lawn fertilizer and pesticides on maintained portions of property in accordance with applicable standards for application and use of lawn fertilizer and pesticides.

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☑ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: 3 tons per week (unit of time)
- Operation : 3 tons per week (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: wood and metal waste may be recycled by the contract at their discretion
- Operation: Town of Amherst recycling program will be followed

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: approved NYSDEC landfill via contractor or private disposal company
- Operation: approved NYSDEC landfill via private disposal company

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☑ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Wetlands

ii. If mix of uses, generally describe:

There are mixture of uses in the vicinity of the Project Site including residential uses to the north in the Bucyrus Heights Subdivision, an elementary school, apartments and office buildings on Sweet Home Road and permanent open space to the east of Site "A".

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	8.0	+ 8.0
• Forested	0	0	0
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	17.4	0	-17.4
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)			
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace, Landscaping, Pond	0	9.4	+9.4

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c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☑ No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☑ Yes ☐ No
If Yes,
i. Identify Facilities:
1. Heritage Heights Elementary School (Sweet Home School District- 2545 Sweet Home Road); 2. Creative Play Learning Center (Private Day Care Facility- 647 Dodge Road); and 3. Four Seasons Child Care & Preschool (Private Day Care Facility- 1639 North French Road).

e. Does the project site contain an existing dam? ☐ Yes ☑ No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:
_____
_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐ Yes ☑ No
If Yes:
i. Has the facility been formally closed? ☐ Yes ☐ No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:
_____
_____
iii. Describe any development constraints due to the prior solid waste activities: _____
_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐ Yes ☑ No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:
_____
_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐ Yes ☑ No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐ Yes ☐ No
☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____
_____
_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐ Yes ☑ No
If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):
_____
_____

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v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >5 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____ %

c. Predominant soil type(s) present on project site:

Getzville silt loam	94 %
Swormville clay loam	6 %
	%

d. What is the average depth to the water table on the project site? Average: >5 feet

e. Drainage status of project site soils:

☐ Well Drained:	% of site
☐ Moderately Well Drained:	% of site
☑ Poorly Drained	100 % of site

f. Approximate proportion of proposed action site with slopes:

☑ 0-10%:	100 % of site
☐ 10-15%:	% of site
☐ 15% or greater:	% of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name Federal Waters, NYS Wetland Approximate Size NYS Wetland (in a...
- Wetland No. (if regulated by DEC) TE-33

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☑ Yes ☐ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:

i. Name of aquifer: _____

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m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐Yes ☑No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No
If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☑Yes ☐No
If Yes:
i. Species and listing:
Spiny Softshell - The Project Sponsor does not believe that Spiny Softshell is present on Site A of the Muir Woods property.

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

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e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☑ Yes ☐ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: Eligible property:Heritage Heights Elementary School

iii. Brief description of attributes on which listing is based:

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No [No impact letter issued by SHPO on October 10, 2001.]

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s):

ii. Basis for identification:

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource:

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.):

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation:

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name Sawyers Landing LLC Date June 24, 2024

Signature Sean Hopkins Title Attorney for Project Sponsor

Sean W. Hopkins, Esq.

PRINT FORM

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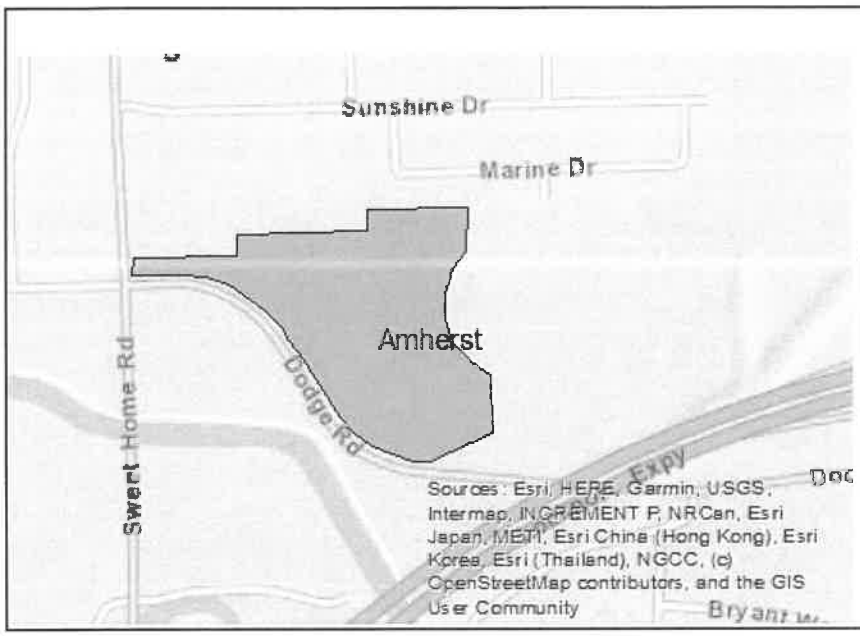
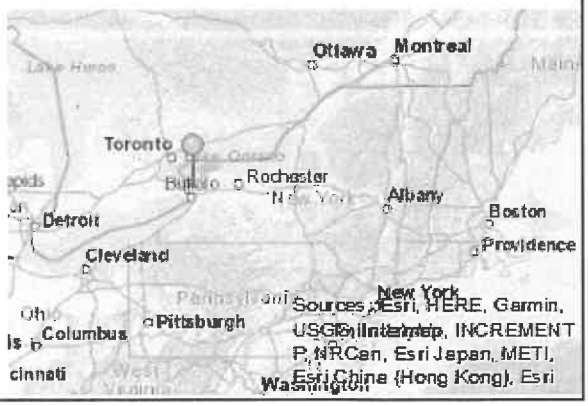
EAF Mapper Summary Report

Thursday, June 18, 2020 8:50 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters, NYS Wetland
E.2.h.iv [Surface Water Features - Wetlands Size]	NYS Wetland (in acres):34.6
E.2.h.iv [Surface Water Features - DEC Wetlands Number]	TE-33
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No

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E.2.k. [500 Year Floodplain]	Yes
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	Yes
E.2.p. [Rare Plants or Animals - Name]	Spiny Softshell
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Yes - Digital mapping data for archaeological site boundaries are not available. Refer to EAF Workbook.
E.3.e.ii [National or State Register of Historic Places or State Eligible Sites - Name]	Eligible property:Heritage Heights Elementary School
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

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TOWN OF AMHERST ATTACHMENT
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM
Mixed-Use Project - 50 Dodge Road

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Getzville Silt Loam	Severe	Severe	Severe	Severe	Moderate
Swormville Clay Loam	Severe	Severe	Severe	Severe	Severe

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   x Geotechnical report attached _____ Not applicable

   [Note: Copy of Geotechnical Report included with Application.

3. Is your property located: On Youngs Road between Dodge and Klein Roads? □ Yes x No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? □ Yes x No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? □ Yes x No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:
   __Not Applicable

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: Yes ☒ No

   Describe A

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project 243 [Sat. Peak Hour]
   Source: Updated Traffic Impact Study prepared by Passero Associates.

8. Will blasting occur during construction? □ Yes ☒ No

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ☒ Yes □ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    51,385 average flow 205,540 peak flow.

    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources,* is your property 'blue-rated' for historic significance? x Yes □ No
    [There are not any buildings located on the Project Site.]
    [Note: A copy of the No Impact Determination letter issued by SHPO is provided at Exhibit "13".]

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Exhibit 4 – Survey of 50 Dodge Road as prepared by Mark Andrews of GPI Engineering & Surveying

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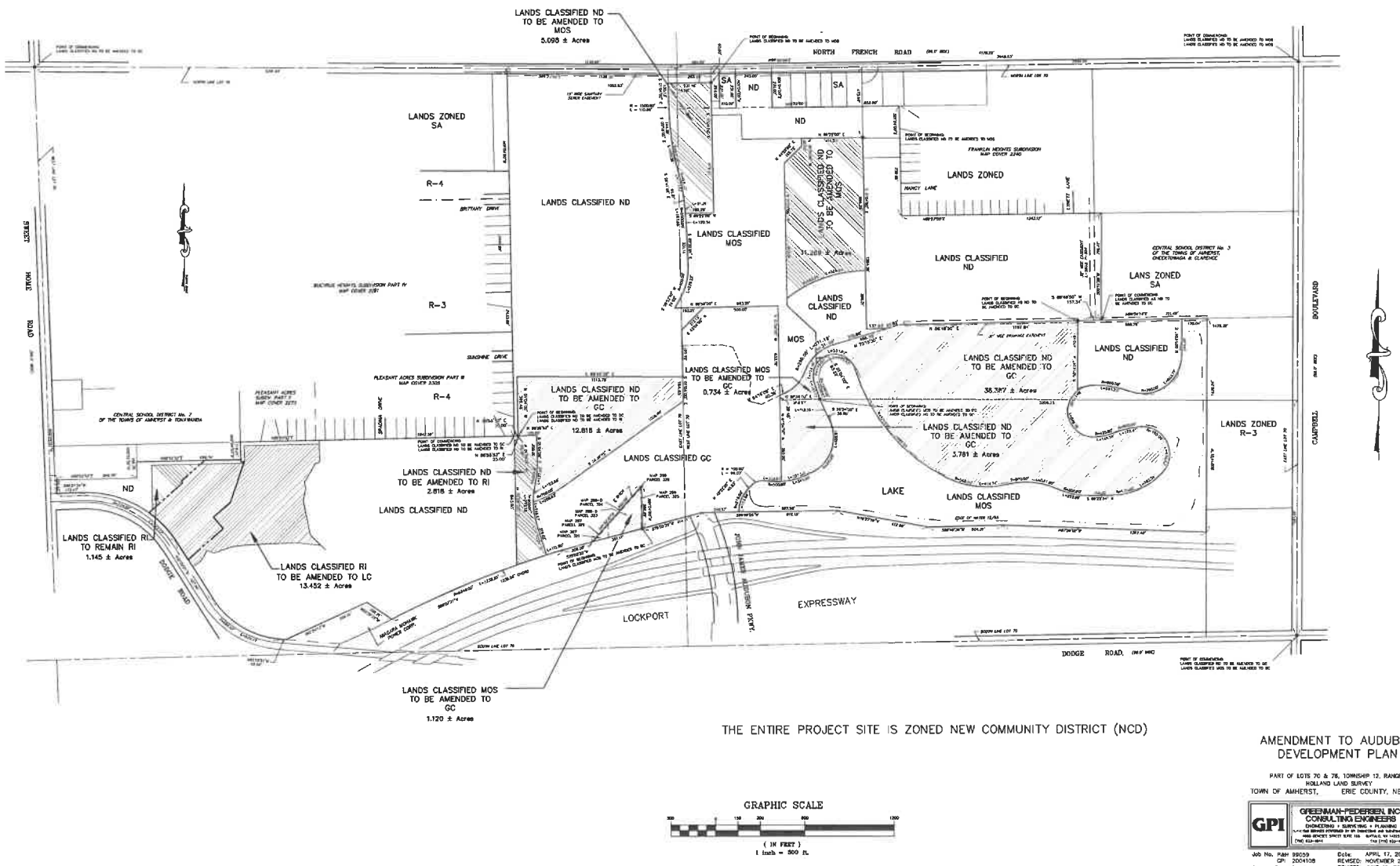

THE ENTIRE PROJECT SITE IS ZONED NEW COMMUNITY DISTRICT (NCD)

GRAPHIC SCALE

(IN FEET)
1 inch = 300 ft.

AMENDMENT TO AUDUBON DEVELOPMENT PLAN

PART OF LOTS 70 & 78, TOWNSHIP 12, RANGE 7
HOLLAND LAND SURVEY
TOWN OF AMHERST, ERIE COUNTY, NEW YORK

GPI GREENMAN-PEDERSEN, INC.
CONSULTING ENGINEERS
ENGINEERING + SURVEYING + PLANNING

Job No. PAH 99059
GPI: 2004108
Scale 1"=300'

Date: APRIL 17, 2002
REVISED: NOVEMBER 2007
REVISED: JUNE 19, 2024

059-23

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 5 – Legal Description of Portion of 50 Dodge Road to be Reclassified from NCD–RI to NCD–LC as prepared by Mark Andrews of GPI Engineering & Surveying

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

EXHIBIT 5

LEGAL DESCRIPTION OF PROPERTY TO BE RECLASSIFIED FROM NCD-RI TO NCD-LC

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Amherst, County of Erie, State of New York, being part of Lot 76, Township 12, Range 7 of the Holland Land Company's Survey, bounded and described as follows.

COMMENCING at the southwest corner of lands shown on a map of Pleasant Acres Subdivision Part II filed in the Erie County Clerk's Office under Map Cover 2273;

THENCE: N-88°-55'-52"-E along the south line of said Map Cover 2273 and partly along the south line of lands shown on a map of Pleasant Acres Subdivision Part III filed in the Erie County Clerk's Office under Map Cover 2305, a distance of 530.61 feet to a point;

THENCE: Through the lands conveyed to Ciminelli Muir Woods LLC by deed recorded in the Erie County Clerk's Office in Liber 11307 of Deeds at page 4915, the following sixteen (16) courses and distances:

1) S-01°-04'-08"-E, a distance of 25 feet to the POINT OF BEGINNING;
2) S-01°-04'-08"-E, a distance of 120.35 feet to a point;
3) S-64°-48'-00"-W, a distance of 35.05 feet to a point;
4) S-29°-42'-37"-W, a distance of 141.03 feet to a point;
5) S-10°-07'-24"-E, a distance of 43.27 feet to a point;
6) S-11°-02'-55"-W, a distance of 83.05 feet to a point;
7) S-11°-56'-26"-E, a distance of 236.39 feet to a point;
8) S-45°-19'-36"-E, a distance of 99.81 feet to a point;
9) N-83°-38'-15"-W, a distance of 172.76 feet to a point;
10) S-87°-22'-49"-W, a distance of 322.92 feet to a point;
11) S-83°-36'-25"-W, a distance of 105.17 feet to a point;
12) S-71°-08'-13"-W, a distance of 128.98 feet to a point;
13) N-67°-53'-17"-W, a distance of 50.93 feet to a point;
14) S-23°-50'-17"-W, a distance of 47.47 feet to a point;
15) S-39°-43'-51"-W, a distance of 50.80 feet to a point;
16) S-57°-29'-39"-W, a distance of 52.30 feet to a point on the northeast line of Dodge Road Relocation;

THENCE: N-32°-30'-21"-W and along the northeasterly line of Dodge Road Relocation a distance of 198.87 feet to a point of curvature;

THENCE: Northwesterly, along the northeasterly line of Dodge Road Relocation on a curve to the left having a radius of 724.00 feet, an arc distance of 272.06 to a point;

THENCE: Through the lands conveyed to Ciminelli Muir Woods LLC by deed recorded in the Erie County Clerk's Office in Liber 11307 of Deeds at page 4915, the following six (6) courses

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and distances:

1) N-48°-24'-26"-E a distance of 302.13 feet to a point;
2) N-41°-35'-34"-W a distance of 14.00 feet to a point;
3) N-48°-24'-26"-E a distance of 173.12 feet to a point;
4) N-88°-55'-52"-E a distance of 296.93 feet to a point;
5) N-02°-04'-03"-W a distance of 118.24 feet to a point;
6) N-88°-55'-52"-E a distance of 505.17 feet to a point the POINT or PLACE of BEGINNING, having an area of 13.461 acres be the same more or less.

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Exhibit 6 – Responses to Questions 11A and 11B of the Application to Amend the Findings Statement and to Amend the Comprehensive Plan & Reclassify a Portion of 50 Dodge Road from NCD–RI to NCD–LC

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EXHIBIT 6

APPLICATION TO AMEND FINDINGS STATEMENT AND RECLASSIFY PORTION OF 50 DODGE ROAD FROM NCD-RI TO NCD-LC

Question 11(A): **Description of the character of the proposed development:**

Response to Question 11(A): The updated layout of the proposed mixed-use project is depicted on the full- size copy of the Overall Site Plan [Drawing C-100 – Date: 06/20/24] for the proposed mixed-use project on Site A of the Muir Woods property prepared by Carmina Wood Morris DPC attached to this Application. A reduced size copy of the Overall Site Plan is also provided at Exhibit "9" of this Application. The project layout has been updated to add a climate controlled self-story building on the western portion of the Project Site.

The residential density of the project has been reduced to 207 units. The action has been defined with the Part 1 of the Full EAF, a copy of which is provided at Exhibit "3" broadly as follows: "All required discretionary approvals and permits as well as all site improvements including the proposed mixed-use and residential buildings, a climate controlled storage buildings, driveway connections, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, an on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements. The project purpose is to develop Site "A" of overall Muir Woods Project Site as a mixed-use project in a manner consistent with the Overall Site Plan for the project prepared by Carmina Wood Morris DPC prepared by Carmina Wood Design. The project is a Type I action pursuant to SEQRA and the Town Board issued an Amended Findings Statement pursuant to SEQRA on September 27, 2021. The proposed use is consistent with the Town's adopted Comprehensive Plan."

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Question 11(B)(1): Rationale for rezoning request: 1. Why was this site chosen?

Response to Question 11(B)(1): The reclassification of a portion of 50 Dodge Road is being sought to ensure that the residential components of the Project Site will be located on property to be classified NCD-ND. Within Section 5-2-5 of the Zoning Code, the language states that the NCD-ND classification is intended to include primarily residential areas designed to provide living space for families and individuals and that ancillary uses designed to conveniently serve residents may be located within them. Section 5-2-5 of the Zoning Code also states that the NCD-NC classification includes:

- Residences and dwelling units of every type, except as otherwise specified in this subsection. In developing a balanced community the use of a variety housing types, styles and construction methods shall be deemed most in keeping with this Section.
- Small convenience retail and service facilities, except for automobile drive-in restaurants, and ancillary office facilities designed to serve the needs of residents of the neighborhood.

Question 11(B)(2): Why cannot land be used with the existing zoning?

Response to Question 11(B)(2): Not applicable. The Project Sponsor is not seeking to amend the zoning classification of the Project Site.

Question 11(B)(3): How will this rezoning impact surrounding properties?

Response to Question 11(B)(3): Not applicable. The Project Sponsor is not seeking to amend the zoning classification of the Project Site. The Project Sponsor believes the proposed development of Site "A" of the Muir Woods property as a mixed-use project per the updated layout will not have any potentially significant adverse impacts on surrounding properties and also that the proposed use is dramatically more compatible with nearby land use than the originally proposed flex/office space and research and development use.

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Question 11(B)(4): How will this rezoning impact the school system?

Response to Question 11(B)(4): The proposed mixed-use project will have positive impacts that will benefit the Sweet Home Central School District since the mixed-use project will generate substantial annual property taxes.

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Exhibit 7 – Responses to Questions 16A, 16C, 16D and 16E of the Application to Amend the Findings Statement & Reclassify a Portion of 50 Dodge Road from NCD–RI to NCD–LC

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EXHIBIT 7

APPLICATION TO AMEND THE FINDINGS STATEMENT AND RECLASSIFY PORTION OF 50 DODGE ROAD FROM NCD-RI TO NCD-LC

Question 16(A)(1): **State in detail why the proposed zoning is consistent with the adopted Town of Amherst Bicentennial Comprehensive Plan. Cite specific sections, maps and/or figures in the plan that support the proposed zoning at this location.**

Response to Question 16(A)(1): During its meeting on October 19, 2020, the Town Board adopted Resolution 2020-792 for the purpose of approving an amendment to the Comprehensive Plan to designate Site A as appropriate for a mixed-use residential/commercial use instead of the previously proposed flex office/R&D buildings. The proposed mixed-use project is clearly consistent with the adopted Comprehensive Plan including Figure 6, which designates the Project Site as appropriate for "Commercial/Mixed Use". A color copy of Figure 6 is provided at Exhibit "17". Figure 21 of the Comprehensive Plan which is titled "University Focal Planning Area – Concept Plan" designates the Project Site as appropriate for "Commercial/Mixed Use. A copy of Figure 21 of the Comprehensive Plan is provided at Exhibit "18".

Question 16(A)(2): **Cite all text, map, and/or figures that must be amended to support the proposed zoning at this location and provide detailed suggested amendments.**

Response to Question 16(A)(2): The Project Sponsor is not seeking to amend the adopted Comprehensive Plan in connection with the updated layout for the mixed-use project.

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Question 16(A)(3): State why the proposed zoning is consistent with intent and objectives (Sec. 1-2-2) of the Zoning Ordinance:

Response to Question 16(A)(3): Not applicable. The Project Sponsor is not seeking to amend the zoning classification of the Project Site. Nonetheless, the requested amendment of the Findings Statement issued by the Town Board on October 19, 2020 is consistent with the intent and objectives of the Zoning Code for the reasons stated below.

Section 1-2-1 of the Zoning Code is titled "Purpose" and it states as follows:

> *"The purpose of this Zoning Ordinance and the intent of the legislative authority in its adoption is to promote the environment of the town and its public health, safety, convenience, comfort, prosperity and the general welfare by regulating the use of buildings, other structures and land for residences, open space, public facilities, business, services, industry or other purposes; by regulating and restricting the bulk, height, design, building coverage and location of structures; by regulating and limiting population density; and for the aforesaid purposes, to divide the land within the limits of the town into districts of such number and dimensions generally consistent with the policies of the Comprehensive Plan and to provide procedures for the administration and amendment of said Zoning Ordinance."*

The proposed development of the Project Site as mixed-use project is consistent with the "Purpose" of the Zoning Code. Section 1-2-2 of the Zoning Code sets forth the objectives of the Zoning Code. This section of the Zoning Code lists thirteen (13) objectives that are discussed below as follows:

A. To protect the character and values of residential, institutional and public uses, business, commercial and manufacturing uses and to insure their orderly and beneficial development;

Response: The proposed mixed-use project will be consistent with the objective of protecting the character and value of existing land uses. The proposed mixed-use project has been carefully designed to reduce previously authorized wetland impacts and to

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include a mixture of uses in a pedestrian friendly environment and as such represents orderly and beneficial development.

B. To provide adequate open spaces for light, air and outdoor uses to include public, common and private open space areas;

Response: The proposed mixed use project is consistent with this objective. The Project Site will include permanent open space and a portion of the recreational trail on the overall Muir Woods property that will connect to the Town's nearby recreational trail that connects to the UB North Campus.

C. To prevent overcrowding of land;

Response: The proposed mixed-use project will not result in the overcrowding of land.

D. To prevent excessive concentration of population and to prevent spare and uncoordinated development;

Response: The proposed mixed-use project will not result in excessive concentration of population. The proposed mixed-use project does not represent an example of uncoordinated development.

E. To regulate and control the location and spacing of buildings on the lot and in relation to the surrounding property generally consistent with the policies of the Comprehensive Plan.

Response: The proposed mixed-use project has been carefully designed to be consistent with the policies of the Comprehensive Plan.

F. To protect persons and property from damage and injury due to fire or flood;

Response: A SWPPP with Engineer's Report prepared by Carmina Wood Design was previously submitted for review and approval by the Town's Engineering Department. The mixed-use project will not increase the likelihood of damage and injury due to fire and flood. The proposed project will be constructed per the stringent requirements of the NYS Building Code including the fire safety standards contained therein.

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G. To preserve and protect significant natural features and vegetation, thereby preventing ecological damage and visual blight which occur when those features or vegetation are eliminated or substantially altered to serve development purposes only.

Response: The proposed mixed-use project will not be inconsistent with this objective.

H. To assure that structure and land use arrangements are aesthetically harmonious with nearby areas and structures.

Response: The development of the Project Site in a manner consistent with the updated Site Plan will be aesthetically harmonious with nearby areas and structures.

I. To regulate the location of buildings and intensity of uses in relation to streets according to plans so as to cause the least interference with and be damaged least by traffic movements and hence result in lessened street congestion and improved public safety.

Response: The proposed mixed-use project will not result in any potentially significant traffic impacts as confirmed by the updated Traffic Impact Study prepared by Passero Associates.

J. To establish zoning patterns that insure economical extensions for sewers, water supply waste disposal and other public utilities, as well as development of recreation, schools and other public facilities;

Response: The Project Site has access to sanitary sewer and water lines as well as necessary public utilities.

K. To guide the future development of the town so as to being the gradual conformity of land, structures and uses generally consistent with the policies of the Comprehensive Plan.

Response: The proposed mixed-use project is consistent with this objective since the project is generally consistent with the policies in the Comprehensive Plan.

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L. To accomplish the specific intents and goals set forth in the introduction to the respective sections.

Response: The proposed mixed-use project is consistent with this objective.

M. To protect the community from visual pollution resulting from the unregulated use of signs and other advertising devices.

Response: The proposed mixed-use project will not be inconsistent with this objective.

Question 16(C): Compatibility with the present zoning and conforming uses of nearby property and with the character of the neighborhood:

Response to Question 16(C): The proposed mixed-use project will be compatible with the present zoning and conforming uses of nearby properties and the character of the neighborhood. There are a mixture of land uses on parcels with varying zoning classifications in the vicinity of the Project Site. The nearby land uses include residential uses in the Bucyrus Heights Subdivision to the north of a portion of the Project Site, the Lockwood Villas apartment project on Sweet Home Road directly north of a portion of the Project Site, Heritage Heights Elementary School on Sweet Home Road, and office buildings on property at the southeast corner of Dodge Road and Sweet Home Road.

Question 16(D): Suitability of the subject property for uses permitted by the current versus the proposed district:

Response to Question 16(D): The Project Site is more suitable for the proposed mixed-use project that the previously proposed flex office and research and development buildings.

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Question 16(E): **Whether the proposed change tends to improve the balance of uses, or meets a specific demand in the Town:**

Response to Question 16(D): The proposed mixed-use project will improve the balance of uses in the Town and will meet a specific demand for mixed-use living environments featuring integrated residential and commercial uses in a pedestrian friendly environment.

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Exhibit 8 – Amended Findings Statement issued by the Town of Amherst Town Board on September 27, 2021

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Town of Amherst

Brian J. Kulpa
Town Supervisor

AMENDMENT #51 TO THE AUDUBON DEVELOPMENT PLAN
TO RECLASSIFY A PORTION OF 326± ACRES OF LAND
FROM NCD-ND & NCD-MOS to NCD-GC, NCD-RI & NCD-MOS
1081 & 1121 North French Road
(Z-9-02)

CERTIFICATION OF AMENDED FINDINGS

Having considered the Draft and Final Generic EIS documents, and having considered the preceding written facts and conclusions relied upon to meet the requirements of 6 NYCRR 617, this Amended Statement of Findings certifies that:

1. The requirements of 6 NYCRR Part 617 have been met;

2. Consistent with the social, economic and other essential considerations from among the reasonable alternatives thereto, the action **approved** is one which minimizes or avoids adverse environmental effects to the maximum extent practicable; including the effects disclosed in the Generic Environmental Impact Statements, and the Application to Amend the Findings Statement, and

3. Consistent with social, economic and other essential considerations, to the maximum extent practicable, adverse environmental effects revealed in the Environmental Impact Statement process and the Second Application to Amend the Findings Statement will be minimized or avoided by incorporating as conditions to the decision those mitigative measures which were identified as practicable.

TOWN OF AMHERST
Name of Agency

Signature of Responsible Official

BRIAN J. KULPA
Name of Responsible Official

TOWN SUPERVISOR
Title of Responsible Official

September 27, 2021
Date

5583 MAIN STREET, WILLIAMSVILLE, NY 14221
Address of Agency

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RESOLUTION

WHEREAS, following the April 16, 2004 submittal of a Draft Generic Environmental Impact Statement (DGEIS) prepared by Ciminelli Development Company, Inc., the DGEIS was accepted by the Town Board on September 7, 2004. The DGEIS was submitted for the proposed rezoning from NCD-ND & NCD-MOS to NCD-GC, NCD-RI & NCD-MOS and development of 326± acres of land located at1081 & 1121 North French Road. On October 28, 2004, the Planning Board held a public hearing on the DGEIS and rezoning request and recommended approval of the subject petition. Subsequently, a public hearing on the DGEIS and rezoning request was held by the Town Board on March 2, 2005. A Final Generic Environmental Impact Statement (FGEIS) was accepted by the Town Board on November 5, 2007, and a Notice of Completion of the FGEIS was filed on November 14, 2007; and

WHEREAS, the Planning Board and the Town Board have considered the content of the DGEIS, the FGEIS, and all other documents and comments and submissions made during and after the hearings.

WHEREAS, on February 18, 2014, the Project Sponsor submitted an Application to Amend the Findings Statement and Audubon Development Plan along with supporting documentation. The Planning Board held a public hearing on the Application during its meeting on March 14, 2014 and it recommended approval of the Application. On June 16, 2014, the Town Board held a public hearing on the Application but did not issue a decision on the Application.

WHEREAS, on August 17, 2015, the Project Sponsor submitted an Amended Application to Amend the Findings Statement and Audubon Development Plan for the purpose of modifying the Application filed on February18, 2014.

WHEREAS, the Planning Board held a public hearing on the Amended Application during its meeting on September 17, 2015 and the Planning Board recommended in favor of the Application. On November 16, 2015, the Town Board held a public hearing on the Application. On December 7, 2015, the Town Board voted to issue an Amended Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the comprehensive environmental review of the Project that concluded with the original issuance of a Findings Statement on December 17, 2007.

WHEREAS, the Planning Board conducted a coordinated environmental review of the development of Sites C and D of the overall Project Site as a 133 lot residential subdivision. On September 14, 2017, the Planning Board issued a negative declaration pursuant to SEQRA for the subdivision based on its determination that the subdivision would not result in any potentially significant adverse environmental impacts.

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WHEREAS, on April 15, 2019, the Project Sponsor submitted an Application to Amend the Findings Statement and Audubon Development Plan along with supporting documentation. The requested amendment of the Findings Statement issued by the Town Board on December 17, 2017 was to allow student housing to be developed on Site B of the overall Muir Woods Project Site ("Application to Amend the Findings Statement"). The Planning Board held public hearings on the Application to Amend the Findings Statement during its meeting on May 16, 2019 and June 20, 2019 it adopted a resolution recommended approval of the Application to Amend the Findings Statement during its meeting on June 20, 2019.

WHEREAS, on August 5, 2019, the Town Board held a public hearing on the Application to Amend the Findings Statement. On August 5, 2019, the Town Board voted three to one to amend the Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of a Findings Statement on December 7, 2007 and the issuance of an Amended Findings Statement on December 7, 2015.

WHEREAS, on June 24, 2020, the Project Sponsor submitted an Application to Amend the Findings Statement issued by the Town Board on December 17, 2017 and to Amend the Comprehensive Plan for Site A of the Muir Woods Project to allow a mixed-use project to be developed on Site A of the overall Muir Woods Project Site (hereinafter collectively the "Application to Amend the Findings Statement"). The Planning Board held a public hearing on the Application to Amend the Findings Statement during its meeting on August 20, 2020 and at the same meeting adopted a resolution recommending approval of the Application to Amend the Findings Statement by the Town Board.

WHEREAS, on October 6, 2020, the Town Board held a public hearing on the Application to Amend the Findings Statement. On October 19, 2020, the Town Board voted to issue the Amended Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of a Findings Statement on December 7, 2007, and the issuance of an Amended Findings Statements on December 7, 2015 and August 5, 2019.

WHEREAS, on July 7, 2021, Sawyers Landing LLC submitted an Application to Amend the Findings Statement issued by the Town Board on October 19, 2020 in order to seek to increase the allowable residential density from 202 units to 258 units. The Planning Board held a public hearing on the Application to Amend the Findings Statement during its meeting on August 19, 2021 and at the same meeting adopted a resolution recommending approval of the Application to Amend the Findings Statement by the Town Board.

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WHEREAS, on September 27 2021, the Town Board held a public hearing on the Application to Amend the Findings Statement. On September 27 2021, the Town Board voted to issue the Amended Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of a Findings Statement on December 7, 2007, and the issuance of an Amended Findings Statements on December 7, 2015 and August 5, 2019 and October 19, 2020.

NOW THEREFORE THE TOWN BOARD FINDS AND DETERMINES THAT:

1. These Amended Findings set forth specific conditions and criteria consistent with 6 NYCRR Sections 617.7, 617.9, 617.11, and 617.12 under which the site plan process can proceed. This process provides procedures to supplement the FGEIS if necessary and for public notice and opportunity to participate in hearings before the Town Planning Board before it approves a site plan. An Environmental Assessment Form will be required with site plan application for environmental review. If the proposed development does not conform with these Amended Findings, a Supplemental Findings Statement, a supplement to the FGEIS, or a Negative Declaration shall be prepared to comply with 6 NYCRR Section 617.9.

2. The proposed mixed-use, student housing and residential development as presented in the FGEIS and the Application to Amend the Findings Statement submitted to the Planning Department on July 6, 2021 is consistent with the intent and objectives of the Zoning Ordinance.

3. Adequate services and utilities must be available prior to occupancy. Review and approval of services and utilities by the Town agencies will be required for site plan approval.

4. Development will be consistent with all other applicable laws, rules and regulations.

5. As provided in 6NYCRR Part 617.10, the Town Board chose to require the preparation of a draft Generic Environmental Impact Statement (DGEIS) instead of a draft Environmental Impact Statement (DEIS) for this project. This decision was based on the scope and timetable of the development described by the Project Sponsor and depicted in the Conceptual Master Plan, which showed a multi-use development on 330± acres of land, to be built out over a 15-20 year period. The Board's decision is also based on the following reasons:

    - A DGEIS provides a lead agency with the framework for properly evaluating a conceptual master plan while identifying the important elements of the environmental setting associated with the project site. A DGEIS assesses a

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broad scope of a group of actions or a combination of effects from a single action.

- The utilization of a DGEIS provides the Town Board with the authority to establish specific criteria and thresholds by which future actions such as site plan and subdivision applications will be reviewed, including requirements for ensuring subsequent compliance with SEQR.
- The Town Board's decision to require the Project Sponsor to prepare a DGEIS acknowledges that the specific layout and appearance of the development cannot be determined at this time but rather will be decided over a period of several years and subject to market demands, and the development of the project will occur in stages.
- The SEQR regulations state that a DGEIS is appropriate for a series or sequence of separate actions and/or projects that have wide application or restrict the range of future alternative policies.
- The Town Board's utilization of a DGEIS affords it the opportunity to evaluate a broad range of anticipated impacts, and it also ensures that related actions will not be segmented in order to avoid the required analysis of the proposed development of the overall project site.

6. By the time the Findings Statement was issued by the Town Board on December 17, 2007, the proposed Muir Woods development had been significantly revised since its initial submittal in 2002, resulting in a reduction in the commercial/office component of the project from 1.8± million sq. ft. to 700,000± sq. ft. and in the residential component from 200± units to 136± units. These changes were made in response to the NYS Department of Environmental Conservation, the U.S. Army Corps of Engineers and the public to minimize impacts to wetland areas to the greatest extent possible.

Following the issuance of the Findings Statement by the Town Board on December 17, 2007, the Project Sponsor obtained the required wetland permits from the New York State Department of Environmental Conservation and the United State Army Corps of Engineers. In an effort to address current market needs while maintaining the intent of the project site New Community District zoning, the Project Sponsor submitted an Application to Amend the Findings Statement in February of 2014 to expand the range of uses within Site B of the project site to specifically allow for multi-family housing in addition to the previously approved office/retail development.

Based on input received during the review of the Application to Amend the Findings Statement to allow for multi-family housing on Site B, the Project Sponsor submitted an Amended Application to Amend the Findings Statement and Audubon Development Plan on August 17, 2015 for the purpose of modifying the Application filed on February18, 2014. The Amended Application proposed to modify the permitted use of the eastern portion of Site B, comprised of approximately 26 acres. Pursuant to the updated Application, the western

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portion of Site B comprised of approximately 20 acres would have remained designated for commercial office and retail development per the Finding Statement issued by the Town Board on December 17, 2007.

Subsequent to the issuance of an Amended Findings Statement by the Town Board on December 7, 2015, the Project Sponsor sought the required approvals and permits for the development of Sites C and D of the Project Site as a 133 lot residential subdivision that includes a roadway connection to Campbell Boulevard on 520 Campbell Boulevard. The Planning Board thoroughly considered the potential adverse environmental impacts associated with the subdivision and issued a negative declaration pursuant to SEQR on September 14, 2017 based on its determination that the 133 lot residential subdivision on Sites C and D would not result in any potentially significant adverse environmental impacts. On September 14, 2017, the Planning Board granted Site Plan Approval for the subdivision, and on June 21, 2018 granted Final Plat Approval for the subdivision. A map cover for the approved 133 residential subdivision was filed with the Erie County Clerk's Office on July 24, 2018, and construction activities in furtherance of the construction of the subdivision began in the fall of 2018.

Following the issuance of the Amended Findings Statement by the Town Board on December 7, 2015, the Project Sponsor sought and obtained extensions of the expiration dates of the wetland permits previously issued by the New York State Department of Environmental Conservation and the United States Army Corps of Engineers.

In an effort to allow student housing to be developed on Site B while maintaining the intent of the New Community District zoning, the Project Sponsor submitted an Application to Amend the Findings Statement on April 15, 2019. The Project Sponsor sought an Amendment of the Findings Statement to expand the range of uses within Site B of the project site to specifically allow for student housing in addition to the previously approved multifamily housing on the western 20± acres of Site B and the previously approved office/retail development on the eastern portion of Site B.

In an effort to allow a mixed-use project to be developed on Site A while maintaining the intent of the New Community District zoning, the Project Sponsor submitted an Application to Amend the Findings Statement and the adopted Comprehensive Plan on June 24, 2020. The Project Sponsor sought an Amendment of the Findings Statement to modify the land use category within Site A of the project site to replace the previously proposed 237,000 sq. ft. maximum Flex office/R&D use with a mixed-use development including 2 four-story mixed-use buildings along the Dodge Road frontage of Site A, 45 two-family townhomes and 2 six-unit single-story multifamily buildings. The Project Sponsor sought to amend the Comprehensive Plan to designate Site A as appropriate for Mixed Residential use. In connection with the proposed mixed-

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use development of Site A, the Project Sponsor proposed to reduce previously approved impacts to the federal wetlands subject to the jurisdiction of the United States Army Corps of Engineers ("USACE") and also to the NYSDEC Freshwater Wetland and its regulated 100 ft. Adjacent Area.

On August 20, 2020, the Planning Board held public hearings in connection with its review of the Application to Amend the Findings Statement and the Comprehensive Plan as filed by the Project Sponsor on June 24, 2020. The Planning Board adopted resolutions during its meeting on August 20, 2020 by unanimous votes recommending that the Town Board issue the Amended Findings Statement and amend the Comprehensive Plan to designate Site A as appropriate for Mixed Residential use.

On October 6, 2020, the Town Board held public hearings in connection with its review of the Application to Amend the Findings Statement and the Comprehensive Plan as filed by the Project Sponsor on June 24, 2020. On October 19, 2020, the Town Board adopted Resolution 2020-791 for the purpose of issuing an Amended Findings Statement to allow Site A of the Muir Woods Property to be developed as a mixed-use residential/commercial project instead of the previously proposed flex office/R&D buildings. Resolution 2020-791 as adopted by the Town Board on October 6, 2020 also authorized the acquisition of approximately 43 acres of Permanent Open Space via a donation by the property owner consisting of property to the west of Site B including the eastern portion of Site A consisting of approximately 9.81 acres of wetlands subject to the jurisdiction of both the NYSDEC and USACE. During its meeting on October 19, 2020, the Town Board also adopted Resolution 2020-792 for the purpose of approving an amendment to the Comprehensive Plan to designate Site A as appropriate for a mixed-use residential/commercial use instead of the previously proposed flex office/R&D buildings

On December 24, 2020, the New York State Department of Environmental Conservation ("NYSDEC") issued an Amended Wetland Permit [Permit No. 9-1422-00398/0001] authorizing the impacts to NYSDEC Freshwater Wetlands and the associated regulated 100 ft. Adjacent Area in order to accommodate the mixed-use development of Site "A". The Amended Wetland Permit reduced the impacts to jurisdictional freshwater wetlands associated with the development of Site A from 9.46 acres to 1.2 acres and reduced the impacts with the development of Site A to the regulated 100 ft. wide adjacent area from 4.2 acres to 3.65 acres.

As a result of the Amended Wetland Permit issued by the NYSDEC on December 24, 2020, the development of the Muir Woods Property will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the Project Sponsor is required to create 19.58 acres of in-kind and out-of-kind wetlands on the overall Muir Woods

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Property, in six areas, to replace the functions and benefits of the impacted wetlands. Additionally, there will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts.

On February 25, 2021, the United States Army Corps of Engineers ("USACE") issued an Amended Wetland Permit [LRB-2001-00067] authorizing impacts to 6.09 acres of federal wetlands, which was a reduction of 6.92 acres of previously authorized impact of 13.01 acre to federal wetlands, in order to accommodate the mixed-use project on Site A.

On July 7, 2021, Sawyers Landing LLC filed an Application to Amend the Findings Statement to accommodate an increase of the allowable density of the residential component of the mixed-use project on Site A from 202 units to 258 units.

7. A Supplemental GEIS, an option that the SEQR regulations leaves to the discretion of the Lead Agency, was not required for this project due to the Town Board's decision that the reduction in the project described in #6, above did not meet the criteria set forth in 6NYCRR Part 617.9(a)(7). Although the changes proposed by the Project Sponsor reduced the development significantly, it was not determined that the amended project would encroach on any land not initially identified in the scope of the original development proposal. The project changes also did not result in newly discovered information, and would not result in any significant environmental impacts not addressed or inadequately addressed in the DGEIS.

8. Traffic and Transportation (FGEIS Section 2.1)

Site specific requirements shall be established by the Town, County and State, as appropriate, as development applications are reviewed. The developer shall be responsible for any traffic mitigation required for development of the project site.

The potential traffic impacts associated with the original project proposal were clearly analyzed and identified within the Traffic Impact Study prepared by Stantec Consulting Services, Inc. dated March 2003 and updated August of 2005 in association with the acceptance of the FGEIS.

The Amended Findings Statement issued by the Town Board on August 5, 2019 included the consideration of adding student housing to the authorized uses of Site B pursuant to the Amended Findings Statement issued by the Town Board on December 17, 2007. The Project Sponsor submitted a Traffic Impact Study for the purpose of evaluating the potential traffic impacts of the development of Site B as a maximum of 515 student housing units. It was determined that the potential traffic impacts associated with student housing on Site B will be less than the potential traffic impacts of the development of Site B in its entirety as a

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maximum of 464,850 sq. ft. of commercial office and retail development pursuant to the Findings Statement issued by the Town Board on December 17, 2007.

The Town Board, as Lead Agency, requires that the Project Sponsor comply with the following mitigation measures during the development of the project site:

A. Provision for Future Extension of John James Audubon Parkway to North French Road

The extension of John James Audubon Parkway through the project site and connecting to North French Road was proposed in the initial Concept Plan submitted for the Muir Woods project in 2002. This proposal was also incorporated into the DGEIS submitted to the Town in 2004. The connection was removed from the Concept Plan in response to the requirement from the NYS Department of Environmental Conservation to further reduce impacts to State and federal wetlands. The Town of Amherst may in the future be interested in the possibility of a future northerly extension of John James Audubon Parkway to North French Road while acknowledging such possible future extension would require approvals from both the NYS Department of Environmental Conservation and the United States Army Corps of Engineers.

The rationale for the road connection was found in several planning documents, both historical and recent:

- The Amherst Community Development Plan adopted by the Planning Board in 1975 includes the extension of the then-planned Lockport Expressway through the subject site as a future Minor Arterial road.
- A report prepared by NYSDOT in 1976 anticipated the extension of the John James Audubon Parkway and forecast its use by 1,950 vehicles per hour.
- The Amherst Bicentennial Comprehensive Plan, accepted by the Town Board in February 2004 and adopted by the Town Board in January 2007, identifies the "Audubon Parkway Extension" in the map showing the Future Thoroughfare System.

The 30+ years of anticipating this roadway connection point to its significance in meeting the transportation goal of improving circulation within the Town and the role this connection would play in overall Town development. Given its importance, the Town Board is requiring that the future location of this connector be shown on site plans submitted for review, and that sufficient land be reserved by the Project Sponsor for the eventual connection to be constructed. The road construction and alignment will be subject to approval by the NYSDEC and the U.S. Army Corps of Engineers, as applicable.

B. Residential Connection to Lynette Lane

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The residential component of the proposed Muir Woods development to occur on Sites C & D may have a direct road connection to Lynette Lane. There will be no direct roadway connection to Nancy Lane. Non-residential traffic will be discouraged from using Lynette Lane through the implementation of various traffic calming measures to be proposed during the site plan review process for the development of Sites C & D, subject to review of such traffic calming measures by the Town Traffic-Safety Board and Fire Chief's Association. These measures include:

1. The lack of direct sight lines for motorists to discourage non-residential traffic from utilizing Lynette Lane to access North French Road;

2. Curvilinear road design; and

3. Installation of signage posting the road for "resident and emergency traffic only" or other such measure to prohibit non-residential traffic from travelling on Lynette Lane and the proposed public roadways within the existing residential subdivision;

If a problem is determined to exist based on the Phase 2 traffic study, further measures to discourage traffic of prohibit cut-through traffic will be considered.

C. No Internal Roadway Connection to Dodge Road

The internal connector road within the Muir Woods development is not proposed to have a westerly connection to Dodge Road; the only direct vehicular connection to Dodge Road will be from the portion of the project located in the western portion of the project site (Site A). If warranted at some future time by a traffic analysis, a connection to Dodge Road may be made from the internal connector road if required permits for such a roadway connection can be obtained from the NYSDEC and the US Army Corps of Engineers.

D. Updated Traffic Impact Study

The Traffic Impact Study will be updated when any of three established thresholds are met:

1. Completion of Phase I development, defined as full build-out of Site B, or

2. prior to approval of any site plan in Site C or Site D or any direct or indirect connection to any of the Sites with Lynette Lane, or

3. when the number of combined vehicular trips entering and exiting the site during the AM weekday peak travel hour reaches 858 trips, or

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4. when the number of combined vehicular trips entering and exiting the site during the PM weekday peak travel hour reaches 774 trips.

If actual conditions exceed projections, this will be reflected in the updated TIS to be prepared by the Project Sponsor, and the Project Sponsor may be required to implement traffic related mitigation measure sooner than expected.

Any mitigation measures, including off-site mitigation measures that are required as a result of the updated TIS, shall be the sole obligation of the Project Sponsor, if approved. Any off-site improvements, including the acquisition of private property required to make those improvements, shall be conditions of any site plan approval and treated as Public Improvement Permits (PIPs) for the purpose of final permitting. At no time shall the Town be required to make any off-site improvements or acquire private property, either by purchase or through its eminent domain powers, to mitigate the impact of this development project.

E. Alternate Access to Campbell Boulevard

During the original environmental review of the proposed project which concluded with the Town Board's issuance of a Findings Statement on December 17, 2007, the Project Sponsor attempted to seek a vehicular connection from the site to Campbell Boulevard through property located at 520 Campbell Boulevard which is owned by the Williamsville Central School District. The Town also participated in efforts to obtain access to Campbell Boulevard via this property. These attempts were not successful.

The Project Sponsor eventually was successful in acquiring 520 Campbell Boulevard from the Williamsville Central School District on December 5, 2017 and the approved 133 residential subdivision on Sites C and D includes a public roadway connection on 520 Campbell Boulevard to Campbell Boulevard.

F. Construction Vehicles

As part of the public comment period for the project, concerns were raised regarding the use of construction vehicles on existing residential streets in the adjacent Franklin Heights Subdivision to access the project site during project construction. In order to avoid the adverse environmental impacts associated with construction vehicles, existing residential streets shall not be utilized by construction vehicles to access the project site. The infrastructure to be constructed for the project shall be appropriately sequenced so that construction vehicles can access the site via the northerly extension of John James Audubon Parkway and Doge Road only.

Any future builder, owner or developer who purchases lots for development within Site C & D shall be prohibited from using Lynette Lane as a means of

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access for construction vehicles. A deed restriction incorporating this restriction shall be a prerequisite of the sale of any lots within Sites C and D. and the Town shall be provided with a copy of the recorded deed restriction, which shall not be recorded at the Erie County Clerk's Office until the content and form of the deed restriction has been reviewed and approved by the Building Department and Town Attorney's Office.

On June 21, 2018, a Declaration of Restrictions was recorded at the Erie County Clerk's Office (Liber 11330 of Deeds at Page 8243) for the purpose of complying with the relevant portion of the Amended Findings Statement prohibiting construction vehicles from utilizing Lynette Lane for access by construction vehicles.

G. Break in Access for Connection to Lockport Expressway (I-990)

The proposed northerly extension of John James Audubon Parkway as a Town roadway to provide access to the project site requires a break in access to the Lockport Expressway (I-990). The NYSDOT has been aware of this requirement since the initial petition by the Project Sponsor in 2002. Prior to the granting of the break in access, several conditions must be met, including completion of any required environmental compliance. Once completed and inspected, the Project Sponsor will be required to dedicate the northern extension of John James Audubon Parkway to the Town for permanent use as a public roadway to be dedicated to the Town of Amherst.

On May 20, 2019, the Town Board adopted a resolution stating the Town will serve as the applicant for the required Break-in-Access for the proposed northerly extension of John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst.

The Town filed an Application for Break-in-Access with the New York State Department of Transportation on August 21, 2019. The NYSDOT has not yet issued a decision on the pending request for Break-in-Access approval.

The Break-in-Access for the proposed northerly extension of John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst will result in numerous public benefits including, but not limited to, accommodating the potential future extension of the NFTA light rail and a terminus for such light rail on Site B, publicly accessible parking for a recreational trail that will cross the overall Muir Woods Project Site and connect to the Town's recreational trail (extending from Niagara Falls Boulevard to the trailhead near the intersection of North Forest Road and Maple Road), and a potential future extension of John James Audubon Parkway as a public roadway connecting to North French Road.

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H. Traffic Mitigation Measures

Dodge Road / Project Site Roadway

Phase I development:

- Installation of a stop sign to the southbound (site driveway) approach
- Construction of one shared left-right turn lane for southbound site driveway approach

Full development:

- No additional improvements

John James Audubon Parkway / I-990 Ramps

Phase I development:
Upon the completion of Phase I development, (Phase I development defined in Section 8, Part D.1. of this Amended Findings Statement) the Project Sponsor shall be required to provide a current trip count Report for both the a.m. and p.m. peak travel hours. Subject to the findings of a warrant analysis prepared in accordance with appropriate traffic engineering standards as determined by the updated trip count Report and based on an analysis of the potential impacts upon existing Levels of Service at this intersection, the Project Sponsor may be required to work with the New York State Department of Transportation to provide the following mitigation measures:

- Installation of traffic signals, each with their own controller, at both the northbound and southbound I-990 to John James Audubon Parkway
- Installation of a wire connection between these two new signals and the existing traffic signal at John James Audubon Parkway and Dodge Road in order to coordinate all three traffic signals
- Widening of both the northbound and southbound I-990 off-ramps to provide one additional turning lane on each ramp approach to John James Audubon Parkway

Full development: If any of the thresholds identified in 'D' above are met, the following improvements will be evaluated and may be required:

- installation of a third lane to the northbound off-ramp in order to provide two left turn lanes and one right turn lane
- add a free-flow southbound right turn lane at the southbound ramp, including a second receiving lane on the ramp to merge to one lane prior to the I-990 mainline

Dodge Road / John James Audubon Parkway

Phase I development:

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- Traffic signal timings will need to be adjusted periodically over time as warranted by changing travel patterns

Full development:

- Construction of a westbound right turn lane. It is anticipated that this improvement will be required when approximately 75% of the development is complete or when the number of westbound right turning vehicles from Dodge Road exceeds 300 vehicles per hour during the morning peak travel period.

North French Road / Sweet Home Road

Phase I development:

- Adjustments to traffic signal timing as travel patterns warrant modification

Full Development:

- Construction of an eastbound right turn lane. Traffic volumes turning right at this location currently exceed guidelines recommended in the Highway Capacity Manual for consideration of installing a separate right turn lane. While construction of this lane is currently warranted to address current existing traffic operations in the area, it will not be needed as a result of traffic to be generated by the proposed development of the project site until approximately 90% of the proposed development has been completed, since new traffic projected to be generated by the project will only add a few additional vehicular trips to this traffic movement.
- Modify signal timings during both the morning and evening peak hours, as necessary. Recent improvements to this intersection to provide protected phasing for the left turns will reduce the number of left turn accidents at this location. Additionally, future planned improvements to be implemented by Erie County will assist in further reductions in the number of accidents at this intersection.

North French Road / Campbell Boulevard

Phase I development

- Adjustments to traffic signal timing as travel patterns warrant modification

Full development:

- Add protected/permitted phasing for eastbound, northbound and southbound left turns when the traffic signal is upgraded in association with the improvement identified above.

North French Road / I-990 Ramps
Dodge Road / Sweet Home Road
Dodge Road / Campbell Boulevard

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be 4.3 acres of stream channel enhancement on-site (totaling approximately 2,630 linear feet).

- The development of the eastern portion of Site B for residential purposes, shall not include any owner occupied housing units within the State regulated wetland or the 100 ft. regulated Adjacent Area that do not involve oversight by either a homeowners or condominium association to ensure there will not be any impacts into the 100 ft. regulated wetland Adjacent Area that is to be preserved on Site B.

Federal Wetlands:
As stated in its letter dated August 27, 2007, the United States Army Corps of Engineers (USACE) has field verified that the federal wetland boundaries located on the Muir Woods project site as shown on the wetland delineation map prepared by Greenman-Pedersen, Inc. dated May 2007 are accurate. The wetland areas were delineated by Earth Dimensions, Inc. and summarized in a final wetland delineation report dated May 16, 2007.

The Project Sponsor provided a complete Joint Application For Permit for wetland impacts associated with the project to the USACE and NYSDEC as of June, 2009. After thoroughly reviewing the complete application and associated wetland impacts, the USACE issued a Validated Department of the Army Permit for wetland impacts associated with the project as of May, 2012. Additionally, having thoroughly reviewed the complete application and associated wetland impacts, the NYSDEC officially issued a Freshwater Wetland Permit and Water Quality Certification for wetland impacts associated with the project as of November, 2009.

On May 14, 2012, the United States Army Corps of Engineers ("USACE") issued Department of Army Permit No. 2001-00067. The permit issued by the USACE permitted to impact 17.83 acres of Federal wetland, and 1.29 acres (approximately 5227 linear feet) of jurisdictional tributaries for the construction of Muir Woods project. On May 6, 2016, the USACE extended the permit expiration dated from May 14, 2012 to November 30, 2019. The USACE issued a modification of Permit No. 2001-00067 on June 20, 2018 in connection with the development of Sites "C" and "D" as a residential subdivision. On January16, 2019, the USACE extended the expiration date of Department of Army Permit No. 2001-00067 to November 30, 2024.

On February 25, 2021, the United States Army Corps of Engineers ("USACE") issued an Amended Wetland Permit [LRB-2001-00067] authorizing impacts to 6.089 acres of federal wetlands, which was a reduction of 6.921 acres of previously authorized impact of 13.01 acre to federal wetlands, in order to accommodate the mixed-use project on Site A.

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10. Wildlife / Biological Resources (FGEIS Section 2.3)

The NYSDEC's Natural Heritage Program has reported no record of known occurrences of rare or state-listed animals or plants, significant natural communities, or other significant habitats, on or in the immediate vicinity of the project site. The Project Sponsor will be required to implement the following mitigation measures in order to minimize impacts to wildlife resources to the maximum extent practicable:

- A comprehensive erosion control plan will be developed and implemented to protect vegetation and water quality.
- Off-limit areas, including wetlands, will be delineated prior to construction to avoid or minimize impacts to vegetation. The construction workforce will be educated as to respecting and adhering to physical boundaries of off-limit areas.
- Best Management Practices will be followed during construction.
- The establishment of invasive vegetative species will be deterred through manual extraction and rapid establishment of desirable vegetation. Exposed and disturbed soils will be seeded, planted and mulched to prevent the colonization of invasive species. Volume 8 of the Appendix of the FGEIS at Exhibit F (*SJWPA Appendix* M) contains a discussion of the proposed on-site wetland mitigation including the protection of habitat areas.
- Waterfowl activity will be deterred in the off-site wetland mitigation area located in the Town of Newstead through the use of mylar tape, snow fencing, 4-7 ft. tree plantings and the seeding of upland grassland areas with a cool season grass.
- The proposed on-site wetland mitigation system will be designed to provide seasonal aquatic habitat for fish, waterfowl and amphibians; habitat for multiple covertypes of wetland plant species; and passerine bird nesting, feeding and resting habitat.
- The project site historically has had an elevated number of deer-vehicle accidents on the roads surrounding the parcel. This parcel is a portion of a much larger habitat area which also includes Nature View Park to the north and is not a "closed" habitat area. The Planning Department, in conjunction with the Police Department, will continue to monitor the deer population throughout the Town and implement approved methods of reducing deer/vehicle accidents in accordance with the Deer-Vehicle Accident Management Plan.

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11. Drainage and Flooding (FGEIS Section 2.4)

The following measures shall be implemented by the Project Sponsor to mitigate drainage and flooding impacts to the maximum extent practicable:

A. The Town Highway Department shall have access to all Town ditches that are on the subject property including Town ditches 4, 4A, 4B and 4C. The Project Sponsor will be required to grant public easements to the Town to these ditches to ensure their proper maintenance. No aspect of the Muir Woods development will inhibit access to Town ditches or create undue burden to the Town for restoration of easement property used to access Town ditches. On June 28, 2018, the Project Sponsor recorded a Permanent Access and Drainage Easement at the Erie County Clerk's Office (Liber 11331 of Deeds at Page 1521) for the purpose of granting the Town an easement to access town ditches and stormwater management facilities on the Project Site including the existing lake.

B. The project site and the surrounding vicinity are known as locations for high amounts of beaver and mosquito activity. Access to the Town Highway Department for control of this activity in Town ditches or other areas of the development shall be provided.

C. The Project Sponsor shall be responsible for cleaning and debrushing of all Town ditches located on the project site during the initial construction phases of the project. The Project Sponsor will also be responsible for long-term maintenance of stream/drainage features and detention/stormwater basins; for maintenance of on-site wetland mitigation areas during the monitoring period; and for the construction of all drainage improvements required for development of the project site.

D. The Project Sponsor shall be required to construct any ponds and sand filters required stormwater quality treatment. All ponds and sand filters to be constructed on the project site will be privately owned and maintained, with public drainage easement to be granted by the Project Sponsor to allow Town to properly maintain the inlet and outlet pipes of any wet ponds.

E. All stormwater runoff will be treated to standards approved by the Town Engineering Department prior to discharging into the existing lake on the project site or Town ditches. No additional detention is being proposed for the Muir Woods development for stormwater quantity control.

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F. All buildings in the west portion of the Muir Woods site located within the Ellicott Creek flood plain will be at a minimum elevation of 576.0 feet, or one foot above the base flood elevation as determined by the Town Building Commissioner.

As development is proposed, specific drainage plans will be reviewed and approved by the Town Highway and Engineering Departments and the NYS Department of Environmental Conservation/US Army Corps of Engineers during site plan review, to ensure there is no adverse impact to the Ellicott Creek Flood Control system.

G. Upon development, the existing 32± acre lake in the southeast portion of the project site will be maintained with a normal lake level of 569.55 feet. The existing 42-inch CMP outlet at the west end of the lake will remain as it is. All stormwater from the east side of the development around the lake will pass through a stormwater quality treatment facility consistent with the NYS Stormwater Management Design Manual and Phase II Stormwater SPDES requirements prior to entering the lake. This system currently designed as sand filters may evolve into wet ponds, bio-retention filters, and/or other acceptable practices under the Design Manual and SPDES requirements.

H. Backyard runoff from proposed residential units will be separated from wetland mitigation areas and wetlands either by a ditch or rear yard drains to preclude pollution of those areas by lawn chemicals, per NYSDEC letter dated October 26, 2007.

I. A detailed Stormwater Pollution Prevention Plan (SWPPP), including a Sediment and Erosion Control Plan, for the various phases of the project including any related on-site drainage areas shall be submitted as specific site plans are submitted for review. The Stormwater Pollution Prevention Plan for each phase of the project will need to be reviewed and approved by the Town's Engineering Department.

J. The Project Sponsor shall be required to comply with the findings and recommendations of the Preliminary Drainage report prepared by Greenman-Pedersen, Inc. in August 2007 and any updated reports during the course of development.

K. The Project Sponsor will provide backyard drainage for the existing homes that are directly adjacent to the portions of the project site that will be developed for residential use. This requirement pertains to Sites and D. Additional drainage improvements for the areas along the rear yards of the homeowners on Nancy Lane will also be installed by the Project Sponsor. The drainage pipe to be installed in the rear yards of the new residential

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units that will be integrated with the new drainage swale behind the residents of Nancy Lane will be a minimum diameter of 12 inches.

12. Character and Quality of Life Issues (FGEIS Section 2.5)

A. Setbacks

On those portions of the project site where commercial or student housing development will be directly adjacent to existing residential areas (i.e. Bucyrus Heights), setbacks will retain existing vegetation to a depth that provides an adequate buffer. The following minimum setbacks will be required:

- The planting of additional trees and shrubs by the Project Sponsor within the minimum setback area may be required to supplement the existing vegetation in order to provide adequate buffers.

- A combination of earthen berms and new vegetation will be required in those portions of the minimum setback area where there is not sufficient existing vegetation to provide an adequate buffer. The minimum height at the top of berms shall be three feet, and the maximum slope shall be 1 on 3 (33%) to promote the growth and long-term viability of trees and shrubs planted on the berms. Berms should have a natural appearance by varying their width and height.

- Site A (western portion of the project site) – This portion of the project site will be utilized for mixed-use; a portion of Site A is located directly south of the Bucyrus Heights subdivision.

  - 25 ft. minimum building setback from residential lot line for single-story residential buildings.

  - 90 ft. minimum building setback from residential lot line for attached and detached two-family townhome style units.

  - 250 ft. minimum building setback from residential lot line for four-story mixed use buildings.

  - 250 ft. minimum building setback from residential lot line for four-story multifamily building.

  - 60 ft. parking setback from residential lot line

- Site B (center portion of site) – This portion of the project site will be developed around the extended John James Audubon Parkway as a

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public roadway to be dedicated to the Town of Amherst. Site B will be developed as student housing or for the land uses permitted pursuant to the Amended Findings Statement issued by the Town Board on December 17, 2015. The following setback standards apply to the development of Site B:

- 60 ft. building setback from residential lot line. If the height of any proposed buildings exceeds 50 feet, the required minimum building setback shall be equal to the height of the proposed building.

- 90 ft. parking setback to residential lot line

B. Building Height

The following maximum building heights will be observed for the proposed development:

- Site A (western portion of the project site) – This portion of the project site will be the location of mixed-use and residential buildings and a portion of Site A is located directly south of the Bucyrus Heights subdivision.

  - Maximum building height for mixed-use and multifamily buildings shall be four-stories and 55 ft. as measured from the finished grade to the top of any parapet (excluding any rooftop mechanical equipment). All mechanical equipment shall be properly screened in accordance with the standards contained in the Zoning Code adopted by the Town Board in May of 2006.

  - Maximum height of any residential buildings within 90 ft. of a residential lot shall be 25 ft.

- Site B (center portion of the project site) – This site will be developed around the extended John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst. Site B will be developed as student housing or Site B will be developed as permitted to the Amended Findings Statement issued by the Town Board on December 17, 2015.

  - There will not be a maximum height for buildings to be constructed on Site B. All buildings will be required to comply with a minimum required setback that shall be the greater of 50 feet or the height of the proposed building at the point of its maximum height (including rooftop mechanicals, etc.)

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13. Soil Stability and Foundation Issues (FGEIS Section 2.6)

The Geotechnical Engineering Report prepared by McMahon & Mann Consulting Engineers, P.C. dated June 2005 includes findings and foundation considerations for future construction of the various components of the project. The report is included in Volume 6, Appendix I of the FGEIS.

The Town shall not grant site plan, subdivision or Public Improvement Permit (PIP) approval for construction of any component of the project (buildings, parking areas or infrastructure) unless the identified limitations as discussed in the McMahon & Mann report are adequately accounted for. The applicant shall be required to provide documentation of site-specific soil characteristics and comply with all relevant Town building codes regarding soil conditions.

Additional mitigation measures to be undertaken by the Project Sponsor, subject to determination by the Building Department, may include:

- Perform individual soil borings for each proposed structure to accurately determine the specific geotechnical design perimeters.
- Take measures to control the moisture content of the soils outside the structure. These may include installation of an irrigation system that would maintain near-saturated conditions in the soil around the structure during dry summer months, and/or installation of an exterior vapor barrier that extends out away from the structure around the perimeter.
- Monitoring of soil moisture with supplemental foundation watering during dry months.
- Use of a lower allowable bearing pressure for design of the spread footings.
- Placement of a minimum of two continuous #5 horizontal longitudinal reinforcing bars in each of the following locations: in the footing, at the base of the foundation wall, and at the top of the foundation wall.
- Use of an isolation joint between the basement floor slab and the foundation wall.
- Installation of a quality vapor barrier under the basement floor slab.
- Installation of a foundation drain system designed so that the floor elevation of the sump is above the elevation of the bottom of the footing.

14. Economic Impacts (FGEIS Section 2.7)

All infrastructure required to support the development of the project site will be installed at the Project Sponsor's expense. Town-wide or localized special assessment districts (sewer, water, highway, etc.) are established so operating cost can be spread over many taxpayers who use specific services.

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According to the "Cost of Servicing/Revenues Generated Land Use Study" in December 2006 commissioned by the Amherst Industrial Development Agency, for every $1.00 attributed to residential use, $1.11 is expended in providing government services, while just $0.48 is expended for commercial use and $0.60 is expended for open land. As a predominantly commercial oriented mixed-use project, the estimated $3,500,000 in yearly tax revenue (2007 estimated) to the Town at full build out projected to be generated by the project is expected to cover the cost of any additional services including police and fire protection, snow plowing, maintenance of roads, water and sewer infrastructure, ditches, etc.

An economic real estate study for the proposed Muir Woods project was completed by Northeast Appraisers in March, 2002 which analyzed residential demand and property values. A subsequent Economic Analysis was completed by Real Property Services, LLC in July 2006, which is included in Appendix K, Volume 8 of the FGEIS. The conclusions of those reports are:

- There will be no negative impact on the marketability or values of nearby existing housing. The project may potentially have a positive impact on surrounding residential property values due to increased demand on desirability to live in close proximity to the development.

- The proposed project development will add over $70 million to the Town of Amherst tax base when completed, and generate over $3.4 million in tax revenue per year at stabilized 2008 levels.

- Over the first 10 years of development, the project is projected to generate over $21.4 million in tax revenue, as compared to total tax revenue of approximately $260,000 that would be generated if the project site remains as vacant land over the same period.

- It appears that both the Sweet Home and Williamsville School Districts will be impacted minimally with regards to expenditures on a per student basis. This takes into account that more than 50% of the residential development will consist of patio homes, which primarily cater to "empty nesters" and typically generate less students per household.

- The competitive advantages of the project site which are expected to support strong market absorption include its direct interchange access from the Lockport Expressway (I-990) and the high visibility of the site from expressway traffic.

15. Noise and Light Issues (FGEIS Section 2.9)

Noise – It is anticipated that the project site will be built-out in stages over many years and, as such, there is a need to impose mitigation measure for noise from

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construction activities to minimize this identified adverse environmental impact to the maximum extent practicable. Both temporary and long terms noise impacts may result from the construction activities on the project site as well as from the proposed use of the project site.

Noise from construction-related activities, which will exceed local ambient levels for noise outside of structures, may cause some temporary annoyance to nearby residents. It is expected that this impact, caused by heavy equipment, construction vehicles and power tools, will continue throughout the duration of construction. In order to reduce this noise, the following measures will be undertaken by the Project Sponsor:

- Limit major construction activities to daytime hours
- Use of construction equipment with mufflers
- The preservation of existing vegetation to the greatest extent practicable will provide a noise barrier to existing residential areas.
- If blasting is required, the developer will follow all requirements of the Town Blasting Ordinance

Noise resulting from the occupation and usage of the buildings constructed on the project site can be expected to result in sound levels that are characteristic of suburban office and residential developments and should not be significant.

With the Lockport Expressway (I-990) forming the southern boundary of the project site, and its design as an elevated highway for a portion of this boundary, traffic is considered the largest source of existing noise. Levels from typical noise generators that may be expected to exist in the vicinity of the project site include:

Distant traffic (45 mph)	45 – 50 decibels
Passenger car pass-bys	70 decibels
Accelerating trucks	85 decibels
Distant aircraft noise	60 – 85 decibels

The Transportation Project Report for the Lockport Expressway evaluated the potential noise impacts of the entire I-990 project, including the interchange that will be improved in connection with the proposed project. A copy of the Noise & Air Pollution Study is found in Volume 6 of the Appendix of the DGEIS at Exhibit 30. In addition, there is not any development directly adjacent to the existing interchange that will be impacted by the proposed interchange improvements. To the south of the northbound off-ramp there are some residential units situated along Dodge Road. However, the planned improvements at the existing off-ramps will not result in a movement of traffic 50% or more closer to source receptors.

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Light – To mitigate the light spillage from exterior lighting on adjacent residential properties, especially the Bucyrus Heights neighborhood, the following measures will be implemented:

- Appropriately located lighting, downward-directed lighting fixtures or hooded lighting will be used to prevent off-site light spillage on adjacent residential areas. The light fixtures and their placement will follow all Town of Amherst code requirements for usage and design. The Town Zoning Code requires a lighting plan to be submitted during the site plan review process, and the standards contained in the relevant section of the Zoning Code regulate lighting spillover from commercial locations onto adjacent residential land uses.

- Screening of proposed commercial buildings and parking lots will be provided through the creation of berms or landscaping elements on the periphery of developed areas (see Section 10A above).

16. Open Space and Recreation (FGEIS Section 2.10)

The proposed internal trail system shall be installed (Sites C & D) of the "The Preserve at Muir Woods" development, provided it does not impact regulated wetlands or is permitted by permits issued by the NYSDEC and/or USACE. Public access to a portion of the existing lake will be provided. The majority of State Wetlands TE-22, TE-33, and TE-34 will remain as Major Open Space (MOS). As a result of the modifications to the project, approximately 224± acres of the project site will be preserved as open space.

The proposed recreational trail connecting sites A, B, C, and D of the Muir Woods Development shall connect to the Town's existing trail system as shown in Figure 4 (Park, Open Space and Trail map) and Figure 2.1 (University Focal Planning Area Concept Plan) of the adopted Amherst Bicentennial Comprehensive Plan and shall be constructed by the Project Sponsor as part of the Muir Woods project. Each development site of the Muir Woods Development shall complete its portion of the trail system prior to the issuance of any certificate of occupancy by the Town of Amherst Building Department.

The Project Sponsor will work with the Town toward achieving the trail connections. An opportunity for a future multi-use trail connection northerly to Nature View Park shall be maintained in accordance with the Town Comprehensive Plan.

17. Other Issues (FGEIS Section 2.12)

A. Reclassification of Land

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The entire project site is zoned New Community District (NCD), and no changes are proposed to remove the property from the NCD zoning district classification.

The original request by Ciminelli Development Company, Inc. in 2002 was to reclassify 326± acres of land from NCD-ND and NCD-MOS to NCD-GC, NCD-RI and NCD-MOS. This request was reviewed and commented on over a five year period. As a result of discussions with the NYS Department of Environmental Conservation during that time, the petitioner amended the original Muir Woods Concept Plan by reducing the overall development from 144 acres to 110 acres in order to minimize wetland impacts. In addition, the various components of the development were altered so that the proposed size of the commercial office/R&D space was reduced from 1.8 million sq. ft. to 700,000 sq. ft. The proposed "village center" originally envisioned was also eliminated. The result is a different land pattern from that initially proposed and one that is not consistent with the originally-requested reclassification districts.

The following additional steps shall be undertaken as part of the Findings for this project:

- The parcels to be reclassified to NCD-GC shall be deed restricted to prohibit the following uses:
    - Automobile sales and service facilities (except vehicles used primarily on the subject property)
    - veterinary clinics or kennels
    - gasoline service station will be prohibited around the existing lake

    On June 21, 2018, a Declaration of Restrictions was recorded at the Erie County Clerk's Office (Liber 11330 of Deeds at Page 8243) for the purpose of prohibiting the above described uses on the portion of the Project Site reclassified to NCD-GC.

- At the Town Board's direction, the Town shall initiate a reclassification of the remainder of wetland areas contained in the original project proposal as Major Open Space (MOS).

B. Land Use

The proposed development will follow the program summarized below as depicted in the original Findings Statement concept plan for the project dated September 2007, as depicted in the Concept Plan for Site B dated August 14, 2015, as the Concept Plan for Site B dated April 2,

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2019showing a student housing project, or as the Concept Plan for Site A dated June 23, 2021 showing a mixed-use project:

Development Site	Land Use	Maximum Developed Area	Development Program
Site A	Mixed-Use	17.42 acres	Maximum of two mixed-use buildings with a maximum height of 60 ft. and maximum combined footprint of 50,000 sq. ft., one four-story multifamily building with a maximum height of 55 ft. (48 units), 49 two-family attached and detached townhomes (98 units) and 12 standalone apartments with attached garages and maximum height of 25 ft. The overall maximum allowed residential density on Site A is 258 units.
Site B (Option 1)	Class A Corporate office buildings	46 acres	Maximum of 464,850 sq. ft. of office/retail space
Site B (Option 2)	Residential/ Commercial	46 acres	Maximum of 192 residential units on the eastern portion of Site B (approximately 26 acres) and a maximum of 205,000 sq. ft. of office and commercial space on the western portion of Site B (approximately 20 acres)
Site B (Option 3)	Residential - Student housing	46 acres	Maximum of 515 student housing units
Sites C and D	Residential	37 acres	133 lot residential subdivision consisting of detached single-family homes on individual lots pursuant to the Map Cover filed at the Erie County Clerk's Office on July 24, 2018.

General components of the proposed development that will minimize adverse environmental impacts include:

- The maintenance of the remaining approximately 224± acres of the development site as permanent open space.
- Implementing a cluster pattern to maximize open space preservation.

C. Utility Infrastructure - In accordance with the October 17, 2007 letter received from the Erie County Department of Environment & Planning, all proposed sanitary sewer lines to be constructed to service both the residential and commercial portions of the project will be subject to review and approval by the Erie County Health Department. All systems installed or improved for the project will be undertaken by the Project Sponsor at its cost and will be required to meet all Town, County and State requirements.

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D. Archaeological/Cultural Resources – One prehistoric archaeological site was discovered on the project site, with a Stage 2 archaeological study determining that the identified prehistoric archaeological site did not meet the eligibility criteria for listing on the State or National Register of Historic Places. This finding was confirmed by the NYS Office of Parks, Recreation and Historic Preservation in its letter of October 10, 2001. No mitigation measures are needed for the subject development.

E. Air Quality – Potential impacts to air quality resulting from fugitive dust generated during construction activities will be minimized by the following measures:

- seeding and/or mulching exposed soils as soon as practicable and in accordance with the requirements and applicable regulations promulgated by the NYSDEC
- grading roadways and covering them with gravel during construction, periodically regarding, compacting and replacing gravel as necessary as determined by the Town
- wetting down temporary roads to be constructed on the project site during construction of the build-out of the project as needed throughout the duration of construction activities and as determined by the Town.

F. Condominium Designation - As originally proposed, the residential portion of the project was not to include the development of any units that will be filed as condominiums. The Project Sponsor previously offered to place a deed restriction to this affect as a condition of sale to any future builder, developer or owner of any lot on the subject site. On June 21, 2018, a Declaration of Restrictions was recorded at the Erie County Clerk's Office (Liber 11330 of Deeds at Page 8243) for the purpose of prohibiting the residential uses on the Project Site from utilizing the condominium form of ownership. The Project Sponsor is requesting that the Declaration of Restrictions be modified to allow the condominium form of ownership for the attached residential units to be developed on Site A.

18. Evaluation of Future Actions

In accordance with SEQR regulations, upon application to the Town for development of the project site that requires the submittal of an Environmental Assessment Form, the Town will be required to determine if the potential adverse environmental impacts associated with the development have been adequately identified and evaluated in the DGEIS, FGEIS, and this Amended Findings Statement, and whether the proposed development exceeds any of the thresholds and/or requirements contained in this

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Findings Statement. This determination must be made by the Town prior to the issuance of any discretionary land use approvals by the Town for the proposed development.

The following scenarios are put forth in Section 617.10(c) & (d) of the SEQR regulations:

A. If the Town determines that the proposed action is in conformance with the conditions and thresholds in the FGEIS or the Amended Findings Statement, then no further environmental review pursuant to SEQR will be required;

B. If the Town determines that the proposed action is adequately addressed in the FGEIS, but is not addressed or not adequately addressed in the Amended Findings Statement, then an amendment to this Amended Findings Statement must be prepared;

C. If the Town determines that the proposed action was not addressed, or was not adequately addressed, in the FGEIS, but it will not result in any significant environmental impacts, then a negative declaration must be prepared; or

D. If the Town determines that the proposed action was not addressed, or was not adequately addressed, in the FGEIS, and the action may have one or more significant adverse environmental impacts, than a supplement to the FGEIS must be prepared.

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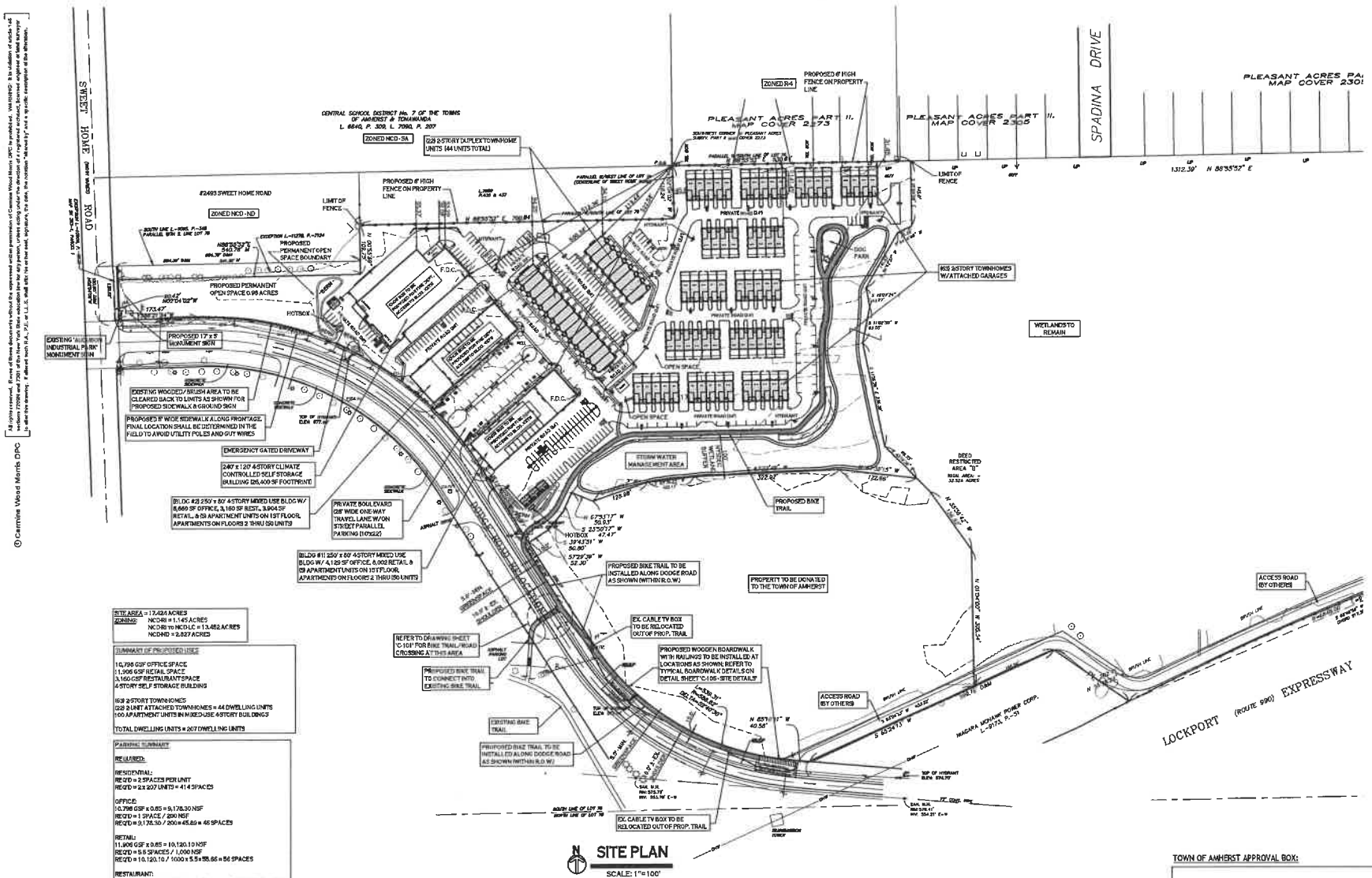
Exhibit 9 – Reduced Size Copy of Overall Site Plan [Drawing C–100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed–Use Project at 50 Dodge Road [Note: Full–Size copy also attached]

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



SITE AREA = 17.424 ACRES
ZONING: NCDRI = 1.145 ACRES
NCDB to NCD LC = 13.452 ACRES
NCDND = 2.827 ACRES

SUMMARY OF PROPOSED USES

10,798 GSF OFFICE SPACE
11,906 GSF RETAIL SPACE
3,160 GSF RESTAURANT SPACE
4-STORY SELF STORAGE BUILDING

153 2-STORY TOWNHOMES
228 2-UNIT ATTACHED TOWNHOMES = 44 DWELLING UNITS
100 APARTMENT UNITS IN MIXED-USE 4-STORY BUILDINGS

TOTAL DWELLING UNITS = 207 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 207 UNITS = 414 SPACES

OFFICE:
10,798 GSF x 0.85 = 9,178.30 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 9,178.30 / 200 = 45.89 = 46 SPACES

RETAIL:
11,906 GSF x 0.85 = 10,120.10 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 10,120.10 / 1000 x 5.5 = 55.66 = 56 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

SELF STORAGE:
REQ'D = 1 SPACE / 5,000 AREA DEVOTED TO STORAGE
REQ'D = 126,400 SF x 4) / 5,000 SF = 22 SPACES

TOTAL REQ'D = 576 SPACES

PROVIDED:

94 PARALLEL PARKING SPACES
171 9'x19' SPACES
63 TOWNHOUSE GARAGE SPACES
63 SPACES IN FRONT OF TOWNHOUSE GARAGE SPACES
16 GARAGE SPACES IN 4-STORY BLDGS.
407 TOTAL SPACES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 0.98 ACRES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 0.059 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.91 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.95 AC
DECREASE = 8.29 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASED)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

N

SITE PLAN

SCALE: 1"=100'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 0 100 200FL

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REVISIONS:

No.	Description	Date
1	Rev. per Amherst T.S.R. 03/07/24 Comments	05/13/24
2	Rev. per ECDPW 03/28/24 Comments	04/02/24

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/22/24
Drawn by: C. Wood
Scale: As Noted

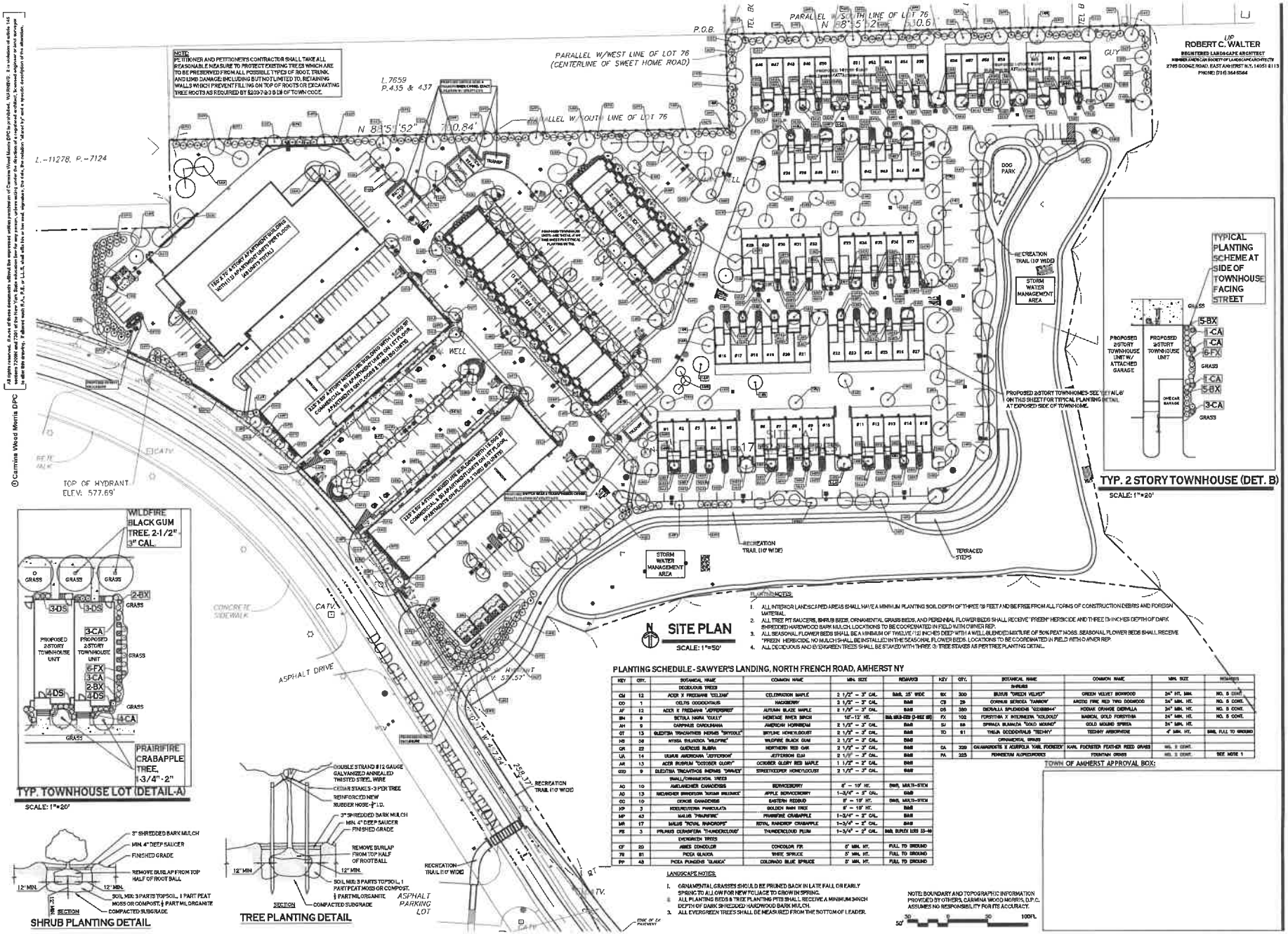
DRAWING NAME:
Overall Site Plan

DRAWING NO.
C-100
Project no.: 21,0

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 9A – Reduced Size Copy of Site Plan [Drawing C–100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed–Use Project at 50 Dodge Road [Note: Full–Size copy also attached]

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



PLANTING NOTES:

1. ALL INTERIOR LANDSCAPED AREAS SHALL HAVE A MINIMUM PLANTING SOIL DEPTH OF THREE (3) FEET AND BE FREE FROM ALL FORMS OF CONSTRUCTION DEBRIS AND FOREIGN MATERIAL.
2. ALL TREE PIT SAUCERS, SHRUB BEDS, ORNAMENTAL GRASS BEDS, AND PERENNIAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE AND THREE (3) INCHES DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH, LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
3. ALL SEASONAL FLOWER BEDS SHALL BE A MINIMUM OF TWELVE (12) INCHES DEEP WITH A WELL-BLENDED MIXTURE OF 50% PEAT MOSS. SEASONAL FLOWER BEDS SHALL RECEIVE "PREEN" HERBICIDE. NO MULCH SHALL BE INSTALLED IN THE SEASONAL FLOWER BEDS. LOCATIONS TO BE COORDINATED IN FIELD WITH OWNER REP.
4. ALL DECIDUOUS AND EVERGREEN TREES SHALL BE STAKED WITH THREE (3) TREE STAKES AS PER TREE PLANTING DETAIL.

PLANTING SCHEDULE - SAWYER'S LANDING, NORTH FRENCH ROAD, AMHERST NY

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		DECIDUOUS TREES			
CM	12	ACER X FREEMANII 'CELZAM'	CELEBRATION MAPLE	2 1/2" - 3" CAL.	B&B, 25' WIDE
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" - 3" CAL.	B&B
AF	12	ACER X FREEMANII 'JEFFERSRED'	AUTUMN BLAZE MAPLE	2 1/2" - 3" CAL.	B&B
BM	9	BETULA NIGRA 'HEILI'	HERITAGE RIVER BIRCH	16'-12' HT.	MULTI-STEM B&B
AM	9	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2 1/2" - 3" CAL.	B&B
GT	13	GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE'	SKYLINE HONEYLOCUST	2 1/2" - 3" CAL.	B&B
NS	58	NYSSA SYLVATICA 'WILDFIRE'	WILDFIRE BLACK GUM	2 1/2" - 3" CAL.	B&B
QR	22	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" - 3" CAL.	B&B
UA	14	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2 1/2" - 3" CAL.	B&B
AR	13	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	1 1/2" - 2" CAL.	B&B
GTD	9	GLEDITSIA TRIACANTHOS INERMIS 'DRAVES'	STREETKEEPER HONEYLOCUST	2 1/2" - 3" CAL.	B&B
		SMALL/ORNAMENTAL TREES			
AG	10	AMELANCHIER CANADENSIS	SERVICEBERRY	8' - 10' HT.	B&B, MULTI-STEM
AO	13	MALUS/MICRO SPRINGTIME 'MALSUM'	APPLE SERVICEBERRY	1-3/4" - 2" CAL.	B&B
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	8' - 10' HT.	B&B, MULTI-STEM
KP	3	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE	8' - 10' HT.	B&B
MP	43	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	1-3/4" - 2" CAL.	B&B
MR	17	MALUS 'ROYAL RAINDROPS'	ROYAL RAINDROP CRABAPPLE	1-3/4" - 2" CAL.	B&B
PS	3	PRUNUS CERASIFERA 'THUNDERCLOUD'	THUNDERCLOUD PLUM	1-3/4" - 2" CAL.	B&B, BUREK 1253 33-48
		EVERGREEN TREES			
CF	20	ABIES CONCOLOR	CONCOLOR FIR	8' MIN. HT.	FULL TO GROUND
PG	81	PICEA GLAUCA	WHITE SPRUCE	8' MIN. HT.	FULL TO GROUND
PP	48	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	8' MIN. HT.	FULL TO GROUND

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MIN. SIZE	REMARKS
		SHRUBS			
BX	300	BUXUS 'GREEN VELVET'	GREEN VELVET BOXWOOD	24" HT. MIN.	NO. 5 CONT.
CS	29	CORNUS SERICEA 'FARROW'	ARCTIC FIRE RED TWIG DOGWOOD	24" MIN. HT.	NO. 5 CONT.
OS	350	DIERVILLA SPLENDENS 'GOLDSMM4'	KODIAK ORANGE DIERVILLA	24" MIN. HT.	NO. 5 CONT.
FX	102	FORSYTHIA X INTERMEDIA 'COLDCLD'	MAGICAL GOLD FORSYTHIA	24" MIN. HT.	NO. 5 CONT.
SJ	88	SPIRAEA JAPONICA 'GOLD MOUND'	GOLD MOUND SPIREA	24" MIN. HT.	
TO	81	THUJA OCCIDENTALIS 'TECHNY'	TECHNY ARBORVITAE	4' MIN. HT.	B&B, FULL TO GROUND
		ORNAMENTAL GRASS			
CA	339	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	MIN. 2 CONT.	
PA	225	PENNISETUM ALOPECUROIDES	FOUNTAIN GRASS	MIN. 2 CONT.	SEE NOTE 1

LANDSCAPE NOTES:

1. ORNAMENTAL GRASSES SHOULD BE PRUNED BACK IN LATE FALL OR EARLY SPRING TO ALLOW FOR NEW FOLIAGE TO GROW IN SPRING.
2. ALL PLANTING BEDS & TREE PLANTING PITS SHALL RECEIVE A MINIMUM 3-INCH DEPTH OF DARK SHREDDED HARDWOOD BARK MULCH.
3. ALL EVERGREEN TREES SHALL BE MEASURED FROM THE BOTTOM OF LEADER.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 0 50 100FT.

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REVISIONS:

No.	Description	Date
1	Rev. per ECDPW 03/28/24 Comments	04/02/24
2	Rev. per Ryan Homes Comments	04/08/24

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

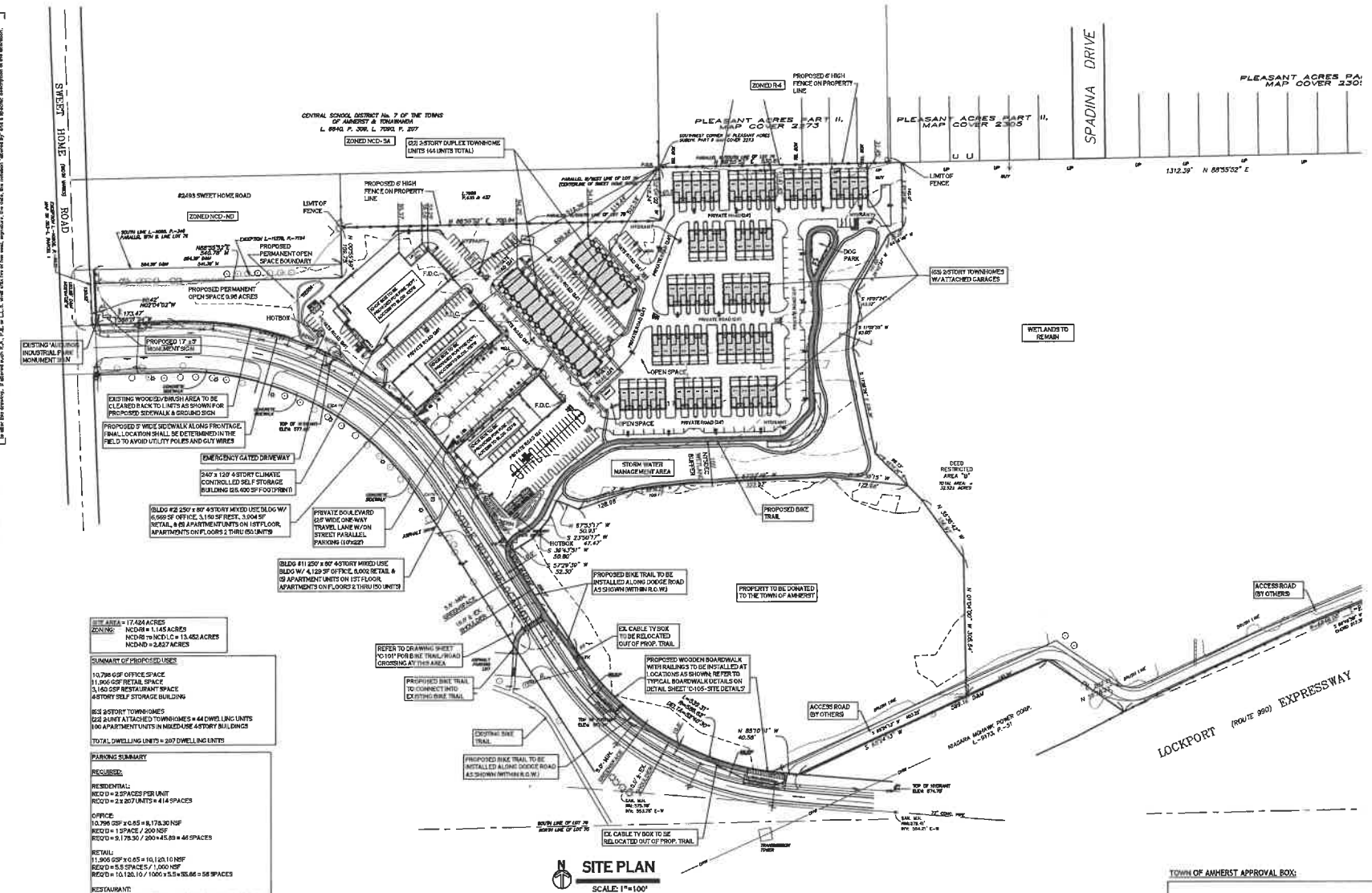
Date: 2/22/24
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Landscape Plan

DRAWING NO.
L-100
Project no.: 21.0

Exhibit 9B – Reduced–Size Copy of Landscape Plan [Drawing L–100 – Date: 06/20/24] prepared by Carmina Wood Design for the Mixed–Use Project at 50 Dodge Road [Note: Full–Size copy also attached]

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



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REVISIONS:

No.	Description	Date
1	Rev. per Amherst T.B.B. 03/07/24 Comments	03/13/24
2	Rev. per ECDPW 03/28/24 Comments	04/02/24

PROJECT NAME:
Site Development plans for:
Sawyer's Landing
Portion of 1081 North French Road
Amherst, New York

Date: 2/22/24
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Overall Site Plan

DRAWING NO.
C-100
Project no.: 21.0

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 10 – Resolution 2021–818 as Adopted by the Town of Amherst Town Board on September 27, 2021 for the purpose of Issuing an Amended Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") for Mixed–Use Development on Site "A" of Muir Woods Property

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Amherst Town Board
5583 Main Street
Williamsville, NY 14221
www.amherst.ny.us

Francina J. Spoth
Town Clerk

Meeting: 10/19/20 07:00 PM
Department: Town Clerk
Initiated by: **Kathleen Cooper**
Co-Sponsored by:

DOC ID: 22383 **RESOLUTION 2020-791** **ROLL CALL VOTE (ADOPTED)**

Amendment to the SEQR Findings Statement for "Muir Woods - Site A" (1081 N. French Road)

Amendment to the SEQR Findings Statement for
"Muir Woods - Site A"
[1081 North French Road (NCD); Z-2002-09C]

RESOLVED, that pursuant to 6NYCRR Part 617 (SEQR) and Town Code Section 104, as amended, that the requirements of SEQR have been completed, and be it further

RESOLVED, that pursuant to NYS Town Law Section 272-a, the Town Board concurs with the findings of the Planning Board as stated in their resolution of August 20, 2020 to amend the "Development Program" within the SEQR Findings Statement approved by the Town Board on August 5, 2020 to permit "Site A" located at the western end of the overall Muir Woods site located at 1081 North French Road (NCD) to be developed as a mixed-use residential/commercial project instead of flex office/R&D buildings.

RESOLVED, that Ciminelli Muir Woods, LLC has offered to donate to the Town approximately 43 acres of Permanent Open Space located between Site "A" and Site "B" of the Overall Muir Wood Property as depicted on a plan prepared by Greenman-Pedersen Consulting Engineers Inc. dated October 13, 2020;

RESOLVED, the approximately 43 acres of Permanent Open Space includes a portion of the Muir Woods Project with frontage on Dodge Road and is also contiguous to the southern boundary of a portion of the Bucyrus Heights Subdivision and the approximately 43 acres of Permanent Open Space includes extensive existing vegetation and also includes wetlands subject to the jurisdiction of the United States Army Corps of Engineers ("USACE") and wetlands and regulated 100 ft. adjacent areas subject to the jurisdiction of the New York State Department of Environmental Conservation ("NYSDEC"); and

RESOLVED, the Town Board hereby finds as follows: i.) Acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site is consistent with the Conceptual Land Use Plan for the Town contained at Figure 6 of the adopted Bicentennial Comprehensive Plan that designates this acreage as "Recreation, Open Space & Gateways"; and, ii.) Acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site as described herein will result in benefits to the Town and its residents including homeowners in the Bucyrus Heights Subdivision.

RESOLVED, the Town Board has evaluated the potential adverse environmental impacts associated with the acquisition of the 43 acres of Permanent Open Space and determined that such acquisition will not result in any potentially significant adverse environmental impacts.

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

RESOLVED, that the Town Board hereby authorizes the acquisition of the approximately 43 acres of Permanent Open Space on the Muir Woods Project Site as described herein via a donation from Ciminelli Muir Woods, LLC subject to the following terms and conditions:

1. The adoption of this resolution by the Town Board for the purpose of acquiring the Permanent Open Space described herein does not include the Town Board designating the Permanent Open Space as "parkland". The Town Board shall adopt a separate resolution in the future if it determines designating the Permanent Open Space as "parkland" is appropriate.

2. Ciminelli Muir Woods, LLC, its successors and assigns, shall retain an easement with respect to the approximately 43 acres of Permanent Open Space for the purpose of completing required wetland mitigation and wetland mitigation monitoring in accordance with the terms and conditions contained in wetland permits issued by the USACE and the NYSDEC. Upon the USACE and the NYSDEC determining that the required wetland mitigation has been completed to their satisfaction and the expiration of the monitoring period, the easement shall terminate.

3. Prior to the recording of a deed from Ciminelli Muir Woods, LLC to the Town of Amherst for the purpose of conveying ownership of the Permanent Open Space as described herein, a Declaration of Restrictive Covenants shall be recorded at the Erie County Clerk's Office for the restricting the use of the approximately 43 acres of Permanent Open Space in accordance with the terms and conditions of wetland permits issued by the USACE and the NYSDEC and also for the purpose of prohibiting future development of the approximately 43 acres of Permanent Open Space.

4. Ciminelli Muir Woods, LLC shall be responsible for the expenses associated with the preparation of a survey and an Abstract of Title for the Permanent Open Space as described herein and the recording fees for the deed to be recorded at the Erie County Clerk's Office.

5. The documentation required to effectuate the transfer of the Permanent Open Space as described herein and to comply with the above conditions shall be subject to review and approval by the Town Attorney's Office.

6. The Supervisor is authorized to execute any documentation required to effectuate the acquisition of the 43 acres of Permanent Open Space in accordance with the terms and conditions contained in this resolution.

10/06/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was opened at 7:51 PM.

Sean W. Hopkins, Esq., presented for both resolution #791 and #792 and answered questions from the Board.

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

There were no speakers from the public, therefore Supervisor Kulpa moved to adjourn the public hearing and set a Decision Date for October 19th. The motion was seconded by Councilmember Lavin and unanimously approved 4-0. The public hearing was adjourned at 8:13 PM.

10/19/2020
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Lavin and unanimously approved 5-0. The public hearing was opened at 7:18 PM.

Sean W. Hopkins, Esq., presented under Res #792.

There were no speakers from the public, therefore Supervisor Kulpa moved to close the public hearing, seconded by Councilmember Lavin and unanimously approved 5-0. The public hearing was closed at 7:20 PM.

A motion to adopt the amended SEQR Findings Statement was made by Supervisor Kulpa, seconded by Deputy Supervisor Berger and approved via Roll Call vote 4-1 (nay, Bucki).

RESULT:	**ROLL CALL VOTE (ADOPTED) [4 TO 1]**
MOVER:	Brian J. Kulpa, Supervisor
SECONDER:	Jacqualine Berger, Deputy Supervisor
AYES:	Kulpa, Berger, Lavin, Szukala
NAYS:	Bucki

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 11 – Reduced–Size Copy of Parcel Plan [Drawing C–102 – Date: 05/28/24] prepared by Carmina Wood Design for the Mixed–Use Project at 50 Dodge Road [Note: Full–Size copy also attached]

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Amherst Town Board
5583 Main Street
Williamsville, NY 14221
www.amherst.ny.us

Francina J. Spoth
Town Clerk

Meeting: 09/27/21 07:00 PM
Department: Town Clerk
Initiated by: **Kathleen Cooper**
Co-Sponsored by:

DOC ID: 24831 **RESOLUTION 2021-818** **ROLL CALL VOTE (ADOPTED AS AMENDED)**

Amendment to the SEQR Findings Statement for "Muir Woods - Site A", Amendment #51 to the Audubon New Community District Development Plan [1081 (Formerly 1121) North French Road (NCD); Z-2002-09_D]

RESOLVED, that pursuant to 6NYCRR Part 617 (SEQR) and Town Code Section 104, as amended, that the requirements of SEQR have been completed, and be it further

RESOLVED, that pursuant to NYS Town Law Sec.272-a, the Town Board concurs with the findings of the Planning Board as stated in their resolution of August 19, 2021 to amend the "Development Program" within the SEQR Findings Statement approved by the Town Board on October 19, 2020 to permit "Site A" located at the western end of the overall Muir Woods site located at 1121 North French Road (NCD) to be developed at a higher density mixed-use residential/commercial project development than that outlined in the findings statement adopted on October 19, 2020.

1. That the Town Board approval of the issuance of the amended findings statement be subject to a condition requiring that the Planning Department be satisfied with the amended findings statement document prior to its signature by the Supervisor.

9/27/2021
A motion to open the public hearing was made by Supervisor Kulpa, seconded by Councilmember Bucki and unanimously approved 5-0. The public hearing was opened at 7:08 PM.

Sean Hopkins, Esq. presented.

There were no speakers from the public, therefore Supervisor Kulpa moved to close the public hearing, seconded by Deputy Supervisor Berger and unanimously approved 5-0. The public hearing was closed at 7:17 PM.

A motion to adopt was made by Supervisor Kulpa and seconded by Councilmember Lavin. A motion was then made by Supervisor Kulpa to amend, seconded by Councilmember Lavin and unanimously approved 5-0. Amendment adds a condition listed above.

A motion to approve as amended was made by Supervisor Kulpa, seconded by Councilmember Lavin and approved 4-1 (nay, Bucki) via Roll Call vote.

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

RESULT:	**ROLL CALL VOTE (ADOPTED AS AMENDED) [4 TO 1]**
MOVER:	Brian J. Kulpa, Supervisor
SECONDER:	Shawn Lavin, Councilmember
AYES:	Kulpa, Berger, Lavin, Szukala
NAYS:	Bucki

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 12 – Copy of the Declaration of Restrictions as Recorded in at the Erie County Clerk's Office on June 21, 2018 at Liber 11330 of Deeds at Page 8243 for the purpose of complying with the relevant portion of the Amended Findings Statement issued by the Town Board Pursuant to the State Environmental Quality Review Act ("SEQRA") on December 7, 2015

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

FILED
JUN 21 2018
ERIE COUNTY
CLERK'S OFFICE

Return Original to Box 460
Hopkins Sorgi & Romanowski PLLC
Attn: Sean W. Hopkins, Esq.

DECLARATION OF RESTRICTIONS

THIS DECLARATION OF RESTRICTIONS (*"Declaration"*) is made as of the 8th day of June, 2018 by **CIMINELLI MUIR WOODS, LLC**, a limited liability company organized under the laws of the State of New York, having its office at 350 Essjay Road, Williamsville, NY (*"Declarant"*) under facts and circumstances summarized by the following recitals:

WHEREAS, Declarant is the owner of real property consisting of approximately 326 acres of real property located at 1081 and 1121 North French Road (hereinafter *"Subject Property"*) and that is more particularly by the metes and bounds legal description attached at **Schedule "1"** hereto;

WHEREAS, the Subject Property is zoned New Community District (*"NCD"*) pursuant to the Zoning Map of the Town of Amherst and the use of land within the New Community District is regulated pursuant to the land use classifications contained in the Zoning Code of the Town of Amherst;

WHEREAS, Declarant petitioned the Town Board of the Town of Amherst (hereinafter *"Town Board"*) to amend the land use classifications of portions of the Subject Property that is owned by the Declarant;

WHEREAS, on December 3, 2007, the Town Board issued a Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") and the Town Board also voted to: 1.) approve Amendment #51 to the Audubon Development Plan, 2.) amend the land use classifications of portions of the Subject Property from NCD-Neighborhood District and NCD-Major Open Space to NCD-General Commercial, NCD-Restricted Industrial and NCD-Major Open Space;

WHEREAS, as the Town Board imposed conditions in connection with its decisions to issue a Findings Statement pursuant to SEQRA and amending the land use classifications of portions of the Subject Property;

WHEREAS, the Town Board issued an Amended Statement of Findings pursuant to SEQRA on December 7, 2015;

NOW, THEREFORE, in exchange for good and valuable consideration the sufficiency of which is acknowledged, the Declarant agrees to restrict the future use of the portions of the Subject Property (or its entirety when expressly specified) in accordance with the conditions imposed by the Town Board that are subject to this Declaration of Restrictions as follows

1. All construction equipment and vehicles that will be utilized in connection with the development the Subject Property pursuant to site plans and final plats to be approved by the Town of Amherst Planning Board shall be expressly prohibited from utilizing the existing streets within the Franklin Heights Subdivision, including but not limited to Lynette Lane, for purposes of egress and ingress to the Subject Property.

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

2. The residential components of the project shall be prohibited from utilizing the condominium form of ownership.

3. On those portions of the Subject Parcel where commercial development (excluding all residential uses) will be located directly adjacent to existing residential areas (i.e. Bucyrus Heights), minimum setbacks have been established for the purpose of providing an adequate buffer. The following minimum setbacks will apply only to development of portions of the Subject Property that are directly adjacent to existing residential uses as of the date of this Declaration of Restrictions:

- All commercial development (buildings and parking areas) will have a minimum setback of fifty feet (50'), with the area within forty feet (40') of adjacent residential property boundaries remaining undisturbed so that existing trees and brush remain as a buffer. The planting of additional trees and shrubs by the Declarant within the minimum setback area may be required by the Town of Amherst during the site plan review process to supplement the existing vegetation in order to provide adequate buffers.

- A combination of earthen berms and new vegetation will be required in those portions of the minimum setback area where there is not sufficient existing vegetation to provide an adequate buffer. The minimum height at the top of berms shall be three feet (3'), and the maximum slope shall be 1 on 3 (33%) to promote the growth and long-term viability of trees and shrubs planted on the berms. Berms should have a natural appearance by varying their width and height. The Town of Amherst will verify compliance with this requirement during the site plan review process.

- Site A: Site A is the western portion of the Subject Parcel that is proposed to be utilized for flex office/R&D buildings and it is located directly south of the existing Bucyrus Heights subdivision. A legal description of Site A is attached as **Schedule "2"**. The minimum setbacks for development within Site A shall be as follows:

  - 60 ft. minimum required building setback from residential lot line.

  - 60 ft. minimum required parking setback from residential lot line.

- Site B: Site B is the center portion of the Subject Parcel that will be utilized for office space. A legal description of Site B is attached as **Schedule "3"**. The minimum setbacks for development within Site B shall be as follows:

  - 60 ft. minimum building setback from residential lot line. If the height of any proposed office buildings exceeds 50 feet, the required minimum building setback shall be equal to or greater than the height of the proposed office building.

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- 60 ft. minimum parking setback to residential lot line.

4. The following maximum building heights shall apply to the commercial components of the development of the Subject Parcel:

- Site A (western portion of the project site) – The maximum building height for buildings within Site A as described in **Schedule "2"** shall be as follows:
  - Maximum building height shall be 40 ft. as measured from the finished grade to the top of any parapet (excluding any rooftop mechanical equipment). All mechanical equipment shall be properly screened in accordance with the standards contained in the Zoning Code adopted by the Town Board in May of 2006.
- Site B (center portion of the Subject Parcel) – The maximum building height for buildings within Site B as described in **Schedule "3"** shall be as follows:
  - There will not be a maximum height for office buildings to be constructed on Site B. All office buildings to be constructed on Site B will be required to comply with a minimum required setback that shall be the greater of fifty feet (50') feet or the height of the proposed office building at the point of its maximum height (including rooftop mechanicals, etc.).

5. The portions of the Subject Property reclassified to New Community District – General Commercial ("NCD-GC") by the Town Board as described in the attached **Schedule "4"** shall be prohibited from being utilized for the following categories of land uses:

A. Automobile sales and service facilities (except vehicles used primarily on the subject property);

B. Veterinary clinics or kennels; and

C. Gasoline service stations shall be prohibited around the existing approximately 32 acre lake on the southeastern portion of the Subject Property.

The above restrictions contained in numbered paragraphs 1, 2, 3, 4 and 5 shall be binding on all parties claiming thereunder and shall run and touch the land except that the above restrictions can be changed, modified or eliminated by a majority vote of the Town Board.

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK
SIGNATURE(S) ON FOLLOWING PAGE]

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

IN WITNESS WHEREOF, the individual executing this Declaration of Restrictions on behalf of the Declarant has the full legal authority to enter execute this Declaration of Restrictions.

CIMINELLI MUIR WOODS, LLC

By: _____

Title: Paul F. Ciminelli
Managing Member

Print Name:

STATE OF NEW YORK)
COUNTY OF ERIE) ss.:

On this 8 day of June, 2018, before me, the undersigned, a notary public in and for said state, personally appeared Paul F. Ciminelli, personally known to me or proved to me on the basis of satisfactory evidence to the be the individual whose name is subscribed to within this instrument and acknowledged to me that he executed the same in his capacity, that they by his signature on the instrument, the individual or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public

KATHLEEN A. GUENTHER #01GU4675162
NOTARY PUBLIC, STATE OF NEW YORK
QUALIFIED IN ERIE COUNTY
My Commission Expires August 31, 2018

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

SCHEDULE I

LEGAL DESCRIPTION OF SUBJECT PROPERTY

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Amherst, County of Erie, State of New York, being part of Lots 70 & 76, Township 12, Range 7 of the Holland Land Company's Survey, bounded and described as follows.

COMMENCING at a point on the centerline of North French Road at the northwest corner of Lot 70 distant 4179.22 feet west of the northeast corner of Lot 70, being the intersection of the centerline of North French Road and the centerline of Campbell Boulevard;

THENCE: N-89°-22'-00"-E, along the centerline of North French Road being the north line of Lot 70, a distance of 285.00 feet to a point;

THENCE: S-01°-04'-00"-E a distance of 33.00 feet to the south line of North French Road and the POINT OF BEGINNING;

THENCE: S-01°-04'-00"-E a distance of 231.00 feet to a point;

THENCE: N-89°-22'-00"-E, parallel with the centerline of North French Road being the north line of Lot 70, a distance of 110.00 feet to a point;

THENCE: N-01°-04'-00"-W a distance of 231.00 feet to the south line of North French Road;

THENCE: N-89°-22'-00"-E, along the said south line of North French Road a distance of 243.00 feet to a point;

THENCE: S-01°-04'-00"-E a distance of 231.00 feet to a point;

THENCE: N-89°-22'-00"-E, parallel with the centerline of North French Road being the north line of Lot 70, a distance of 853.60 feet to the western most northwest corner of Franklin Heights Subdivision filed in the Erie County Clerk's Office under Map Cover 2240;

THENCE: S-01°-04'-00"-E and parallel with the west line of Lot 70 a distance of 739.86 feet to the southwest corner of said Map Cover 2240;

THENCE: N-89°-22'-00"-E and parallel with the centerline of North French Road being the north line of Lot 70, a distance of 1343.12 feet to the northwest corner of lands conveyed to the Central School District No. 3 of the Towns of Amherst, Cheektowaga and Clarence by deed recorded in the Erie County Clerk's Office in Liber 7318 of Deeds at page 367;

THENCE: S-00°-11'-28"-W, along the west line of said Central School District No. 3 of the Towns of Amherst, Cheektowaga and Clarence lands, a distance of 716.41 feet to the southwest corner thereof;

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

THENCE: N-89°-04'-14"-E, and parallel with the south line of lot 70 being the centerline of Dodge Road, along the south line of said Central School District No. 3 of the Towns of Amherst, Cheektowaga and Clarence lands, a distance of 711.46 feet a point distant 609.84 feet west of the centerline of Campbell Boulevard being the east line of Lot 70;

THENCE: S-00°-14'-01"-W, parallel with the centerline of Campbell Boulevard (east line of Lot 70), a distance of 1439.24 feet to the northerly line of the Lockport Expressway Section II;

THENCE: Along the northerly lines of said Lockport Expressway Section II, the following six (6) courses and distances;

1.) N-87°-56'-02"-W, a distance of 1367.40 feet to a point.
2.) S-88°-46'-36"-W, a distance of 504.31 feet to a point.
3.) N-79°-27'-19"-W, a distance of 612.88 feet to a point.
4.) S-89°-19'-05"-W, a distance of 916.15 feet to a point.
5.) S-75°-02'-22"-W, a distance of 970.22 feet to a point of curvature
6.) Southwesterly along a curve to the left having a radius of 6,848.00 feet an arc distance of 1,238.25, and a central angle of 10°-21'-37" and a chord length of 1,236.56 feet at a bearing of S-68°-07'-21"-W to the east corner of lands conveyed to Niagara Mohawk Power Corporation by deed recorded in the Erie County Clerk's Office in Liber 9173 of Deeds at page 51.

THENCE: N-55°-38'-22"-W a distance of 202.71 feet to the north corner of said lands conveyed to Niagara Mohawk Power Corporation by deed recorded in the Erie County Clerk's Office in Liber 9173 of Deeds at page 51;

THENCE: S-65°-24'-13"-W a distance of 599.16 feet to the north line of Dodge Road Relocation;

THENCE: N-85°-10'-51"-W along the northerly line of Dodge Road Relocation a distance of 40.58 feet to a point of curvature;

THENCE: Northwesterly along a curve to the right and along the northerly line of Dodge Road Relocation said curve having a radius of 586.62 feet an arc distance of 539.31 and a central angle of 52°-40'-30" to a point of tangency;

THENCE: N-32°-30'-21"-W and along the northerly line of Dodge Road Relocation a distance of 457.24 feet to a point of curvature;

THENCE: Northwesterly along a curve to the left and along the northerly line of Dodge Road Relocation said curve having a radius of 724.00 feet an arc distance of 747.17 and a central angle of 59°-07'-45" to a point of tangency;

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

THENCE: S-88°-21'-54"-W and along the northerly line of Dodge Road Relocation a distance of 173.47 feet to the east line of Sweet Home Road as appropriated by the County of Erie under Liber 10908 of Deeds at page 9632 and delineated on Map SK 353-1, Parcel 1;

THENCE: N-02°-04'-02"-W and along said east line of Sweet Home Road a distance of 90.42 feet to a point;

THENCE: N-88°-55'-52"-E a distance of 540.79 feet to a point;

THENCE: N-00°-55'-59"-W a distance of 109.75 feet to a point;

THENCE: N-88°-55'-52"-E a distance of 700.84 feet to a point;

THENCE: N-02°-04'-02"-W and parallel with the centerline of Sweet Home Road being the west line of Lot 76, a distance of 118.24 feet to the southwest corner of lands shown on a map of Pleasant Acres Subdivision Part II filed in the Erie County Clerk's Office under Map Cover 2273;

THENCE: N-88°-55'-52"-E along the south line of said Map Cover 2273 and along the south line of lands shown on a map of Pleasant Acres Subdivision Part III filed in the Erie County Clerk's Office under Map Cover 2305 and being parallel with the south line of Lot 76, a distance of 1843.00 feet to the southeast corner of said Map Cover 2305;

THENCE: N-01°-06'-07"-W along the east line of said Map Cover 2305 and along the east line of lands shown on a map Bucyrus Heights Subdivision Part IV filed in the Erie County Clerk's Office under Map Cover 2291 and their extension north a distance of 2433.88 feet to the south line of said North French Road;

THENCE: S-89°-37'-42"-E along the south line of said North French Road a distance of 1138.32 feet to an angle point;

THENCE: N-89°-22'-00"-E continuing along the south line of said North French Road a distance of 285.54 feet to the POINT or PLACE of BEGINNING, having an area of 325.46 acres be the same more or less.

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

SCHEDULE 2

LEGAL DESCRIPTION OF SITE A

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Amherst, County of Erie, State of New York, being Part of Lot 76, Township 12, Range 7 of the Holland Land Survey (so-called) bounded and described as follows:

COMMENCING at the point of intersection of the centerline of Dodge Road with the centerline of Sweet Home Road; thence: south along the centerline of Sweet Home Road, a distance of 86.08 feet to a point; thence: east, at right angles with said centerline, a distance of 679.33 feet to the POINT OR PLACE OF BEGINNING of the parcel hereinafter described:

THENCE: through lands now or formerly of New York State Urban Development Corporation, the following fifteen (15) courses and distances:

1.) N-00°-55'-59"-W, a distances of 304.81 feet to a point;
2.) N-88°-55'-52"-E, a distance of 625.24 feet to a point;
3.) N-02°-04'-02"-W, a distance of 118.24 feet to a point;
4.) N-88°-55'-52"-E, a distance of 506.27 feet to a point;
5.) S-01°-04'-08"-E, a distance of 120.35 feet to a point;
6.) S-64°-48'-00"-W, a distance of 35.05 feet to a point;
7.) S-29°-42'-37"-W, a distance of 135.73 feet to a point;
8.) S-06°-01'-17"-E, a distance of 361.98 feet to a point;
9.) S-45°-04'-18"-E, a distance of 271.44 feet to a point;
10.) S-01°-04'-00"-E, a distance of 314.49 feet to a point;
11.) S-65°-24'-13"-W, a distance of 407.54 feet to a point;
12.) N-85°-10'-51"-W, a distance of 34.02 feet to a point of curvature;
13.) Northwesterly, on a curve to the right having a radius of 561.62 feet, an arc distance of 516.33 feet to a point of tangency;
14.) N-32°-30'-21'-W, a distance of 457.24 feet to a point of curvature;
15.) Northwesterly, on a curve to the left having a radius of 749.00 feet, an arc distance of 272.69 feet to the above described POINT OR PLACE OF BEGINNING containing 24.812 acres be the same more or less.

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

SCHEDULE 3

LEGAL DESCRIPTION OF SITE B

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Amherst, County of Erie, State of New York, being Part of Lots 70 and 76, Township 12, Range 7 of the Holland Land Survey (so-called) bounded and described as follows:

COMMENCING at the southeasterly corner of Pleasant Acres Subdivision, Part III as shown on a map filed in the Erie County Clerk's Office under Map Cover 2305:

THENCE: N-88°-55'-52"-E, a distance of 25.49 feet to the POINT OR PLACE OF BEGINNING of the parcel hereinafter described:

THENCE: Through lands now or formerly of New York State Urban Development Corporation the following eighteen (18) courses and distances:

1.) N-01°-04'-00"-W, a distance of 399.46 feet to a point;
2.) S-89°-49'-30"-E, a distance of 1113.76 feet to a point;
3.) N-01°-04'-00"-W, a distance of 313.08 feet to a point;
4.) N-43°-56'-00"-E, a distance of 212.13 feet to a point;
5.) N-88°-56'-00"-E, a distance of 500.00 feet to a point;
6.) S-01°-04'-00"-E, a distance of 633.18 feet to a point;
7.) N-64°-16'-09"-E, a distance of 40.36 feet to a point of curvature;
8.) Northeasterly along a curve to the left having a radius 246.47 feet, an arc distance of 199.72 feet to a point of reverse curvature;
9.) Northeasterly along a curve to the right having a radius 290.00 feet, an arc distance of 139.68 feet to a point to a point;
10.) S-41°-06'-39"-E, along a radial line a distance of 42.58 feet to a point;
11.) Southwesterly along a curve to the left having a radius of 145.00 feet, an arc distance of 165.69 feet to a point of compound curvature;
12.) Southeasterly along a curve to the left having a radius of 1490.00 feet, an arc distance of 235.87 feet to a point to a point of tangency;
13.) S-26°-24'-00"-E, along a line a distance of 38.95 feet to a point of curvature;
14.) Southeasterly and Southwesterly along a curve to the right having a radius of 265.00 feet, an arc distance of 400.91 feet to a point to a point of compound curvature;
15.) Southwesterly along a curve to the right having a radius of 500.00 feet, an arc distance of 345.60 feet to a point to a point of reverse curvature;
16.) Southwesterly along a curve to the left having a radius of 100.00 feet, an arc distance of 99.07 feet to a point to a point of tangency;
17.) S-42°-22'-25"-W, a distance of 40.03 feet to a point of curvature;
18.) Southwesterly along a curve to the left having a radius of 215.00 feet, an arc distance of 161.56 feet to a point on the northerly boundary line of the Lockport Expressway;

THENCE: along the said northerly boundary of the Lockport Expressway the following three (3) courses and distances:

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

1.) S-89°-19'-05"-W, a distance of 248.17 feet to a point;
2.) S-75°-02'-22"-W, a distance of 970.22 feet to a point of curvature;
3.) Southwesterly along a curve to the left having a radius of 6848.00 feet an arc distance of 322.33 feet to a point:

THENCE: Through lands now or formerly of New York State Urban Development Corporation the following three (3) courses and distances:

1.) N-01°-04'-00"-W, a distance of 843.03 feet to a point;
2.) N-88°-55'-52"-E, a distance of 25.00 feet to a point;
3.) N-01°-04'-00"-W, a distance of 25.00 feet to the above described POINT OR PLACE OF BEGINNING containing 52.202 acres be the same more or less.

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

SCHEDULE 4

LEGAL DESCRIPTION OF PORTIONS OF SUBJECT PROPERTY RECLASSIFIED TO NEW COMMUNITY DISTRICT – GENERAL COMMERCIAL ("NCD-GC")

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Amherst, County of Erie, State of New York, being Part of Lots 70 and 76, Township 12, Range 7 of the Holland Land Survey (so-called) bounded and described as follows:

COMMENCING at the southeasterly corner of Pleasant Acres Subdivision, Part III as shown on a map filed in the Erie County Clerk's Office under Map Cover 2305:

THENCE: N-88°-55'-52"-E, a distance of 25.49 feet to the POINT OR PLACE OF BEGINNING of the parcel hereinafter described:

THENCE: Through lands now or formerly of New York State Urban Development Corporation the following thirty (30) courses and distances:

1.) N-01°-04'-00"-W, a distance of 399.46 feet to a point;
2.) S-89°-49'-30"-E, a distance of 1113.76 feet to a point;
3.) N-01°-04'-00"-W, a distance of 477.72 feet to a point;
4.) N-43°-56'-00"-W, a distance of 212.13 feet to a point;
5.) N-88°-56'-00"-E, a distance of 500.00 feet to a point;
6.) S-01°-04'-00"-E, a distance of 633.18 feet to a point;
7.) N-64°-16'-09"-E, a distance of 40.36 feet to a point of curvature;
8.) Northeasterly along a curve to the left having a radius 246.47 feet, an arc distance of 199.72 feet to a point of reverse curvature;
9.) Northeasterly along a curve to the right having a radius of 290.00 feet, an arc distance of 271.18 feet to a point;
10.) N-73°-15'-30"-E, a distance of 466.70 feet to a point;
11.) N-88°-48'-50"-E, a distance of 1197.84 feet to a point;
12.) S-00°-14'-01"-W, a distance of 470.19 feet to a point on a curve;
13.) Southwesterly and southeasterly along a curve to the left having a radius of 175.00 feet an arc distance of 442.29 feet to a point of compound curvature;
14.) Easterly along a curve to the left having a radius of 425.00 feet an arc distance of 145.78 feet to a point of reverse curvature;
15.) Easterly along a curve to the right having a radius of 500.00 an arc distance of 172.91 feet to a point of compound curvature;
16.) Southeasterly and southwesterly along a curve to the right having a radius of 185.00 an arc distance of 438.62 feet to a point of compound curvature;
17.) Southwesterly along a curve to the right having a radius of 475.00 feet an arc distance of 382.34 feet to a point of tangency;
18.) S-89°-22'-54"-W, a distance of 150.00 feet to a point;
19.) Westerly along a curve to the right having a radius of 500.00 feet an arc distance of 222.66 feet to a point of reverse curvature;

20.) Westerly along a curve to the left having a radius of 500.00 feet an arc distance of 341.90 feet to a point of reverse curvature;
21.) Westerly along a curve to the right having a radius of 585.00 feet an arc distance of 414.74 feet to a point of compound curvature;
22.) Northwesterly along a curve to the right having a radius of 1200.00 feet an arc distance of 986.04 feet to a point of reverse curvature;
23.) Northwesterly and southwesterly along a curve to the left having a radius of 145.00 an arc distance of 455.53 feet to a point of compound curvature;
24.) Southeasterly along a curve to the left having a radius of 1490.00 feet, an arc distance of 235.87 feet to a point to a point of tangency;
25.) S-26°-24'-00"-E, a distance of 38.95 feet to a point of curvature;
26.) Southwesterly along a curve to the right having a radius of 265.00 feet, an arc distance of 400.91 feet to a point to a point of compound curvature;
27.) Southwesterly along a curve to the right having a radius of 500.00 feet, an arc distance of 345.60 feet to a point to a point of reverse curvature;
28.) Southwesterly along a curve to the left having a radius of 100.00 feet, an arc distance of 99.07 feet to a point to a point of tangency;
29.) S-42°-22'-25"-W, a distance of 40.03 feet to a point of curvature;
30.) Southwesterly along a curve to the left having a radius of 215.00 feet, an arc distance of 161.56 feet to a point on the northerly boundary line of the Lockport Expressway;

Thence along the said northerly boundary of the Lockport Expressway the following three (3) courses and distances:

1.) S-89°-19'-05"-W, a distance of 248.17 feet to a point;
2.) S-75°-02'-22"-W, a distance of 970.22 feet to a point of curvature;
3.) Southwesterly along a curve to the left having a radius of 6848.00 feet an arc distance of 111.80 feet to a point:

THENCE: Through lands now or formerly of New York State Urban Development Corporation the following five (5) courses and distances:

1.) N-17°-38'-00"-W, a distance of 219.03 feet to a point of curvature;
2.) Northerly along a curve to the right having a radius of 500.00 feet an arc distance of 272.15 feet to a point of reverse curvature;
3.) Northerly along a curve to the left having a radius of 500.00 feet an arc distance of 127.60 feet to a point of tangency;
4.) N-01°-04'-08"-W, a distance of 200.00 feet to a point;
5.) S-88°-55'-52"-W, a distance of 125.00 feet to the above described POINT OR PLACE OF BEGINNING containing 87.733 acres be the same more or less.

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

MICHAEL P KEARNS, ERIE COUNTY CLERK
REF:

DATE:6/21/2018
TIME:4:01:37 PM
RECEIPT: 18114282

SEAN HOPKINS
ACCOUNT #: 0

ITEM - 01 774
RECD: 6/21/2018 4:07:17 PM
FILE: 2018123291 BK/PG D 11330/8243
CIMINELLI MUIR WOODS LLC
TOWN OF AMHERST
Recording Fees 105.00
Subtotal 105.00

TOTAL DUE	$105.00
PAID TOTAL	$105.00
PAID CREDIT	$105.00

VISA # xxxx-

REC BY: Janet H
COUNTY RECORDER

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 13 – No Impact Determination Letter Issued by Ruth Pierpont, Director, New York State Office of Parks, Recreation and Historic Preservation, dated October 10, 2001

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

October 10, 2001

Carolyn A. Pierce
CCRG
105 Robie Avenue
Buffalo, New York 14214

Dear Ms. Pierce:

Re: SEQRA
~~Muir Woods~~ Mixed-Use Development
Amherst/Erie County
01PR0345

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

RLP:cmp

RECEIVED
OCT 16 2001
CIMINELLI DEVELOPMENT COMPANY, INC.

An Equal Opportunity/Affirmative Action Agency
Printed on recycled paper

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 14 – Amended Wetland Permit Issued by the United States Army Corps of Engineers ("USACE") dated February 25, 2021

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

February 25, 2021

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Mr. Adam Faeth
Development Manager
Ciminelli Muir Woods LLC
350 Essjay Road Suite 101
Williamsville, NY 14221

Dear Mr. Faeth:

This is in reply to your submittal dated July 20, 2020 in which you requested a modification of Department of the Army Permit No. LRB-2001-00067. The project is located on a 326-acre parcel in the Town of Amherst, Erie County, New York. Specifically, you seek authorization to change the proposed use of an area identified as Site A from research and development and flex office space to a mixed-use commercial and residential development. This includes two 4-story mixed-use buildings, two-family townhouses, 6-unit apartment buildings, and a recreational trail to connect Site A with Site B. Wetland impacts have been reduced from 13.01 acres to 6.089 acres in Site A. A reduction of 6.921 acres. In addition, because of the reconfigured project including the significant reduction of wetland impacts, you have requested that the requirement of off-site compensatory mitigation be removed. Lastly, you have requested that 134 acres of the overall Muir Woods site located northeast of Site B, is donated to the Town of Amherst. This area will remain as open space in perpetuity. Permit compliance with mitigation requirements will remain as it currently is on the 134-acre site as a responsibility of Ciminelli Muir Woods LLC.

A Public Notice was published and coordinated with agencies and adjacent property owners using standard procedures. No comments were received as a result of the Public Notice. Based upon our evaluation, I concluded your request will not result in any unacceptable environmental or navigational impacts. Therefore, I am modifying Department of the Army permit No. LRB-2001-00067 to reflect the changes outlined in your request and identified on the attached drawings. All other terms and conditions of Permit No. LRB-2001-00067 remain in full force and effect.

Sheets 1, 2, and 3 of 3 are hereby made part of Permit No. LRB-2001-00067. Sheet 1 of 3 of this modification is an update to Sheets 2, 3, and 5 of 6 of the original permit. Sheet 2 and 3 of 3 of this modification are updates to Sheet 5 of 6 of the original permit. In addition, the following Special Conditions No. 6 and 8 of Permit No. LRB-2001-00067 are modified so that they no

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

longer include the requirement of off-site compensatory mitigation, as indicated below with the original and the following modified condition:

1. Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 17.83 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site, and 27.37 acres of wetland off-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site and off-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

   Modified Special Condition Number 6: As mitigation to compensate for unavoidable and permanent impacts to 10.91 acres of Federal wetlands and 1.29 acres of Federal tributaries (approximately 5227 linear feet), the permittee shall create, at a minimum; 26.91 acres of wetland on-site. In addition, the permittee shall enhance 4.3 acres of tributary (approximately 2630 linear feet) on-site, all in accordance with the approved on-site mitigation plan that is made part of this permit. The mitigation area must be constructed in accordance with the approved plan as well as all permit conditions.

2. Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan, and the Proposed Off-Site Wetland Mitigation Plan dated November 16, 2009. The stated mitigation plans are hereby incorporated into and made part of the permit as Attachments 1 and 2. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

   Modified Special Condition Number 8: The approved compensatory mitigation must be in strict conformance with the plans approved by the Corps of Engineers. Such approved plans were prepared by Ciminelli Development Company, Incorporated and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009, including the Proposed On-Site Wetland Mitigation Plan dated November 16, 2009. The stated on-site mitigation plan is hereby incorporated into and made part of the permit as Attachments 1. The permittee shall implement the mitigation in accordance with the plans and all permit conditions. Where permit conditions differ from the mitigation plan, the permit conditions shall be the ruling condition.

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Regulatory Branch

SUBJECT: Request for Modification of Department of the Army Permit No. LRB-2001-00067, New York State Department of Environmental Conservation No. 9-1422-00398/00002.

Questions pertaining to this matter should be directed to Martin Crosson at 716-879-4346, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207 or by E-mail at: martin.h.crosson@usace.army.mil

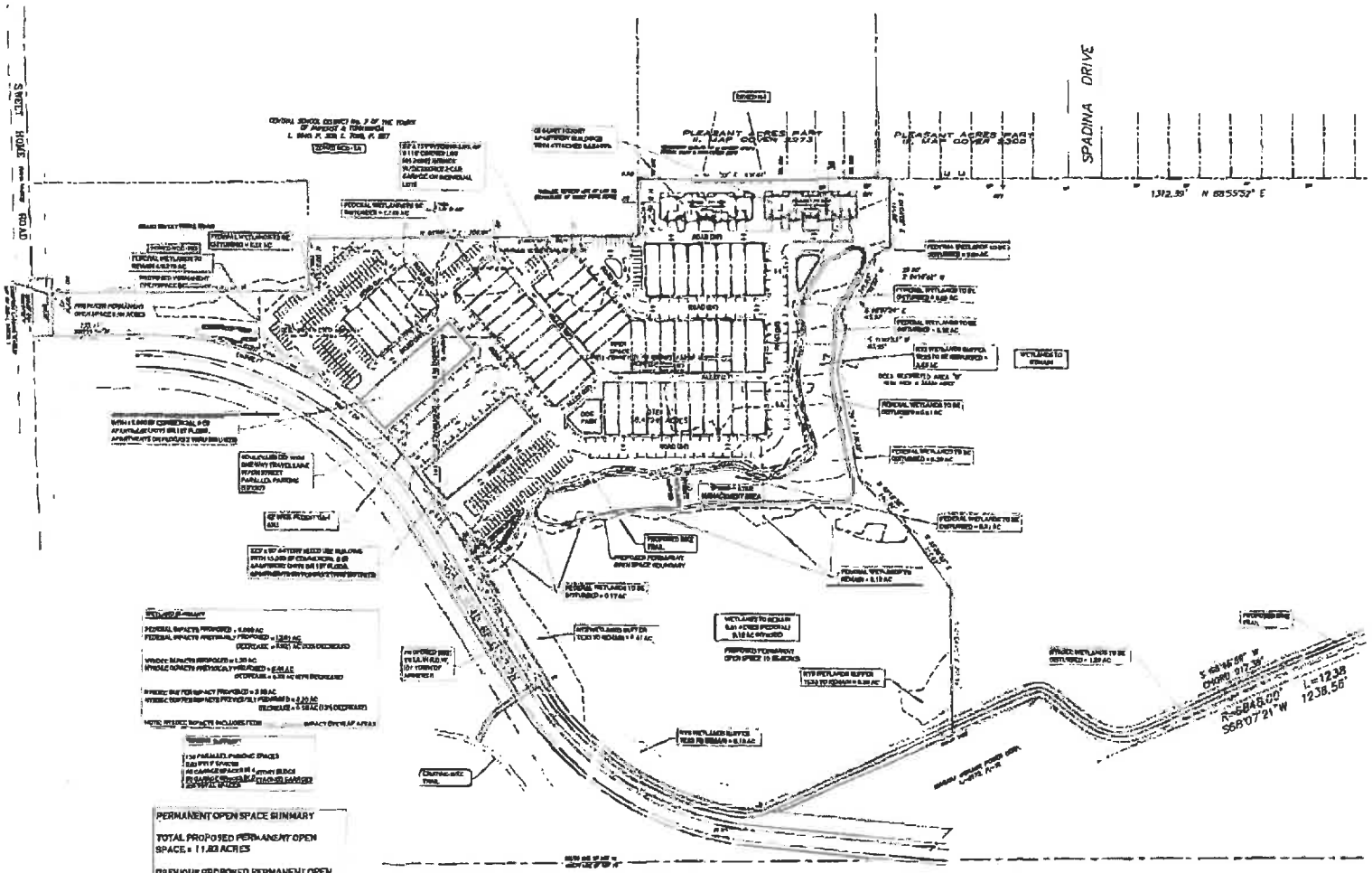
BY AUTHORITY OF THE SECRETARY OF THE ARMY

Steven V. Metivier

For: Mark Scalabrino
Acting Chief, Regulatory Branch

Enclosures

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



SITE PLAN

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 1 of 3

Camina Wood Morris

PROJECT NAME:
Site Development plans for:
Muir Woods Site "A"
Sweet Home & Dodge Road
Amherst, New York

DRAWING NAME:
Concept Site Plan

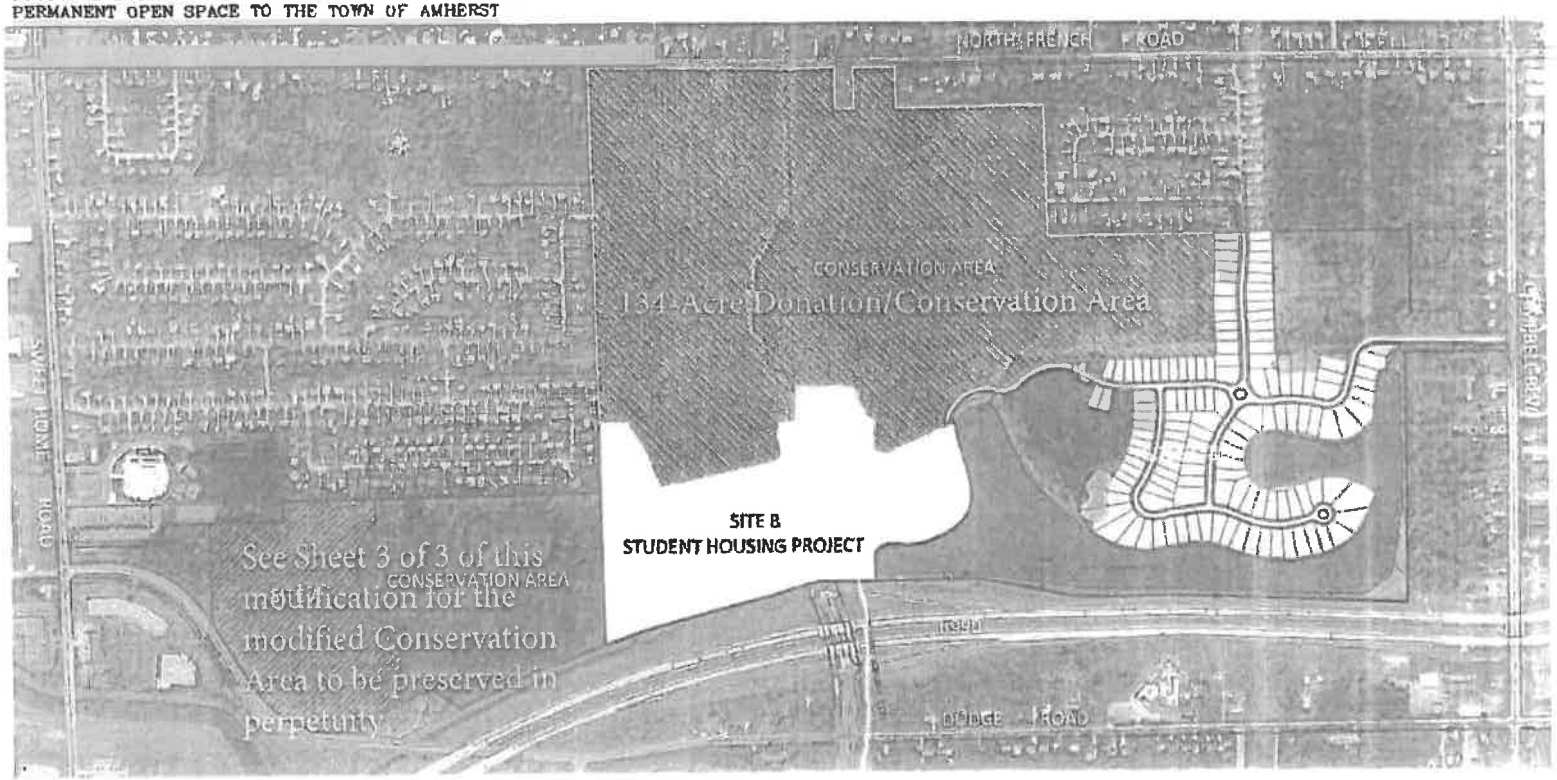
DRAWING NO.
C-100

Project no.: 19.182

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

MUIR WOODS OVERALL PROJECT AREA

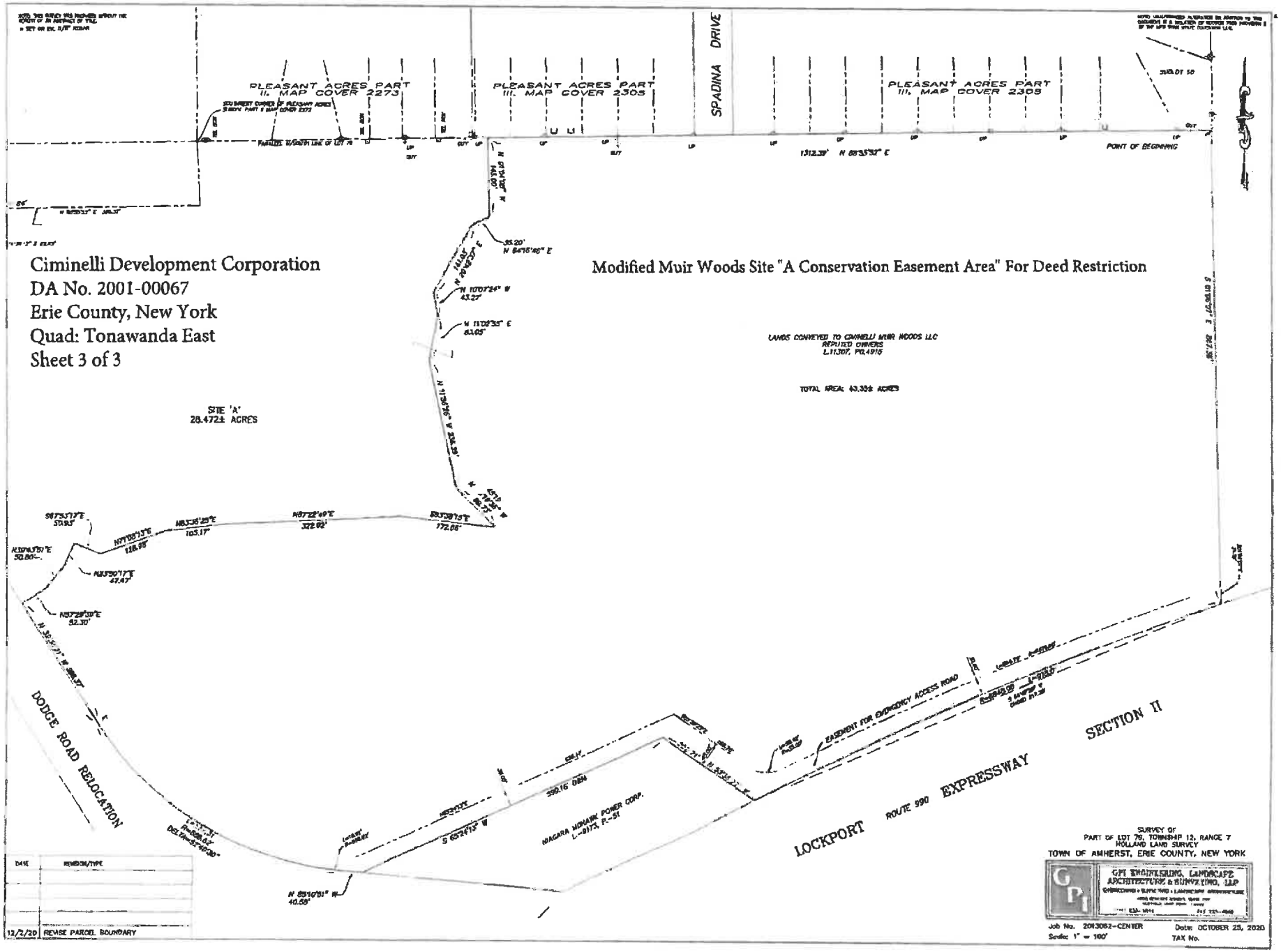
PROPOSED DONATION OF APPROXIMATELY 134 ACRES OF PERMANENT OPEN SPACE TO THE TOWN OF AMHERST



CONSERVATION AREA TO BE DONATED

Ciminelli Development Corporation
DA No. 2001-00067
Erie County, New York
Quad: Tonawanda East
Sheet 2 of 3

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Exhibit 15 – Amended Wetland Permit Issued by the New York State Department of Environmental Conservation ("NYSDEC") dated December 24, 2020

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7165 | F: (716) 851-7168
www.dec.ny.gov

December 24, 2020

Mr. Adam Faeth
Ciminelli Real Estate Corporation
50 Fountain Plaza, Suite 500
Buffalo, New York 14202

Muir Woods Development – "Site A"
Permit Transmittal Letter
Permit No. 9-1422-00398/00001

Dear Mr. Faeth:

Enclosed is your permit which was issued in accordance with applicable provisions of the Environmental Conservation Law. The permit is valid for only that project, activity or operation expressly authorized. If modifications are desired after permit issuance, you must submit the proposed revisions and receive written approval from the Permit Administrator prior to initiating any change. If the Department determines that the modification represents a material change in the scope of the authorized project, activity, operation or permit conditions, you will be required to submit a new application for permit.

Please review all permit conditions carefully. In particular, identify your initial responsibilities under this permit in order to assure timely action if required. Since failure to comply precisely with permit conditions may be treated as a violation of the environmental conservation law, you are requested to provide a copy of the permit to the project contractor, facility operator, and other persons directly responsible for permit implementation (if any).

If you have any questions, please contact this office at the above address.

Respectfully,
David S. Denk
Regional Permit Administrator

Enclosure
ecc: NYSDEC Law Enforcement
Maureen Brady, NYSDEC Office of General Counsel
Mr. Chuck Rosenburg, NYSDEC Division of Fish and Wildlife
Mr. Martin Crossen, USACOE
Sean Hopkins, Esq., Hopkins Sorgi & McCarthy PLLC

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

PERMIT
Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
Ciminelli Muir Woods LLC
50 Fountain Plaza, Suite 500
Buffalo, NY 14202
(716) 631-8000

Facility:
MUIR WOODS DEVELOPMENT
1121 N French Rd
Amherst, NY 14228

Facility Location: in AMHERST in ERIE COUNTY
Facility Principal Reference Point: NYTM-E: 191.586 NYTM-N: 4770.823
Latitude: 43°01'38.9" Longitude: 78°47'07.2"

Authorized Activity: Construction of a mixed-use project named "Muir Woods" consisting of approximately two 4-story mixed-use buildings consisting of commercial space and residential units, 90 two-family townhouses and 2 six-unit apartment buildings, approximately 133 detached single-family residential units and 515 cottage-style and apartment-style housing units with various amenities; and gas, electric, sanitary, potable water and storm water (the necessary infrastructure), while maintaining open space on approximately 224 acres in the Audubon New Community District. The Muir Woods project property is a 326 acre site bounded by the Lockport Expressway (Interstate Route 990) and Dodge Road on the south, Sweet Home Road on the west, North French Road on the north and Campbell Boulevard on the east. The project will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the project includes creation of 19.58 acres of in-kind and out-of-kind wetlands on-site, in six areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts. The project also includes construction at 520 Campbell Road property as detailed on plan sheets referenced in Natural Resource Condition No. 4.

Permit Authorizations

Freshwater Wetlands - Under Article 24
Permit ID 9-1422-00398/00001

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Facility DEC ID 9-1422-00398

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 9-1422-00398/00002

Renewal	Effective Date: 1/10/2019	Expiration Date: 11/30/2024
Modification # 1	Effective Date: 12/17/2019	Expiration Date: 11/30/2024
Modification # 2	Effective Date: 12/24/2020	Expiration Date: 11/30/2024

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY 14203 -2915

Authorized Signature: David S. Denk Digitally signed by David S. Denk DN: cn=David S. Denk, o=NYS DEC, ou=Div. of Env. Permits, email=david.denk@dec.ny.gov, c=US Date: 2020.12.24 10:29:47 -05'00' Date ___/___/____

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS; WATER QUALITY CERTIFICATION

1. **No Work Prior to Approval of Legal Instrument for Preservation of Undeveloped Areas of Site** No work authorized by this permit may begin until the Department approves a legal instrument, such as a deed restriction and/or conservation easement, that will preserve in perpetuity the natural resource values of the undeveloped areas of the site. This condition does not apply to the 520 Campbell Boulevard property.

2. **Declaration of Restrictions 520 Campbell Boulevard Property** A Declaration of Restrictions permanently prohibiting any future development of the 6.88 acres of jurisdictional federal wetlands and portion of the upland area on 520 Campbell Boulevard as depicted on the Wetland Restriction Exhibit Map must be incorporated into the deeds for lots 1 – 12 and 21. By 60 days after Water Quality Certification issuance, the permittee shall file with the real property records of the Erie County Clerk`s Office, the deed for each applicable lot containing this notice. The permittee shall within two weeks following the filing of the deed(s) submit proof of filing from the County Clerk's Office

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

showing the Liber and page number at which the deed notice was filed and the date of filing for one of the affected lots to: Regional Permit Administrator, NYSDEC Region 9 Headquarters, 270 Michigan Ave, Buffalo, NY 14203-2915.

3. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Ciminelli Development Company, Inc. and titled "Supplement #4 to the Wetland Permit Application for Muir Woods Development Project" dated June 2009.

4. **Conformance with Plans Site B** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include the "Concept Plan - Muir Woods" dated 08 November 2019 amended to show Conifer Planting Area (attached).

5. **Conformance with Plans - 520 Campbell Boulevard** All activities authorized by this permit for the 520 Campbell Boulevard property must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans include those sheets entitled: The Preserve at Muir Woods (DEC Planting Exhibit, DEC Earthwork Exhibit and the Wetland Restriction Exhibit) by Greenman-Pedersen, Inc. dated May 2018.

6. **Conformance with Plans Site A** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or the applicant's agent as part of the permit application. Such approved plans include Drawing C-100 dated July 20, 2020 and received by this Department on August 10, 2020.

7. **Future Phases** Prior to development of Muir Woods Sites A and B, the permittee must obtain specific approval of engineered plans for Sites A and B to ensure compliance with the terms and condition of this permit, the approved wetland mitigation plans and the most current Findings Statement for the overall Muir Woods Project issued pursuant to the State Environmental Quality Review Act. The permittee shall submit the engineered plans for the development of Sites A and B for review by the Department simultaneous with submission of such engineered plans to the Town of Amherst. If required by the Department, the permittee shall make any necessary modifications to the engineered plans to ensure compliance with the terms and conditions of this permit, the approved wetland mitigation plans and the most current Findings Statement.

8. **Permit Conditions Prevail over Plans** If any condition of this permit conflicts with the approved plans noted in Condition Number 1, the permit conditions shall prevail over the plans unless specific written approval for such a change is obtained from this Department prior to implementation.

9. **Pre-construction Meeting to Review Permit** Prior to commencing work at the project site, the permittee shall schedule a pre-construction meeting with Department staff (Contact: Mr. David Denk, Regional Permit Administrator, NYSDEC, Division of Environmental Permits, Telephone : 716/851- 7165 and/or Mr. Charles P. Rosenburg, NYSDEC, Division of Fish and Wildlife, Telephone: 716/851-7010) and selected contractors to review the conditions contained in this permit.

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10. Mark Areas of No Disturbance on the Muir Woods Site Grade stakes and/or other appropriate measures (substantial contractor fencing, perhaps in combination with necessary silt fencing) shall be used to ensure that no equipment enters identified areas of no disturbance within the immediate area under construction (i.e.- Site A, Site B, Site C or Site D) on the Muir Woods project site. Boundaries of the on-site mitigation areas shall likewise be marked to define the limits of that work.

11. Install Controls Along Limits of Disturbance Before any soil is disturbed within a specific Site Development Area, as detailed in Condition #6 above, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales along the limits-of-disturbance as shown on the plans or drawings referenced in this permit. Such erosion and sedimentation controls shall be maintained until unpaved portions of the subject site are stabilized by a self-sustaining cover of vegetation that is adequate to prevent erosion and sedimentation on and off the site. Sediment which has accumulated at the controls shall be removed periodically as necessary during the construction period. Before the controls are removed, the permittee shall remove all sediment that has accumulated at the controls.

12. Work Within Ares Depicted on Plans All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving and stockpiling of material must take place within the Site Development Areas or mitigation areas as depicted on the project plans referenced by this permit. Construction activity is prohibited within areas to be left in a natural condition or locations on the property not within the Site Development Areas or mitigation areas designated by this permit. Disturbance to the wetlands and their regulated 100 foot wide adjacent areas shall be strictly limited to the work areas identified in the plans, and specifically the MAP SHOWING WETLAND IMPACT AREAS - NEW YORK STATE WETLANDS, and APPENDIX M - PROPOSED ON-SITE MITIGATION PLAN.

13. Invasive Species (Non-Native Vegetation) To prevent the unintentional introduction or spread of invasive species, the permittee must ensure that all construction equipment is cleaned of mud, seeds, vegetation and other debris before entering any approved Site Development Areas within State regulated wetlands or their 100 foot wide adjacent areas, as well as all on-site wetland mitigation areas.

14. Prevention of Invasive Species The permittee shall prevent the establishment of invasive species (purple loosestrife, Phragmites, reed canary-grass, Japanese knotweed, glossy buckthorn and common buckthorn) across all disturbed areas within the wetland mitigation area for five growing seasons. If any of these invasive species become established, monitoring and treatment may be extended for an additional 5 years at the Department's discretion.

15. Wetland Mitigation is Mandatory Completion of all freshwater wetland mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed by the expiration date of this permit. Mitigation will be subject to remediation, if necessary, pursuant to Condition #16 below. All mitigation areas shall be monitored for a period of ten (10) years or until the mitigation is deemed successful by this Department. Monitoring reports shall be prepared for the first four (4) years after construction of the mitigation areas and every other year (years 6, 8 and 10) thereafter. This Department may, at its discretion, modify the 10-year monitoring period and/or monitoring report requirement at any time. Monitoring reports shall be submitted to Mr. Charles P. Rosenburg, Habitat Manager, NYSDEC, Bureau of Ecosystem Health, 270 Michigan Avenue, Buffalo, NY 14203-2915 Telephone: 716/851-7024.

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16. **On-Site Mitigation to be in Accordance with Mitigation Plan** The on-site mitigation shall be in accordance with Appendix M - Proposed On-Site Wetland Mitigation for Muir Woods prepared by Earth Dimensions, Inc. revised May 25, 2009 and with the modifications shown in Exhibit 22 of the July 20, 2020 application binder.

17. **Planting Row of Native Conifers** The permittee shall plant a row of native conifer trees in the location shown on the attached plan. The tree plantings must be a minimum of 6 feet tall, spaced 15 feet apart, and must be planted no later than October 15th following the completion of construction of the adjacent apartment units.

18. **Survival Rate for Mitigation Plantings** The permittee shall prepare a care, maintenance, inspection, and replacement schedule for the tree and shrub plantings described in the mitigation plan to ensure an 85% survival rate for five growing seasons. This condition includes all on-site landscape "buffer" plantings.

19. **Herbicides, Pesticides in Wetland or Adjacent Area** The use of herbicides and other pesticides in State regulated wetlands or their 100 foot wide adjacent areas is a regulated activity and may only be conducted pursuant to a valid Article 33 Pesticides Permit.

20. **Requirement for SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities** Since development of the Muir Woods site in the Town of Amherst will involve land disturbance of one (1) or more acres, the permittee is required to obtain coverage under State Pollutant Discharge Elimination System (SPDES) General Permit GP-0-15-002 for Stormwater Discharge from Construction Activities. A Notice of Intent (NOI) is required to be sent to NYSDEC, Division of Water, 625 Broadway, 4th Floor, Albany, New York 12233-3505, Telephone: 518/402-8111 and approved before construction commences. Alternatively, an eNOI may be filed electronically as described on the Department's website. The General Permit GP-0-15-002 and NOI form are available on the Department's website at www.dec.state.ny.us.

21. **Visibly Turbid Discharges Prohibited** Visibly turbid discharges from project dewatering operations, excavation and grading activities are strictly prohibited to any "water body" (pond, wetland, stream or water course). Any such discharges shall be (1) retained in an appropriately maintained upland settling basin, filtered through crushed stone, sand, filter fabric fences, hay bales etc., or (2) directed to a grassy area sufficiently distant from any water body to preclude such entry.

22. **Stockpiling of Soil** Stockpiling of excavated soil is prohibited at locations within any portion of the TE-22, TE-23 and TE-34 Wetlands or their regulated 100 foot wide adjacent areas, or within any mapped 100-year floodplain beyond the Site Development Areas or mitigation areas identified in the plans.

23. **Stabilize Disturbed Areas** All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with straw, or hydro-seeded. Mulch shall be maintained until suitable vegetative cover is established.

24. **Temporary Mulch, Final Seeding** If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth.

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25. **Disposal of Material** Any non-merchantable tree and brush debris, demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of on an approved upland site more than 100 feet from any regulated freshwater wetland. These materials shall be suitably stabilized so as not to re-enter any water body, wetland, or wetland adjacent area; and must be disposed of in accordance with all local, state, and federal statutes, regulations, or ordinances.

26. **Placement of Interpretive Signs Required** Permanent interpretive signs shall be placed at various wetland boundary locations throughout the Muir Woods project site . The permittee shall submit a proposal for the signs to the Department for approval. The interpretive signs shall be a minimum of 12 inches by 12 inches and shall be placed on permanent posts.

27. **Annual Project Inspection / Meeting** The permittee shall schedule an annual inspection/meeting to update Department staff on project progress and compliance with conditions of this permit for the on-site wetland mitigation area.

28. **Wetland Monuments** Monuments shall be placed every 200 feet along the outer edge of the wetland preservation areas. The monuments shall be 30" long, 5/8" rebar and cap embedded flush and in the center of the top exposed surface of concrete in a minimum 4 inch diameter, 4.5 foot long section of PVC Schedule 40 drain pipe filled with concrete, extending vertically1.5 to 2 feet above existing grade at each location. The caps shall say "Conservation Area Marker, Do Not Disturb". These monuments are to be permanently maintained.

29. **Wetland Boundaries** The boundaries of the TE-22, TE-23 and TE-34 Wetlands shall be fixed for the period of this permit (expires November 30, 2024). At that time, new boundary delineations for those wetlands will be required by this Department (to be performed or confirmed by a Department Biologist). Since project activities will be subject to the updated wetland boundary delineations and pertinent regulations at that time, any future permit modification (if necessary) would be reviewed based on the updated delineations and pertinent regulations. As such, modifications to the current project plan may be necessary depending upon the updated wetland delineations and permit regulations in effect at that time.

30. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

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31. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

32. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

33. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

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The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 9 Headquarters
270 Michigan Ave
Buffalo, NY14203 -2915

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

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NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

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Exhibit 16 – Redline Draft of Proposed Amended Findings for Proposed Mixed-Use Project on Site "A" of Muir Woods Property

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Town of Amherst
Brian J. Kulpa
Town Supervisor

AMENDMENT #51 TO THE AUDUBON DEVELOPMENT PLAN
TO RECLASSIFY A PORTION OF 326± ACRES OF LAND
FROM NCD-ND & NCD-MOS to NCD-GC, NCD-RI & NCD-MOS
1081 & 1121 North French Road
(Z-9-02)

CERTIFICATION OF AMENDED FINDINGS

Having considered the Draft and Final Generic EIS documents, and having considered the preceding written facts and conclusions relied upon to meet the requirements of 6 NYCRR 617, this Amended Statement of Findings certifies that:

1. The requirements of 6 NYCRR Part 617 have been met;

2. Consistent with the social, economic and other essential considerations from among the reasonable alternatives thereto, the action **approved** is one which minimizes or avoids adverse environmental effects to the maximum extent practicable; including the effects disclosed in the Generic Environmental Impact Statements, and the Application to Amend the Findings Statement, and

3. Consistent with social, economic and other essential considerations, to the maximum extent practicable, adverse environmental effects revealed in the Environmental Impact Statement process and the Second Application to Amend the Findings Statement will be minimized or avoided by incorporating as conditions to the decision those mitigative measures which were identified as practicable.

TOWN OF AMHERST
Name of Agency

Signature of Responsible Official

BRIAN J. KULPA
Name of Responsible Official

TOWN SUPERVISOR
Title of Responsible Official

~~September 27, 2021~~
Date

5583 MAIN STREET, WILLIAMSVILLE, NY 14221
Address of Agency

Amherst Municipal Building | 5583 Main Street | Williamsville NY 14221
716-631-7032 | bkulpa@amherst.ny.us | www.amherst.ny.us

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RESOLUTION

WHEREAS, following the April 16, 2004 submittal of a Draft Generic Environmental Impact Statement (DGEIS) prepared by Ciminelli Development Company, Inc., the DGEIS was accepted by the Town Board on September 7, 2004. The DGEIS was submitted for the proposed rezoning from NCD-ND & NCD-MOS to NCD-GC, NCD-RI & NCD-MOS and development of 326± acres of land located at1081 & 1121 North French Road. On October 28, 2004, the Planning Board held a public hearing on the DGEIS and rezoning request and recommended approval of the subject petition. Subsequently, a public hearing on the DGEIS and rezoning request was held by the Town Board on March 2, 2005. A Final Generic Environmental Impact Statement (FGEIS) was accepted by the Town Board on November 5, 2007, and a Notice of Completion of the FGEIS was filed on November 14, 2007; and

WHEREAS, the Planning Board and the Town Board have considered the content of the DGEIS, the FGEIS, and all other documents and comments and submissions made during and after the hearings.

WHEREAS, on February 18, 2014, the Project Sponsor submitted an Application to Amend the Findings Statement and Audubon Development Plan along with supporting documentation. The Planning Board held a public hearing on the Application during its meeting on March 14, 2014 and it recommended approval of the Application. On June 16, 2014, the Town Board held a public hearing on the Application but did not issue a decision on the Application.

WHEREAS, on August 17, 2015, the Project Sponsor submitted an Amended Application to Amend the Findings Statement and Audubon Development Plan for the purpose of modifying the Application filed on February18, 2014.

WHEREAS, the Planning Board held a public hearing on the Amended Application during its meeting on September 17, 2015 and the Planning Board recommended in favor of the Application. On November 16, 2015, the Town Board held a public hearing on the Application. On December 7, 2015, the Town Board voted to issue an Amended Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the comprehensive environmental review of the Project that concluded with the original issuance of a Findings Statement on December 17, 2007.

WHEREAS, the Planning Board conducted a coordinated environmental review of the development of Sites C and D of the overall Project Site as a 133 lot residential subdivision. On September 14, 2017, the Planning Board issued a negative declaration pursuant to SEQRA for the subdivision based on its determination that the subdivision would not result in any potentially significant adverse environmental impacts.

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WHEREAS, on April 15, 2019, the Project Sponsor submitted an Application to Amend the Findings Statement and Audubon Development Plan along with supporting documentation. The requested amendment of the Findings Statement issued by the Town Board on December 17, 2017 was to allow student housing to be developed on Site B of the overall Muir Woods Project Site ("Application to Amend the Findings Statement"). The Planning Board held public hearings on the Application to Amend the Findings Statement during its meeting on May 16, 2019 and June 20, 2019 it adopted a resolution recommended approval of the Application to Amend the Findings Statement during its meeting on June 20, 2019.

WHEREAS, on August 5, 2019, the Town Board held a public hearing on the Application to Amend the Findings Statement. On August 5, 2019, the Town Board voted three to one to amend the Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of a Findings Statement on December 7, 2007 and the issuance of an Amended Findings Statement on December 7, 2015.

WHEREAS, on June 24, 2020, the Project Sponsor submitted an Application to Amend the Findings Statement issued by the Town Board on December 17, 2017 and to Amend the Comprehensive Plan for Site A of the Muir Woods Project to allow a mixed-use project to be developed on Site A of the overall Muir Woods Project Site (hereinafter collectively the "Application to Amend the Findings Statement"). The Planning Board held a public hearing on the Application to Amend the Findings Statement during its meeting on August 20, 2020 and at the same meeting adopted a resolution recommending approval of the Application to Amend the Findings Statement by the Town Board.

WHEREAS, on October 6, 2020, the Town Board held a public hearing on the Application to Amend the Findings Statement. On October 19, 2020, the Town Board voted to issue the Amended Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of a Findings Statement on December 7, 2007, and the issuance of an Amended Findings Statements on December 7, 2015 and August 5, 2019.

WHEREAS, on July 7, 2021, Sawyers Landing LLC submitted an Application to Amend the Findings Statement issued by the Town Board on October 19, 2020 in order to seek to increase the allowable residential density from 202 units to 258 units. The Planning Board held a public hearing on the Application to Amend the Findings Statement during its meeting on August 19, 2021 and at the same meeting adopted a resolution recommending approval of the Application to Amend the Findings Statement by the Town Board.

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Certification of Amended Findings
Amendment #51 to the Audubon Development Plan (Z-9-02)

WHEREAS, on September 27 2021, the Town Board held a public hearing on the Application to Amend the Findings Statement. On September 27 2021, the Town Board voted to issue the Amended Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of a Findings Statement on December 7, 2007, and the issuance of an Amended Findings Statements on December 7, 2015 and August 5, 2019 and October 19, 2020.

WHEREAS, on June 24, 2024, Sawyers Landing LLC submitted an Application to Amend the Findings Statement issued by the Town Board on September 27, 2021 in order to modify the allowable uses on Site A of the overall Muir Woods Project Site [50 Dodge Road] to include a four-story climate controlled storage building and also to reclassify 13.452 acres of 50 Dodge Road from NCD-RI to NCD-LC.

The Planning Board held a public hearing on the Application to Amend the Findings Statement during its meeting on _____, 2024 and adopted a resolution recommending that the Town Board _____ the Application to Amend the Findings Statement and to reclassify 13.452 acres of 50 Dodge Road from NCD-RI to NCD-LC.

WHEREAS, on _____, 2024, the Town Board held a public hearing on the Application to Amend the Findings Statement and to reclassify 13.452 acres of 50 Dodge Road from NCD-RI to NCD-LC.

WHEREAS, on _____, 2024, the Town Board voted to issue the Amended Findings Statement based on its determination that the potential modifications to mixed-use project at 50 Dodge Road will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of an Amended Findings Statement pursuant to SEQRA on September 27, 2021.

WHEREAS, on _____, 2024, the Town Board adopted a resolution to approve the reclassification of 13.452 acres of 50 Dodge Road from NCD-RI to NCD-LC.

NOW THEREFORE THE TOWN BOARD FINDS AND DETERMINES THAT:

1. These Amended Findings set forth specific conditions and criteria consistent with 6 NYCRR Sections 617.7, 617.9, 617.11, and 617.12 under which the site plan process can proceed. This process provides procedures to supplement the FGEIS if necessary and for public notice and opportunity to participate in hearings before the Town Planning Board before it approves a site plan. An Environmental Assessment Form will be required with site plan application for environmental

review. If the proposed development does not conform with these Amended Findings, a Supplemental Findings Statement, a supplement to the FGEIS, or a Negative Declaration shall be prepared to comply with 6 NYCRR Section 617.9.

2. The proposed mixed-use, student housing and residential development as presented in the FGEIS and the Application to Amend the Findings Statement submitted to the Planning Department on July 6, 2021 is consistent with the intent and objectives of the Zoning Ordinance.

3. Adequate services and utilities must be available prior to occupancy. Review and approval of services and utilities by the Town agencies will be required for site plan approval.

4. Development will be consistent with all other applicable laws, rules and regulations.

5. As provided in 6NYCRR Part 617.10, the Town Board chose to require the preparation of a draft Generic Environmental Impact Statement (DGEIS) instead of a draft Environmental Impact Statement (DEIS) for this project. This decision was based on the scope and timetable of the development described by the Project Sponsor and depicted in the Conceptual Master Plan, which showed a multi-use development on 330± acres of land, to be built out over a 15-20 year period. The Board's decision is also based on the following reasons:

   - A DGEIS provides a lead agency with the framework for properly evaluating a conceptual master plan while identifying the important elements of the environmental setting associated with the project site. A DGEIS assesses a broad scope of a group of actions or a combination of effects from a single action.
   - The utilization of a DGEIS provides the Town Board with the authority to establish specific criteria and thresholds by which future actions such as site plan and subdivision applications will be reviewed, including requirements for ensuring subsequent compliance with SEQR.
   - The Town Board's decision to require the Project Sponsor to prepare a DGEIS acknowledges that the specific layout and appearance of the development cannot be determined at this time but rather will be decided over a period of several years and subject to market demands, and the development of the project will occur in stages.
   - The SEQR regulations state that a DGEIS is appropriate for a series or sequence of separate actions and/or projects that have wide application or restrict the range of future alternative policies.
   - The Town Board's utilization of a DGEIS affords it the opportunity to evaluate a broad range of anticipated impacts, and it also ensures that related actions will not be segmented in order to avoid the required analysis of the proposed development of the overall project site.

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6. By the time the Findings Statement was issued by the Town Board on December 17, 2007, the proposed Muir Woods development had been significantly revised since its initial submittal in 2002, resulting in a reduction in the commercial/office component of the project from 1.8± million sq. ft. to 700,000± sq. ft. and in the residential component from 200± units to 136± units. These changes were made in response to the NYS Department of Environmental Conservation, the U.S. Army Corps of Engineers and the public to minimize impacts to wetland areas to the greatest extent possible.

Following the issuance of the Findings Statement by the Town Board on December 17, 2007, the Project Sponsor obtained the required wetland permits from the New York State Department of Environmental Conservation and the United State Army Corps of Engineers. In an effort to address current market needs while maintaining the intent of the project site New Community District zoning, the Project Sponsor submitted an Application to Amend the Findings Statement in February of 2014 to expand the range of uses within Site B of the project site to specifically allow for multi-family housing in addition to the previously approved office/retail development.

Based on input received during the review of the Application to Amend the Findings Statement to allow for multi-family housing on Site B, the Project Sponsor submitted an Amended Application to Amend the Findings Statement and Audubon Development Plan on August 17, 2015 for the purpose of modifying the Application filed on February18, 2014. The Amended Application proposed to modify the permitted use of the eastern portion of Site B, comprised of approximately 26 acres. Pursuant to the updated Application, the western portion of Site B comprised of approximately 20 acres would have remained designated for commercial office and retail development per the Finding Statement issued by the Town Board on December 17, 2007.

Subsequent to the issuance of an Amended Findings Statement by the Town Board on December 7, 2015, the Project Sponsor sought the required approvals and permits for the development of Sites C and D of the Project Site as a 133 lot residential subdivision that includes a roadway connection to Campbell Boulevard on 520 Campbell Boulevard. The Planning Board thoroughly considered the potential adverse environmental impacts associated with the subdivision and issued a negative declaration pursuant to SEQR on September 14, 2017 based on its determination that the 133 lot residential subdivision on Sites C and D would not result in any potentially significant adverse environmental impacts. On September 14, 2017, the Planning Board granted Site Plan Approval for the subdivision, and on June 21, 2018 granted Final Plat Approval for the subdivision. A map cover for the approved 133 residential subdivision was filed with the Erie County Clerk's Office on July 24, 2018, and construction activities in furtherance of the construction of the subdivision began in the fall of 2018.

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Following the issuance of the Amended Findings Statement by the Town Board on December 7, 2015, the Project Sponsor sought and obtained extensions of the expiration dates of the wetland permits previously issued by the New York State Department of Environmental Conservation and the United States Army Corps of Engineers.

In an effort to allow student housing to be developed on Site B while maintaining the intent of the New Community District zoning, the Project Sponsor submitted an Application to Amend the Findings Statement on April 15, 2019. The Project Sponsor sought an Amendment of the Findings Statement to expand the range of uses within Site B of the project site to specifically allow for student housing in addition to the previously approved multifamily housing on the western 20± acres of Site B and the previously approved office/retail development on the eastern portion of Site B.

In an effort to allow a mixed-use project to be developed on Site A while maintaining the intent of the New Community District zoning, the Project Sponsor submitted an Application to Amend the Findings Statement and the adopted Comprehensive Plan on June 24, 2020. The Project Sponsor sought an Amendment of the Findings Statement to modify the land use category within Site A of the project site to replace the previously proposed 237,000 sq. ft. maximum Flex office/R&D use with a mixed-use development including 2 four-story mixed-use buildings along the Dodge Road frontage of Site A, 45 two-family townhomes and 2 six-unit single-story multifamily buildings. The Project Sponsor sought to amend the Comprehensive Plan to designate Site A as appropriate for Mixed Residential use. In connection with the proposed mixed-use development of Site A, the Project Sponsor proposed to reduce previously approved impacts to the federal wetlands subject to the jurisdiction of the United States Army Corps of Engineers ("USACE") and also to the NYSDEC Freshwater Wetland and its regulated 100 ft. Adjacent Area.

On August 20, 2020, the Planning Board held public hearings in connection with its review of the Application to Amend the Findings Statement and the Comprehensive Plan as filed by the Project Sponsor on June 24, 2020. The Planning Board adopted resolutions during its meeting on August 20, 2020 by unanimous votes recommending that the Town Board issue the Amended Findings Statement and amend the Comprehensive Plan to designate Site A as appropriate for Mixed Residential use.

On October 6, 2020, the Town Board held public hearings in connection with its review of the Application to Amend the Findings Statement and the Comprehensive Plan as filed by the Project Sponsor on June 24, 2020. On October 19, 2020, the Town Board adopted Resolution 2020-791 for the purpose of issuing an Amended Findings Statement to allow Site A of the Muir Woods

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Property to be developed as a mixed-use residential/commercial project instead of the previously proposed flex office/R&D buildings. Resolution 2020-791 as adopted by the Town Board on October 6, 2020 also authorized the acquisition of approximately 43 acres of Permanent Open Space via a donation by the property owner consisting of property to the west of Site B including the eastern portion of Site A consisting of approximately 9.81 acres of wetlands subject to the jurisdiction of both the NYSDEC and USACE. During its meeting on October 19, 2020, the Town Board also adopted Resolution 2020-792 for the purpose of approving an amendment to the Comprehensive Plan to designate Site A as appropriate for a mixed-use residential/commercial use instead of the previously proposed flex office/R&D buildings

On December 24, 2020, the New York State Department of Environmental Conservation ("NYSDEC") issued an Amended Wetland Permit [Permit No. 9-1422-00398/0001] authorizing the impacts to NYSDEC Freshwater Wetlands and the associated regulated 100 ft. Adjacent Area in order to accommodate the mixed-use development of Site "A". The Amended Wetland Permit reduced the impacts to jurisdictional freshwater wetlands associated with the development of Site A from 9.46 acres to 1.2 acres and reduced the impacts with the development of Site A to the regulated 100 ft. wide adjacent area from 4.2 acres to 3.65 acres.

As a result of the Amended Wetland Permit issued by the NYSDEC on December 24, 2020, the development of the Muir Woods Property will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the Project Sponsor is required to create 19.58 acres of in-kind and out-of-kind wetlands on the overall Muir Woods Property, in six areas, to replace the functions and benefits of the impacted wetlands. Additionally, there will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts.

On February 25, 2021, the United States Army Corps of Engineers ("USACE") issued an Amended Wetland Permit [LRB-2001-00067] authorizing impacts to 6.09 acres of federal wetlands, which was a reduction of 6.92 acres of previously authorized impact of 13.01 acre to federal wetlands, in order to accommodate the mixed-use project on Site A.

On July 7, 2021, Sawyers Landing LLC filed an Application to Amend the Findings Statement to accommodate an increase of the allowable density of the residential component of the mixed-use project on Site A from 202 units to 258 units.

On September 27, 2024, the Town Board adopted Resolution No. 2021-818 for the purpose of approving the issuance of an Amended Findings Statement pursuant to SEQRA.

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7. A Supplemental GEIS, an option that the SEQR regulations leaves to the discretion of the Lead Agency, was not required for this project due to the Town Board's decision that the reduction in the project described in #6, above did not meet the criteria set forth in 6NYCRR Part 617.9(a)(7). Although the changes proposed by the Project Sponsor reduced the development significantly, it was not determined that the amended project would encroach on any land not initially identified in the scope of the original development proposal. The project changes also did not result in newly discovered information, and would not result in any significant environmental impacts not addressed or inadequately addressed in the DGEIS.

8. Traffic and Transportation (FGEIS Section 2.1)

Site specific requirements shall be established by the Town, County and State, as appropriate, as development applications are reviewed. The developer shall be responsible for any traffic mitigation required for development of the project site.

The potential traffic impacts associated with the original project proposal were clearly analyzed and identified within the Traffic Impact Study prepared by Stantec Consulting Services, Inc. dated March 2003 and updated August of 2005 in association with the acceptance of the FGEIS.

The Amended Findings Statement issued by the Town Board on August 5, 2019 included the consideration of adding student housing to the authorized uses of Site B pursuant to the Amended Findings Statement issued by the Town Board on December 17, 2007. The Project Sponsor submitted a Traffic Impact Study for the purpose of evaluating the potential traffic impacts of the development of Site B as a maximum of 515 student housing units. It was determined that the potential traffic impacts associated with student housing on Site B will be less than the potential traffic impacts of the development of Site B in its entirety as a maximum of 464,850 sq. ft. of commercial office and retail development pursuant to the Findings Statement issued by the Town Board on December 17, 2007.

The Town Board, as Lead Agency, requires that the Project Sponsor comply with the following mitigation measures during the development of the project site:

A. Provision for Future Extension of John James Audubon Parkway to North French Road

The extension of John James Audubon Parkway through the project site and connecting to North French Road was proposed in the initial Concept Plan submitted for the Muir Woods project in 2002. This proposal was also incorporated into the DGEIS submitted to the Town in 2004. The connection was removed from the Concept Plan in response to the requirement from the NYS Department of Environmental Conservation to further reduce impacts to State and federal wetlands. The Town of Amherst may in the future be interested in the

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possibility of a future northerly extension of John James Audubon Parkway to North French Road while acknowledging such possible future extension would require approvals from both the NYS Department of Environmental Conservation and the United States Army Corps of Engineers.

The rationale for the road connection was found in several planning documents, both historical and recent:

- The Amherst Community Development Plan adopted by the Planning Board in 1975 includes the extension of the then-planned Lockport Expressway through the subject site as a future Minor Arterial road.
- A report prepared by NYSDOT in 1976 anticipated the extension of the John James Audubon Parkway and forecast its use by 1,950 vehicles per hour.
- The Amherst Bicentennial Comprehensive Plan, accepted by the Town Board in February 2004 and adopted by the Town Board in January 2007, identifies the "Audubon Parkway Extension" in the map showing the Future Thoroughfare System.

The 30+ years of anticipating this roadway connection point to its significance in meeting the transportation goal of improving circulation within the Town and the role this connection would play in overall Town development. Given its importance, the Town Board is requiring that the future location of this connector be shown on site plans submitted for review, and that sufficient land be reserved by the Project Sponsor for the eventual connection to be constructed. The road construction and alignment will be subject to approval by the NYSDEC and the U.S. Army Corps of Engineers, as applicable.

B. Residential Connection to Lynette Lane

The residential component of the proposed Muir Woods development to occur on Sites C & D may have a direct road connection to Lynette Lane. There will be no direct roadway connection to Nancy Lane. Non-residential traffic will be discouraged from using Lynette Lane through the implementation of various traffic calming measures to be proposed during the site plan review process for the development of Sites C & D, subject to review of such traffic calming measures by the Town Traffic-Safety Board and Fire Chief's Association. These measures include:

1. The lack of direct sight lines for motorists to discourage non-residential traffic from utilizing Lynette Lane to access North French Road;

2. Curvilinear road design; and

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3. Installation of signage posting the road for "resident and emergency traffic only" or other such measure to prohibit non-residential traffic from travelling on Lynette Lane and the proposed public roadways within the existing residential subdivision;

If a problem is determined to exist based on the Phase 2 traffic study, further measures to discourage traffic of prohibit cut-through traffic will be considered.

C. No Internal Roadway Connection to Dodge Road

The internal connector road within the Muir Woods development is not proposed to have a westerly connection to Dodge Road; the only direct vehicular connection to Dodge Road will be from the portion of the project located in the western portion of the project site (Site A). If warranted at some future time by a traffic analysis, a connection to Dodge Road may be made from the internal connector road if required permits for such a roadway connection can be obtained from the NYSDEC and the US Army Corps of Engineers.

D. Updated Traffic Impact Study

The Traffic Impact Study will be updated when any of three established thresholds are met:

1. Completion of Phase I development, defined as full build-out of Site B, or

2. prior to approval of any site plan in Site C or Site D or any direct or indirect connection to any of the Sites with Lynette Lane, or

3. when the number of combined vehicular trips entering and exiting the site during the AM weekday peak travel hour reaches 858 trips, or

4. when the number of combined vehicular trips entering and exiting the site during the PM weekday peak travel hour reaches 774 trips.

If actual conditions exceed projections, this will be reflected in the updated TIS to be prepared by the Project Sponsor, and the Project Sponsor may be required to implement traffic related mitigation measure sooner than expected.

Any mitigation measures, including off-site mitigation measures that are required as a result of the updated TIS, shall be the sole obligation of the Project Sponsor, if approved. Any off-site improvements, including the acquisition of private property required to make those improvements, shall be conditions of any site plan approval and treated as Public Improvement Permits (PIPs) for the purpose of final permitting. At no time shall the Town be required to make any off-site

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improvements or acquire private property, either by purchase or through its eminent domain powers, to mitigate the impact of this development project.

E. Alternate Access to Campbell Boulevard

During the original environmental review of the proposed project which concluded with the Town Board's issuance of a Findings Statement on December 17, 2007, the Project Sponsor attempted to seek a vehicular connection from the site to Campbell Boulevard through property located at 520 Campbell Boulevard which is owned by the Williamsville Central School District. The Town also participated in efforts to obtain access to Campbell Boulevard via this property. These attempts were not successful.

The Project Sponsor eventually was successful in acquiring 520 Campbell Boulevard from the Williamsville Central School District on December 5, 2017 and the approved 133 residential subdivision on Sites C and D includes a public roadway connection on 520 Campbell Boulevard to Campbell Boulevard.

F. Construction Vehicles

As part of the public comment period for the project, concerns were raised regarding the use of construction vehicles on existing residential streets in the adjacent Franklin Heights Subdivision to access the project site during project construction. In order to avoid the adverse environmental impacts associated with construction vehicles, existing residential streets shall not be utilized by construction vehicles to access the project site. The infrastructure to be constructed for the project shall be appropriately sequenced so that construction vehicles can access the site via the northerly extension of John James Audubon Parkway and Doge Road only.

Any future builder, owner or developer who purchases lots for development within Site C & D shall be prohibited from using Lynette Lane as a means of access for construction vehicles. A deed restriction incorporating this restriction shall be a prerequisite of the sale of any lots within Sites C and D. and the Town shall be provided with a copy of the recorded deed restriction, which shall not be recorded at the Erie County Clerk's Office until the content and form of the deed restriction has been reviewed and approved by the Building Department and Town Attorney's Office.

On June 21, 2018, a Declaration of Restrictions was recorded at the Erie County Clerk's Office (Liber 11330 of Deeds at Page 8243) for the purpose of complying with the relevant portion of the Amended Findings Statement prohibiting construction vehicles from utilizing Lynette Lane for access by construction vehicles.

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G. Break in Access for Connection to Lockport Expressway (I-990)

The proposed northerly extension of John James Audubon Parkway as a Town roadway to provide access to the project site requires a break in access to the Lockport Expressway (I-990). The NYSDOT has been aware of this requirement since the initial petition by the Project Sponsor in 2002. Prior to the granting of the break in access, several conditions must be met, including completion of any required environmental compliance. Once completed and inspected, the Project Sponsor will be required to dedicate the northern extension of John James Audubon Parkway to the Town for permanent use as a public roadway to be dedicated to the Town of Amherst.

On May 20, 2019, the Town Board adopted a resolution stating the Town will serve as the applicant for the required Break-in-Access for the proposed northerly extension of John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst.

The Town filed an Application for Break-in-Access with the New York State Department of Transportation on August 21, 2019. The NYSDOT has not yet issued a decision on the pending request for Break-in-Access approval.

The Break-in-Access for the proposed northerly extension of John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst will result in numerous public benefits including, but not limited to, accommodating the potential future extension of the NFTA light rail and a terminus for such light rail on Site B, publicly accessible parking for a recreational trail that will cross the overall Muir Woods Project Site and connect to the Town's recreational trail (extending from Niagara Falls Boulevard to the trailhead near the intersection of North Forest Road and Maple Road), and a potential future extension of John James Audubon Parkway as a public roadway connecting to North French Road.

H. Traffic Mitigation Measures

Dodge Road / Project Site Roadway

Phase I development:
- Installation of a stop sign to the southbound (site driveway) approach
- Construction of one shared left-right turn lane for southbound site driveway approach

Full development:
- No additional improvements

John James Audubon Parkway / I-990 Ramps

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Phase I development:
Upon the completion of Phase I development, (Phase I development defined in Section 8, Part D.1. of this Amended Findings Statement) the Project Sponsor shall be required to provide a current trip count Report for both the a.m. and p.m. peak travel hours. Subject to the findings of a warrant analysis prepared in accordance with appropriate traffic engineering standards as determined by the updated trip count Report and based on an analysis of the potential impacts upon existing Levels of Service at this intersection, the Project Sponsor may be required to work with the New York State Department of Transportation to provide the following mitigation measures:

- Installation of traffic signals, each with their own controller, at both the northbound and southbound I-990 to John James Audubon Parkway
- Installation of a wire connection between these two new signals and the existing traffic signal at John James Audubon Parkway and Dodge Road in order to coordinate all three traffic signals
- Widening of both the northbound and southbound I-990 off-ramps to provide one additional turning lane on each ramp approach to John James Audubon Parkway

Full development: If any of the thresholds identified in 'D' above are met, the following improvements will be evaluated and may be required:

- installation of a third lane to the northbound off-ramp in order to provide two left turn lanes and one right turn lane
- add a free-flow southbound right turn lane at the southbound ramp, including a second receiving lane on the ramp to merge to one lane prior to the I-990 mainline

Dodge Road / John James Audubon Parkway

Phase I development:

- Traffic signal timings will need to be adjusted periodically over time as warranted by changing travel patterns

Full development:

- Construction of a westbound right turn lane. It is anticipated that this improvement will be required when approximately 75% of the development is complete or when the number of westbound right turning vehicles from Dodge Road exceeds 300 vehicles per hour during the morning peak travel period.

North French Road / Sweet Home Road

Phase I development:

- Adjustments to traffic signal timing as travel patterns warrant modification

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Full Development:

- Construction of an eastbound right turn lane. Traffic volumes turning right at this location currently exceed guidelines recommended in the Highway Capacity Manual for consideration of installing a separate right turn lane. While construction of this lane is currently warranted to address current existing traffic operations in the area, it will not be needed as a result of traffic to be generated by the proposed development of the project site until approximately 90% of the proposed development has been completed, since new traffic projected to be generated by the project will only add a few additional vehicular trips to this traffic movement.
- Modify signal timings during both the morning and evening peak hours, as necessary. Recent improvements to this intersection to provide protected phasing for the left turns will reduce the number of left turn accidents at this location. Additionally, future planned improvements to be implemented by Erie County will assist in further reductions in the number of accidents at this intersection.

North French Road / Campbell Boulevard

Phase I development

- Adjustments to traffic signal timing as travel patterns warrant modification

Full development:

- Add protected/permitted phasing for eastbound, northbound and southbound left turns when the traffic signal is upgraded in association with the improvement identified above.

North French Road / I-990 Ramps
Dodge Road / Sweet Home Road
Dodge Road / Campbell Boulevard

Phase I development:

- Modify signal timings for both the morning and evening peak travel hours as traffic patterns change.

Full development:

- Modify signal timings for both the morning and evening peak travel hours as traffic patterns change.

North Forest Road / John James Audubon Parkway

Phase I and/or Full development:

- Add protected/permitted phasing for the southbound left turn movement when warranted

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- Modify signal timings during both peak travel periods, as traffic patterns change

North French Road / Lynette Lane

Phase I development:

Based on the most current Traffic Impact Study addressing the impact on Lynette Lane and its intersection with North French Road, Lynette Lane as currently constructed may not be adequate to support the traffic associated with full build-out of the proposed development plan. Consequently, the Project Sponsor acknowledges its potential obligation to make off-site improvements to Lynette Lane and its intersection with North French Road, should any site plan be approved. See Section 8.D of this Certification of Findings.

- If the updated TIS identifies traffic mitigation measures reasonably necessary to accommodate traffic from development of the project site, and such mitigation measures cannot be mitigated by the Project Sponsor, then the scope of the project may be limited.

Route 62 / East Robinson Road
Campbell Boulevard / Tonawanda Creek Road
Millersport Highway / Campbell Boulevard / Stahl Road

Phase I and Full development:

- Modify signal timings for both the morning and evening peak travel hours as traffic patterns change.

9. Wetland Issues (FGEIS Section 2.2)

The proposed Muir Woods project will result in permanent impacts to approximately 10.98 acres of State regulated wetlands (TE-22, TE-33 and TE-34), 13.46 acres of State regulated 100-foot wide wetland adjacent area, and 19.12 acres of federal wetlands. According to the Permit Transmittal Letter dated November 30, 2009, the NYSDEC has officially issued a Freshwater Wetlands Permit (Permit ID 9-1422-00398/00001) and Water Quality Certification (Permit ID 9-1422-00398/00002) for the permanent wetland impacts as identified.

On June 1, 2018, the NYSDEC issued a modification of Permit No. 9-1422-00398/00002 (Modification No. 1 of Permit No. 9-1422-00398/00002) that applies to the development of Sites C and D as a 133 lot residential subdivision. On August 29, 2018, the NYSDEC issued a modification of Permit No. 9-1422-00398/00001 and Permit No. 9-1422-00398/00002 (Modification No. 1 of Permit No. 9-1422-00398/00001 and Modification No. 2 of Permit No. 9-1422-

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00398/00002"). On January 10, 2019, the NYSDEC issued Modification No. 3 of Permit No. Permit No. 9-1422-00398/00001 to extend the expiration date of the wetland permit to November 30, 2024.

On December 24, 2020, the New York State Department of Environmental Conservation ("NYSDEC") issued an Amended Wetland Permit [Permit No. 9-1422-00398/0001] authorizing impacts to NYSDEC Freshwater Wetlands and the associated regulated 100 ft. Adjacent Area in order to accommodate the mixed-use development of Site "A". The Amended Wetland Permit reduced the impacts to jurisdictional freshwater wetlands associated with the development of Site A from 9.46 acres to 1.2 acres and reduced the impacts with the development of Site A to the regulated 100 ft. wide adjacent area from 4.2 acres to 3.65 acres.

As a result of the Amended Wetland Permit issued by the NYSDEC on December 24, 2020, for the development of the Muir Woods Property will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the Project Sponsor is required to create 19.58 acres of in-kind and out-of-kind wetlands on the overall Muir Woods Property in six areas, to replace the functions and benefits of the impacted wetlands. Additionally, there will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts.

Additional wetland findings include the following:

- The project will not create a regulated 100-ft. wetland buffer area that crosses any property line adjacent to the project site. The on-site mitigation areas will be designed so that they will be located at least 100 ft. from neighboring properties.

- As mitigation for the impacts as identified, the project includes creation of 26.917 acres of in-kind and out-of-kind wetland on-site, in several areas, to replace the functions and benefits of the impacted wetlands. There will be 4.3 acres of stream channel enhancement on-site (totaling approximately 2,630 linear feet).

- The development of the eastern portion of Site B for residential purposes, shall not include any owner occupied housing units within the State regulated wetland or the 100 ft. regulated Adjacent Area that do not involve oversight by either a homeowners or condominium association to ensure there will not be any impacts into the 100 ft. regulated wetland Adjacent Area that is to be preserved on Site B.

Federal Wetlands:

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As stated in its letter dated August 27, 2007, the United States Army Corps of Engineers (USACE) has field verified that the federal wetland boundaries located on the Muir Woods project site as shown on the wetland delineation map prepared by Greenman-Pedersen, Inc. dated May 2007 are accurate. The wetland areas were delineated by Earth Dimensions, Inc. and summarized in a final wetland delineation report dated May 16, 2007.

The Project Sponsor provided a complete Joint Application For Permit for wetland impacts associated with the project to the USACE and NYSDEC as of June, 2009. After thoroughly reviewing the complete application and associated wetland impacts, the USACE issued a Validated Department of the Army Permit for wetland impacts associated with the project as of May, 2012. Additionally, having thoroughly reviewed the complete application and associated wetland impacts, the NYSDEC officially issued a Freshwater Wetland Permit and Water Quality Certification for wetland impacts associated with the project as of November, 2009.

On May 14, 2012, the United States Army Corps of Engineers ("USACE") issued Department of Army Permit No. 2001-00067. The permit issued by the USACE permitted to impact 17.83 acres of Federal wetland, and 1.29 acres (approximately 5227 linear feet) of jurisdictional tributaries for the construction of Muir Woods project. On May 6, 2016, the USACE extended the permit expiration dated from May 14, 2012 to November 30, 2019. The USACE issued a modification of Permit No. 2001-00067 on June 20, 2018 in connection with the development of Sites "C" and "D" as a residential subdivision. On January16, 2019, the USACE extended the expiration date of Department of Army Permit No. 2001-00067 to November 30, 2024.

On February 25, 2021, the United States Army Corps of Engineers ("USACE") issued an Amended Wetland Permit [LRB-2001-00067] authorizing impacts to 6.089 acres of federal wetlands, which was a reduction of 6.921 acres of previously authorized impact of 13.01 acre to federal wetlands, in order to accommodate the mixed-use project on Site A.

10. Wildlife / Biological Resources (FGEIS Section 2.3)

The NYSDEC's Natural Heritage Program has reported no record of known occurrences of rare or state-listed animals or plants, significant natural communities, or other significant habitats, on or in the immediate vicinity of the project site. The Project Sponsor will be required to implement the following mitigation measures in order to minimize impacts to wildlife resources to the maximum extent practicable:

- A comprehensive erosion control plan will be developed and implemented to protect vegetation and water quality.

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- Off-limit areas, including wetlands, will be delineated prior to construction to avoid or minimize impacts to vegetation. The construction workforce will be educated as to respecting and adhering to physical boundaries of off-limit areas.

- Best Management Practices will be followed during construction.

- The establishment of invasive vegetative species will be deterred through manual extraction and rapid establishment of desirable vegetation. Exposed and disturbed soils will be seeded, planted and mulched to prevent the colonization of invasive species. Volume 8 of the Appendix of the FGEIS at Exhibit F (*SJWPA Appendix* M) contains a discussion of the proposed on-site wetland mitigation including the protection of habitat areas.

- Waterfowl activity will be deterred in the off-site wetland mitigation area located in the Town of Newstead through the use of mylar tape, snow fencing, 4-7 ft. tree plantings and the seeding of upland grassland areas with a cool season grass.

- The proposed on-site wetland mitigation system will be designed to provide seasonal aquatic habitat for fish, waterfowl and amphibians; habitat for multiple covertypes of wetland plant species; and passerine bird nesting, feeding and resting habitat.

- The project site historically has had an elevated number of deer-vehicle accidents on the roads surrounding the parcel. This parcel is a portion of a much larger habitat area which also includes Nature View Park to the north and is not a "closed" habitat area. The Planning Department, in conjunction with the Police Department, will continue to monitor the deer population throughout the Town and implement approved methods of reducing deer/vehicle accidents in accordance with the Deer-Vehicle Accident Management Plan.

11. Drainage and Flooding (FGEIS Section 2.4)

The following measures shall be implemented by the Project Sponsor to mitigate drainage and flooding impacts to the maximum extent practicable:

A. The Town Highway Department shall have access to all Town ditches that are on the subject property including Town ditches 4, 4A, 4B and 4C. The Project Sponsor will be required to grant public easements to the Town to these ditches to ensure their proper maintenance. No aspect of the Muir Woods development

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will inhibit access to Town ditches or create undue burden to the Town for restoration of easement property used to access Town ditches. On June 28, 2018, the Project Sponsor recorded a Permanent Access and Drainage Easement at the Erie County Clerk's Office (Liber 11331 of Deeds at Page 1521) for the purpose of granting the Town an easement to access town ditches and stormwater management facilities on the Project Site including the existing lake.

B. The project site and the surrounding vicinity are known as locations for high amounts of beaver and mosquito activity. Access to the Town Highway Department for control of this activity in Town ditches or other areas of the development shall be provided.

C. The Project Sponsor shall be responsible for cleaning and debrushing of all Town ditches located on the project site during the initial construction phases of the project. The Project Sponsor will also be responsible for long-term maintenance of stream/drainage features and detention/stormwater basins; for maintenance of on-site wetland mitigation areas during the monitoring period; and for the construction of all drainage improvements required for development of the project site.

D. The Project Sponsor shall be required to construct any ponds and sand filters required stormwater quality treatment. All ponds and sand filters to be constructed on the project site will be privately owned and maintained, with public drainage easement to be granted by the Project Sponsor to allow Town to properly maintain the inlet and outlet pipes of any wet ponds.

E. All stormwater runoff will be treated to standards approved by the Town Engineering Department prior to discharging into the existing lake on the project site or Town ditches. No additional detention is being proposed for the Muir Woods development for stormwater quantity control.

F. All buildings in the west portion of the Muir Woods site located within the Ellicott Creek flood plain will be at a minimum elevation of 576.0 feet, or one foot above the base flood elevation as determined by the Town Building Commissioner.

As development is proposed, specific drainage plans will be reviewed and approved by the Town Highway and Engineering Departments and the NYS Department of Environmental Conservation/US Army Corps of Engineers during site plan review, to ensure there is no adverse impact to the Ellicott Creek Flood Control system.

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G. Upon development, the existing 32± acre lake in the southeast portion of the project site will be maintained with a normal lake level of 569.55 feet. The existing 42-inch CMP outlet at the west end of the lake will remain as it is. All stormwater from the east side of the development around the lake will pass through a stormwater quality treatment facility consistent with the NYS Stormwater Management Design Manual and Phase II Stormwater SPDES requirements prior to entering the lake. This system currently designed as sand filters may evolve into wet ponds, bio-retention filters, and/or other acceptable practices under the Design Manual and SPDES requirements.

H. Backyard runoff from proposed residential units will be separated from wetland mitigation areas and wetlands either by a ditch or rear yard drains to preclude pollution of those areas by lawn chemicals, per NYSDEC letter dated October 26, 2007.

I. A detailed Stormwater Pollution Prevention Plan (SWPPP), including a Sediment and Erosion Control Plan, for the various phases of the project including any related on-site drainage areas shall be submitted as specific site plans are submitted for review. The Stormwater Pollution Prevention Plan for each phase of the project will need to be reviewed and approved by the Town's Engineering Department.

J. The Project Sponsor shall be required to comply with the findings and recommendations of the Preliminary Drainage report prepared by Greenman-Pedersen, Inc. in August 2007 and any updated reports during the course of development.

K. The Project Sponsor will provide backyard drainage for the existing homes that are directly adjacent to the portions of the project site that will be developed for residential use. This requirement pertains to Sites and D. Additional drainage improvements for the areas along the rear yards of the homeowners on Nancy Lane will also be installed by the Project Sponsor. The drainage pipe to be installed in the rear yards of the new residential units that will be integrated with the new drainage swale behind the residents of Nancy Lane will be a minimum diameter of 12 inches.

12. Character and Quality of Life Issues (FGEIS Section 2.5)

A. Setbacks

On those portions of the project site where commercial or student housing development will be directly adjacent to existing residential areas (i.e. Bucyrus Heights), setbacks will retain existing vegetation to a depth that

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provides an adequate buffer. The following minimum setbacks will be required:

- The planting of additional trees and shrubs by the Project Sponsor within the minimum setback area may be required to supplement the existing vegetation in order to provide adequate buffers.

- A combination of earthen berms and new vegetation will be required in those portions of the minimum setback area where there is not sufficient existing vegetation to provide an adequate buffer. The minimum height at the top of berms shall be three feet, and the maximum slope shall be 1 on 3 (33%) to promote the growth and long-term viability of trees and shrubs planted on the berms. Berms should have a natural appearance by varying their width and height.

- Site A (western portion of the project site – 50 Ddoge Road) – This portion of the project site will be utilized for mixed-use; a portion of Site A is located directly south of the Bucyrus Heights subdivision.

  ~~• 25 ft. minimum building setback from residential lot line for single-story residential buildings.~~

  • 3190 ft. minimum building setback from residential lot line for attached and detached -two-family -townhome style units.

  • 250 ft. minimum building setback from residential lot line for four-story mixed use buildings.

  • 400~~250~~ ft. minimum building setback from residential lot line for four-story multifamily building.

  • 450 ft. minimum setback from residential lot line for four-story climate controlled storage building.

  • 60 ft. parking setback from residential lot line

- Site B (center portion of site) – This portion of the project site will be developed around the extended John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst. Site B will be developed as student housing or for the land uses permitted pursuant to the Amended Findings Statement issued by the Town Board on December 17, 2015. The following setback standards apply to the development of Site B:

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- 60 ft. building setback from residential lot line. If the height of any proposed buildings exceeds 50 feet, the required minimum building setback shall be equal to the height of the proposed building.

- 90 ft. parking setback to residential lot line

B. Building Height

The following maximum building heights will be observed for the proposed development:

- Site A (western portion of the project site) – This portion of the project site will be the location of mixed-use and residential buildings and a portion of Site A is located directly south of the Bucyrus Heights subdivision.

  - Maximum building height for mixed-use buildings, ~~and~~ multifamily buildings and climate controlled storage building shall be four-stories and 60~~55~~ ft. as measured from the finished grade to the top of any parapet (excluding any rooftop mechanical equipment). All mechanical equipment shall be properly screened in accordance with the standards contained in the Zoning Code adopted by the Town Board in May of 2006.

  - Maximum height of any residential buildings within 90 ft. of a residential lot shall be 3~~2~~5 ft.

- Site B (center portion of the project site) – This site will be developed around the extended John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst. Site B will be developed as student housing or Site B will be developed as permitted to the Amended Findings Statement issued by the Town Board on December 17, 2015.

  - There will not be a maximum height for buildings to be constructed on Site B. All buildings will be required to comply with a minimum required setback that shall be the greater of 50 feet or the height of the proposed building at the point of its maximum height (including rooftop mechanicals, etc.)

13. Soil Stability and Foundation Issues (FGEIS Section 2.6)

The Geotechnical Engineering Report prepared by McMahon & Mann Consulting Engineers, P.C. dated June 2005 includes findings and foundation considerations

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for future construction of the various components of the project. The report is included in Volume 6, Appendix I of the FGEIS.

The Town shall not grant site plan, subdivision or Public Improvement Permit (PIP) approval for construction of any component of the project (buildings, parking areas or infrastructure) unless the identified limitations as discussed in the McMahon & Mann report are adequately accounted for. The applicant shall be required to provide documentation of site-specific soil characteristics and comply with all relevant Town building codes regarding soil conditions.

Additional mitigation measures to be undertaken by the Project Sponsor, subject to determination by the Building Department, may include:

- Perform individual soil borings for each proposed structure to accurately determine the specific geotechnical design perimeters.
- Take measures to control the moisture content of the soils outside the structure. These may include installation of an irrigation system that would maintain near-saturated conditions in the soil around the structure during dry summer months, and/or installation of an exterior vapor barrier that extends out away from the structure around the perimeter.
- Monitoring of soil moisture with supplemental foundation watering during dry months.
- Use of a lower allowable bearing pressure for design of the spread footings.
- Placement of a minimum of two continuous #5 horizontal longitudinal reinforcing bars in each of the following locations: in the footing, at the base of the foundation wall, and at the top of the foundation wall.
- Use of an isolation joint between the basement floor slab and the foundation wall.
- Installation of a quality vapor barrier under the basement floor slab.
- Installation of a foundation drain system designed so that the floor elevation of the sump is above the elevation of the bottom of the footing.

14. Economic Impacts (FGEIS Section 2.7)

All infrastructure required to support the development of the project site will be installed at the Project Sponsor's expense. Town-wide or localized special assessment districts (sewer, water, highway, etc.) are established so operating cost can be spread over many taxpayers who use specific services.

According to the "Cost of Servicing/Revenues Generated Land Use Study" in December 2006 commissioned by the Amherst Industrial Development Agency, for every $1.00 attributed to residential use, $1.11 is expended in providing government services, while just $0.48 is expended for commercial use and $0.60 is expended for open land. As a predominantly commercial oriented mixed-use project, the estimated $3,500,000 in yearly tax revenue (2007 estimated) to the

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Town at full build out projected to be generated by the project is expected to cover the cost of any additional services including police and fire protection, snow plowing, maintenance of roads, water and sewer infrastructure, ditches, etc.

An economic real estate study for the proposed Muir Woods project was completed by Northeast Appraisers in March, 2002 which analyzed residential demand and property values. A subsequent Economic Analysis was completed by Real Property Services, LLC in July 2006, which is included in Appendix K, Volume 8 of the FGEIS. The conclusions of those reports are:

- There will be no negative impact on the marketability or values of nearby existing housing. The project may potentially have a positive impact on surrounding residential property values due to increased demand on desirability to live in close proximity to the development.

- The proposed project development will add over $70 million to the Town of Amherst tax base when completed, and generate over $3.4 million in tax revenue per year at stabilized 2008 levels.

- Over the first 10 years of development, the project is projected to generate over $21.4 million in tax revenue, as compared to total tax revenue of approximately $260,000 that would be generated if the project site remains as vacant land over the same period.

- It appears that both the Sweet Home and Williamsville School Districts will be impacted minimally with regards to expenditures on a per student basis. This takes into account that more than 50% of the residential development will consist of patio homes, which primarily cater to "empty nesters" and typically generate less students per household.

- The competitive advantages of the project site which are expected to support strong market absorption include its direct interchange access from the Lockport Expressway (I-990) and the high visibility of the site from expressway traffic.

15. Noise and Light Issues (FGEIS Section 2.9)

Noise – It is anticipated that the project site will be built-out in stages over many years and, as such, there is a need to impose mitigation measure for noise from construction activities to minimize this identified adverse environmental impact to the maximum extent practicable. Both temporary and long terms noise impacts may result from the construction activities on the project site as well as from the proposed use of the project site.

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Noise from construction-related activities, which will exceed local ambient levels for noise outside of structures, may cause some temporary annoyance to nearby residents. It is expected that this impact, caused by heavy equipment, construction vehicles and power tools, will continue throughout the duration of construction. In order to reduce this noise, the following measures will be undertaken by the Project Sponsor:

- Limit major construction activities to daytime hours
- Use of construction equipment with mufflers
- The preservation of existing vegetation to the greatest extent practicable will provide a noise barrier to existing residential areas.
- If blasting is required, the developer will follow all requirements of the Town Blasting Ordinance

Noise resulting from the occupation and usage of the buildings constructed on the project site can be expected to result in sound levels that are characteristic of suburban office and residential developments and should not be significant.

With the Lockport Expressway (I-990) forming the southern boundary of the project site, and its design as an elevated highway for a portion of this boundary, traffic is considered the largest source of existing noise. Levels from typical noise generators that may be expected to exist in the vicinity of the project site include:

Distant traffic (45 mph)	45 – 50 decibels
Passenger car pass-bys	70 decibels
Accelerating trucks	85 decibels
Distant aircraft noise	60 – 85 decibels

The Transportation Project Report for the Lockport Expressway evaluated the potential noise impacts of the entire I-990 project, including the interchange that will be improved in connection with the proposed project. A copy of the Noise & Air Pollution Study is found in Volume 6 of the Appendix of the DGEIS at Exhibit 30. In addition, there is not any development directly adjacent to the existing interchange that will be impacted by the proposed interchange improvements. To the south of the northbound off-ramp there are some residential units situated along Dodge Road. However, the planned improvements at the existing off-ramps will not result in a movement of traffic 50% or more closer to source receptors.

Light – To mitigate the light spillage from exterior lighting on adjacent residential properties, especially the Bucyrus Heights neighborhood, the following measures will be implemented:

- Appropriately located lighting, downward-directed lighting fixtures or hooded lighting will be used to prevent off-site light spillage on adjacent residential

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areas. The light fixtures and their placement will follow all Town of Amherst code requirements for usage and design. The Town Zoning Code requires a lighting plan to be submitted during the site plan review process, and the standards contained in the relevant section of the Zoning Code regulate lighting spillover from commercial locations onto adjacent residential land uses.

- Screening of proposed commercial buildings and parking lots will be provided through the creation of berms or landscaping elements on the periphery of developed areas (see Section 10A above).

16. Open Space and Recreation (FGEIS Section 2.10)

The proposed internal trail system shall be installed (Sites C & D) of the "The Preserve at Muir Woods" development, provided it does not impact regulated wetlands or is permitted by permits issued by the NYSDEC and/or USACE. Public access to a portion of the existing lake will be provided. The majority of State Wetlands TE-22, TE-33, and TE-34 will remain as Major Open Space (MOS). As a result of the modifications to the project, approximately 224± acres of the project site will be preserved as open space.

The proposed recreational trail connecting sites A, B, C, and D of the Muir Woods Development shall connect to the Town's existing trail system as shown in Figure 4 (Park, Open Space and Trail map) and Figure 2.1 (University Focal Planning Area Concept Plan) of the adopted Amherst Bicentennial Comprehensive Plan and shall be constructed by the Project Sponsor as part of the Muir Woods project. Each development site of the Muir Woods Development shall complete its portion of the trail system prior to the issuance of any certificate of occupancy by the Town of Amherst Building Department.

~~The Project Sponsor will work with the Town toward achieving the trail connections. An opportunity for a future multi-use trail connection northerly to Nature View Park shall be maintained in accordance with the Town Comprehensive Plan.~~

17. Other Issues (FGEIS Section 2.12)

A. Reclassification of Land

The entire project site is zoned New Community District (NCD), and no changes are proposed to remove the property from the NCD zoning district classification.

The original request by Ciminelli Development Company, Inc. in 2002 was to reclassify 326± acres of land from NCD-ND and NCD-MOS to

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NCD-GC, NCD-RI and NCD-MOS. This request was reviewed and commented on over a five year period. As a result of discussions with the NYS Department of Environmental Conservation during that time, the petitioner amended the original Muir Woods Concept Plan by reducing the overall development from 144 acres to 110 acres in order to minimize wetland impacts. In addition, the various components of the development were altered so that the proposed size of the commercial office/R&D space was reduced from 1.8 million sq. ft. to 700,000 sq. ft. The proposed "village center" originally envisioned was also eliminated. The result is a different land pattern from that initially proposed and one that is not consistent with the originally-requested reclassification districts.

The following additional steps shall be undertaken as part of the Findings for this project:

- The parcels to be reclassified to NCD-GC shall be deed restricted to prohibit the following uses:
    - Automobile sales and service facilities (except vehicles used primarily on the subject property)
    - veterinary clinics or kennels
    - gasoline service station will be prohibited around the existing lake

    On June 21, 2018, a Declaration of Restrictions was recorded at the Erie County Clerk's Office (Liber 11330 of Deeds at Page 8243) for the purpose of prohibiting the above described uses on the portion of the Project Site reclassified to NCD-GC.

- At the Town Board's direction, the Town shall initiate a reclassification of the remainder of wetland areas contained in the original project proposal as Major Open Space (MOS).

B. Land Use

The proposed development will follow the program summarized below as depicted in the original Findings Statement concept plan for the project dated September 2007, as depicted in the Concept Plan for Site B dated August 14, 2015, as the Concept Plan for Site B dated April 2, 2019showing a student housing project, or as the Concept Plan for Site A dated June 23, 2021 showing a mixed-use project:

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Development Site	Land Use	Maximum Developed Area	Development Program
Site A	Mixed-Use	17.42 acres	Maximum of two mixed-use buildings with a maximum height of 60 ft. and maximum combined footprint of 50,000 sq. ft., one-four story climate controlled storage building with a maximum footprint of 32,000 sq. ft.; ~~one four-story multifamily building with a maximum height of 55 ft. (48 units),~~ 49 one-family and two-family attached and detached townhomes ~~(98 units) and 12 standalone apartments with attached garages~~ and maximum height of 325 ft. The overall maximum allowed residential density on Site A is 258 units.
Site B (Option 1)	Class A Corporate office buildings	46 acres	Maximum of 464,850 sq. ft. of office/retail space
Site B (Option 2)	Residential/ Commercial	46 acres	Maximum of 192 residential units on the eastern portion of Site B (approximately 26 acres) and a maximum of 205,000 sq. ft. of office and commercial space on the western portion of Site B (approximately 20 acres)
Site B (Option 3)	Residential - Student housing	46 acres	Maximum of 515 student housing units
Sites C and D	Residential	37 acres	133 lot residential subdivision consisting of detached single-family homes on individual lots pursuant to the Map Cover filed at the Erie County Clerk's Office on July 24, 2018.

General components of the proposed development that will minimize adverse environmental impacts include:

- The maintenance of the remaining approximately 224± acres of the development site as permanent open space.
- Implementing a cluster pattern to maximize open space preservation.

C. Utility Infrastructure - In accordance with the October 17, 2007 letter received from the Erie County Department of Environment & Planning, all proposed sanitary sewer lines to be constructed to service both the residential and commercial portions of the project will be subject to review and approval by the Erie County Health Department. All systems installed or improved for the project will be undertaken by the Project Sponsor at its cost and will be required to meet all Town, County and State requirements.

D. Archaeological/Cultural Resources – One prehistoric archaeological site was discovered on the project site, with a Stage 2 archaeological study determining that the identified prehistoric archaeological site did not meet

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the eligibility criteria for listing on the State or National Register of Historic Places. This finding was confirmed by the NYS Office of Parks, Recreation and Historic Preservation in its letter of October 10, 2001. No mitigation measures are needed for the subject development.

E. Air Quality – Potential impacts to air quality resulting from fugitive dust generated during construction activities will be minimized by the following measures:

- seeding and/or mulching exposed soils as soon as practicable and in accordance with the requirements and applicable regulations promulgated by the NYSDEC
- grading roadways and covering them with gravel during construction, periodically regarding, compacting and replacing gravel as necessary as determined by the Town
- wetting down temporary roads to be constructed on the project site during construction of the build-out of the project as needed throughout the duration of construction activities and as determined by the Town.

F. Condominium Designation - As originally proposed, the residential portion of the project was not to include the development of any units that will be filed as condominiums. The Project Sponsor previously offered to place a deed restriction to this affect as a condition of sale to any future builder, developer or owner of any lot on the subject site. On June 21, 2018, a Declaration of Restrictions was recorded at the Erie County Clerk's Office (Liber 11330 of Deeds at Page 8243) for the purpose of prohibiting the residential uses on the Project Site from utilizing the condominium form of ownership. The Project Sponsor is requesting that the Declaration of Restrictions be modified to allow the condominium form of ownership for the attached residential units to be developed on Site A.

18. Evaluation of Future Actions

In accordance with SEQR regulations, upon application to the Town for development of the project site that requires the submittal of an Environmental Assessment Form, the Town will be required to determine if the potential adverse environmental impacts associated with the development have been adequately identified and evaluated in the DGEIS, FGEIS, and this Amended Findings Statement, and whether the proposed development exceeds any of the thresholds and/or requirements contained in this Findings Statement. This determination must be made by the Town prior to the issuance of any discretionary land use approvals by the Town for the proposed development.

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Certification of Amended Findings
Amendment #51 to the Audubon Development Plan (Z-9-02)

The following scenarios are put forth in Section 617.10(c) & (d) of the SEQR regulations:

A. If the Town determines that the proposed action is in conformance with the conditions and thresholds in the FGEIS or the Amended Findings Statement, then no further environmental review pursuant to SEQR will be required;

B. If the Town determines that the proposed action is adequately addressed in the FGEIS, but is not addressed or not adequately addressed in the Amended Findings Statement, then an amendment to this Amended Findings Statement must be prepared;

C. If the Town determines that the proposed action was not addressed, or was not adequately addressed, in the FGEIS, but it will not result in any significant environmental impacts, then a negative declaration must be prepared; or

D. If the Town determines that the proposed action was not addressed, or was not adequately addressed, in the FGEIS, and the action may have one or more significant adverse environmental impacts, than a supplement to the FGEIS must be prepared.

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Exhibit 17 – Color Copy of Figure 6 of the Town of Amherst Comprehensive Plan titled "Conceptual Land Use Plan"

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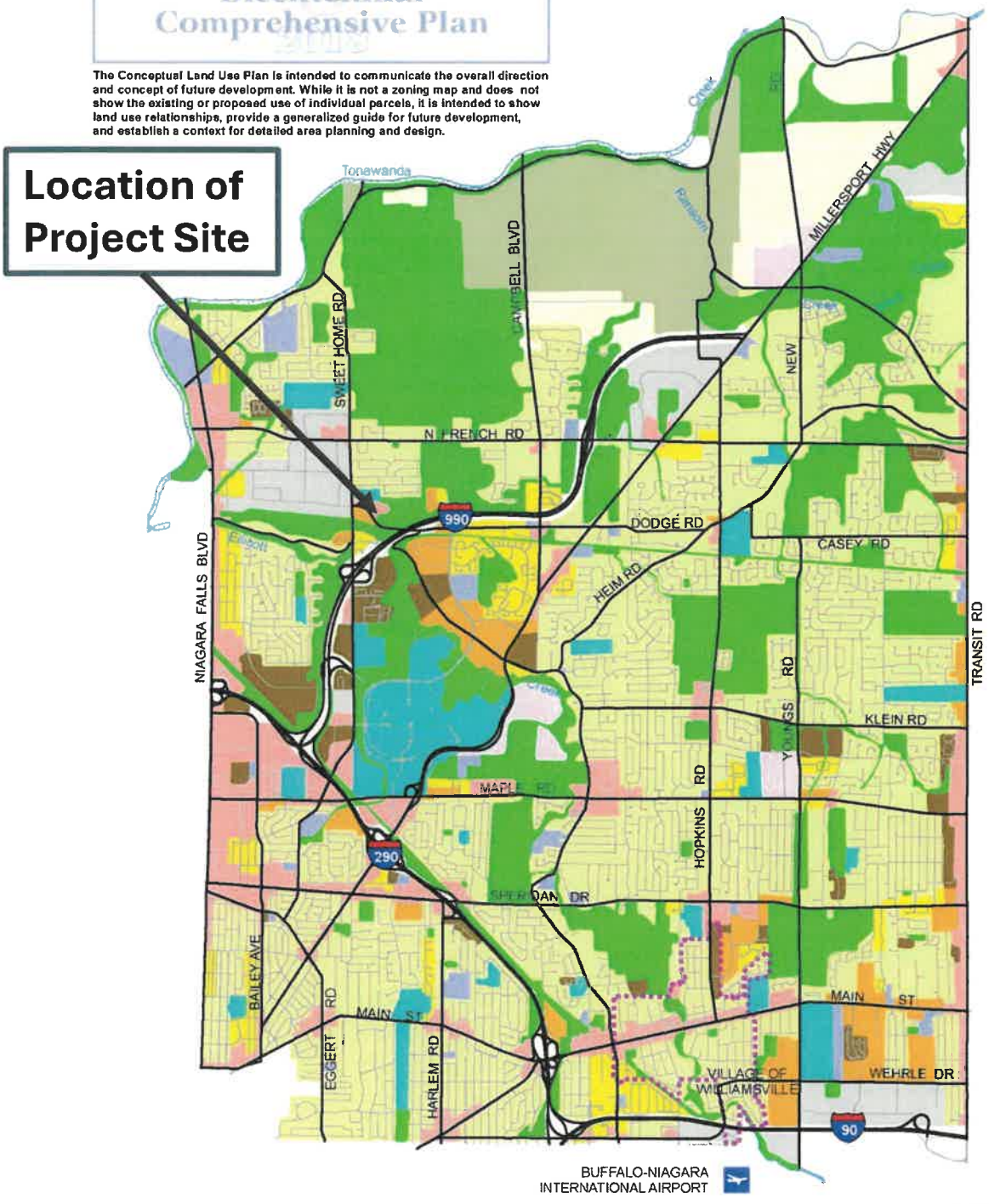
Town of Amherst Bicentennial Comprehensive Plan

The Conceptual Land Use Plan is intended to communicate the overall direction and concept of future development. While it is not a zoning map and does not show the existing or proposed use of individual parcels, it is intended to show land use relationships, provide a generalized guide for future development, and establish a context for detailed area planning and design.



Conceptual Land Use Plan

- Rural Residential
- Single Family Residential
- Mixed Residential
- Medium Residential
- Commercial / Mixed Use*
- Special Use Center
- Commercial - Office
- Industrial - Office
- Community Facilities
- Educational Campus
- Recreation, Open Space & Greenways
- Agriculture
- Transportation
- Surface Water
- Village of Williamsville Boundary

* See Map Figure 6-A for Additional Designations

SOURCE NOTES:

Original Source Data Provided by the Town of Amherst Information Technology Department, URS Corporation and Wallace Roberts & Todd, LLC

Map Compiled by the Town of Amherst Planning Department

Date: December 2020

N

0 0.25 0.5 0.75 1 1.25 Miles

FIGURE 6

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Exhibit 18 – Color Copy of Figure 6 of the Town of Amherst Comprehensive Plan titled "Conceptual Land Use Plan"

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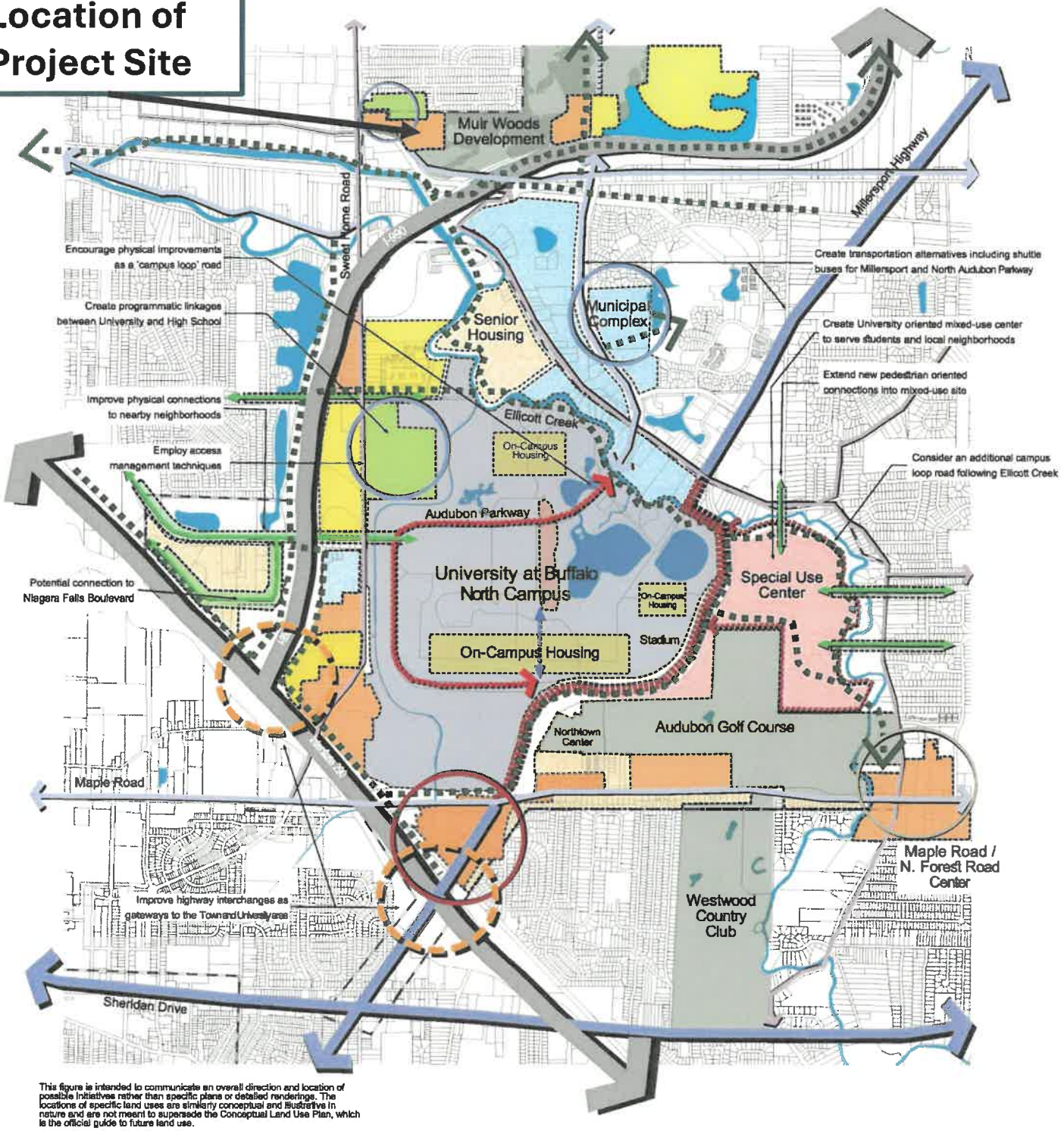
Location of Project Site



This figure is intended to communicate an overall direction and location of possible initiatives rather than specific plans or detailed renderings. The locations of specific land uses are similarly conceptual and illustrative in nature and are not meant to supersede the Conceptual Land Use Plan, which is the official guide to future land use.

UNIVERSITY FOCAL PLANNING AREA - CONCEPT PLAN

Town of Amherst Bicentennial Comprehensive Plan

December 2020 Figure 21

LEGEND

- Expressway
- Major Arterial
- Minor Arterial
- Collector
- Neighborhood Connector
- Campus Loop
- Multi-use Trail
- Natural Trail
- Special Use Center
- Stabilize and maintain existing residential fabric
- Medium Residential / Student Housing
- Commercial / Mixed-Use
- Office / Research
- School / Community Facility
- University at Buffalo
- Recreation / Open Space / Greenways
- Gateway
- Neighborhood Anchor / Community Service
- Regional Commercial Center
- Neighborhood Commercial Center

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Town of Amherst

Brian J. Kulpa
Town Supervisor

AMENDMENT #51 TO THE AUDUBON DEVELOPMENT PLAN
TO RECLASSIFY A PORTION OF 326± ACRES OF LAND
FROM NCD-ND & NCD-MOS to NCD-GC, NCD-RI & NCD-MOS
1081 & 1121 North French Road
(Z-9-02)

CERTIFICATION OF AMENDED FINDINGS

Having considered the Draft and Final Generic EIS documents, and having considered the preceding written facts and conclusions relied upon to meet the requirements of 6 NYCRR 617, this Amended Statement of Findings certifies that:

1. The requirements of 6 NYCRR Part 617 have been met;

2. Consistent with the social, economic and other essential considerations from among the reasonable alternatives thereto, the action **approved** is one which minimizes or avoids adverse environmental effects to the maximum extent practicable; including the effects disclosed in the Generic Environmental Impact Statements, and the Application to Amend the Findings Statement, and

3. Consistent with social, economic and other essential considerations, to the maximum extent practicable, adverse environmental effects revealed in the Environmental Impact Statement process and the Second Application to Amend the Findings Statement will be minimized or avoided by incorporating as conditions to the decision those mitigative measures which were identified as practicable.

TOWN OF AMHERST
Name of Agency

Signature of Responsible Official

BRIAN J. KULPA
Name of Responsible Official

TOWN SUPERVISOR
Title of Responsible Official

~~September 27, 2021~~
Date

5583 MAIN STREET, WILLIAMSVILLE, NY 14221
Address of Agency

Amherst Municipal Building | 5583 Main Street | Williamsville NY 14221
716-631-7032 | bkulpa@amherst.ny.us | www.amherst.ny.us

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PROJECT HISTORY~~RESOLUTION~~

~~WHEREAS,~~ F~~f~~ollowing the April 16, 2004 submittal of a Draft Generic Environmental Impact Statement (DGEIS) prepared by Ciminelli Development Company, Inc., the DGEIS was accepted by the Town Board on September 7, 2004. The DGEIS was submitted for the proposed rezoning from NCD-ND & NCD-MOS to NCD-GC, NCD-RI & NCD-MOS and development of 326± acres of land located at1081 & 1121 North French Road. On October 28, 2004, the Planning Board held a public hearing on the DGEIS and rezoning request and recommended approval of the subject petition. Subsequently, a public hearing on the DGEIS and rezoning request was held by the Town Board on March 2, 2005. A Final Generic Environmental Impact Statement (FGEIS) was accepted by the Town Board on November 5, 2007, and a Notice of Completion of the FGEIS was filed on November 14, 2007; and

~~WHEREAS,~~ T~~t~~he Planning Board and the Town Board have considered the content of the DGEIS, the FGEIS, and all other documents and comments and submissions made during and after the hearings.

~~WHEREAS,~~ O~~o~~n February 18, 2014, the Project Sponsor submitted an Application to Amend the Findings Statement and Audubon Development Plan along with supporting documentation. The Planning Board held a public hearing on the Application during its meeting on March 14, 2014 and it recommended approval of the Application. On June 16, 2014, the Town Board held a public hearing on the Application but did not issue a decision on the Application.

~~WHEREAS,~~ O~~o~~n August 17, 2015, the Project Sponsor submitted an Amended Application to Amend the Findings Statement and Audubon Development Plan for the purpose of modifying the Application filed on February18, 2014.

~~WHEREAS,~~ T~~t~~he Planning Board held a public hearing on the Amended Application during its meeting on September 17, 2015 and the Planning Board recommended in favor of the Application. On November 16, 2015, the Town Board held a public hearing on the Application. On December 7, 2015, the Town Board voted to issue an Amended Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the comprehensive environmental review of the Project that concluded with the original issuance of a Findings Statement on December 17, 2007.

~~WHEREAS,~~ T~~t~~he Planning Board conducted a coordinated environmental review of the development of Sites C and D of the overall Project Site as a 133 lot residential subdivision. On September 14, 2017, the Planning Board issued a negative declaration pursuant to SEQRA for the subdivision based on its determination that the subdivision would not result in any potentially significant adverse environmental impacts.

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~~WHEREAS, O~~On April 15, 2019, the Project Sponsor submitted an Application to Amend the Findings Statement and Audubon Development Plan along with supporting documentation. The requested amendment of the Findings Statement issued by the Town Board on December 17, 2017 was to allow student housing to be developed on Site B of the overall Muir Woods Project Site ("Application to Amend the Findings Statement"). The Planning Board held public hearings on the Application to Amend the Findings Statement during its meeting on May 16, 2019 and June 20, 2019 it adopted a resolution recommended approval of the Application to Amend the Findings Statement during its meeting on June 20, 2019.

~~WHEREAS, o~~On August 5, 2019, the Town Board held a public hearing on the Application to Amend the Findings Statement. On August 5, 2019, the Town Board voted three to one to amend the Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of a Findings Statement on December 7, 2007 and the issuance of an Amended Findings Statement on December 7, 2015.

~~WHEREAS, o~~On June 24, 2020, the Project Sponsor submitted an Application to Amend the Findings Statement issued by the Town Board on December 17, 2017 and to Amend the Comprehensive Plan for Site A of the Muir Woods Project to allow a mixed-use project to be developed on Site A of the overall Muir Woods Project Site (hereinafter collectively the "Application to Amend the Findings Statement"). The Planning Board held a public hearing on the Application to Amend the Findings Statement during its meeting on August 20, 2020 and at the same meeting adopted a resolution recommending approval of the Application to Amend the Findings Statement by the Town Board.

~~WHEREAS, o~~On October 6, 2020, the Town Board held a public hearing on the Application to Amend the Findings Statement. On October 19, 2020, the Town Board voted to issue the Amended Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of a Findings Statement on December 7, 2007, and the issuance of an Amended Findings Statements on December 7, 2015 and August 5, 2019.

~~WHEREAS, o~~On July 7, 2021, Sawyers Landing LLC submitted an Application to Amend the Findings Statement issued by the Town Board on October 19, 2020 in order to seek to increase the allowable residential density from 202 units to 258 units. The Planning Board held a public hearing on the Application to Amend the Findings Statement during its meeting on August 19, 2021 and at the same meeting adopted a resolution recommending approval of the Application to Amend the Findings Statement by the Town Board.

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~~WHEREAS, o~~On September 27 2021, the Town Board held a public hearing on the Application to Amend the Findings Statement. On September 27 2021, the Town Board voted to issue the Amended Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of a Findings Statement on December 7, 2007, and the issuance of an Amended Findings Statements on December 7, 2015 and August 5, 2019 and October 19, 2020.

On June 24, 2024, Sawyers Landing LLC submitted an Application to Amend the Findings Statement issued by the Town Board on September 27, 2021 in order to modify the allowable uses on Site A of the overall Muir Woods Project Site [50 Dodge Road] to include a four-story climate controlled storage building and also to reclassify 13.452 acres of 50 Dodge Road from NCD-RI to NCD-LC.

On August 14, 2024, Sawyers Landing LLC amend the Application referred to in the preceding paragraph to include a request to amend a Declaration of Restrictions recorded at the Erie County Clerk's Office on June 18, 2018 at Liber 11330 of Deeds at Page 8243.

The Planning Board held a public hearing on the Application to Amend the Findings Statement during its meeting on _____, 2024 and adopted a resolution recommending that the Town Board _____ the Application to Amend the Findings Statement and to reclassify 13.452 acres of 50 Dodge Road from NCD-RI to NCD-LC.

On _____ , 2024, the Town Board held a public hearing on the Application to Amend the Findings Statement and to reclassify 13.452 acres of 50 Dodge Road from NCD-RI to NCD-LC.

On _____, 2024, the Town Board voted to issue the Amended Findings Statement based on its determination that the potential modifications to mixed-use project at 50 Dodge Road will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of an Amended Findings Statement pursuant to SEQRA on September 27, 2021.

On _____ , 2024, the Town Board adopted a resolution to approve the reclassification of 13.452 acres of 50 Dodge Road from NCD-RI to NCD-LC and to approve the amendment of a Declaration of Restrictions.

NOW THEREFORE THE TOWN BOARD FINDS AND DETERMINES THAT:

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1. These Amended Findings set forth specific conditions and criteria consistent with 6 NYCRR Sections 617.7, 617.9, 617.11, and 617.12 under which the site plan process can proceed. This process provides procedures to supplement the FGEIS if necessary and for public notice and opportunity to participate in hearings before the Town Planning Board before it approves a site plan. An Environmental Assessment Form will be required with site plan application for environmental review. If the proposed development does not conform with these Amended Findings, a Supplemental Findings Statement, a supplement to the FGEIS, or a Negative Declaration shall be prepared to comply with 6 NYCRR Section 617.9.

2. The proposed mixed-use, student housing and residential development as presented in the FGEIS and the Application to Amend the Findings Statement submitted to the Planning Department on June 24, 2024~~July 6, 2021~~ is consistent with the intent and objectives of the Zoning Ordinance.

3. Adequate services and utilities must be available prior to occupancy. Review and approval of services and utilities by the Town agencies will be required for site plan approval.

4. Development will be consistent with all other applicable laws, rules and regulations.

5. As provided in 6NYCRR Part 617.10, the Town Board chose to require the preparation of a draft Generic Environmental Impact Statement (DGEIS) instead of a draft Environmental Impact Statement (DEIS) for this project. This decision was based on the scope and timetable of the development described by the Project Sponsor and depicted in the Conceptual Master Plan, which showed a multi-use development on 330± acres of land, to be built out over a 15-20 year period. The Board's decision is also based on the following reasons:

   - A DGEIS provides a lead agency with the framework for properly evaluating a conceptual master plan while identifying the important elements of the environmental setting associated with the project site. A DGEIS assesses a broad scope of a group of actions or a combination of effects from a single action.
   - The utilization of a DGEIS provides the Town Board with the authority to establish specific criteria and thresholds by which future actions such as site plan and subdivision applications will be reviewed, including requirements for ensuring subsequent compliance with SEQR.
   - The Town Board's decision to require the Project Sponsor to prepare a DGEIS acknowledges that the specific layout and appearance of the development cannot be determined at this time but rather will be decided over a period of several years and subject to market demands, and the development of the project will occur in stages.

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- The SEQR regulations state that a DGEIS is appropriate for a series or sequence of separate actions and/or projects that have wide application or restrict the range of future alternative policies.
- The Town Board's utilization of a DGEIS affords it the opportunity to evaluate a broad range of anticipated impacts, and it also ensures that related actions will not be segmented in order to avoid the required analysis of the proposed development of the overall project site.

6. By the time the Findings Statement was issued by the Town Board on December 17, 2007, the proposed Muir Woods development had been significantly revised since its initial submittal in 2002, resulting in a reduction in the commercial/office component of the project from 1.8± million sq. ft. to 700,000± sq. ft. and in the residential component from 200± units to 136± units. These changes were made in response to the NYS Department of Environmental Conservation, the U.S. Army Corps of Engineers and the public to minimize impacts to wetland areas to the greatest extent possible.

Following the issuance of the Findings Statement by the Town Board on December 17, 2007, the Project Sponsor obtained the required wetland permits from the New York State Department of Environmental Conservation and the United State Army Corps of Engineers. In an effort to address current market needs while maintaining the intent of the project site New Community District zoning, the Project Sponsor submitted an Application to Amend the Findings Statement in February of 2014 to expand the range of uses within Site B of the project site to specifically allow for multi-family housing in addition to the previously approved office/retail development.

Based on input received during the review of the Application to Amend the Findings Statement to allow for multi-family housing on Site B, the Project Sponsor submitted an Amended Application to Amend the Findings Statement and Audubon Development Plan on August 17, 2015 for the purpose of modifying the Application filed on February18, 2014. The Amended Application proposed to modify the permitted use of the eastern portion of Site B, comprised of approximately 26 acres. Pursuant to the updated Application, the western portion of Site B comprised of approximately 20 acres would have remained designated for commercial office and retail development per the Finding Statement issued by the Town Board on December 17, 2007.

Subsequent to the issuance of an Amended Findings Statement by the Town Board on December 7, 2015, the Project Sponsor sought the required approvals and permits for the development of Sites C and D of the Project Site as a 133 lot residential subdivision that includes a roadway connection to Campbell Boulevard on 520 Campbell Boulevard. The Planning Board thoroughly considered the potential adverse environmental impacts associated with the subdivision and issued a negative declaration pursuant to SEQR on September 14, 2017 based on

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its determination that the 133 lot residential subdivision on Sites C and D would not result in any potentially significant adverse environmental impacts. On September 14, 2017, the Planning Board granted Site Plan Approval for the subdivision, and on June 21, 2018 granted Final Plat Approval for the subdivision. A map cover for the approved 133 residential subdivision was filed with the Erie County Clerk's Office on July 24, 2018, and construction activities in furtherance of the construction of the subdivision began in the fall of 2018.

Following the issuance of the Amended Findings Statement by the Town Board on December 7, 2015, the Project Sponsor sought and obtained extensions of the expiration dates of the wetland permits previously issued by the New York State Department of Environmental Conservation and the United States Army Corps of Engineers.

In an effort to allow student housing to be developed on Site B while maintaining the intent of the New Community District zoning, the Project Sponsor submitted an Application to Amend the Findings Statement on April 15, 2019. The Project Sponsor sought an Amendment of the Findings Statement to expand the range of uses within Site B of the project site to specifically allow for student housing in addition to the previously approved multifamily housing on the western 20± acres of Site B and the previously approved office/retail development on the eastern portion of Site B.

In an effort to allow a mixed-use project to be developed on Site A while maintaining the intent of the New Community District zoning, the Project Sponsor submitted an Application to Amend the Findings Statement and the adopted Comprehensive Plan on June 24, 2020. The Project Sponsor sought an Amendment of the Findings Statement to modify the land use category within Site A of the project site to replace the previously proposed 237,000 sq. ft. maximum Flex office/R&D use with a mixed-use development including 2 four-story mixed-use buildings along the Dodge Road frontage of Site A, 45 two-family townhomes and 2 six-unit single-story multifamily buildings. The Project Sponsor sought to amend the Comprehensive Plan to designate Site A as appropriate for Mixed Residential use. In connection with the proposed mixed-use development of Site A, the Project Sponsor proposed to reduce previously approved impacts to the federal wetlands subject to the jurisdiction of the United States Army Corps of Engineers ("USACE") and also to the NYSDEC Freshwater Wetland and its regulated 100 ft. Adjacent Area.

On August 20, 2020, the Planning Board held public hearings in connection with its review of the Application to Amend the Findings Statement and the Comprehensive Plan as filed by the Project Sponsor on June 24, 2020. The Planning Board adopted resolutions during its meeting on August 20, 2020 by unanimous votes recommending that the Town Board issue the Amended

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Findings Statement and amend the Comprehensive Plan to designate Site A as appropriate for Mixed Residential use.

On October 6, 2020, the Town Board held public hearings in connection with its review of the Application to Amend the Findings Statement and the Comprehensive Plan as filed by the Project Sponsor on June 24, 2020. On October 19, 2020, the Town Board adopted Resolution 2020-791 for the purpose of issuing an Amended Findings Statement to allow Site A of the Muir Woods Property to be developed as a mixed-use residential/commercial project instead of the previously proposed flex office/R&D buildings. Resolution 2020-791 as adopted by the Town Board on October 6, 2020 also authorized the acquisition of approximately 43 acres of Permanent Open Space via a donation by the property owner consisting of property to the west of Site B including the eastern portion of Site A consisting of approximately 9.81 acres of wetlands subject to the jurisdiction of both the NYSDEC and USACE. During its meeting on October 19, 2020, the Town Board also adopted Resolution 2020-792 for the purpose of approving an amendment to the Comprehensive Plan to designate Site A as appropriate for a mixed-use residential/commercial use instead of the previously proposed flex office/R&D buildings

On December 24, 2020, the New York State Department of Environmental Conservation ("NYSDEC") issued an Amended Wetland Permit [Permit No. 9-1422-00398/0001] authorizing the impacts to NYSDEC Freshwater Wetlands and the associated regulated 100 ft. Adjacent Area in order to accommodate the mixed-use development of Site "A". The Amended Wetland Permit reduced the impacts to jurisdictional freshwater wetlands associated with the development of Site A from 9.46 acres to 1.2 acres and reduced the impacts with the development of Site A to the regulated 100 ft. wide adjacent area from 4.2 acres to 3.65 acres.

As a result of the Amended Wetland Permit issued by the NYSDEC on December 24, 2020, the development of the Muir Woods Property will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the Project Sponsor is required to create 19.58 acres of in-kind and out-of-kind wetlands on the overall Muir Woods Property, in six areas, to replace the functions and benefits of the impacted wetlands. Additionally, there will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts.

On February 25, 2021, the United States Army Corps of Engineers ("USACE") issued an Amended Wetland Permit [LRB-2001-00067] authorizing impacts to 6.09 acres of federal wetlands, which was a reduction of 6.92 acres of previously authorized impact of 13.01 acre to federal wetlands, in order to accommodate the mixed-use project on Site A.

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On July 7, 2021, Sawyers Landing LLC filed an Application to Amend the Findings Statement to accommodate an increase of the allowable density of the residential component of the mixed-use project on Site A from 202 units to 258 units.

On September 27 2021, the Town Board voted to issue the Amended Findings Statement based on its determination that the potential modifications to the Muir Woods Project will not result in any potentially significant adverse environmental impacts that were not thoroughly evaluated in connection with the previous comprehensive environmental review of the Project that concluded with the issuance of a Findings Statement on December 7, 2007, and the issuance of an Amended Findings Statements on December 7, 2015 and August 5, 2019 and October 19, 2020.

On June 24, 2024, Sawyers Landing LLC submitted an Application to Amend the Findings Statement issued by the Town Board on September 27, 2021 in order to modify the allowable uses on Site A of the overall Muir Woods Project Site [50 Dodge Road] to include a four-story climate controlled storage building and also to reclassify 13.452 acres of 50 Dodge Road from NCD-RI to NCD-LC.

On August 14, 2024, Sawyers Landing LLC amend the Application referred to in the preceding paragraph to include a request to amend a Declaration of Restrictions recorded at the Erie County Clerk's Office on June 18, 2018 at Liber 11330 of Deeds at Page 8243.

On September 27, 2024, the Town Board adopted Resolution No. 2021-818 for the purpose of approving the issuance of an Amended Findings Statement pursuant to SEQRA.

7. A Supplemental GEIS, an option that the SEQR regulations leaves to the discretion of the Lead Agency, was not required for this project due to the Town Board's decision that the reduction in the project described in #6, above did not meet the criteria set forth in 6NYCRR Part 617.9(a)(7). Although the changes proposed by the Project Sponsor reduced the development significantly, it was not determined that the amended project would encroach on any land not initially identified in the scope of the original development proposal. The project changes also did not result in newly discovered information, and would not result in any significant environmental impacts not addressed or inadequately addressed in the DGEIS.

8. Traffic and Transportation (FGEIS Section 2.1)

Site specific requirements shall be established by the Town, County and State, as appropriate, as development applications are reviewed. The developer shall be responsible for any traffic mitigation required for development of the project site.

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The potential traffic impacts associated with the original project proposal were clearly analyzed and identified within the Traffic Impact Study prepared by Stantec Consulting Services, Inc. dated March 2003 and updated August of 2005 in association with the acceptance of the FGEIS.

The Amended Findings Statement issued by the Town Board on August 5, 2019 included the consideration of adding student housing to the authorized uses of Site B pursuant to the Amended Findings Statement issued by the Town Board on December 17, 2007. The Project Sponsor submitted a Traffic Impact Study for the purpose of evaluating the potential traffic impacts of the development of Site B as a maximum of 515 student housing units. It was determined that the potential traffic impacts associated with student housing on Site B will be less than the potential traffic impacts of the development of Site B in its entirety as a maximum of 464,850 sq. ft. of commercial office and retail development pursuant to the Findings Statement issued by the Town Board on December 17, 2007.

The Town Board, as Lead Agency, requires that the Project Sponsor comply with the following mitigation measures during the development of the project site:

A. Provision for Future Extension of John James Audubon Parkway to North French Road

The extension of John James Audubon Parkway through the project site and connecting to North French Road was proposed in the initial Concept Plan submitted for the Muir Woods project in 2002. This proposal was also incorporated into the DGEIS submitted to the Town in 2004. The connection was removed from the Concept Plan in response to the requirement from the NYS Department of Environmental Conservation to further reduce impacts to State and federal wetlands. The Town of Amherst may in the future be interested in the possibility of a future northerly extension of John James Audubon Parkway to North French Road while acknowledging such possible future extension would require approvals from both the NYS Department of Environmental Conservation and the United States Army Corps of Engineers.

The rationale for the road connection was found in several planning documents, both historical and recent:

- The Amherst Community Development Plan adopted by the Planning Board in 1975 includes the extension of the then-planned Lockport Expressway through the subject site as a future Minor Arterial road.
- A report prepared by NYSDOT in 1976 anticipated the extension of the John James Audubon Parkway and forecast its use by 1,950 vehicles per hour.
- The Amherst Bicentennial Comprehensive Plan, accepted by the Town Board in February 2004 and adopted by the Town Board in January 2007,

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identifies the "Audubon Parkway Extension" in the map showing the Future Thoroughfare System.

The 30+ years of anticipating this roadway connection point to its significance in meeting the transportation goal of improving circulation within the Town and the role this connection would play in overall Town development. Given its importance, the Town Board is requiring that the future location of this connector be shown on site plans submitted for review, and that sufficient land be reserved by the Project Sponsor for the eventual connection to be constructed. The road construction and alignment will be subject to approval by the NYSDEC and the U.S. Army Corps of Engineers, as applicable.

B. Residential Connection to Lynette Lane

The residential component of the proposed Muir Woods development to occur on Sites C & D may have a direct road connection to Lynette Lane. There will be no direct roadway connection to Nancy Lane. Non-residential traffic will be discouraged from using Lynette Lane through the implementation of various traffic calming measures to be proposed during the site plan review process for the development of Sites C & D, subject to review of such traffic calming measures by the Town Traffic-Safety Board and Fire Chief's Association. These measures include:

1. The lack of direct sight lines for motorists to discourage non-residential traffic from utilizing Lynette Lane to access North French Road;

2. Curvilinear road design; and

3. Installation of signage posting the road for "resident and emergency traffic only" or other such measure to prohibit non-residential traffic from travelling on Lynette Lane and the proposed public roadways within the existing residential subdivision;

If a problem is determined to exist based on the Phase 2 traffic study, further measures to discourage traffic of prohibit cut-through traffic will be considered.

C. No Internal Roadway Connection to Dodge Road

The internal connector road within the Muir Woods development is not proposed to have a westerly connection to Dodge Road; the only direct vehicular connection to Dodge Road will be from the portion of the project located in the western portion of the project site (Site A). If warranted at some future time by a traffic analysis, a connection to Dodge Road may be made from the internal connector road if required permits for such a roadway connection can be obtained from the NYSDEC and the US Army Corps of Engineers.

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D. Updated Traffic Impact Study

The Traffic Impact Study will be updated when any of three established thresholds are met:

1. Completion of Phase I development, defined as full build-out of Site B, or

2. prior to approval of any site plan in Site C or Site D or any direct or indirect connection to any of the Sites with Lynette Lane, or

3. when the number of combined vehicular trips entering and exiting the site during the AM weekday peak travel hour reaches 858 trips, or

4. when the number of combined vehicular trips entering and exiting the site during the PM weekday peak travel hour reaches 774 trips.

If actual conditions exceed projections, this will be reflected in the updated TIS to be prepared by the Project Sponsor, and the Project Sponsor may be required to implement traffic related mitigation measure sooner than expected.

Any mitigation measures, including off-site mitigation measures that are required as a result of the updated TIS, shall be the sole obligation of the Project Sponsor, if approved. Any off-site improvements, including the acquisition of private property required to make those improvements, shall be conditions of any site plan approval and treated as Public Improvement Permits (PIPs) for the purpose of final permitting. At no time shall the Town be required to make any off-site improvements or acquire private property, either by purchase or through its eminent domain powers, to mitigate the impact of this development project.

E. Alternate Access to Campbell Boulevard

During the original environmental review of the proposed project which concluded with the Town Board's issuance of a Findings Statement on December 17, 2007, the Project Sponsor attempted to seek a vehicular connection from the site to Campbell Boulevard through property located at 520 Campbell Boulevard which is owned by the Williamsville Central School District. The Town also participated in efforts to obtain access to Campbell Boulevard via this property. These attempts were not successful.

The Project Sponsor eventually was successful in acquiring 520 Campbell Boulevard from the Williamsville Central School District on December 5, 2017 and the approved 133 residential subdivision on Sites C and D includes a public roadway connection on 520 Campbell Boulevard to Campbell Boulevard.

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F. Construction Vehicles

As part of the public comment period for the project, concerns were raised regarding the use of construction vehicles on existing residential streets in the adjacent Franklin Heights Subdivision to access the project site during project construction. In order to avoid the adverse environmental impacts associated with construction vehicles, existing residential streets shall not be utilized by construction vehicles to access the project site. The infrastructure to be constructed for the project shall be appropriately sequenced so that construction vehicles can access the site via the northerly extension of John James Audubon Parkway and Doge Road only.

Any future builder, owner or developer who purchases lots for development within Site C & D shall be prohibited from using Lynette Lane as a means of access for construction vehicles. A deed restriction incorporating this restriction shall be a prerequisite of the sale of any lots within Sites C and D. and the Town shall be provided with a copy of the recorded deed restriction, which shall not be recorded at the Erie County Clerk's Office until the content and form of the deed restriction has been reviewed and approved by the Building Department and Town Attorney's Office.

On June 21, 2018, a Declaration of Restrictions was recorded at the Erie County Clerk's Office (Liber 11330 of Deeds at Page 8243) for the purpose of complying with the relevant portion of the Amended Findings Statement prohibiting construction vehicles from utilizing Lynette Lane for access by construction vehicles.

G. Break in Access for Connection to Lockport Expressway (I-990)

The proposed northerly extension of John James Audubon Parkway as a Town roadway to provide access to the project site requires a break in access to the Lockport Expressway (I-990). The NYSDOT has been aware of this requirement since the initial petition by the Project Sponsor in 2002. Prior to the granting of the break in access, several conditions must be met, including completion of any required environmental compliance. Once completed and inspected, the Project Sponsor will be required to dedicate the northern extension of John James Audubon Parkway to the Town for permanent use as a public roadway to be dedicated to the Town of Amherst.

On May 20, 2019, the Town Board adopted a resolution stating the Town will serve as the applicant for the required Break-in-Access for the proposed northerly extension of John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst.

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The Town filed an Application for Break-in-Access with the New York State Department of Transportation on August 21, 2019. The NYSDOT has not yet issued a decision on the pending request for Break-in-Access approval.

The Break-in-Access for the proposed northerly extension of John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst will result in numerous public benefits including, but not limited to, accommodating the potential future extension of the NFTA light rail and a terminus for such light rail on Site B, publicly accessible parking for a recreational trail that will cross the overall Muir Woods Project Site and connect to the Town's recreational trail (extending from Niagara Falls Boulevard to the trailhead near the intersection of North Forest Road and Maple Road), and a potential future extension of John James Audubon Parkway as a public roadway connecting to North French Road.

H. Traffic Mitigation Measures

Dodge Road / Project Site Roadway

Phase I development:

- Installation of a stop sign to the southbound (site driveway) approach
- Construction of one shared left-right turn lane for southbound site driveway approach

Full development:

- No additional improvements

John James Audubon Parkway / I-990 Ramps

Phase I development:

Upon the completion of Phase I development, (Phase I development defined in Section 8, Part D.1. of this Amended Findings Statement) the Project Sponsor shall be required to provide a current trip count Report for both the a.m. and p.m. peak travel hours. Subject to the findings of a warrant analysis prepared in accordance with appropriate traffic engineering standards as determined by the updated trip count Report and based on an analysis of the potential impacts upon existing Levels of Service at this intersection, the Project Sponsor may be required to work with the New York State Department of Transportation to provide the following mitigation measures:

- Installation of traffic signals, each with their own controller, at both the northbound and southbound I-990 to John James Audubon Parkway
- Installation of a wire connection between these two new signals and the existing traffic signal at John James Audubon Parkway and Dodge Road in order to coordinate all three traffic signals

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- Widening of both the northbound and southbound I-990 off-ramps to provide one additional turning lane on each ramp approach to John James Audubon Parkway

Full development: If any of the thresholds identified in 'D' above are met, the following improvements will be evaluated and may be required:

- installation of a third lane to the northbound off-ramp in order to provide two left turn lanes and one right turn lane
- add a free-flow southbound right turn lane at the southbound ramp, including a second receiving lane on the ramp to merge to one lane prior to the I-990 mainline

Dodge Road / John James Audubon Parkway

Phase I development:

- Traffic signal timings will need to be adjusted periodically over time as warranted by changing travel patterns

Full development:

- Construction of a westbound right turn lane. It is anticipated that this improvement will be required when approximately 75% of the development is complete or when the number of westbound right turning vehicles from Dodge Road exceeds 300 vehicles per hour during the morning peak travel period.

North French Road / Sweet Home Road

Phase I development:

- Adjustments to traffic signal timing as travel patterns warrant modification

Full Development:

- Construction of an eastbound right turn lane. Traffic volumes turning right at this location currently exceed guidelines recommended in the Highway Capacity Manual for consideration of installing a separate right turn lane. While construction of this lane is currently warranted to address current existing traffic operations in the area, it will not be needed as a result of traffic to be generated by the proposed development of the project site until approximately 90% of the proposed development has been completed, since new traffic projected to be generated by the project will only add a few additional vehicular trips to this traffic movement.
- Modify signal timings during both the morning and evening peak hours, as necessary. Recent improvements to this intersection to provide protected phasing for the left turns will reduce the number of left turn accidents at this location. Additionally, future planned improvements to be implemented by Erie County will assist in further reductions in the number of accidents at this intersection.

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North French Road / Campbell Boulevard

Phase I development

- Adjustments to traffic signal timing as travel patterns warrant modification

Full development:

- Add protected/permitted phasing for eastbound, northbound and southbound left turns when the traffic signal is upgraded in association with the improvement identified above.

North French Road / I-990 Ramps
Dodge Road / Sweet Home Road
Dodge Road / Campbell Boulevard

Phase I development:

- Modify signal timings for both the morning and evening peak travel hours as traffic patterns change.

Full development:

- Modify signal timings for both the morning and evening peak travel hours as traffic patterns change.

North Forest Road / John James Audubon Parkway

Phase I and/or Full development:

- Add protected/permitted phasing for the southbound left turn movement when warranted
- Modify signal timings during both peak travel periods, as traffic patterns change

North French Road / Lynette Lane

Phase I development:

Based on the most current Traffic Impact Study addressing the impact on Lynette Lane and its intersection with North French Road, Lynette Lane as currently constructed may not be adequate to support the traffic associated with full build-out of the proposed development plan. Consequently, the Project Sponsor acknowledges its potential obligation to make off-site improvements to Lynette Lane and its intersection with North French Road, should any site plan be approved. See Section 8.D of this Certification of Findings.

- If the updated TIS identifies traffic mitigation measures reasonably necessary to accommodate traffic from development of the project site,

and such mitigation measures cannot be mitigated by the Project Sponsor, then the scope of the project may be limited.

Route 62 / East Robinson Road
Campbell Boulevard / Tonawanda Creek Road
Millersport Highway / Campbell Boulevard / Stahl Road

Phase I and Full development:

- Modify signal timings for both the morning and evening peak travel hours as traffic patterns change.

9. Wetland Issues (FGEIS Section 2.2)

The proposed Muir Woods project will result in permanent impacts to approximately 10.98 acres of State regulated wetlands (TE-22, TE-33 and TE-34), 13.46 acres of State regulated 100-foot wide wetland adjacent area, and 19.12 acres of federal wetlands. According to the Permit Transmittal Letter dated November 30, 2009, the NYSDEC has officially issued a Freshwater Wetlands Permit (Permit ID 9-1422-00398/00001) and Water Quality Certification (Permit ID 9-1422-00398/00002) for the permanent wetland impacts as identified.

On June 1, 2018, the NYSDEC issued a modification of Permit No. 9-1422-00398/00002 (Modification No. 1 of Permit No. 9-1422-00398/00002) that applies to the development of Sites C and D as a 133 lot residential subdivision. On August 29, 2018, the NYSDEC issued a modification of Permit No. 9-1422-00398/00001 and Permit No. 9-1422-00398/00002 (Modification No. 1 of Permit No. 9-1422-00398/00001 and Modification No. 2 of Permit No. 9-1422-00398/00002"). On January 10, 2019, the NYSDEC issued Modification No. 3 of Permit No. Permit No. 9-1422-00398/00001 to extend the expiration date of the wetland permit to November 30, 2024.

On December 24, 2020, the New York State Department of Environmental Conservation ("NYSDEC") issued an Amended Wetland Permit [Permit No. 9-1422-00398/0001] authorizing impacts to NYSDEC Freshwater Wetlands and the associated regulated 100 ft. Adjacent Area in order to accommodate the mixed-use development of Site "A". The Amended Wetland Permit reduced the impacts to jurisdictional freshwater wetlands associated with the development of Site A from 9.46 acres to 1.2 acres and reduced the impacts with the development of Site A to the regulated 100 ft. wide adjacent area from 4.2 acres to 3.65 acres.

As a result of the Amended Wetland Permit issued by the NYSDEC on December 24, 2020, for the development of the Muir Woods Property will result in permanent impacts to approximately 2.39 acres of State regulated wetlands (TE-22, TE-23 and TE-34), and 11.38 acres of State regulated 100 foot wide wetland adjacent area. As mitigation for those impacts the Project Sponsor is required to

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create 19.58 acres of in-kind and out-of-kind wetlands on the overall Muir Woods Property in six areas, to replace the functions and benefits of the impacted wetlands. Additionally, there will be 4.3 acres of stream channel enhancement on-site as mitigation for State wetland regulated adjacent area impacts.

Additional wetland findings include the following:

- The project will not create a regulated 100-ft. wetland buffer area that crosses any property line adjacent to the project site. The on-site mitigation areas will be designed so that they will be located at least 100 ft. from neighboring properties.

- As mitigation for the impacts as identified, the project includes creation of ~~26.917 acres~~ of in-kind and out-of-kind wetland on-site, in several areas, to replace the functions and benefits of the impacted wetlands per the terms and conditions contained in the wetland permits issued by the NYSDEC. ~~There will be 4.3 acres of stream channel enhancement on-site (totaling approximately 2,630 linear feet).~~

- The development of the eastern portion of Site B for residential purposes, shall not include any owner occupied housing units within the State regulated wetland or the 100 ft. regulated Adjacent Area that do not involve oversight by either a homeowners or condominium association to ensure there will not be any impacts into the 100 ft. regulated wetland Adjacent Area that is to be preserved on Site B.

Federal Wetlands:
As stated in its letter dated August 27, 2007, the United States Army Corps of Engineers (USACE) has field verified that the federal wetland boundaries located on the Muir Woods project site as shown on the wetland delineation map prepared by Greenman-Pedersen, Inc. dated May 2007 are accurate. The wetland areas were delineated by Earth Dimensions, Inc. and summarized in a final wetland delineation report dated May 16, 2007.

The Project Sponsor provided a complete Joint Application For Permit for wetland impacts associated with the project to the USACE and NYSDEC as of June, 2009. After thoroughly reviewing the complete application and associated wetland impacts, the USACE issued a Validated Department of the Army Permit for wetland impacts associated with the project as of May, 2012. Additionally, having thoroughly reviewed the complete application and associated wetland impacts, the NYSDEC officially issued a Freshwater Wetland Permit and Water Quality Certification for wetland impacts associated with the project as of November, 2009.

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On May 14, 2012, the United States Army Corps of Engineers ("USACE") issued Department of Army Permit No. 2001-00067. The permit issued by the USACE permitted to impact 17.83 acres of Federal wetland, and 1.29 acres (approximately 5227 linear feet) of jurisdictional tributaries for the construction of Muir Woods project. On May 6, 2016, the USACE extended the permit expiration dated from May 14, 2012 to November 30, 2019. The USACE issued a modification of Permit No. 2001-00067 on June 20, 2018 in connection with the development of Sites "C" and "D" as a residential subdivision. On January16, 2019, the USACE extended the expiration date of Department of Army Permit No. 2001-00067 to November 30, 2024.

On February 25, 2021, the United States Army Corps of Engineers ("USACE") issued an Amended Wetland Permit [LRB-2001-00067] authorizing impacts to 6.089 acres of federal wetlands, which was a reduction of 6.921 acres of previously authorized impact of 13.01 acre to federal wetlands, in order to accommodate the mixed-use project on Site A.

10. Wildlife / Biological Resources (FGEIS Section 2.3)

The NYSDEC's Natural Heritage Program has reported no record of known occurrences of rare or state-listed animals or plants, significant natural communities, or other significant habitats, on or in the immediate vicinity of the project site. The Project Sponsor will be required to implement the following mitigation measures in order to minimize impacts to wildlife resources to the maximum extent practicable:

- A comprehensive erosion control plan will be developed and implemented to protect vegetation and water quality.

- Off-limit areas, including wetlands, will be delineated prior to construction to avoid or minimize impacts to vegetation. The construction workforce will be educated as to respecting and adhering to physical boundaries of off-limit areas.

- Best Management Practices will be followed during construction.

- The establishment of invasive vegetative species will be deterred through manual extraction and rapid establishment of desirable vegetation. Exposed and disturbed soils will be seeded, planted and mulched to prevent the colonization of invasive species. Volume 8 of the Appendix of the FGEIS at Exhibit F (*SJWPA Appendix* M) contains a discussion of the proposed on-site wetland mitigation including the protection of habitat areas.

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- Waterfowl activity will be deterred in the off-site wetland mitigation area located in the Town of Newstead through the use of mylar tape, snow fencing, 4-7 ft. tree plantings and the seeding of upland grassland areas with a cool season grass.

- The proposed on-site wetland mitigation system will be designed to provide seasonal aquatic habitat for fish, waterfowl and amphibians; habitat for multiple covertypes of wetland plant species; and passerine bird nesting, feeding and resting habitat.

- The project site historically has had an elevated number of deer-vehicle accidents on the roads surrounding the parcel. This parcel is a portion of a much larger habitat area which also includes Nature View Park to the north and is not a "closed" habitat area. The Planning Department, in conjunction with the Police Department, will continue to monitor the deer population throughout the Town and implement approved methods of reducing deer/vehicle accidents in accordance with the Deer-Vehicle Accident Management Plan.

11. Drainage and Flooding (FGEIS Section 2.4)

The following measures shall be implemented by the Project Sponsor to mitigate drainage and flooding impacts to the maximum extent practicable:

A. The Town Highway Department shall have access to all Town ditches that are on the subject property including Town ditches 4, 4A, 4B and 4C. The Project Sponsor will be required to grant public easements to the Town to these ditches to ensure their proper maintenance. No aspect of the Muir Woods development will inhibit access to Town ditches or create undue burden to the Town for restoration of easement property used to access Town ditches. On June 28, 2018, the Project Sponsor recorded a Permanent Access and Drainage Easement at the Erie County Clerk's Office (Liber 11331 of Deeds at Page 1521) for the purpose of granting the Town an easement to access town ditches and stormwater management facilities on the Project Site including the existing lake.

B. The project site and the surrounding vicinity are known as locations for high amounts of beaver and mosquito activity. Access to the Town Highway Department for control of this activity in Town ditches or other areas of the development shall be provided.

C. The Project Sponsor shall be responsible for cleaning and debrushing of all Town ditches located on the project site during the initial construction

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phases of the project. The Project Sponsor will also be responsible for long-term maintenance of stream/drainage features and detention/stormwater basins; for maintenance of on-site wetland mitigation areas during the monitoring period; and for the construction of all drainage improvements required for development of the project site.

D. The Project Sponsor shall be required to construct any ponds and sand filters required stormwater quality treatment. All ponds and sand filters to be constructed on the project site will be privately owned and maintained, with public drainage easement to be granted by the Project Sponsor to allow Town to properly maintain the inlet and outlet pipes of any wet ponds.

E. All stormwater runoff will be treated to standards approved by the Town Engineering Department prior to discharging into the existing lake on the project site or Town ditches. No additional detention is being proposed for the Muir Woods development for stormwater quantity control.

F. All buildings in the west portion of the Muir Woods site located within the Ellicott Creek flood plain will be at a minimum elevation of 576.0 feet, or one foot above the base flood elevation as determined by the Town Building Commissioner.

As development is proposed, specific drainage plans will be reviewed and approved by the Town Highway and Engineering Departments and the NYS Department of Environmental Conservation/US Army Corps of Engineers during site plan review, to ensure there is no adverse impact to the Ellicott Creek Flood Control system.

G. Upon development, the existing 32± acre lake in the southeast portion of the project site will be maintained with a normal lake level of 569.55 feet. The existing 42-inch CMP outlet at the west end of the lake will remain as it is. All stormwater from the east side of the development around the lake will pass through a stormwater quality treatment facility consistent with the NYS Stormwater Management Design Manual and Phase II Stormwater SPDES requirements prior to entering the lake. This system currently designed as sand filters may evolve into wet ponds, bio-retention filters, and/or other acceptable practices under the Design Manual and SPDES requirements.

H. Backyard runoff from proposed residential units will be separated from wetland mitigation areas and wetlands either by a ditch or rear yard drains to preclude pollution of those areas by lawn chemicals, per NYSDEC letter dated October 26, 2007.

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I. A detailed Stormwater Pollution Prevention Plan (SWPPP), including a Sediment and Erosion Control Plan, for the various phases of the project including any related on-site drainage areas shall be submitted as specific site plans are submitted for review. The Stormwater Pollution Prevention Plan for each phase of the project will need to be reviewed and approved by the Town's Engineering Department.

J. The Project Sponsor shall be required to comply with the findings and recommendations of the Preliminary Drainage report prepared by Greenman-Pedersen, Inc. in August 2007 and any updated reports during the course of development.

K. The Project Sponsor will provide backyard drainage for the existing homes that are directly adjacent to the portions of the project site that will be developed for residential use. This requirement pertains to Sites and D. Additional drainage improvements for the areas along the rear yards of the homeowners on Nancy Lane will also be installed by the Project Sponsor. The drainage pipe to be installed in the rear yards of the new residential units that will be integrated with the new drainage swale behind the residents of Nancy Lane will be a minimum diameter of 12 inches.

12. Character and Quality of Life Issues (FGEIS Section 2.5)

A. Setbacks

On those portions of the project site where commercial or student housing development will be directly adjacent to existing residential areas (i.e. Pleasant Acres Part II & III Subdivision~~Bucyrus Heights~~), setbacks will retain existing vegetation to a depth that provides an adequate buffer. The following minimum setbacks will be required:

- The planting of additional trees and shrubs by the Project Sponsor within the minimum setback area may be required to supplement the existing vegetation in order to provide adequate buffers.

- A combination of earthen berms and new vegetation will be required in those portions of the minimum setback area where there is not sufficient existing vegetation to provide an adequate buffer. The minimum height at the top of berms shall be three feet, and the maximum slope shall be 1 on 3 (33%) to promote the growth and long-term viability of trees and shrubs planted on the berms. Berms should have a natural appearance by varying their width and height.

- Site A (western portion of the project site – 50 Dodge Road) – This portion of the project site will be utilized for mixed-use; a portion of

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Site A is located directly south of the Pleasant Acres Part II & III Subdivision (Bucyrus Heights neighborhood)~~subdivision.~~

- ~~25 ft. minimum building setback from residential lot line for single-story residential buildings.~~

- 3090 ft. minimum building setback from residential lot line for attached and detached ~~-~~two-family ~~-~~townhome style units.

- 400~~250~~ ft. minimum building setback from residential lot line for four-story mixed use buildings.

- 500 ~~250~~ ft. minimum building setback from residential lot line for four-story multifamily buildings.

- 450 ft. minimum setback from residential lot line for four-story climate controlled storage building.

- 60 ft. parking setback from residential lot line

- Site B (center portion of site) – This portion of the project site will be developed around the extended John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst. Site B will be developed as student housing or for the land uses permitted pursuant to the Amended Findings Statement issued by the Town Board on December 17, 2015. The following setback standards apply to the development of Site B:

  - 60 ft. building setback from residential lot line. If the height of any proposed buildings exceeds 50 feet, the required minimum building setback shall be equal to the height of the proposed building.

  - 90 ft. parking setback to residential lot line

B. Building Height

The following maximum building heights will be observed for the proposed development:

- Site A (western portion of the project site – 50 Dodge Road) – This portion of the project site will be the location of mixed-use buildings, a climate controlled storage building and residential buildings and a portion of Site A (50 Dodge Road) is located directly south of the

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Pleasant Acres Part II & III Subdivision (Bucyrus Heights neighborhood)~~Bucyrus Heights subdivision~~.

- Maximum building height for mixed-use buildings, ~~and~~ multifamily buildings and climate controlled storage building shall be four-stories and 60~~55~~ ft. as measured from the finished grade to the top of any parapet (excluding any rooftop mechanical equipment). All mechanical equipment shall be properly screened in accordance with the standards contained in the Zoning Code adopted by the Town Board in May of 2006.

- Maximum height of any residential buildings within 500 ~~90~~ ft. of a residential lot shall be 35~~25~~ ft.

- Site B (center portion of the project site) – This site will be developed around the extended John James Audubon Parkway as a public roadway to be dedicated to the Town of Amherst. Site B will be developed as student housing or Site B will be developed as permitted to the Amended Findings Statement issued by the Town Board on December 17, 2015.

  - There will not be a maximum height for buildings to be constructed on Site B. All buildings will be required to comply with a minimum required setback that shall be the greater of 50 feet or the height of the proposed building at the point of its maximum height (including rooftop mechanicals, etc.)

13. Soil Stability and Foundation Issues (FGEIS Section 2.6)

The Geotechnical Engineering Report prepared by McMahon & Mann Consulting Engineers, P.C. dated June 2005 includes findings and foundation considerations for future construction of the various components of the project. The report is included in Volume 6, Appendix I of the FGEIS.

The Town shall not grant site plan, subdivision or Public Improvement Permit (PIP) approval for construction of any component of the project (buildings, parking areas or infrastructure) unless the identified limitations as discussed in the McMahon & Mann report are adequately accounted for. The applicant shall be required to provide documentation of site-specific soil characteristics and comply with all relevant Town building codes regarding soil conditions.

Additional mitigation measures to be undertaken by the Project Sponsor, subject to determination by the Building Department, may include:

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- Perform individual soil borings for each proposed structure to accurately determine the specific geotechnical design perimeters.
- Take measures to control the moisture content of the soils outside the structure. These may include installation of an irrigation system that would maintain near-saturated conditions in the soil around the structure during dry summer months, and/or installation of an exterior vapor barrier that extends out away from the structure around the perimeter.
- Monitoring of soil moisture with supplemental foundation watering during dry months.
- Use of a lower allowable bearing pressure for design of the spread footings.
- Placement of a minimum of two continuous #5 horizontal longitudinal reinforcing bars in each of the following locations: in the footing, at the base of the foundation wall, and at the top of the foundation wall.
- Use of an isolation joint between the basement floor slab and the foundation wall.
- Installation of a quality vapor barrier under the basement floor slab.
- Installation of a foundation drain system designed so that the floor elevation of the sump is above the elevation of the bottom of the footing.

14. Economic Impacts (FGEIS Section 2.7)

All infrastructure required to support the development of the project site will be installed at the Project Sponsor's expense. Town-wide or localized special assessment districts (sewer, water, highway, etc.) are established so operating cost can be spread over many taxpayers who use specific services.

According to the "Cost of Servicing/Revenues Generated Land Use Study" in December 2006 commissioned by the Amherst Industrial Development Agency, for every $1.00 attributed to residential use, $1.11 is expended in providing government services, while just $0.48 is expended for commercial use and $0.60 is expended for open land. As a predominantly commercial oriented mixed-use project, the estimated $3,500,000 in yearly tax revenue (2007 estimated) to the Town at full build out projected to be generated by the project is expected to cover the cost of any additional services including police and fire protection, snow plowing, maintenance of roads, water and sewer infrastructure, ditches, etc.

An economic real estate study for the proposed Muir Woods project was completed by Northeast Appraisers in March, 2002 which analyzed residential demand and property values. A subsequent Economic Analysis was completed by Real Property Services, LLC in July 2006, which is included in Appendix K, Volume 8 of the FGEIS. The conclusions of those reports are:

- There will be no negative impact on the marketability or values of nearby existing housing. The project may potentially have a positive impact on

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surrounding residential property values due to increased demand on desirability to live in close proximity to the development.

- The proposed project development will add over $70 million to the Town of Amherst tax base when completed, and generate over $3.4 million in tax revenue per year at stabilized 2008 levels.

- Over the first 10 years of development, the project is projected to generate over $21.4 million in tax revenue, as compared to total tax revenue of approximately $260,000 that would be generated if the project site remains as vacant land over the same period.

- It appears that both the Sweet Home and Williamsville School Districts will be impacted minimally with regards to expenditures on a per student basis. This takes into account that more than 50% of the residential development will consist of patio homes, which primarily cater to "empty nesters" and typically generate less students per household.

- The competitive advantages of the project site which are expected to support strong market absorption include its direct interchange access from the Lockport Expressway (I-990) and the high visibility of the site from expressway traffic.

15. Noise and Light Issues (FGEIS Section 2.9)

Noise – It is anticipated that the project site will be built-out in stages over many years and, as such, there is a need to impose mitigation measure for noise from construction activities to minimize this identified adverse environmental impact to the maximum extent practicable. Both temporary and long terms noise impacts may result from the construction activities on the project site as well as from the proposed use of the project site.

Noise from construction-related activities, which will exceed local ambient levels for noise outside of structures, may cause some temporary annoyance to nearby residents. It is expected that this impact, caused by heavy equipment, construction vehicles and power tools, will continue throughout the duration of construction. In order to reduce this noise, the following measures will be undertaken by the Project Sponsor:

- Limit major construction activities to daytime hours
- Use of construction equipment with mufflers
- The preservation of existing vegetation to the greatest extent practicable will provide a noise barrier to existing residential areas.
- If blasting is required, the developer will follow all requirements of the Town Blasting Ordinance

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Noise resulting from the occupation and usage of the buildings constructed on the project site can be expected to result in sound levels that are characteristic of suburban office and residential developments and should not be significant.

With the Lockport Expressway (I-990) forming the southern boundary of the project site, and its design as an elevated highway for a portion of this boundary, traffic is considered the largest source of existing noise. Levels from typical noise generators that may be expected to exist in the vicinity of the project site include:

Distant traffic (45 mph)	45 – 50 decibels
Passenger car pass-bys	70 decibels
Accelerating trucks	85 decibels
Distant aircraft noise	60 – 85 decibels

The Transportation Project Report for the Lockport Expressway evaluated the potential noise impacts of the entire I-990 project, including the interchange that will be improved in connection with the proposed project. A copy of the Noise & Air Pollution Study is found in Volume 6 of the Appendix of the DGEIS at Exhibit 30. In addition, there is not any development directly adjacent to the existing interchange that will be impacted by the proposed interchange improvements. To the south of the northbound off-ramp there are some residential units situated along Dodge Road. However, the planned improvements at the existing off-ramps will not result in a movement of traffic 50% or more closer to source receptors.

Light – To mitigate the light spillage from exterior lighting on adjacent residential properties, especially the Pleasant Acres Part II & III Subdivision (Bucyrus Heights neighborhood), the following measures will be implemented:

- Appropriately located lighting, downward-directed lighting fixtures or hooded lighting will be used to prevent off-site light spillage on adjacent residential areas. The light fixtures and their placement will follow all Town of Amherst code requirements for usage and design. The Town Zoning Code requires a lighting plan to be submitted during the site plan review process, and the standards contained in the relevant section of the Zoning Code regulate lighting spillover from commercial locations onto adjacent residential land uses.

- Screening of proposed commercial buildings and parking lots will be provided through the creation of berms or landscaping elements on the periphery of developed areas (see Section 10A above).

16. Open Space and Recreation (FGEIS Section 2.10)

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The proposed internal trail system shall be installed (Sites C & D) of the "The Preserve at Muir Woods" development, provided it does not impact regulated wetlands or is permitted by permits issued by the NYSDEC and/or USACE. Public access to a portion of the existing lake will be provided. The majority of State Wetlands TE-22, TE-33, and TE-34 will remain as Major Open Space (MOS). As a result of the modifications to the project, approximately 224± acres of the project site will be preserved as open space.

The proposed recreational trail connecting sites A, B, C, and D of the Muir Woods Development shall connect to the Town's existing trail system as shown in Figure 4 (Park, Open Space and Trail map) and Figure 2.1 (University Focal Planning Area Concept Plan) of the adopted Amherst Bicentennial Comprehensive Plan and shall be constructed by the Project Sponsor as part of the Muir Woods project. Each development site of the Muir Woods Development shall complete its portion of the trail system prior to the issuance of any certificate of occupancy by the Town of Amherst Building Department.

~~The Project Sponsor will work with the Town toward achieving the trail connections. An opportunity for a future multi-use trail connection northerly to Nature View Park shall be maintained in accordance with the Town Comprehensive Plan.~~

17. Other Issues (FGEIS Section 2.12)

A. Reclassification of Land

The entire project site is zoned New Community District (NCD), and no changes are proposed to remove the property from the NCD zoning district classification.

The original request by Ciminelli Development Company, Inc. in 2002 was to reclassify 326± acres of land from NCD-ND and NCD-MOS to NCD-GC, NCD-RI and NCD-MOS. This request was reviewed and commented on over a five year period. As a result of discussions with the NYS Department of Environmental Conservation during that time, the petitioner amended the original Muir Woods Concept Plan by reducing the overall development from 144 acres to 110 acres in order to minimize wetland impacts. In addition, the various components of the development were altered so that the proposed size of the commercial office/R&D space was reduced from 1.8 million sq. ft. to 700,000 sq. ft. The proposed "village center" originally envisioned was also eliminated. The result is a different land pattern from that initially proposed and one that is not consistent with the originally-requested reclassification districts.

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The following additional steps shall be undertaken as part of the Findings for this project:

- The parcels to be reclassified to NCD-GC shall be deed restricted to prohibit the following uses:
    - Automobile sales and service facilities (except vehicles used primarily on the subject property)
    - veterinary clinics or kennels
    - gasoline service station will be prohibited around the existing lake

    On June 21, 2018, a Declaration of Restrictions was recorded at the Erie County Clerk's Office (Liber 11330 of Deeds at Page 8243) for the purpose of prohibiting the above described uses on the portion of the Project Site reclassified to NCD-GC.

- At the Town Board's direction, the Town shall initiate a reclassification of the remainder of wetland areas contained in the original project proposal as Major Open Space (MOS).

B. Land Use

The proposed development will follow the program summarized below as depicted in the original Findings Statement concept plan for the project dated September 2007, as depicted in the Concept Plan for Site B dated August 14, 2015, as the Concept Plan for Site B dated April 2, 2019showing a student housing project, or as the Concept Plan for Site A dated June 23, 2021 showing a mixed-use project:

Development Site	Land Use	Maximum Developed Area	Development Program
Site A (50 Dodge Road)	Mixed-Use including mixed-use buildings, climate controlled storage building and residential buildings	17.42 acres	Maximum of two mixed-use buildings with a maximum height of 60 ft. and maximum combined footprint of 50,000 sq. ft., one-four story climate controlled storage building with a maximum footprint of 35,000 sq. ft.; ~~one four story multifamily building with a maximum height of 55 ft. (48 units),~~ ~~49~~ one-family and two-family attached and detached townhomes ~~(98 units) and 12 standalone apartments with attached garages~~ and maximum height of ~~32~~5 ft. The overall maximum allowed residential density on Site A is 258 units.

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Site B (Option 1)	Class A Corporate office buildings	46 acres	Maximum of 464,850 sq. ft. of office/retail space
Site B (Option 2)	Residential/ Commercial	46 acres	Maximum of 192 residential units on the eastern portion of Site B (approximately 26 acres) and a maximum of 205,000 sq. ft. of office and commercial space on the western portion of Site B (approximately 20 acres)
Site B (Option 3)	Residential - Student housing	46 acres	Maximum of 515 student housing units
Sites C and D	Residential	37 acres	133 lot residential subdivision consisting of detached single-family homes on individual lots pursuant to the Map Cover filed at the Erie County Clerk's Office on July 24, 2018.

General components of the proposed development that will minimize adverse environmental impacts include:

- The maintenance of the remaining approximately 224± acres of the development site as permanent open space.
- Implementing a cluster pattern to maximize open space preservation.

C. Utility Infrastructure - In accordance with the October 17, 2007 letter received from the Erie County Department of Environment & Planning, all proposed sanitary sewer lines to be constructed to service both the residential and commercial portions of the project will be subject to review and approval by the Erie County Health Department. All systems installed or improved for the project will be undertaken by the Project Sponsor at its cost and will be required to meet all Town, County and State requirements.

D. Archaeological/Cultural Resources – One prehistoric archaeological site was discovered on the project site, with a Stage 2 archaeological study determining that the identified prehistoric archaeological site did not meet the eligibility criteria for listing on the State or National Register of Historic Places. This finding was confirmed by the NYS Office of Parks, Recreation and Historic Preservation in its letter of October 10, 2001. No mitigation measures are needed for the subject development.

E. Air Quality – Potential impacts to air quality resulting from fugitive dust generated during construction activities will be minimized by the following measures:

- seeding and/or mulching exposed soils as soon as practicable and in accordance with the requirements and applicable regulations promulgated by the NYSDEC

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- grading roadways and covering them with gravel during construction, periodically regarding, compacting and replacing gravel as necessary as determined by the Town
- wetting down temporary roads to be constructed on the project site during construction of the build-out of the project as needed throughout the duration of construction activities and as determined by the Town.

F. Condominium Designation - As originally proposed, the residential portion of the project was not to include the development of any units that will be filed as condominiums. The Project Sponsor previously offered to place a deed restriction to this affect as a condition of sale to any future builder, developer or owner of any lot on the subject site. On June 21, 2018, a Declaration of Restrictions was recorded at the Erie County Clerk's Office (Liber 11330 of Deeds at Page 8243) for the purpose of prohibiting the residential uses on the Project Site from utilizing the condominium form of ownership. The Project Sponsor is requesting that the Declaration of Restrictions be modified to allow the condominium form of ownership for the attached residential units to be developed on Site A.

18. Evaluation of Future Actions

In accordance with SEQR regulations, upon application to the Town for development of the project site that requires the submittal of an Environmental Assessment Form, the Town will be required to determine if the potential adverse environmental impacts associated with the development have been adequately identified and evaluated in the DGEIS, FGEIS, and this Amended Findings Statement, and whether the proposed development exceeds any of the thresholds and/or requirements contained in this Findings Statement. This determination must be made by the Town prior to the issuance of any discretionary land use approvals by the Town for the proposed development.

The following scenarios are put forth in Section 617.10(c) & (d) of the SEQR regulations:

A. If the Town determines that the proposed action is in conformance with the conditions and thresholds in the FGEIS or the Amended Findings Statement, then no further environmental review pursuant to SEQR will be required;

B. If the Town determines that the proposed action is adequately addressed in the FGEIS, but is not addressed or not adequately addressed in the Amended Findings Statement, then an amendment to this Amended Findings Statement must be prepared;

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C. If the Town determines that the proposed action was not addressed, or was not adequately addressed, in the FGEIS, but it will not result in any significant environmental impacts, then a negative declaration must be prepared; or

D. If the Town determines that the proposed action was not addressed, or was not adequately addressed, in the FGEIS, and the action may have one or more significant adverse environmental impacts, than a supplement to the FGEIS must be prepared.

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Return Original to Box 460
Hopkins Sorgi & McCarthy PLLC
Attn: Sean W. Hopkins, Esq.

AMENDED DECLARATION OF RESTRICTIONS

THIS AMENDED DECLARATION OF RESTRICTIONS ("***Amended Declaration***") is made as of the ____ day of _____, 202_ by **SAWYER'S LANDING LLC**, ~~**CIMINELLI MUIR WOODS, LLC,**~~ a limited liability company organized under the laws of the State of New York, having its office at 350 Essjay Road, Williamsville, NY ("***Declarant***").

RECITALS

WHEREAS, this Amended Declaration has been executed by Declarant for the purpose of modifying and amending the Declaration of Restrictions recorded at the Erie County Clerk's Office on June 21, 2018 at Liber 11330 of Deeds at Page 8243 (the "***Declaration of Restrictions***").

WHEREAS, Declarant is the owner of a portion of the real property subject to the Declaration of Restrictions recorded at the Erie County Clerk's Office on June 21, 2018 at Liber 11330 of Deeds at Page 8243 consisting of approximately 17.42 of real property located at 50 Dodge Road (formerly ~~consisting of approximately 326 acres of real property located at~~ a portion of 1081 and 1121 North French Road (hereinafter "***Site A*** ~~***Subject Property***~~") that is more particularly by the metes and bounds legal description of Site A attached at **Schedule "1"** hereto;

WHEREAS, Site A ~~the Subject Property~~ is zoned New Community District ("***NCD***") pursuant to the Zoning Map of the Town of Amherst and the use of land within the New Community District is regulated pursuant to the land use classifications contained in the Zoning Code of the Town of Amherst;

WHEREAS, Declarant petitioned the Town Board of the Town of Amherst (hereinafter "***Town Board***") to approve an amendment of the Declaration of Restrictions limited to the restrictions that apply to Site A as described in the legal description of Site A at **Schedule "1"**;~~amend the land use classifications of portions of the Subject Property that is owned by the Declarant;~~

~~WHEREAS, on December 3, 2007, the Town Board issued a Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA") and the Town Board also voted to: 1.) approve Amendment #51 to the Audubon Development Plan, 2.) amend the land use classifications of portions of the Subject Property from NCD-Neighborhood District and NCD-Major Open Space to NCD-General Commercial, NCD-Restricted Industrial and NCD-Major Open Space;~~

~~WHEREAS, as the Town Board imposed conditions in connection with its decisions to issue a Findings Statement pursuant to SEQRA and amending the land use classifications of portions of the Subject Property;~~

WHEREAS, on _____, 2024, the Town Board approved the request to amend the Declaration of Restrictions for Site A. ~~issued an Amended Statement of Findings pursuant to SEQRA on December 7, 2015;~~

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NOW, THEREFORE, in exchange for good and valuable consideration the sufficiency of which is acknowledged, the Declarant agrees to restrict the future use of Site A ~~the portions of the Subject Property (or its entirety when expressly specified)~~ in accordance with the conditions imposed by the Town Board that are subject to this Amended Declaration ~~of Restrictions~~ as follows:

1. All construction equipment and vehicles that will be utilized in connection with the development of Site A ~~the Subject Property~~ pursuant to site plans and final plats to be approved by the Town of Amherst Planning Board shall be expressly prohibited from utilizing the existing streets within Pleasant Acres Part II & III Subdivision (Bucyrus Heights neighborhood) ~~the Franklin Heights Subdivision, including but not limited to Lynette Lane~~, for purposes of egress and ingress to the Subject Property.

2. The residential components of the project on Site A shall be prohibited from utilizing the condominium form of ownership.

3. ~~On those portions of the Subject Parcel where commercial development (excluding all residential uses) will be located directly adjacent to existing residential areas (i.e. Bucyrus Heights), minimum setbacks have been established for the purpose of providing an adequate buffer.~~ The following minimum setbacks will apply only to development of portions of Site A ~~the Subject Property~~ that are directly adjacent to to the Pleasant Acres Part II & III Subdivision (Bucyrus Heights neighborhood) ("***Residential Lot Line***"):

   - ~~All commercial development (buildings and parking areas) will have a minimum setback of fifty feet (50'), with the area within forty feet (40') of adjacent residential property boundaries remaining undisturbed so that existing trees and brush remain as a buffer. The planting of additional trees and shrubs by the Declarant within the minimum setback area may be required by the Town of Amherst during the site plan review process to supplement the existing vegetation in order to provide adequate buffers.~~

   - ~~A combination of earthen berms and new vegetation will be required in those portions of the minimum setback area where there is not sufficient existing vegetation to provide an adequate buffer. The minimum height at the top of berms shall be three feet (3'), and the maximum slope shall be 1 on 3 (33%) to promote the growth and long-term viability of trees and shrubs planted on the berms. Berms should have a natural appearance by varying their width and height. The Town of Amherst will verify compliance with this requirement during the site plan review process.~~

   - Site A: ~~Site A is the western portion of the Subject Parcel that is proposed to be utilized for flex office/R&D buildings and it is located directly south of the existing Bucyrus Heights subdivision. A legal description of Site A is attached as **Schedule "2".**~~ The minimum setbacks for development within Site A shall be as follows:

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- ~~60 ft. minimum required building setback from residential lot line.~~

- ~~60 ft. minimum required parking setback from residential lot line.~~30 ft. minimum building setback from residential lot line for attached and detached two-family townhome style units.

- 400 ft. minimum building setback from residential lot line for four-story mixed use buildings.

- 500 ft. minimum building setback from residential lot line for four-story multifamily buildings.

- 450 ft. minimum setback from residential lot line for four-story climate controlled storage building.

- 60 ft. parking setback from residential lot line

The planting of additional trees and shrubs by the Declarant within the minimum setback areas may be required by the Town of Amherst during the site plan review process to supplement the existing vegetation in order to provide adequate buffers.

- ~~Site B: Site B is the center portion of the Subject Parcel that will be utilized for office space. A legal description of Site B is attached as **Schedule "3"**. The minimum setbacks for development within Site B shall be as follows:~~

  - ~~60 ft. minimum building setback from residential lot line. If the height of any proposed office buildings exceeds 50 feet, the required minimum building setback shall be equal to or greater than the height of the proposed office building.~~

  - ~~60 ft. minimum parking setback to residential lot line.~~

4. The following maximum building heights shall apply only to development of portions of Site A the Subject Property that are directly adjacent to the Pleasant Acres Part II & III Subdivision (Bucyrus Heights neighborhood) ("***Residential Lot Line***"): ~~to the commercial components of the development of the Subject Parcel:~~

   - ~~Site A (western portion of the project site) The maximum building height for buildings within Site A as described in **Schedule "2"** shall be as follows:~~Maximum building height for mixed-use buildings, multifamily buildings and climate controlled storage building shall be four-stories and 60 ft. as measured from the finished grade to the top of any parapet (excluding any rooftop mechanical equipment).

   - Maximum height of any residential buildings within 500 ft. of a residential lot shall be 35 ft.

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- ~~Maximum building height shall be 40 ft. as measured from the finished grade to the top of any parapet (excluding any rooftop mechanical equipment).~~

All mechanical equipment shall be properly screened in accordance with the standards contained in the Zoning Code adopted by the Town Board in May of 2006.

- ~~Site B (center portion of the Subject Parcel) – The maximum building height for buildings within Site B as described in **Schedule "3"** shall be as follows:~~

- ~~There will not be a maximum height for office buildings to be constructed on Site B. All office buildings to be constructed on Site B will be required to comply with a minimum required setback that shall be the greater of fifty feet (50') feet or the height of the proposed office building at the point of its maximum height (including rooftop mechanicals, etc.).~~

~~5. The portions of the Subject Property reclassified to New Community District – General Commercial ("NCD-GC") by the Town Board as described in the attached **Schedule "4"** shall be prohibited from being utilized for the following categories of land uses:~~

~~A. Automobile sales and service facilities (except vehicles used primarily on the subject property);~~

~~B. Veterinary clinics or kennels; and~~

~~Gasoline service stations shall be prohibited around the existing approximately 32 acre lake on the southeastern portion of the Subject Property.~~

The above restrictions contained in numbered paragraphs 1, 2, 3 and ~~,~~ 4 ~~and 5~~ shall be binding on all parties claiming thereunder and shall run and touch the land consisting of Site A except that the above restrictions can be changed, modified or eliminated by a majority vote of the Town Board.

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK
SIGNATURE(S) ON FOLLOWING PAGE]

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IN WITNESS WHEREOF, the individual executing this Amended Declaration of Restrictions on behalf of the Declarant has the full legal authority to enter execute this Amended Declaration of Restrictions.

SAWYER'S LANDING LLC~~CIMINELLI MUIR WOODS, LLC~~

By: ~~—~~SEVERYN CO. LLC, ITS MEMBER

Signature:~~By:~~ _____
Print Name: William Severyn~~Paul F. Ciminelli~~
Title: Member ~~Authorized~~ ~~Managing Member~~

STATE OF NEW YORK)
ss:
COUNTY OF ERIE)

On this __ day of _____ ~~June~~, 202_ ~~18~~, before me, the undersigned, a notary public in and for said state, personally appeared William Severyn~~Paul F. Ciminelli~~, personally known to me or proved to me on the basis of satisfactory evidence to the be the individual whose name is subscribed to within this instrument and acknowledged to me that he executed the same in his capacity, that they by his signature on the instrument, the individual or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public

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SCHEDULE 1

LEGAL DESCRIPTION OF 50 DODGE ROAD (SITE A)

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Amherst, County of Erie, State of New York, being Part of Lot 76, Township 12, Range 7 of the Holland Land Survey (so-called) bounded and described as follows:

COMMENCING at the point of intersection of the centerline of Dodge Road with the centerline of Sweet Home Road; thence: south along the centerline of Sweet Home Road, a distance of 86.08 feet to a point; thence: east, at right angles with said centerline, a distance of 679.33 feet to the POINT OR PLACE OF BEGINNING of the parcel hereinafter described:

THENCE: through lands now or formerly of New York State Urban Development Corporation, the following fifteen (15) courses and distances:

1.) N-00°-55'-59"-W, a distances of 304.81 feet to a point;
2.) N-88°-55'-52"-E, a distance of 625.24 feet to a point;
3.) N-02°-04'-02"-W, a distance of 118.24 feet to a point;
4.) N-88°-55'-52"-E, a distance of 506.27 feet to a point;
5.) S-01°-04'-08"-E, a distance of 120.35 feet to a point;
6.) S-64°-48'-00"-W, a distance of 35.05 feet to a point;
7.) S-29°-42'-37"-W, a distance of 135.73 feet to a point;
8.) S-06°-01'-17"-E, a distance of 361.98 feet to a point;
9.) S-45°-04'-18"-E, a distance of 271.44 feet to a point;
10.) S-01°-04'-00"-E, a distance of 314.49 feet to a point;
11.) S-65°-24'-13"-W, a distance of 407.54 feet to a point;
12.) N-85°-10'-51"-W, a distance of 34.02 feet to a point of curvature;
13.) Northwesterly, on a curve to the right having a radius of 561.62 feet, an arc distance of 516.33 feet to a point of tangency;
14.) N-32°-30'-21'-W, a distance of 457.24 feet to a point of curvature;
15.) Northwesterly, on a curve to the left having a radius of 749.00 feet, an arc distance of 272.69 feet to the above described POINT OR PLACE OF BEGINNING containing 24.812 acres be the same more or less.

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Full Environmental Assessment Form
Part 1 - Project and Setting

Prepared By: Sean Hopkins, Esq. Hopkins Sorgi & McCar
PLLC 5500 Main Street, Suite
343 Williamsville, NY 14221
Tel: 716.510-4338
E-mail: shopkins@hsmlegal.com

2.c

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Proposed Mixed-Use Project - Site A of Muir Woods		
Project Location (describe, and attach a general location map): 50 Dodge Road - Town of Amherst - Erie County		
Brief Description of Proposed Action (include purpose or need): The proposed action consists of an amendment of the Findings Statement issued by the Town of Amherst Town Board ("Town Board") on September 27, 2021 pursuant to the State Environmental Quality Review Act ("SEQRA") to accommodate the updated layout for the proposed mixed-use project to be located at 50 Dodge Road. The layout of the mixed-use project is depicted on the Overall Site Plan [Drawing C-100] prepared by Carmina Wood Design. The residential density of the project has been reduced to 207 units. The action has been defined broadly to include all required discretionary approvals and permits as well as all site improvements including the proposed mixed-use and residential buildings, a climate controlled storage buildings, driveway connections, access aisles, parking spaces, driveways, wetland impacts, lighting, landscaping, an on-site storm water management improvements, sanitary sewer and water lines and connections and all other required utility improvements. The project purpose is to develop Site "A" of overall Muir Woods Project Site as a mixed-use project in a manner consistent with the Overall Site Plan for the project prepared by Carmina Wood Morris DPC prepared by Carmina Wood Design. The project is a Type I action pursuant to SEQRA and the Town Board issued an Amended Findings Statement pursuant to SEQRA on September 27, 2021. The proposed use is consistent with the Town's adopted Comprehensive Plan.		
Name of Applicant/Sponsor: Sawyers Landing LLC c/o Sean Hopkins, Esq.	Telephone: 716.510-4338 E-Mail: shopkins@hsmlegal.com	
Address: 5500 Main Street, Suite 343		
City/PO: Williamsville, NY	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:

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B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town Board - Amend Findings Stmt., Reclassify of NCD Property & Amend Dec. of Restrictions	June 24, 2024
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Amended Site Plan Approval and Subdivision Approval	To be Determined
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☑Yes ☐No	Building Department - Building Permits; Town of Amherst IDA [PILOT, etc.]	To be determined
e. County agencies ☑Yes ☐No	Highway Work Permit - ECDPW; Water - ECWA	To be determined
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC - Amended Wetland Permit; DSCA Approval and SPDES Permit	Amended wetland permit issued on 12/24/20 - DSCA & SPDES - To be determined
h. Federal agencies ☑Yes ☐No	USACE - Amended Wetland Permit	Issued on 02/25/21

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

[**Note**: The Town has an adopted Waterfront Revitalization Program.]

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes ☐No

If Yes, identify the plan(s):

NYS Heritage Areas:West Erie Canal Corridor [Note: The project will not have any impacts on the West Erie Canal Corridor.]

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

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C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Site "A" of the Muir Woods property is zoned New Community District - NCD-ND and NCD-RI pursuant to the Town of Amherst Zoning Map.

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☑ Yes ☐ No
If Yes,
i. What is the proposed new zoning for the site? The Applicant is proposing to reclassify 13.54 acres from NCD-RI to NCD-LC.

C.4. Existing community services.

a. In what school district is the project site located? Sweet Home Central School District

b. What police or other public protection forces serve the project site?
Town of Amherst Police Department

c. Which fire protection and emergency medical services serve the project site?
Volunteer Fire Department

d. What parks serve the project site?
Various Town Parks including Nature View Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Mixed-use project consisting of commercial space and various residential unit types.

b. a. Total acreage of the site of the proposed action? 17.424 acres
b. Total acreage to be physically disturbed? 17 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 17.424 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☑ Yes ☐ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
63 residential lots [2 family townhomes for sale]
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? 63 lots
iv. Minimum and maximum proposed lot sizes? Minimum 1,400 sq. ft. Maximum 1,400 sq ft.

e. Will the proposed action be constructed in multiple phases? ☑ Yes ☐ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated 3-4
- Anticipated commencement date of phase 1 (including demolition) Mar month 2025 year
- Anticipated completion date of final phase Mar month 2027 year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases:
The infrastructure necessary for each phase will be installed to ensure compliance with applicable technical standards including those for stormwater management.

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f. Does the project include new residential uses? [**Note**: The 63 one-family units consist of attached townhome units for sale.] ☑ Yes ☐ No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase	63	22		50
At completion of all phases	63	22		100

The build-out of the residential components will be based on market conditions.

g. Does the proposed action include new non-residential construction (including expansions)? ☑ Yes ☐ No

If Yes, There will be 15,000 sq. ft. of commercial space in each of the two mixed-use buildings.

i. Total number of structures 3

ii. Dimensions (in feet) of largest proposed structure: 55' height; 240' width; and 120' length

iii. Approximate extent of building space to be heated or cooled: 56,000 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑ Yes ☐ No

If Yes,

i. Purpose of the impoundment: Storm water management

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☑ Other specify: Storm water runoff from impervious surfaces.

iii. If other than water, identify the type of impounded/contained liquids and their source.

N/A

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: 1.5 acres

v. Dimensions of the proposed dam or impounding structure: N/A height; _____ length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

Impoundment area is an excavation consisting of earth fill.

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No

If Yes:

i .What is the purpose of the excavation or dredging? _____

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards): _____
- Over what duration of time? _____

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

_____

_____

iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No

If yes, describe. _____

_____

v. What is the total area to be dredged or excavated? _____acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐ Yes ☐ No

ix. Summarize site reclamation goals and plan: _____

_____

_____

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐ Yes ☑ No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): _____

_____

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ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres: _____

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐ Yes ☑ No
If Yes, describe: _____

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐ Yes ☑ No
If Yes:

- acres of aquatic vegetation proposed to be removed: _____
- expected acreage of aquatic vegetation remaining after project completion: _____
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access): _____
- proposed method of plant removal: _____
- if chemical/herbicide treatment will be used, specify product(s): _____

v. Describe any proposed reclamation/mitigation following disturbance: _____

c. Will the proposed action use, or create a new demand for water? ☑ Yes ☐ No
If Yes:

i. Total anticipated water usage/demand per day: 56,524 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑ Yes ☐ No
If Yes:

- Name of district or service area: ECWA Consolidated Water District
- Does the existing public water supply have capacity to serve the proposal? ☑ Yes ☐ No
- Is the project site in the existing district? ☑ Yes ☐ No
- Is expansion of the district needed? ☐ Yes ☑ No
- Do existing lines serve the project site? ☑ Yes ☐ No

iii. Will line extension within an existing district be necessary to supply the project? ☐ Yes ☑ No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____
- Source(s) of supply for the district: _____

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐ Yes ☐ No
If, Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- Proposed source(s) of supply for new district: _____

v. If a public water supply will not be used, describe plans to provide water supply for the project: _____

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑ Yes ☐ No
If Yes:

i. Total anticipated liquid waste generation per day: 51,385 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each): _____
Sanitary wastewater

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑ Yes ☐ No
If Yes:

- Name of wastewater treatment plant to be used: Tonawanda Creek Wastewater Treatment Plant
- Name of district: Town of Amherst Consolidated Sanitary Sewer District
- Does the existing wastewater treatment plant have capacity to serve the project? ☑ Yes ☐ No
- Is the project site in the existing district? ☑ Yes ☐ No
- Is expansion of the district needed? ☐ Yes ☑ No

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- Do existing sewer lines serve the project site? ☑ Yes ☐ No
- Will a line extension within an existing district be necessary to serve the project? ☐ Yes ☑ No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐ Yes ☑ No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

_____

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑ Yes ☐ No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 8 acres (impervious surface)

_____ Square feet or 17.42 acres (parcel size)

ii. Describe types of new point sources. Parking lots and roof tops

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

Stormwater runoff will be conveyed into the on-site stormwater management system to be installed per the applicable stringent stormwater quality and quantity standards of the NYS Department of Environmental Conservation ("NYSDEC")

- If to surface waters, identify receiving water bodies or wetlands: NYSDEC & Federal wetlands on the east portion of the site after on-site stormwater management system.
- Will stormwater runoff flow to adjacent properties? ☐ Yes ☑ No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☐ Yes ☑ No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐ Yes ☑ No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐ Yes ☑ No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐ Yes ☐ No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? [**Note:** An updated Traffic Impact Study prepared by Passero Associates has been submitted based on the current project layout.] ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend ☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

To be determined

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

National Grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 to 7:00
- Saturday: 8:00 to 6:00
- Sunday: As needed
- Holidays: Not Applicable

ii. During Operations:

- Monday - Friday: 8:00 to 11:00
- Saturday: 8:00 to 11:00
- Sunday: 8:00 to 10:00
- Holidays: 8:00 to 10:00

The hours of operation during "During Operations" as listed above apply to the first floor commercial space in the two mixed-use buildings. The hours are estimates since the tenants that will lease the first floor commercial space including both office and retail tenants have not yet been identified.

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

Construction activities will include the use of construction equipment during daytime hours that will exceed ambient background noise levels. The construction related noise impacts are a temporary unavoidable impact.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe: _____

n. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Lighting will be installed in compliance with the lighting standards contained in the Town of Amherst Zoning Code.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe: _____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities: _____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☑ Yes ☐ No

If Yes:

i. Describe proposed treatment(s):

Potential use of lawn fertilizer and pesticides on maintained portions of property in accordance with applicable standards for application and use of lawn fertilizer and pesticides.

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☑ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: 3 tons per week (unit of time)
- Operation : 3 tons per week (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: wood and metal waste may be recycled by the contract at their discretion
- Operation: Town of Amherst recycling program will be followed

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: approved NYSDEC landfill via contractor or private disposal company
- Operation: approved NYSDEC landfill via private disposal company

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☑ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Wetlands

ii. If mix of uses, generally describe:

There are mixture of uses in the vicinity of the Project Site including residential uses to the north in the Bucyrus Heights Subdivision, an elementary school, apartments and office buildings on Sweet Home Road and permanent open space to the east of Site "A".

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	8.0	+ 8.0
• Forested	0	0	0
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	17.4	0	-17.4
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)			
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Greenspace, Landscaping, Pond	0	9.4	+9.4

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c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☑ No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☑ Yes ☐ No
If Yes,
i. Identify Facilities:
1. Heritage Heights Elementary School (Sweet Home School District- 2545 Sweet Home Road); 2. Creative Play Learning Center (Private Day Care Facility- 647 Dodge Road); and 3. Four Seasons Child Care & Preschool (Private Day Care Facility- 1639 North French Road).

e. Does the project site contain an existing dam? ☐ Yes ☑ No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:
_____
_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐ Yes ☑ No
If Yes:
i. Has the facility been formally closed? ☐ Yes ☐ No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:
_____
_____
iii. Describe any development constraints due to the prior solid waste activities: _____
_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐ Yes ☑ No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:
_____
_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐ Yes ☑ No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐ Yes ☐ No
☐ Yes – Spills Incidents database Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures:_____
_____
_____
iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐ Yes ☑ No
If yes, provide DEC ID number(s): _____
iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):
_____
_____

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v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >5 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____%

c. Predominant soil type(s) present on project site:

Getzville silt loam	94 %
Swormville clay loam	6 %
	%

d. What is the average depth to the water table on the project site? Average: >5 feet

e. Drainage status of project site soils:

☐	Well Drained:	% of site
☐	Moderately Well Drained:	% of site
☑	Poorly Drained	100 % of site

f. Approximate proportion of proposed action site with slopes:

☑	0-10%:	100 % of site
☐	10-15%:	% of site
☐	15% or greater:	% of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name Federal Waters, NYS Wetland Approximate Size NYS Wetland (in a...
- Wetland No. (if regulated by DEC) TE-33

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☑ Yes ☐ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:

i. Name of aquifer: _____

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m. Identify the predominant wildlife species that occupy or use the project site:
Typical suburban species

n. Does the project site contain a designated significant natural community? ☐ Yes ☑ No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation):
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐ Yes ☑ No

If Yes:
i. Species and listing (endangered or threatened):

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☑ Yes ☐ No

If Yes:
i. Species and listing:
Spiny Softshell - The Project Sponsor does not believe that Spiny Softshell is present on Site A of the Muir Woods property.

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐ Yes ☑ No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐ Yes ☑ No
If Yes, provide county plus district name/number:

b. Are agricultural lands consisting of highly productive soils present? ☐ Yes ☑ No
i. If Yes: acreage(s) on project site?
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐ Yes ☑ No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent:

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐ Yes ☑ No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

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e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☑ Yes ☐ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: Eligible property:Heritage Heights Elementary School

iii. Brief description of attributes on which listing is based:

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No [No impact letter issued by SHPO on October 10, 2001.]

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s):

ii. Basis for identification:

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource:

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.):

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation:

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name Sawyers Landing LLC Date August 12, 2024

Signature Sean Hopkins Title Attorney for Project Sponsor

Sean W. Hopkins, Esq.

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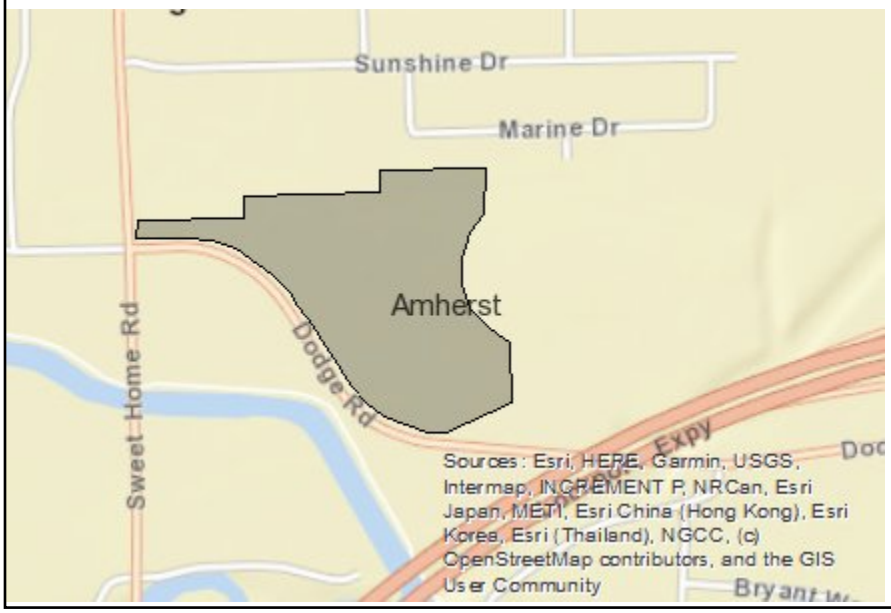
PRINT FORM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Heritage Areas:West Erie Canal Corridor
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters, NYS Wetland
E.2.h.iv [Surface Water Features - Wetlands Size]	NYS Wetland (in acres):34.6
E.2.h.iv [Surface Water Features - DEC Wetlands Number]	TE-33
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No

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E.2.k. [500 Year Floodplain]	Yes
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	Yes
E.2.p. [Rare Plants or Animals - Name]	Spiny Softshell
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Yes - Digital mapping data for archaeological site boundaries are not available. Refer to EAF Workbook.
E.3.e.ii [National or State Register of Historic Places or State Eligible Sites - Name]	Eligible property:Heritage Heights Elementary School
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

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TOWN OF AMHERST ATTACHMENT
State Environmental Quality Review
ENVIRONMENTAL ASSESSMENT FORM
Mixed-Use Project - 50 Dodge Road

1. For each applicable category of proposed new structures, including additions to existing structures, provide the following information for all soil types on the project site (*according to Soil Survey of Erie County, NY; Table 11, Building Site Development, pp 294-305):*

Soil Name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Getzville Silt Loam	Severe	Severe	Severe	Severe	Moderate
Swormville Clay Loam	Severe	Severe	Severe	Severe	Severe

2. If the Soil survey indicates either "severe" or "moderate" suitability for the proposed types of construction, a geotechnical and hydrological analysis based on one test per 3.5 acres of project area must be provided (per Town Board resolution, 3/17/03, amended 6/16/03).

   __x__ Geotechnical report attached _____ Not applicable

   [Note: Copy of Geotechnical Report included with Application.

3. Is your property located: On Youngs Road between Dodge and Klein Roads? □ Yes x No
   On Wehrle Dr. between Spindrift Dr. and Oakwood Rd? □ Yes x No

   If so, the property may be within an area of the Town that is affected by a moratorium on connections to the sanitary sewer system.

4. Are there alternative locations on the site for this project? □ Yes x No

5. Location and size of real property owned by petitioner within one (1) mile of subject proposal:
   __Not Applicable

6. Are you aware of current or future plans or intentions by others in the Town of Amherst to develop property within 1000± ft. of the present project request: Yes ☒ No

   Describe A
   _____

   (Potential environmental impacts from adjacent or nearby projects undergoing the approval process will receive a coordinated environmental review to determine cumulative effects on common receivers (e.g. traffic and drainage corridors) and other relevant environmental concerns.)

7. Maximum number of vehicular trips to be generated per peak hour upon completion of project__243 [Sat. Peak Hour]
   Source: __Updated Traffic Impact Study prepared by Passero Associates.

8. Will blasting occur during construction? □ Yes ☒ No

9. Does the project propose to connect and be tributary to the public sanitary sewer system? ☒ Yes □ No

10. Proposed net additional gallons per day (gpd) of sanitary sewer discharge upon completion of project:
    __51,385_____ average flow __205,540_____ peak flow.

    (Average flows of 2,500 gpd or greater will require an Engineer's Report that includes a detailed downstream sewer capacity analysis and the identification of and commitment to required I/I offset work during peak wastewater flow conditions.)

11. Based on the Town's *2011 Reconnaissance Level Survey of Historic Resources*, is your property 'blue-rated' for historic significance? x Yes □ No
    [There are not any buildings located on the Project Site.]
    [Note: A copy of the No Impact Determination letter issued by SHPO is provided at Exhibit "13".]

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CARMINA WOOD
DESIGN

ENGINEER'S REPORT

for

Sawyer's Landing
Dodge & Sweet Home Road
Town of Amherst, Erie County, New York

Prepared for

Sawyer's Landing LLC

c/o Severyn Development
43 Central Ave Suite #300
Lancaster, NY 14086

Prepared by

Carmina Wood Morris, D.P.C.

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February 2021

Revised 6/20/2024

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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Section 1 - Location & Description

This project is a development of a 17.4 acre site located on the north side of Dodge Road, west of Sweet Home Road in the Town of Amherst. Both Dodge Road and Sweet Home Road are Erie County roads. Proposed is the construction of a mixed-use development to include (2) 4-story mixed-use buildings with 100 apartment units total, (22) 2-story duplex townhomes with 44-units total, (1) 4-story self-storage building and (63) 2-story townhomes. A bike trail will be constructed on site, this trail will connect to the existing Town of Amherst bike trail on the south side of Dodge Road. The approximately 1 acre westerly portion will remain undisturbed and be deed restricted as permanent open space. The site is currently undeveloped consisting of woods and overgrown brush/grass. NYSDEC and Federal wetlands were delineated on site by Earth Dimensions, Inc. Approximately 6.1 acres of Federal and 1.2 acres of NYSDEC wetlands have been permitted to be impacted. The proposed site development area to be disturbed for this project is approximately 16.4 acres.

Section 2 - Water Service

A new 8" D.I. combined service will be tapped off the existing 24" D.I.P. ECWA water main along the north side of Dodge Road at the northern portion of the project site. Following the tap, the 8" D.I. service will continue north into the site where it will enter into a Hot-Box enclosure. Within the Hot-Box enclosure an 8" meter (by ECWA) and an 8" Watts 957 RPZ will be installed. Similarly, a second 8" D.I. combined service will be tapped off the existing 24" ECWA main at the southern portion of the site along Dodge Road. As with the first installation, following the tap, the 8" D.I. service will continue northeast into the site where it will enter a hotbox with the same 8" meter (by ECWA) and 8" Watts 957 RPZ. The services will exit the Hot-Box enclosures and then transition into 8" AWWA C-900 PVC. The services will run throughout the site to provide both domestic and fire service to the proposed buildings. Heat & light for testing will be provided in the areas of the meters & RPZs to prevent freezing. Drainage due to testing or failure will be to the exterior through a drain, drainage will be away from the enclosures. The owner will be responsible for keeping the drainage ports clear of snow and debris. A total of 5 (five) proposed fire hydrants shall be installed around the site to provide fire protection coverage. There are no existing water services to this site, and therefore none to be killed/abandoned per ECWA requirements.

Domestic Summary:

Peak Operating Demand:	141.31 gpm
Water Main:	24" on Dodge Road
Static Pressure:	105 psi (per ECWA, 98 psi residual)
Friction Loss:	0.0 psi
Loss through meter/RPZ:	13.0 psi
Elevation Loss:	0.0 psi
Pressure after RPZ & Meter:	92 psi
Pressure at 4th floor:	76.8 psi

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Repairs to all devices will be made during off hours, dual backflow preventers are not required. The site is not located in a 100-year flood plain. Disinfection of the water service following installation will be continuous feed, according to AWWA C-651, latest revision.

Section 3 - Sanitary Sewer Service

The proposed sanitary sewer service will connect to the existing 60" sanitary sewer (peanut line) located on the south side of Dodge Road. In order to connect to this sewer, a public sewer extension along the south side of Dodge Road will be required. This public extension will consist of a total of 643 LF of 8" SDR-35 PVC at a minimum slope of 0.4%.

The proposed private on-site sewer mains will consist of 8" SDR-35 PVC at a minimum slope of 0.4%. Each of the proposed commercial buildings and apartment buildings will have a 6" SDR-35 PVC sanitary sewer lateral at a minimum slope of 1.0% tied into the private main. The townhouse units will have a 4" SDR-35 PVC sanitary sewer lateral at a minimum slope of 1.0% tied into the private main. The 8" private main will tie into the proposed public extension on the south side of Dodge Road across from the SE portion of the project site.

A downstream sanitary sewer capacity analysis (DSCA) is required to be prepared for the site given the flows will exceed 2,500 gpd. This report is included in Appendix A.

Design Parameters

Housing: use 220/gpd/unit
Q = 207 units x 220 gpd/unit = 45,540 gpd

Commercial: use 0.1 gpd/sf
Q = 11,906 sf x 0.1 gpd/sf = 1,190.6 gpd

Office: use 0.1 gpd/sf
Q = 10,798 sf x 0.1 gpd/sf = 1,079.8 gpd

Self Storage: use 15 gpd/employee
Q = 5 empoyees x 15 gpd = 75 gpd

Restaurant: use 35 gpd/seat
Q = 100 seats x 35 gpd/seat = 3,500 gpd

Total = 51,385 gpd (average) using a 3.97 PF (see appendix A for calc)

Total = 51,385 x 3.97 = 203,902 gpd = 141.60 gpm = 0.315 cfs

The hydraulic loading rates per "Design Standard for Wastewater Treatment Works" 2014, NYSDEC. See attached Sanitary Sewer & Water Calculations for additional information.

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I/I Mitigation:

Peak Flow = 141.60 gpm
4:1 offset = 141.60 x 4 = 566.39 gpm
Mitigation Credit = $250/gpm
I/I Mitigation = 566.39 gpm x $250/gpm = $141,598.58
Refer to Appendix A for additional information.

Section 4 - Storm Sewer Service

The existing site is generally flat and slopes west with portions sloping east. The portion that slopes west settles in a low area and once the capacity of that area is exceeded, sheet flow continues towards Sweet Home Road and is collected by an existing 12" pipe on the north side of Dodge Road. This pipe flows to the Erie County system on Sweet Home Road. The portion that flows east flows to the offsite wetlands.

Currently Dodge Road does not have a drainage system. A series of catch basins and pipes will be installed in the green area on the north side of Dodge Road to collect the road drainage. The west portion of this system will connect to the existing closed drainage system on Sweet Home Road. The east portion will discharge to the Ellicott Creek diversion channel using and existing discharge point. This new system will also convey the proposed discharge from the site as described below.

The proposed onsite storm sewer system consists of smooth interior and perforated HDPE pipes connected by a series of catch basins, manholes and yard drains. The site is split into a storm water management area on the east and west sides.

<u>West Side</u>

The west side of the site has (2) bioretention areas which portions of the westerly area will discharge to. These bioretention areas along with the remainder of the west portion of the site will discharge to the underground detention area. Note that the yard drains installed along the north property line discharge to the underground detention area. An outlet structure in the SW portion of this area will control runoff to at or below existing runoff flow rates. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Sweet Home Road system.

<u>Underground Detention Summary</u>

(286) ADS Stormtech SC-740 chambers
Top of stone elev. = 573.00
Top of chamber elev. = 572.50
Bottom of chamber elev. = 570.00
Bottom of stone elev. = 569.50
Total storage = 18,574 CF

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Event	Ex. Discharge	Pro. Discharge	Elev.
1 yr	0.87 cfs	0.33 cfs	570.29
2 yr	1.34 cfs	0.68 cfs	570.46
5 yr	2.14 cfs	1.05 cfs	570.79
10 yr	2.94 cfs	1.28 cfs	571.13
25 yr	4.34 cfs	1.61 cfs	571.73
50 yr	5.69 cfs	3.61 cfs	572.23
100 yr	7.33 cfs	4.83 cfs	572.92

East Side

The east side of the site has a bioretention area and wet detention pond which this portion of the site discharges to. The NE portion of the site discharges to a forebay which spills into the main micropool portion of the wet detention basin. The SE portion of the site discharges to the bioretention area which also spills into the main micropool portion of the site. An outlet control structure is located in the SE portion of the micropool and controls the discharge from this storm water management area. Spillways are also located on the east portion of the micropool which will discharge to the existing wetlands to the east in order to not cut off all flow from this site into this area. The discharge from the outlet control structure will discharge to the new system on Dodge Road which flows to the Ellicott Creek diversion channel.

The bioretention areas and wet detention pond for the project area are sized to provide 100% of the required Runoff Reduction Volume (RRv) and Water Quality Volume (WQv) treatment for the overall site in accordance with Chapter 4 of the NYSDEC Stormwater design manual. The soils in the vicinity of the bioretention areas are mainly USDA hydrologic group 'D' and therefore the system will be installed with underdrains per NYSDEC requirements. The bioretention areas will consist of 6" and 8" perforated HDPE underdrains in 12" of drainage gravel, followed by filter fabric and 18" minimum of planting soil. Overflow yard drains will be installed to allow 6" maximum temporary ponding for RRv treatment. The east bioretention area (area #3) spills into the wet detention pond and the underdrain pipe ties together with the pond discharge and flows to Dodge Road. The east bioretention areas (areas #1 & #2) have a catch basin to act as the spillway and this catch basin and the underdrain pipes discharge to the underground detention area.

Storm Water Management Area Summary

Forebay
Top of basin elev. = 576.80
Permanent water elev. = 575.00
Aquatic bench elev. = 574.50
Bottom of basin elev. = 569.00

Micropool
Top of basin elev. = 576.80
Permanent water elev. = 575.00

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Aquatic bench elev. = 574.50
Bottom of basin elev. = 563.00

Overall Storm Water Summary

WQv Provided = 152,678 cf (pond)
WQv Provided = 6,948 cf (bioretention)
WQv Provided = 159,626 cf (total)

Bioretention Area Summary:

Area	Rim Elev.	Bottom Elev.	Area
1	574.50	574.00	2,300 sf
2	574.50	574.00	2,600 sf
3	575.50	575.00	11,000 sf
		Total Provided =	15,900 sf

Water Quality Summary:
WQv req'd = 28,804 cf (0.661 ac-ft)
RRv min. req'd = 5,518 cf (0.127 ac-ft)
RRv provided = 8,662 cf (0.199 ac-ft)
WQv provided = 159,626 cf (3.665 ac-ft)
Total RRv + WQv provided = 8,662 cf + 159,626 cf = 168,287 cf (3.868 ac-ft)

Detention: Comparison of the existing 1-year vs. the proposed 1-year runoff
Comparison of the existing 10-year vs. the proposed 10-year runoff
Comparison of the existing 100-year vs. the proposed 100-year runoff

Storm pipes: 10-year storm

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Appendix A

Sanitary Sewer and Water Demand Calculations

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Project No.: 24-4034 Date: 6/20/2024
Project Name: Muir Woods
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer Demand Calcs
Sheet: 1 of 1

Sanitary Sewage Demand Calculations:

West - Mixed Use Buildings

0.1	gal/d/sf	x	11,906	sf	=	1,191	gpd		*use 0.1 gallons per day per square foot (Retail
35.0	gal/d/seat	x	100	seats	=	3,500	gpd		*use 35 gallons per day per seat (fast food)
0.1	gal/d/sf	x	10,798	sf	=	1,080	gpd		*use 0.1 gallons per day per square foot (Office
15	gal/d/employee	x	5	employees		75	gpd		*use 15 gallons per employee (Self-Storage)

West - Apartments

220	gal/d/unit	x	100	units	=	22,000	gpd	*use 220 gallons per day per 2-bedroom unit

North - Apartments and Duplex Buildings

220	gal/d/unit	x	63	units	=	13,860	gpd	*use 220 gallons per day per 2-bedroom unit
220	gal/d/unit	x	44	units	=	9,680	gpd	*use 220 gallons per day per 2-bedroom unit

Total Site Sanitary Demand:	=	51,385	gpd
	=	0.051	MGD
Find Peak Sanitary Demand:	=	0.079	cfs

Peaking Factor based on Population:

Total demand: 51,385 gpd / 100 gpcd = 514 per capita

Population (P) = 514 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.97

Peak Sanitary Demand	=	51,385	x	3.97	=	203,902	gpd
					=	0.204	MGD
					=	0.315	cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow	=	203,902	gpd	=	141.60	gpm		
4:1 offset flow per NYSDEC requirements	=	141.6	x	4	=	566.39	gpm req'd	
Mitigation Credit	=	$250	/ gpm					
Mitigation Agreement Amount	**=**	**$141,598.58**						

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Project No.: 24-4034 Date: 6/20/2024
Project Name: Sawyer's Landing (Muir Woods)
Project Address: Sweet Home Road and Dodge Road - Amherst, NY
Subject: Sanitary Sewer & Water Demand Calcs
Sheet: 2 of 2

Water Demand Calculations (domestic):

Site

51,385 gpd x 1.1 = 56,524 gpd *use 110% of sewage demand

*use 1.8 peaking factor and assume a 12 hour day

56,524 gpm x 1day/12hr x 1hr/60min = 78.50 gpm

78.50 gpm x 1.8 = 141.31 gpm Q_{peak}

Headlosses:

Q_{peak} = 141.31 gpm
Pipe = 8 inch Ductile Iron C = 140
Length = 33 LF (approx. distance from tap to RPZ)

$$H_L = \frac{10.44\, L\, Q^{1.85}}{C^{1.85}\, D^{4.866}} = \frac{10.44(33)(141.31)^{1.85}}{(140)^{1.85}\,(8)^{4.866}} = 0.01 \text{ ft} = 0.01 \text{ psi}$$

Δ elev = 0 ft = 0.00 psi
Loss through meter = 1 psi
Loss through RPZ = 12 psi
Total Losses = 13.0 psi
Static Pressure = 105 psi (per ECWA - residual pressure 98 psi)
Residual Pressure Following RPZ = 105 - 13.0 = 92.0 psi (available after rpz & meter)

Headlosses to furthest hydrant

Q_{peak} = 141.31 gpm
Pipe = 8 inch C-900 PVC C = 140
Length = 1,293 LF (approx. distance from RPZ to hydrant)

$$H_L = \frac{10.44\, L\, Q^{1.85}}{C^{1.85}\, D^{4.866}} = \frac{10.44(1{,}293)(141.31)^{1.85}}{(140)^{1.85}\,(8)^{4.866}} = 0.55 \text{ ft} = 0.24 \text{ psi}$$

Δ elev = 1.1 ft = 0.48 psi
Total Losses = 0.7 psi
Static Pressure = 92 psi (per ECWA - residual pressure 98 psi)
Residual Pressure Following hydrant = 92.0 - 0.7 = 91.3 psi (available after furthest hydrant)

Residual Pressure 30" above 4th Floor
Δ elev = 35 ft = 15.16 psi
Residual Pressure 30" above 4th Floor = 92.0 - 15.16 = 76.8 psi

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Downstream Sewer Capacity Analysis

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

CARMINAWOOD
DESIGN

DOWNSTREAM SANITARY SEWER CAPACITY ANALYSIS REPORT

for

Muir Woods Site

Sweet Home & Dodge Road
Amherst, Erie County, New York

Prepared for

Sawyer's Landing, LLC

c/o Severyn Development
43 Central Ave Suite #300
Lancaster, New York 14086

Prepared by

Carmina Wood Design

487 Main Street, Suite 500
Buffalo, NY 14203

Telephone: (716) 842-3165
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REVISED
June 2024

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Project Description

This new site development project will consist of the construction of apartment buildings, duplexes, office, restaurant, and retail space as well as self-storage. Construction will also include on-site utility, landscaping improvements, and associated roads and parking. The overall acreage of the site is 28.47 acres. The site is located at Sweet Home Road and Dodge Road on a western portion of parcel 40.08-3-13.1 in the Town of Amherst and is zoned NCD-SA.

The proposed sewer for this project will leave the site via a privately owned sanitary service and cross Dodge Road to connect to a proposed 8" publicly owned sewer extension. The public line will then tie in to the existing 60" RCP Peanut line along Dodge Road. Sewage will then be conveyed west and then eventually north through the 84" West Side Interceptor to the Town of Amherst Wastewater Treatment Facility #16. The proposed public extension from the tie in to the existing 60" RCP line will be owned and maintained by the Town of Amherst.

Node 1 – Dodge Road (60"):

Existing Peak Flow measured (wet weather event)	=	40.602 cfs (21.851 mgd)*
Proposed Muir Woods Peak Flow	=	0.315 cfs **
Proposed Peak Flow	=	40.917 cfs

Theoretical capacity of existing 60" RCP pipe @ 0.07% = 81.366 cfs

Conclusion: The proposed peak flow is less than the capacity of the 60" pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 1 of the downstream monitoring points during the rain events monitored.

Node 2 – North Ellicott Creek Rd (60")

Existing Peak Flow measured (wet weather event)	=	99.524 cfs (53.561 mgd)*
Proposed Muir Woods Peak Flow	=	0.315 cfs **
Proposed Peak Flow	=	99.839 cfs

Theoretical capacity of existing 60" pipe = 82.873 cfs (44.60 mgd)

Conclusion: Current flows the day following the 1.21" rainfall event exceeded the capacity of the existing 60" sewer pipe, but at no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole. In addition, Sanitary Sewer Overflow (SSO) did not occur. I/I mitigation shall be required for the contribution proposed for this project.

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Node 3 - Sweet Home (66")

Existing Peak Flow measured (overall)	=	69.058 cfs (39.601 mgd)*
Proposed Muir Woods Peak Flow	=	0.315cfs **
Proposed Peak Flow	=	69.373 cfs

Capacity of existing 66" pipe = 106.657 cfs (57.40 mgd)

Conclusion: The proposed peak flow is less than the capacity of the 66" pipe, therefore there is sufficient capacity. At no time during the monitoring did the flow depth exceed the pipe diameter at Node 3 of the downstream monitoring points during the rain events monitored.

Foot Notes:

Pipe slopes, sizes and materials provided by Town of Amherst Engineering Department Sewer Maintenance Division

* Converted from measurements in TECSmith report dated 8/12/20

** See Sanitary Sewage Demand Calculations

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Location Map

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Muir Woods Site - Sweet Home and Dodge Rd

8/18/2020, 8:51:26 AM

Parcels

Municipal Boundaries

1:9,028

0 300 600 1,200 ft

0 90 180 360 m

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS,

USGS TNM – National Hydrography Dataset. Data Refreshed July, 2020. | NYS GIS Program Office | Telephone: (518) 242-5029 | Email: its.sm.SAM.

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Sanitary Demand Calculations

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Sanitary Sewage Demand Calculations:

West - Mixed Use Buildings

0.1	gal/d/sf	x	11,906	sf	=	1,191	gpd		*use 0.1 gallons per day per square foot (Retail
35.0	gal/d/seat	x	100	seats	=	3,500	gpd		*use 35 gallons per day per seat (fast food)
0.1	gal/d/sf	x	10,798	sf	=	1,080	gpd		*use 15 gallons per day per employee (Office)
15	gal/d/employee	x	5	employees		75	gpd		*use 15 gallons per employee (Self-Storage)

West - Apartments

220	gal/d/unit	x	100	units	=	22,000	gpd	*use 220 gallons per day per 2-bedroom unit

North - Apartments and Duplex Buildings

220	gal/d/unit	x	63	units	=	13,860	gpd	*use 220 gallons per day per 2-bedroom unit
220	gal/d/unit	x	44	units	=	9,680	gpd	*use 220 gallons per day per 2-bedroom unit

Total Site Sanitary Demand:	=	51,385	gpd
	=	0.051	MGD
Find Peak Sanitary Demand:	=	0.079	cfs

Peaking Factor based on Population:

Total demand: 51,385 gpd / 100 gpcd = 514 per capita

Population (P) = 514 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.97

Peak Sanitary Demand	=	51,385	x	3.97	=	203,902	gpd
					=	0.204	MGD
					=	0.315	cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow	=	203,902	gpd	=	141.60	gpm		
4:1 offset flow per NYSDEC requirements	=	141.6	x	4	=	566.39	gpm req'd	
Mitigation Credit	=	$250	/ gpm					
Mitigation Agreement Amount	**=**	**$141,598.58**						

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TECSmith Monitoring Report

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TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

Date: August 12, 2020

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For: Muir Woods Capacity Analysis

Christopher Wood
487 Main Street, Suite 600
Buffalo, New York 14203
P: (716) 842-3165
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Project Name: Muir Woods Capacity Analysis

Flow Monitoring Period: July 8, 2020 to August 5, 2020

Rain Events (> 0.5-inches) Monitored: July 11 (1.21”), July 16 (0.86”), and August (0.90”)

Number of Monitoring Nodes: Three (3) downstream manholes

Node Locations and Descriptions:

- Node 1 Dodge Rd 60" (60")
- Node 2 North Ellicott Creek Rd. (60")
- Node 3 Sweethome 66 (66")

Summary Conclusion:

Based on the data presented in this report, specifically the flow depth measurements recorded (see graphs below)

- At no time did the flow depth exceed pipe diameter at Node 1 and Node3 of the downstream monitoring points during the rain events monitored.
- One time the flow depth exceed pipe diameter at Node 2 of the downstream monitoring points during the rain events monitored.
- At no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole.

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TECsmith

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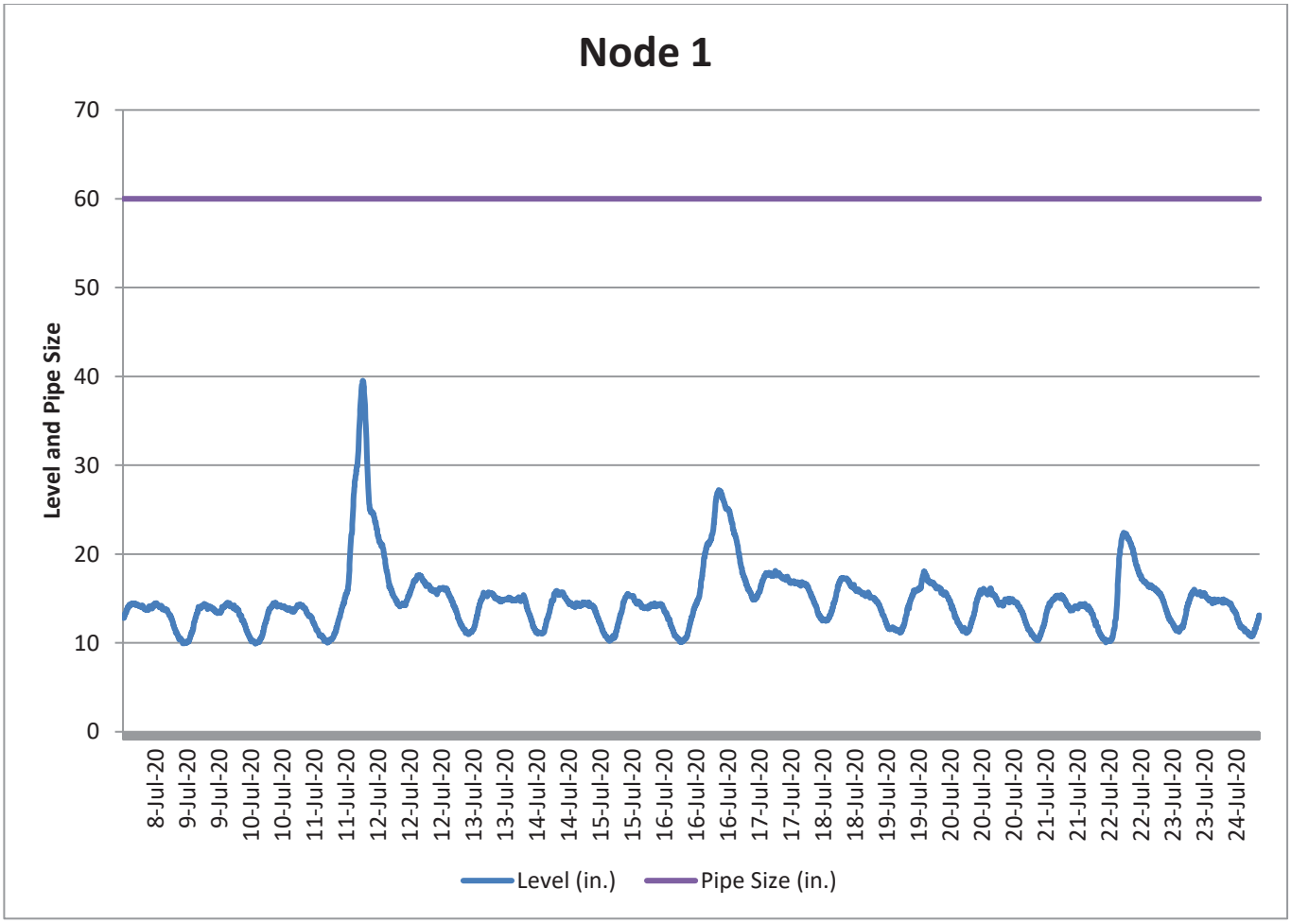
Depth of Flow Capacity Summary:

Depth of flow capacity is based on diameter of pipe. See graphs below.

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 1.



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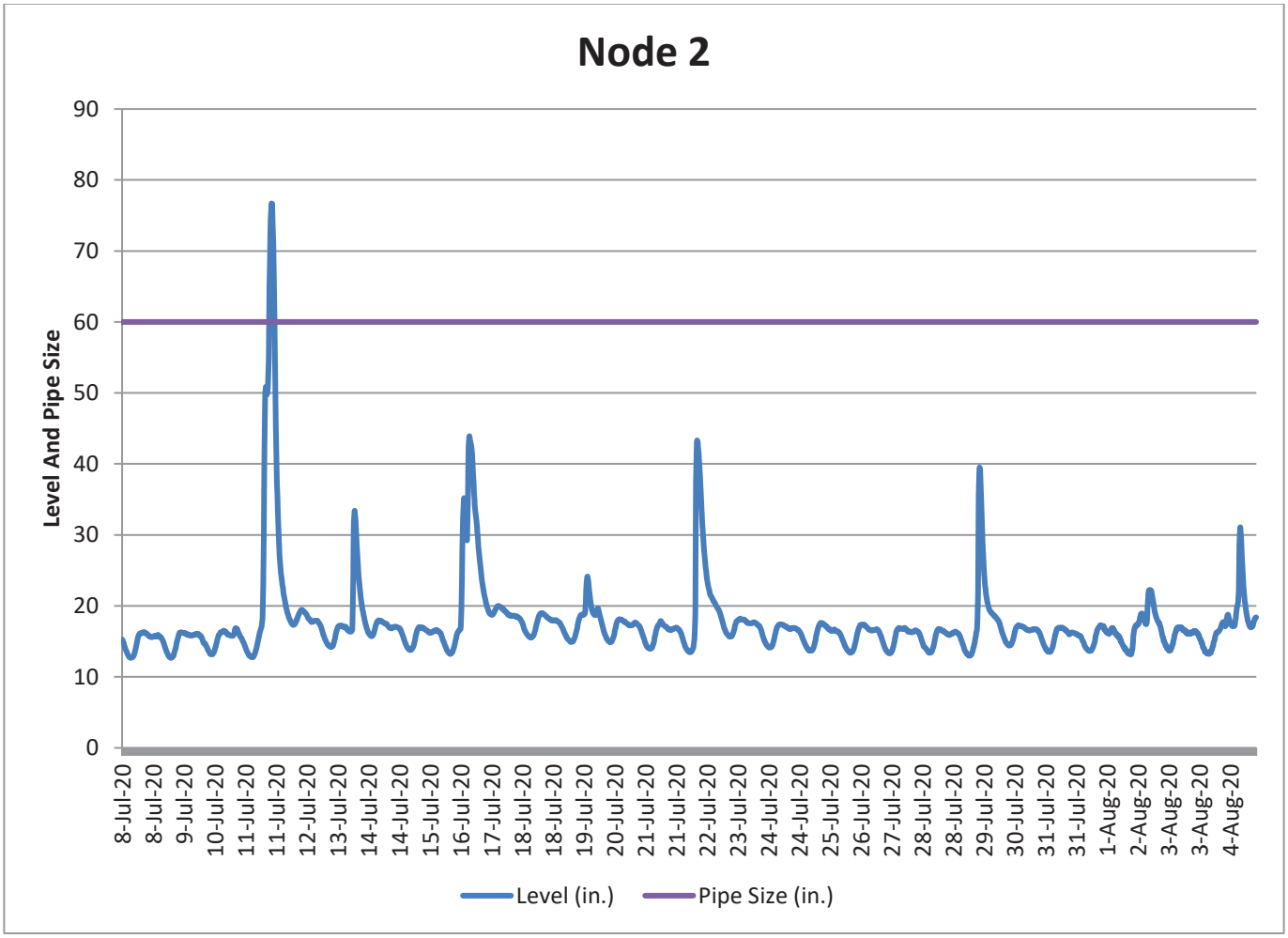
- One time during the monitoring period did depth of flow exceed pipe diameter at Node 2.



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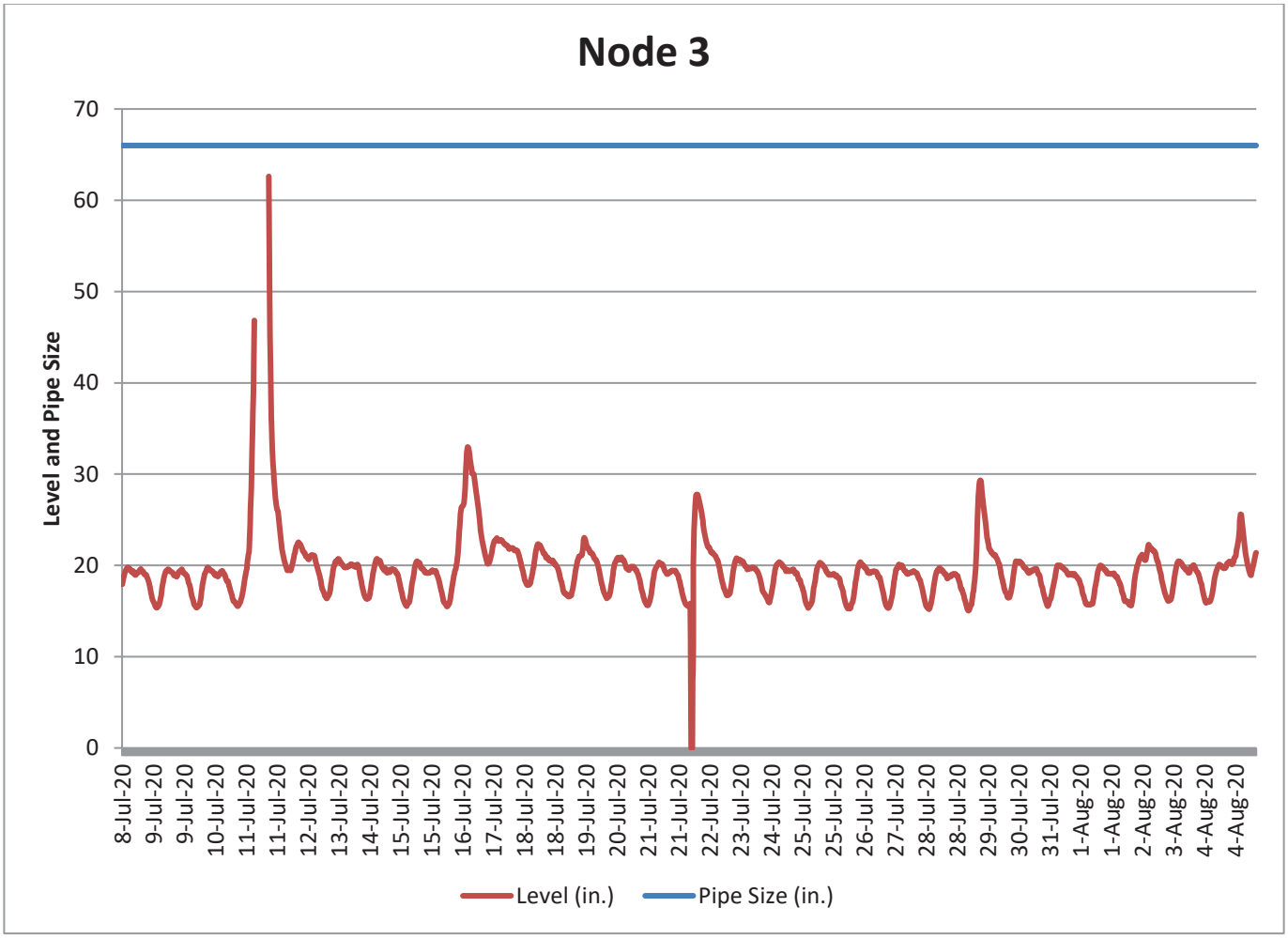
TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-462-0382
Fax: 716-687-1418

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 3.



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Date	Node 1			Node 2			Node 3			Rain₂
	Dodge Rd 60" (60")			North Ellicott Creek Rd. (60")			Sweethome 66 (66")			
	FLOW (GAL x 1,000)	PEAK FLOW (MGD)	PEAK LEVEL (IN)	FLOW (GAL x 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	FLOW (GAL x 1	PEAK FLOW (MDG)	PEAK LEVEL (IN)	(inches)
7/8/2020	4186.283	8.161	14.473	7265.409	8.598	16.319	4800986323.2	8.025	19.770	***0***
7/9/2020	6195.964	8.253	14.556	7387.504	8.661	16.273	6645115872.8	8.044	19.590	***0***
7/10/2020	6231.790	8.143	14.521	7625.321	9.362	16.873	6667623530.3	8.079	19.790	***0***
7/11/2020	10033.769	21.851	39.526	20780.607	53.561	76.701	10540796680.3	28.096	66.000	***1.21***
7/12/2020	9184.078	14.374	22.474	11292.759	17.205	23.420	9306202243.7	13.750	25.810	***0***
7/13/2020	7070.585	9.115	15.714	11243.925	29.525	33.420	7609650153.8	9.108	20.730	***0.47***
7/14/2020	6974.494	9.101	15.869	9685.896	13.288	20.168	7274548275.2	9.280	20.720	***0***
7/15/2020	6591.385	8.845	15.512	8174.879	9.503	17.013	6975378581.5	8.831	20.460	***0***
7/16/2020	9916.241	20.532	27.213	18886.012	44.070	43.892	12067803314.2	39.601	32.990	***0.86***
7/17/2020	10096.644	16.639	23.493	12451.728	18.137	24.043	10307997546.4	14.224	26.250	***0.03***
7/18/2020	8256.593	10.757	17.307	9766.538	11.556	18.960	8664937727.1	10.772	22.350	***0***
7/19/2020	7589.558	11.382	18.060	10166.964	17.245	24.128	8331695207.5	24.048	23.030	***0.21***
7/20/2020	7269.757	9.235	16.144	8853.911	10.160	18.118	7730113857.4	9.669	20.890	***0***
7/21/2020	6681.658	8.895	15.365	8179.097	9.991	17.880	1603593925.8	9.197	20.330	***0***
7/22/2020	8633.887	15.390	22.402	15950.443	42.105	43.300	16326027301.0	29.736	27.790	***0.42***
7/23/2020	7327.211	9.216	16.027	9664.310	11.130	18.508	6916249204.1	19.172	20.800	***0***
7/24/2020	6764.464	8.779	15.317	8434.117	9.760	17.405	8296938032.2	15.723	20.360	***0***
7/25/2020	6426.122	8.861	15.407	8159.333	9.969	17.608	6871634377.4	12.359	20.320	***0***
7/26/2020	6409.255	8.667	15.297	8027.060	9.774	17.372	6816880470.0	9.106	20.360	***0***
7/27/2020	6487.339	8.269	15.107	7871.954	9.244	16.902	6854655651.9	8.336	20.100	***0.03***
7/28/2020	6298.427	8.016	14.780	7696.223	9.134	16.757	6692447010.5	8.080	19.740	***0.01***
7/29/2020	8340.302	16.584	23.592	12134.192	36.728	39.530	9170179156.5	20.222	29.310	***0.18***
7/30/2020	6969.955	8.785	15.769	8383.294	9.650	17.268	7523641190.2	9.272	20.460	***0***
7/31/2020	6450.443	8.415	15.050	7762.583	9.287	16.964	7145517425.5	9.079	20.020	***0***
8/1/2020	6190.340	8.162	14.979	7900.808	9.762	17.305	6954528215.3	13.188	20.010	***0***
8/2/2020	7093.727	10.270	17.033	9801.968	15.922	22.240	7827565960.7	17.585	22.270	***0.29***
8/3/2020	6767.967	8.538	15.346	8117.853	9.663	17.172	7374180322.3	9.104	20.460	***0***
8/4/2020	6796.062	10.365	17.180	8920.731	24.649	28.896	7717920498.0	19.489	24.920	***0.9***
8/5/2020	4464.403	13.072	20.203	5583.196	26.407	31.097	3896577334.0	14.011	25.600	***0***
---	---	---	---	---	---	---	---	---	---	***4.61***

	MGD	CFS		MGD	CFS		MGD	CFS
Wet	21.851	33.808	Wet	53.561	82.871	Wet	39.601	61.271
Overall	16.639	25.744	Overall	42.105	65.146	Overall	29.736	46.008

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50

(T) Amherst Engineering Department Sewer Maintenance Division Downstream Routing Map

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Town of Amherst Engineering Department
Sewer Maintenance Division

Main Sanitary Sewer Interceptors

DOWNSTREAM SEWER

AMHERST PEANUT LINE & WEST SIDE INTERCEPTOR

460 Dodge Road - Proposed 26 Unit Apartment Building - Amherst Consolidated Sewer District

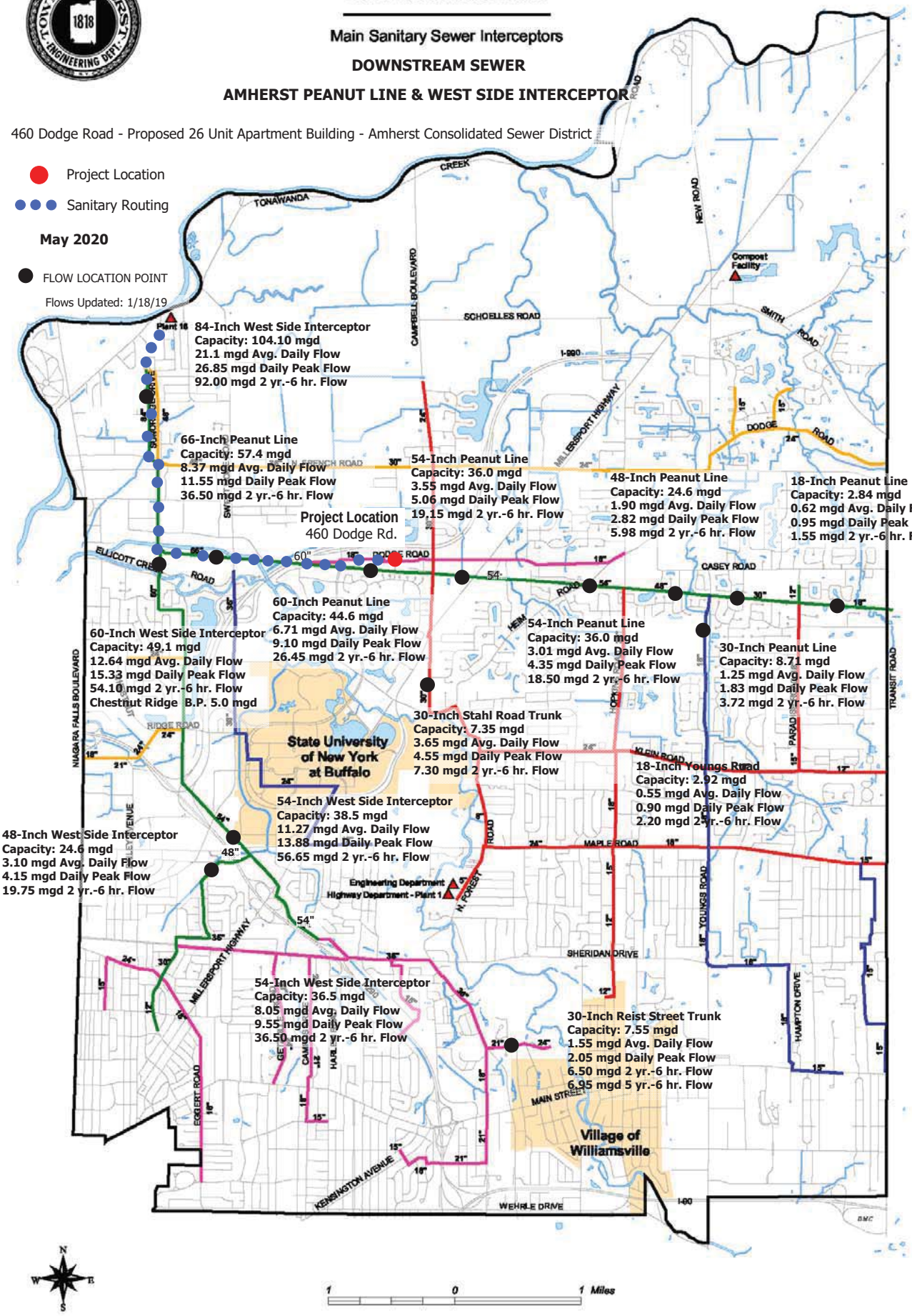
Project Location

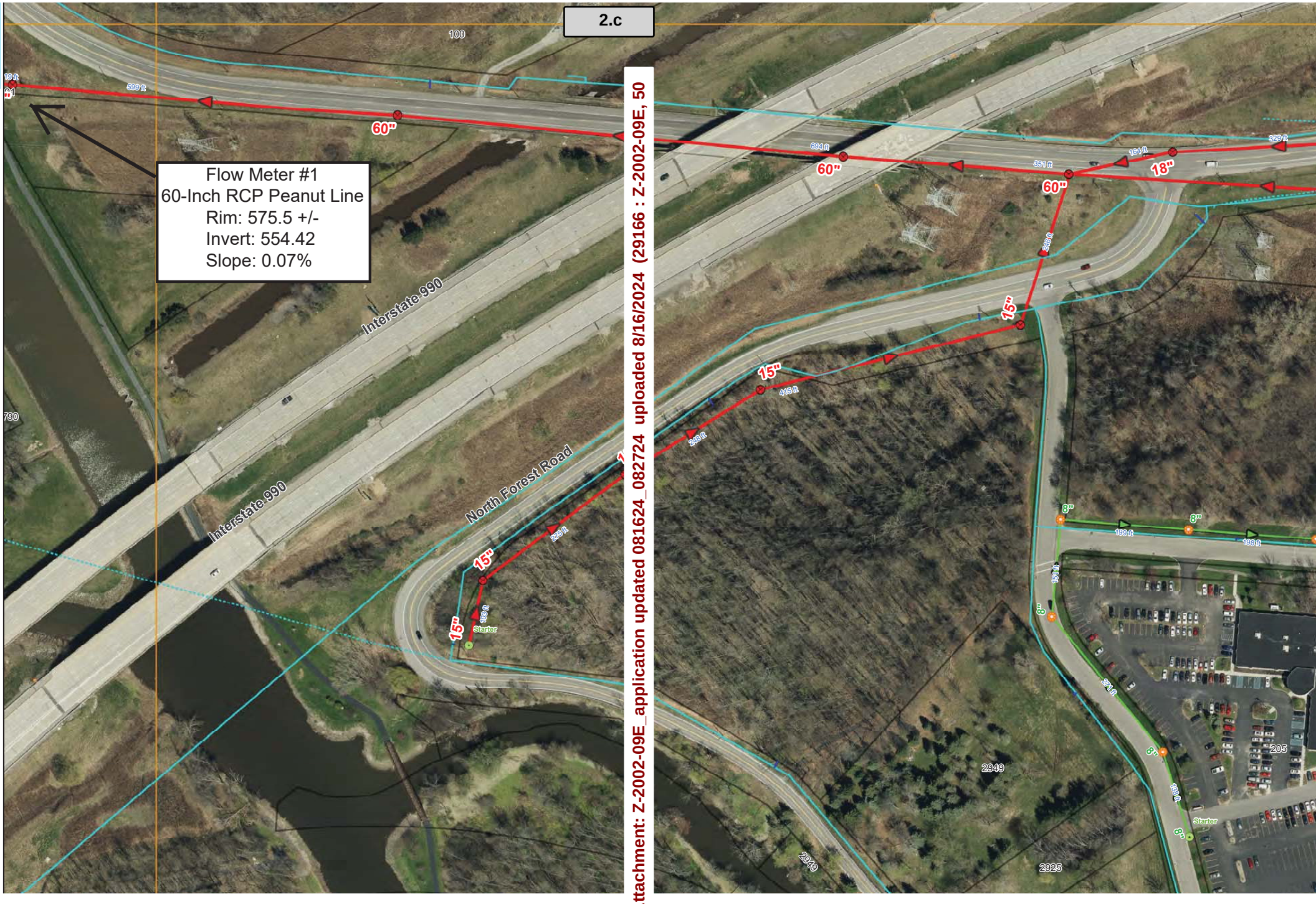
Sanitary Routing

May 2020

FLOW LOCATION POINT

Flows Updated: 1/18/19





Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50

348 N Ellicott Creek Rd
Buffalo, New York
Google
Street View
Flow Meter #2
2.c
Google
Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50

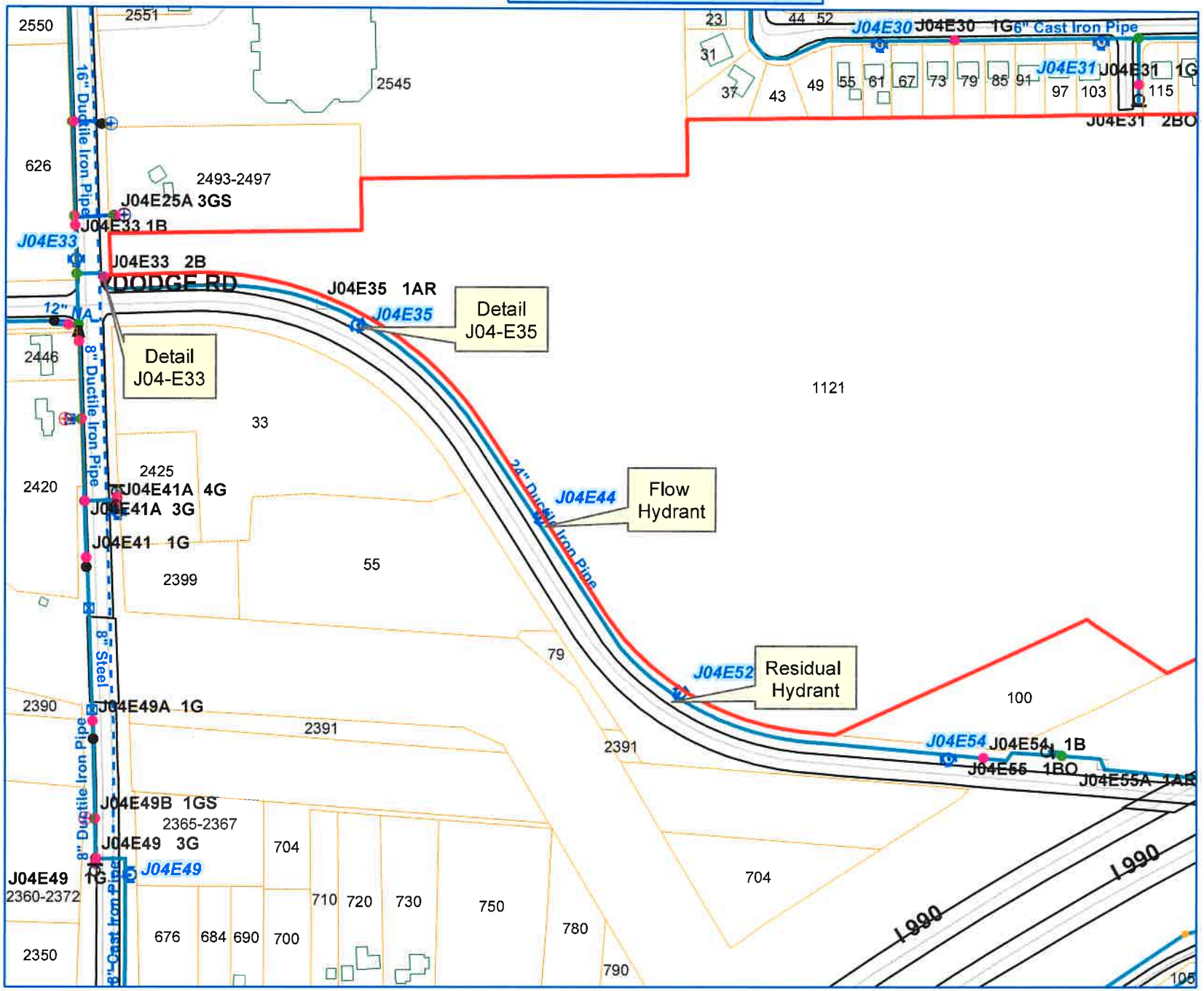
Flow Meter #3

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50

Water Demand Calculations

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

1121 Dodge Rd., AMTN

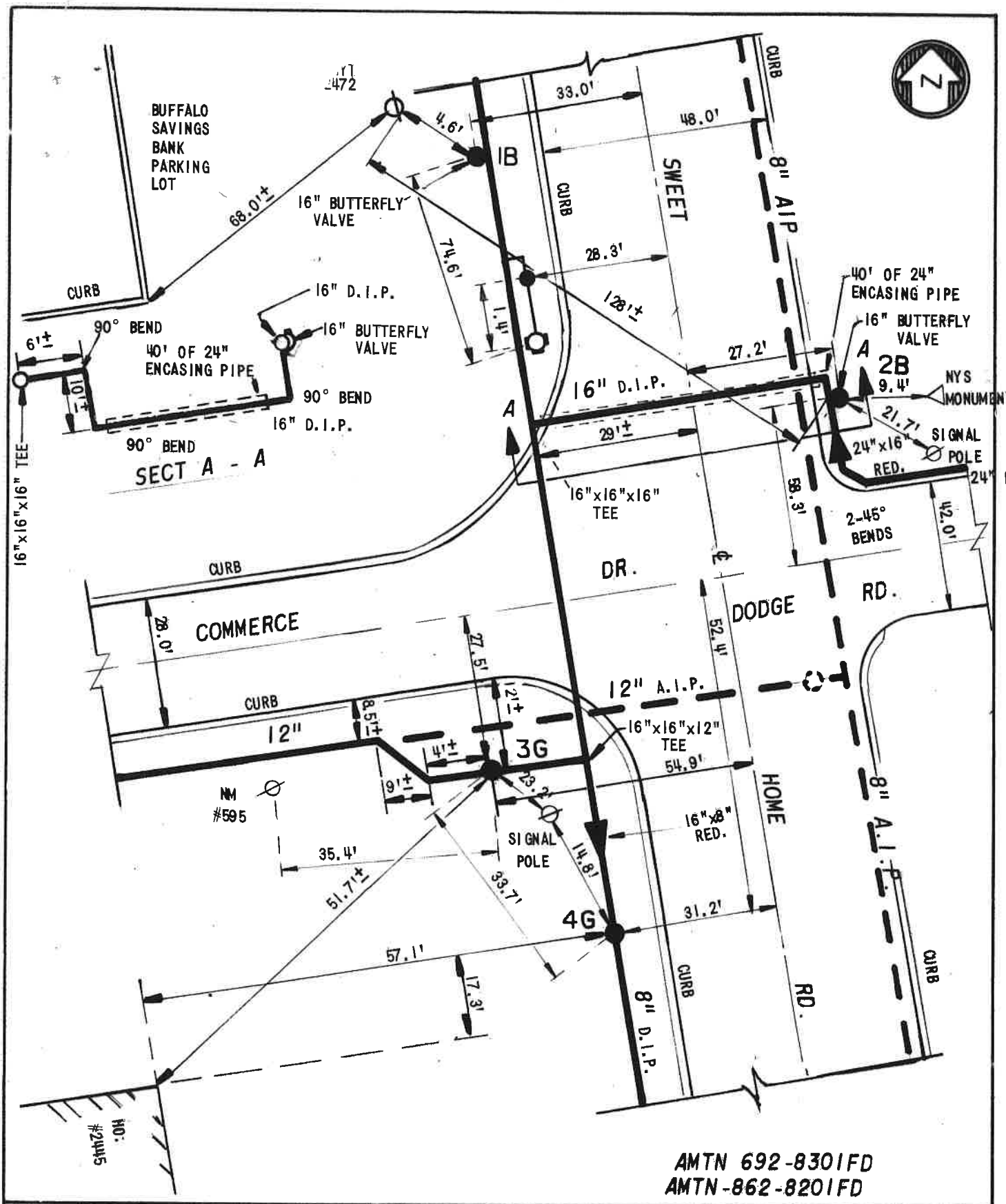


N

1 inch = 300 feet

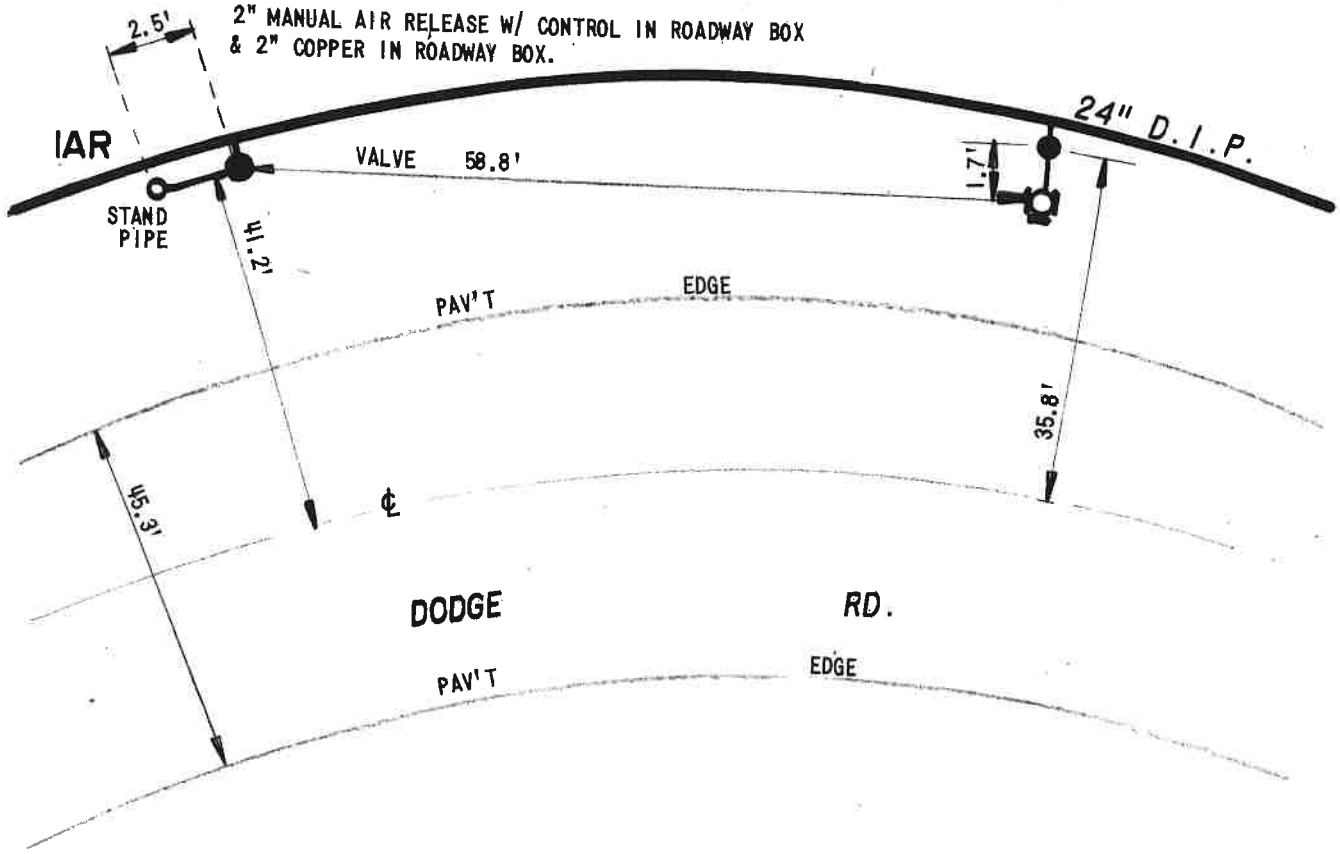
Legend:

Parcels



ERIE COUNTY WATER AUTHORITY, BUFFALO, NEW YORK	REVISED DR. BY: RLS DATE: 6-30-06 NOT TO SCALE	TOWN OF AMHERST W.D 15C	J04-E33 DETAIL SHEET NO.

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



AMTN-692-8301-FD

SHEET 1

ERIE COUNTY WATER AUTHORITY BUFFALO, NEW YORK	REVISED DR. BY: RLS DATE: 6-30-06 NOT TO SCALE	TOWN OF AMHERST W.D. 15C	J04-E35 DETAIL SHEET NO.

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

AMHERST
Size of Main/Branch: 24"/6" Fire District: 22028 GETZVILLE FD 11 Water District: 315 AMHERST DISTRICT 15C

Performed By: JRS & DPZ

Comments: HYDRANT FLOW TEST REQUESTED BY BILL GROFF
PRATT & HUTH, PHONE: 633-4844, FAX: 633-4940

Dischrge Coef: .90 Elvtn Usgs(ft): Static(psi): 105 Residual(psi): 98 Required Residual Pressure(psi): 20
Gallons Used..: 7,680 Total Flow(gpm): 2,558 Flow at Reqd Resid Pressure: 9,850

Flow Hydrants:

C	Flow Hyd	Flow Hydrant Address	Main/Brnch	Nzle	Size	Pitot	Flow	Comments
_	J04 E44	DODGE RD	24"/6"	1:	2.50	58.0	1,279	
		2ND HYD E/O SWEET HOME RD		2:	2.50	58.0	1,279	
				3:			Tot Flow:	2,558

Bottom

I=Flow Hydrant Inquiry
ENTER=Continue F3=Exit F6=Maintain Test F7=Test Hydrant Inquiry F15=Print Test Information

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Appendix B

Storm Sewer System Drainage Calculations

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Existing Runoff

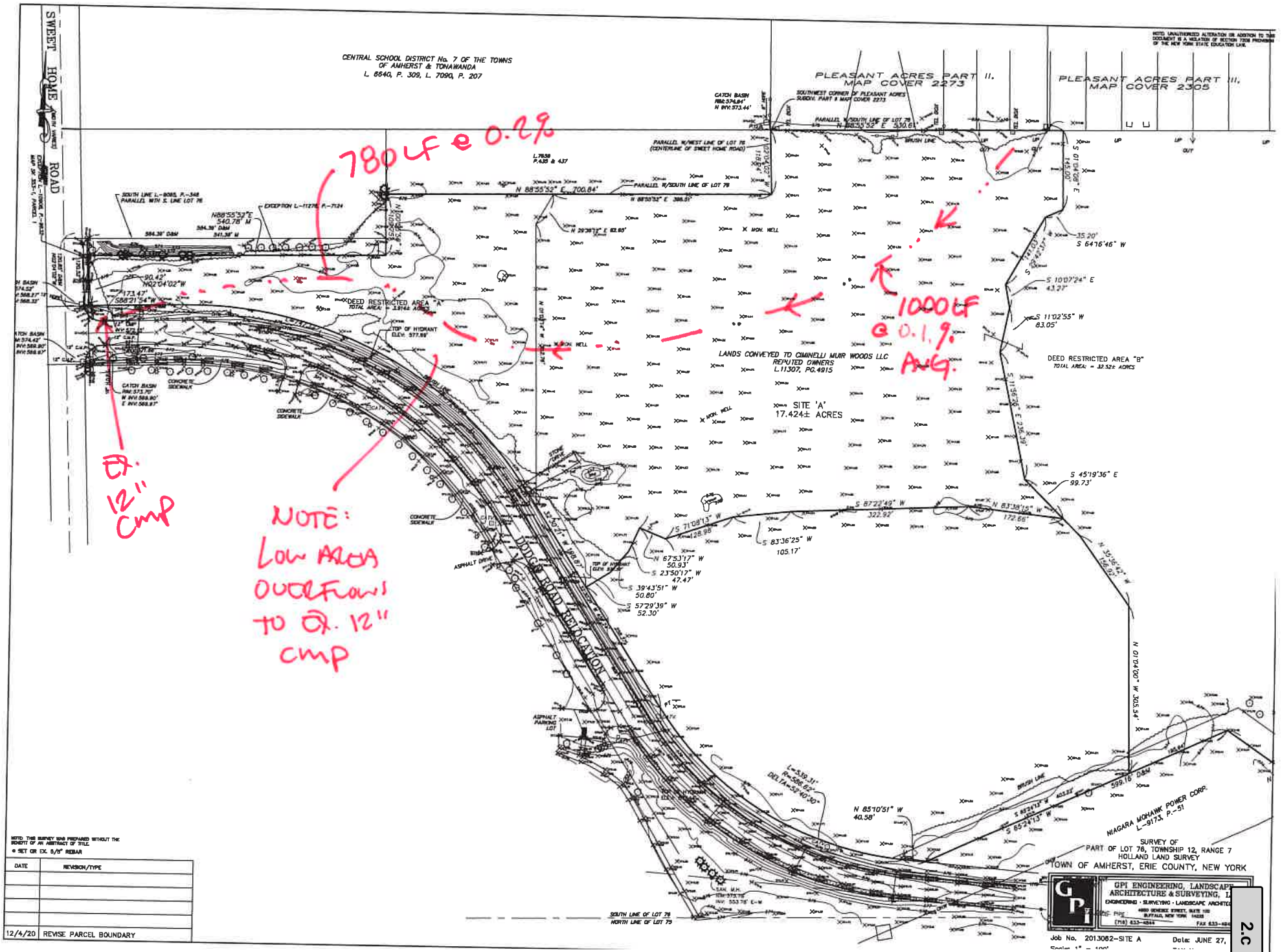
Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Existing

Subcat Reach Pond Link

Routing Diagram for 21.011 Existing
Prepared by Hewlett-Packard Company, Printed 3/1/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Events for Subcatchment 1S: Existing

Event	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	0.87	0.578	0.41
2-Year	1.34	0.851	0.60
5-Year	2.14	1.304	0.92
10-Year	2.94	1.752	1.24
25-Year	4.34	2.527	1.78
50-Year	5.69	3.272	2.31
100-Year	**7.33**	**4.181**	**2.95**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.830	77	Brush, Fair, HSG D (1S)
12.170	79	Woods, Fair, HSG D (1S)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
17.000	HSG D	1S
0.000	Other	

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	4.830	0.000	4.830	Brush, Fair	1S
0.000	0.000	0.000	12.170	0.000	12.170	Woods, Fair	1S

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Existing

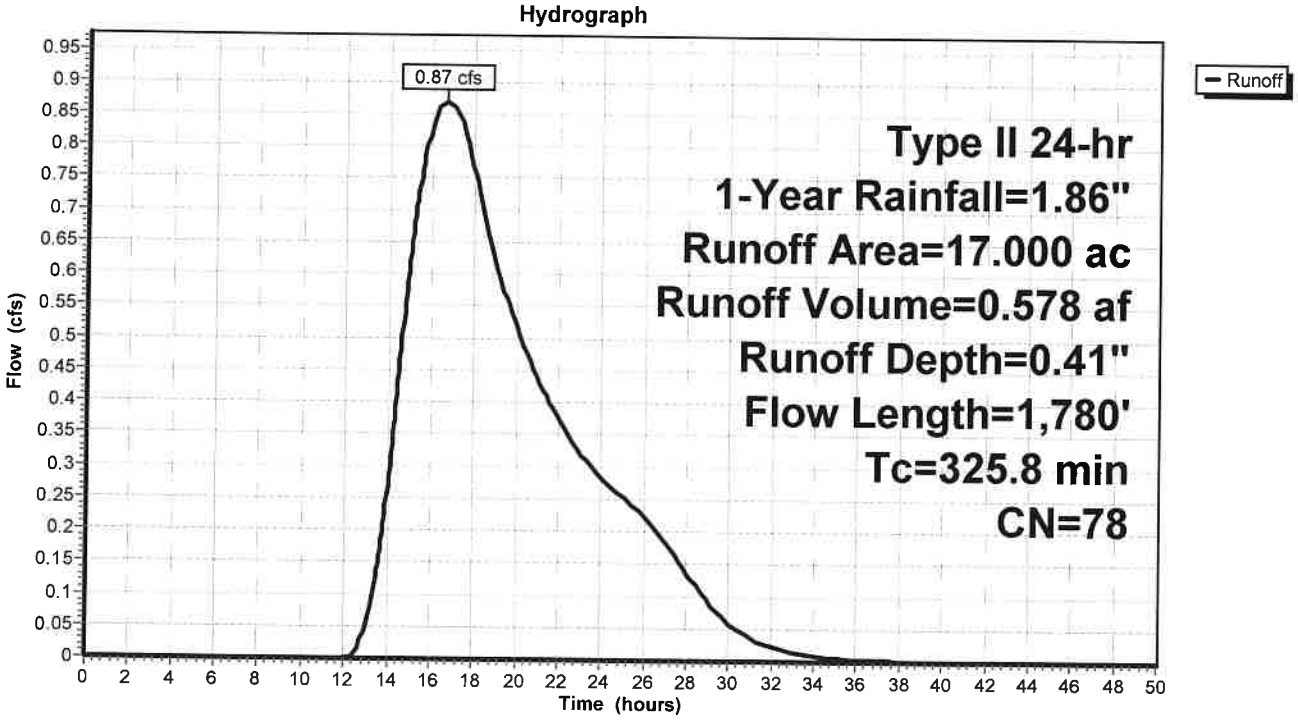
Runoff = 0.87 cfs @ 16.65 hrs, Volume= 0.578 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Existing

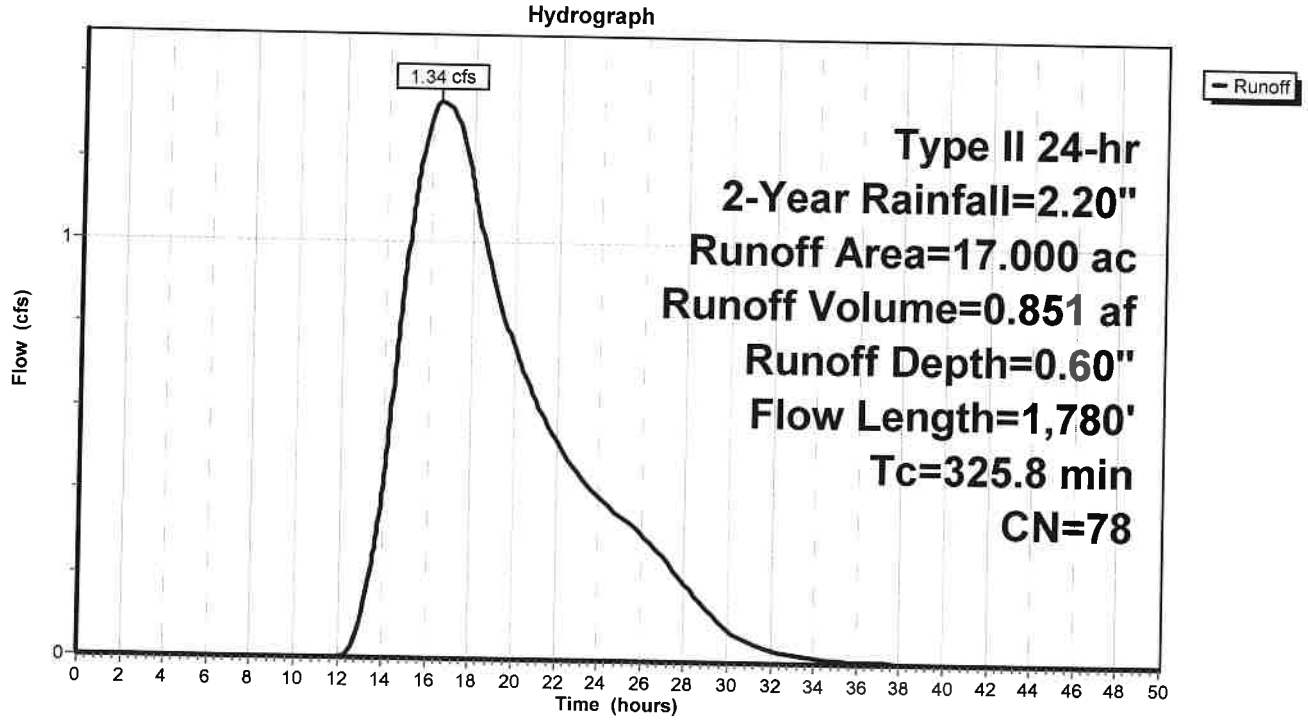
Runoff = 1.34 cfs @ 16.35 hrs, Volume= 0.851 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Existing

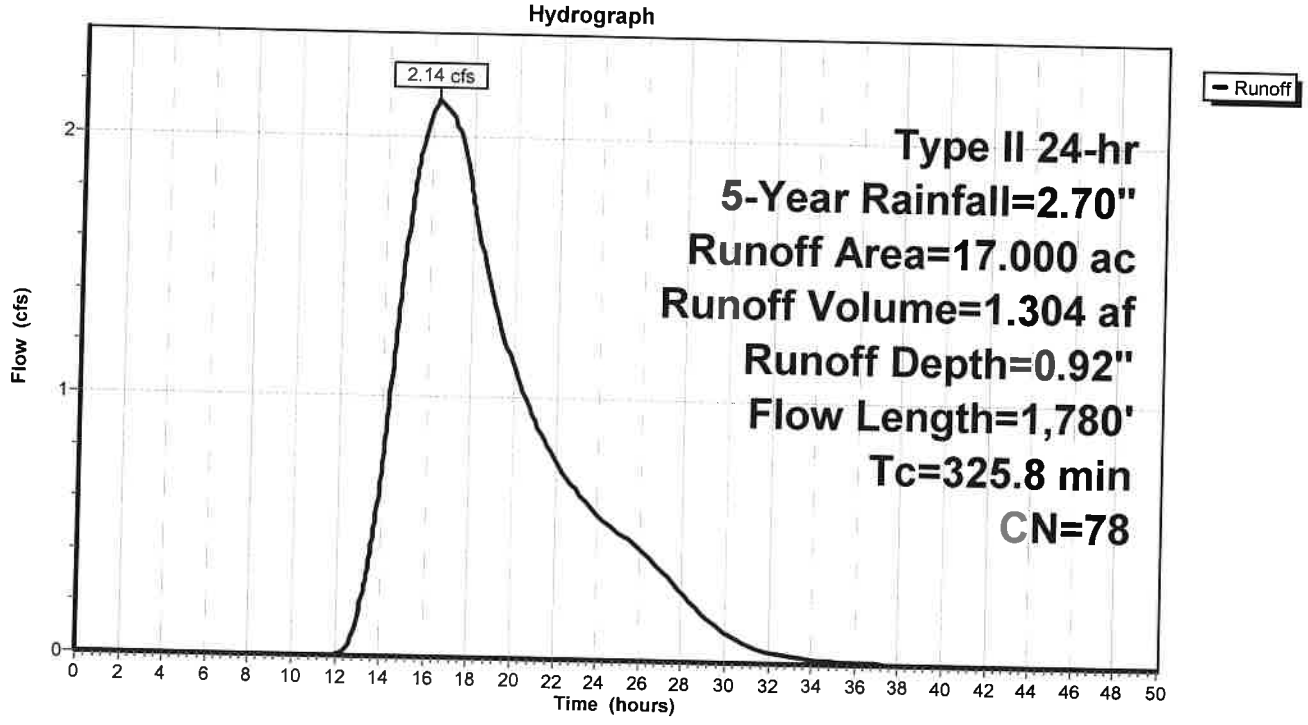
Runoff = 2.14 cfs @ 16.31 hrs, Volume= 1.304 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Existing

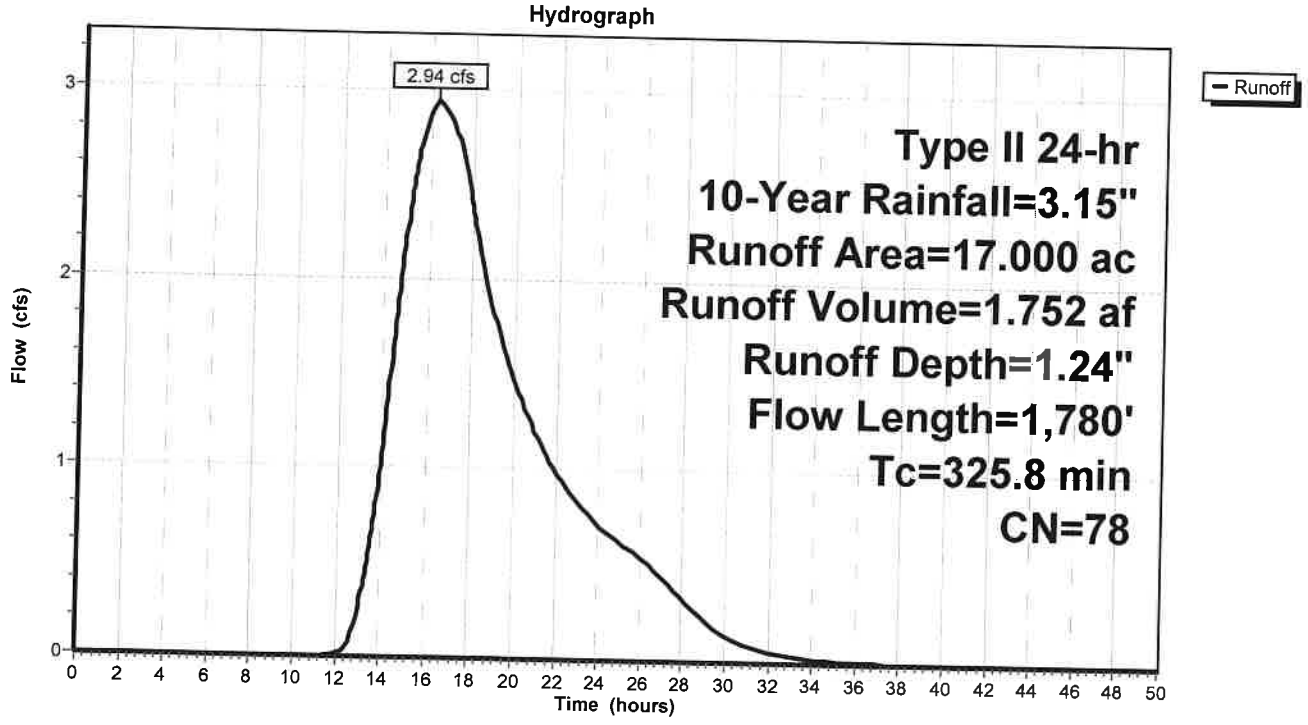
Runoff = 2.94 cfs @ 16.31 hrs, Volume= 1.752 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Existing

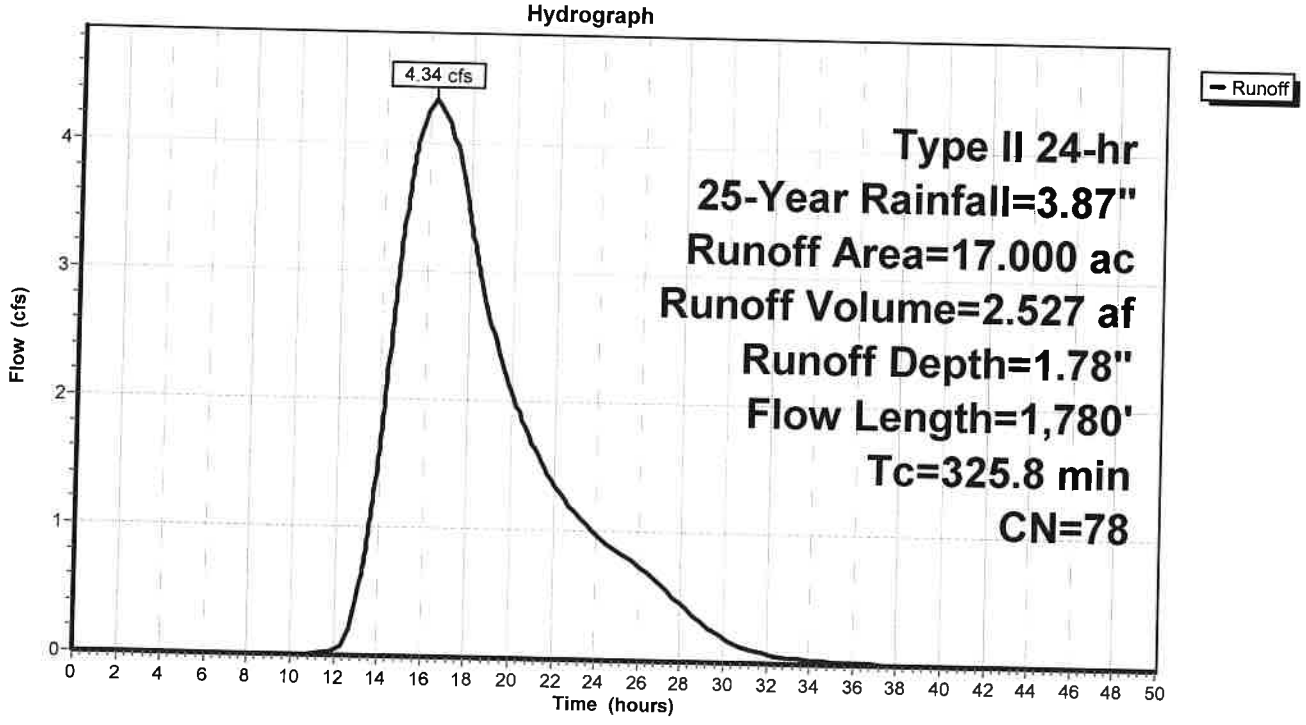
Runoff = 4.34 cfs @ 16.30 hrs, Volume= 2.527 af, Depth= 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Existing

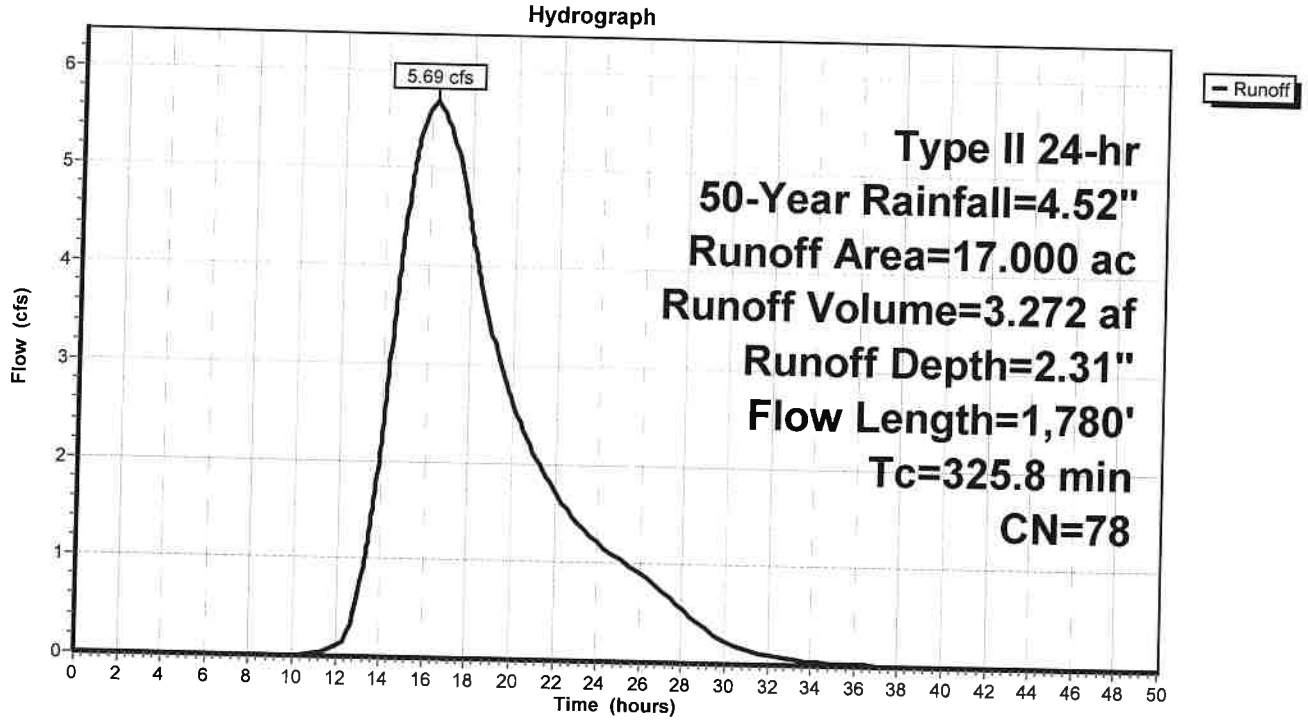
Runoff = 5.69 cfs @ 16.29 hrs, Volume= 3.272 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Existing

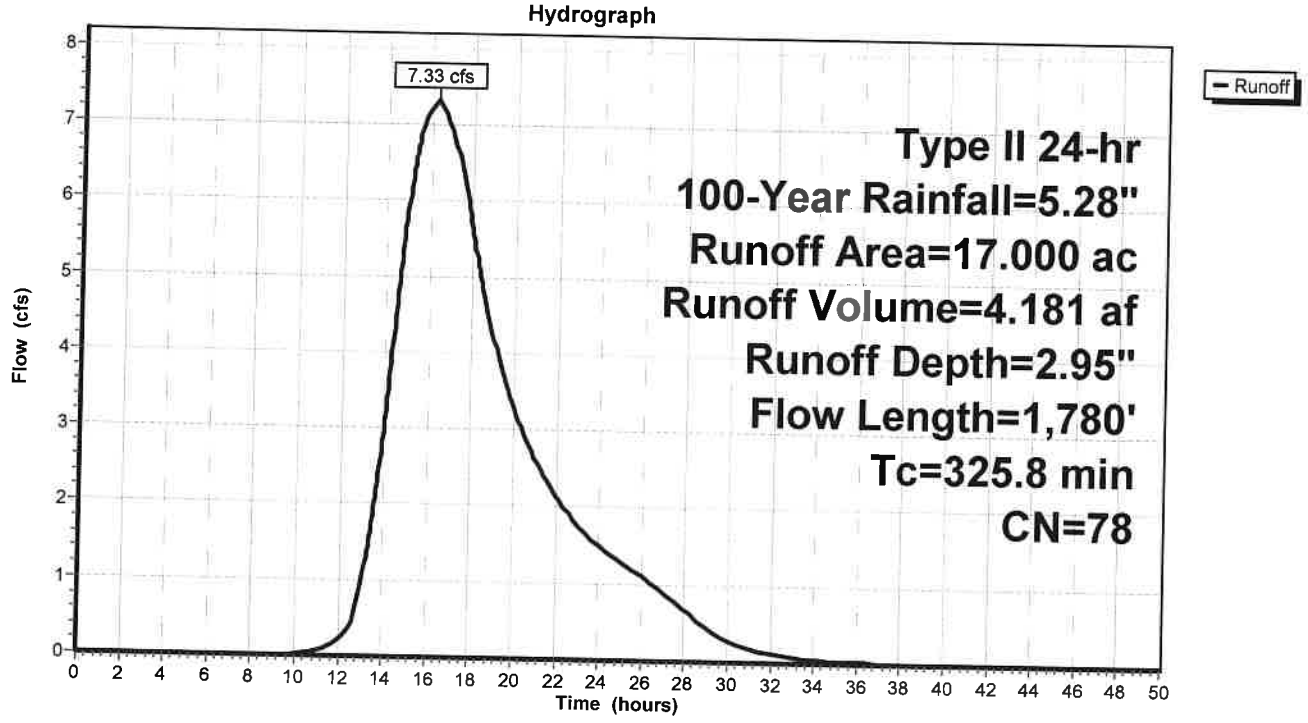
Runoff = 7.33 cfs @ 16.29 hrs, Volume= 4.181 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
12.170	79	Woods, Fair, HSG D
4.830	77	Brush, Fair, HSG D
17.000	78	Weighted Average
17.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
193.9	300	0.0010	0.03		**Sheet Flow, woods** Woods: Light underbrush n= 0.400 P2= 2.50"
73.8	700	0.0010	0.16		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
58.1	780	0.0020	0.22		**Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps
325.8	1,780	Total			

Subcatchment 1S: Existing



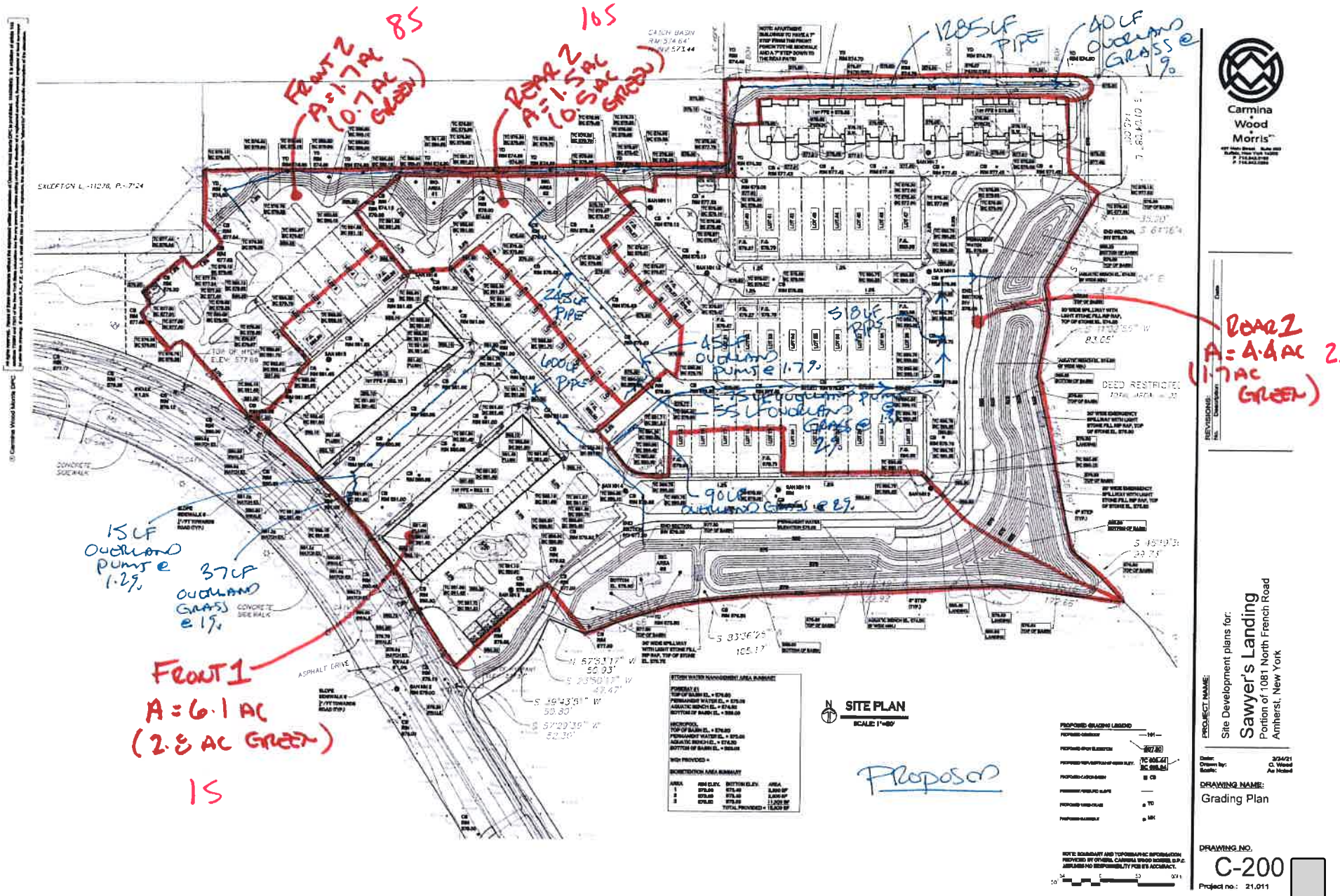
Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Proposed Runoff

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Proposed Runoff - East

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



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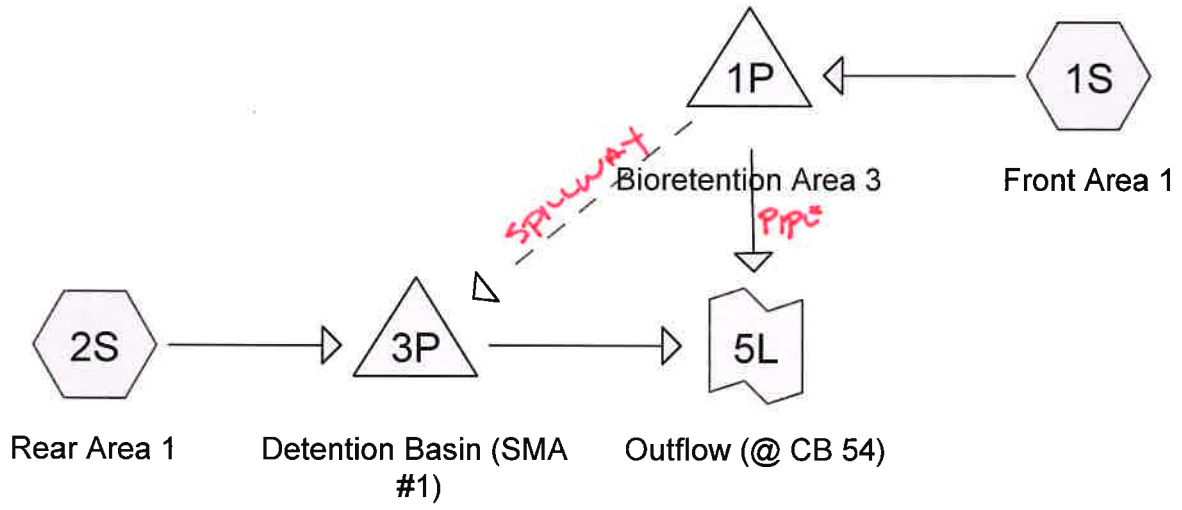

Subcat Reach Pond Link

Routing Diagram for 21.011 Proposed
Prepared by Hewlett-Packard Company, Printed 3/4/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

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Events for Link 5L: Outflow (@ CB 54)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-Year	2.78	2.78	**0.00**
2-Year	2.86	2.86	0.00
5-Year	3.01	3.01	0.00
10-Year	3.16	3.16	0.00
25-Year	3.36	3.36	0.00
50-Year	3.48	3.48	0.00
100-Year	**3.60**	**3.60**	0.00

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Events for Pond 3P: Detention Basin (SMA #1)

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	6.05	0.10	0.10	0.00	575.23	13,685
2-Year	12.29	0.18	0.18	0.00	575.32	19,129
5-Year	20.08	0.33	0.33	0.00	575.46	28,218
10-Year	26.01	0.47	0.47	0.00	575.60	37,117
25-Year	34.94	0.64	0.64	0.00	575.83	51,964
50-Year	42.93	1.97	0.72	1.25	576.00	62,935
100-Year	**52.24**	**8.57**	**0.78**	**7.80**	**576.11**	**70,722**

↑ TO DODGE RD

↑ TO WETLANDS

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Events for Pond 1P: Bioretention Area 3

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	8.17	4.38	2.74	1.63	575.82	7,520
2-Year	10.57	8.19	2.79	5.41	575.91	8,359
5-Year	14.18	12.91	2.83	10.09	575.99	9,153
10-Year	17.46	16.45	2.85	13.60	576.04	9,672
25-Year	22.74	21.73	2.89	18.84	576.11	10,375
50-Year	27.50	26.43	2.91	23.52	576.17	10,954
100-Year	**33.05**	**31.92**	**2.94**	**28.98**	**576.23**	**11,585**

↑ TO DODGE RD

↑ TO BASIN

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.500	80	>75% Grass cover, Good, HSG D (1S, 2S)
3.200	98	Paved parking, HSG D (1S, 2S)
2.800	98	Roofs, HSG D (1S, 2S)
10.500	**90**	**TOTAL AREA**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
10.500	HSG D	1S, 2S
0.000	Other	
10.500		**TOTAL AREA**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	4.500	0.000	4.500	>75% Grass cover, Good	1S, 2S
0.000	0.000	0.000	3.200	0.000	3.200	Paved parking	1S, 2S
0.000	0.000	0.000	2.800	0.000	2.800	Roofs	1S, 2S
0.000	**0.000**	**0.000**	**10.500**	**0.000**	**10.500**	**TOTAL AREA**	

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=0.98"
Flow Length=652' Tc=13.3 min CN=90 Runoff=8.17 cfs 0.496 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.04"
Flow Length=683' Tc=14.4 min CN=91 Runoff=6.05 cfs 0.382 af

Pond 1P: Bioretention Area 3 Peak Elev=575.82' Storage=7,520 cf Inflow=8.17 cfs 0.496 af
Primary=2.74 cfs 0.475 af Secondary=1.63 cfs 0.021 af Outflow=4.38 cfs 0.496 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.23' Storage=13,685 cf Inflow=6.05 cfs 0.403 af
Primary=0.10 cfs 0.249 af Secondary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.249 af

Link 5L: Outflow (@ CB 54) Inflow=2.78 cfs 0.724 af
Primary=2.78 cfs 0.724 af

Total Runoff Area = 10.500 ac Runoff Volume = 0.878 af Average Runoff Depth = 1.00"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Front Area 1

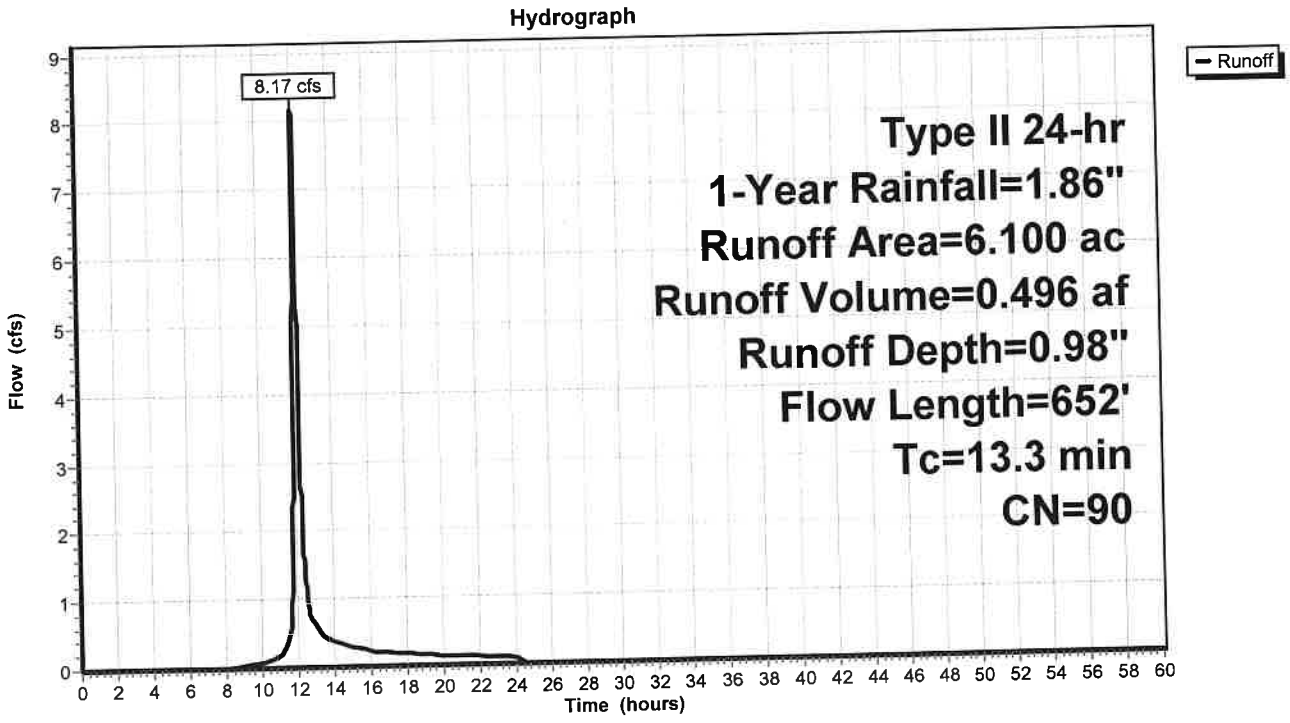
Runoff = 8.17 cfs @ 12.05 hrs, Volume= 0.496 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.00
9.00	0.27	0.00	0.02
10.00	0.34	0.01	0.07
11.00	0.44	0.03	0.20
12.00	1.23	0.48	**7.23**
13.00	1.44	0.63	**0.63**
14.00	1.53	0.70	0.37
15.00	1.59	0.75	0.29
16.00	1.64	0.79	0.23
17.00	1.68	0.83	0.20
18.00	1.71	0.85	0.17
19.00	1.74	0.88	0.15
20.00	1.77	0.90	0.13
21.00	1.79	0.92	0.12
22.00	1.82	0.94	0.12
23.00	1.84	0.96	0.11
24.00	**1.86**	**0.98**	0.11
25.00	1.86	0.98	0.00
26.00	1.86	0.98	0.00
27.00	1.86	0.98	0.00
28.00	1.86	0.98	0.00
29.00	1.86	0.98	0.00
30.00	1.86	0.98	0.00
31.00	1.86	0.98	0.00
32.00	1.86	0.98	0.00
33.00	1.86	0.98	0.00
34.00	1.86	0.98	0.00
35.00	1.86	0.98	0.00
36.00	1.86	0.98	0.00
37.00	1.86	0.98	0.00
38.00	1.86	0.98	0.00
39.00	1.86	0.98	0.00
40.00	1.86	0.98	0.00
41.00	1.86	0.98	0.00
42.00	1.86	0.98	0.00
43.00	1.86	0.98	0.00
44.00	1.86	0.98	0.00
45.00	1.86	0.98	0.00
46.00	1.86	0.98	0.00
47.00	1.86	0.98	0.00
48.00	1.86	0.98	0.00
49.00	1.86	0.98	0.00
50.00	1.86	0.98	0.00
51.00	1.86	0.98	0.00
52.00	1.86	0.98	0.00
53.00	1.86	0.98	0.00
54.00	1.86	0.98	0.00
55.00	1.86	0.98	0.00
56.00	1.86	0.98	0.00
57.00	1.86	0.98	0.00
58.00	1.86	0.98	0.00
59.00	1.86	0.98	0.00
60.00	1.86	0.98	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 2S: Rear Area 1

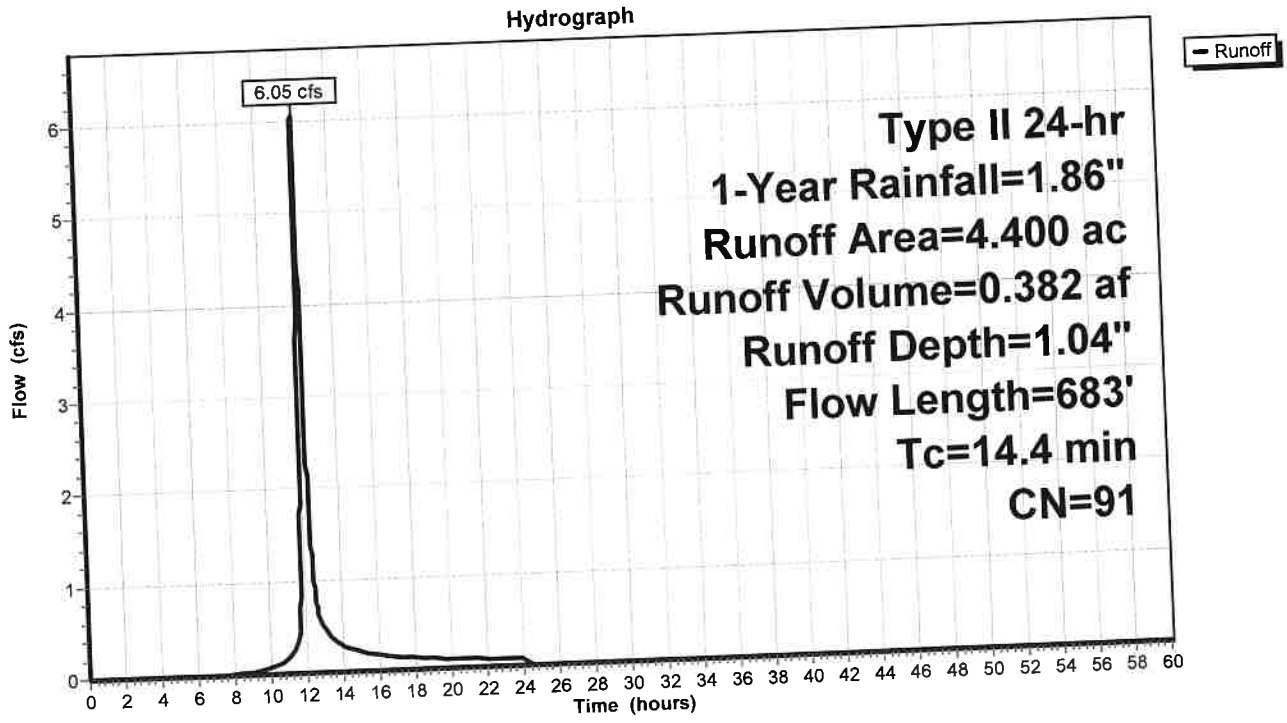
Runoff = 6.05 cfs @ 12.06 hrs, Volume= 0.382 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.01
9.00	0.27	0.01	0.03
10.00	0.34	0.02	0.06
11.00	0.44	0.05	0.17
12.00	1.23	0.53	**5.18**
13.00	1.44	0.69	**0.48**
14.00	1.53	0.76	0.28
15.00	1.59	0.81	0.21
16.00	1.64	0.85	0.17
17.00	1.68	0.89	0.15
18.00	1.71	0.92	0.13
19.00	1.74	0.94	0.11
20.00	1.77	0.97	0.10
21.00	1.79	0.99	0.09
22.00	1.82	1.01	0.09
23.00	1.84	1.02	0.08
24.00	**1.86**	**1.04**	0.08
25.00	1.86	1.04	0.00
26.00	1.86	1.04	0.00
27.00	1.86	1.04	0.00
28.00	1.86	1.04	0.00
29.00	1.86	1.04	0.00
30.00	1.86	1.04	0.00
31.00	1.86	1.04	0.00
32.00	1.86	1.04	0.00
33.00	1.86	1.04	0.00
34.00	1.86	1.04	0.00
35.00	1.86	1.04	0.00
36.00	1.86	1.04	0.00
37.00	1.86	1.04	0.00
38.00	1.86	1.04	0.00
39.00	1.86	1.04	0.00
40.00	1.86	1.04	0.00
41.00	1.86	1.04	0.00
42.00	1.86	1.04	0.00
43.00	1.86	1.04	0.00
44.00	1.86	1.04	0.00
45.00	1.86	1.04	0.00
46.00	1.86	1.04	0.00
47.00	1.86	1.04	0.00
48.00	1.86	1.04	0.00
49.00	1.86	1.04	0.00
50.00	1.86	1.04	0.00
51.00	1.86	1.04	0.00
52.00	1.86	1.04	0.00
53.00	1.86	1.04	0.00
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56.00	1.86	1.04	0.00
57.00	1.86	1.04	0.00
58.00	1.86	1.04	0.00
59.00	1.86	1.04	0.00
60.00	1.86	1.04	0.00

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Summary for Pond 1P: Bioretention Area 3

Inflow Area =	6.100 ac,	54.10% Impervious,	Inflow Depth =	0.98"	for 1-Year event
Inflow =	8.17 cfs @	12.05 hrs,	Volume=	0.496 af	
Outflow =	4.38 cfs @	12.19 hrs,	Volume=	0.496 af,	Atten= 46%, Lag= 8.2 min
Primary =	2.74 cfs @	12.19 hrs,	Volume=	0.475 af	
Secondary =	1.63 cfs @	12.19 hrs,	Volume=	0.021 af	

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.82' @ 12.19 hrs Surf.Area= 9,695 sf Storage= 7,520 cf

Plug-Flow detention time= 319.4 min calculated for 0.496 af (100% of inflow)
Center-of-Mass det. time= 319.4 min (1,152.7 - 833.3)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.74 cfs @ 12.19 hrs HW=575.82' (Free Discharge)
↑—**1=8" pipe** (Barrel Controls 2.74 cfs @ 7.86 fps)
↑—**2=Grate** (Passes < 3.80 cfs potential flow)
↑—**3=Exfiltration** (Passes < 0.06 cfs potential flow)

Secondary OutFlow Max=1.62 cfs @ 12.19 hrs HW=575.82' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Weir Controls 1.62 cfs @ 0.77 fps)

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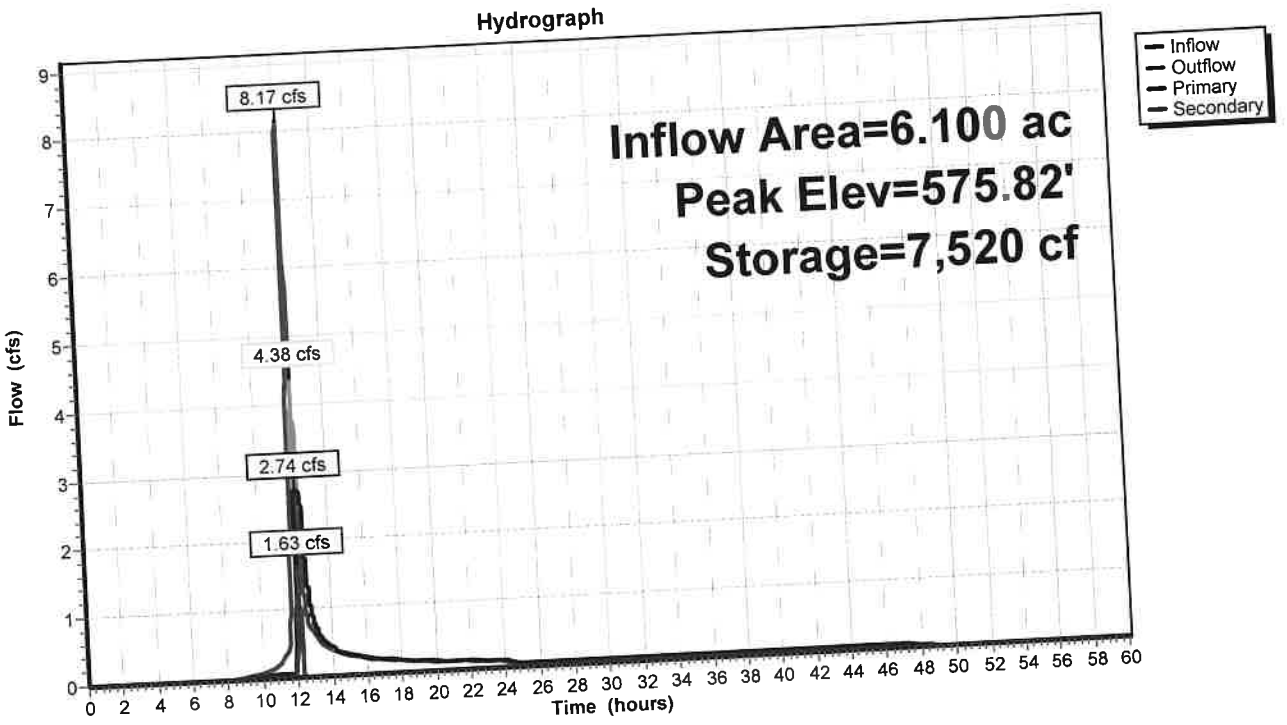
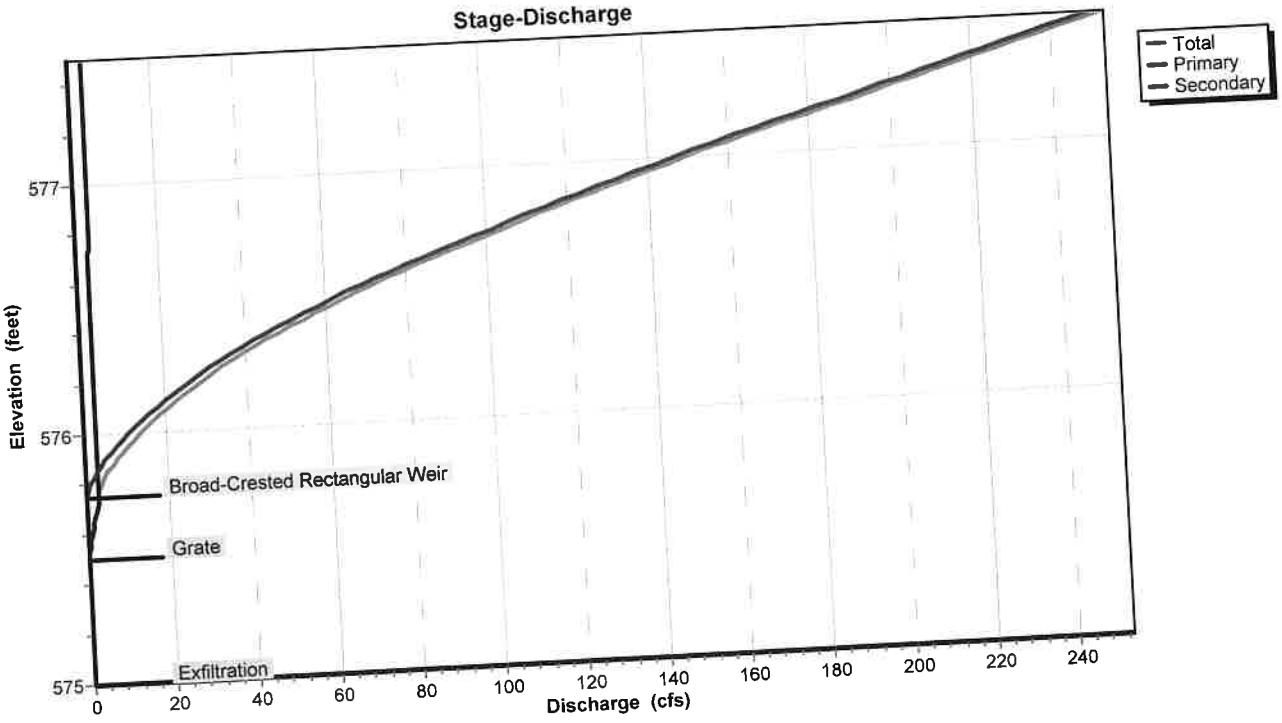
Pond 1P: Bioretention Area 3



Pond 1P: Bioretention Area 3



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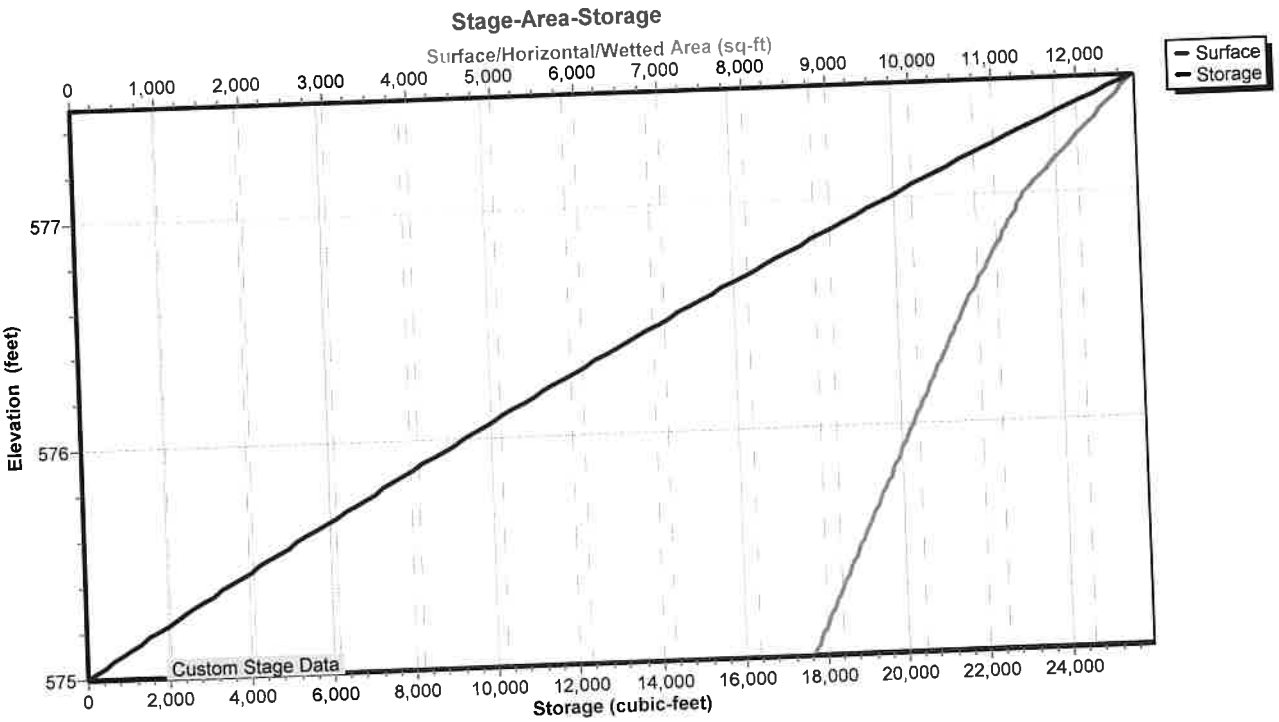
Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.00	0	575.00	0.00	0.00	0.00
10.00	0.07	121	575.01	0.03	0.03	0.00
12.00	**7.23**	**4,533**	**575.51**	**0.08**	**0.08**	**0.00**
14.00	**0.37**	**5,004**	**575.56**	**0.42**	**0.42**	**0.00**
16.00	0.23	4,812	575.54	0.25	0.25	0.00
18.00	0.17	4,735	575.53	0.18	0.18	0.00
20.00	0.13	4,666	575.52	0.14	0.14	0.00
22.00	0.12	4,618	575.51	0.12	0.12	0.00
24.00	0.11	4,598	575.51	0.11	0.11	0.00
26.00	0.00	4,207	575.47	0.06	0.06	0.00
28.00	0.00	3,812	575.43	0.05	0.05	0.00
30.00	0.00	3,420	575.38	0.05	0.05	0.00
32.00	0.00	3,031	575.34	0.05	0.05	0.00
34.00	0.00	2,646	575.30	0.05	0.05	0.00
36.00	0.00	2,264	575.26	0.05	0.05	0.00
38.00	0.00	1,885	575.21	0.05	0.05	0.00
40.00	0.00	1,510	575.17	0.05	0.05	0.00
42.00	0.00	1,138	575.13	0.05	0.05	0.00
44.00	0.00	769	575.09	0.05	0.05	0.00
46.00	0.00	404	575.05	0.05	0.05	0.00
48.00	0.00	96	575.01	0.02	0.02	0.00
50.00	0.00	18	575.00	0.00	0.00	0.00
52.00	0.00	3	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 1.10" for 1-Year event
Inflow = 6.05 cfs @ 12.06 hrs, Volume= 0.403 af
Outflow = 0.10 cfs @ 19.66 hrs, Volume= 0.249 af, Atten= 98%, Lag= 455.7 min
Primary = 0.10 cfs @ 19.66 hrs, Volume= 0.249 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.23' @ 19.66 hrs Surf.Area= 60,952 sf Storage= 13,685 cf

Plug-Flow detention time= 1,134.7 min calculated for 0.249 af (62% of inflow)
Center-of-Mass det. time= 1,028.3 min (1,852.6 - 824.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

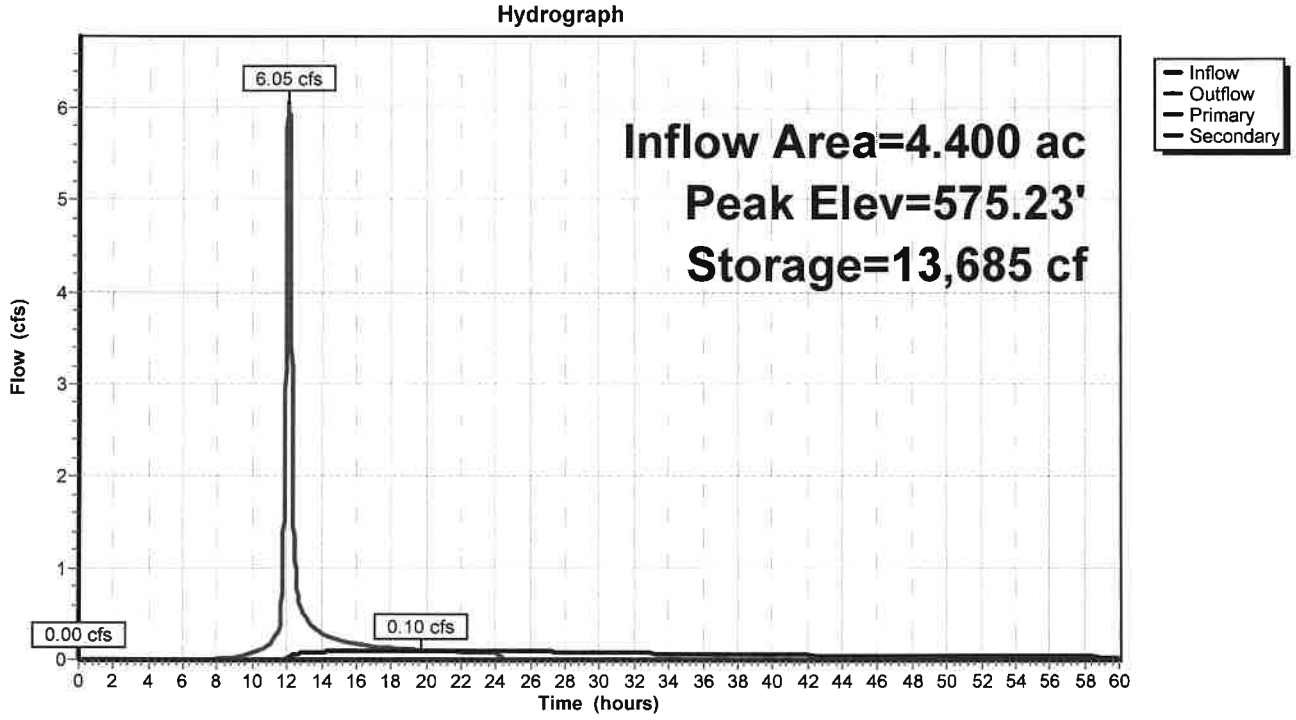
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.10 cfs @ 19.66 hrs HW=575.23' (Free Discharge)
↑**1=12" outlet pipe** (Passes 0.10 cfs of 1.85 cfs potential flow)
↑**2=low flow outlet pipe** (Barrel Controls 0.10 cfs @ 1.70 fps)
3=Grate (Controls 0.00 cfs)

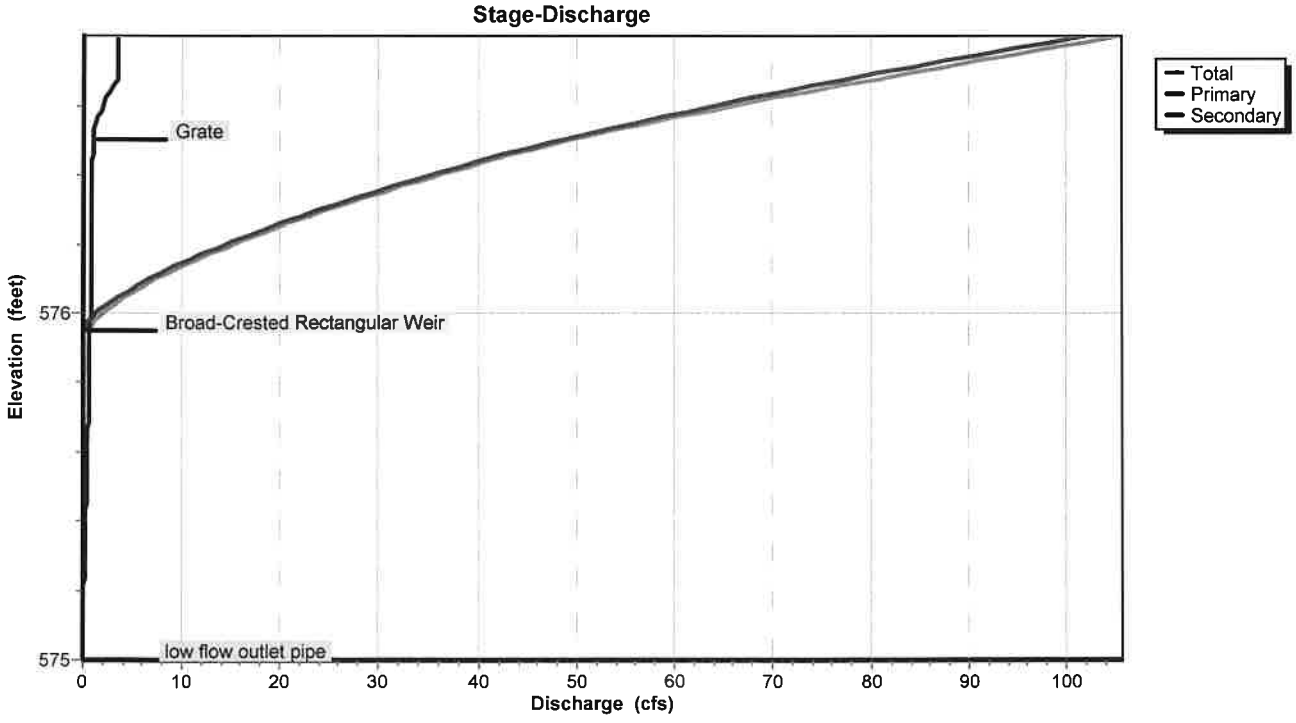
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)

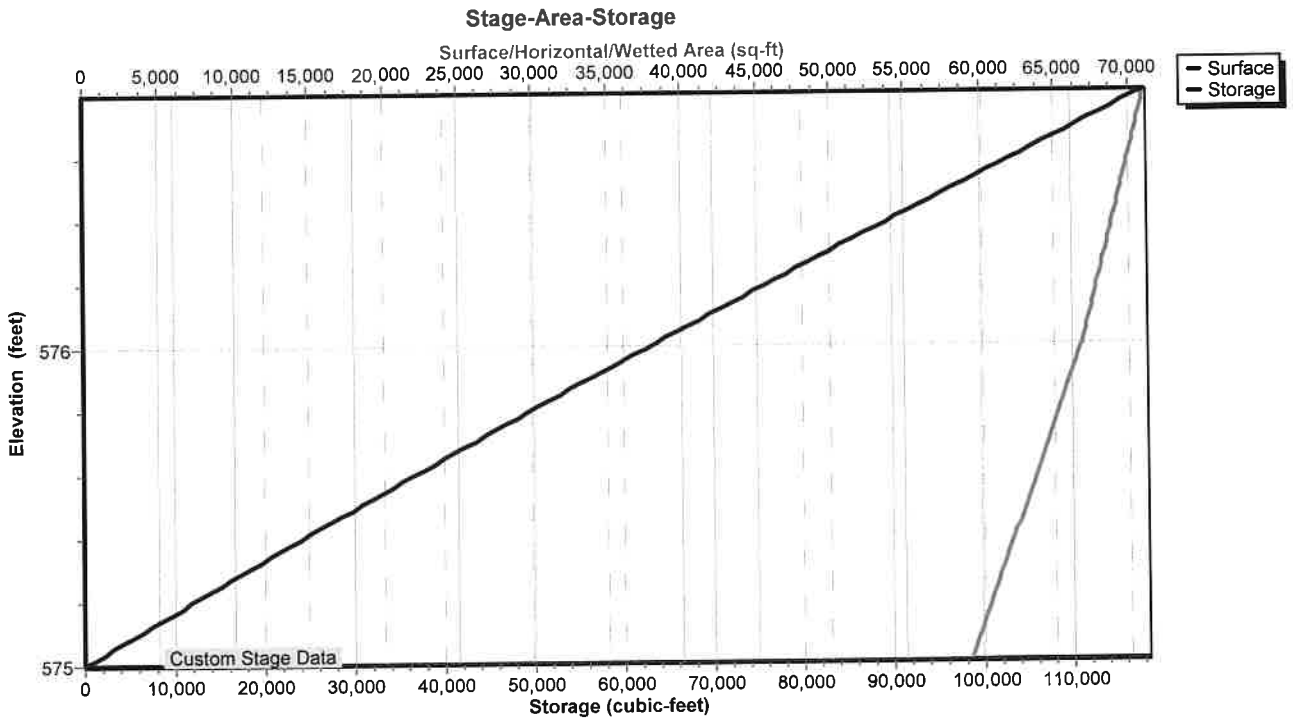


Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.01	5	575.00	0.00	0.00	0.00
10.00	0.06	218	575.00	0.00	0.00	0.00
12.00	**5.18**	3,798	575.06	0.01	0.01	0.00
14.00	**0.28**	12,350	575.21	0.08	0.08	0.00
16.00	0.17	13,252	575.22	0.10	0.10	0.00
18.00	0.13	**13,599**	**575.23**	**0.10**	**0.10**	0.00
20.00	0.10	**13,682**	**575.23**	**0.10**	**0.10**	0.00
22.00	0.09	13,599	575.23	0.10	0.10	0.00
24.00	0.08	13,477	575.22	0.10	0.10	0.00
26.00	0.00	12,859	575.21	0.09	0.09	0.00
28.00	0.00	12,236	575.20	0.08	0.08	0.00
30.00	0.00	11,664	575.19	0.08	0.08	0.00
32.00	0.00	11,139	575.19	0.07	0.07	0.00
34.00	0.00	10,655	575.18	0.06	0.06	0.00
36.00	0.00	10,207	575.17	0.06	0.06	0.00
38.00	0.00	9,792	575.16	0.06	0.06	0.00
40.00	0.00	9,408	575.16	0.05	0.05	0.00
42.00	0.00	9,050	575.15	0.05	0.05	0.00
44.00	0.00	8,716	575.15	0.04	0.04	0.00
46.00	0.00	8,404	575.14	0.04	0.04	0.00
48.00	0.00	8,113	575.14	0.04	0.04	0.00
50.00	0.00	7,839	575.13	0.04	0.04	0.00
52.00	0.00	7,582	575.13	0.03	0.03	0.00
54.00	0.00	7,341	575.12	0.03	0.03	0.00
56.00	0.00	7,114	575.12	0.03	0.03	0.00
58.00	0.00	6,899	575.12	0.03	0.03	0.00
60.00	0.00	6,696	575.11	0.03	0.03	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

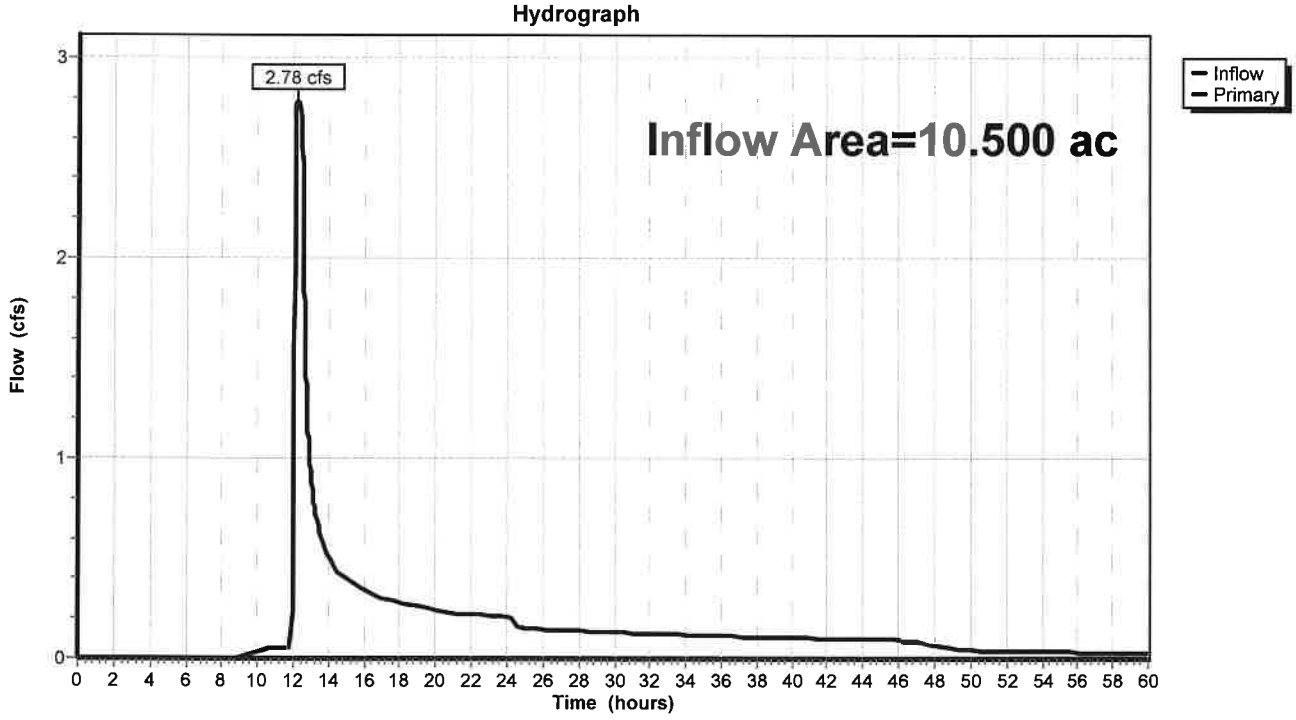
Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 0.83" for 1-Year event
Inflow = 2.78 cfs @ 12.22 hrs, Volume= 0.724 af
Primary = 2.78 cfs @ 12.22 hrs, Volume= 0.724 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.04	0.00	0.04
1.00	0.00	0.00	0.00	53.00	0.03	0.00	0.03
2.00	0.00	0.00	0.00	54.00	0.03	0.00	0.03
3.00	0.00	0.00	0.00	55.00	0.03	0.00	0.03
4.00	0.00	0.00	0.00	56.00	0.03	0.00	0.03
5.00	0.00	0.00	0.00	57.00	0.03	0.00	0.03
6.00	0.00	0.00	0.00	58.00	0.03	0.00	0.03
7.00	0.00	0.00	0.00	59.00	0.03	0.00	0.03
8.00	0.00	0.00	0.00	60.00	0.03	0.00	0.03
9.00	0.01	0.00	0.01				
10.00	0.03	0.00	0.03				
11.00	0.05	0.00	0.05				
12.00	**0.09**	0.00	**0.09**				
13.00	**0.91**	0.00	**0.91**				
14.00	0.51	0.00	0.51				
15.00	0.40	0.00	0.40				
16.00	0.34	0.00	0.34				
17.00	0.30	0.00	0.30				
18.00	0.28	0.00	0.28				
19.00	0.26	0.00	0.26				
20.00	0.24	0.00	0.24				
21.00	0.23	0.00	0.23				
22.00	0.22	0.00	0.22				
23.00	0.21	0.00	0.21				
24.00	0.21	0.00	0.21				
25.00	0.15	0.00	0.15				
26.00	0.15	0.00	0.15				
27.00	0.14	0.00	0.14				
28.00	0.14	0.00	0.14				
29.00	0.13	0.00	0.13				
30.00	0.13	0.00	0.13				
31.00	0.13	0.00	0.13				
32.00	0.12	0.00	0.12				
33.00	0.12	0.00	0.12				
34.00	0.12	0.00	0.12				
35.00	0.12	0.00	0.12				
36.00	0.11	0.00	0.11				
37.00	0.11	0.00	0.11				
38.00	0.11	0.00	0.11				
39.00	0.11	0.00	0.11				
40.00	0.10	0.00	0.10				
41.00	0.10	0.00	0.10				
42.00	0.10	0.00	0.10				
43.00	0.10	0.00	0.10				
44.00	0.10	0.00	0.10				
45.00	0.09	0.00	0.09				
46.00	0.09	0.00	0.09				
47.00	0.09	0.00	0.09				
48.00	0.06	0.00	0.06				
49.00	0.05	0.00	0.05				
50.00	0.04	0.00	0.04				
51.00	0.04	0.00	0.04				

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=1.27"
Flow Length=652' Tc=13.3 min CN=90 Runoff=10.57 cfs 0.644 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.34"
Flow Length=683' Tc=14.4 min CN=91 Runoff=7.75 cfs 0.491 af

Pond 1P: Bioretention Area 3 Peak Elev=575.91' Storage=8,359 cf Inflow=10.57 cfs 0.644 af
Primary=2.79 cfs 0.556 af Secondary=5.41 cfs 0.088 af Outflow=8.19 cfs 0.644 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.32' Storage=19,128 cf Inflow=12.29 cfs 0.579 af
Primary=0.18 cfs 0.400 af Secondary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.400 af

Link 5L: Outflow (@ CB 54) Inflow=2.86 cfs 0.956 af
Primary=2.86 cfs 0.956 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.135 af Average Runoff Depth = 1.30"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Front Area 1

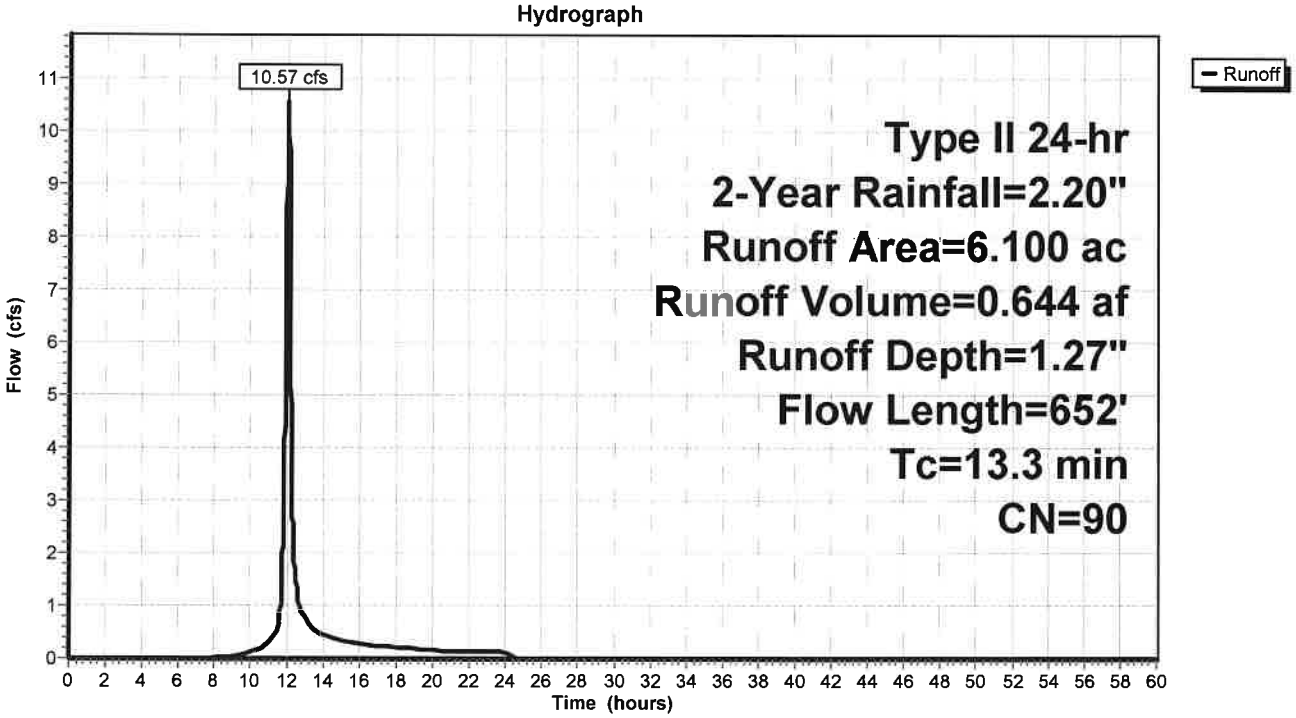
Runoff = 10.57 cfs @ 12.05 hrs, Volume= 0.644 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	2.20	1.27	0.00
1.00	0.02	0.00	0.00	53.00	2.20	1.27	0.00
2.00	0.05	0.00	0.00	54.00	2.20	1.27	0.00
3.00	0.08	0.00	0.00	55.00	2.20	1.27	0.00
4.00	0.11	0.00	0.00	56.00	2.20	1.27	0.00
5.00	0.14	0.00	0.00	57.00	2.20	1.27	0.00
6.00	0.18	0.00	0.00	58.00	2.20	1.27	0.00
7.00	0.22	0.00	0.00	59.00	2.20	1.27	0.00
8.00	0.26	0.00	0.02	60.00	2.20	1.27	0.00
9.00	0.32	0.01	0.06				
10.00	0.40	0.02	0.12				
11.00	0.52	0.06	0.30				
12.00	1.46	0.65	**9.45**				
13.00	1.70	0.84	**0.79**				
14.00	1.80	0.93	0.46				
15.00	1.88	0.99	0.36				
16.00	1.94	1.04	0.28				
17.00	1.98	1.08	0.24				
18.00	2.03	1.12	0.21				
19.00	2.06	1.15	0.19				
20.00	2.09	1.17	0.16				
21.00	2.12	1.20	0.15				
22.00	2.15	1.22	0.14				
23.00	2.18	1.24	0.14				
24.00	**2.20**	**1.27**	0.13				
25.00	2.20	1.27	0.00				
26.00	2.20	1.27	0.00				
27.00	2.20	1.27	0.00				
28.00	2.20	1.27	0.00				
29.00	2.20	1.27	0.00				
30.00	2.20	1.27	0.00				
31.00	2.20	1.27	0.00				
32.00	2.20	1.27	0.00				
33.00	2.20	1.27	0.00				
34.00	2.20	1.27	0.00				
35.00	2.20	1.27	0.00				
36.00	2.20	1.27	0.00				
37.00	2.20	1.27	0.00				
38.00	2.20	1.27	0.00				
39.00	2.20	1.27	0.00				
40.00	2.20	1.27	0.00				
41.00	2.20	1.27	0.00				
42.00	2.20	1.27	0.00				
43.00	2.20	1.27	0.00				
44.00	2.20	1.27	0.00				
45.00	2.20	1.27	0.00				
46.00	2.20	1.27	0.00				
47.00	2.20	1.27	0.00				
48.00	2.20	1.27	0.00				
49.00	2.20	1.27	0.00				
50.00	2.20	1.27	0.00				
51.00	2.20	1.27	0.00				

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 2S: Rear Area 1

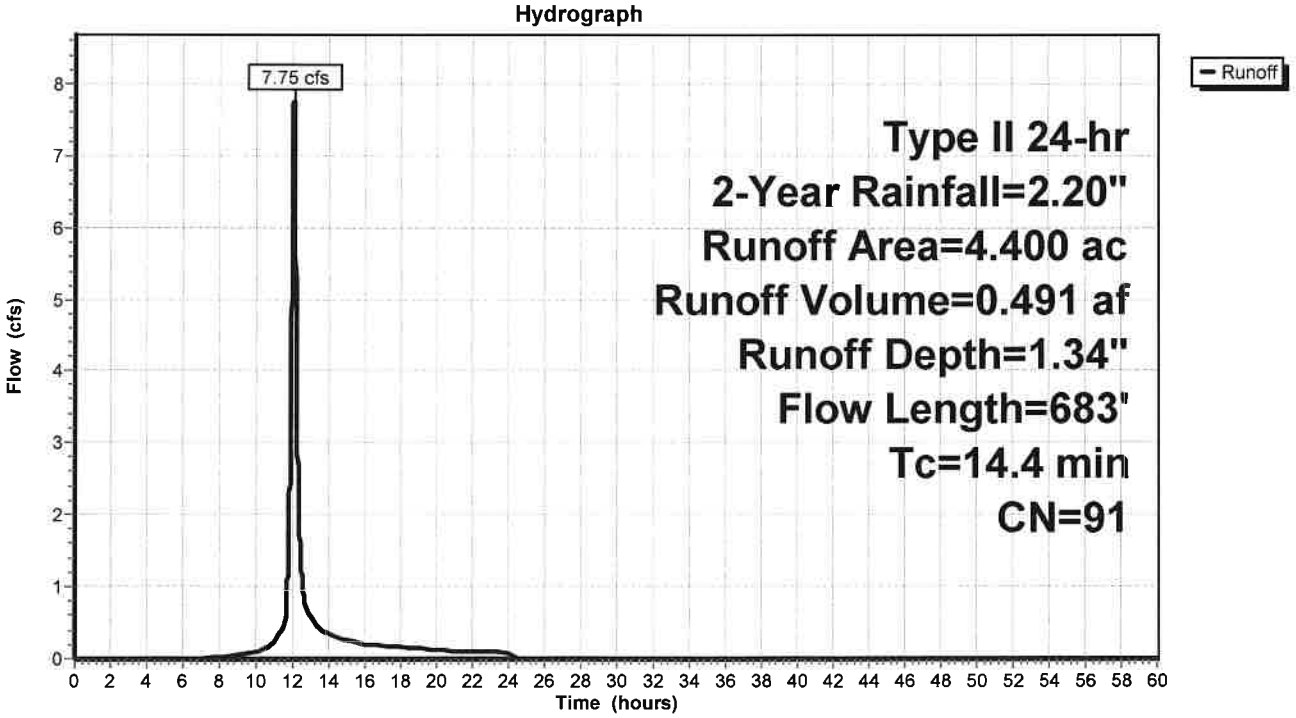
Runoff = 7.75 cfs @ 12.06 hrs, Volume= 0.491 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.02
9.00	0.32	0.01	0.06
10.00	0.40	0.03	0.10
11.00	0.52	0.08	0.25
12.00	1.46	0.71	**6.69**
13.00	1.70	0.90	**0.60**
14.00	1.80	0.99	0.35
15.00	1.88	1.06	0.27
16.00	1.94	1.11	0.21
17.00	1.98	1.15	0.18
18.00	2.03	1.19	0.16
19.00	2.06	1.22	0.14
20.00	2.09	1.25	0.12
21.00	2.12	1.27	0.11
22.00	2.15	1.30	0.10
23.00	2.18	1.32	0.10
24.00	**2.20**	**1.34**	0.10
25.00	2.20	1.34	0.00
26.00	2.20	1.34	0.00
27.00	2.20	1.34	0.00
28.00	2.20	1.34	0.00
29.00	2.20	1.34	0.00
30.00	2.20	1.34	0.00
31.00	2.20	1.34	0.00
32.00	2.20	1.34	0.00
33.00	2.20	1.34	0.00
34.00	2.20	1.34	0.00
35.00	2.20	1.34	0.00
36.00	2.20	1.34	0.00
37.00	2.20	1.34	0.00
38.00	2.20	1.34	0.00
39.00	2.20	1.34	0.00
40.00	2.20	1.34	0.00
41.00	2.20	1.34	0.00
42.00	2.20	1.34	0.00
43.00	2.20	1.34	0.00
44.00	2.20	1.34	0.00
45.00	2.20	1.34	0.00
46.00	2.20	1.34	0.00
47.00	2.20	1.34	0.00
48.00	2.20	1.34	0.00
49.00	2.20	1.34	0.00
50.00	2.20	1.34	0.00
51.00	2.20	1.34	0.00
52.00	2.20	1.34	0.00
53.00	2.20	1.34	0.00
54.00	2.20	1.34	0.00
55.00	2.20	1.34	0.00
56.00	2.20	1.34	0.00
57.00	2.20	1.34	0.00
58.00	2.20	1.34	0.00
59.00	2.20	1.34	0.00
60.00	2.20	1.34	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 1.27" for 2-Year event
Inflow = 10.57 cfs @ 12.05 hrs, Volume= 0.644 af
Outflow = 8.19 cfs @ 12.13 hrs, Volume= 0.644 af, Atten= 22%, Lag= 4.9 min
Primary = 2.79 cfs @ 12.13 hrs, Volume= 0.556 af
Secondary = 5.41 cfs @ 12.13 hrs, Volume= 0.088 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.91' @ 12.13 hrs Surf.Area= 9,805 sf Storage= 8,359 cf

Plug-Flow detention time= 252.3 min calculated for 0.644 af (100% of inflow)
Center-of-Mass det. time= 252.2 min (1,078.1 - 825.9)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

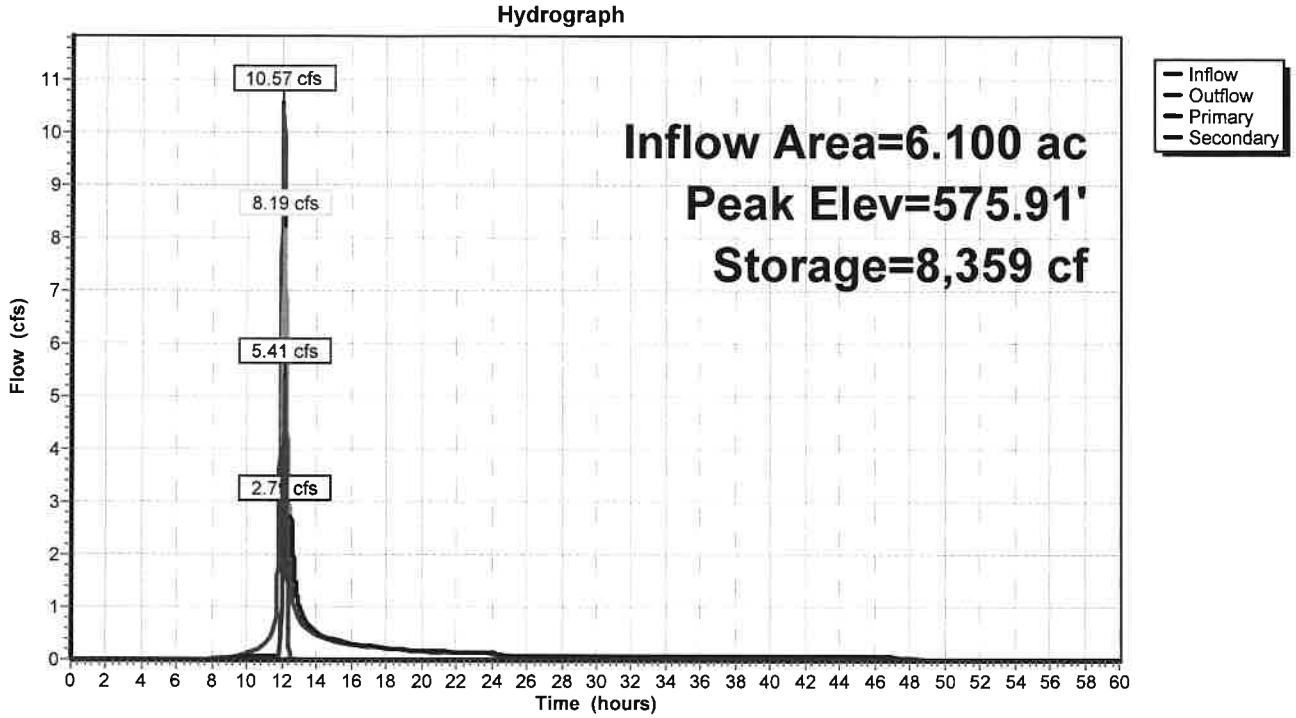
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.79 cfs @ 12.13 hrs HW=575.91' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.79 cfs @ 7.98 fps)
└**2=Grate** (Passes < 4.28 cfs potential flow)
└**3=Exfiltration** (Passes < 0.06 cfs potential flow)

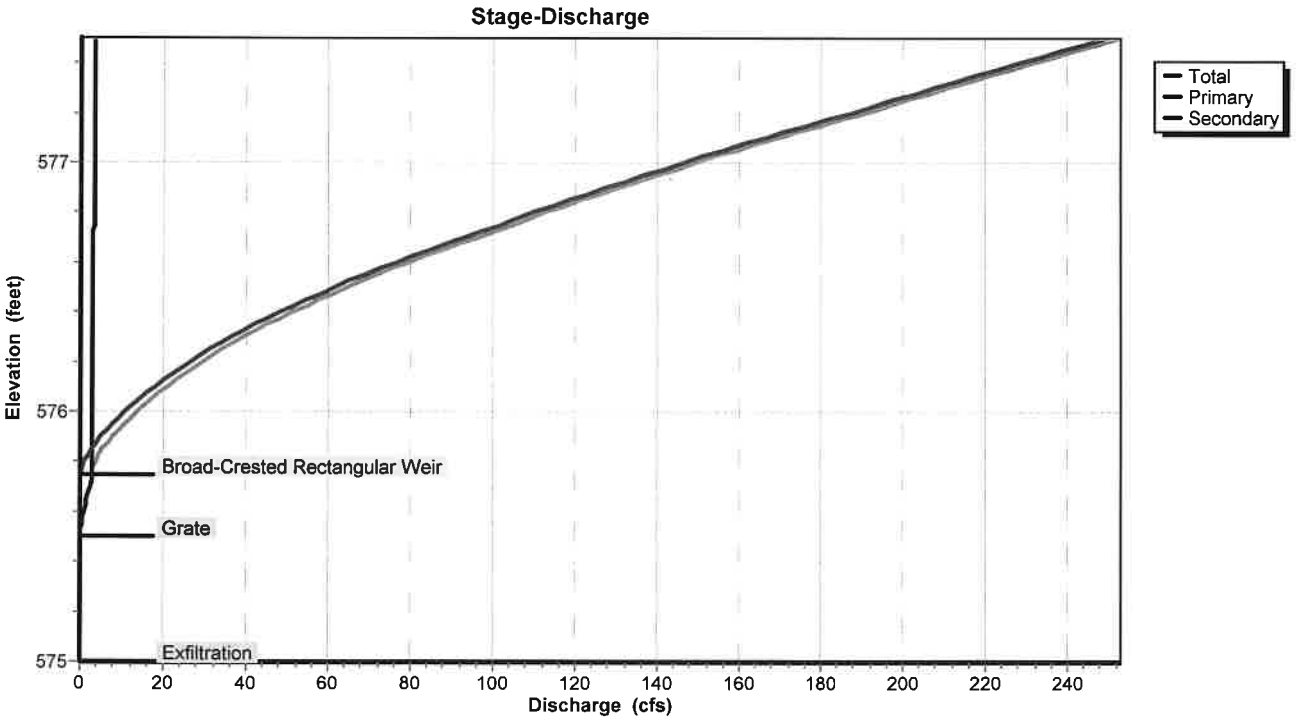
Secondary OutFlow Max=5.39 cfs @ 12.13 hrs HW=575.91' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 5.39 cfs @ 1.15 fps)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3

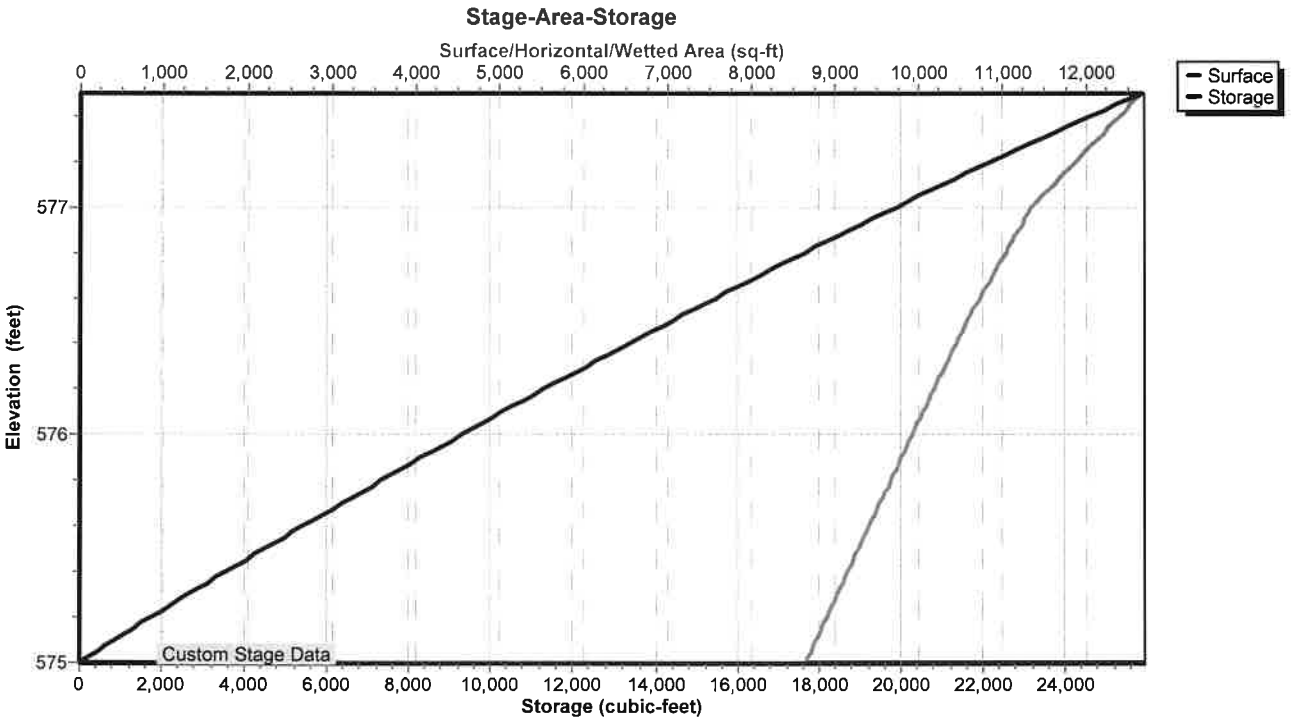


Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.02	17	575.00	0.00	0.00	0.00
10.00	0.12	257	575.03	0.05	0.05	0.00
12.00	**9.45**	**6,253**	**575.69**	**2.30**	**2.30**	**0.00**
14.00	**0.46**	**5,096**	**575.57**	**0.52**	**0.52**	**0.00**
16.00	0.28	4,881	575.54	0.30	0.30	0.00
18.00	0.21	4,786	575.53	0.22	0.22	0.00
20.00	0.16	4,719	575.53	0.17	0.17	0.00
22.00	0.14	4,676	575.52	0.15	0.15	0.00
24.00	0.13	4,652	575.52	0.13	0.13	0.00
26.00	0.00	4,232	575.47	0.06	0.06	0.00
28.00	0.00	3,836	575.43	0.05	0.05	0.00
30.00	0.00	3,444	575.39	0.05	0.05	0.00
32.00	0.00	3,055	575.34	0.05	0.05	0.00
34.00	0.00	2,670	575.30	0.05	0.05	0.00
36.00	0.00	2,287	575.26	0.05	0.05	0.00
38.00	0.00	1,909	575.22	0.05	0.05	0.00
40.00	0.00	1,533	575.18	0.05	0.05	0.00
42.00	0.00	1,161	575.13	0.05	0.05	0.00
44.00	0.00	792	575.09	0.05	0.05	0.00
46.00	0.00	426	575.05	0.05	0.05	0.00
48.00	0.00	107	575.01	0.02	0.02	0.00
50.00	0.00	20	575.00	0.00	0.00	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 1.58" for 2-Year event
Inflow = 12.29 cfs @ 12.11 hrs, Volume= 0.579 af
Outflow = 0.18 cfs @ 17.01 hrs, Volume= 0.400 af, Atten= 99%, Lag= 293.7 min
Primary = 0.18 cfs @ 17.01 hrs, Volume= 0.400 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.32' @ 17.01 hrs Surf.Area= 61,630 sf Storage= 19,128 cf

Plug-Flow detention time= 1,051.7 min calculated for 0.400 af (69% of inflow)
Center-of-Mass det. time= 962.0 min (1,770.2 - 808.1)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

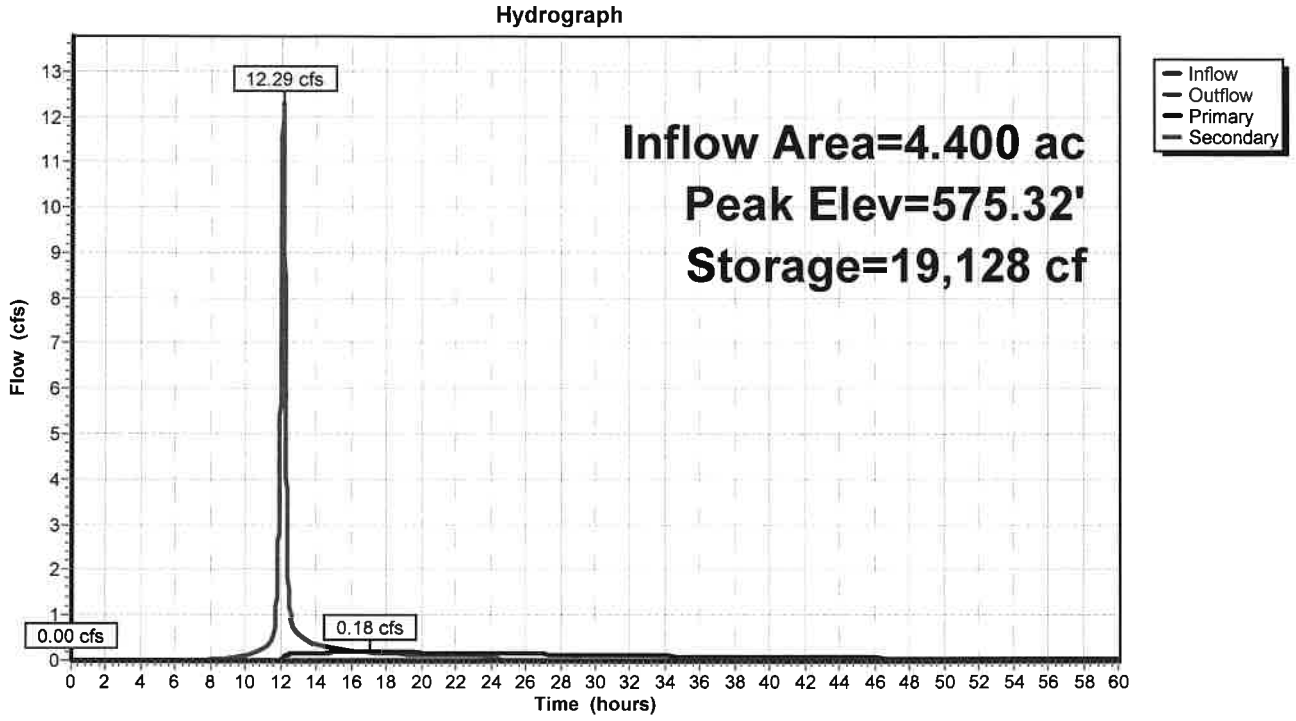
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.18 cfs @ 17.01 hrs HW=575.32' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.18 cfs of 1.87 cfs potential flow)
└**2=low flow outlet pipe** (Barrel Controls 0.18 cfs @ 1.95 fps)
└**3=Grate** (Controls 0.00 cfs)

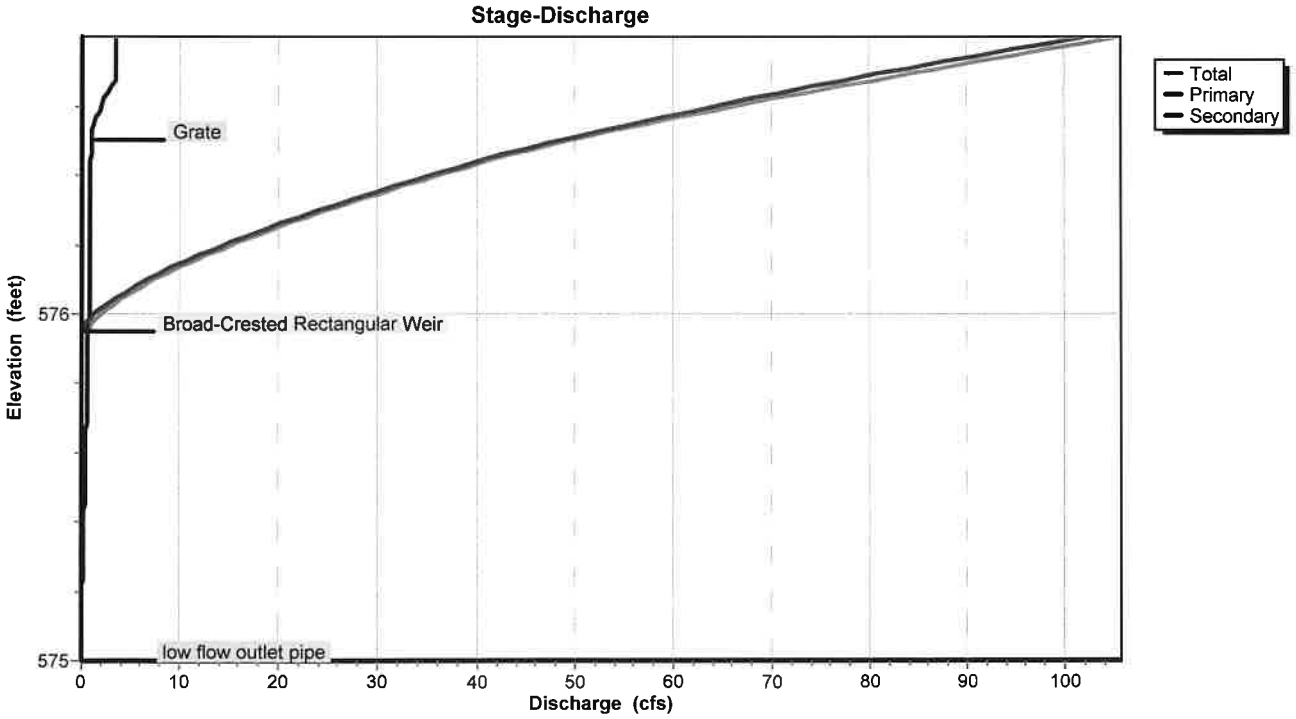
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)

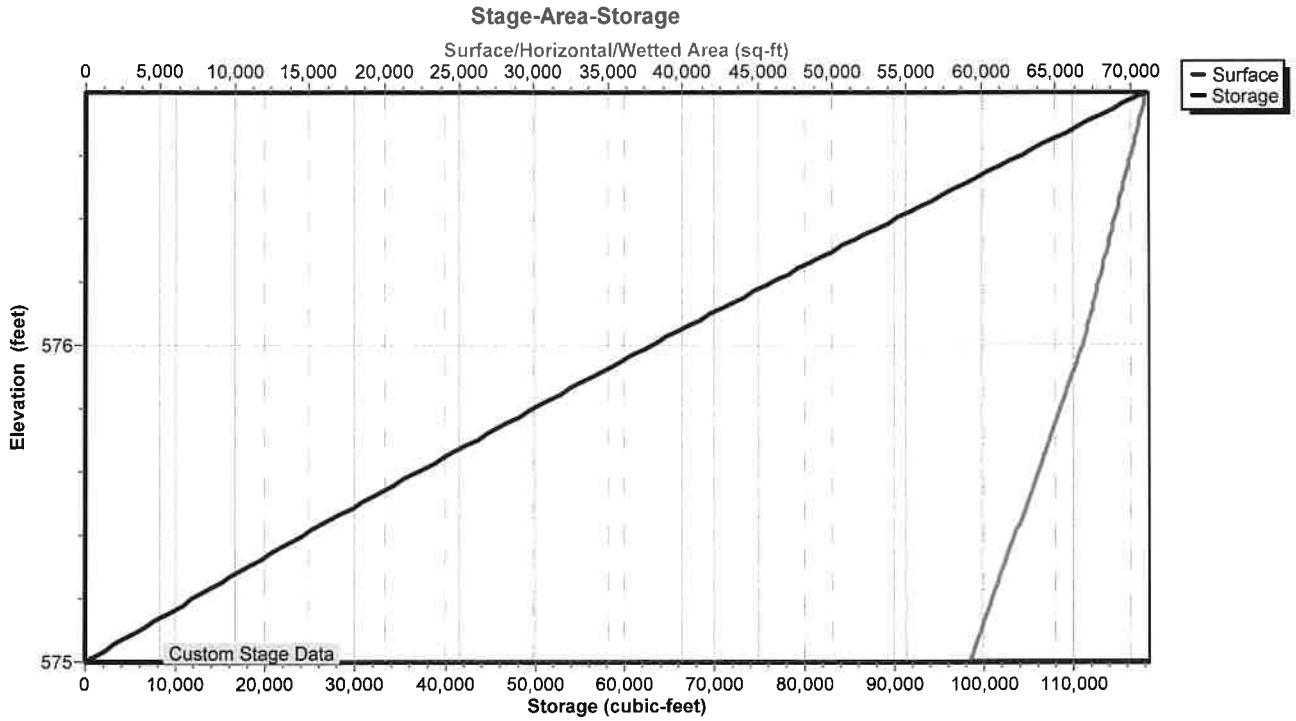


Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.02	48	575.00	0.00	0.00	0.00
10.00	0.10	451	575.01	0.00	0.00	0.00
12.00	**6.69**	5,327	575.09	0.02	0.02	0.00
14.00	**0.35**	18,425	575.31	0.17	0.17	0.00
16.00	0.21	**19,087**	**575.32**	**0.18**	**0.18**	0.00
18.00	0.16	**19,093**	**575.32**	**0.18**	**0.18**	0.00
20.00	0.12	18,812	575.31	0.17	0.17	0.00
22.00	0.10	18,367	575.30	0.17	0.17	0.00
24.00	0.10	17,912	575.30	0.16	0.16	0.00
26.00	0.00	16,886	575.28	0.15	0.15	0.00
28.00	0.00	15,893	575.26	0.13	0.13	0.00
30.00	0.00	14,996	575.25	0.12	0.12	0.00
32.00	0.00	14,184	575.24	0.11	0.11	0.00
34.00	0.00	13,445	575.22	0.10	0.10	0.00
36.00	0.00	12,772	575.21	0.09	0.09	0.00
38.00	0.00	12,156	575.20	0.08	0.08	0.00
40.00	0.00	11,591	575.19	0.08	0.08	0.00
42.00	0.00	11,071	575.18	0.07	0.07	0.00
44.00	0.00	10,592	575.18	0.06	0.06	0.00
46.00	0.00	10,149	575.17	0.06	0.06	0.00
48.00	0.00	9,739	575.16	0.05	0.05	0.00
50.00	0.00	9,358	575.16	0.05	0.05	0.00
52.00	0.00	9,003	575.15	0.05	0.05	0.00
54.00	0.00	8,673	575.15	0.04	0.04	0.00
56.00	0.00	8,364	575.14	0.04	0.04	0.00
58.00	0.00	8,075	575.14	0.04	0.04	0.00
60.00	0.00	7,803	575.13	0.04	0.04	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

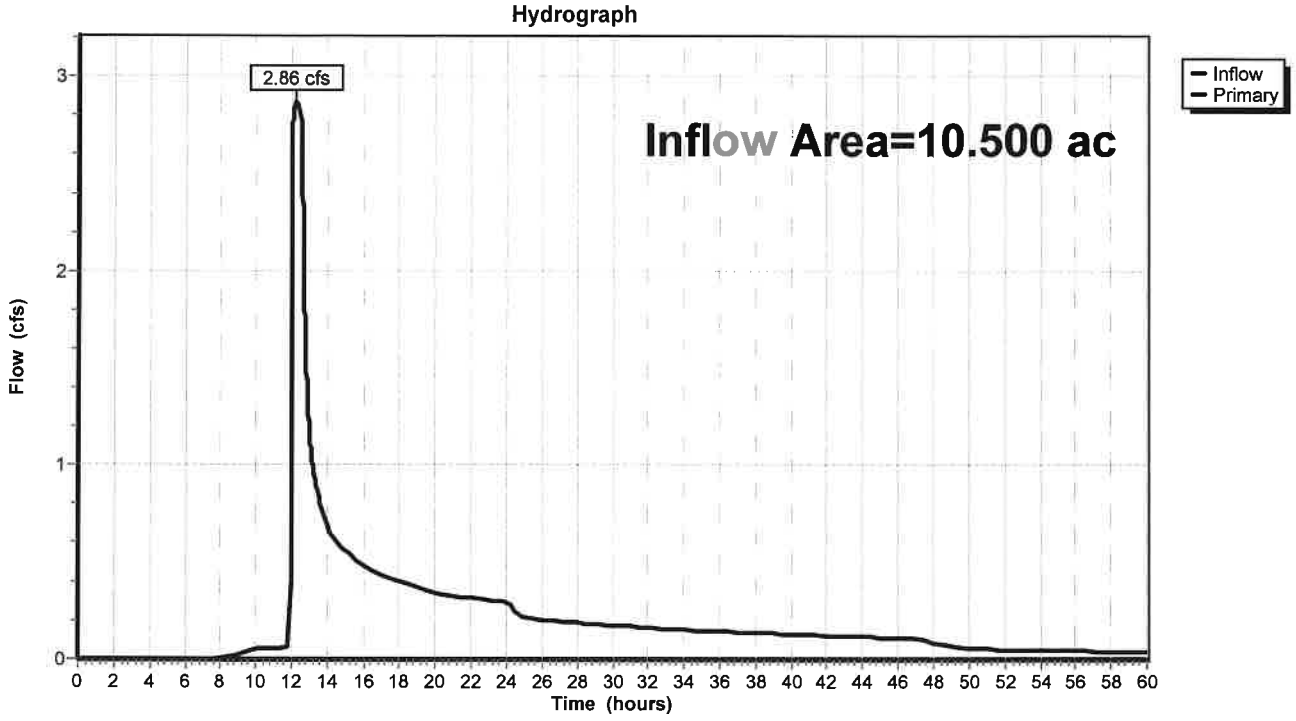
Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.09" for 2-Year event
Inflow = 2.86 cfs @ 12.23 hrs, Volume= 0.956 af
Primary = 2.86 cfs @ 12.23 hrs, Volume= 0.956 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.05	0.00	0.05
1.00	0.00	0.00	0.00	53.00	0.05	0.00	0.05
2.00	0.00	0.00	0.00	54.00	0.04	0.00	0.04
3.00	0.00	0.00	0.00	55.00	0.04	0.00	0.04
4.00	0.00	0.00	0.00	56.00	0.04	0.00	0.04
5.00	0.00	0.00	0.00	57.00	0.04	0.00	0.04
6.00	0.00	0.00	0.00	58.00	0.04	0.00	0.04
7.00	0.00	0.00	0.00	59.00	0.04	0.00	0.04
8.00	0.00	0.00	0.00	60.00	0.04	0.00	0.04
9.00	0.02	0.00	0.02				
10.00	0.05	0.00	0.05				
11.00	0.05	0.00	0.05				
12.00	**2.31**	0.00	**2.31**				
13.00	**1.18**	0.00	**1.18**				
14.00	0.69	0.00	0.69				
15.00	0.55	0.00	0.55				
16.00	0.48	0.00	0.48				
17.00	0.43	0.00	0.43				
18.00	0.40	0.00	0.40				
19.00	0.37	0.00	0.37				
20.00	0.34	0.00	0.34				
21.00	0.32	0.00	0.32				
22.00	0.31	0.00	0.31				
23.00	0.30	0.00	0.30				
24.00	0.29	0.00	0.29				
25.00	0.21	0.00	0.21				
26.00	0.20	0.00	0.20				
27.00	0.19	0.00	0.19				
28.00	0.19	0.00	0.19				
29.00	0.18	0.00	0.18				
30.00	0.17	0.00	0.17				
31.00	0.17	0.00	0.17				
32.00	0.16	0.00	0.16				
33.00	0.16	0.00	0.16				
34.00	0.15	0.00	0.15				
35.00	0.15	0.00	0.15				
36.00	0.14	0.00	0.14				
37.00	0.14	0.00	0.14				
38.00	0.13	0.00	0.13				
39.00	0.13	0.00	0.13				
40.00	0.13	0.00	0.13				
41.00	0.12	0.00	0.12				
42.00	0.12	0.00	0.12				
43.00	0.12	0.00	0.12				
44.00	0.11	0.00	0.11				
45.00	0.11	0.00	0.11				
46.00	0.11	0.00	0.11				
47.00	0.11	0.00	0.11				
48.00	0.08	0.00	0.08				
49.00	0.06	0.00	0.06				
50.00	0.06	0.00	0.06				
51.00	0.05	0.00	0.05				

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=1.71"
Flow Length=652' Tc=13.3 min CN=90 Runoff=14.18 cfs 0.870 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=1.79"
Flow Length=683' Tc=14.4 min CN=91 Runoff=10.29 cfs 0.658 af

Pond 1P: Bioretention Area 3 Peak Elev=575.99' Storage=9,153 cf Inflow=14.18 cfs 0.870 af
Primary=2.83 cfs 0.666 af Secondary=10.09 cfs 0.203 af Outflow=12.91 cfs 0.870 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.46' Storage=28,218 cf Inflow=20.08 cfs 0.861 af
Primary=0.33 cfs 0.652 af Secondary=0.00 cfs 0.000 af Outflow=0.33 cfs 0.652 af

Link 5L: Outflow (@ CB 54) Inflow=3.01 cfs 1.318 af
Primary=3.01 cfs 1.318 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.527 af Average Runoff Depth = 1.75"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Front Area 1

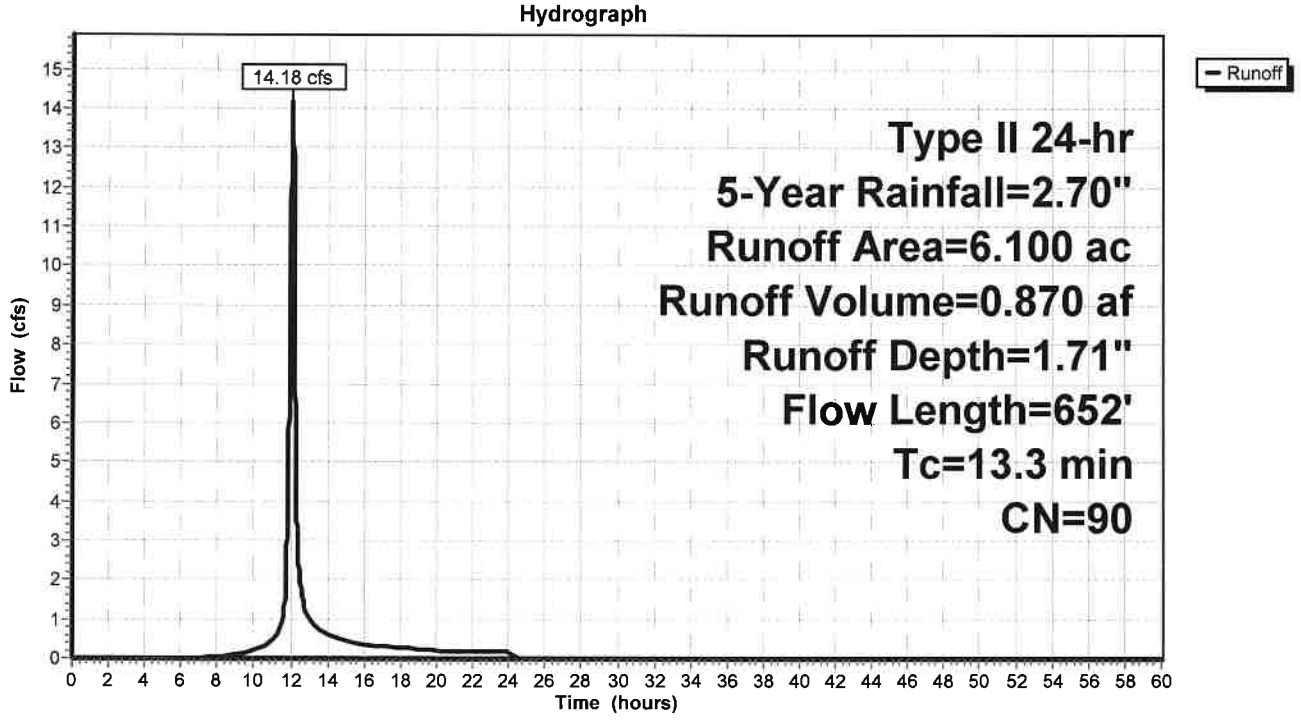
Runoff = 14.18 cfs @ 12.05 hrs, Volume= 0.870 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.02
8.00	0.32	0.01	0.05
9.00	0.40	0.02	0.12
10.00	0.49	0.05	0.20
11.00	0.63	0.11	0.47
12.00	1.79	0.92	**12.79**
13.00	2.08	1.17	**1.02**
14.00	2.21	1.28	0.59
15.00	2.30	1.36	0.46
16.00	2.38	1.42	0.36
17.00	2.43	1.47	0.31
18.00	2.49	1.52	0.27
19.00	2.53	1.56	0.24
20.00	2.57	1.59	0.20
21.00	2.60	1.62	0.19
22.00	2.64	1.65	0.18
23.00	2.67	1.68	0.17
24.00	**2.70**	**1.71**	0.17
25.00	2.70	1.71	0.00
26.00	2.70	1.71	0.00
27.00	2.70	1.71	0.00
28.00	2.70	1.71	0.00
29.00	2.70	1.71	0.00
30.00	2.70	1.71	0.00
31.00	2.70	1.71	0.00
32.00	2.70	1.71	0.00
33.00	2.70	1.71	0.00
34.00	2.70	1.71	0.00
35.00	2.70	1.71	0.00
36.00	2.70	1.71	0.00
37.00	2.70	1.71	0.00
38.00	2.70	1.71	0.00
39.00	2.70	1.71	0.00
40.00	2.70	1.71	0.00
41.00	2.70	1.71	0.00
42.00	2.70	1.71	0.00
43.00	2.70	1.71	0.00
44.00	2.70	1.71	0.00
45.00	2.70	1.71	0.00
46.00	2.70	1.71	0.00
47.00	2.70	1.71	0.00
48.00	2.70	1.71	0.00
49.00	2.70	1.71	0.00
50.00	2.70	1.71	0.00
51.00	2.70	1.71	0.00
52.00	2.70	1.71	0.00
53.00	2.70	1.71	0.00
54.00	2.70	1.71	0.00
55.00	2.70	1.71	0.00
56.00	2.70	1.71	0.00
57.00	2.70	1.71	0.00
58.00	2.70	1.71	0.00
59.00	2.70	1.71	0.00
60.00	2.70	1.71	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 2S: Rear Area 1

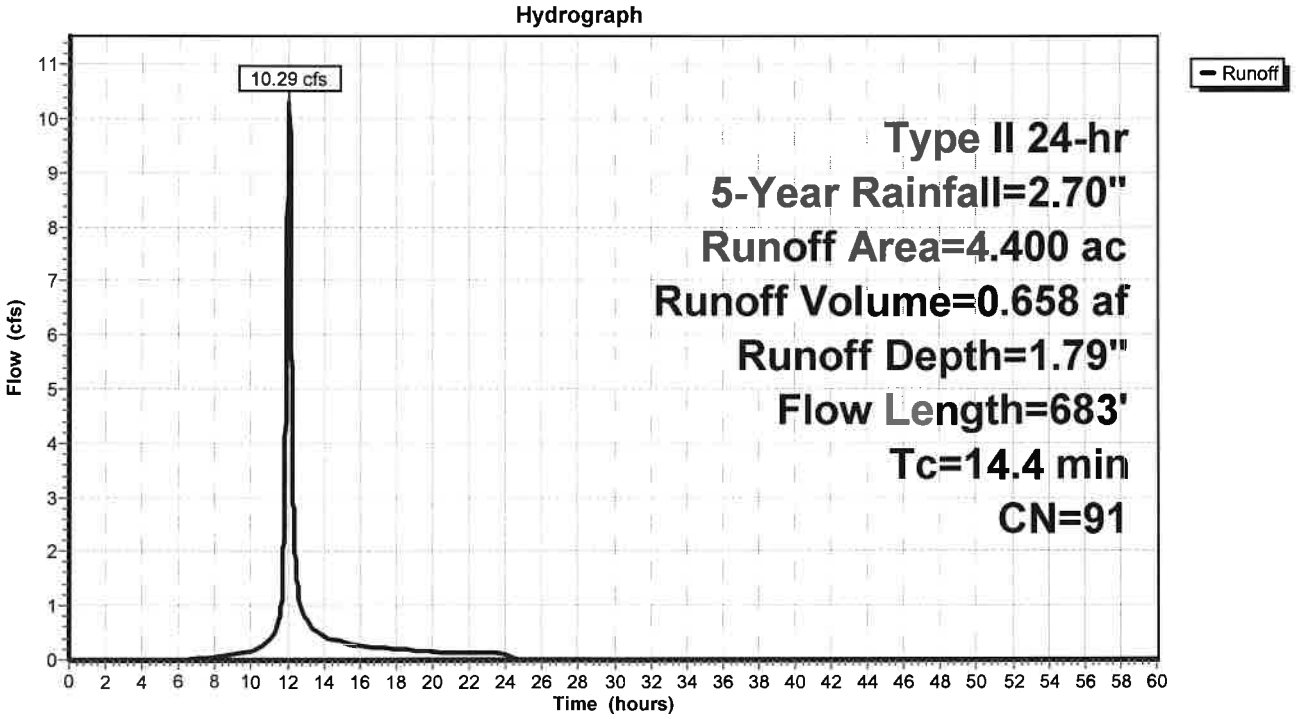
Runoff = 10.29 cfs @ 12.06 hrs, Volume= 0.658 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.03
8.00	0.32	0.01	0.05
9.00	0.40	0.03	0.10
10.00	0.49	0.07	0.17
11.00	0.63	0.13	0.37
12.00	1.79	0.98	**8.97**
13.00	2.08	1.24	**0.77**
14.00	2.21	1.35	0.44
15.00	2.30	1.43	0.34
16.00	2.38	1.50	0.27
17.00	2.43	1.55	0.23
18.00	2.49	1.60	0.20
19.00	2.53	1.64	0.18
20.00	2.57	1.67	0.15
21.00	2.60	1.71	0.14
22.00	2.64	1.74	0.13
23.00	2.67	1.77	0.13
24.00	**2.70**	**1.79**	0.12
25.00	2.70	1.79	0.00
26.00	2.70	1.79	0.00
27.00	2.70	1.79	0.00
28.00	2.70	1.79	0.00
29.00	2.70	1.79	0.00
30.00	2.70	1.79	0.00
31.00	2.70	1.79	0.00
32.00	2.70	1.79	0.00
33.00	2.70	1.79	0.00
34.00	2.70	1.79	0.00
35.00	2.70	1.79	0.00
36.00	2.70	1.79	0.00
37.00	2.70	1.79	0.00
38.00	2.70	1.79	0.00
39.00	2.70	1.79	0.00
40.00	2.70	1.79	0.00
41.00	2.70	1.79	0.00
42.00	2.70	1.79	0.00
43.00	2.70	1.79	0.00
44.00	2.70	1.79	0.00
45.00	2.70	1.79	0.00
46.00	2.70	1.79	0.00
47.00	2.70	1.79	0.00
48.00	2.70	1.79	0.00
49.00	2.70	1.79	0.00
50.00	2.70	1.79	0.00
51.00	2.70	1.79	0.00
52.00	2.70	1.79	0.00
53.00	2.70	1.79	0.00
54.00	2.70	1.79	0.00
55.00	2.70	1.79	0.00
56.00	2.70	1.79	0.00
57.00	2.70	1.79	0.00
58.00	2.70	1.79	0.00
59.00	2.70	1.79	0.00
60.00	2.70	1.79	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 1.71" for 5-Year event
Inflow = 14.18 cfs @ 12.05 hrs, Volume= 0.870 af
Outflow = 12.91 cfs @ 12.10 hrs, Volume= 0.870 af, Atten= 9%, Lag= 2.9 min
Primary = 2.83 cfs @ 12.10 hrs, Volume= 0.666 af
Secondary = 10.09 cfs @ 12.10 hrs, Volume= 0.203 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.99' @ 12.10 hrs Surf.Area= 9,908 sf Storage= 9,153 cf

Plug-Flow detention time= 193.1 min calculated for 0.869 af (100% of inflow)
Center-of-Mass det. time= 193.4 min (1,010.7 - 817.3)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

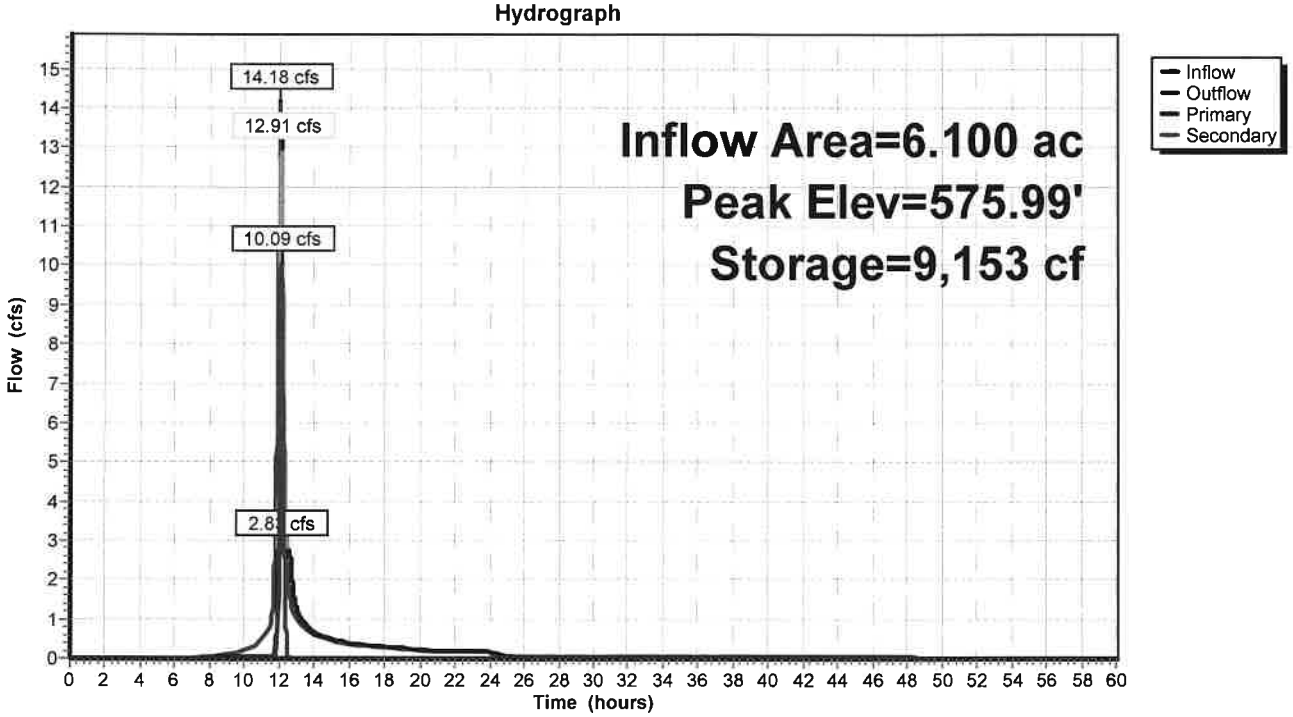
Primary OutFlow Max=2.83 cfs @ 12.10 hrs HW=575.99' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.83 cfs @ 8.10 fps)
  ├**2=Grate** (Passes < 4.69 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

Secondary OutFlow Max=10.07 cfs @ 12.10 hrs HW=575.99' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 10.07 cfs @ 1.42 fps)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

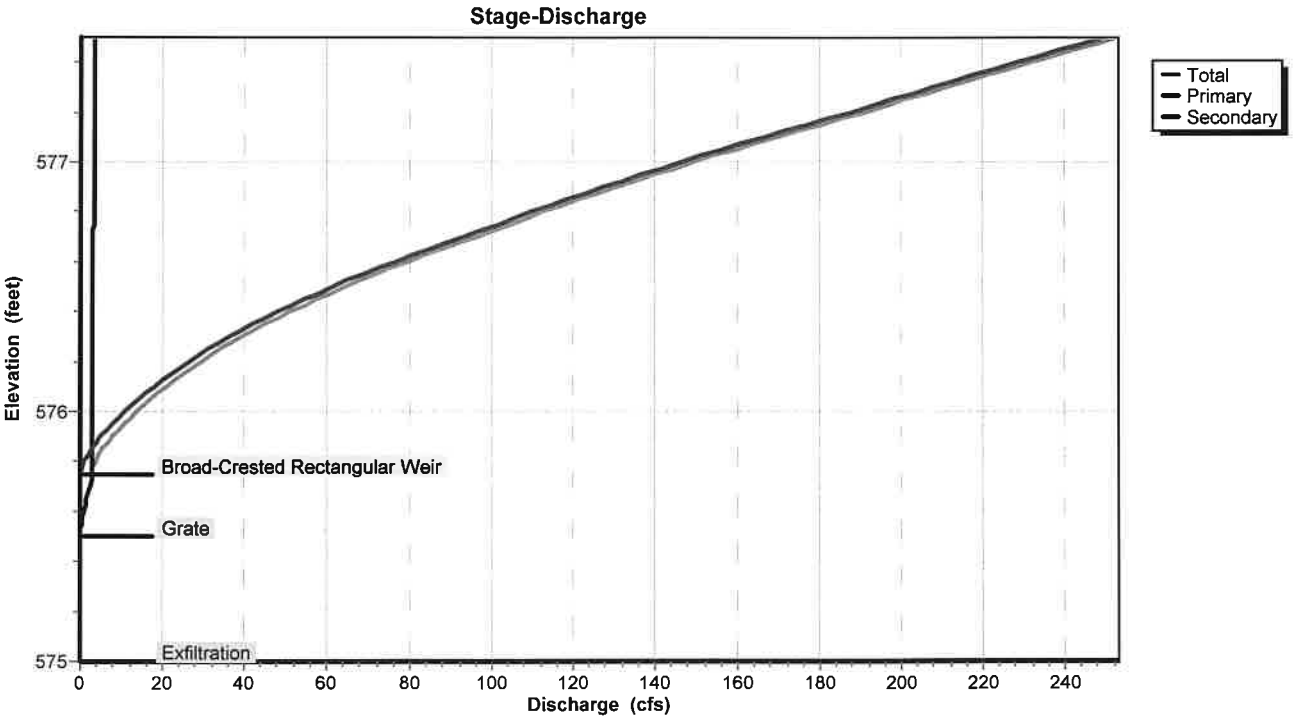
Pond 1P: Bioretention Area 3

Hydrograph



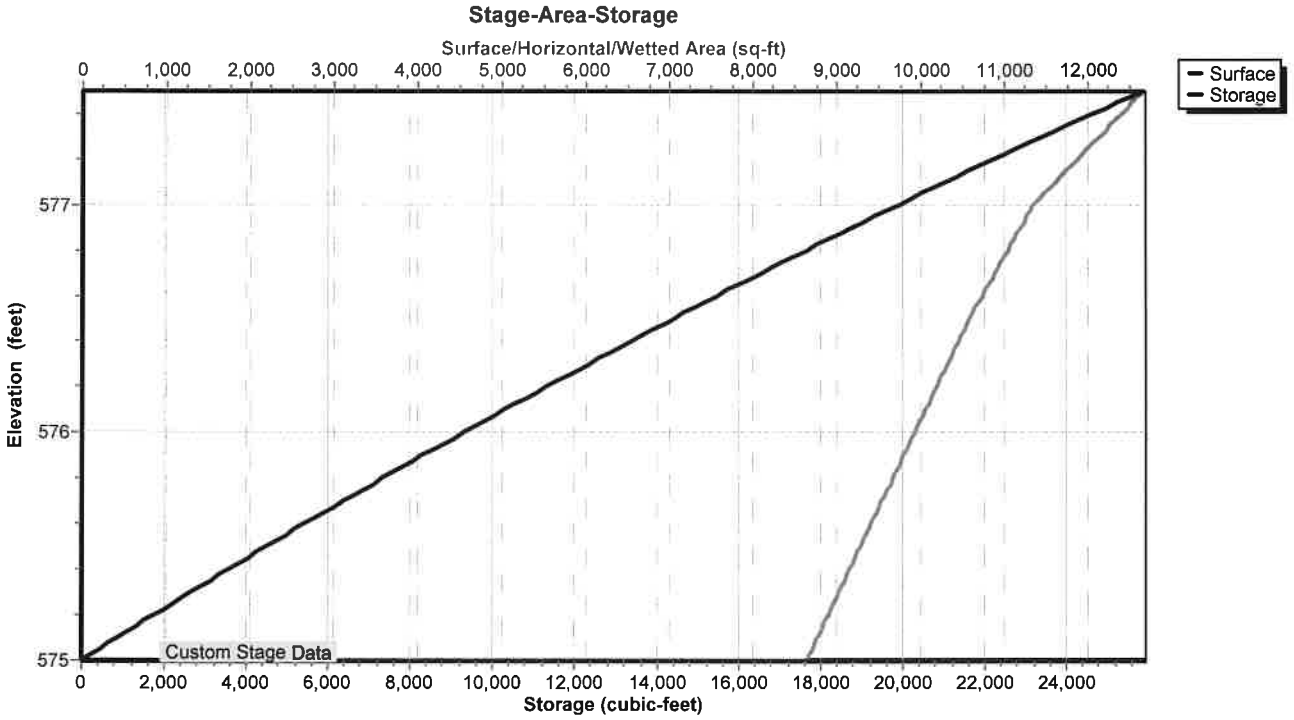
Pond 1P: Bioretention Area 3

Stage-Discharge



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
8.00	0.05	99	575.01	0.02	0.02	0.00
10.00	0.20	617	575.07	0.05	0.05	0.00
12.00	**12.79**	**8,183**	**575.89**	**7.28**	**2.78**	**4.50**
14.00	**0.59**	**5,218**	**575.58**	**0.66**	**0.66**	**0.00**
16.00	0.36	4,969	575.55	0.38	0.38	0.00
18.00	0.27	4,859	575.54	0.29	0.29	0.00
20.00	0.20	4,774	575.53	0.21	0.21	0.00
22.00	0.18	4,739	575.53	0.18	0.18	0.00
24.00	0.17	4,722	575.53	0.17	0.17	0.00
26.00	0.00	4,258	575.48	0.06	0.06	0.00
28.00	0.00	3,862	575.43	0.05	0.05	0.00
30.00	0.00	3,470	575.39	0.05	0.05	0.00
32.00	0.00	3,081	575.35	0.05	0.05	0.00
34.00	0.00	2,695	575.30	0.05	0.05	0.00
36.00	0.00	2,313	575.26	0.05	0.05	0.00
38.00	0.00	1,934	575.22	0.05	0.05	0.00
40.00	0.00	1,558	575.18	0.05	0.05	0.00
42.00	0.00	1,186	575.14	0.05	0.05	0.00
44.00	0.00	816	575.09	0.05	0.05	0.00
46.00	0.00	450	575.05	0.05	0.05	0.00
48.00	0.00	119	575.01	0.03	0.03	0.00
50.00	0.00	22	575.00	0.01	0.01	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

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Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 2.35" for 5-Year event
Inflow = 20.08 cfs @ 12.08 hrs, Volume= 0.861 af
Outflow = 0.33 cfs @ 15.13 hrs, Volume= 0.652 af, Atten= 98%, Lag= 182.5 min
Primary = 0.33 cfs @ 15.13 hrs, Volume= 0.652 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.46' @ 15.13 hrs Surf.Area= 62,747 sf Storage= 28,218 cf

Plug-Flow detention time= 974.3 min calculated for 0.652 af (76% of inflow)
Center-of-Mass det. time= 898.6 min (1,692.2 - 793.6)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

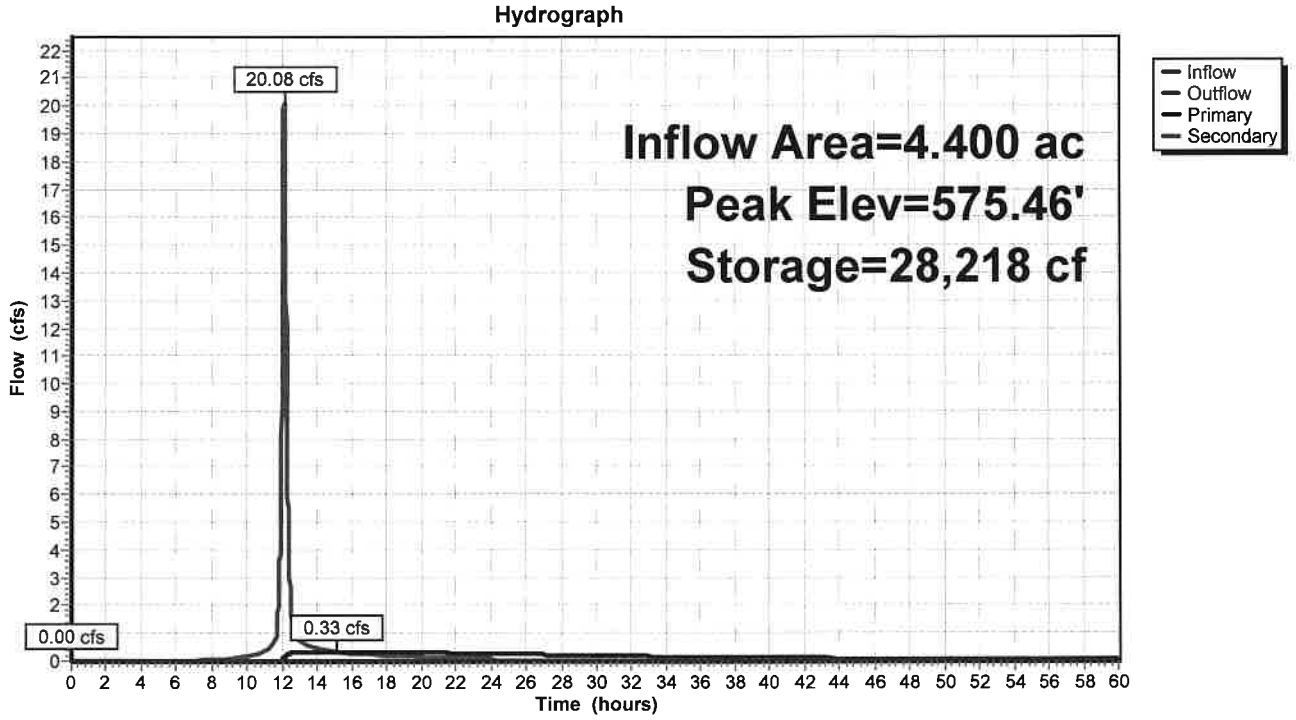
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.33 cfs @ 15.13 hrs HW=575.46' (Free Discharge)
↑**1=12" outlet pipe** (Passes 0.33 cfs of 2.02 cfs potential flow)
↑**2=low flow outlet pipe** (Barrel Controls 0.33 cfs @ 2.27 fps)
3=Grate (Controls 0.00 cfs)

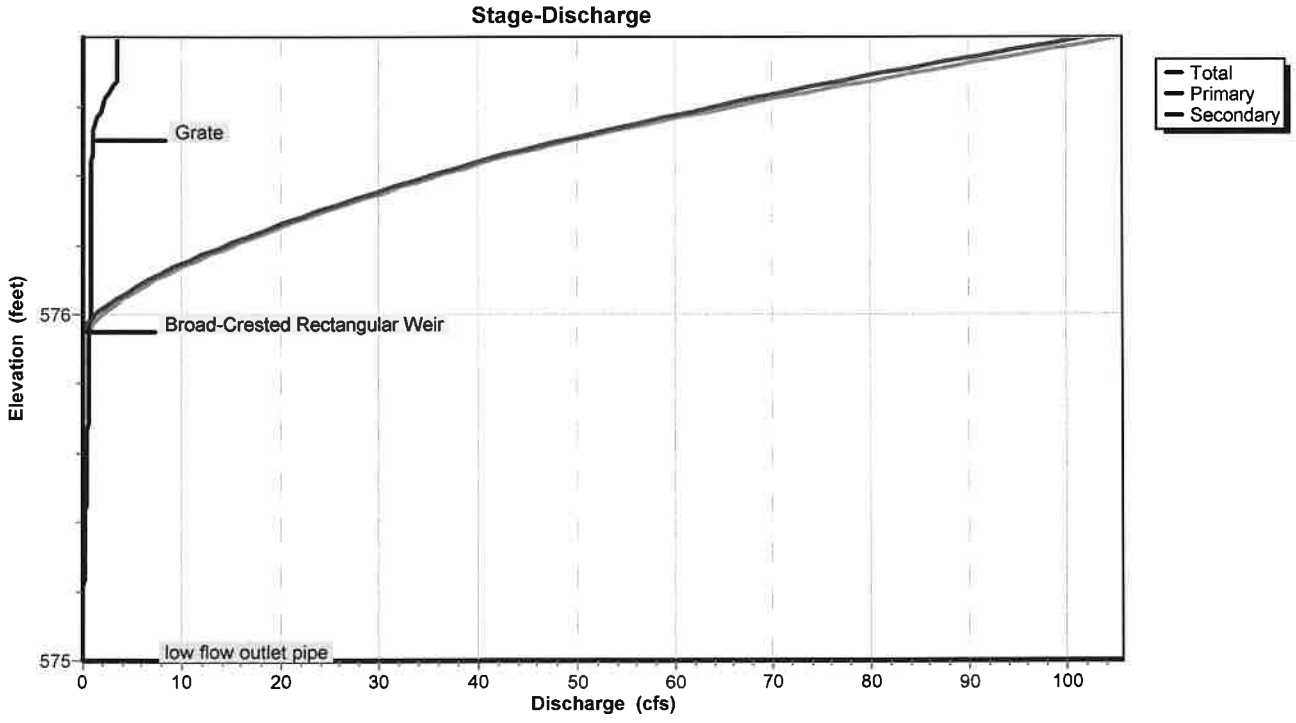
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)

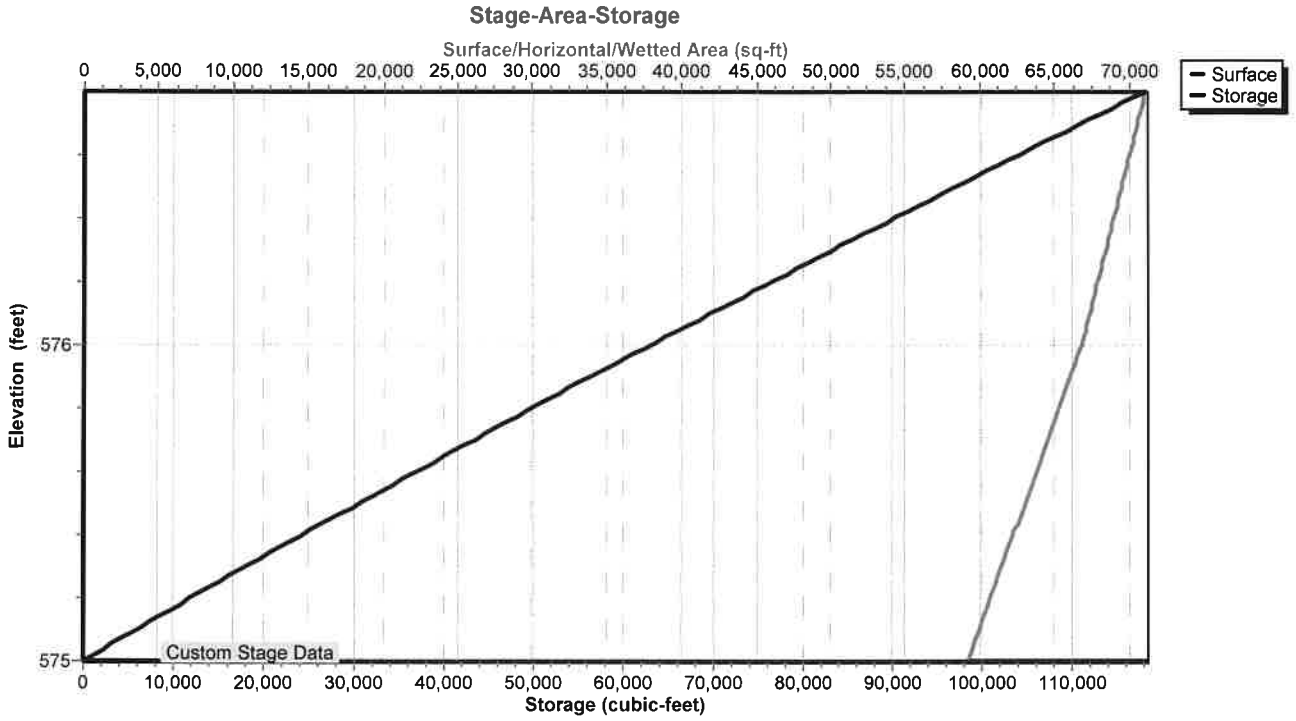


Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	1	575.00	0.00	0.00	0.00
8.00	0.05	186	575.00	0.00	0.00	0.00
10.00	0.17	912	575.02	0.00	0.00	0.00
12.00	**13.47**	8,186	575.14	0.04	0.04	0.00
14.00	**0.44**	**28,034**	**575.46**	**0.33**	**0.33**	0.00
16.00	0.27	**28,118**	**575.46**	**0.33**	**0.33**	0.00
18.00	0.20	27,442	575.45	0.32	0.32	0.00
20.00	0.15	26,479	575.43	0.30	0.30	0.00
22.00	0.13	25,382	575.42	0.28	0.28	0.00
24.00	0.12	24,337	575.40	0.26	0.26	0.00
26.00	0.00	22,633	575.37	0.24	0.24	0.00
28.00	0.00	21,033	575.35	0.21	0.21	0.00
30.00	0.00	19,609	575.32	0.19	0.19	0.00
32.00	0.00	18,338	575.30	0.17	0.17	0.00
34.00	0.00	17,199	575.29	0.15	0.15	0.00
36.00	0.00	16,175	575.27	0.13	0.13	0.00
38.00	0.00	15,251	575.25	0.12	0.12	0.00
40.00	0.00	14,415	575.24	0.11	0.11	0.00
42.00	0.00	13,655	575.23	0.10	0.10	0.00
44.00	0.00	12,964	575.22	0.09	0.09	0.00
46.00	0.00	12,331	575.21	0.08	0.08	0.00
48.00	0.00	11,752	575.20	0.08	0.08	0.00
50.00	0.00	11,220	575.19	0.07	0.07	0.00
52.00	0.00	10,729	575.18	0.07	0.07	0.00
54.00	0.00	10,276	575.17	0.06	0.06	0.00
56.00	0.00	9,856	575.16	0.06	0.06	0.00
58.00	0.00	9,467	575.16	0.05	0.05	0.00
60.00	0.00	9,105	575.15	0.05	0.05	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

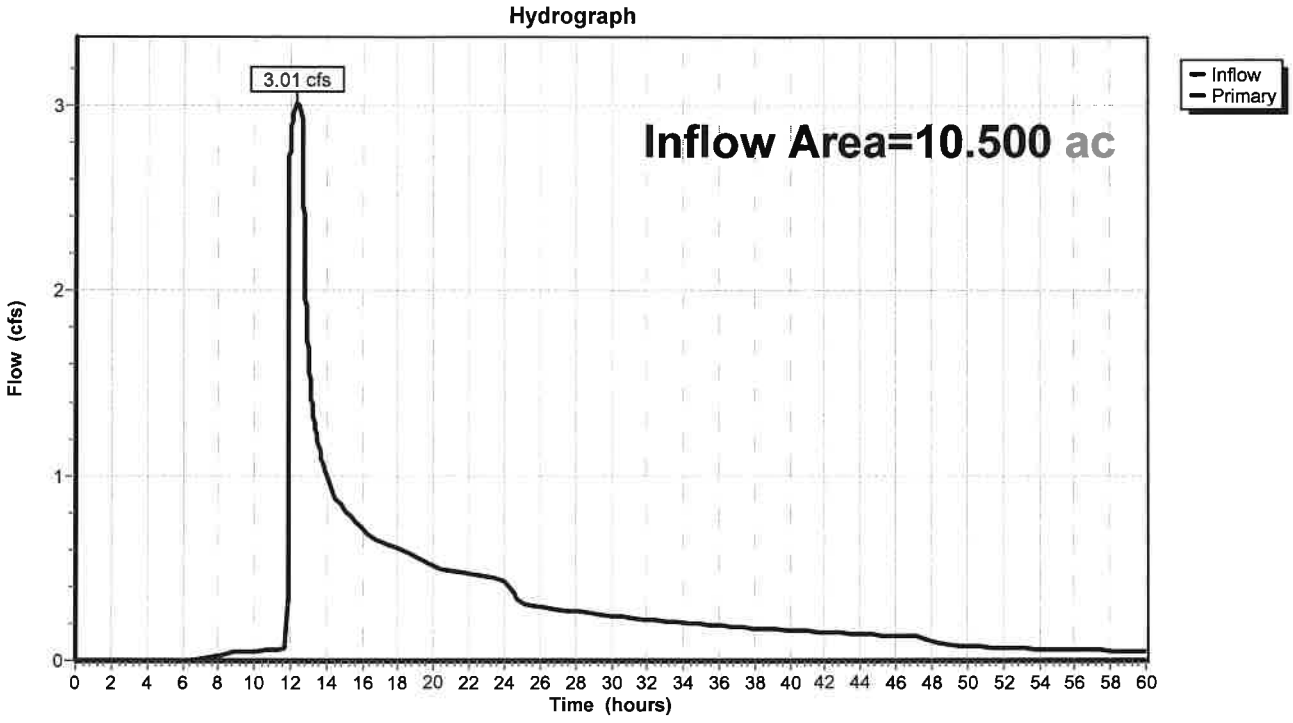
Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.51" for 5-Year event
Inflow = 3.01 cfs @ 12.34 hrs, Volume= 1.318 af
Primary = 3.01 cfs @ 12.34 hrs, Volume= 1.318 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.07	0.00	0.07
1.00	0.00	0.00	0.00	53.00	0.06	0.00	0.06
2.00	0.00	0.00	0.00	54.00	0.06	0.00	0.06
3.00	0.00	0.00	0.00	55.00	0.06	0.00	0.06
4.00	0.00	0.00	0.00	56.00	0.06	0.00	0.06
5.00	0.00	0.00	0.00	57.00	0.05	0.00	0.05
6.00	0.00	0.00	0.00	58.00	0.05	0.00	0.05
7.00	0.00	0.00	0.00	59.00	0.05	0.00	0.05
8.00	0.02	0.00	0.02	60.00	0.05	0.00	0.05
9.00	0.05	0.00	0.05				
10.00	0.05	0.00	0.05				
11.00	0.05	0.00	0.05				
12.00	**2.82**	0.00	**2.82**				
13.00	**1.62**	0.00	**1.62**				
14.00	0.99	0.00	0.99				
15.00	0.81	0.00	0.81				
16.00	0.71	0.00	0.71				
17.00	0.65	0.00	0.65				
18.00	0.60	0.00	0.60				
19.00	0.56	0.00	0.56				
20.00	0.51	0.00	0.51				
21.00	0.48	0.00	0.48				
22.00	0.47	0.00	0.47				
23.00	0.45	0.00	0.45				
24.00	0.43	0.00	0.43				
25.00	0.31	0.00	0.31				
26.00	0.29	0.00	0.29				
27.00	0.28	0.00	0.28				
28.00	0.26	0.00	0.26				
29.00	0.25	0.00	0.25				
30.00	0.24	0.00	0.24				
31.00	0.23	0.00	0.23				
32.00	0.22	0.00	0.22				
33.00	0.21	0.00	0.21				
34.00	0.20	0.00	0.20				
35.00	0.20	0.00	0.20				
36.00	0.19	0.00	0.19				
37.00	0.18	0.00	0.18				
38.00	0.17	0.00	0.17				
39.00	0.17	0.00	0.17				
40.00	0.16	0.00	0.16				
41.00	0.16	0.00	0.16				
42.00	0.15	0.00	0.15				
43.00	0.15	0.00	0.15				
44.00	0.14	0.00	0.14				
45.00	0.14	0.00	0.14				
46.00	0.13	0.00	0.13				
47.00	0.13	0.00	0.13				
48.00	0.10	0.00	0.10				
49.00	0.09	0.00	0.09				
50.00	0.08	0.00	0.08				
51.00	0.07	0.00	0.07				

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=2.12"
Flow Length=652' Tc=13.3 min CN=90 Runoff=17.46 cfs 1.079 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=2.21"
Flow Length=683' Tc=14.4 min CN=91 Runoff=12.59 cfs 0.811 af

Pond 1P: Bioretention Area 3 Peak Elev=576.04' Storage=9,672 cf Inflow=17.46 cfs 1.079 af
Primary=2.85 cfs 0.765 af Secondary=13.60 cfs 0.314 af Outflow=16.45 cfs 1.079 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.60' Storage=37,117 cf Inflow=26.01 cfs 1.125 af
Primary=0.47 cfs 0.892 af Secondary=0.00 cfs 0.000 af Outflow=0.47 cfs 0.892 af

Link 5L: Outflow (@ CB 54) Inflow=3.16 cfs 1.657 af
Primary=3.16 cfs 1.657 af

Total Runoff Area = 10.500 ac Runoff Volume = 1.890 af Average Runoff Depth = 2.16"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Front Area 1

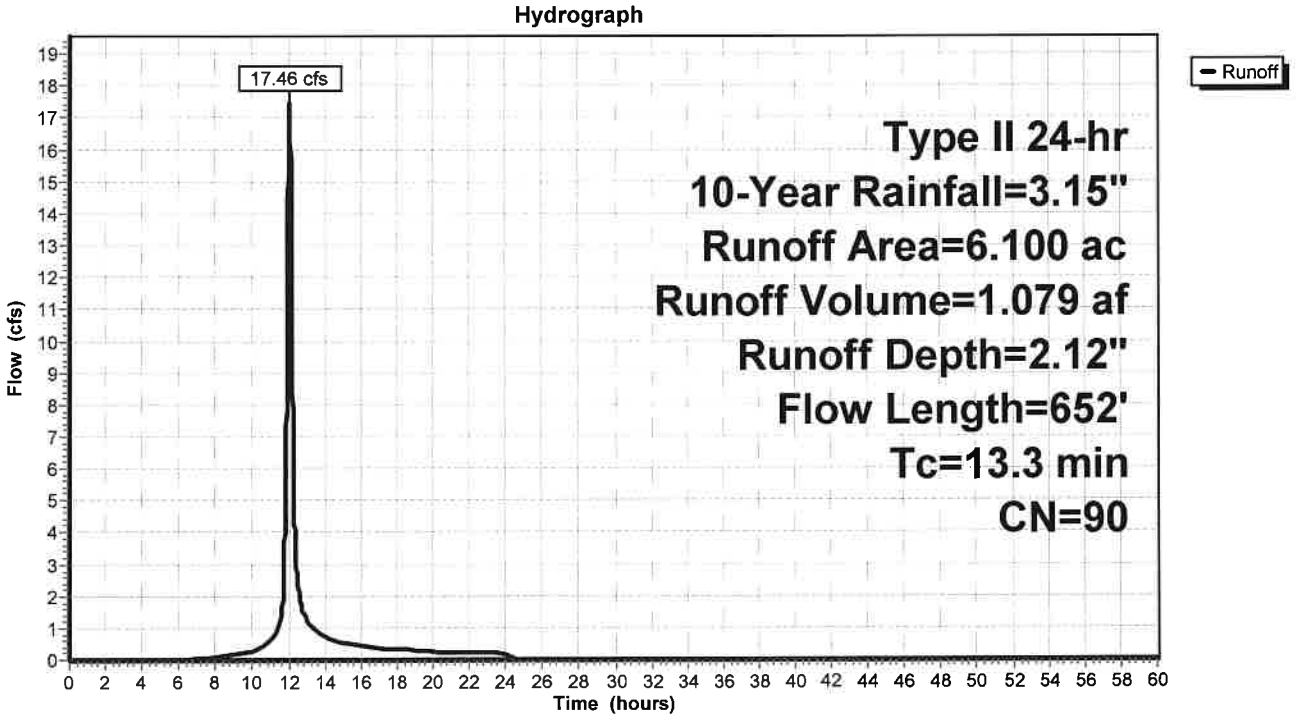
Runoff = 17.46 cfs @ 12.05 hrs, Volume= 1.079 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.00	0.01
7.00	0.31	0.01	0.05
8.00	0.38	0.02	0.09
9.00	0.46	0.04	0.18
10.00	0.57	0.08	0.28
11.00	0.74	0.16	0.63
12.00	2.09	1.17	**15.84**
13.00	2.43	1.47	**1.23**
14.00	2.58	1.61	0.71
15.00	2.69	1.70	0.55
16.00	2.77	1.78	0.43
17.00	2.84	1.84	0.37
18.00	2.90	1.89	0.33
19.00	2.95	1.94	0.28
20.00	3.00	1.98	0.24
21.00	3.04	2.02	0.22
22.00	3.08	2.06	0.22
23.00	3.11	2.09	0.21
24.00	**3.15**	**2.12**	0.20
25.00	3.15	2.12	0.00
26.00	3.15	2.12	0.00
27.00	3.15	2.12	0.00
28.00	3.15	2.12	0.00
29.00	3.15	2.12	0.00
30.00	3.15	2.12	0.00
31.00	3.15	2.12	0.00
32.00	3.15	2.12	0.00
33.00	3.15	2.12	0.00
34.00	3.15	2.12	0.00
35.00	3.15	2.12	0.00
36.00	3.15	2.12	0.00
37.00	3.15	2.12	0.00
38.00	3.15	2.12	0.00
39.00	3.15	2.12	0.00
40.00	3.15	2.12	0.00
41.00	3.15	2.12	0.00
42.00	3.15	2.12	0.00
43.00	3.15	2.12	0.00
44.00	3.15	2.12	0.00
45.00	3.15	2.12	0.00
46.00	3.15	2.12	0.00
47.00	3.15	2.12	0.00
48.00	3.15	2.12	0.00
49.00	3.15	2.12	0.00
50.00	3.15	2.12	0.00
51.00	3.15	2.12	0.00
52.00	3.15	2.12	0.00
53.00	3.15	2.12	0.00
54.00	3.15	2.12	0.00
55.00	3.15	2.12	0.00
56.00	3.15	2.12	0.00
57.00	3.15	2.12	0.00
58.00	3.15	2.12	0.00
59.00	3.15	2.12	0.00
60.00	3.15	2.12	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 2S: Rear Area 1

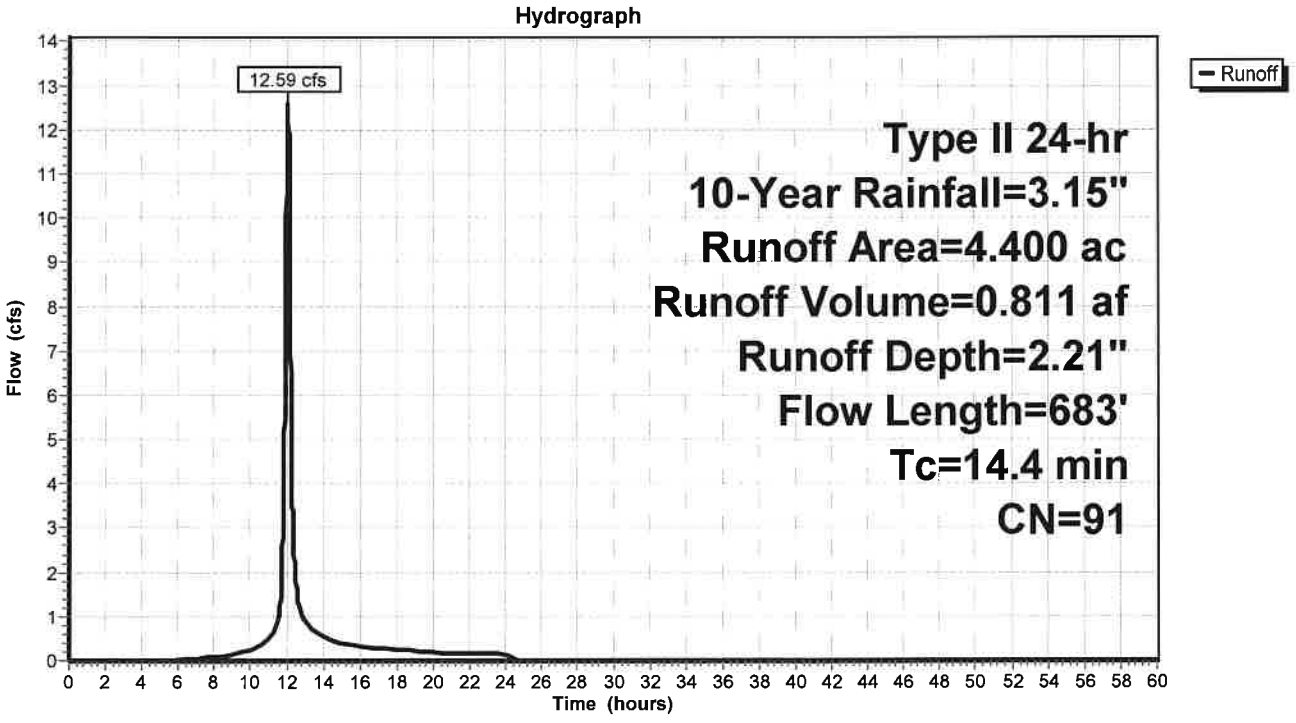
Runoff = 12.59 cfs @ 12.06 hrs, Volume= 0.811 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.15	0.00	0.00
5.00	0.20	0.00	0.00
6.00	0.25	0.00	0.02
7.00	0.31	0.01	0.05
8.00	0.38	0.03	0.08
9.00	0.46	0.06	0.15
10.00	0.57	0.10	0.23
11.00	0.74	0.19	0.49
12.00	2.09	1.24	**11.04**
13.00	2.43	1.55	**0.92**
14.00	2.58	1.69	0.53
15.00	2.69	1.78	0.40
16.00	2.77	1.86	0.32
17.00	2.84	1.92	0.27
18.00	2.90	1.98	0.24
19.00	2.95	2.03	0.21
20.00	3.00	2.07	0.18
21.00	3.04	2.11	0.16
22.00	3.08	2.14	0.16
23.00	3.11	2.18	0.15
24.00	**3.15**	**2.21**	0.15
25.00	3.15	2.21	0.00
26.00	3.15	2.21	0.00
27.00	3.15	2.21	0.00
28.00	3.15	2.21	0.00
29.00	3.15	2.21	0.00
30.00	3.15	2.21	0.00
31.00	3.15	2.21	0.00
32.00	3.15	2.21	0.00
33.00	3.15	2.21	0.00
34.00	3.15	2.21	0.00
35.00	3.15	2.21	0.00
36.00	3.15	2.21	0.00
37.00	3.15	2.21	0.00
38.00	3.15	2.21	0.00
39.00	3.15	2.21	0.00
40.00	3.15	2.21	0.00
41.00	3.15	2.21	0.00
42.00	3.15	2.21	0.00
43.00	3.15	2.21	0.00
44.00	3.15	2.21	0.00
45.00	3.15	2.21	0.00
46.00	3.15	2.21	0.00
47.00	3.15	2.21	0.00
48.00	3.15	2.21	0.00
49.00	3.15	2.21	0.00
50.00	3.15	2.21	0.00
51.00	3.15	2.21	0.00
52.00	3.15	2.21	0.00
53.00	3.15	2.21	0.00
54.00	3.15	2.21	0.00
55.00	3.15	2.21	0.00
56.00	3.15	2.21	0.00
57.00	3.15	2.21	0.00
58.00	3.15	2.21	0.00
59.00	3.15	2.21	0.00
60.00	3.15	2.21	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 2.12" for 10-Year event
Inflow = 17.46 cfs @ 12.05 hrs, Volume= 1.079 af
Outflow = 16.45 cfs @ 12.09 hrs, Volume= 1.079 af, Atten= 6%, Lag= 2.3 min
Primary = 2.85 cfs @ 12.09 hrs, Volume= 0.765 af
Secondary = 13.60 cfs @ 12.09 hrs, Volume= 0.314 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.04' @ 12.09 hrs Surf.Area= 9,976 sf Storage= 9,672 cf

Plug-Flow detention time= 160.8 min calculated for 1.079 af (100% of inflow)
Center-of-Mass det. time= 160.7 min (971.9 - 811.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

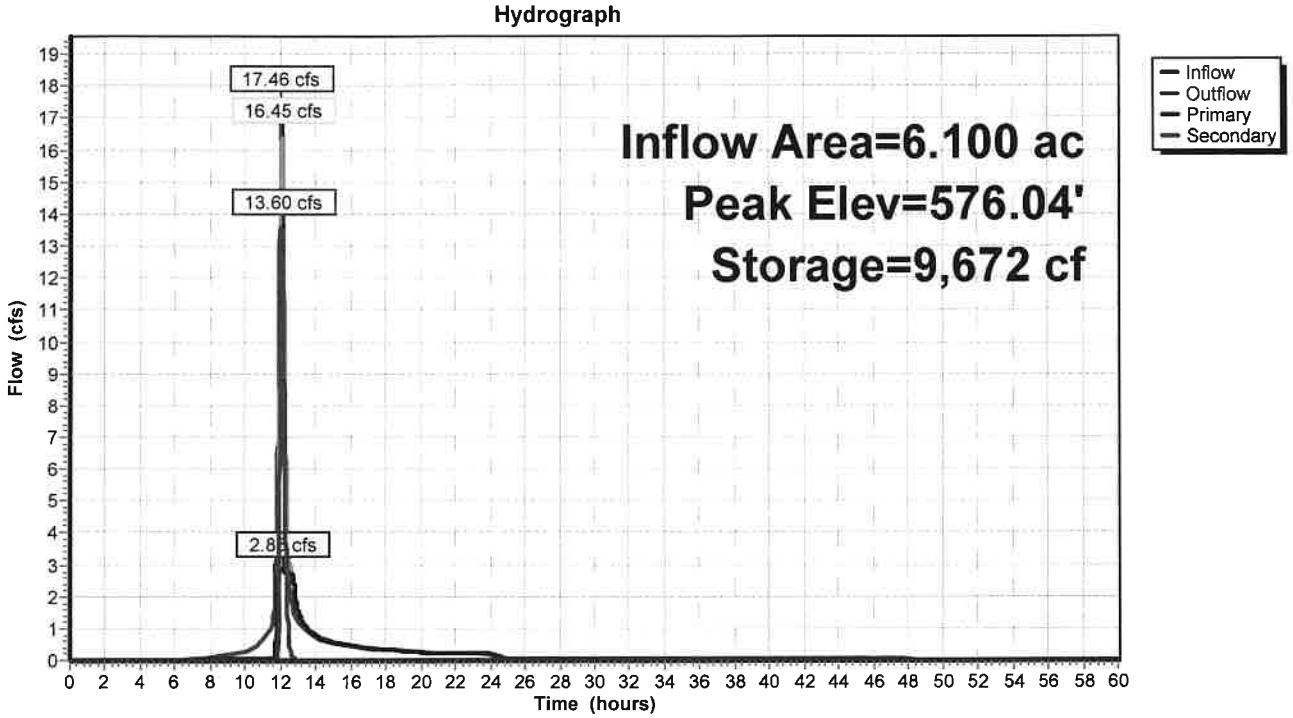
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.85 cfs @ 12.09 hrs HW=576.04' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.85 cfs @ 8.17 fps)
  ├**2=Grate** (Passes < 4.93 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

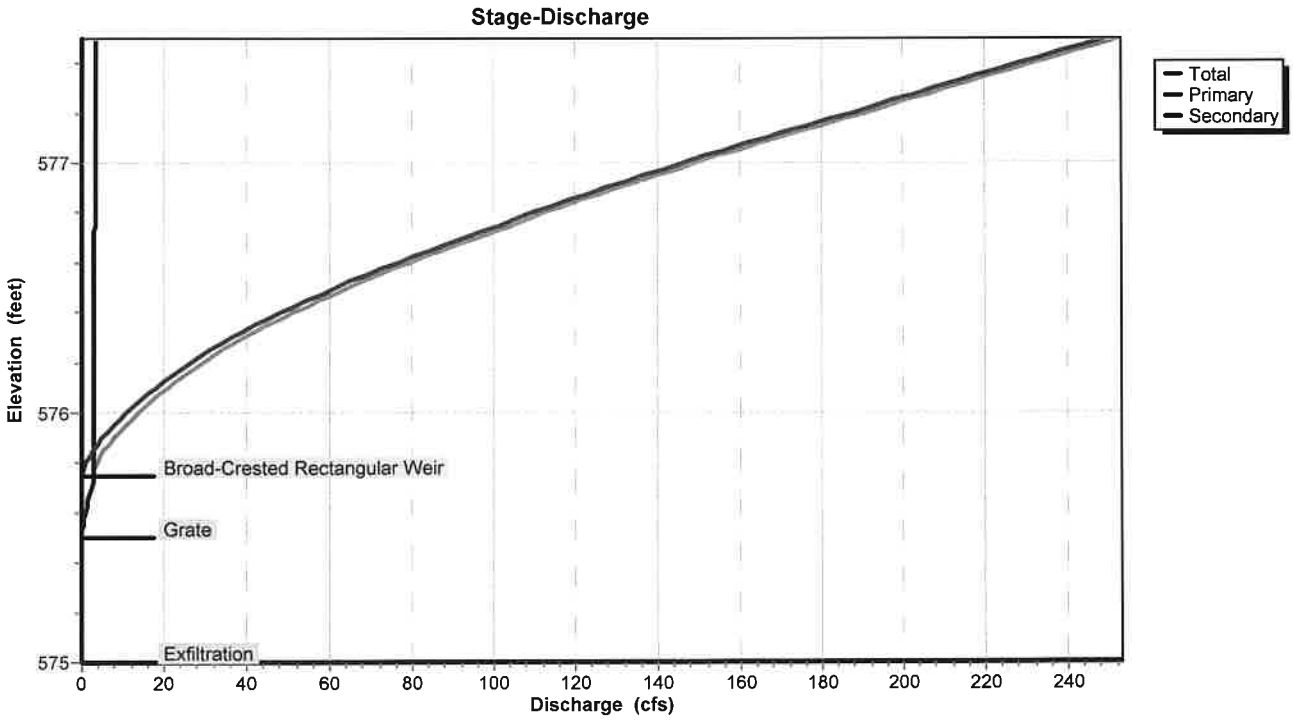
Secondary OutFlow Max=13.58 cfs @ 12.09 hrs HW=576.04' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 13.58 cfs @ 1.57 fps)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3

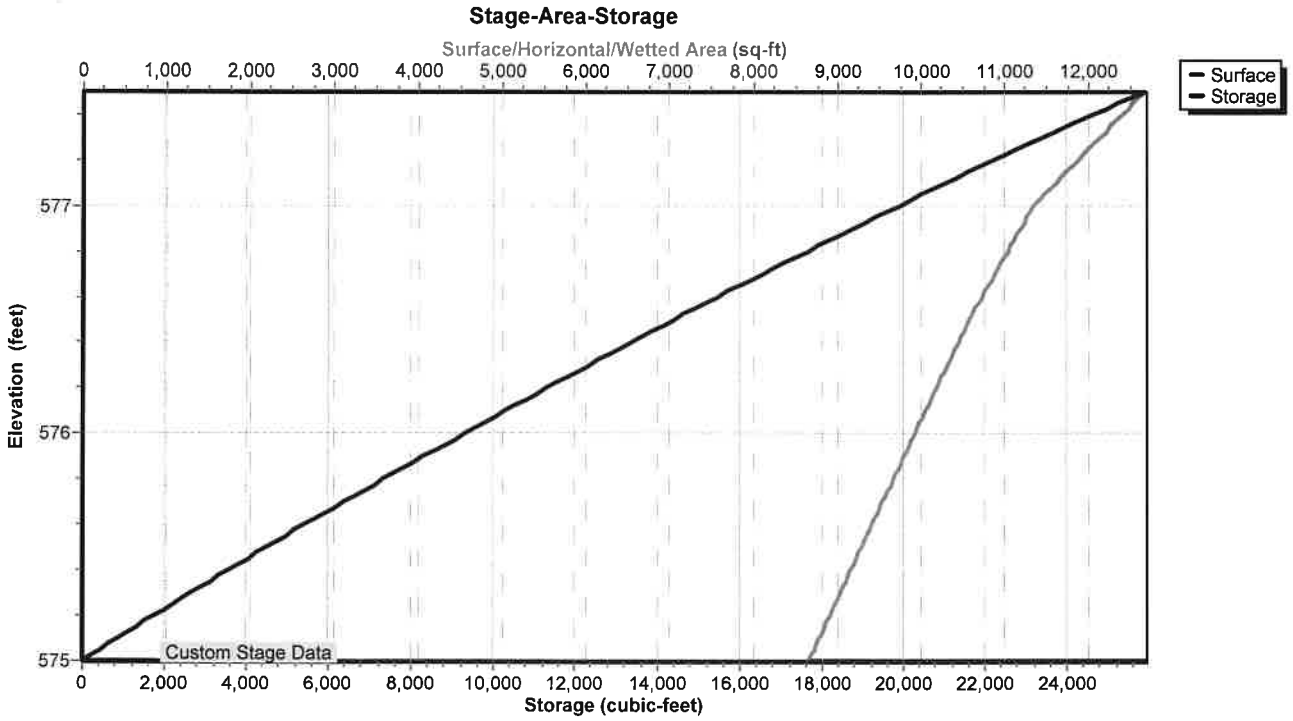


Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.01	6	575.00	0.00	0.00	0.00
8.00	0.09	207	575.02	0.05	0.05	0.00
10.00	0.28	1,102	575.13	0.05	0.05	0.00
12.00	**15.84**	**9,006**	**575.97**	**11.97**	**2.82**	**9.15**
14.00	**0.71**	**5,320**	**575.59**	**0.79**	**0.79**	**0.00**
16.00	0.43	5,039	575.56	0.46	0.46	0.00
18.00	0.33	4,925	575.55	0.34	0.34	0.00
20.00	0.24	4,823	575.54	0.25	0.25	0.00
22.00	0.22	4,781	575.53	0.22	0.22	0.00
24.00	0.20	4,760	575.53	0.20	0.20	0.00
26.00	0.00	4,270	575.48	0.06	0.06	0.00
28.00	0.00	3,874	575.43	0.05	0.05	0.00
30.00	0.00	3,482	575.39	0.05	0.05	0.00
32.00	0.00	3,093	575.35	0.05	0.05	0.00
34.00	0.00	2,707	575.31	0.05	0.05	0.00
36.00	0.00	2,324	575.26	0.05	0.05	0.00
38.00	0.00	1,945	575.22	0.05	0.05	0.00
40.00	0.00	1,569	575.18	0.05	0.05	0.00
42.00	0.00	1,197	575.14	0.05	0.05	0.00
44.00	0.00	828	575.10	0.05	0.05	0.00
46.00	0.00	461	575.05	0.05	0.05	0.00
48.00	0.00	126	575.01	0.03	0.03	0.00
50.00	0.00	24	575.00	0.01	0.01	0.00
52.00	0.00	4	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 3.07" for 10-Year event
Inflow = 26.01 cfs @ 12.08 hrs, Volume= 1.125 af
Outflow = 0.47 cfs @ 14.32 hrs, Volume= 0.892 af, Atten= 98%, Lag= 134.6 min
Primary = 0.47 cfs @ 14.32 hrs, Volume= 0.892 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.60' @ 14.32 hrs Surf.Area= 63,820 sf Storage= 37,117 cf

Plug-Flow detention time= 942.6 min calculated for 0.892 af (79% of inflow)
Center-of-Mass det. time= 874.9 min (1,660.4 - 785.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

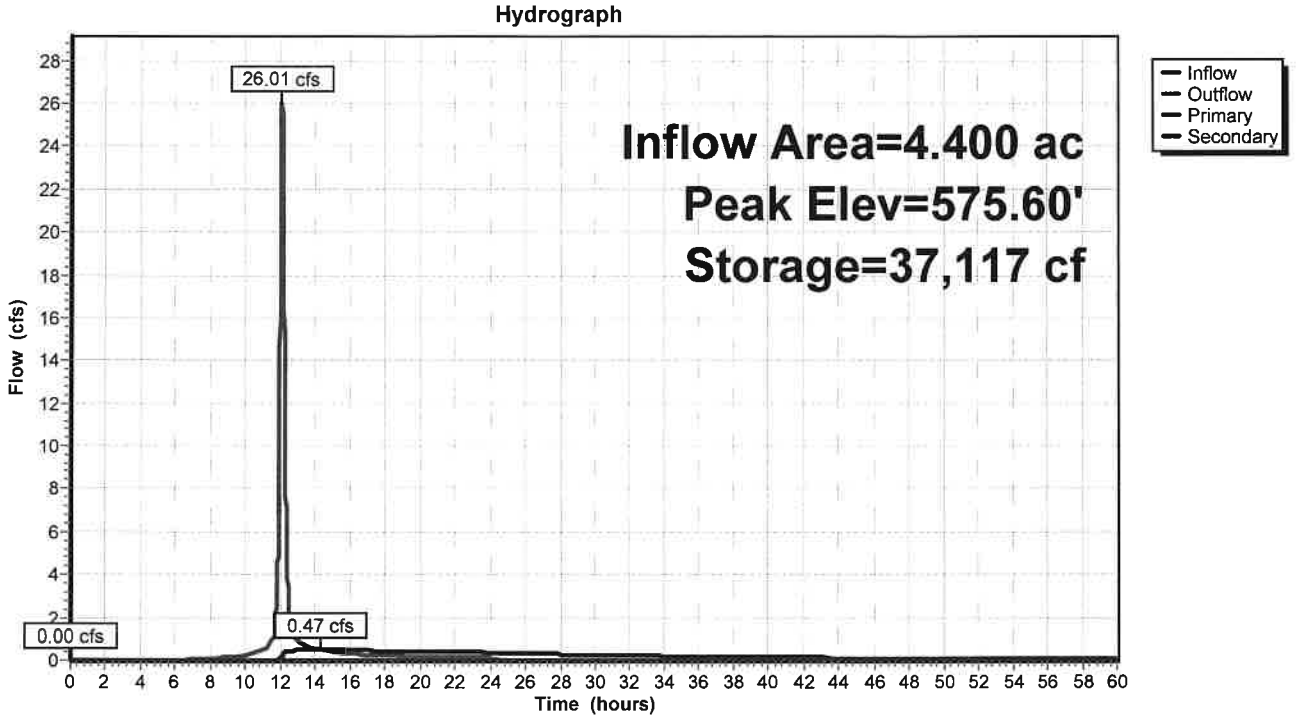
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.47 cfs @ 14.32 hrs HW=575.60' (Free Discharge)
↑—**1=12" outlet pipe** (Passes 0.47 cfs of 2.23 cfs potential flow)
↑—**2=low flow outlet pipe** (Barrel Controls 0.47 cfs @ 2.50 fps)
—**3=Grate** (Controls 0.00 cfs)

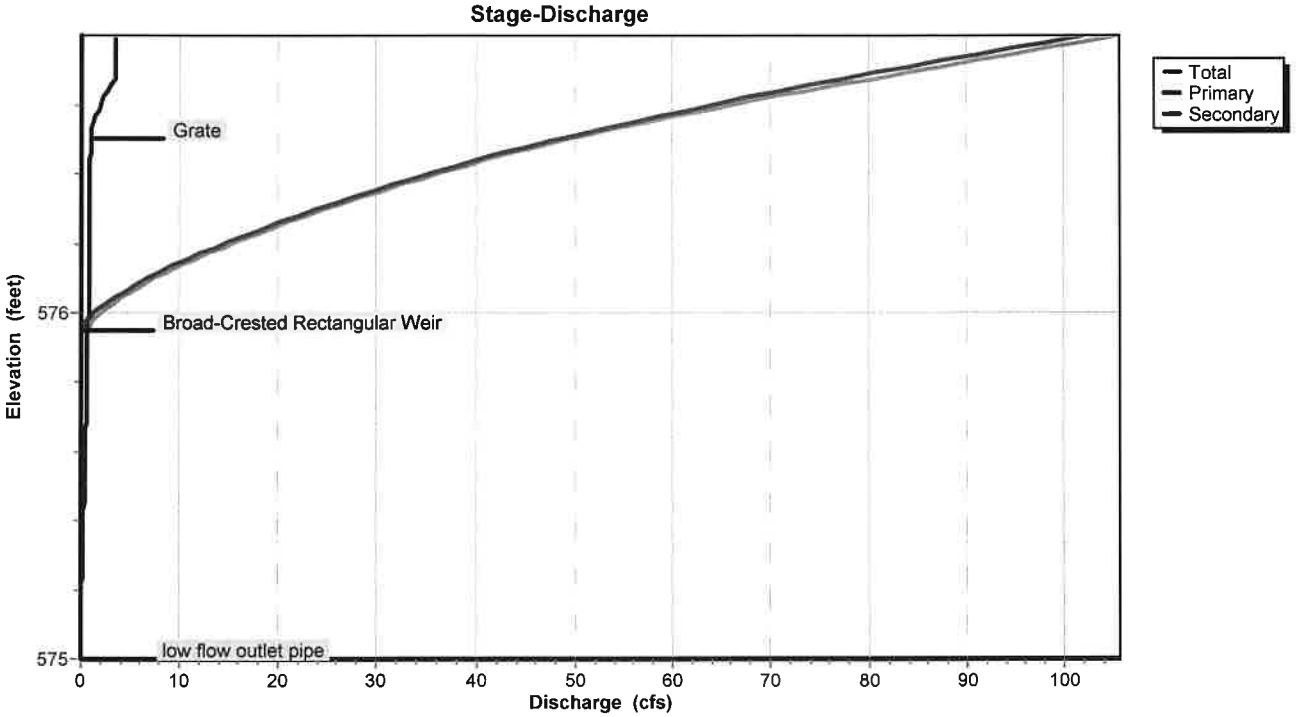
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)

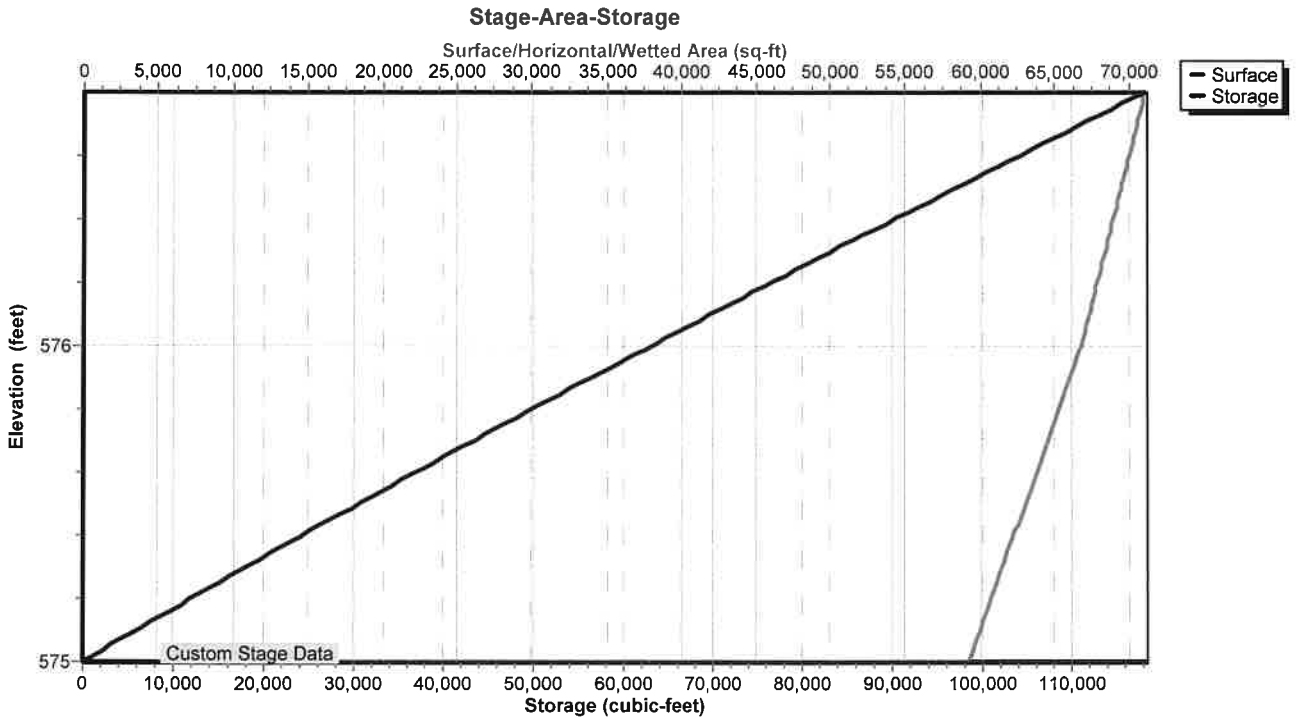


Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.02	28	575.00	0.00	0.00	0.00
8.00	0.08	376	575.01	0.00	0.00	0.00
10.00	0.23	1,427	575.02	0.00	0.00	0.00
12.00	**20.19**	11,922	575.20	0.08	0.08	0.00
14.00	**0.53**	**37,087**	**575.60**	**0.47**	**0.47**	0.00
16.00	0.32	**36,669**	**575.60**	**0.46**	**0.46**	0.00
18.00	0.24	35,374	575.58	0.44	0.44	0.00
20.00	0.18	33,764	575.55	0.42	0.42	0.00
22.00	0.16	32,024	575.52	0.39	0.39	0.00
24.00	0.15	30,385	575.50	0.37	0.37	0.00
26.00	0.00	28,005	575.46	0.33	0.33	0.00
28.00	0.00	25,794	575.42	0.29	0.29	0.00
30.00	0.00	23,836	575.39	0.26	0.26	0.00
32.00	0.00	22,102	575.36	0.23	0.23	0.00
34.00	0.00	20,561	575.34	0.20	0.20	0.00
36.00	0.00	19,188	575.32	0.18	0.18	0.00
38.00	0.00	17,961	575.30	0.16	0.16	0.00
40.00	0.00	16,860	575.28	0.14	0.14	0.00
42.00	0.00	15,870	575.26	0.13	0.13	0.00
44.00	0.00	14,975	575.25	0.12	0.12	0.00
46.00	0.00	14,165	575.24	0.11	0.11	0.00
48.00	0.00	13,428	575.22	0.10	0.10	0.00
50.00	0.00	12,756	575.21	0.09	0.09	0.00
52.00	0.00	12,141	575.20	0.08	0.08	0.00
54.00	0.00	11,578	575.19	0.08	0.08	0.00
56.00	0.00	11,059	575.18	0.07	0.07	0.00
58.00	0.00	10,581	575.18	0.06	0.06	0.00
60.00	0.00	10,139	575.17	0.06	0.06	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

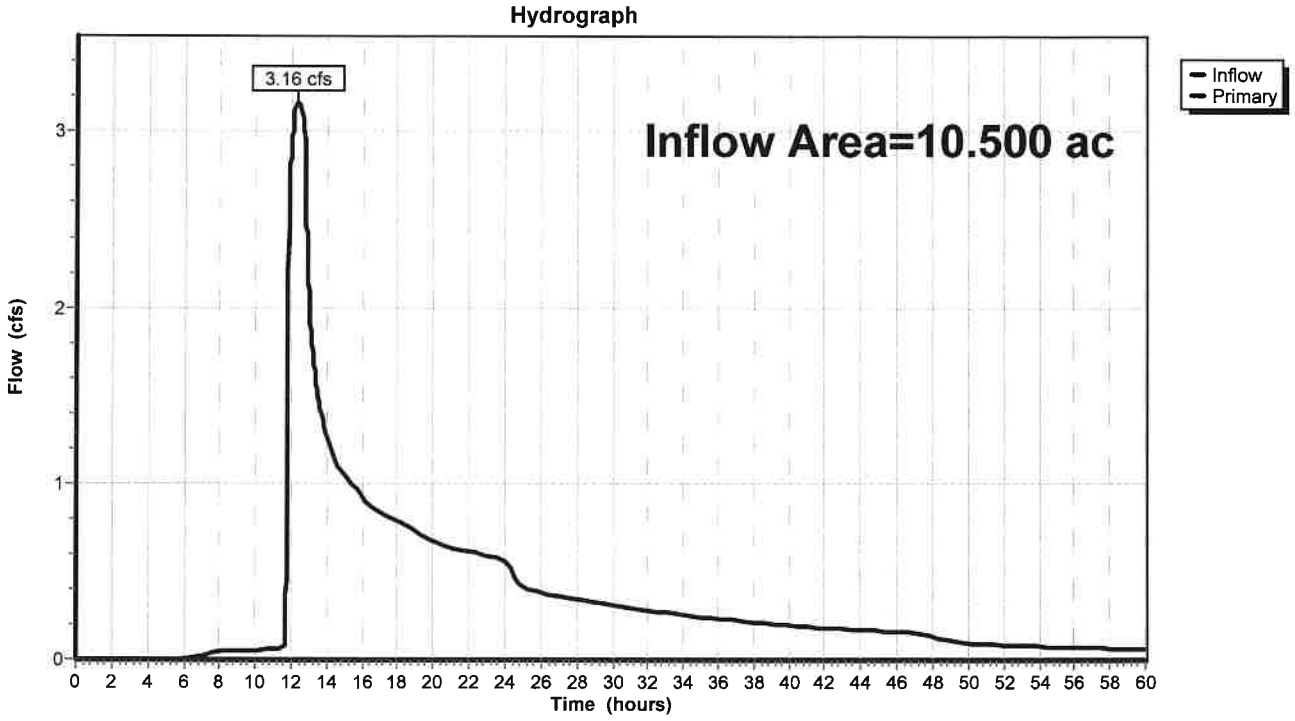
Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 1.89" for 10-Year event
Inflow = 3.16 cfs @ 12.39 hrs, Volume= 1.657 af
Primary = 3.16 cfs @ 12.39 hrs, Volume= 1.657 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.08	0.00	0.08
1.00	0.00	0.00	0.00	53.00	0.08	0.00	0.08
2.00	0.00	0.00	0.00	54.00	0.08	0.00	0.08
3.00	0.00	0.00	0.00	55.00	0.07	0.00	0.07
4.00	0.00	0.00	0.00	56.00	0.07	0.00	0.07
5.00	0.00	0.00	0.00	57.00	0.07	0.00	0.07
6.00	0.00	0.00	0.00	58.00	0.06	0.00	0.06
7.00	0.02	0.00	0.02	59.00	0.06	0.00	0.06
8.00	0.05	0.00	0.05	60.00	0.06	0.00	0.06
9.00	0.05	0.00	0.05				
10.00	0.05	0.00	0.05				
11.00	0.06	0.00	0.06				
12.00	**2.90**	0.00	**2.90**				
13.00	**2.02**	0.00	**2.02**				
14.00	1.26	0.00	1.26				
15.00	1.05	0.00	1.05				
16.00	0.92	0.00	0.92				
17.00	0.84	0.00	0.84				
18.00	0.78	0.00	0.78				
19.00	0.73	0.00	0.73				
20.00	0.67	0.00	0.67				
21.00	0.63	0.00	0.63				
22.00	0.61	0.00	0.61				
23.00	0.59	0.00	0.59				
24.00	0.57	0.00	0.57				
25.00	0.40	0.00	0.40				
26.00	0.38	0.00	0.38				
27.00	0.36	0.00	0.36				
28.00	0.34	0.00	0.34				
29.00	0.33	0.00	0.33				
30.00	0.31	0.00	0.31				
31.00	0.29	0.00	0.29				
32.00	0.28	0.00	0.28				
33.00	0.27	0.00	0.27				
34.00	0.26	0.00	0.26				
35.00	0.24	0.00	0.24				
36.00	0.23	0.00	0.23				
37.00	0.22	0.00	0.22				
38.00	0.21	0.00	0.21				
39.00	0.20	0.00	0.20				
40.00	0.20	0.00	0.20				
41.00	0.19	0.00	0.19				
42.00	0.18	0.00	0.18				
43.00	0.18	0.00	0.18				
44.00	0.17	0.00	0.17				
45.00	0.16	0.00	0.16				
46.00	0.16	0.00	0.16				
47.00	0.15	0.00	0.15				
48.00	0.13	0.00	0.13				
49.00	0.11	0.00	0.11				
50.00	0.09	0.00	0.09				
51.00	0.09	0.00	0.09				

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=2.80"
Flow Length=652' Tc=13.3 min CN=90 Runoff=22.74 cfs 1.421 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=2.89"
Flow Length=683' Tc=14.4 min CN=91 Runoff=16.27 cfs 1.061 af

Pond 1P: Bioretention Area 3 Peak Elev=576.11' Storage=10,375 cf Inflow=22.74 cfs 1.421 af
Primary=2.89 cfs 0.934 af Secondary=18.84 cfs 0.487 af Outflow=21.73 cfs 1.421 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=575.83' Storage=51,963 cf Inflow=34.94 cfs 1.548 af
Primary=0.64 cfs 1.276 af Secondary=0.00 cfs 0.000 af Outflow=0.64 cfs 1.276 af

Link 5L: Outflow (@ CB 54) Inflow=3.36 cfs 2.210 af
Primary=3.36 cfs 2.210 af

Total Runoff Area = 10.500 ac Runoff Volume = 2.482 af Average Runoff Depth = 2.84"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Front Area 1

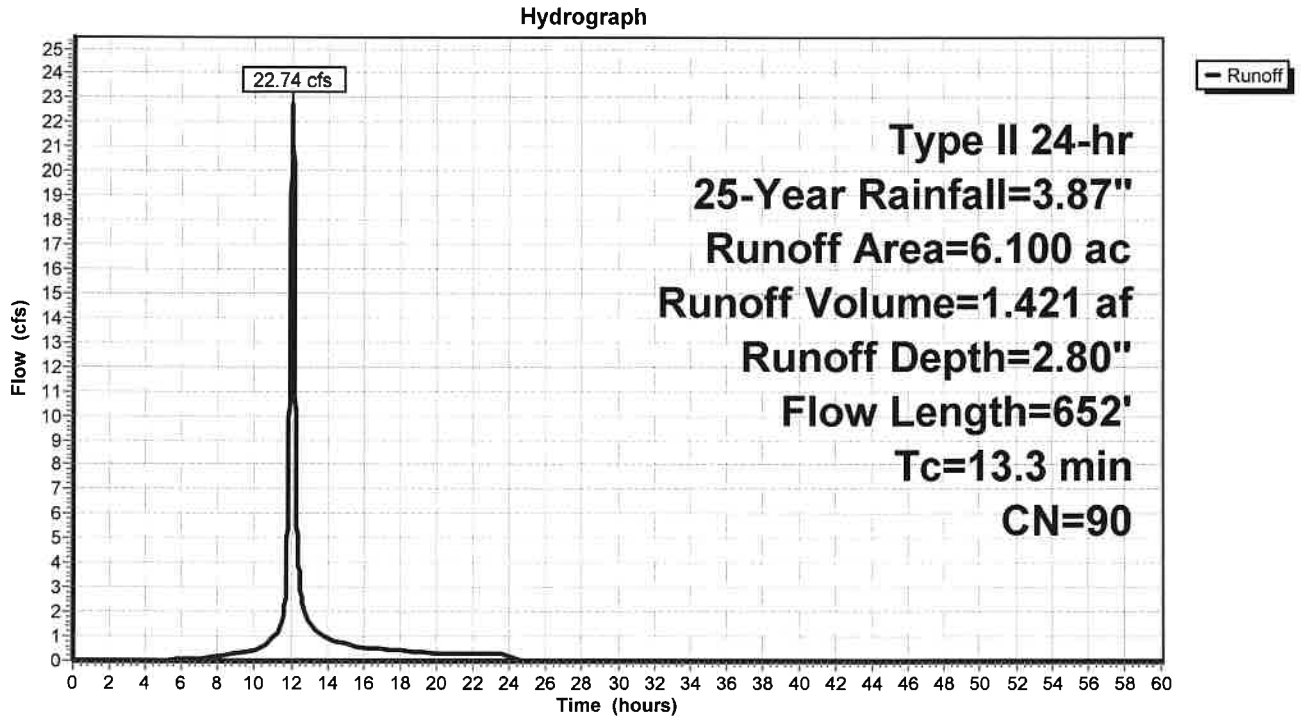
Runoff = 22.74 cfs @ 12.05 hrs, Volume= 1.421 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.87	2.80	0.00
1.00	0.04	0.00	0.00	53.00	3.87	2.80	0.00
2.00	0.09	0.00	0.00	54.00	3.87	2.80	0.00
3.00	0.13	0.00	0.00	55.00	3.87	2.80	0.00
4.00	0.19	0.00	0.00	56.00	3.87	2.80	0.00
5.00	0.24	0.00	0.01	57.00	3.87	2.80	0.00
6.00	0.31	0.01	0.05	58.00	3.87	2.80	0.00
7.00	0.38	0.02	0.10	59.00	3.87	2.80	0.00
8.00	0.46	0.04	0.16	60.00	3.87	2.80	0.00
9.00	0.57	0.08	0.28				
10.00	0.70	0.14	0.43				
11.00	0.91	0.26	0.90				
12.00	2.57	1.59	**20.75**				
13.00	2.99	1.97	**1.57**				
14.00	3.17	2.14	0.90				
15.00	3.30	2.26	0.70				
16.00	3.41	2.36	0.54				
17.00	3.49	2.44	0.47				
18.00	3.56	2.51	0.41				
19.00	3.63	2.57	0.36				
20.00	3.68	2.62	0.30				
21.00	3.73	2.67	0.28				
22.00	3.78	2.71	0.27				
23.00	3.83	2.75	0.26				
24.00	**3.87**	**2.80**	0.25				
25.00	3.87	2.80	0.00				
26.00	3.87	2.80	0.00				
27.00	3.87	2.80	0.00				
28.00	3.87	2.80	0.00				
29.00	3.87	2.80	0.00				
30.00	3.87	2.80	0.00				
31.00	3.87	2.80	0.00				
32.00	3.87	2.80	0.00				
33.00	3.87	2.80	0.00				
34.00	3.87	2.80	0.00				
35.00	3.87	2.80	0.00				
36.00	3.87	2.80	0.00				
37.00	3.87	2.80	0.00				
38.00	3.87	2.80	0.00				
39.00	3.87	2.80	0.00				
40.00	3.87	2.80	0.00				
41.00	3.87	2.80	0.00				
42.00	3.87	2.80	0.00				
43.00	3.87	2.80	0.00				
44.00	3.87	2.80	0.00				
45.00	3.87	2.80	0.00				
46.00	3.87	2.80	0.00				
47.00	3.87	2.80	0.00				
48.00	3.87	2.80	0.00				
49.00	3.87	2.80	0.00				
50.00	3.87	2.80	0.00				
51.00	3.87	2.80	0.00				

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 2S: Rear Area 1

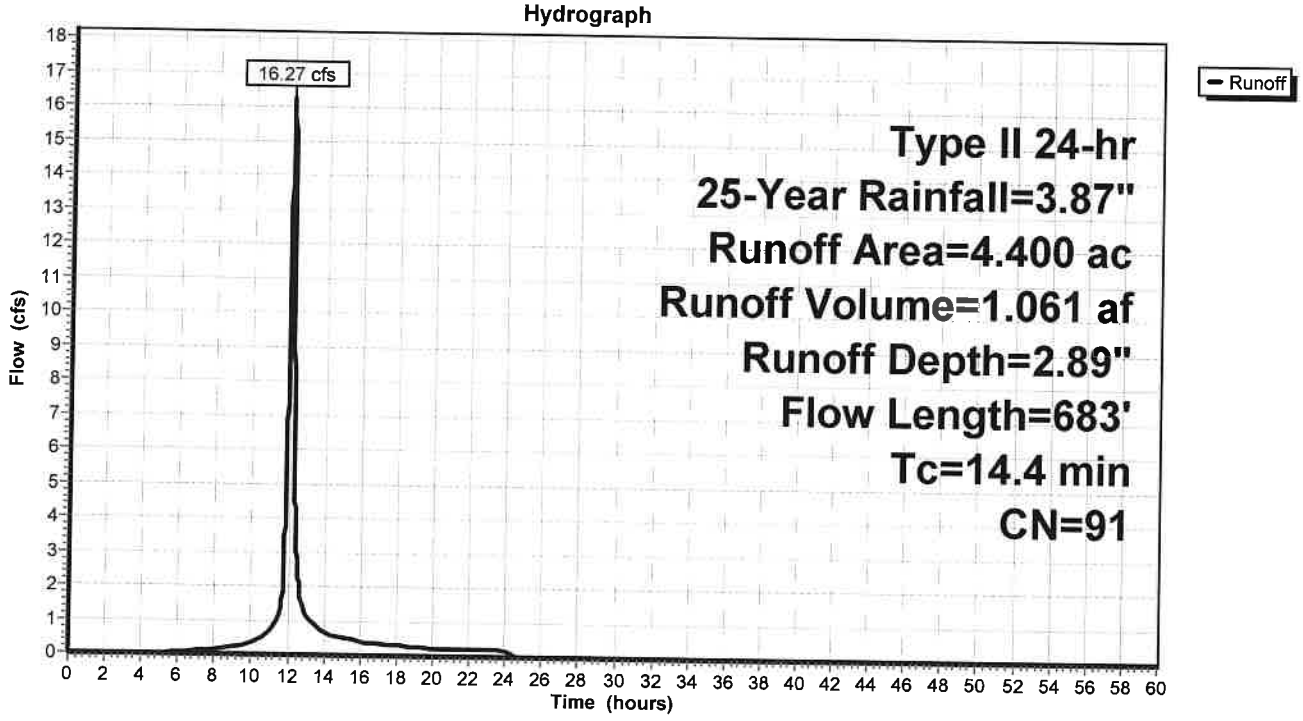
Runoff = 16.27 cfs @ 12.06 hrs, Volume= 1.061 af, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.02
6.00	0.31	0.01	0.05
7.00	0.38	0.03	0.09
8.00	0.46	0.06	0.13
9.00	0.57	0.10	0.23
10.00	0.70	0.17	0.34
11.00	0.91	0.30	0.69
12.00	2.57	1.67	**14.36**
13.00	2.99	2.06	**1.16**
14.00	3.17	2.23	0.67
15.00	3.30	2.36	0.51
16.00	3.41	2.45	0.40
17.00	3.49	2.53	0.34
18.00	3.56	2.60	0.30
19.00	3.63	2.66	0.26
20.00	3.68	2.72	0.22
21.00	3.73	2.76	0.21
22.00	3.78	2.81	0.20
23.00	3.83	2.85	0.19
24.00	**3.87**	**2.89**	0.18
25.00	3.87	2.89	0.00
26.00	3.87	2.89	0.00
27.00	3.87	2.89	0.00
28.00	3.87	2.89	0.00
29.00	3.87	2.89	0.00
30.00	3.87	2.89	0.00
31.00	3.87	2.89	0.00
32.00	3.87	2.89	0.00
33.00	3.87	2.89	0.00
34.00	3.87	2.89	0.00
35.00	3.87	2.89	0.00
36.00	3.87	2.89	0.00
37.00	3.87	2.89	0.00
38.00	3.87	2.89	0.00
39.00	3.87	2.89	0.00
40.00	3.87	2.89	0.00
41.00	3.87	2.89	0.00
42.00	3.87	2.89	0.00
43.00	3.87	2.89	0.00
44.00	3.87	2.89	0.00
45.00	3.87	2.89	0.00
46.00	3.87	2.89	0.00
47.00	3.87	2.89	0.00
48.00	3.87	2.89	0.00
49.00	3.87	2.89	0.00
50.00	3.87	2.89	0.00
51.00	3.87	2.89	0.00
52.00	3.87	2.89	0.00
53.00	3.87	2.89	0.00
54.00	3.87	2.89	0.00
55.00	3.87	2.89	0.00
56.00	3.87	2.89	0.00
57.00	3.87	2.89	0.00
58.00	3.87	2.89	0.00
59.00	3.87	2.89	0.00
60.00	3.87	2.89	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 2.80" for 25-Year event
Inflow = 22.74 cfs @ 12.05 hrs, Volume= 1.421 af
Outflow = 21.73 cfs @ 12.08 hrs, Volume= 1.421 af, Atten= 4%, Lag= 2.0 min
Primary = 2.89 cfs @ 12.08 hrs, Volume= 0.934 af
Secondary = 18.84 cfs @ 12.08 hrs, Volume= 0.487 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.11' @ 12.08 hrs Surf.Area= 10,069 sf Storage= 10,375 cf

Plug-Flow detention time= 127.9 min calculated for 1.421 af (100% of inflow)
Center-of-Mass det. time= 128.1 min (931.5 - 803.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

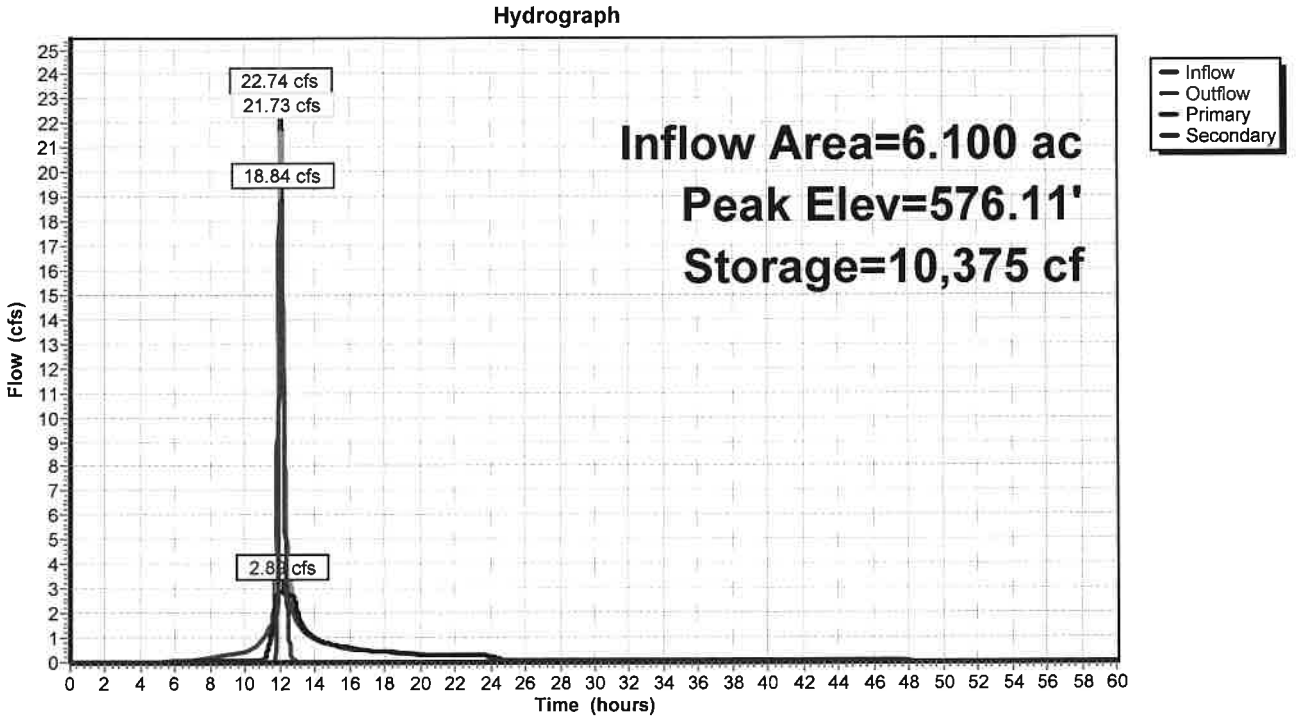
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.89 cfs @ 12.08 hrs HW=576.11' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.89 cfs @ 8.27 fps)
  └**2=Grate** (Passes < 5.25 cfs potential flow)
  └**3=Exfiltration** (Passes < 0.06 cfs potential flow)

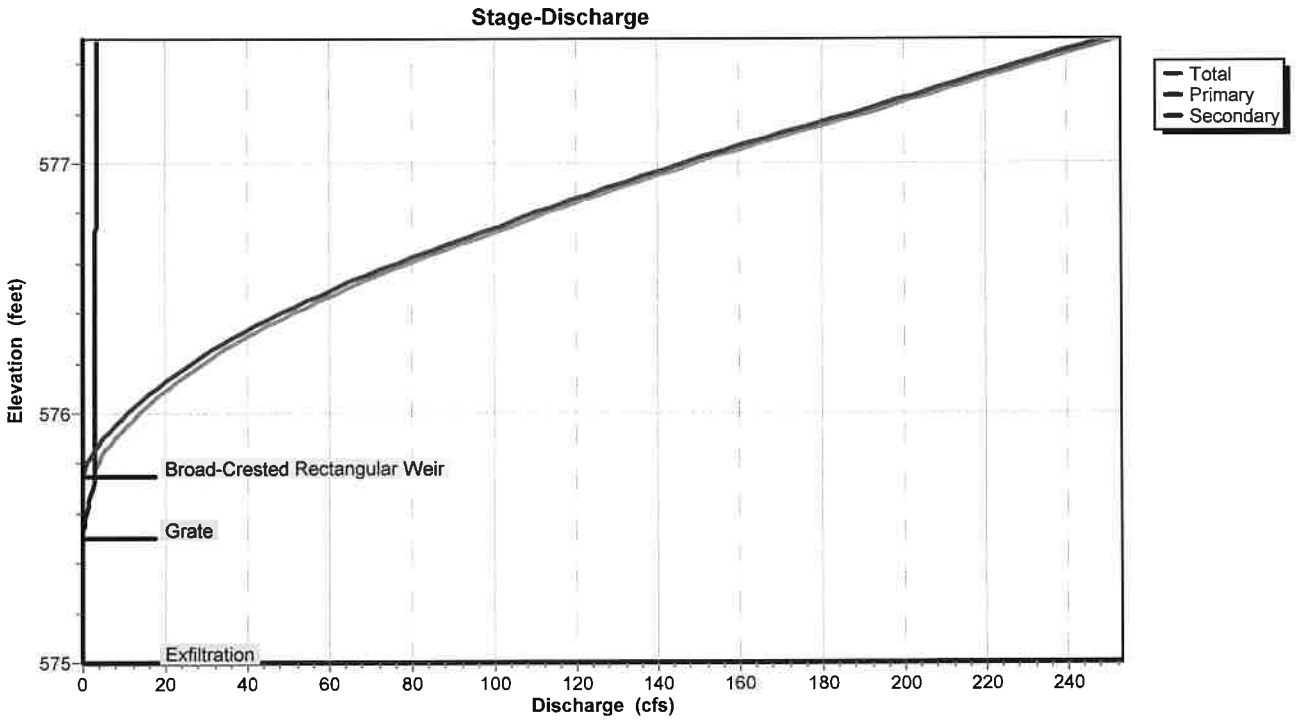
Secondary OutFlow Max=18.83 cfs @ 12.08 hrs HW=576.11' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 18.83 cfs @ 1.75 fps)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3

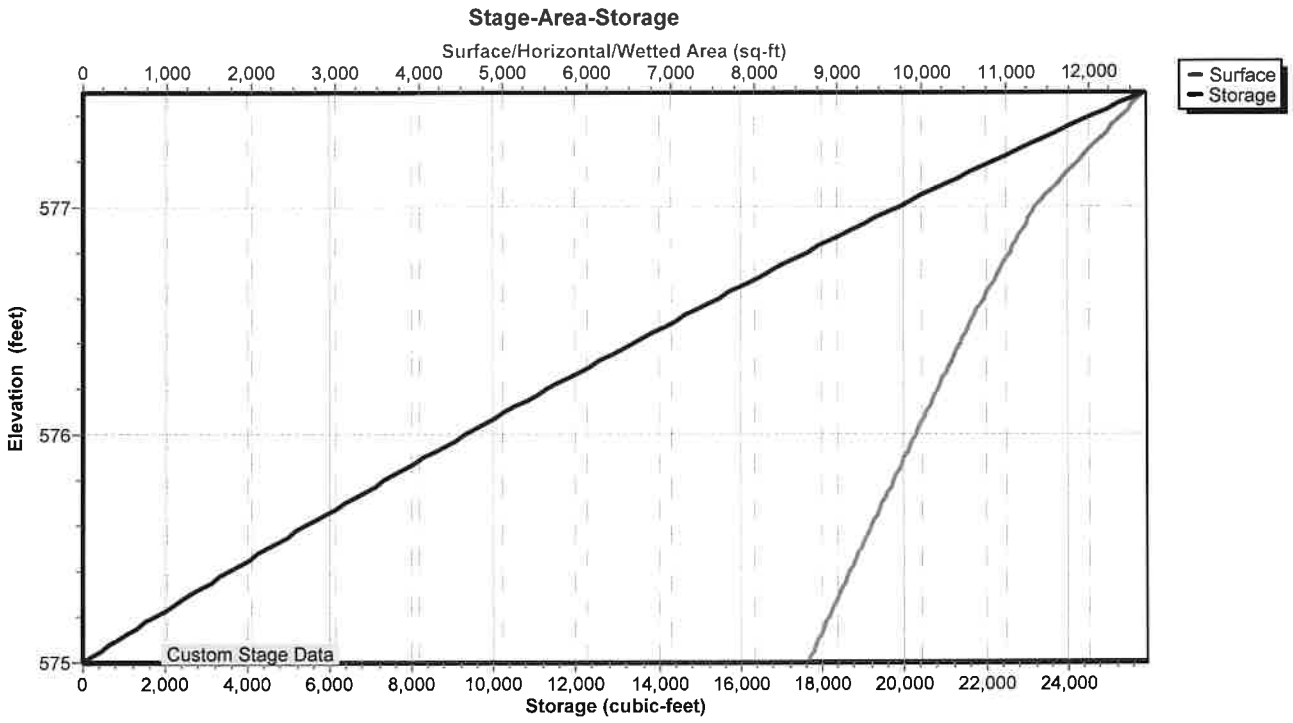


Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.05	75	575.01	0.02	0.02	0.00
8.00	0.16	510	575.06	0.05	0.05	0.00
10.00	0.43	2,153	575.24	0.05	0.05	0.00
12.00	**20.75**	**9,748**	**576.05**	**16.99**	**2.86**	**14.14**
14.00	**0.90**	**5,469**	**575.61**	**1.00**	**1.00**	**0.00**
16.00	0.54	5,148	575.57	0.58	0.58	0.00
18.00	0.41	5,009	575.56	0.43	0.43	0.00
20.00	0.30	4,900	575.54	0.32	0.32	0.00
22.00	0.27	4,847	575.54	0.28	0.28	0.00
24.00	0.25	4,821	575.54	0.25	0.25	0.00
26.00	0.00	4,285	575.48	0.06	0.06	0.00
28.00	0.00	3,889	575.44	0.05	0.05	0.00
30.00	0.00	3,497	575.39	0.05	0.05	0.00
32.00	0.00	3,108	575.35	0.05	0.05	0.00
34.00	0.00	2,722	575.31	0.05	0.05	0.00
36.00	0.00	2,339	575.27	0.05	0.05	0.00
38.00	0.00	1,960	575.22	0.05	0.05	0.00
40.00	0.00	1,584	575.18	0.05	0.05	0.00
42.00	0.00	1,211	575.14	0.05	0.05	0.00
44.00	0.00	842	575.10	0.05	0.05	0.00
46.00	0.00	475	575.05	0.05	0.05	0.00
48.00	0.00	134	575.02	0.03	0.03	0.00
50.00	0.00	25	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 4.22" for 25-Year event
Inflow = 34.94 cfs @ 12.07 hrs, Volume= 1.548 af
Outflow = 0.64 cfs @ 14.10 hrs, Volume= 1.276 af, Atten= 98%, Lag= 121.4 min
Primary = 0.64 cfs @ 14.10 hrs, Volume= 1.276 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.83' @ 14.10 hrs Surf.Area= 65,573 sf Storage= 51,963 cf

Plug-Flow detention time= 951.6 min calculated for 1.276 af (82% of inflow)
Center-of-Mass det. time= 890.6 min (1,667.8 - 777.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

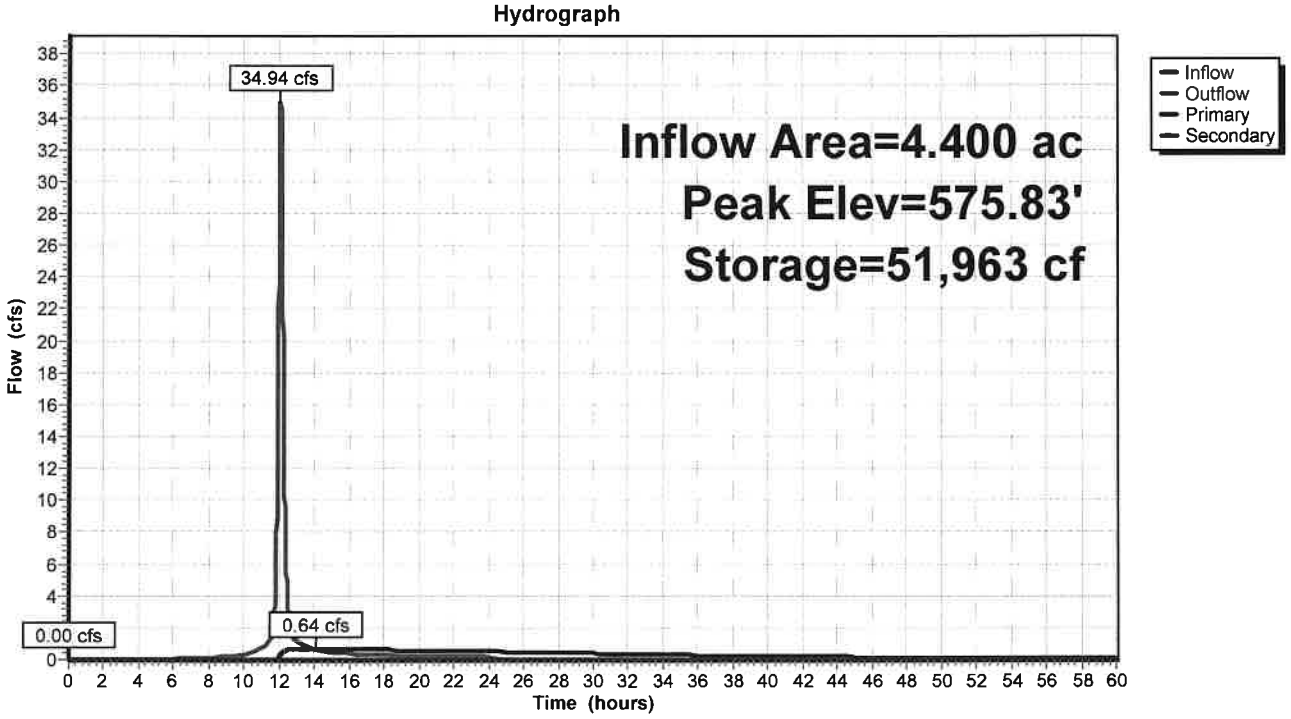
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.64 cfs @ 14.10 hrs HW=575.83' (Free Discharge)
↑—**1=12" outlet pipe** (Passes 0.64 cfs of 2.52 cfs potential flow)
↑—**2=low flow outlet pipe** (Inlet Controls 0.64 cfs @ 3.24 fps)
—**3=Grate** (Controls 0.00 cfs)

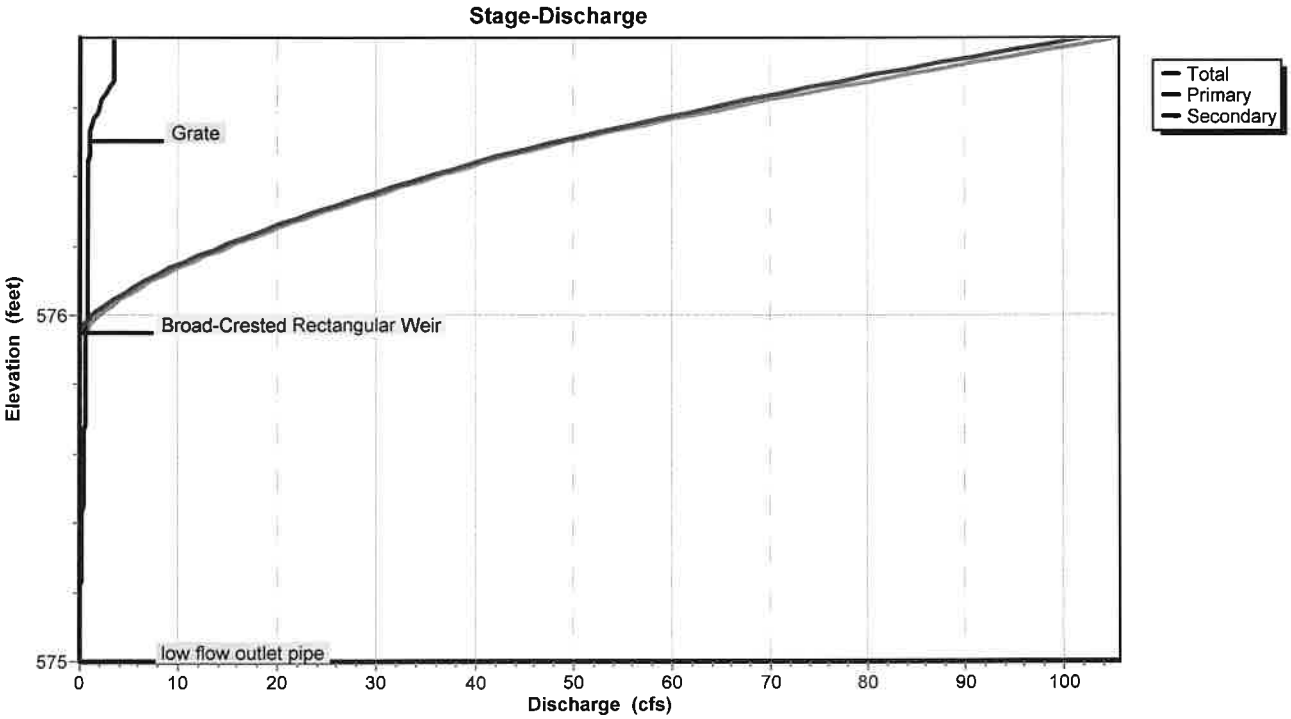
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=575.00' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)



Pond 3P: Detention Basin (SMA #1)



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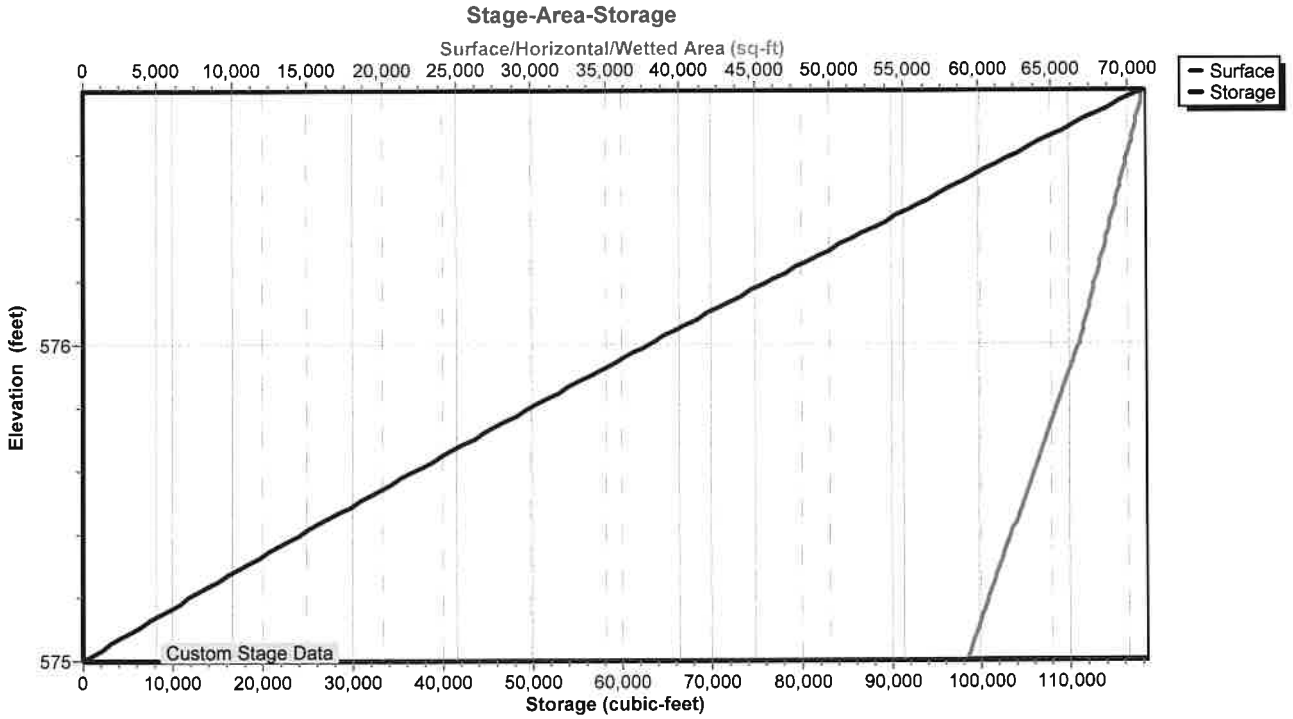
Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	**0.00**
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.05	138	575.00	0.00	0.00	0.00
8.00	0.13	792	575.01	0.00	0.00	0.00
10.00	0.34	2,407	575.04	0.00	0.00	0.00
12.00	**28.50**	18,305	575.30	0.17	0.17	0.00
14.00	**0.67**	**51,959**	**575.83**	**0.64**	**0.64**	0.00
16.00	0.40	**51,083**	**575.82**	**0.63**	**0.63**	0.00
18.00	0.30	49,081	575.79	0.61	0.61	0.00
20.00	0.22	46,637	575.75	0.59	0.59	0.00
22.00	0.20	44,041	575.71	0.55	0.55	0.00
24.00	0.18	41,619	575.67	0.51	0.51	0.00
26.00	0.00	38,209	575.62	0.48	0.48	0.00
28.00	0.00	34,905	575.57	0.44	0.44	0.00
30.00	0.00	31,923	575.52	0.39	0.39	0.00
32.00	0.00	29,266	575.48	0.35	0.35	0.00
34.00	0.00	26,910	575.44	0.31	0.31	0.00
36.00	0.00	24,824	575.41	0.27	0.27	0.00
38.00	0.00	22,978	575.38	0.24	0.24	0.00
40.00	0.00	21,340	575.35	0.21	0.21	0.00
42.00	0.00	19,882	575.33	0.19	0.19	0.00
44.00	0.00	18,582	575.31	0.17	0.17	0.00
46.00	0.00	17,418	575.29	0.15	0.15	0.00
48.00	0.00	16,372	575.27	0.14	0.14	0.00
50.00	0.00	15,429	575.26	0.12	0.12	0.00
52.00	0.00	14,576	575.24	0.11	0.11	0.00
54.00	0.00	13,802	575.23	0.10	0.10	0.00
56.00	0.00	13,098	575.22	0.09	0.09	0.00
58.00	0.00	12,454	575.21	0.09	0.09	0.00
60.00	0.00	11,865	575.20	0.08	0.08	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

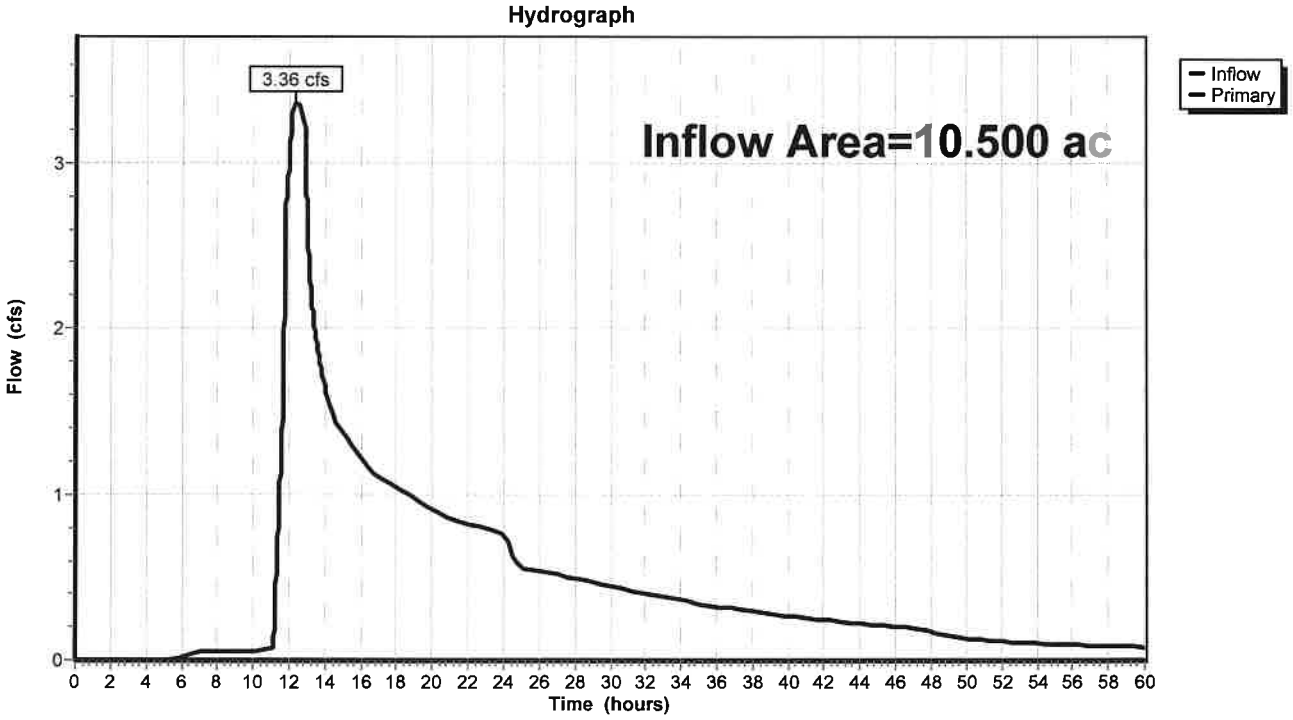
Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 2.53" for 25-Year event
Inflow = 3.36 cfs @ 12.37 hrs, Volume= 2.210 af
Primary = 3.36 cfs @ 12.37 hrs, Volume= 2.210 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.11	0.00	0.11
1.00	0.00	0.00	0.00	53.00	0.11	0.00	0.11
2.00	0.00	0.00	0.00	54.00	0.10	0.00	0.10
3.00	0.00	0.00	0.00	55.00	0.10	0.00	0.10
4.00	0.00	0.00	0.00	56.00	0.09	0.00	0.09
5.00	0.00	0.00	0.00	57.00	0.09	0.00	0.09
6.00	0.02	0.00	0.02	58.00	0.09	0.00	0.09
7.00	0.05	0.00	0.05	59.00	0.08	0.00	0.08
8.00	0.05	0.00	0.05	60.00	0.08	0.00	0.08
9.00	0.05	0.00	0.05				
10.00	0.06	0.00	0.06				
11.00	0.07	0.00	0.07				
12.00	**3.02**	0.00	**3.02**				
13.00	**2.64**	0.00	**2.64**				
14.00	1.63	0.00	1.63				
15.00	1.36	0.00	1.36				
16.00	1.21	0.00	1.21				
17.00	1.10	0.00	1.10				
18.00	1.04	0.00	1.04				
19.00	0.97	0.00	0.97				
20.00	0.91	0.00	0.91				
21.00	0.85	0.00	0.85				
22.00	0.82	0.00	0.82				
23.00	0.79	0.00	0.79				
24.00	0.76	0.00	0.76				
25.00	0.55	0.00	0.55				
26.00	0.53	0.00	0.53				
27.00	0.51	0.00	0.51				
28.00	0.49	0.00	0.49				
29.00	0.47	0.00	0.47				
30.00	0.45	0.00	0.45				
31.00	0.42	0.00	0.42				
32.00	0.40	0.00	0.40				
33.00	0.38	0.00	0.38				
34.00	0.36	0.00	0.36				
35.00	0.34	0.00	0.34				
36.00	0.33	0.00	0.33				
37.00	0.31	0.00	0.31				
38.00	0.29	0.00	0.29				
39.00	0.28	0.00	0.28				
40.00	0.27	0.00	0.27				
41.00	0.25	0.00	0.25				
42.00	0.24	0.00	0.24				
43.00	0.23	0.00	0.23				
44.00	0.22	0.00	0.22				
45.00	0.21	0.00	0.21				
46.00	0.20	0.00	0.20				
47.00	0.20	0.00	0.20				
48.00	0.17	0.00	0.17				
49.00	0.14	0.00	0.14				
50.00	0.13	0.00	0.13				
51.00	0.12	0.00	0.12				

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=3.41"
Flow Length=652' Tc=13.3 min CN=90 Runoff=27.50 cfs 1.736 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=3.52"
Flow Length=683' Tc=14.4 min CN=91 Runoff=19.58 cfs 1.290 af

Pond 1P: Bioretention Area 3 Peak Elev=576.17' Storage=10,953 cf Inflow=27.50 cfs 1.736 af
Primary=2.91 cfs 1.092 af Secondary=23.52 cfs 0.644 af Outflow=26.43 cfs 1.736 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=576.00' Storage=62,935 cf Inflow=42.93 cfs 1.933 af
Primary=0.72 cfs 1.504 af Secondary=1.25 cfs 0.131 af Outflow=1.97 cfs 1.635 af

Link 5L: Outflow (@ CB 54) Inflow=3.48 cfs 2.596 af
Primary=3.48 cfs 2.596 af

Total Runoff Area = 10.500 ac Runoff Volume = 3.026 af Average Runoff Depth = 3.46"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Front Area 1

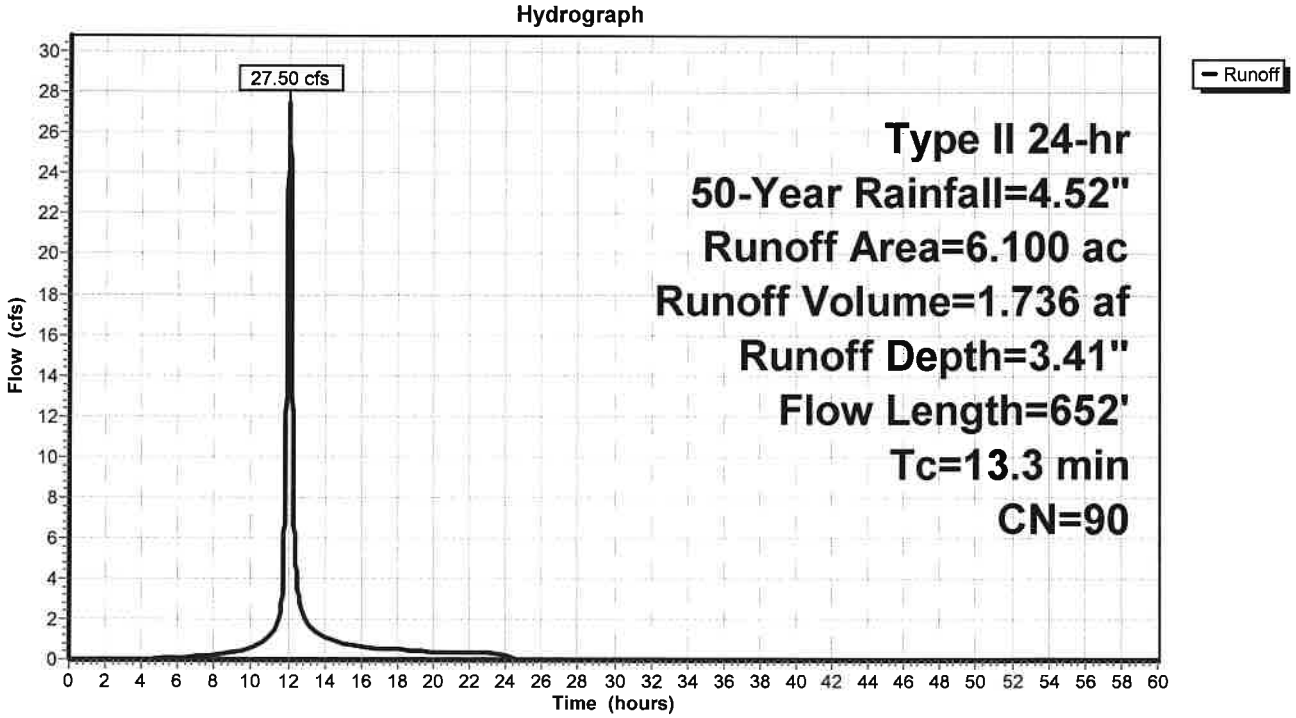
Runoff = 27.50 cfs @ 12.05 hrs, Volume= 1.736 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.52	3.41	0.00
1.00	0.05	0.00	0.00	53.00	4.52	3.41	0.00
2.00	0.10	0.00	0.00	54.00	4.52	3.41	0.00
3.00	0.16	0.00	0.00	55.00	4.52	3.41	0.00
4.00	0.22	0.00	0.00	56.00	4.52	3.41	0.00
5.00	0.28	0.00	0.04	57.00	4.52	3.41	0.00
6.00	0.36	0.02	0.09	58.00	4.52	3.41	0.00
7.00	0.45	0.04	0.16	59.00	4.52	3.41	0.00
8.00	0.54	0.07	0.23	60.00	4.52	3.41	0.00
9.00	0.66	0.13	0.39				
10.00	0.82	0.21	0.57				
11.00	1.06	0.36	1.16				
12.00	3.00	1.98	**25.18**				
13.00	3.49	2.44	**1.87**				
14.00	3.71	2.64	1.08				
15.00	3.86	2.78	0.83				
16.00	3.98	2.90	0.64				
17.00	4.08	2.99	0.55				
18.00	4.16	3.07	0.49				
19.00	4.24	3.15	0.42				
20.00	4.30	3.21	0.36				
21.00	4.36	3.26	0.33				
22.00	4.42	3.32	0.32				
23.00	4.47	3.37	0.31				
24.00	**4.52**	**3.41**	0.30				
25.00	4.52	3.41	0.00				
26.00	4.52	3.41	0.00				
27.00	4.52	3.41	0.00				
28.00	4.52	3.41	0.00				
29.00	4.52	3.41	0.00				
30.00	4.52	3.41	0.00				
31.00	4.52	3.41	0.00				
32.00	4.52	3.41	0.00				
33.00	4.52	3.41	0.00				
34.00	4.52	3.41	0.00				
35.00	4.52	3.41	0.00				
36.00	4.52	3.41	0.00				
37.00	4.52	3.41	0.00				
38.00	4.52	3.41	0.00				
39.00	4.52	3.41	0.00				
40.00	4.52	3.41	0.00				
41.00	4.52	3.41	0.00				
42.00	4.52	3.41	0.00				
43.00	4.52	3.41	0.00				
44.00	4.52	3.41	0.00				
45.00	4.52	3.41	0.00				
46.00	4.52	3.41	0.00				
47.00	4.52	3.41	0.00				
48.00	4.52	3.41	0.00				
49.00	4.52	3.41	0.00				
50.00	4.52	3.41	0.00				
51.00	4.52	3.41	0.00				

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 2S: Rear Area 1

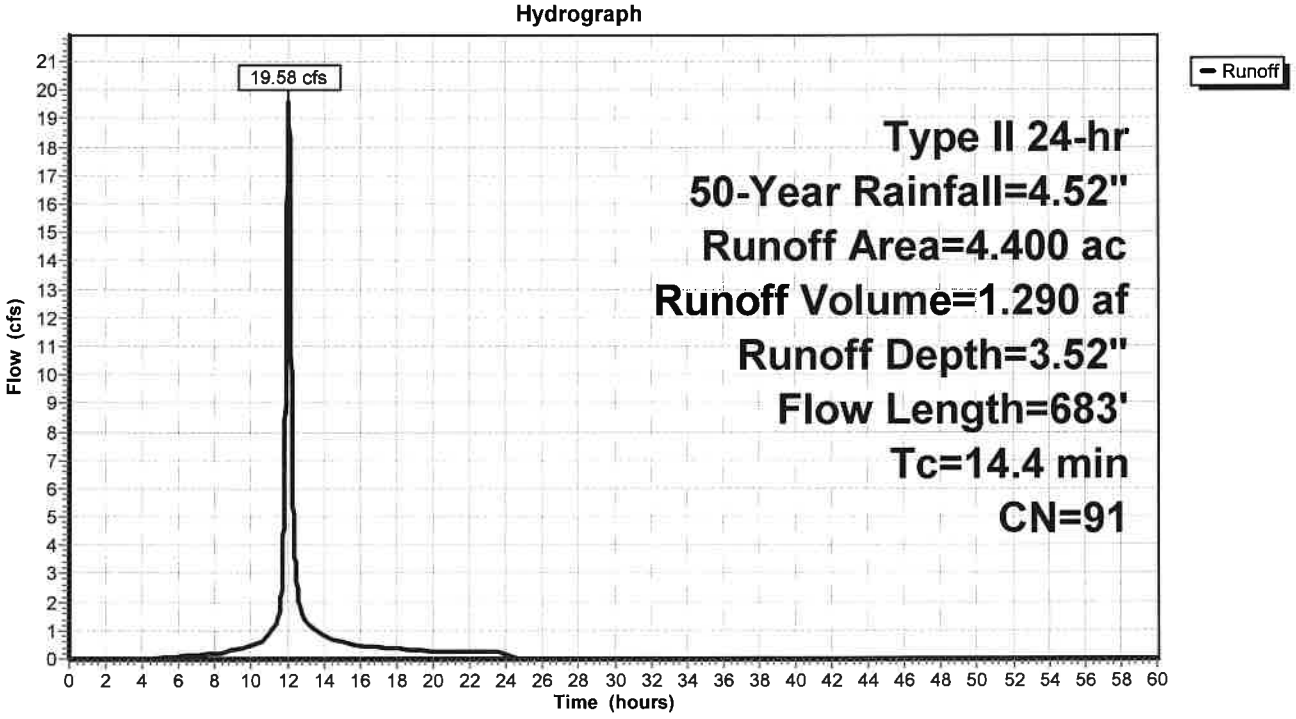
Runoff = 19.58 cfs @ 12.06 hrs, Volume= 1.290 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.00
5.00	0.28	0.01	0.04
6.00	0.36	0.02	0.08
7.00	0.45	0.05	0.13
8.00	0.54	0.09	0.19
9.00	0.66	0.15	0.31
10.00	0.82	0.24	0.44
11.00	1.06	0.40	0.88
12.00	3.00	2.07	**17.36**
13.00	3.49	2.53	**1.38**
14.00	3.71	2.74	0.79
15.00	3.86	2.88	0.60
16.00	3.98	3.00	0.47
17.00	4.08	3.09	0.40
18.00	4.16	3.17	0.36
19.00	4.24	3.25	0.31
20.00	4.30	3.31	0.26
21.00	4.36	3.36	0.24
22.00	4.42	3.42	0.23
23.00	4.47	3.47	0.22
24.00	**4.52**	**3.52**	0.21
25.00	4.52	3.52	0.00
26.00	4.52	3.52	0.00
27.00	4.52	3.52	0.00
28.00	4.52	3.52	0.00
29.00	4.52	3.52	0.00
30.00	4.52	3.52	0.00
31.00	4.52	3.52	0.00
32.00	4.52	3.52	0.00
33.00	4.52	3.52	0.00
34.00	4.52	3.52	0.00
35.00	4.52	3.52	0.00
36.00	4.52	3.52	0.00
37.00	4.52	3.52	0.00
38.00	4.52	3.52	0.00
39.00	4.52	3.52	0.00
40.00	4.52	3.52	0.00
41.00	4.52	3.52	0.00
42.00	4.52	3.52	0.00
43.00	4.52	3.52	0.00
44.00	4.52	3.52	0.00
45.00	4.52	3.52	0.00
46.00	4.52	3.52	0.00
47.00	4.52	3.52	0.00
48.00	4.52	3.52	0.00
49.00	4.52	3.52	0.00
50.00	4.52	3.52	0.00
51.00	4.52	3.52	0.00
52.00	4.52	3.52	0.00
53.00	4.52	3.52	0.00
54.00	4.52	3.52	0.00
55.00	4.52	3.52	0.00
56.00	4.52	3.52	0.00
57.00	4.52	3.52	0.00
58.00	4.52	3.52	0.00
59.00	4.52	3.52	0.00
60.00	4.52	3.52	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 3.41" for 50-Year event
Inflow = 27.50 cfs @ 12.05 hrs, Volume= 1.736 af
Outflow = 26.43 cfs @ 12.08 hrs, Volume= 1.736 af, Atten= 4%, Lag= 1.9 min
Primary = 2.91 cfs @ 12.08 hrs, Volume= 1.092 af
Secondary = 23.52 cfs @ 12.08 hrs, Volume= 0.644 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.17' @ 12.08 hrs Surf.Area= 10,144 sf Storage= 10,953 cf

Plug-Flow detention time= 109.3 min calculated for 1.736 af (100% of inflow)
Center-of-Mass det. time= 109.3 min (907.1 - 797.8)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

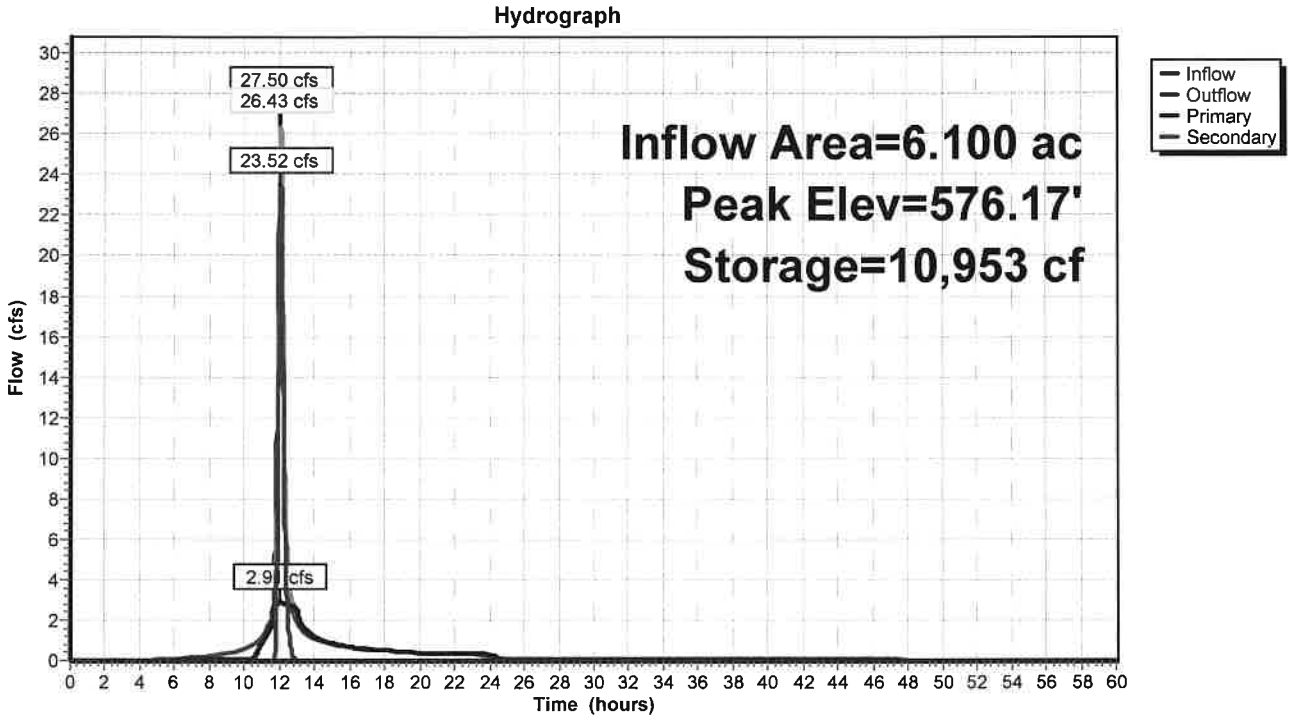
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.91 cfs @ 12.08 hrs HW=576.17' (Free Discharge)
└─**1=8" pipe** (Barrel Controls 2.91 cfs @ 8.34 fps)
  └─**2=Grate** (Passes < 5.49 cfs potential flow)
  └─**3=Exfiltration** (Passes < 0.06 cfs potential flow)

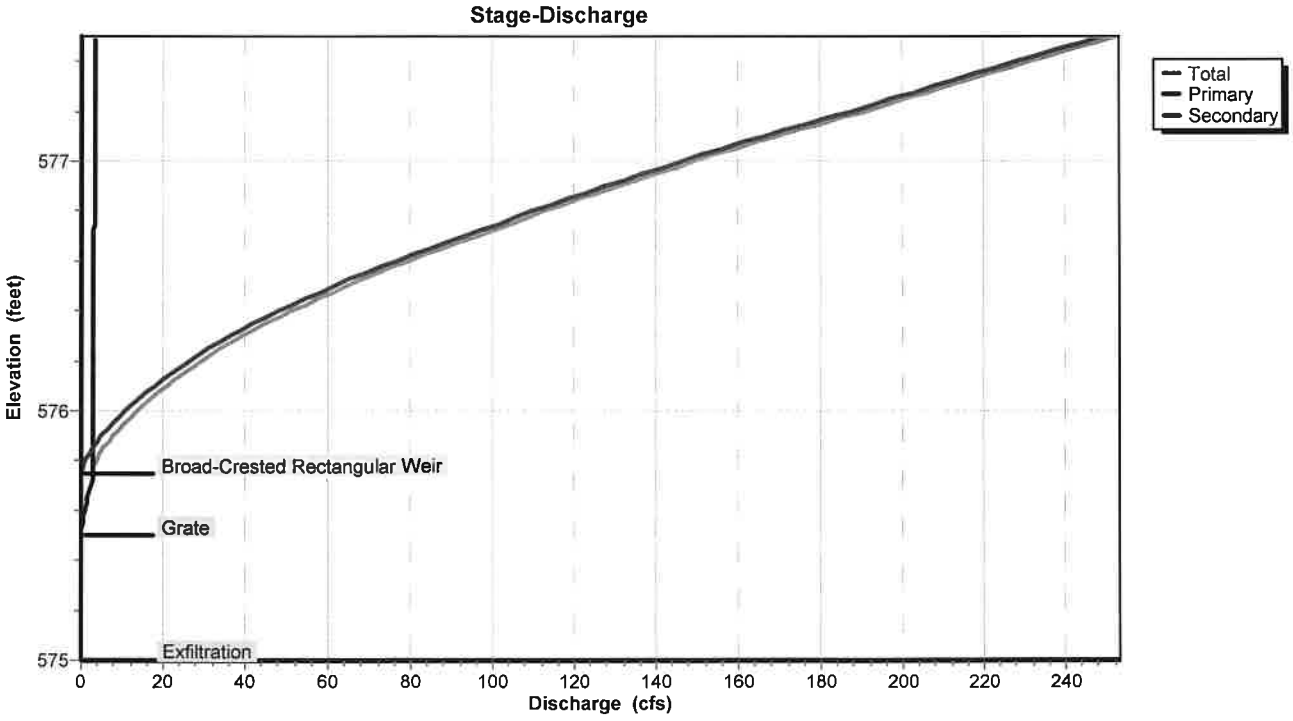
Secondary OutFlow Max=23.50 cfs @ 12.08 hrs HW=576.17' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Weir Controls 23.50 cfs @ 1.88 fps)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3

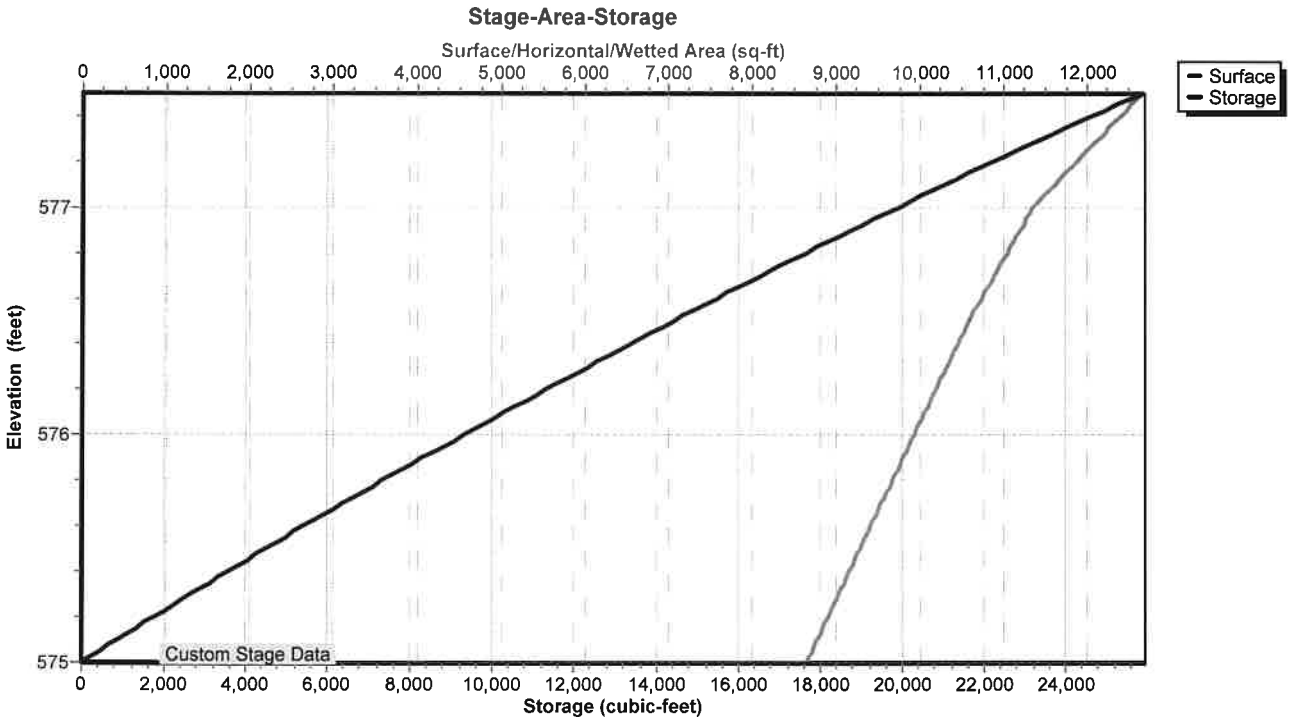


Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	0	575.00	0.00	0.00	0.00
6.00	0.09	180	575.02	0.04	0.04	0.00
8.00	0.23	959	575.11	0.05	0.05	0.00
10.00	0.57	3,333	575.38	0.05	0.05	0.00
12.00	**25.18**	**10,302**	**576.10**	**21.15**	**2.88**	**18.27**
14.00	**1.08**	**5,594**	**575.62**	**1.18**	**1.18**	**0.00**
16.00	0.64	5,233	575.58	0.68	0.68	0.00
18.00	0.49	5,081	575.56	0.51	0.51	0.00
20.00	0.36	4,961	575.55	0.38	0.38	0.00
22.00	0.32	4,907	575.55	0.33	0.33	0.00
24.00	0.30	4,876	575.54	0.30	0.30	0.00
26.00	0.00	4,297	575.48	0.06	0.06	0.00
28.00	0.00	3,900	575.44	0.05	0.05	0.00
30.00	0.00	3,508	575.39	0.05	0.05	0.00
32.00	0.00	3,118	575.35	0.05	0.05	0.00
34.00	0.00	2,732	575.31	0.05	0.05	0.00
36.00	0.00	2,350	575.27	0.05	0.05	0.00
38.00	0.00	1,970	575.22	0.05	0.05	0.00
40.00	0.00	1,594	575.18	0.05	0.05	0.00
42.00	0.00	1,221	575.14	0.05	0.05	0.00
44.00	0.00	852	575.10	0.05	0.05	0.00
46.00	0.00	486	575.06	0.05	0.05	0.00
48.00	0.00	140	575.02	0.03	0.03	0.00
50.00	0.00	26	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 5.27" for 50-Year event
Inflow = 42.93 cfs @ 12.07 hrs, Volume= 1.933 af
Outflow = 1.97 cfs @ 12.73 hrs, Volume= 1.635 af, Atten= 95%, Lag= 39.8 min
Primary = 0.72 cfs @ 12.73 hrs, Volume= 1.504 af
Secondary = 1.25 cfs @ 12.73 hrs, Volume= 0.131 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.00' @ 12.73 hrs Surf.Area= 66,838 sf Storage= 62,935 cf

Plug-Flow detention time= 900.4 min calculated for 1.635 af (85% of inflow)
Center-of-Mass det. time= 844.0 min (1,616.3 - 772.2)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

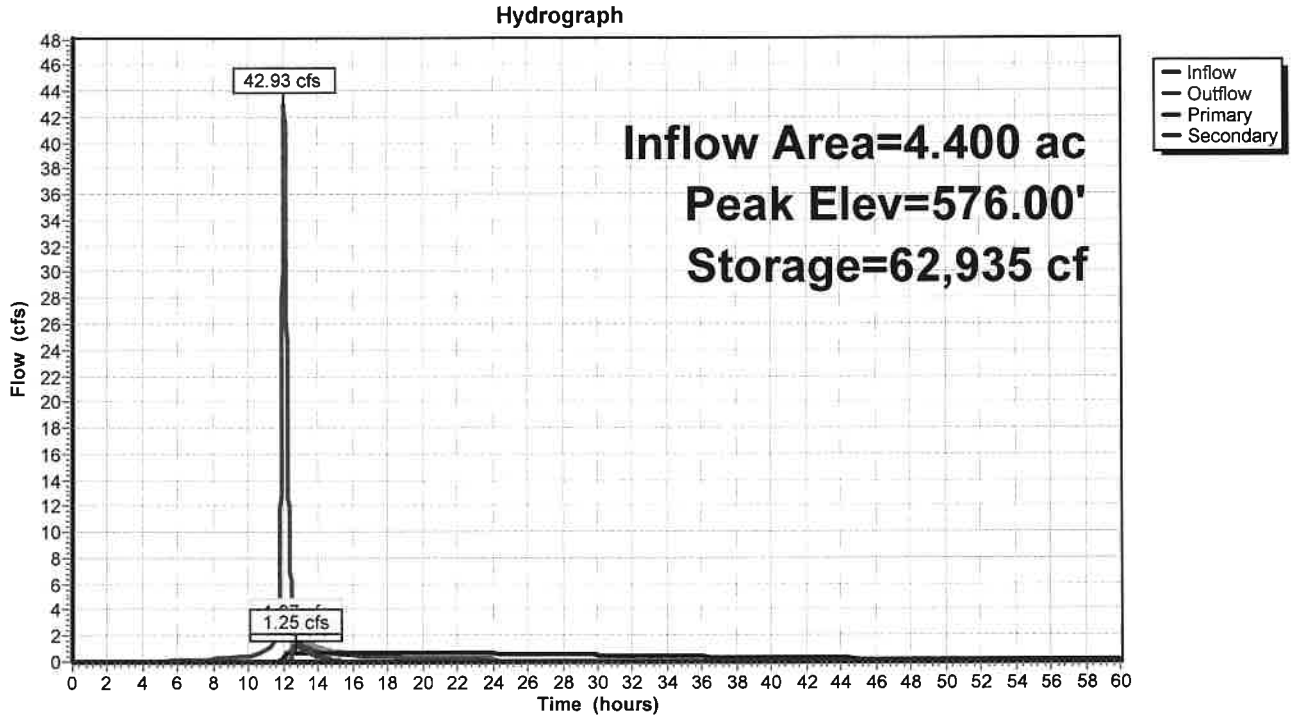
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.72 cfs @ 12.73 hrs HW=576.00' (Free Discharge)
↑—**1=12" outlet pipe** (Passes 0.72 cfs of 2.71 cfs potential flow)
↑—**2=low flow outlet pipe** (Inlet Controls 0.72 cfs @ 3.68 fps)
—**3=Grate** (Controls 0.00 cfs)

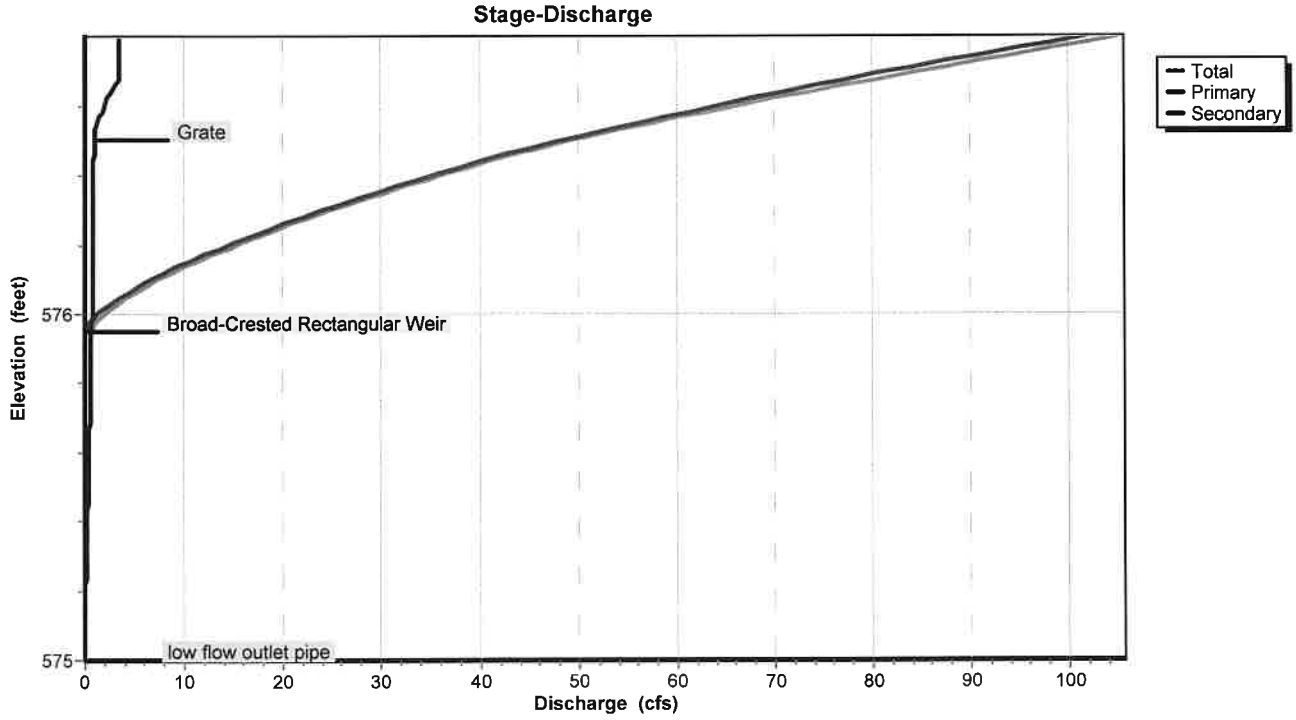
Secondary OutFlow Max=1.25 cfs @ 12.73 hrs HW=576.00' (Free Discharge)
↑—**4=Broad-Crested Rectangular Weir** (Weir Controls 1.25 cfs @ 0.64 fps)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)



Pond 3P: Detention Basin (SMA #1)



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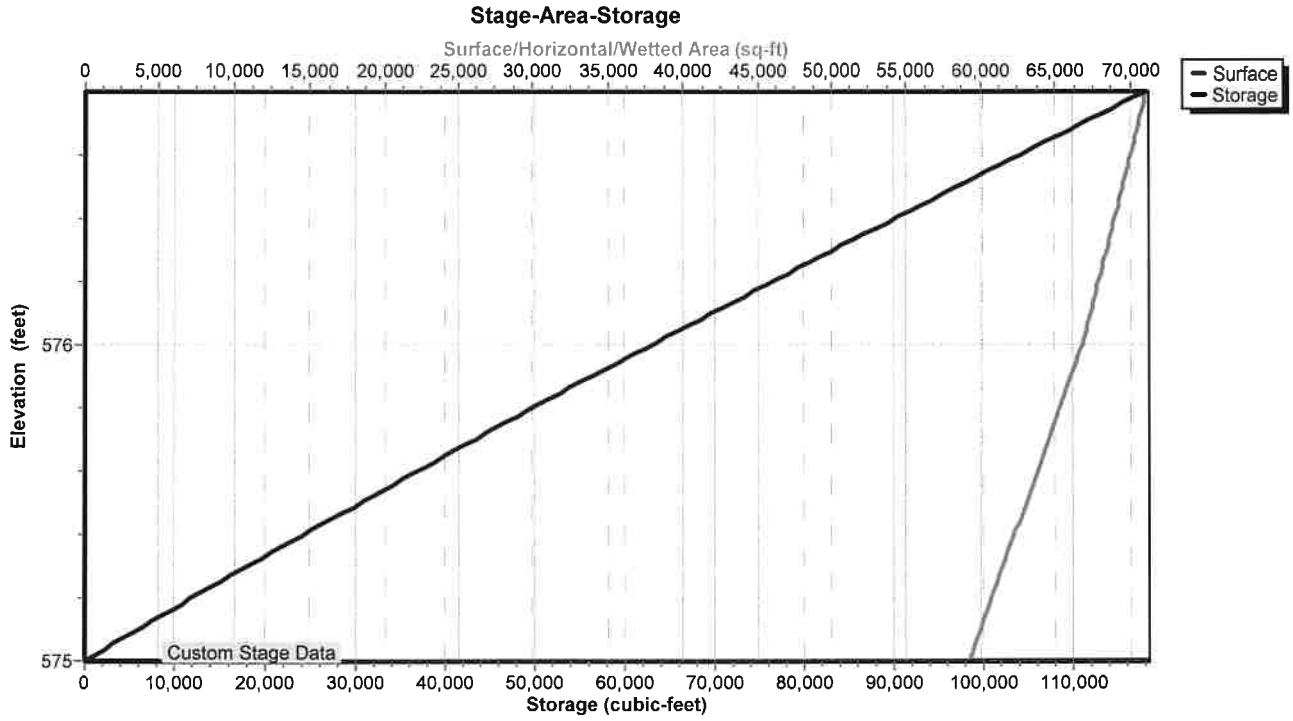
Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.00	1	575.00	0.00	0.00	0.00
6.00	0.08	300	575.01	0.00	0.00	0.00
8.00	0.19	1,265	575.02	0.00	0.00	0.00
10.00	0.44	3,420	575.06	0.01	0.01	0.00
12.00	**35.63**	**24,163**	**575.40**	**0.26**	**0.26**	**0.00**
14.00	**0.79**	**61,204**	**575.97**	**1.11**	**0.71**	**0.40**
16.00	0.47	59,536	575.95	0.70	0.70	0.00
18.00	0.36	57,495	575.92	0.68	0.68	0.00
20.00	0.26	54,889	575.88	0.66	0.66	0.00
22.00	0.23	51,975	575.83	0.64	0.64	0.00
24.00	0.21	49,094	575.79	0.61	0.61	0.00
26.00	0.00	45,010	575.73	0.56	0.56	0.00
28.00	0.00	41,189	575.67	0.50	0.50	0.00
30.00	0.00	37,665	575.61	0.47	0.47	0.00
32.00	0.00	34,410	575.56	0.43	0.43	0.00
34.00	0.00	31,481	575.51	0.38	0.38	0.00
36.00	0.00	28,873	575.47	0.34	0.34	0.00
38.00	0.00	26,562	575.44	0.30	0.30	0.00
40.00	0.00	24,517	575.40	0.27	0.27	0.00
42.00	0.00	22,705	575.37	0.24	0.24	0.00
44.00	0.00	21,097	575.35	0.21	0.21	0.00
46.00	0.00	19,666	575.33	0.19	0.19	0.00
48.00	0.00	18,389	575.30	0.17	0.17	0.00
50.00	0.00	17,245	575.29	0.15	0.15	0.00
52.00	0.00	16,216	575.27	0.14	0.14	0.00
54.00	0.00	15,288	575.25	0.12	0.12	0.00
56.00	0.00	14,449	575.24	0.11	0.11	0.00
58.00	0.00	13,686	575.23	0.10	0.10	0.00
60.00	0.00	12,992	575.22	0.09	0.09	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

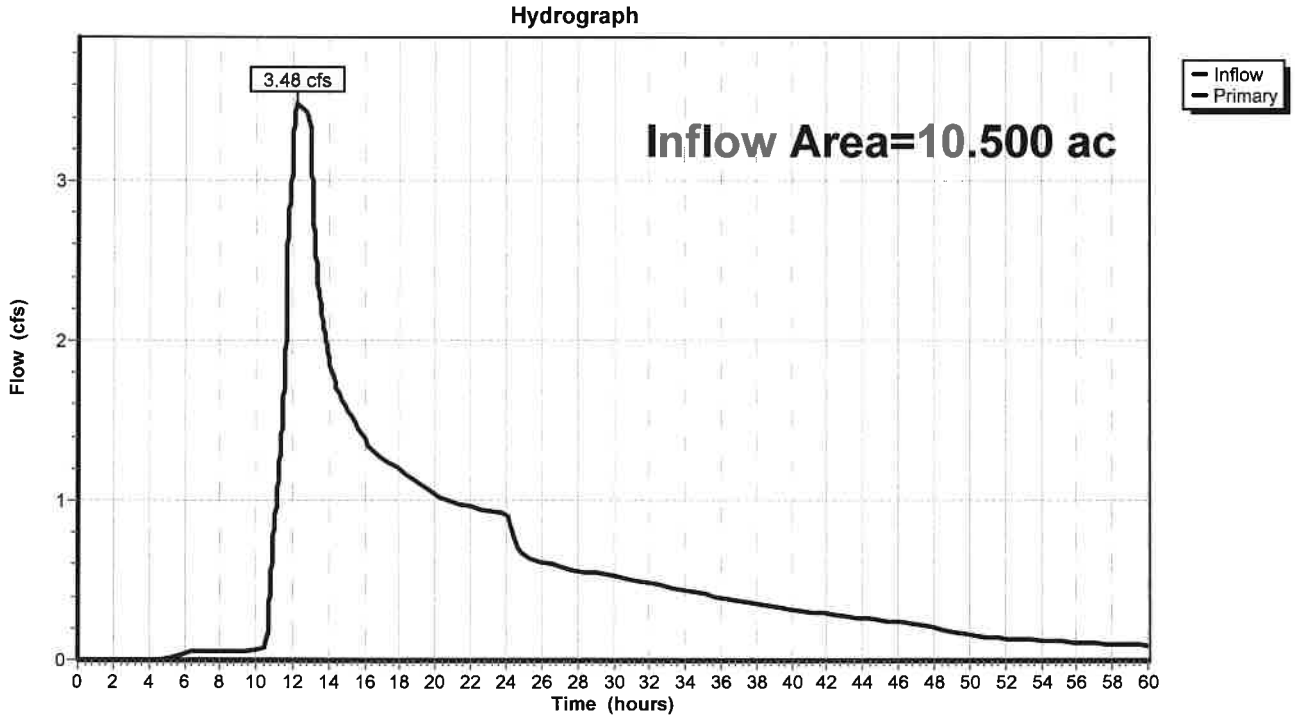
Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 2.97" for 50-Year event
Inflow = 3.48 cfs @ 12.21 hrs, Volume= 2.596 af
Primary = 3.48 cfs @ 12.21 hrs, Volume= 2.596 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.14	0.00	0.14
1.00	0.00	0.00	0.00	53.00	0.13	0.00	0.13
2.00	0.00	0.00	0.00	54.00	0.12	0.00	0.12
3.00	0.00	0.00	0.00	55.00	0.12	0.00	0.12
4.00	0.00	0.00	0.00	56.00	0.11	0.00	0.11
5.00	0.01	0.00	0.01	57.00	0.11	0.00	0.11
6.00	0.04	0.00	0.04	58.00	0.10	0.00	0.10
7.00	0.05	0.00	0.05	59.00	0.10	0.00	0.10
8.00	0.05	0.00	0.05	60.00	0.09	0.00	0.09
9.00	0.06	0.00	0.06				
10.00	0.06	0.00	0.06				
11.00	0.88	0.00	0.88				
12.00	**3.14**	0.00	**3.14**				
13.00	**3.25**	0.00	**3.25**				
14.00	1.89	0.00	1.89				
15.00	1.57	0.00	1.57				
16.00	1.38	0.00	1.38				
17.00	1.26	0.00	1.26				
18.00	1.19	0.00	1.19				
19.00	1.11	0.00	1.11				
20.00	1.04	0.00	1.04				
21.00	0.99	0.00	0.99				
22.00	0.96	0.00	0.96				
23.00	0.94	0.00	0.94				
24.00	0.91	0.00	0.91				
25.00	0.65	0.00	0.65				
26.00	0.62	0.00	0.62				
27.00	0.59	0.00	0.59				
28.00	0.56	0.00	0.56				
29.00	0.55	0.00	0.55				
30.00	0.53	0.00	0.53				
31.00	0.51	0.00	0.51				
32.00	0.48	0.00	0.48				
33.00	0.46	0.00	0.46				
34.00	0.44	0.00	0.44				
35.00	0.42	0.00	0.42				
36.00	0.39	0.00	0.39				
37.00	0.37	0.00	0.37				
38.00	0.35	0.00	0.35				
39.00	0.34	0.00	0.34				
40.00	0.32	0.00	0.32				
41.00	0.30	0.00	0.30				
42.00	0.29	0.00	0.29				
43.00	0.27	0.00	0.27				
44.00	0.26	0.00	0.26				
45.00	0.25	0.00	0.25				
46.00	0.24	0.00	0.24				
47.00	0.23	0.00	0.23				
48.00	0.20	0.00	0.20				
49.00	0.17	0.00	0.17				
50.00	0.16	0.00	0.16				
51.00	0.15	0.00	0.15				

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Front Area 1 Runoff Area=6.100 ac 54.10% Impervious Runoff Depth=4.15"
Flow Length=652' Tc=13.3 min CN=90 Runoff=33.05 cfs 2.108 af

Subcatchment 2S: Rear Area 1 Runoff Area=4.400 ac 61.36% Impervious Runoff Depth=4.25"
Flow Length=683' Tc=14.4 min CN=91 Runoff=23.44 cfs 1.560 af

Pond 1P: Bioretention Area 3 Peak Elev=576.23' Storage=11,585 cf Inflow=33.05 cfs 2.108 af
Primary=2.94 cfs 1.275 af Secondary=28.98 cfs 0.833 af Outflow=31.92 cfs 2.108 af

Pond 3P: Detention Basin (SMA #1) Peak Elev=576.11' Storage=70,722 cf Inflow=52.24 cfs 2.392 af
Primary=0.78 cfs 1.554 af Secondary=7.80 cfs 0.534 af Outflow=8.57 cfs 2.088 af

Link 5L: Outflow (@ CB 54) Inflow=3.60 cfs 2.829 af
Primary=3.60 cfs 2.829 af

Total Runoff Area = 10.500 ac Runoff Volume = 3.668 af Average Runoff Depth = 4.19"
42.86% Pervious = 4.500 ac 57.14% Impervious = 6.000 ac

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 1S: Front Area 1

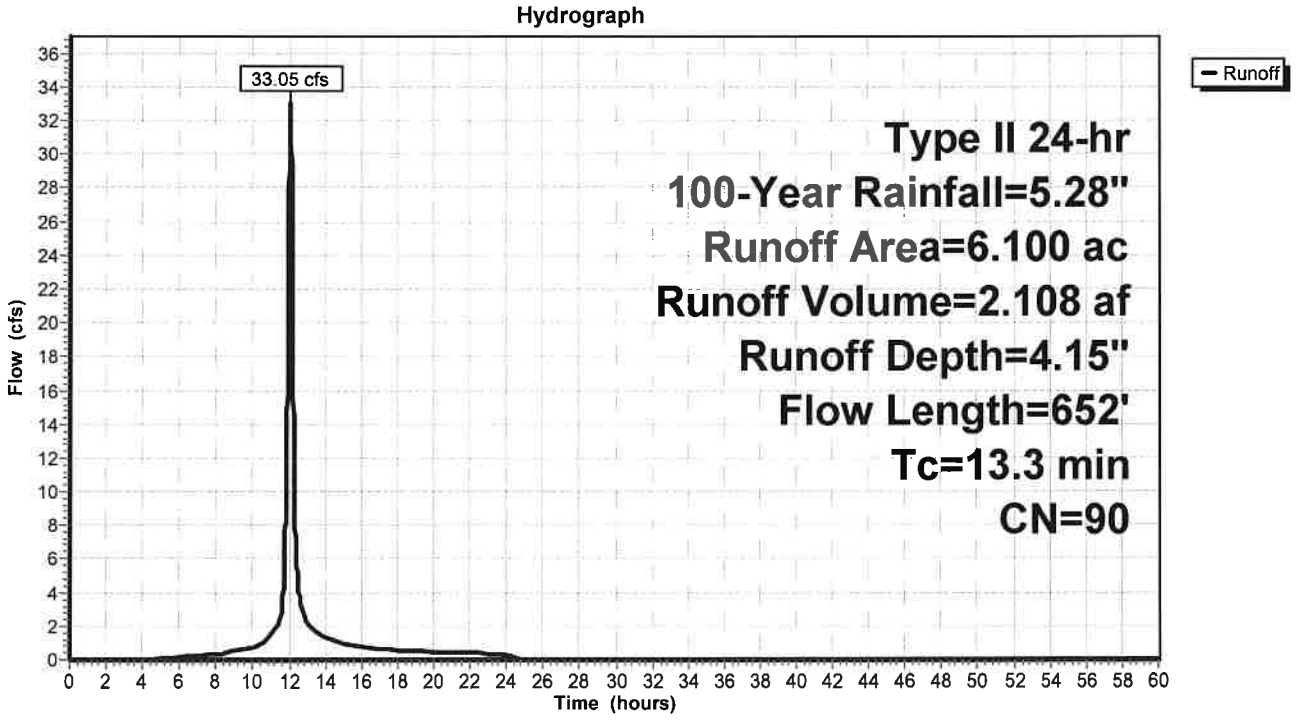
Runoff = 33.05 cfs @ 12.05 hrs, Volume= 2.108 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
1.800	98	Paved parking, HSG D
1.500	98	Roofs, HSG D
2.800	80	>75% Grass cover, Good, HSG D
6.100	90	Weighted Average
2.800		45.90% Pervious Area
3.300		54.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	37	0.0100	0.06		**Sheet Flow, grass** Grass: Dense n= 0.240 P2= 2.50"
0.4	15	0.0120	0.68		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
3.3	600		3.00		**Direct Entry, pipe flow**
13.3	652	Total			

Subcatchment 1S: Front Area 1



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 1S: Front Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.28	4.15	0.00
1.00	0.06	0.00	0.00	53.00	5.28	4.15	0.00
2.00	0.12	0.00	0.00	54.00	5.28	4.15	0.00
3.00	0.18	0.00	0.00	55.00	5.28	4.15	0.00
4.00	0.25	0.00	0.01	56.00	5.28	4.15	0.00
5.00	0.33	0.01	0.08	57.00	5.28	4.15	0.00
6.00	0.42	0.03	0.15	58.00	5.28	4.15	0.00
7.00	0.52	0.06	0.23	59.00	5.28	4.15	0.00
8.00	0.63	0.11	0.32	60.00	5.28	4.15	0.00
9.00	0.78	0.18	0.52				
10.00	0.96	0.29	0.74				
11.00	1.24	0.49	1.47				
12.00	3.50	2.45	**30.36**				
13.00	4.08	2.99	**2.21**				
14.00	4.33	3.23	1.27				
15.00	4.51	3.40	0.98				
16.00	4.65	3.54	0.76				
17.00	4.76	3.65	0.66				
18.00	4.86	3.74	0.58				
19.00	4.95	3.83	0.50				
20.00	5.03	3.90	0.42				
21.00	5.09	3.97	0.40				
22.00	5.16	4.03	0.38				
23.00	5.22	4.09	0.36				
24.00	**5.28**	**4.15**	0.35				
25.00	5.28	4.15	0.00				
26.00	5.28	4.15	0.00				
27.00	5.28	4.15	0.00				
28.00	5.28	4.15	0.00				
29.00	5.28	4.15	0.00				
30.00	5.28	4.15	0.00				
31.00	5.28	4.15	0.00				
32.00	5.28	4.15	0.00				
33.00	5.28	4.15	0.00				
34.00	5.28	4.15	0.00				
35.00	5.28	4.15	0.00				
36.00	5.28	4.15	0.00				
37.00	5.28	4.15	0.00				
38.00	5.28	4.15	0.00				
39.00	5.28	4.15	0.00				
40.00	5.28	4.15	0.00				
41.00	5.28	4.15	0.00				
42.00	5.28	4.15	0.00				
43.00	5.28	4.15	0.00				
44.00	5.28	4.15	0.00				
45.00	5.28	4.15	0.00				
46.00	5.28	4.15	0.00				
47.00	5.28	4.15	0.00				
48.00	5.28	4.15	0.00				
49.00	5.28	4.15	0.00				
50.00	5.28	4.15	0.00				
51.00	5.28	4.15	0.00				

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 2S: Rear Area 1

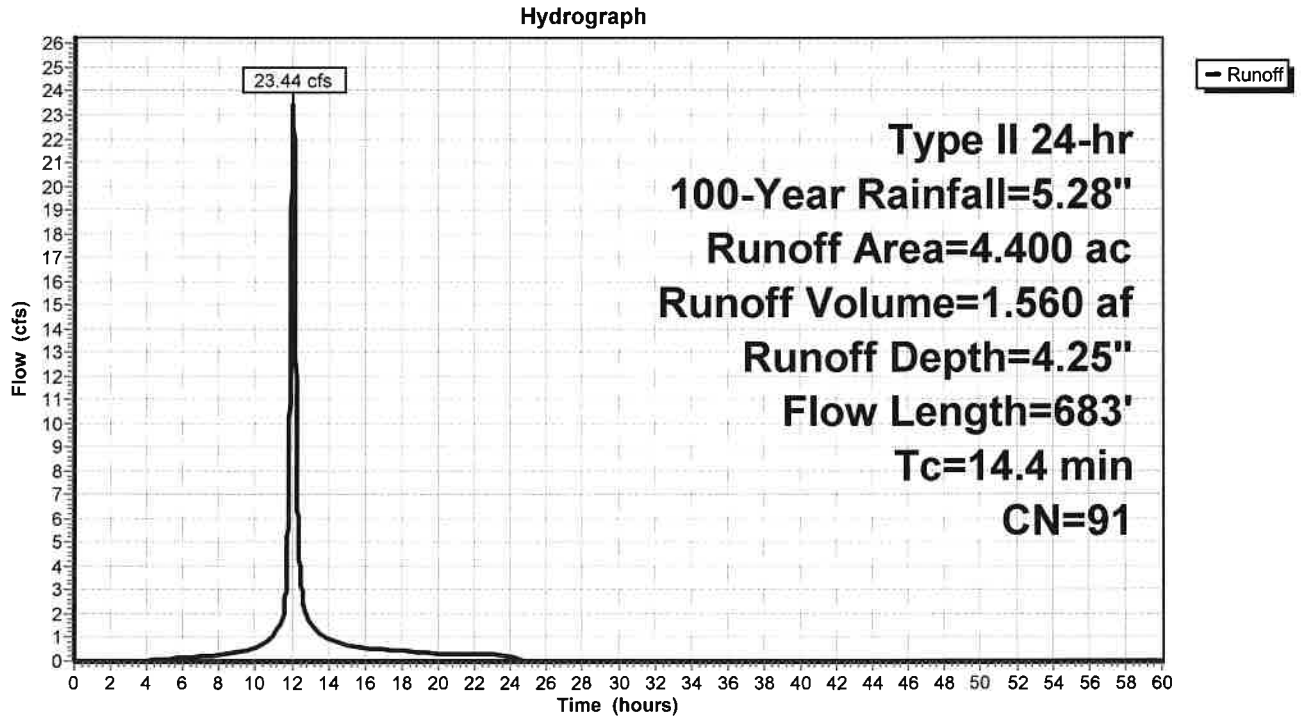
Runoff = 23.44 cfs @ 12.06 hrs, Volume= 1.560 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG D
1.300	98	Roofs, HSG D
1.700	80	>75% Grass cover, Good, HSG D
4.400	91	Weighted Average
1.700		38.64% Pervious Area
2.700		61.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	90	0.0200	0.15		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
1.3	75	0.0130	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
2.9	518		3.00		**Direct Entry, Pipe flow**
14.4	683	Total			

Subcatchment 2S: Rear Area 1



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 2S: Rear Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.18	0.00	0.00
4.00	0.25	0.00	0.02
5.00	0.33	0.02	0.07
6.00	0.42	0.04	0.13
7.00	0.52	0.08	0.19
8.00	0.63	0.13	0.25
9.00	0.78	0.21	0.41
10.00	0.96	0.33	0.57
11.00	1.24	0.54	1.10
12.00	3.50	2.54	**20.85**
13.00	4.08	3.09	**1.64**
14.00	4.33	3.33	0.94
15.00	4.51	3.50	0.71
16.00	4.65	3.64	0.56
17.00	4.76	3.75	0.48
18.00	4.86	3.85	0.42
19.00	4.95	3.93	0.36
20.00	5.03	4.01	0.31
21.00	5.09	4.07	0.29
22.00	5.16	4.14	0.28
23.00	5.22	4.20	0.26
24.00	**5.28**	**4.25**	0.25
25.00	5.28	4.25	0.00
26.00	5.28	4.25	0.00
27.00	5.28	4.25	0.00
28.00	5.28	4.25	0.00
29.00	5.28	4.25	0.00
30.00	5.28	4.25	0.00
31.00	5.28	4.25	0.00
32.00	5.28	4.25	0.00
33.00	5.28	4.25	0.00
34.00	5.28	4.25	0.00
35.00	5.28	4.25	0.00
36.00	5.28	4.25	0.00
37.00	5.28	4.25	0.00
38.00	5.28	4.25	0.00
39.00	5.28	4.25	0.00
40.00	5.28	4.25	0.00
41.00	5.28	4.25	0.00
42.00	5.28	4.25	0.00
43.00	5.28	4.25	0.00
44.00	5.28	4.25	0.00
45.00	5.28	4.25	0.00
46.00	5.28	4.25	0.00
47.00	5.28	4.25	0.00
48.00	5.28	4.25	0.00
49.00	5.28	4.25	0.00
50.00	5.28	4.25	0.00
51.00	5.28	4.25	0.00
52.00	5.28	4.25	0.00
53.00	5.28	4.25	0.00
54.00	5.28	4.25	0.00
55.00	5.28	4.25	0.00
56.00	5.28	4.25	0.00
57.00	5.28	4.25	0.00
58.00	5.28	4.25	0.00
59.00	5.28	4.25	0.00
60.00	5.28	4.25	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 1P: Bioretention Area 3

Inflow Area = 6.100 ac, 54.10% Impervious, Inflow Depth = 4.15" for 100-Year event
Inflow = 33.05 cfs @ 12.05 hrs, Volume= 2.108 af
Outflow = 31.92 cfs @ 12.08 hrs, Volume= 2.108 af, Atten= 3%, Lag= 1.8 min
Primary = 2.94 cfs @ 12.08 hrs, Volume= 1.275 af
Secondary = 28.98 cfs @ 12.08 hrs, Volume= 0.833 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.23' @ 12.08 hrs Surf.Area= 10,226 sf Storage= 11,585 cf

Plug-Flow detention time= 93.7 min calculated for 2.108 af (100% of inflow)
Center-of-Mass det. time= 93.9 min (886.3 - 792.4)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	25,904 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	8,648	0	0
576.00	9,925	9,287	9,287
576.50	10,585	5,128	14,414
577.00	11,350	5,484	19,898
577.50	12,675	6,006	25,904

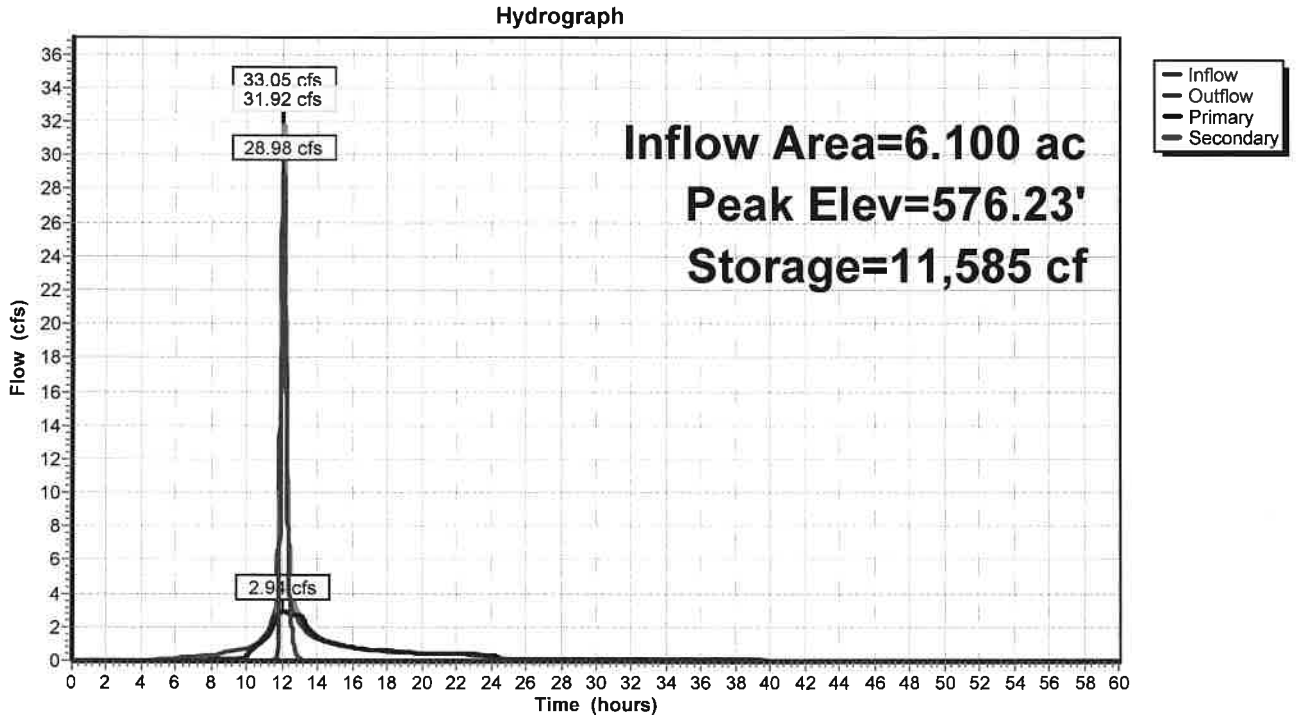
Device	Routing	Invert	Outlet Devices
#1	Primary	572.50'	**8.0" Round 8" pipe** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 572.50' / 572.42' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	575.50'	**8.0" Horiz. Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	575.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Secondary	575.75'	**30.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.94 cfs @ 12.08 hrs HW=576.23' (Free Discharge)
└**1=8" pipe** (Barrel Controls 2.94 cfs @ 8.43 fps)
└**2=Grate** (Passes < 5.74 cfs potential flow)
└**3=Exfiltration** (Passes < 0.06 cfs potential flow)

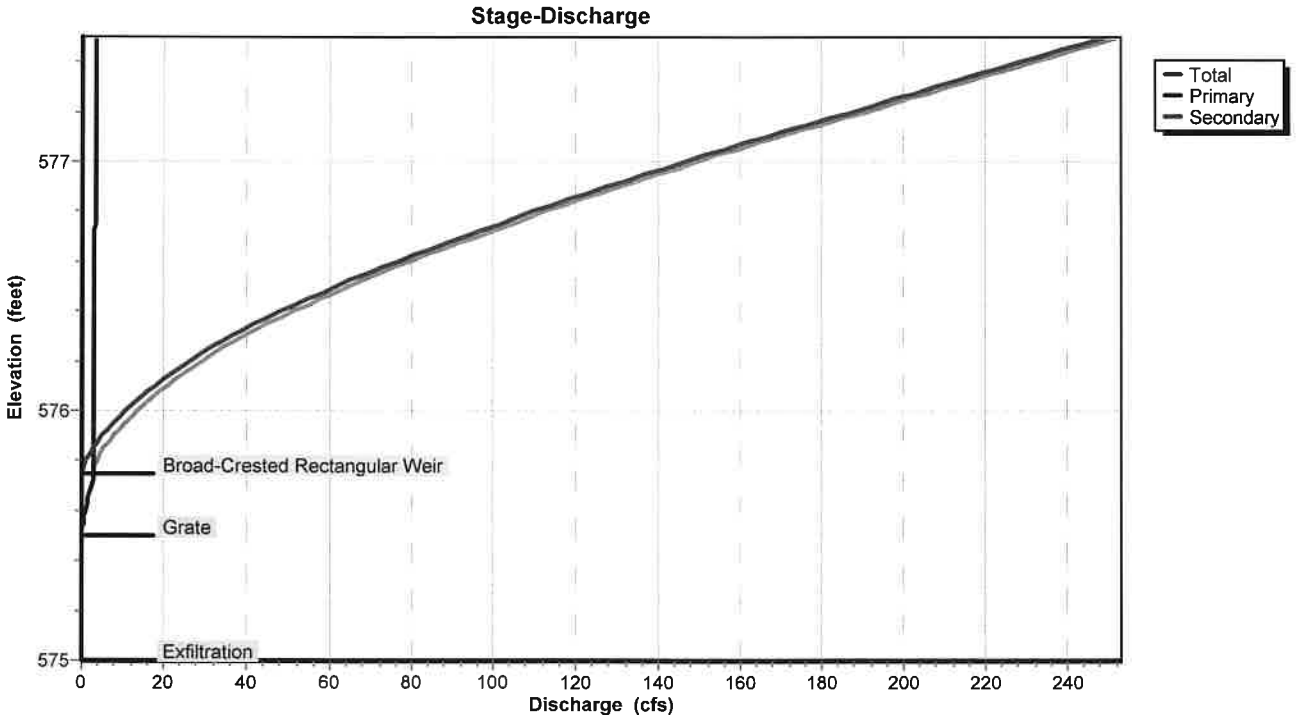
Secondary OutFlow Max=28.93 cfs @ 12.08 hrs HW=576.23' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 28.93 cfs @ 2.02 fps)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3

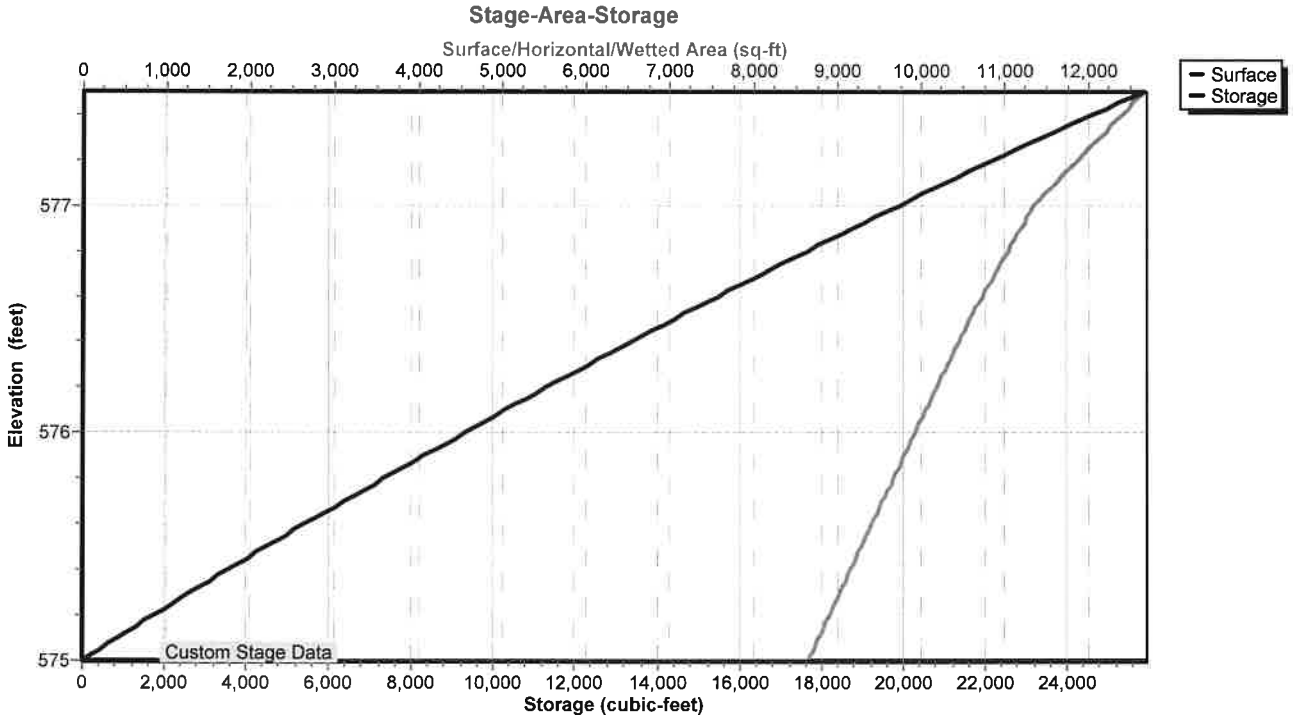


Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 1P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 1P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.01	6	575.00	0.00	0.00	0.00
6.00	0.15	359	575.04	0.05	0.05	0.00
8.00	0.32	1,651	575.19	0.05	0.05	0.00
10.00	0.74	4,857	575.54	0.28	0.28	0.00
12.00	**30.36**	**10,896**	**576.16**	**25.95**	**2.91**	**23.04**
14.00	**1.27**	**5,731**	**575.63**	**1.39**	**1.39**	**0.00**
16.00	0.76	5,329	575.59	0.81	0.81	0.00
18.00	0.58	5,164	575.57	0.60	0.60	0.00
20.00	0.42	5,023	575.56	0.44	0.44	0.00
22.00	0.38	4,969	575.55	0.38	0.38	0.00
24.00	0.35	4,939	575.55	0.35	0.35	0.00
26.00	0.00	4,307	575.48	0.06	0.06	0.00
28.00	0.00	3,911	575.44	0.05	0.05	0.00
30.00	0.00	3,518	575.40	0.05	0.05	0.00
32.00	0.00	3,129	575.35	0.05	0.05	0.00
34.00	0.00	2,743	575.31	0.05	0.05	0.00
36.00	0.00	2,360	575.27	0.05	0.05	0.00
38.00	0.00	1,981	575.23	0.05	0.05	0.00
40.00	0.00	1,604	575.18	0.05	0.05	0.00
42.00	0.00	1,232	575.14	0.05	0.05	0.00
44.00	0.00	862	575.10	0.05	0.05	0.00
46.00	0.00	496	575.06	0.05	0.05	0.00
48.00	0.00	147	575.02	0.03	0.03	0.00
50.00	0.00	28	575.00	0.01	0.01	0.00
52.00	0.00	5	575.00	0.00	0.00	0.00
54.00	0.00	1	575.00	0.00	0.00	0.00
56.00	0.00	0	575.00	0.00	0.00	0.00
58.00	0.00	0	575.00	0.00	0.00	0.00
60.00	0.00	0	575.00	0.00	0.00	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 1P: Bioretention Area 3

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.05	0.05	0.05	0.00
575.10	0.05	0.05	0.00
575.15	0.05	0.05	0.00
575.20	0.05	0.05	0.00
575.25	0.05	0.05	0.00
575.30	0.05	0.05	0.00
575.35	0.05	0.05	0.00
575.40	0.05	0.05	0.00
575.45	0.05	0.05	0.00
575.50	0.06	0.06	0.00
575.55	0.36	0.36	0.00
575.60	0.92	0.92	0.00
575.65	1.65	1.65	0.00
575.70	2.51	2.51	0.00
575.75	2.71	2.71	0.00
575.80	3.71	2.73	0.98
575.85	5.53	2.76	2.77
575.90	7.87	2.78	5.09
575.95	10.64	2.81	7.84
576.00	13.78	2.83	10.95
576.05	17.25	2.86	14.39
576.10	21.02	2.88	18.14
576.15	25.07	2.91	22.16
576.20	29.37	2.93	26.44
576.25	34.02	2.95	31.07
576.30	39.38	2.98	36.41
576.35	45.12	3.00	42.12
576.40	51.24	3.02	48.22
576.45	57.74	3.04	54.69
576.50	64.62	3.07	61.55
576.55	71.88	3.09	68.79
576.60	79.53	3.11	76.42
576.65	87.57	3.13	84.44
576.70	96.00	3.16	92.85
576.75	104.54	3.18	101.36
576.80	112.97	3.20	109.77
576.85	121.69	3.22	118.47
576.90	130.69	3.24	127.45
576.95	139.98	3.26	136.72
577.00	149.56	3.28	146.27
577.05	159.42	3.30	156.11
577.10	169.57	3.33	166.24
577.15	180.00	3.35	176.66
577.20	190.72	3.37	187.36
577.25	201.24	3.39	197.86
577.30	211.24	3.41	207.83
577.35	221.40	3.43	217.97
577.40	231.71	3.45	228.27
577.45	242.19	3.47	238.72
577.50	**252.82**	**3.49**	**249.33**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 1P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	8,648	0
575.05	8,712	434
575.10	8,776	871
575.15	8,840	1,312
575.20	8,903	1,755
575.25	8,967	2,202
575.30	9,031	2,652
575.35	9,095	3,105
575.40	9,159	3,561
575.45	9,223	4,021
575.50	9,287	4,484
575.55	9,350	4,950
575.60	9,414	5,419
575.65	9,478	5,891
575.70	9,542	6,366
575.75	9,606	6,845
575.80	9,670	7,327
575.85	9,733	7,812
575.90	9,797	8,300
575.95	9,861	8,792
576.00	9,925	9,287
576.05	9,991	9,784
576.10	10,057	10,286
576.15	10,123	10,790
576.20	10,189	11,298
576.25	10,255	11,809
576.30	10,321	12,323
576.35	10,387	12,841
576.40	10,453	13,362
576.45	10,519	13,886
576.50	10,585	14,414
576.55	10,661	14,945
576.60	10,738	15,480
576.65	10,814	16,019
576.70	10,891	16,562
576.75	10,968	17,108
576.80	11,044	17,658
576.85	11,121	18,212
576.90	11,197	18,770
576.95	11,274	19,332
577.00	11,350	19,898
577.05	11,482	20,469
577.10	11,615	21,046
577.15	11,747	21,630
577.20	11,880	22,221
577.25	12,013	22,818
577.30	12,145	23,422
577.35	12,278	24,033
577.40	12,410	24,650
577.45	12,543	25,274
577.50	**12,675**	**25,904**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 3P: Detention Basin (SMA #1)

Inflow Area = 4.400 ac, 61.36% Impervious, Inflow Depth = 6.52" for 100-Year event
Inflow = 52.24 cfs @ 12.07 hrs, Volume= 2.392 af
Outflow = 8.57 cfs @ 12.41 hrs, Volume= 2.088 af, Atten= 84%, Lag= 20.7 min
Primary = 0.78 cfs @ 12.41 hrs, Volume= 1.554 af
Secondary = 7.80 cfs @ 12.41 hrs, Volume= 0.534 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 576.11' @ 12.41 hrs Surf.Area= 67,462 sf Storage= 70,722 cf

Plug-Flow detention time= 739.0 min calculated for 2.088 af (87% of inflow)
Center-of-Mass det. time= 688.7 min (1,456.5 - 767.8)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	118,224 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	59,213	0	0
576.00	66,849	63,031	63,031
576.80	71,134	55,193	118,224

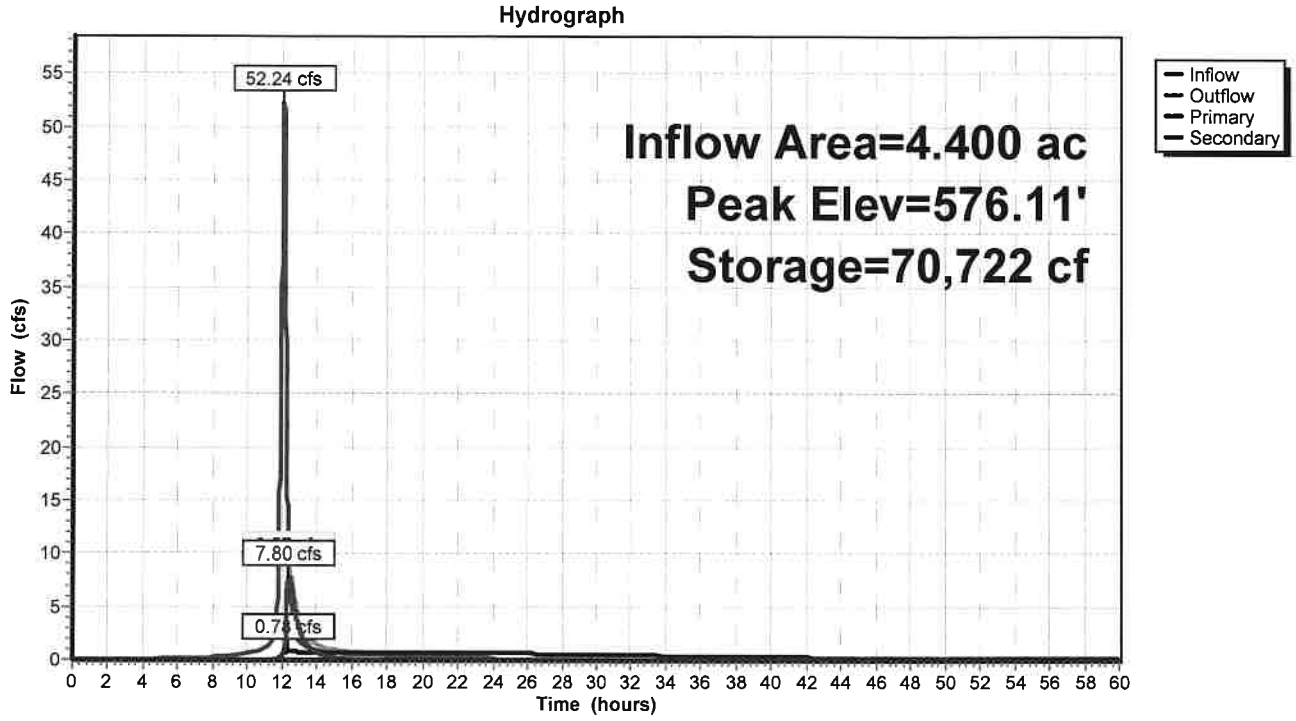
Device	Routing	Invert	Outlet Devices
#1	Primary	574.00'	**12.0" Round 12" outlet pipe** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 574.00' / 573.79' S= 0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	575.00'	**6.0" Round low flow outlet pipe** L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 575.00' / 574.95' S= 0.0050 '/' Cc= 0.900 n= 0.010 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	576.50'	**30.0" x 30.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	575.95'	**20.0' long (Profile 1) Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.78 cfs @ 12.41 hrs HW=576.11' (Free Discharge)
└**1=12" outlet pipe** (Passes 0.78 cfs of 2.84 cfs potential flow)
  ├**2=low flow outlet pipe** (Inlet Controls 0.78 cfs @ 3.95 fps)
  └**3=Grate** (Controls 0.00 cfs)

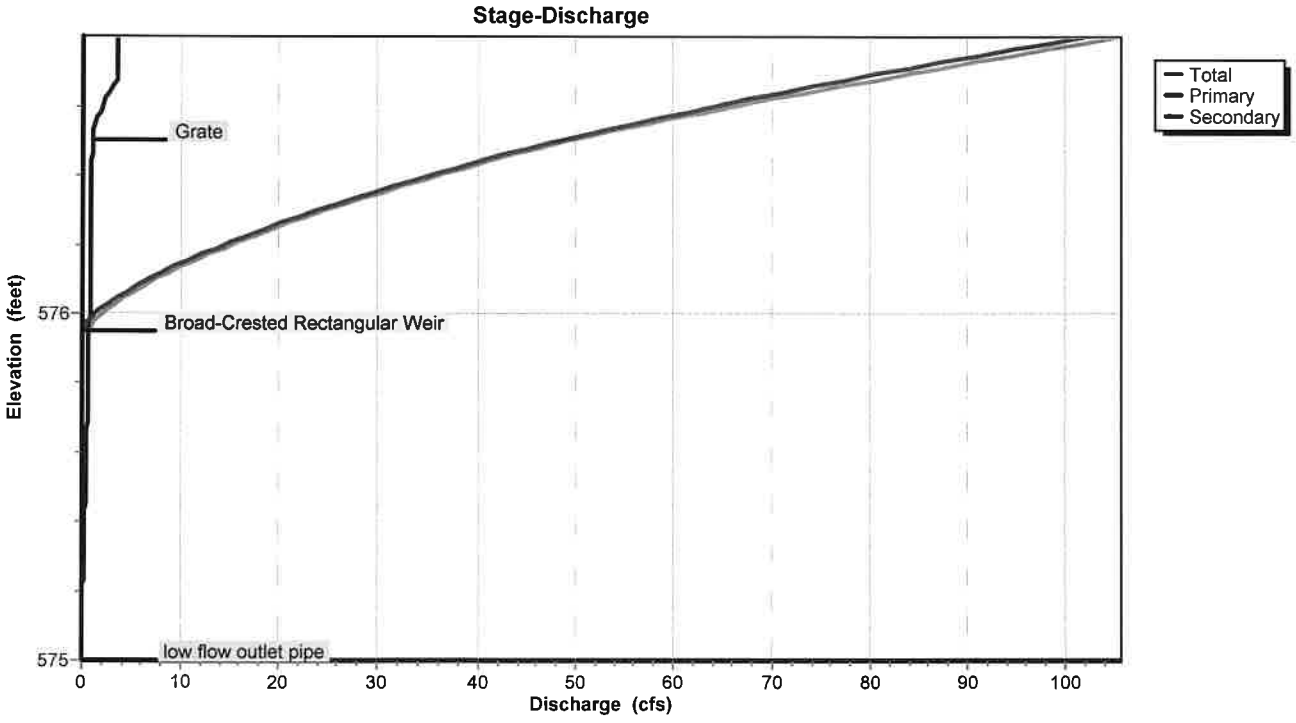
Secondary OutFlow Max=7.79 cfs @ 12.41 hrs HW=576.11' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 7.79 cfs @ 1.18 fps)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)

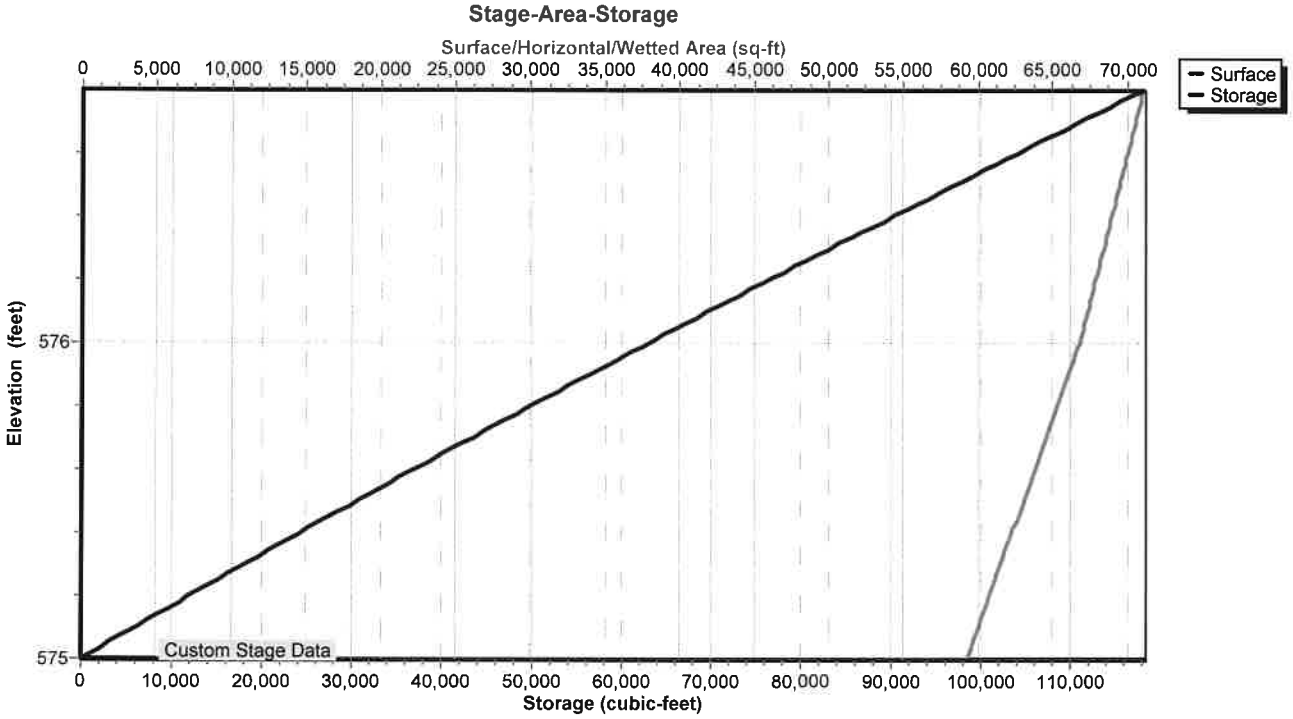


Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 3P: Detention Basin (SMA #1)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 3P: Detention Basin (SMA #1)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	575.00	0.00	0.00	0.00
2.00	0.00	0	575.00	0.00	0.00	0.00
4.00	0.02	25	575.00	0.00	0.00	0.00
6.00	0.13	556	575.01	0.00	0.00	0.00
8.00	0.25	1,914	575.03	0.00	0.00	0.00
10.00	0.57	4,720	575.08	0.01	0.01	0.00
12.00	**43.89**	**31,253**	**575.51**	**0.38**	**0.38**	**0.00**
14.00	**0.94**	**61,894**	**575.98**	**1.43**	**0.71**	**0.72**
16.00	0.56	59,972	575.95	0.73	0.70	0.03
18.00	0.42	58,398	575.93	0.69	0.69	0.00
20.00	0.31	56,130	575.90	0.67	0.67	0.00
22.00	0.28	53,450	575.86	0.65	0.65	0.00
24.00	0.25	50,762	575.81	0.63	0.63	0.00
26.00	0.00	46,581	575.75	0.59	0.59	0.00
28.00	0.00	42,588	575.69	0.52	0.52	0.00
30.00	0.00	38,979	575.63	0.49	0.49	0.00
32.00	0.00	35,609	575.58	0.45	0.45	0.00
34.00	0.00	32,555	575.53	0.40	0.40	0.00
36.00	0.00	29,827	575.49	0.36	0.36	0.00
38.00	0.00	27,407	575.45	0.32	0.32	0.00
40.00	0.00	25,264	575.42	0.28	0.28	0.00
42.00	0.00	23,368	575.39	0.25	0.25	0.00
44.00	0.00	21,686	575.36	0.22	0.22	0.00
46.00	0.00	20,191	575.33	0.20	0.20	0.00
48.00	0.00	18,858	575.31	0.17	0.17	0.00
50.00	0.00	17,665	575.29	0.16	0.16	0.00
52.00	0.00	16,594	575.28	0.14	0.14	0.00
54.00	0.00	15,630	575.26	0.13	0.13	0.00
56.00	0.00	14,758	575.25	0.12	0.12	0.00
58.00	0.00	13,967	575.23	0.10	0.10	0.00
60.00	0.00	13,248	575.22	0.10	0.10	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
575.00	0.00	0.00	0.00
575.02	0.00	0.00	0.00
575.04	0.00	0.00	0.00
575.06	0.01	0.01	0.00
575.08	0.01	0.01	0.00
575.10	0.02	0.02	0.00
575.12	0.03	0.03	0.00
575.14	0.04	0.04	0.00
575.16	0.05	0.05	0.00
575.18	0.07	0.07	0.00
575.20	0.08	0.08	0.00
575.22	0.09	0.09	0.00
575.24	0.11	0.11	0.00
575.26	0.13	0.13	0.00
575.28	0.15	0.15	0.00
575.30	0.16	0.16	0.00
575.32	0.18	0.18	0.00
575.34	0.20	0.20	0.00
575.36	0.22	0.22	0.00
575.38	0.24	0.24	0.00
575.40	0.26	0.26	0.00
575.42	0.28	0.28	0.00
575.44	0.31	0.31	0.00
575.46	0.33	0.33	0.00
575.48	0.35	0.35	0.00
575.50	0.37	0.37	0.00
575.52	0.39	0.39	0.00
575.54	0.41	0.41	0.00
575.56	0.43	0.43	0.00
575.58	0.45	0.45	0.00
575.60	0.46	0.46	0.00
575.62	0.48	0.48	0.00
575.64	0.49	0.49	0.00
575.66	0.50	0.50	0.00
575.68	0.51	0.51	0.00
575.70	0.54	0.54	0.00
575.72	0.56	0.56	0.00
575.74	0.58	0.58	0.00
575.76	0.60	0.60	0.00
575.78	0.61	0.61	0.00
575.80	0.62	0.62	0.00
575.82	0.63	0.63	0.00
575.84	0.64	0.64	0.00
575.86	0.65	0.65	0.00
575.88	0.66	0.66	0.00
575.90	0.67	0.67	0.00
575.92	0.68	0.68	0.00
575.94	0.69	0.69	0.00
575.96	0.82	0.70	0.12
575.98	1.32	0.71	0.61
576.00	2.03	0.72	1.31
576.02	2.90	0.73	2.16
576.04	3.90	0.74	3.15
576.06	5.01	0.75	4.26
576.08	6.23	0.76	5.47
576.10	7.55	0.77	6.79
576.12	8.96	0.78	8.19
576.14	10.46	0.79	9.67
576.16	12.04	0.80	11.24
576.18	13.69	0.80	12.88
576.20	15.41	0.81	14.60
576.22	17.21	0.82	16.39
576.24	19.07	0.83	18.24
576.26	21.00	0.84	20.16
576.28	22.99	0.85	22.14
576.30	25.04	0.85	24.18
576.32	27.15	0.86	26.29
576.34	29.32	0.87	28.45
576.36	31.54	0.88	30.66
576.38	33.82	0.89	32.93
576.40	36.15	0.89	35.26
576.42	38.54	0.90	37.63
576.44	40.97	0.91	40.06
576.46	43.73	0.92	42.81
576.48	46.56	0.93	45.63
576.50	49.47	0.93	48.54
576.52	52.56	1.03	51.53
576.54	55.81	1.21	54.60
576.56	59.18	1.44	57.75
576.58	62.68	1.70	60.98
576.60	66.29	2.00	64.29
576.62	70.02	2.34	67.68
576.64	73.85	2.70	71.16
576.66	77.79	3.08	74.71
576.68	81.74	3.39	78.35
576.70	85.48	3.41	82.07
576.72	89.30	3.43	85.87
576.74	93.20	3.45	89.75
576.76	97.18	3.46	93.72
576.78	101.25	3.48	97.76
576.80	**105.39**	**3.50**	**101.90**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 3P: Detention Basin (SMA #1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	59,213	0
575.02	59,366	1,186
575.04	59,518	2,375
575.06	59,671	3,567
575.08	59,824	4,761
575.10	59,977	5,959
575.12	60,129	7,161
575.14	60,282	8,365
575.16	60,435	9,572
575.18	60,587	10,782
575.20	60,740	11,995
575.22	60,893	13,212
575.24	61,046	14,431
575.26	61,198	15,653
575.28	61,351	16,879
575.30	61,504	18,108
575.32	61,657	19,339
575.34	61,809	20,574
575.36	61,962	21,811
575.38	62,115	23,052
575.40	62,267	24,296
575.42	62,420	25,543
575.44	62,573	26,793
575.46	62,726	28,046
575.48	62,878	29,302
575.50	63,031	30,561
575.52	63,184	31,823
575.54	63,336	33,088
575.56	63,489	34,357
575.58	63,642	35,628
575.60	63,795	36,902
575.62	63,947	38,180
575.64	64,100	39,460
575.66	64,253	40,744
575.68	64,405	42,030
575.70	64,558	43,320
575.72	64,711	44,613
575.74	64,864	45,908
575.76	65,016	47,207
575.78	65,169	48,509
575.80	65,322	49,814
575.82	65,475	51,122
575.84	65,627	52,433
575.86	65,780	53,747
575.88	65,933	55,064
575.90	66,085	56,384
575.92	66,238	57,708
575.94	66,391	59,034
575.96	66,544	60,363
575.98	66,696	61,696
576.00	66,849	63,031
576.02	66,956	64,369
576.04	67,063	65,709
576.06	67,170	67,052
576.08	67,278	68,396
576.10	67,385	69,743
576.12	67,492	71,091
576.14	67,599	72,442
576.16	67,706	73,795
576.18	67,813	75,151
576.20	67,920	76,508
576.22	68,027	77,867
576.24	68,135	79,229
576.26	68,242	80,593
576.28	68,349	81,959
576.30	68,456	83,327
576.32	68,563	84,697
576.34	68,670	86,069
576.36	68,777	87,444
576.38	68,884	88,820
576.40	68,992	90,199
576.42	69,099	91,580
576.44	69,206	92,963
576.46	69,313	94,348
576.48	69,420	95,736
576.50	69,527	97,125
576.52	69,634	98,517
576.54	69,741	99,910
576.56	69,848	101,306
576.58	69,956	102,704
576.60	70,063	104,105
576.62	70,170	105,507
576.64	70,277	106,911
576.66	70,384	108,318
576.68	70,491	109,727
576.70	70,598	111,138
576.72	70,706	112,551
576.74	70,813	113,966
576.76	70,920	115,383
576.78	71,027	116,803
576.80	**71,134**	**118,224**

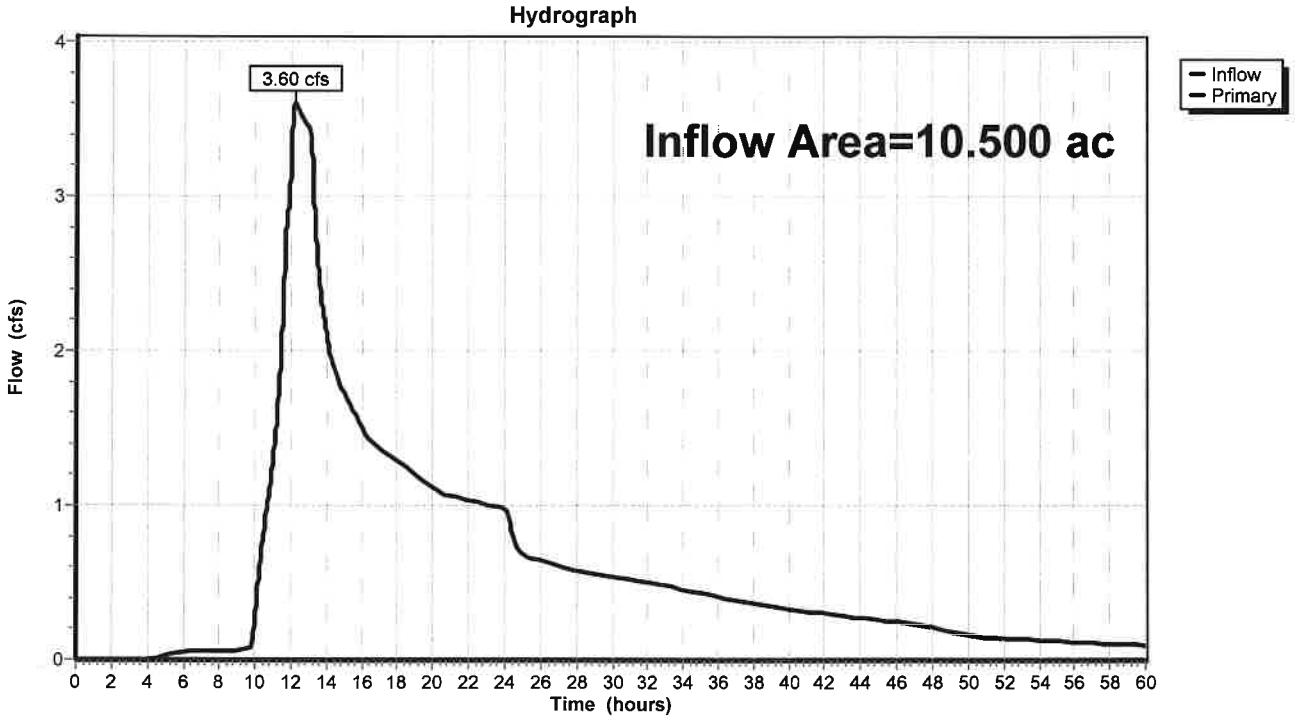
Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Link 5L: Outflow (@ CB 54)

Inflow Area = 10.500 ac, 57.14% Impervious, Inflow Depth > 3.23" for 100-Year event
Inflow = 3.60 cfs @ 12.19 hrs, Volume= 2.829 af
Primary = 3.60 cfs @ 12.19 hrs, Volume= 2.829 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 5L: Outflow (@ CB 54)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Link 5L: Outflow (@ CB 54)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.14	0.00	0.14
1.00	0.00	0.00	0.00	53.00	0.13	0.00	0.13
2.00	0.00	0.00	0.00	54.00	0.13	0.00	0.13
3.00	0.00	0.00	0.00	55.00	0.12	0.00	0.12
4.00	0.00	0.00	0.00	56.00	0.12	0.00	0.12
5.00	0.03	0.00	0.03	57.00	0.11	0.00	0.11
6.00	0.05	0.00	0.05	58.00	0.10	0.00	0.10
7.00	0.05	0.00	0.05	59.00	0.10	0.00	0.10
8.00	0.05	0.00	0.05	60.00	0.10	0.00	0.10
9.00	0.06	0.00	0.06				
10.00	0.30	0.00	0.30				
11.00	1.31	0.00	1.31				
12.00	**3.29**	0.00	**3.29**				
13.00	**3.44**	0.00	**3.44**				
14.00	2.10	0.00	2.10				
15.00	1.72	0.00	1.72				
16.00	1.51	0.00	1.51				
17.00	1.37	0.00	1.37				
18.00	1.29	0.00	1.29				
19.00	1.20	0.00	1.20				
20.00	1.11	0.00	1.11				
21.00	1.06	0.00	1.06				
22.00	1.03	0.00	1.03				
23.00	1.01	0.00	1.01				
24.00	0.98	0.00	0.98				
25.00	0.68	0.00	0.68				
26.00	0.64	0.00	0.64				
27.00	0.61	0.00	0.61				
28.00	0.58	0.00	0.58				
29.00	0.55	0.00	0.55				
30.00	0.54	0.00	0.54				
31.00	0.52	0.00	0.52				
32.00	0.50	0.00	0.50				
33.00	0.48	0.00	0.48				
34.00	0.45	0.00	0.45				
35.00	0.43	0.00	0.43				
36.00	0.41	0.00	0.41				
37.00	0.39	0.00	0.39				
38.00	0.37	0.00	0.37				
39.00	0.35	0.00	0.35				
40.00	0.33	0.00	0.33				
41.00	0.32	0.00	0.32				
42.00	0.30	0.00	0.30				
43.00	0.28	0.00	0.28				
44.00	0.27	0.00	0.27				
45.00	0.26	0.00	0.26				
46.00	0.25	0.00	0.25				
47.00	0.24	0.00	0.24				
48.00	0.21	0.00	0.21				
49.00	0.18	0.00	0.18				
50.00	0.16	0.00	0.16				
51.00	0.15	0.00	0.15				

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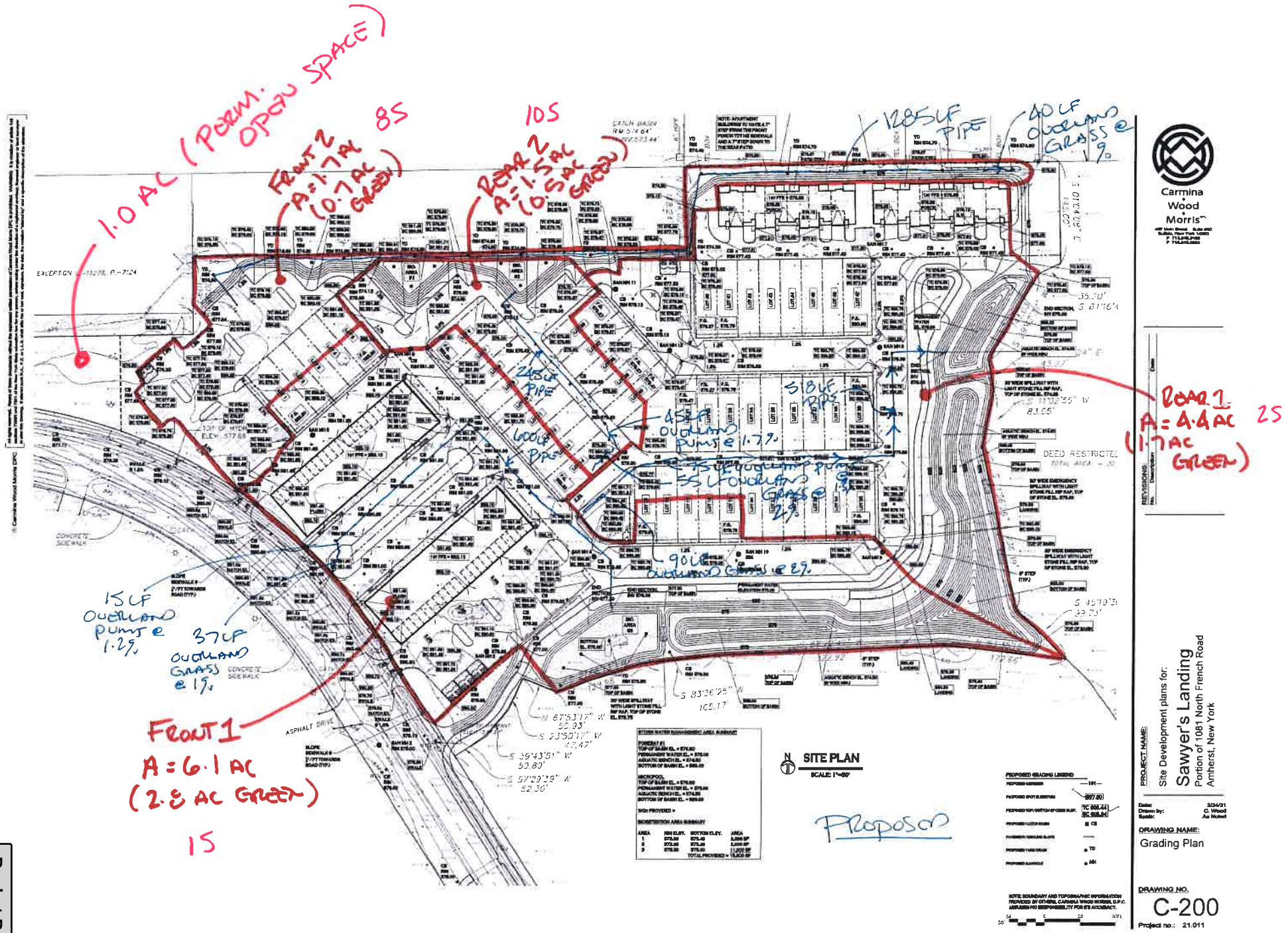
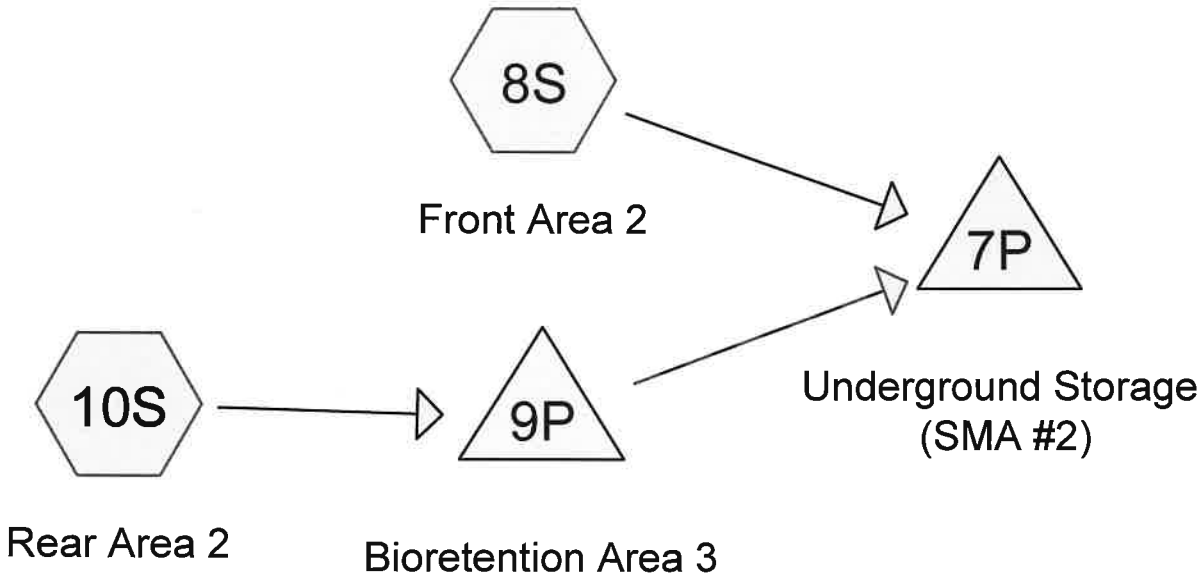
Proposed Runoff - West

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Subcat Reach Pond Link

Routing Diagram for 21.011 Proposed
Prepared by Hewlett-Packard Company, Printed 3/4/2021
HydroCAD® 10.00-18 s/n 05019 © 2016 HydroCAD Software Solutions LLC

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Events for Pond 7P: Underground Storage

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	2.40	0.33	570.29	4,537
2-Year	4.15	0.68	570.46	5,990
5-Year	7.03	1.05	570.79	8,639
10-Year	9.17	1.28	571.13	11,342
25-Year	11.11	1.61	571.73	15,804
50-Year	12.80	3.61	572.23	18,836
100-Year	**14.92**	**4.83**	**572.92**	**21,772**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.200	80	>75% Grass cover, Good, HSG D (8S, 10S)
1.200	98	Paved parking, HSG D (8S, 10S)
0.800	98	Roofs, HSG D (8S, 10S)
3.200	**91**	**TOTAL AREA**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
3.200	HSG D	8S, 10S
0.000	Other	
3.200		**TOTAL AREA**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	1.200	0.000	1.200	>75% Grass cover, Good	8S, 10S
0.000	0.000	0.000	1.200	0.000	1.200	Paved parking	8S, 10S
0.000	0.000	0.000	0.800	0.000	0.800	Roofs	8S, 10S
0.000	**0.000**	**0.000**	**3.200**	**0.000**	**3.200**	**TOTAL AREA**	

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Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.04"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=2.36 cfs 0.148 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.11"
Flow Length=345' Tc=9.1 min CN=92 Runoff=2.63 cfs 0.139 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.29' Storage=4,537 cf Inflow=2.40 cfs 0.287 af
Outflow=0.33 cfs 0.243 af

Pond 9P: Bioretention Area 3 Peak Elev=574.54' Storage=2,922 cf Inflow=2.63 cfs 0.139 af
Outflow=0.43 cfs 0.139 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.287 af Average Runoff Depth = 1.08"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 8S: Front Area 2

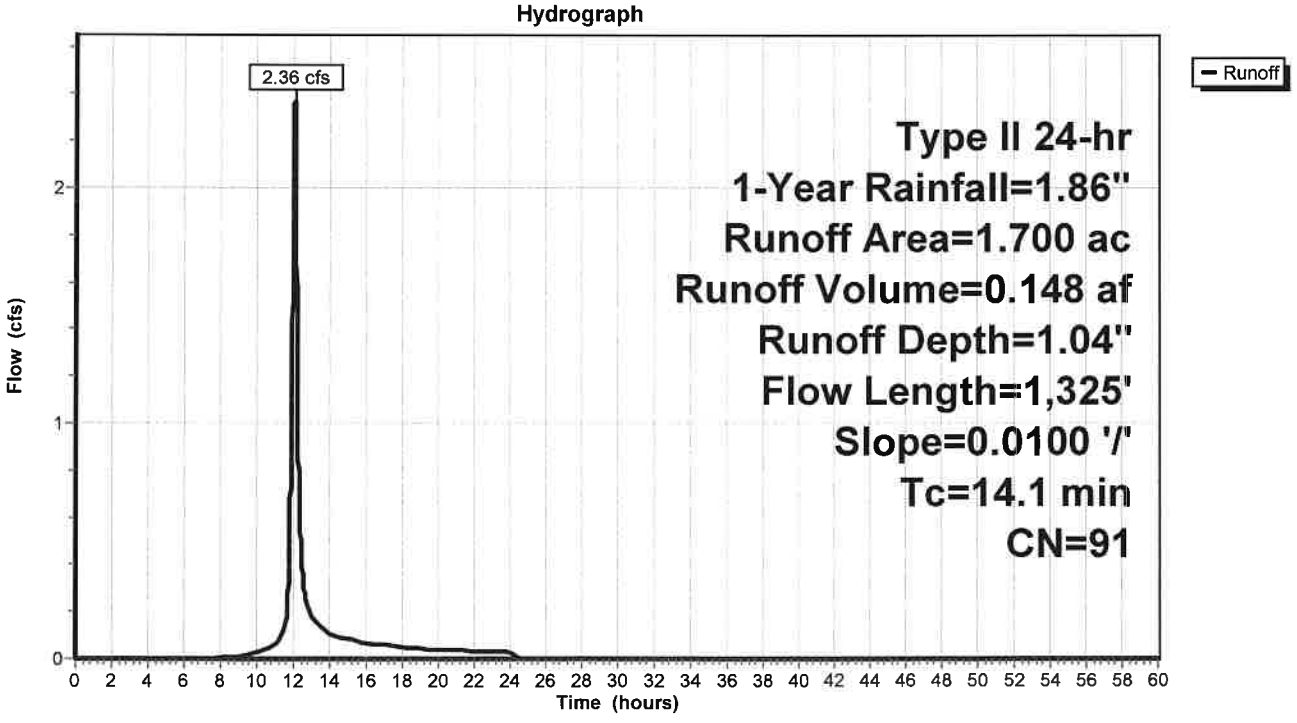
Runoff = 2.36 cfs @ 12.06 hrs, Volume= 0.148 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.00
9.00	0.27	0.01	0.01
10.00	0.34	0.02	0.02
11.00	0.44	0.05	0.07
12.00	1.23	0.53	**2.04**
13.00	1.44	0.69	**0.18**
14.00	1.53	0.76	0.11
15.00	1.59	0.81	0.08
16.00	1.64	0.85	0.07
17.00	1.68	0.89	0.06
18.00	1.71	0.92	0.05
19.00	1.74	0.94	0.04
20.00	1.77	0.97	0.04
21.00	1.79	0.99	0.03
22.00	1.82	1.01	0.03
23.00	1.84	1.02	0.03
24.00	**1.86**	**1.04**	0.03
25.00	1.86	1.04	0.00
26.00	1.86	1.04	0.00
27.00	1.86	1.04	0.00
28.00	1.86	1.04	0.00
29.00	1.86	1.04	0.00
30.00	1.86	1.04	0.00
31.00	1.86	1.04	0.00
32.00	1.86	1.04	0.00
33.00	1.86	1.04	0.00
34.00	1.86	1.04	0.00
35.00	1.86	1.04	0.00
36.00	1.86	1.04	0.00
37.00	1.86	1.04	0.00
38.00	1.86	1.04	0.00
39.00	1.86	1.04	0.00
40.00	1.86	1.04	0.00
41.00	1.86	1.04	0.00
42.00	1.86	1.04	0.00
43.00	1.86	1.04	0.00
44.00	1.86	1.04	0.00
45.00	1.86	1.04	0.00
46.00	1.86	1.04	0.00
47.00	1.86	1.04	0.00
48.00	1.86	1.04	0.00
49.00	1.86	1.04	0.00
50.00	1.86	1.04	0.00
51.00	1.86	1.04	0.00
52.00	1.86	1.04	0.00
53.00	1.86	1.04	0.00
54.00	1.86	1.04	0.00
55.00	1.86	1.04	0.00
56.00	1.86	1.04	0.00
57.00	1.86	1.04	0.00
58.00	1.86	1.04	0.00
59.00	1.86	1.04	0.00
60.00	1.86	1.04	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 10S: Rear Area 2

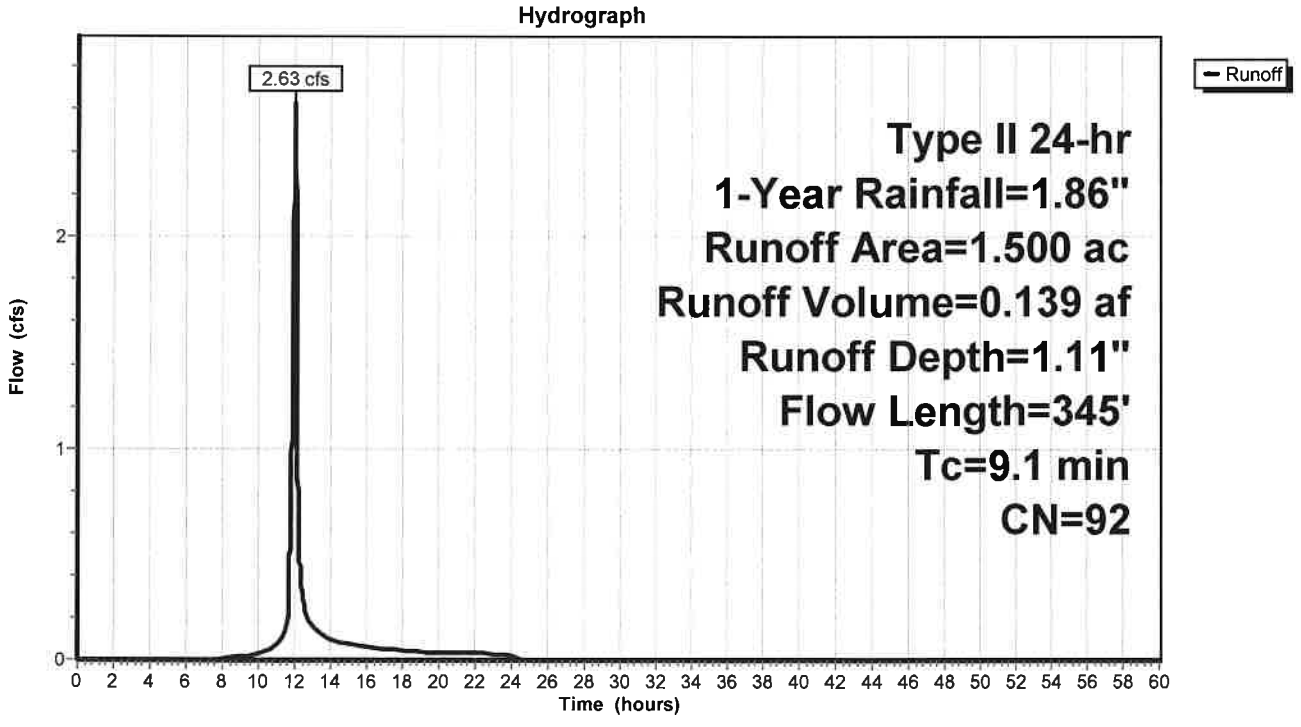
Runoff = 2.63 cfs @ 12.01 hrs, Volume= 0.139 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.86"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00	0.09	0.00	0.00
5.00	0.12	0.00	0.00
6.00	0.15	0.00	0.00
7.00	0.18	0.00	0.00
8.00	0.22	0.00	0.01
9.00	0.27	0.01	0.02
10.00	0.34	0.03	0.03
11.00	0.44	0.06	0.07
12.00	1.23	0.58	**2.63**
13.00	1.44	0.75	**0.16**
14.00	1.53	0.82	0.09
15.00	1.59	0.88	0.07
16.00	1.64	0.92	0.06
17.00	1.68	0.95	0.05
18.00	1.71	0.98	0.04
19.00	1.74	1.01	0.04
20.00	1.77	1.03	0.03
21.00	1.79	1.05	0.03
22.00	1.82	1.07	0.03
23.00	1.84	1.09	0.03
24.00	**1.86**	**1.11**	0.03
25.00	1.86	1.11	0.00
26.00	1.86	1.11	0.00
27.00	1.86	1.11	0.00
28.00	1.86	1.11	0.00
29.00	1.86	1.11	0.00
30.00	1.86	1.11	0.00
31.00	1.86	1.11	0.00
32.00	1.86	1.11	0.00
33.00	1.86	1.11	0.00
34.00	1.86	1.11	0.00
35.00	1.86	1.11	0.00
36.00	1.86	1.11	0.00
37.00	1.86	1.11	0.00
38.00	1.86	1.11	0.00
39.00	1.86	1.11	0.00
40.00	1.86	1.11	0.00
41.00	1.86	1.11	0.00
42.00	1.86	1.11	0.00
43.00	1.86	1.11	0.00
44.00	1.86	1.11	0.00
45.00	1.86	1.11	0.00
46.00	1.86	1.11	0.00
47.00	1.86	1.11	0.00
48.00	1.86	1.11	0.00
49.00	1.86	1.11	0.00
50.00	1.86	1.11	0.00
51.00	1.86	1.11	0.00
52.00	1.86	1.11	0.00
53.00	1.86	1.11	0.00
54.00	1.86	1.11	0.00
55.00	1.86	1.11	0.00
56.00	1.86	1.11	0.00
57.00	1.86	1.11	0.00
58.00	1.86	1.11	0.00
59.00	1.86	1.11	0.00
60.00	1.86	1.11	0.00

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Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.08" for 1-Year event
Inflow = 2.40 cfs @ 12.06 hrs, Volume= 0.287 af
Outflow = 0.33 cfs @ 13.18 hrs, Volume= 0.243 af, Atten= 86%, Lag= 67.2 min
Primary = 0.33 cfs @ 13.18 hrs, Volume= 0.243 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.29' @ 13.18 hrs Surf.Area= 10,145 sf Storage= 4,537 cf

Plug-Flow detention time= 493.3 min calculated for 0.243 af (85% of inflow)
Center-of-Mass det. time= 283.3 min (1,405.6 - 1,122.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

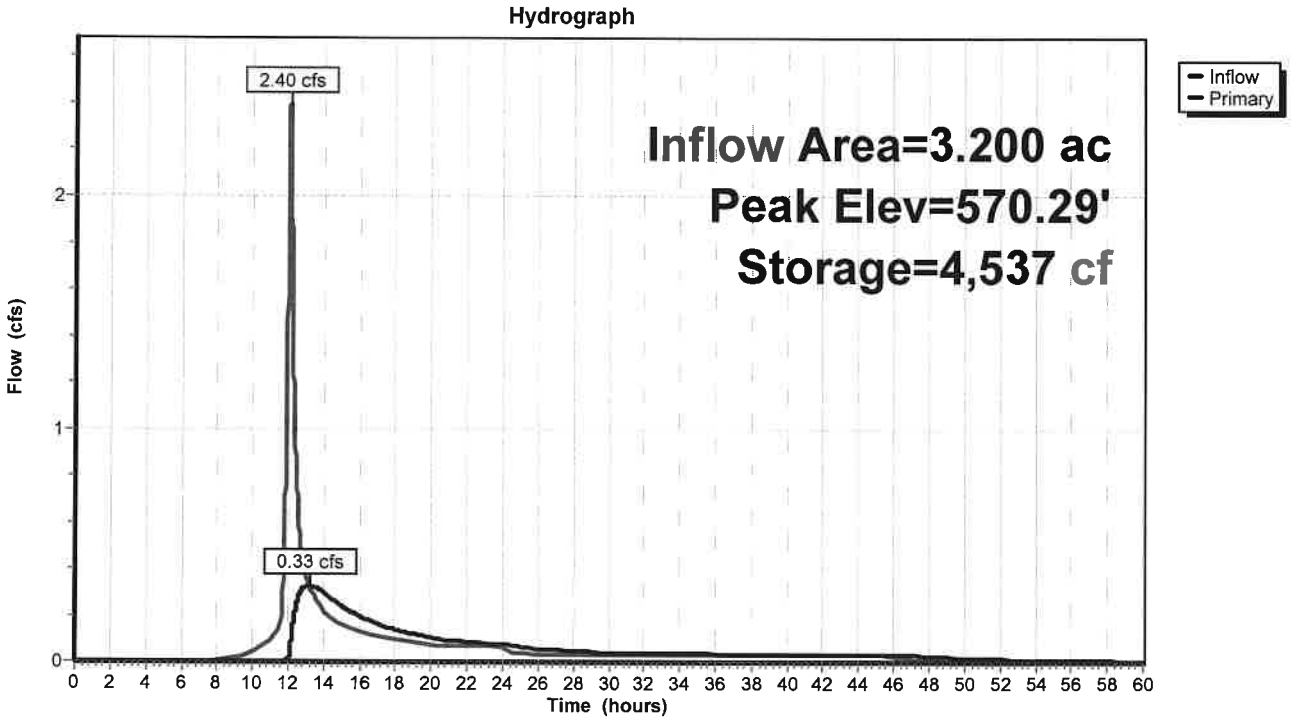
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

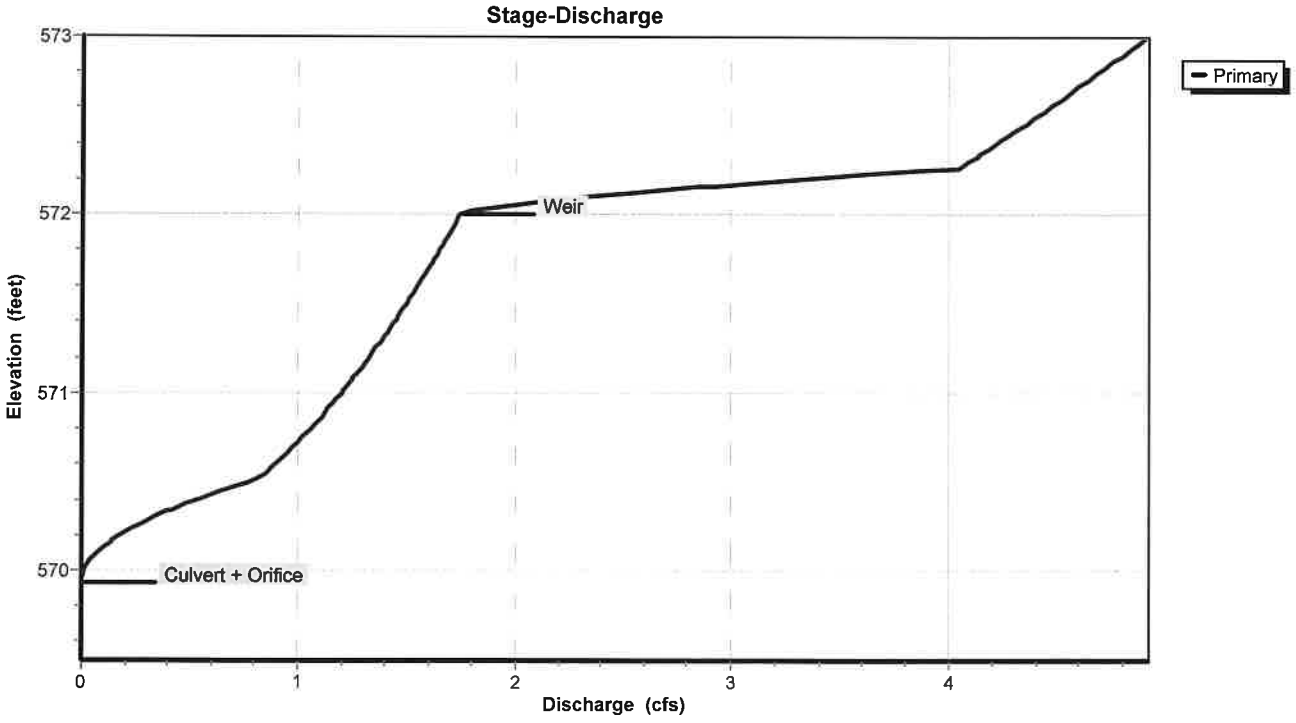
Primary OutFlow Max=0.32 cfs @ 13.18 hrs HW=570.29' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.32 cfs @ 1.88 fps)
  └**2=Orifice** (Passes 0.32 cfs of 0.56 cfs potential flow)
  └**3=Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)

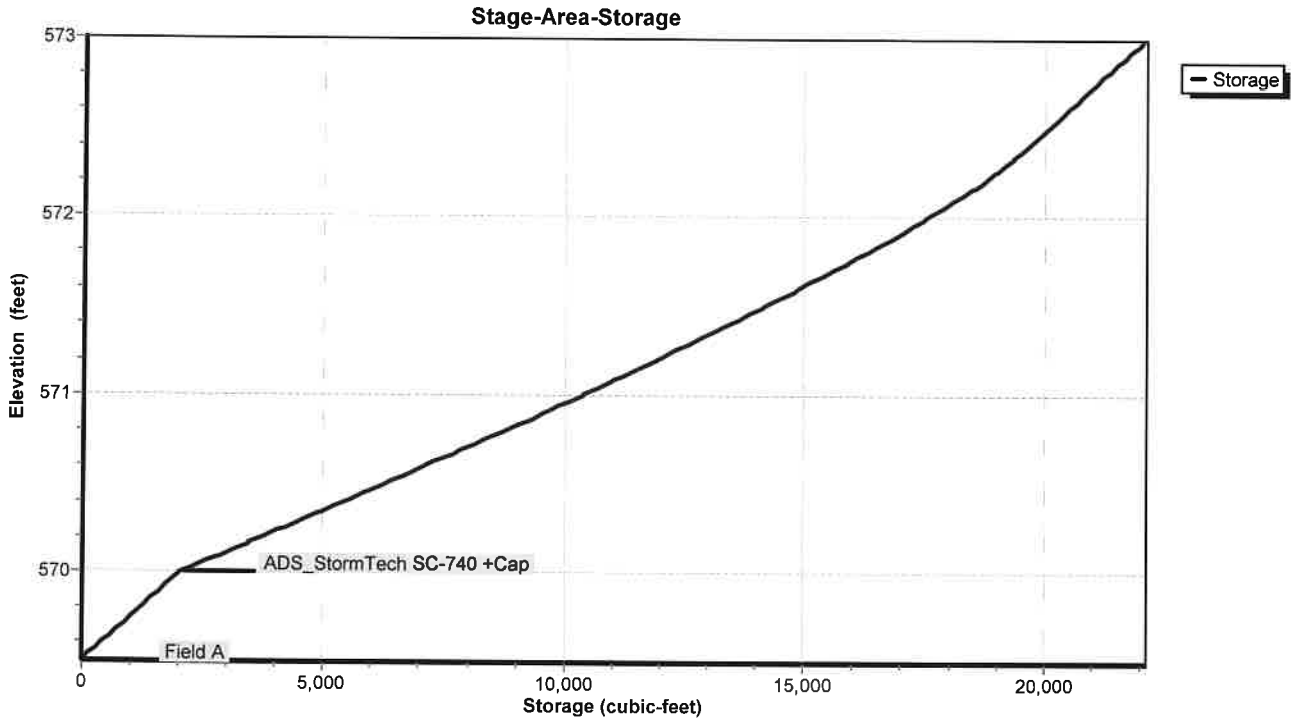


Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	0	569.50	0.00
8.00	0.00	4	569.50	0.00
10.00	0.04	139	569.53	0.00
12.00	**2.08**	**1,735**	**569.93**	**0.00**
14.00	**0.22**	**4,393**	**570.28**	**0.30**
16.00	0.13	3,835	570.21	0.20
18.00	0.10	3,452	570.17	0.14
20.00	0.07	3,194	570.14	0.10
22.00	0.07	3,023	570.12	0.08
24.00	0.06	2,931	570.10	0.07
26.00	0.03	2,737	570.08	0.06
28.00	0.03	2,618	570.07	0.05
30.00	0.03	2,550	570.06	0.04
32.00	0.03	2,506	570.06	0.04
34.00	0.03	2,476	570.05	0.04
36.00	0.03	2,453	570.05	0.03
38.00	0.03	2,436	570.05	0.03
40.00	0.03	2,422	570.05	0.03
42.00	0.03	2,410	570.04	0.03
44.00	0.03	2,399	570.04	0.03
46.00	0.03	2,388	570.04	0.03
48.00	0.01	2,288	570.03	0.02
50.00	0.00	2,166	570.02	0.02
52.00	0.00	2,066	570.00	0.01
54.00	0.00	1,993	569.99	0.01
56.00	0.00	1,945	569.98	0.01
58.00	0.00	1,910	569.97	0.00
60.00	0.00	1,885	569.96	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)
569.50	0
569.55	203
569.60	406
569.65	609
569.70	812
569.75	1,014
569.80	1,217
569.85	1,420
569.90	1,623
569.95	1,826
570.00	2,029
570.05	2,459
570.10	2,889
570.15	3,318
570.20	3,746
570.25	4,173
570.30	4,598
570.35	5,022
570.40	5,444
570.45	5,865
570.50	6,284
570.55	6,701
570.60	7,116
570.65	7,529
570.70	7,940
570.75	8,349
570.80	8,756
570.85	9,160
570.90	9,562
570.95	9,962
571.00	10,359
571.05	10,754
571.10	11,145
571.15	11,534
571.20	11,919
571.25	12,301
571.30	12,680
571.35	13,056
571.40	13,428
571.45	13,797
571.50	14,161
571.55	14,522
571.60	14,879
571.65	15,230
571.70	15,577
571.75	15,917
571.80	16,252
571.85	16,582
571.90	16,906
571.95	17,224
572.00	17,535
572.05	17,838
572.10	18,133
572.15	18,417
572.20	18,690
572.25	18,946
572.30	19,188
572.35	19,417
572.40	19,637
572.45	19,850
572.50	20,057
572.55	20,260
572.60	20,463
572.65	20,665
572.70	20,868
572.75	21,071
572.80	21,274
572.85	21,477
572.90	21,680
572.95	21,883
573.00	**22,086**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.11" for 1-Year event
Inflow = 2.63 cfs @ 12.01 hrs, Volume= 0.139 af
Outflow = 0.43 cfs @ 12.29 hrs, Volume= 0.139 af, Atten= 84%, Lag= 17.0 min
Primary = 0.43 cfs @ 12.29 hrs, Volume= 0.139 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.54' @ 12.29 hrs Surf.Area= 5,881 sf Storage= 2,922 cf

Plug-Flow detention time= 615.0 min calculated for 0.139 af (100% of inflow)
Center-of-Mass det. time= 615.0 min (1,433.7 - 818.7)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

Primary OutFlow Max=0.42 cfs @ 12.29 hrs HW=574.54' (Free Discharge)
- **1=8" pipe** (Passes 0.42 cfs of 4.43 cfs potential flow)
  - **2=Grate** (Weir Controls 0.39 cfs @ 0.69 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

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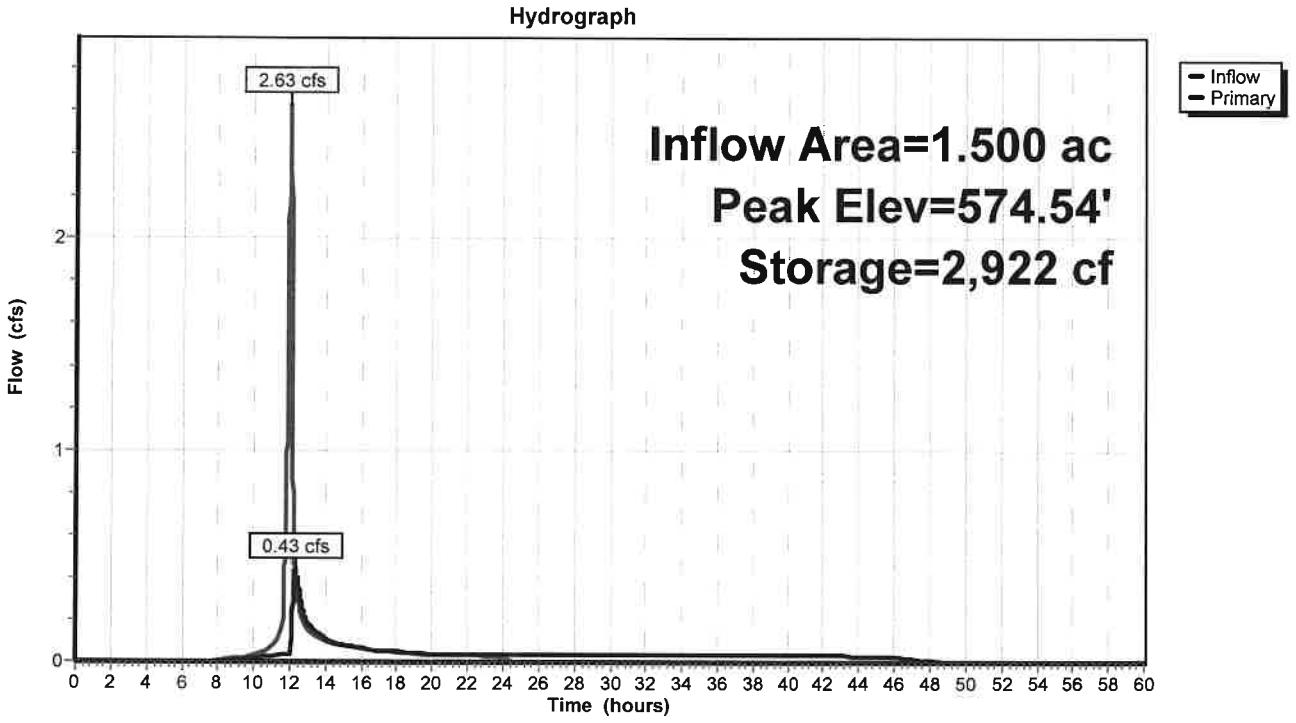
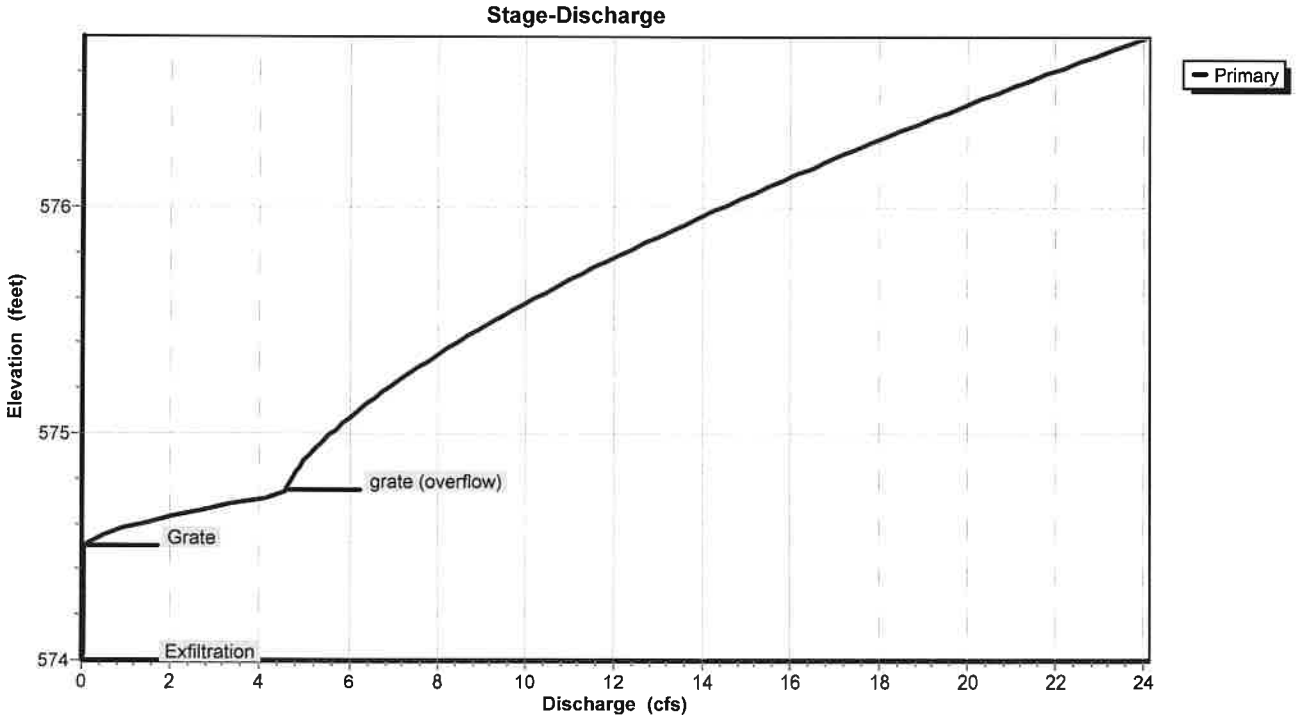
Pond 9P: Bioretention Area 3



Pond 9P: Bioretention Area 3



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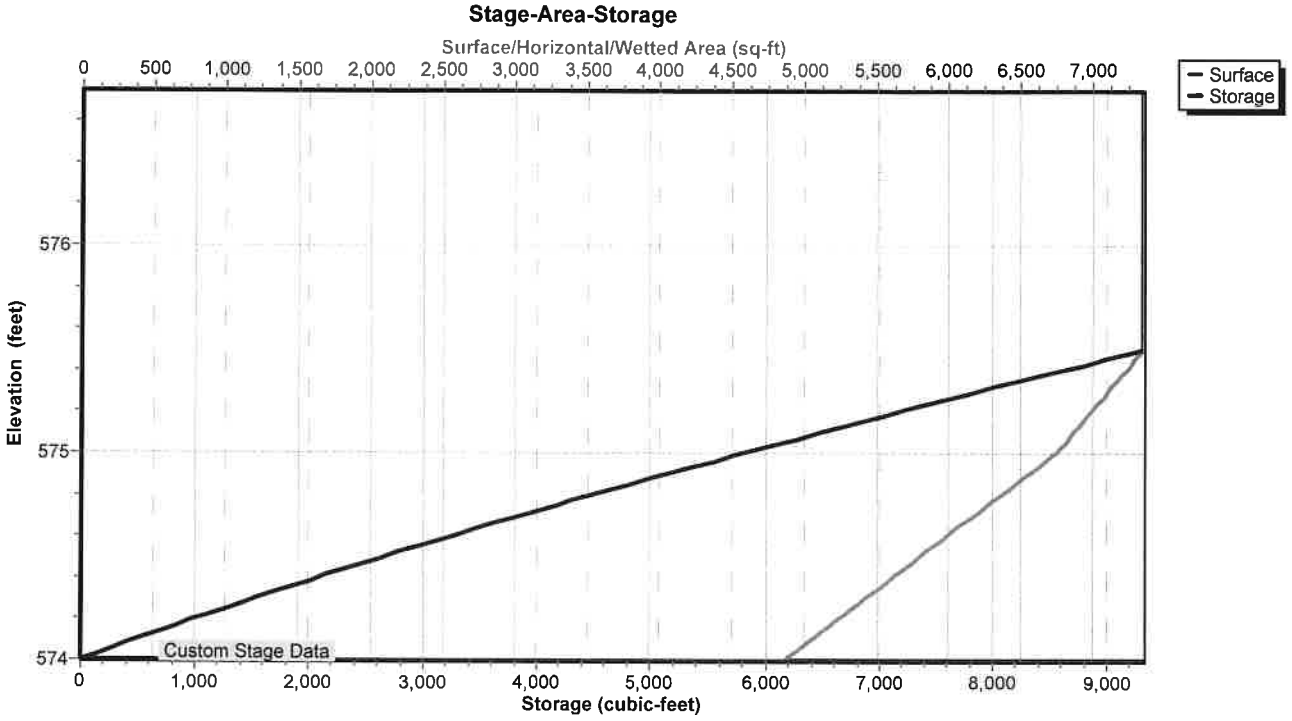
Pond 9P: Bioretention Area 3



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Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.00	0	574.00	0.00
8.00	0.01	9	574.00	0.00
10.00	0.03	70	574.01	0.01
12.00	**2.63**	**1,806**	**574.35**	**0.03**
14.00	**0.09**	**2,731**	**574.51**	**0.11**
16.00	0.06	2,688	574.50	0.06
18.00	0.04	2,673	574.50	0.05
20.00	0.03	2,662	574.50	0.03
22.00	0.03	2,636	574.50	0.03
24.00	0.03	2,594	574.49	0.03
26.00	0.00	2,362	574.45	0.03
28.00	0.00	2,119	574.40	0.03
30.00	0.00	1,881	574.36	0.03
32.00	0.00	1,647	574.32	0.03
34.00	0.00	1,417	574.28	0.03
36.00	0.00	1,190	574.23	0.03
38.00	0.00	968	574.19	0.03
40.00	0.00	750	574.15	0.03
42.00	0.00	536	574.11	0.03
44.00	0.00	326	574.07	0.03
46.00	0.00	120	574.02	0.03
48.00	0.00	26	574.01	0.01
50.00	0.00	6	574.00	0.00
52.00	0.00	1	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

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Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

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Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

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Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.34"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=3.03 cfs 0.190 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.42"
Flow Length=345' Tc=9.1 min CN=92 Runoff=3.32 cfs 0.177 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.46' Storage=5,990 cf Inflow=4.15 cfs 0.367 af
Outflow=0.68 cfs 0.324 af

Pond 9P: Bioretention Area 3 Peak Elev=574.60' Storage=3,274 cf Inflow=3.32 cfs 0.177 af
Outflow=1.41 cfs 0.177 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.367 af Average Runoff Depth = 1.38"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 8S: Front Area 2

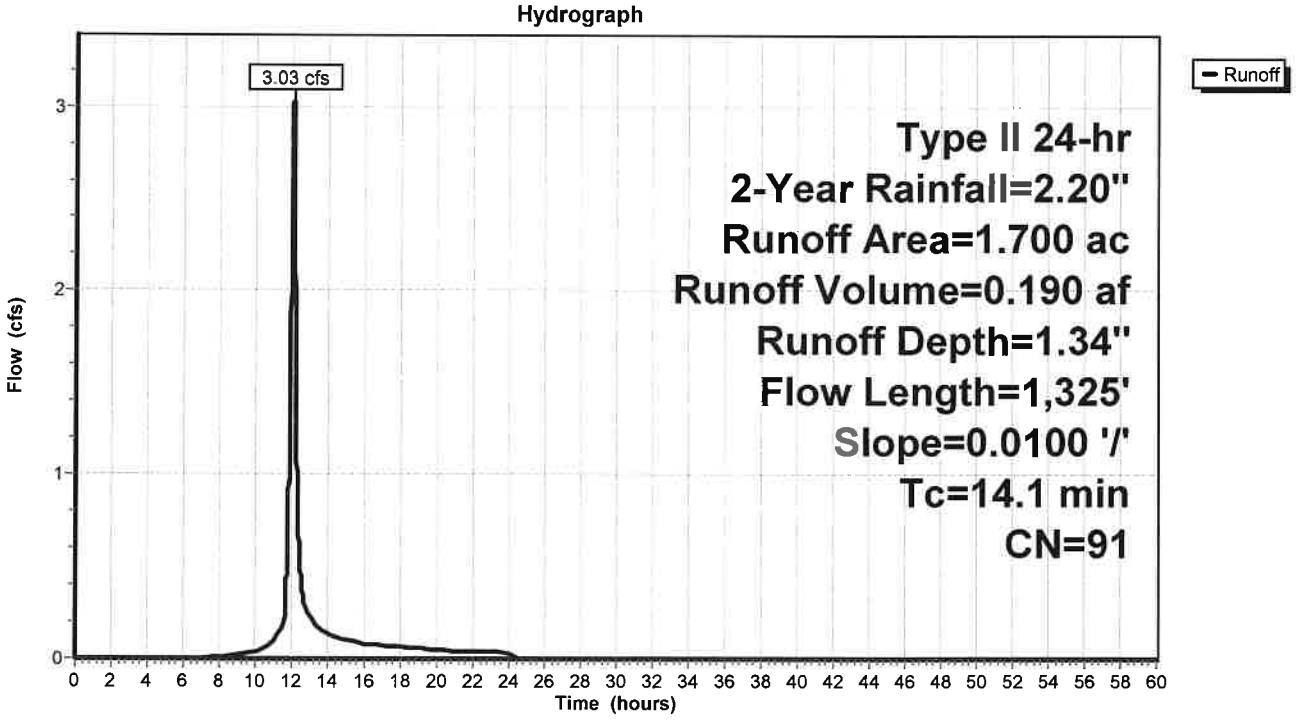
Runoff = 3.03 cfs @ 12.06 hrs, Volume= 0.190 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass**
					Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.02	0.00	0.00
2.00	0.05	0.00	0.00
3.00	0.08	0.00	0.00
4.00	0.11	0.00	0.00
5.00	0.14	0.00	0.00
6.00	0.18	0.00	0.00
7.00	0.22	0.00	0.00
8.00	0.26	0.00	0.01
9.00	0.32	0.01	0.02
10.00	0.40	0.03	0.04
11.00	0.52	0.08	0.10
12.00	1.46	0.71	**2.64**
13.00	1.70	0.90	**0.23**
14.00	1.80	0.99	0.13
15.00	1.88	1.06	0.10
16.00	1.94	1.11	0.08
17.00	1.98	1.15	0.07
18.00	2.03	1.19	0.06
19.00	2.06	1.22	0.05
20.00	2.09	1.25	0.05
21.00	2.12	1.27	0.04
22.00	2.15	1.30	0.04
23.00	2.18	1.32	0.04
24.00	**2.20**	**1.34**	0.04
25.00	2.20	1.34	0.00
26.00	2.20	1.34	0.00
27.00	2.20	1.34	0.00
28.00	2.20	1.34	0.00
29.00	2.20	1.34	0.00
30.00	2.20	1.34	0.00
31.00	2.20	1.34	0.00
32.00	2.20	1.34	0.00
33.00	2.20	1.34	0.00
34.00	2.20	1.34	0.00
35.00	2.20	1.34	0.00
36.00	2.20	1.34	0.00
37.00	2.20	1.34	0.00
38.00	2.20	1.34	0.00
39.00	2.20	1.34	0.00
40.00	2.20	1.34	0.00
41.00	2.20	1.34	0.00
42.00	2.20	1.34	0.00
43.00	2.20	1.34	0.00
44.00	2.20	1.34	0.00
45.00	2.20	1.34	0.00
46.00	2.20	1.34	0.00
47.00	2.20	1.34	0.00
48.00	2.20	1.34	0.00
49.00	2.20	1.34	0.00
50.00	2.20	1.34	0.00
51.00	2.20	1.34	0.00
52.00	2.20	1.34	0.00
53.00	2.20	1.34	0.00
54.00	2.20	1.34	0.00
55.00	2.20	1.34	0.00
56.00	2.20	1.34	0.00
57.00	2.20	1.34	0.00
58.00	2.20	1.34	0.00
59.00	2.20	1.34	0.00
60.00	2.20	1.34	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 10S: Rear Area 2

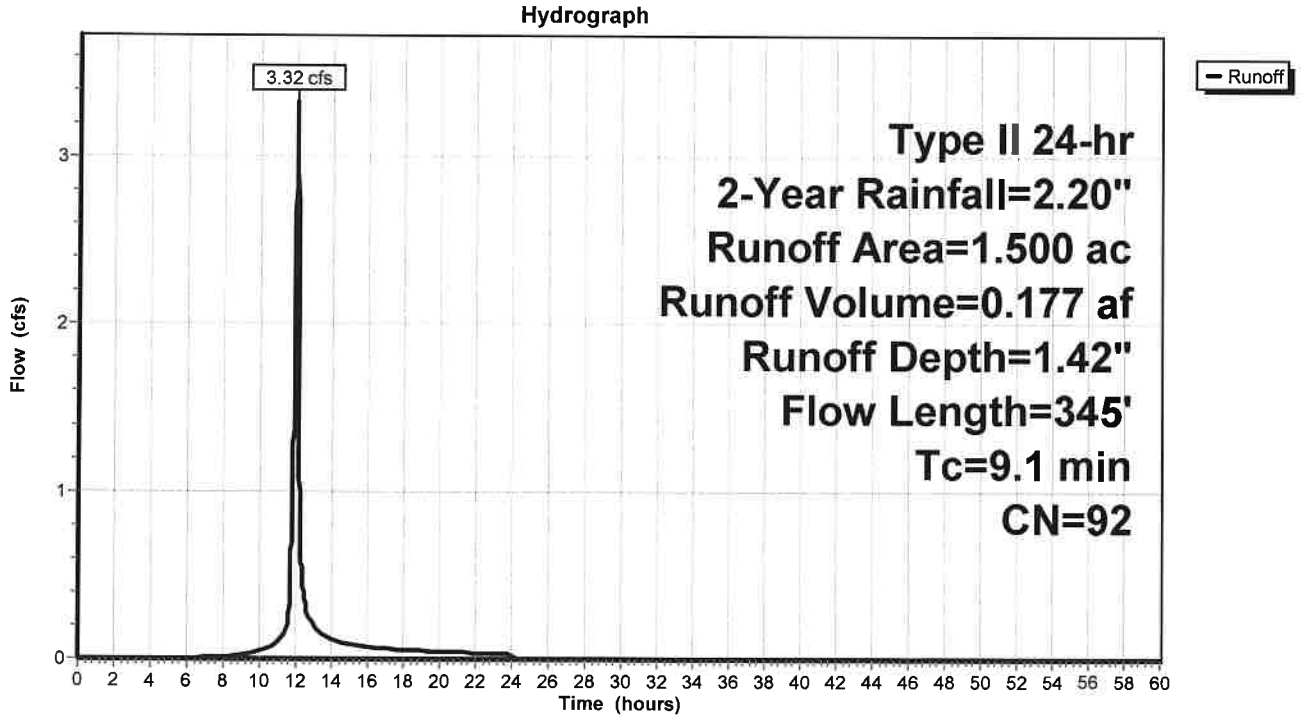
Runoff = 3.32 cfs @ 12.00 hrs, Volume= 0.177 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.20"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	2.20	1.42	0.00
1.00	0.02	0.00	0.00	53.00	2.20	1.42	0.00
2.00	0.05	0.00	0.00	54.00	2.20	1.42	0.00
3.00	0.08	0.00	0.00	55.00	2.20	1.42	0.00
4.00	0.11	0.00	0.00	56.00	2.20	1.42	0.00
5.00	0.14	0.00	0.00	57.00	2.20	1.42	0.00
6.00	0.18	0.00	0.00	58.00	2.20	1.42	0.00
7.00	0.22	0.00	0.01	59.00	2.20	1.42	0.00
8.00	0.26	0.01	0.01	60.00	2.20	1.42	0.00
9.00	0.32	0.02	0.03				
10.00	0.40	0.05	0.04				
11.00	0.52	0.10	0.10				
12.00	1.46	0.77	**3.32**				
13.00	1.70	0.97	0.20				
14.00	1.80	1.06	0.12				
15.00	1.88	1.13	0.09				
16.00	1.94	1.18	0.07				
17.00	1.98	1.22	0.06				
18.00	2.03	1.26	0.05				
19.00	2.06	1.29	0.05				
20.00	2.09	1.32	0.04				
21.00	2.12	1.35	0.04				
22.00	2.15	1.37	0.04				
23.00	2.18	1.40	0.03				
24.00	**2.20**	**1.42**	0.03				
25.00	2.20	1.42	0.00				
26.00	2.20	1.42	0.00				
27.00	2.20	1.42	0.00				
28.00	2.20	1.42	0.00				
29.00	2.20	1.42	0.00				
30.00	2.20	1.42	0.00				
31.00	2.20	1.42	0.00				
32.00	2.20	1.42	0.00				
33.00	2.20	1.42	0.00				
34.00	2.20	1.42	0.00				
35.00	2.20	1.42	0.00				
36.00	2.20	1.42	0.00				
37.00	2.20	1.42	0.00				
38.00	2.20	1.42	0.00				
39.00	2.20	1.42	0.00				
40.00	2.20	1.42	0.00				
41.00	2.20	1.42	0.00				
42.00	2.20	1.42	0.00				
43.00	2.20	1.42	0.00				
44.00	2.20	1.42	0.00				
45.00	2.20	1.42	0.00				
46.00	2.20	1.42	0.00				
47.00	2.20	1.42	0.00				
48.00	2.20	1.42	0.00				
49.00	2.20	1.42	0.00				
50.00	2.20	1.42	0.00				
51.00	2.20	1.42	0.00				

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.38" for 2-Year event
Inflow = 4.15 cfs @ 12.10 hrs, Volume= 0.367 af
Outflow = 0.68 cfs @ 12.65 hrs, Volume= 0.324 af, Atten= 84%, Lag= 33.2 min
Primary = 0.68 cfs @ 12.65 hrs, Volume= 0.324 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.46' @ 12.65 hrs Surf.Area= 10,145 sf Storage= 5,990 cf

Plug-Flow detention time= 401.0 min calculated for 0.324 af (88% of inflow)
Center-of-Mass det. time= 229.7 min (1,287.9 - 1,058.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

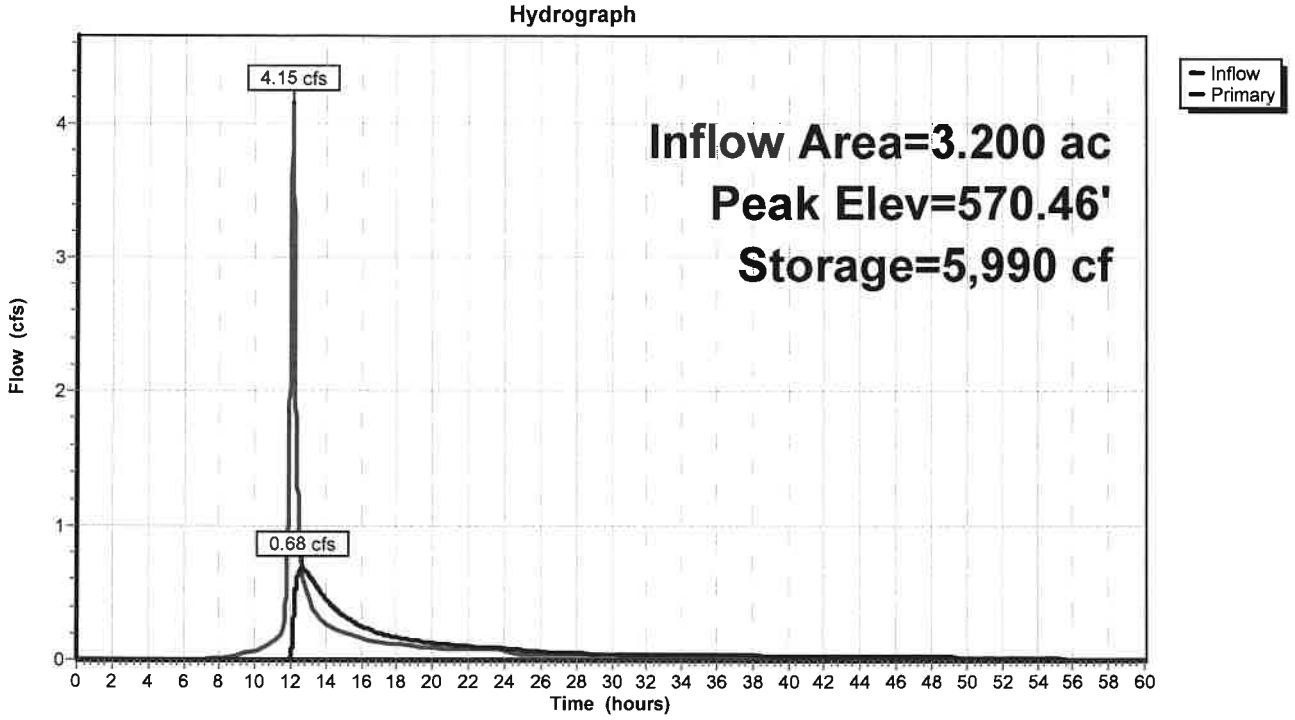
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

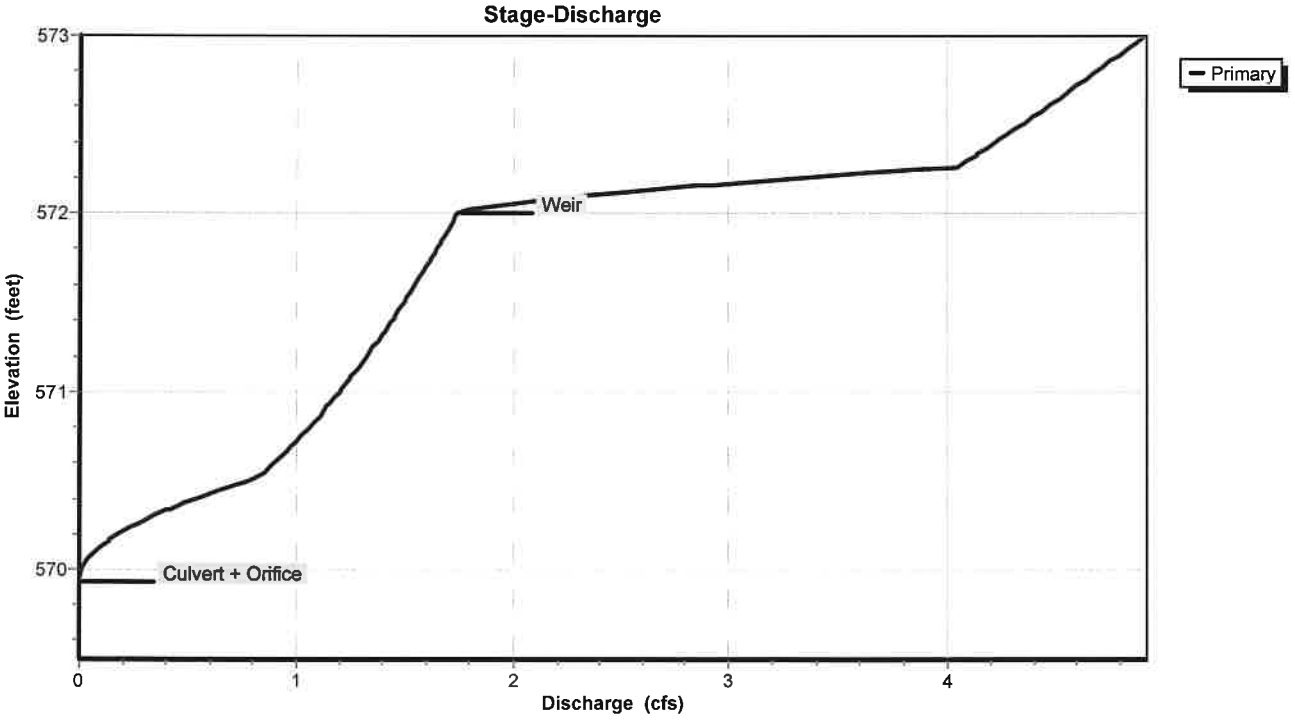
Primary OutFlow Max=0.68 cfs @ 12.65 hrs HW=570.46' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.68 cfs @ 2.31 fps)
└**2=Orifice** (Passes 0.68 cfs of 0.76 cfs potential flow)
└**3=Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)

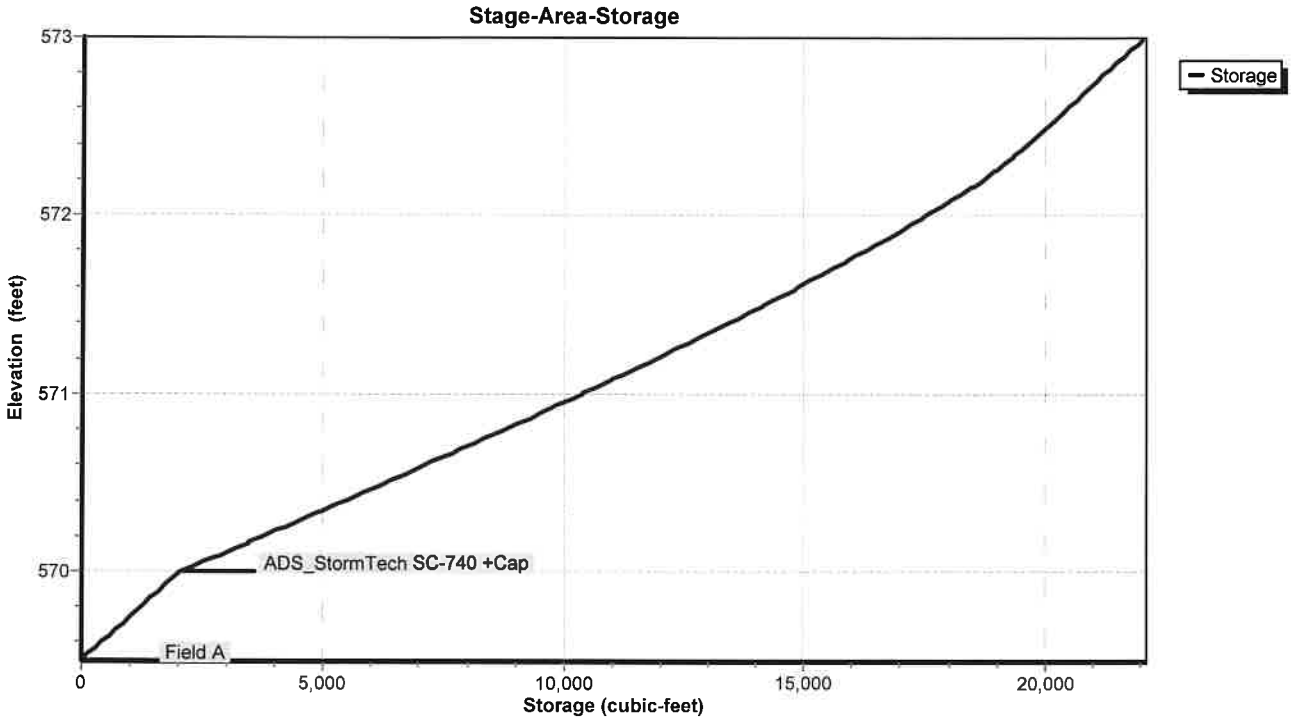


Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	0	569.50	0.00
8.00	0.01	32	569.51	0.00
10.00	0.06	286	569.57	0.00
12.00	**2.68**	**2,414**	**570.04**	**0.03**
14.00	**0.27**	**5,111**	**570.36**	**0.45**
16.00	0.16	4,155	570.25	0.25
18.00	0.12	3,660	570.19	0.17
20.00	0.09	3,359	570.15	0.12
22.00	0.08	3,149	570.13	0.10
24.00	0.07	3,029	570.12	0.09
26.00	0.03	2,788	570.09	0.06
28.00	0.03	2,647	570.07	0.05
30.00	0.03	2,566	570.06	0.04
32.00	0.03	2,517	570.06	0.04
34.00	0.03	2,484	570.05	0.04
36.00	0.03	2,459	570.05	0.03
38.00	0.03	2,441	570.05	0.03
40.00	0.03	2,426	570.05	0.03
42.00	0.03	2,413	570.04	0.03
44.00	0.03	2,402	570.04	0.03
46.00	0.03	2,392	570.04	0.03
48.00	0.01	2,323	570.03	0.03
50.00	0.00	2,199	570.02	0.02
52.00	0.00	2,091	570.01	0.01
54.00	0.00	2,010	570.00	0.01
56.00	0.00	1,957	569.98	0.01
58.00	0.00	1,919	569.97	0.00
60.00	0.00	1,891	569.97	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.42" for 2-Year event
Inflow = 3.32 cfs @ 12.00 hrs, Volume= 0.177 af
Outflow = 1.41 cfs @ 12.13 hrs, Volume= 0.177 af, Atten= 58%, Lag= 7.6 min
Primary = 1.41 cfs @ 12.13 hrs, Volume= 0.177 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.60' @ 12.13 hrs Surf.Area= 5,993 sf Storage= 3,274 cf

Plug-Flow detention time= 499.6 min calculated for 0.177 af (100% of inflow)
Center-of-Mass det. time= 499.8 min (1,311.6 - 811.8)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

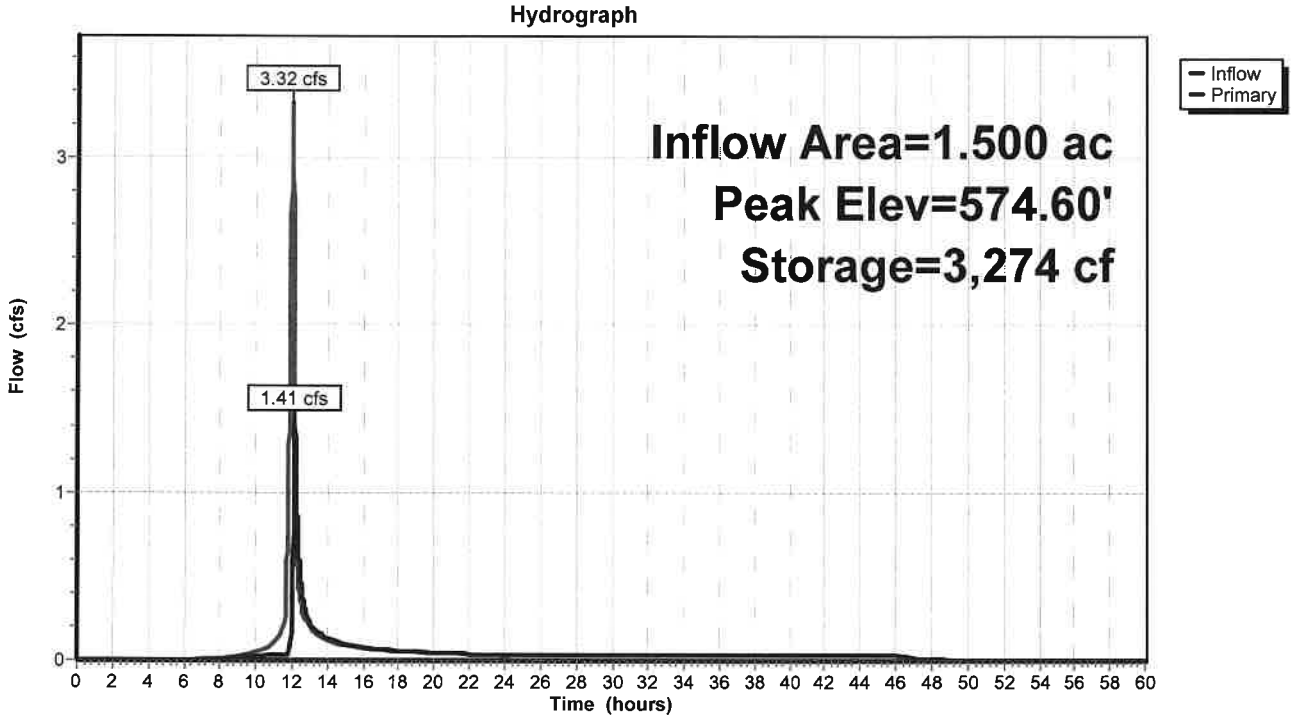
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

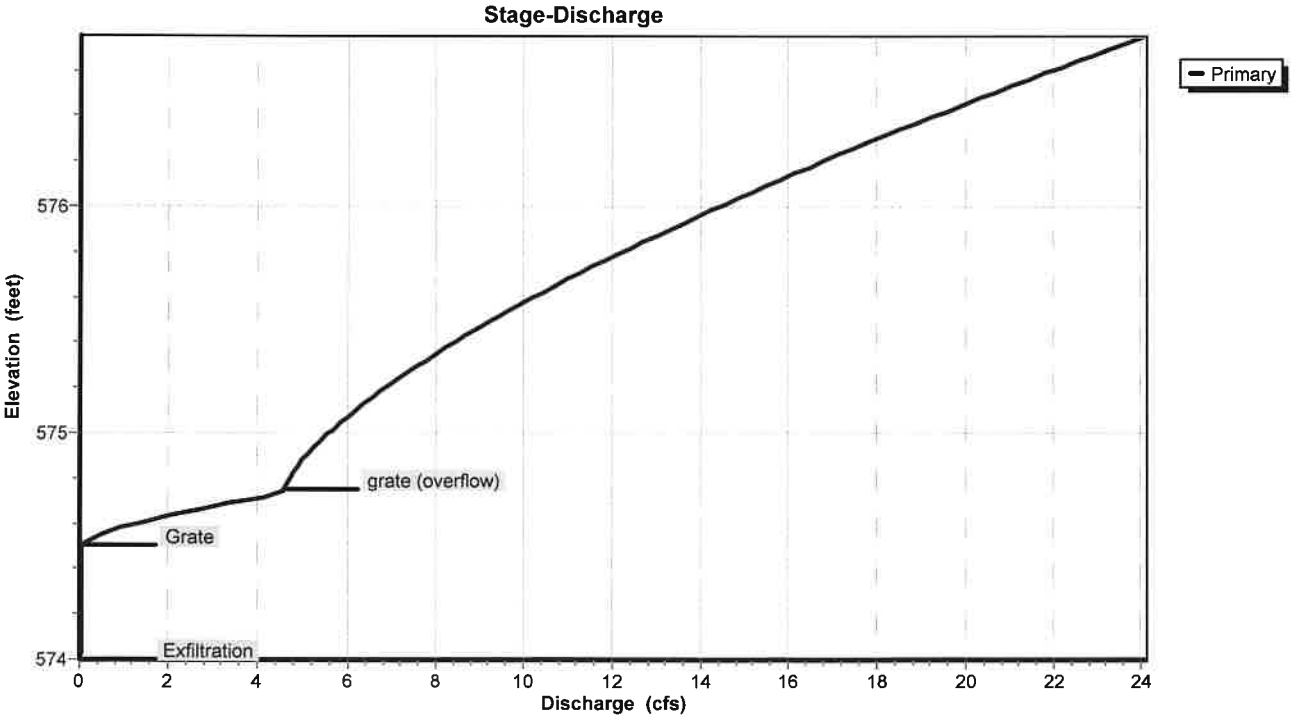
Primary OutFlow Max=1.41 cfs @ 12.13 hrs HW=574.60' (Free Discharge)
└─**1=8" pipe** (Passes 1.41 cfs of 4.48 cfs potential flow)
  └─**2=Grate** (Weir Controls 1.37 cfs @ 1.05 fps)
  └─**3=Exfiltration** (Controls 0.04 cfs)
└─**4=grate (overflow)** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3



Pond 9P: Bioretention Area 3



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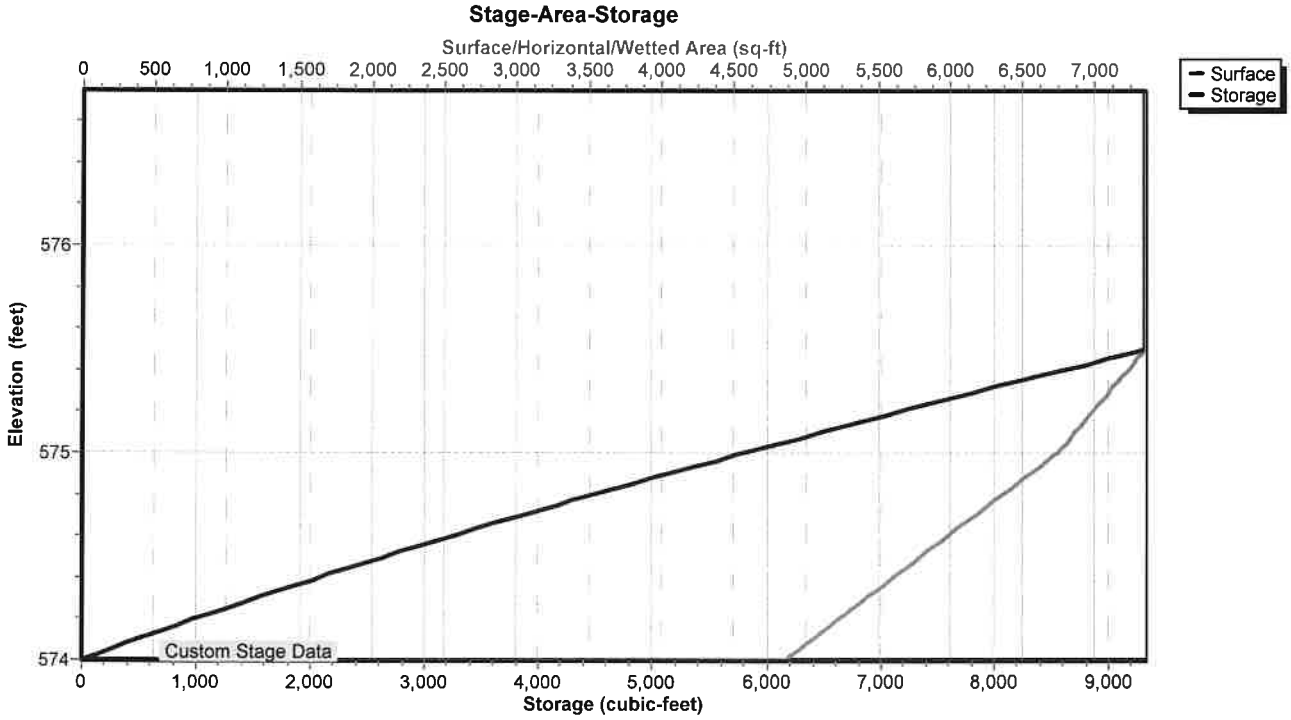
Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.00	0	574.00	0.00
8.00	0.01	26	574.01	0.01
10.00	0.04	116	574.02	0.02
12.00	**3.32**	**2,442**	**574.46**	**0.03**
14.00	0.12	**2,754**	**574.52**	**0.13**
16.00	0.07	2,701	574.51	0.08
18.00	0.05	2,683	574.50	0.06
20.00	0.04	2,669	574.50	0.04
22.00	0.04	2,664	574.50	0.04
24.00	0.03	2,661	574.50	0.03
26.00	0.00	2,430	574.46	0.03
28.00	0.00	2,186	574.42	0.03
30.00	0.00	1,947	574.37	0.03
32.00	0.00	1,712	574.33	0.03
34.00	0.00	1,480	574.29	0.03
36.00	0.00	1,253	574.25	0.03
38.00	0.00	1,030	574.20	0.03
40.00	0.00	810	574.16	0.03
42.00	0.00	595	574.12	0.03
44.00	0.00	384	574.08	0.03
46.00	0.00	176	574.04	0.03
48.00	0.00	40	574.01	0.01
50.00	0.00	9	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

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Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

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Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

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Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=1.79"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=4.02 cfs 0.254 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=1.88"
Flow Length=345' Tc=9.1 min CN=92 Runoff=4.35 cfs 0.235 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=570.79' Storage=8,639 cf Inflow=7.03 cfs 0.489 af
Outflow=1.05 cfs 0.446 af

Pond 9P: Bioretention Area 3 Peak Elev=574.68' Storage=3,708 cf Inflow=4.35 cfs 0.235 af
Outflow=3.06 cfs 0.235 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.489 af Average Runoff Depth = 1.83"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

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Summary for Subcatchment 8S: Front Area 2

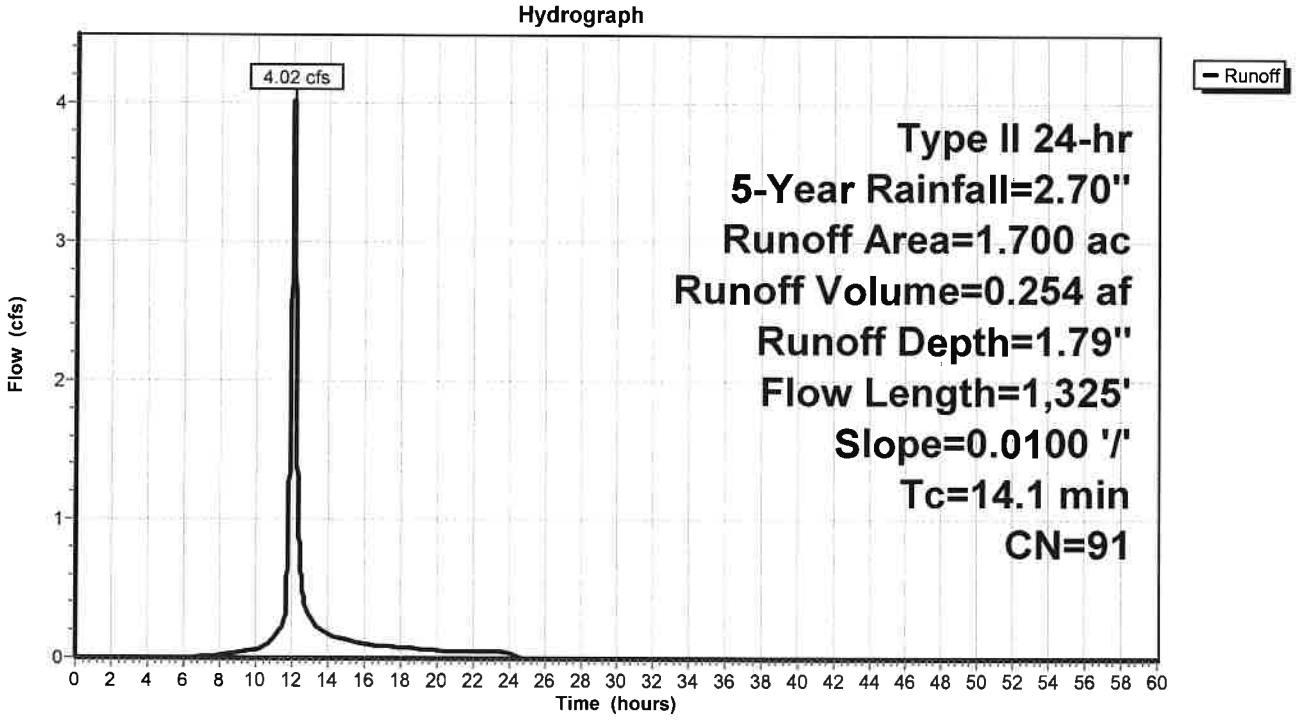
Runoff = 4.02 cfs @ 12.06 hrs, Volume= 0.254 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass**
					Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.00
7.00	0.27	0.00	0.01
8.00	0.32	0.01	0.02
9.00	0.40	0.03	0.04
10.00	0.49	0.07	0.06
11.00	0.63	0.13	0.14
12.00	1.79	0.98	**3.54**
13.00	2.08	1.24	**0.30**
14.00	2.21	1.35	0.17
15.00	2.30	1.43	0.13
16.00	2.38	1.50	0.10
17.00	2.43	1.55	0.09
18.00	2.49	1.60	0.08
19.00	2.53	1.64	0.07
20.00	2.57	1.67	0.06
21.00	2.60	1.71	0.05
22.00	2.64	1.74	0.05
23.00	2.67	1.77	0.05
24.00	**2.70**	**1.79**	0.05
25.00	2.70	1.79	0.00
26.00	2.70	1.79	0.00
27.00	2.70	1.79	0.00
28.00	2.70	1.79	0.00
29.00	2.70	1.79	0.00
30.00	2.70	1.79	0.00
31.00	2.70	1.79	0.00
32.00	2.70	1.79	0.00
33.00	2.70	1.79	0.00
34.00	2.70	1.79	0.00
35.00	2.70	1.79	0.00
36.00	2.70	1.79	0.00
37.00	2.70	1.79	0.00
38.00	2.70	1.79	0.00
39.00	2.70	1.79	0.00
40.00	2.70	1.79	0.00
41.00	2.70	1.79	0.00
42.00	2.70	1.79	0.00
43.00	2.70	1.79	0.00
44.00	2.70	1.79	0.00
45.00	2.70	1.79	0.00
46.00	2.70	1.79	0.00
47.00	2.70	1.79	0.00
48.00	2.70	1.79	0.00
49.00	2.70	1.79	0.00
50.00	2.70	1.79	0.00
51.00	2.70	1.79	0.00
52.00	2.70	1.79	0.00
53.00	2.70	1.79	0.00
54.00	2.70	1.79	0.00
55.00	2.70	1.79	0.00
56.00	2.70	1.79	0.00
57.00	2.70	1.79	0.00
58.00	2.70	1.79	0.00
59.00	2.70	1.79	0.00
60.00	2.70	1.79	0.00

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Summary for Subcatchment 10S: Rear Area 2

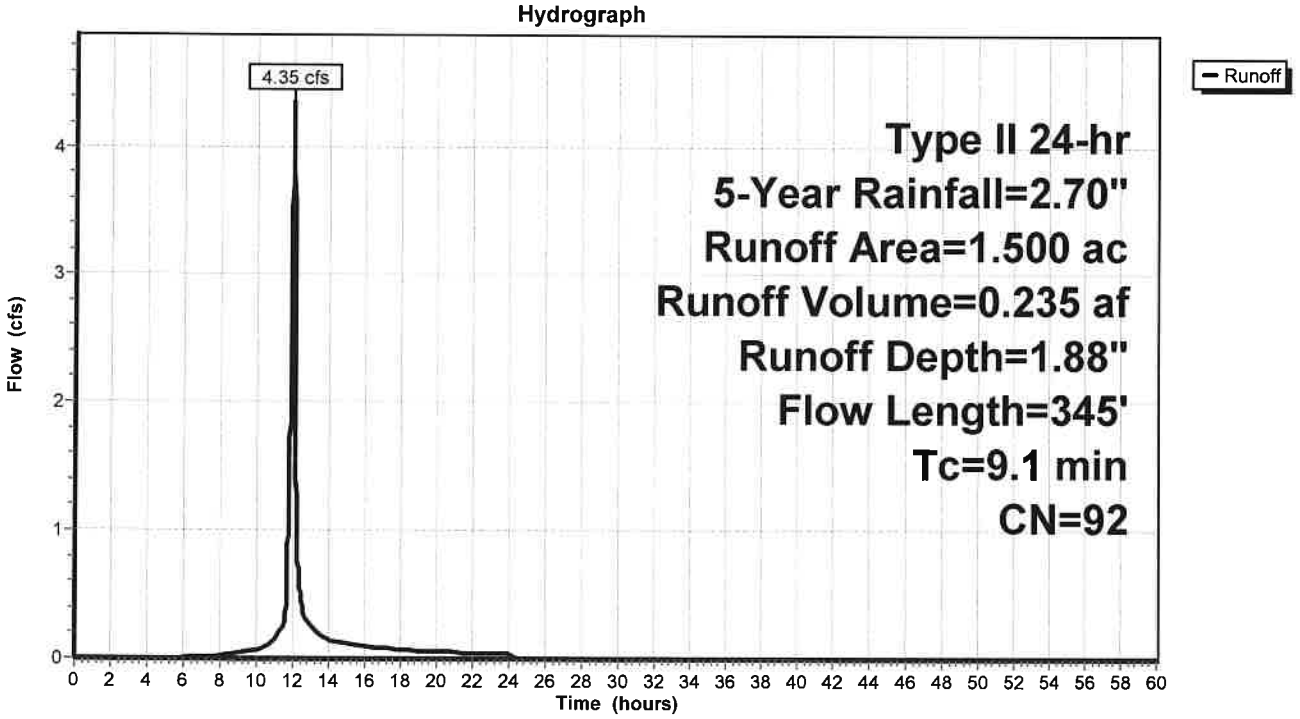
Runoff = 4.35 cfs @ 12.00 hrs, Volume= 0.235 af, Depth= 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=2.70"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00	0.17	0.00	0.00
6.00	0.22	0.00	0.01
7.00	0.27	0.01	0.01
8.00	0.32	0.02	0.02
9.00	0.40	0.05	0.04
10.00	0.49	0.08	0.07
11.00	0.63	0.16	0.15
12.00	1.79	1.05	**4.35**
13.00	2.08	1.31	0.25
14.00	2.21	1.43	0.15
15.00	2.30	1.51	0.12
16.00	2.38	1.58	0.09
17.00	2.43	1.63	0.08
18.00	2.49	1.68	0.07
19.00	2.53	1.72	0.06
20.00	2.57	1.76	0.05
21.00	2.60	1.79	0.05
22.00	2.64	1.82	0.05
23.00	2.67	1.85	0.04
24.00	**2.70**	**1.88**	0.04
25.00	2.70	1.88	0.00
26.00	2.70	1.88	0.00
27.00	2.70	1.88	0.00
28.00	2.70	1.88	0.00
29.00	2.70	1.88	0.00
30.00	2.70	1.88	0.00
31.00	2.70	1.88	0.00
32.00	2.70	1.88	0.00
33.00	2.70	1.88	0.00
34.00	2.70	1.88	0.00
35.00	2.70	1.88	0.00
36.00	2.70	1.88	0.00
37.00	2.70	1.88	0.00
38.00	2.70	1.88	0.00
39.00	2.70	1.88	0.00
40.00	2.70	1.88	0.00
41.00	2.70	1.88	0.00
42.00	2.70	1.88	0.00
43.00	2.70	1.88	0.00
44.00	2.70	1.88	0.00
45.00	2.70	1.88	0.00
46.00	2.70	1.88	0.00
47.00	2.70	1.88	0.00
48.00	2.70	1.88	0.00
49.00	2.70	1.88	0.00
50.00	2.70	1.88	0.00
51.00	2.70	1.88	0.00
52.00	2.70	1.88	0.00
53.00	2.70	1.88	0.00
54.00	2.70	1.88	0.00
55.00	2.70	1.88	0.00
56.00	2.70	1.88	0.00
57.00	2.70	1.88	0.00
58.00	2.70	1.88	0.00
59.00	2.70	1.88	0.00
60.00	2.70	1.88	0.00

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Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 1.83" for 5-Year event
Inflow = 7.03 cfs @ 12.07 hrs, Volume= 0.489 af
Outflow = 1.05 cfs @ 12.55 hrs, Volume= 0.446 af, Atten= 85%, Lag= 29.0 min
Primary = 1.05 cfs @ 12.55 hrs, Volume= 0.446 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 570.79' @ 12.55 hrs Surf.Area= 10,145 sf Storage= 8,639 cf

Plug-Flow detention time= 321.6 min calculated for 0.446 af (91% of inflow)
Center-of-Mass det. time= 190.4 min (1,183.7 - 993.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

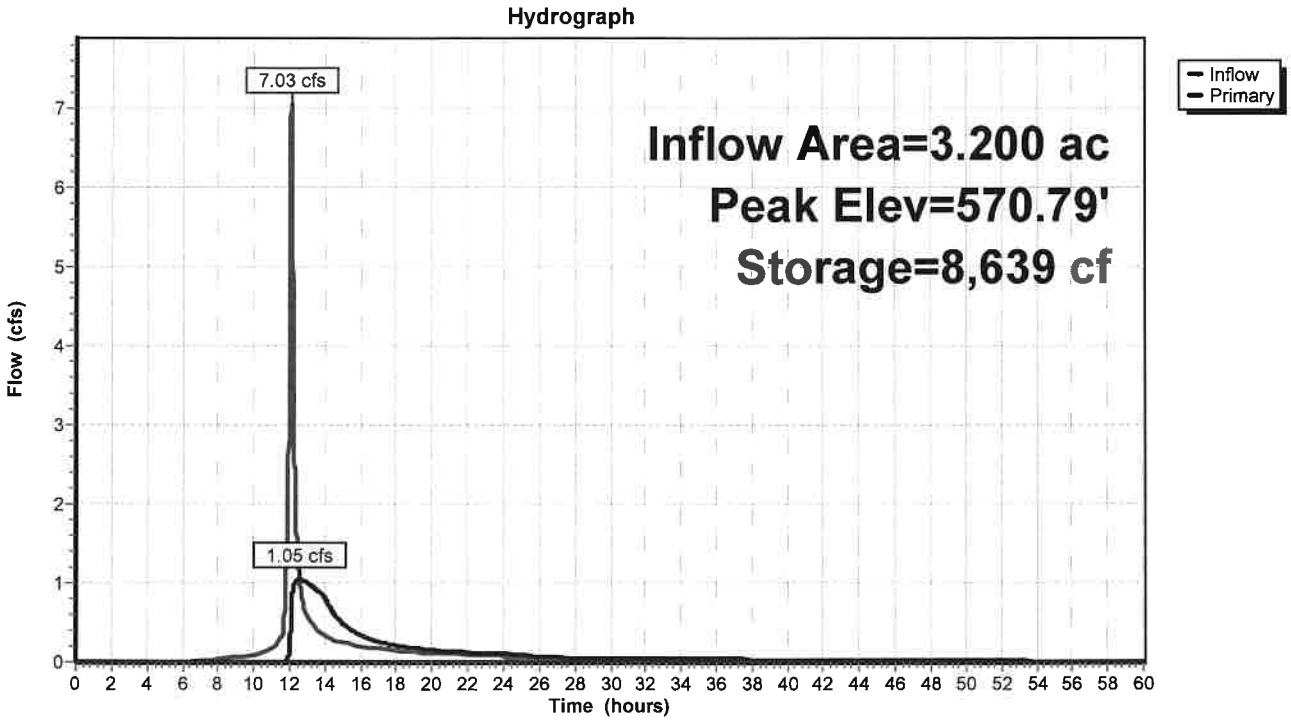
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

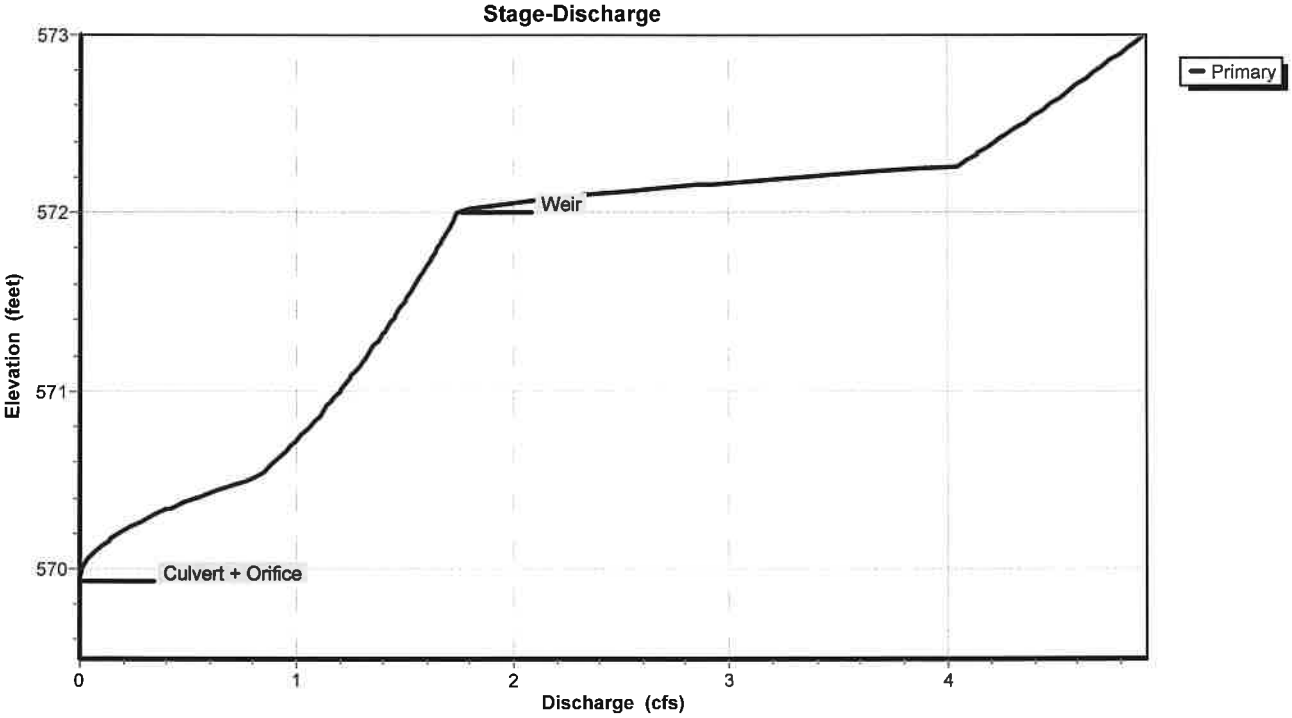
Primary OutFlow Max=1.05 cfs @ 12.55 hrs HW=570.79' (Free Discharge)
↑—**1=Culvert** (Passes 1.05 cfs of 1.53 cfs potential flow)
↑—**2=Orifice** (Orifice Controls 1.05 cfs @ 4.00 fps)
—**3=Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)

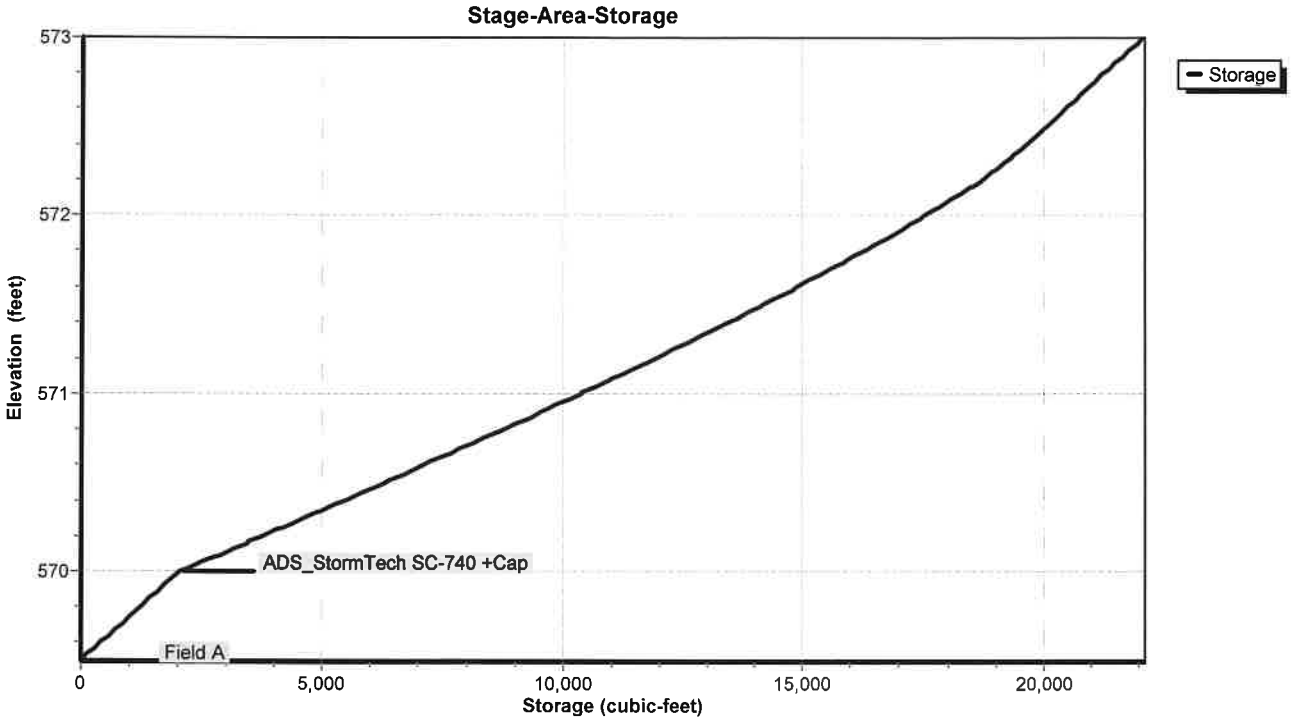


Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.00	2	569.50	0.00
8.00	0.03	119	569.53	0.00
10.00	0.09	566	569.64	0.00
12.00	**5.13**	**3,593**	**570.18**	**0.16**
14.00	**0.33**	**6,444**	**570.52**	**0.81**
16.00	0.20	4,602	570.30	0.34
18.00	0.15	3,932	570.22	0.21
20.00	0.11	3,570	570.18	0.15
22.00	0.10	3,332	570.15	0.12
24.00	0.09	3,200	570.14	0.10
26.00	0.03	2,873	570.10	0.07
28.00	0.03	2,693	570.08	0.05
30.00	0.03	2,592	570.07	0.04
32.00	0.03	2,532	570.06	0.04
34.00	0.03	2,493	570.05	0.04
36.00	0.03	2,465	570.05	0.03
38.00	0.03	2,445	570.05	0.03
40.00	0.03	2,428	570.05	0.03
42.00	0.03	2,415	570.04	0.03
44.00	0.03	2,403	570.04	0.03
46.00	0.03	2,393	570.04	0.03
48.00	0.01	2,328	570.03	0.03
50.00	0.00	2,203	570.02	0.02
52.00	0.00	2,095	570.01	0.01
54.00	0.00	2,013	570.00	0.01
56.00	0.00	1,959	569.98	0.01
58.00	0.00	1,920	569.97	0.00
60.00	0.00	1,892	569.97	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)
569.50	0
569.55	203
569.60	406
569.65	609
569.70	812
569.75	1,014
569.80	1,217
569.85	1,420
569.90	1,623
569.95	1,826
570.00	2,029
570.05	2,459
570.10	2,889
570.15	3,318
570.20	3,746
570.25	4,173
570.30	4,598
570.35	5,022
570.40	5,444
570.45	5,865
570.50	6,284
570.55	6,701
570.60	7,116
570.65	7,529
570.70	7,940
570.75	8,349
570.80	8,756
570.85	9,160
570.90	9,562
570.95	9,962
571.00	10,359
571.05	10,754
571.10	11,145
571.15	11,534
571.20	11,919
571.25	12,301
571.30	12,680
571.35	13,056
571.40	13,428
571.45	13,797
571.50	14,161
571.55	14,522
571.60	14,879
571.65	15,230
571.70	15,577
571.75	15,917
571.80	16,252
571.85	16,582
571.90	16,906
571.95	17,224
572.00	17,535
572.05	17,838
572.10	18,133
572.15	18,417
572.20	18,690
572.25	18,946
572.30	19,188
572.35	19,417
572.40	19,637
572.45	19,850
572.50	20,057
572.55	20,260
572.60	20,463
572.65	20,665
572.70	20,868
572.75	21,071
572.80	21,274
572.85	21,477
572.90	21,680
572.95	21,883
573.00	**22,086**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 1.88" for 5-Year event
Inflow = 4.35 cfs @ 12.00 hrs, Volume= 0.235 af
Outflow = 3.06 cfs @ 12.08 hrs, Volume= 0.235 af, Atten= 30%, Lag= 4.6 min
Primary = 3.06 cfs @ 12.08 hrs, Volume= 0.235 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.68' @ 12.08 hrs Surf.Area= 6,129 sf Storage= 3,708 cf

Plug-Flow detention time= 384.2 min calculated for 0.235 af (100% of inflow)
Center-of-Mass det. time= 384.1 min (1,187.9 - 803.8)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

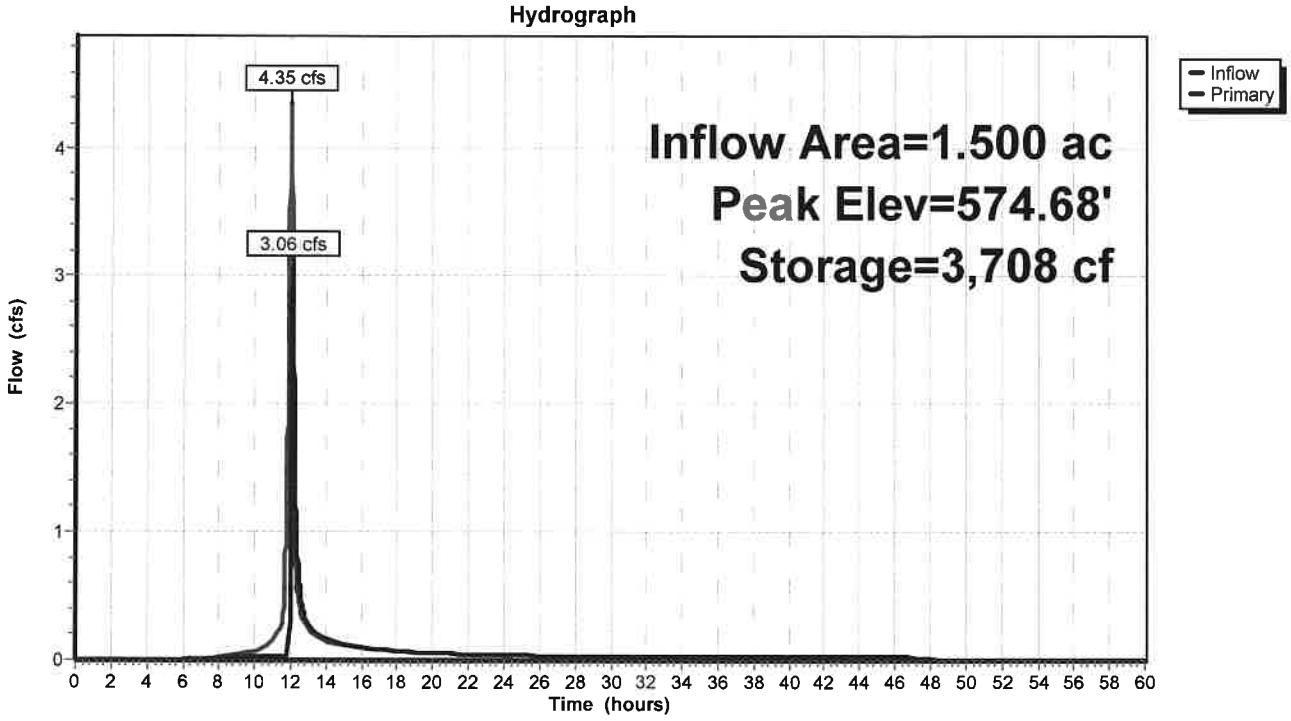
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

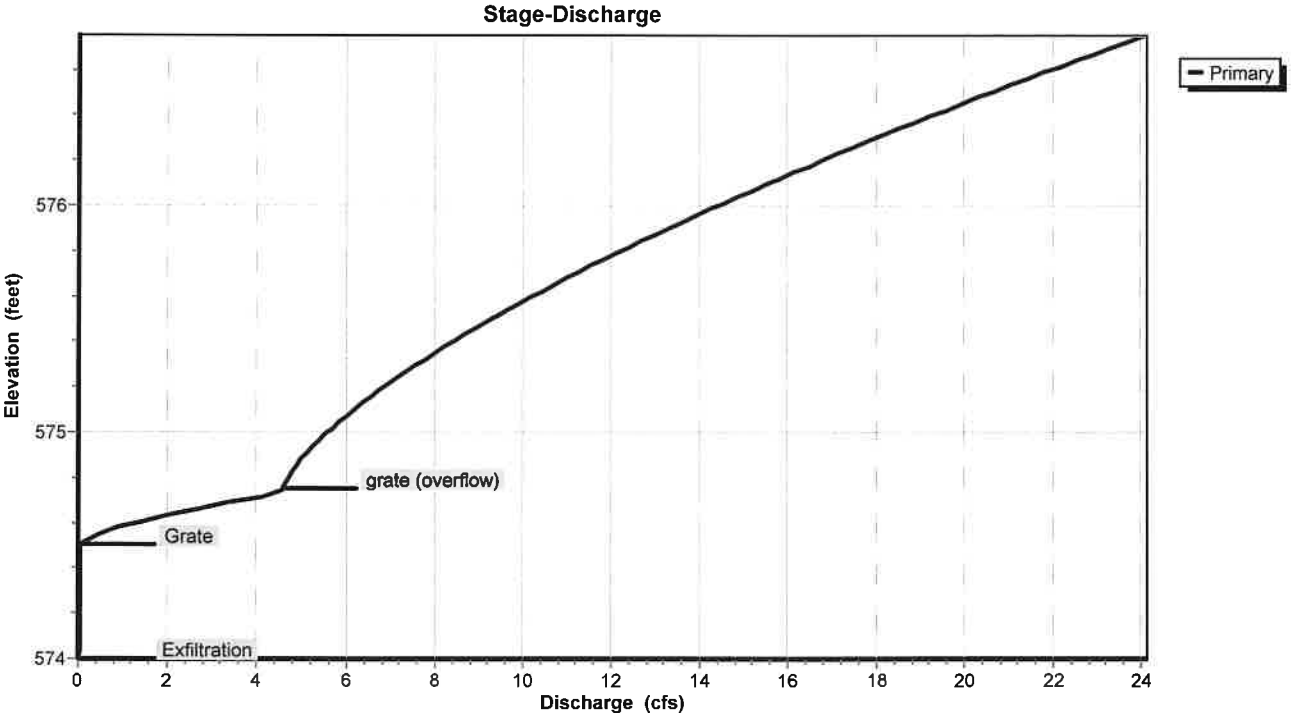
Primary OutFlow Max=3.05 cfs @ 12.08 hrs HW=574.68' (Free Discharge)
- **1=8" pipe** (Passes 3.05 cfs of 4.54 cfs potential flow)
  - **2=Grate** (Weir Controls 3.02 cfs @ 1.37 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3



Pond 9P: Bioretention Area 3



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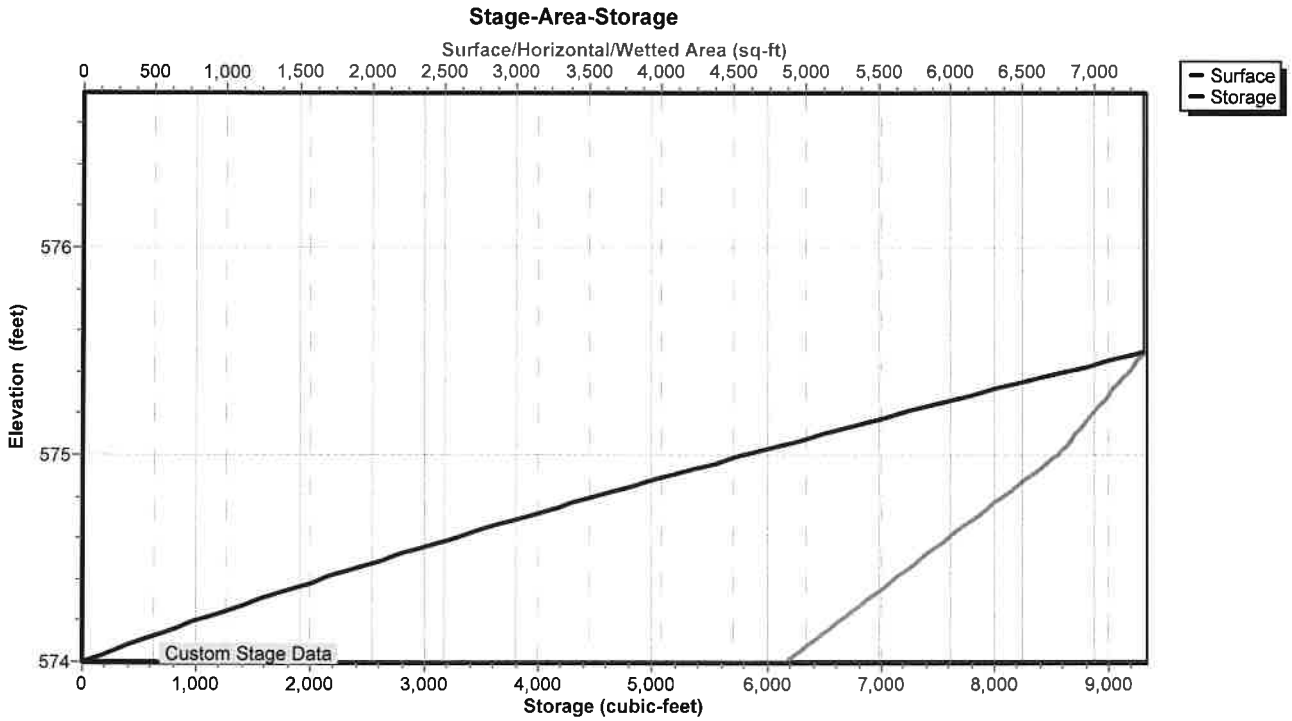
Pond 9P: Bioretention Area 3



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Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.01	6	574.00	0.00
8.00	0.02	61	574.01	0.01
10.00	0.07	208	574.04	0.03
12.00	**4.35**	**3,326**	**574.61**	**1.59**
14.00	0.15	**2,783**	**574.52**	**0.16**
16.00	0.09	2,721	574.51	0.10
18.00	0.07	2,697	574.51	0.07
20.00	0.05	2,679	574.50	0.05
22.00	0.05	2,673	574.50	0.05
24.00	0.04	2,670	574.50	0.04
26.00	0.00	2,439	574.46	0.03
28.00	0.00	2,196	574.42	0.03
30.00	0.00	1,956	574.38	0.03
32.00	0.00	1,720	574.33	0.03
34.00	0.00	1,489	574.29	0.03
36.00	0.00	1,262	574.25	0.03
38.00	0.00	1,038	574.21	0.03
40.00	0.00	819	574.16	0.03
42.00	0.00	603	574.12	0.03
44.00	0.00	392	574.08	0.03
46.00	0.00	184	574.04	0.03
48.00	0.00	42	574.01	0.01
50.00	0.00	9	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

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Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=2.21"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=4.91 cfs 0.313 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=2.30"
Flow Length=345' Tc=9.1 min CN=92 Runoff=5.28 cfs 0.288 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=571.13' Storage=11,342 cf Inflow=9.17 cfs 0.601 af
Outflow=1.28 cfs 0.558 af

Pond 9P: Bioretention Area 3 Peak Elev=574.72' Storage=4,001 cf Inflow=5.28 cfs 0.288 af
Outflow=4.27 cfs 0.288 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.601 af Average Runoff Depth = 2.25"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 8S: Front Area 2

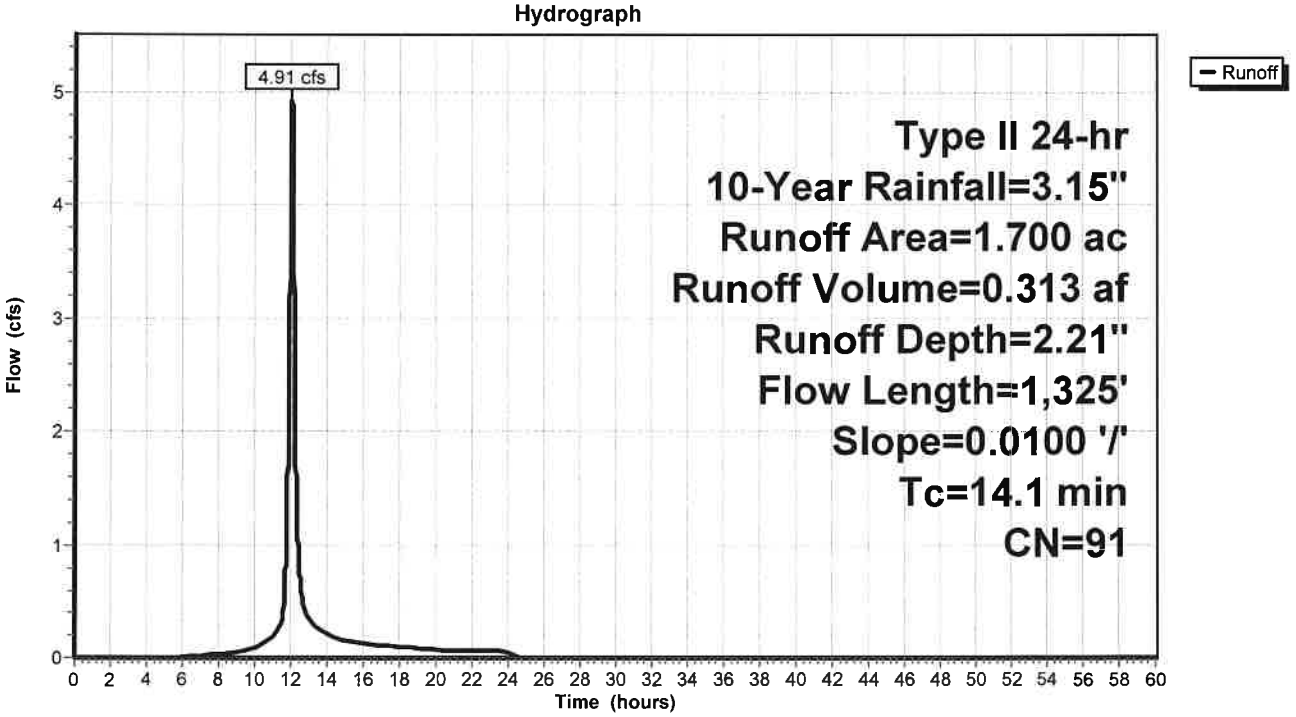
Runoff = 4.91 cfs @ 12.05 hrs, Volume= 0.313 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.15	2.21	0.00
1.00	0.03	0.00	0.00	53.00	3.15	2.21	0.00
2.00	0.07	0.00	0.00	54.00	3.15	2.21	0.00
3.00	0.11	0.00	0.00	55.00	3.15	2.21	0.00
4.00	0.15	0.00	0.00	56.00	3.15	2.21	0.00
5.00	0.20	0.00	0.00	57.00	3.15	2.21	0.00
6.00	0.25	0.00	0.01	58.00	3.15	2.21	0.00
7.00	0.31	0.01	0.02	59.00	3.15	2.21	0.00
8.00	0.38	0.03	0.03	60.00	3.15	2.21	0.00
9.00	0.46	0.06	0.06				
10.00	0.57	0.10	0.09				
11.00	0.74	0.19	0.19				
12.00	2.09	1.24	**4.35**				
13.00	2.43	1.55	**0.35**				
14.00	2.58	1.69	0.20				
15.00	2.69	1.78	0.16				
16.00	2.77	1.86	0.12				
17.00	2.84	1.92	0.11				
18.00	2.90	1.98	0.09				
19.00	2.95	2.03	0.08				
20.00	3.00	2.07	0.07				
21.00	3.04	2.11	0.06				
22.00	3.08	2.14	0.06				
23.00	3.11	2.18	0.06				
24.00	**3.15**	**2.21**	0.06				
25.00	3.15	2.21	0.00				
26.00	3.15	2.21	0.00				
27.00	3.15	2.21	0.00				
28.00	3.15	2.21	0.00				
29.00	3.15	2.21	0.00				
30.00	3.15	2.21	0.00				
31.00	3.15	2.21	0.00				
32.00	3.15	2.21	0.00				
33.00	3.15	2.21	0.00				
34.00	3.15	2.21	0.00				
35.00	3.15	2.21	0.00				
36.00	3.15	2.21	0.00				
37.00	3.15	2.21	0.00				
38.00	3.15	2.21	0.00				
39.00	3.15	2.21	0.00				
40.00	3.15	2.21	0.00				
41.00	3.15	2.21	0.00				
42.00	3.15	2.21	0.00				
43.00	3.15	2.21	0.00				
44.00	3.15	2.21	0.00				
45.00	3.15	2.21	0.00				
46.00	3.15	2.21	0.00				
47.00	3.15	2.21	0.00				
48.00	3.15	2.21	0.00				
49.00	3.15	2.21	0.00				
50.00	3.15	2.21	0.00				
51.00	3.15	2.21	0.00				

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 10S: Rear Area 2

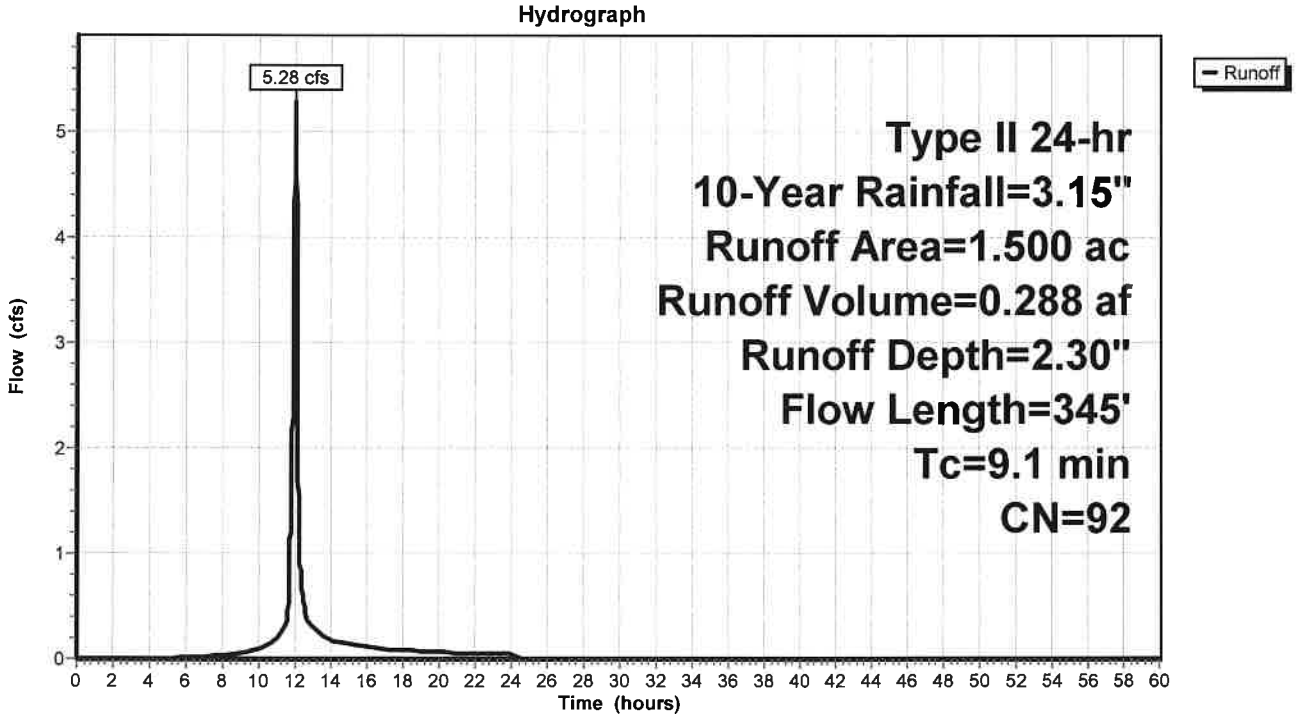
Runoff = 5.28 cfs @ 12.00 hrs, Volume= 0.288 af, Depth= 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.15"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.15	2.30	0.00
1.00	0.03	0.00	0.00	53.00	3.15	2.30	0.00
2.00	0.07	0.00	0.00	54.00	3.15	2.30	0.00
3.00	0.11	0.00	0.00	55.00	3.15	2.30	0.00
4.00	0.15	0.00	0.00	56.00	3.15	2.30	0.00
5.00	0.20	0.00	0.00	57.00	3.15	2.30	0.00
6.00	0.25	0.01	0.01	58.00	3.15	2.30	0.00
7.00	0.31	0.02	0.02	59.00	3.15	2.30	0.00
8.00	0.38	0.04	0.03	60.00	3.15	2.30	0.00
9.00	0.46	0.07	0.06				
10.00	0.57	0.12	0.09				
11.00	0.74	0.22	0.20				
12.00	2.09	1.32	**5.27**				
13.00	2.43	1.63	0.30				
14.00	2.58	1.77	0.18				
15.00	2.69	1.87	0.14				
16.00	2.77	1.95	0.11				
17.00	2.84	2.01	0.09				
18.00	2.90	2.07	0.08				
19.00	2.95	2.12	0.07				
20.00	3.00	2.16	0.06				
21.00	3.04	2.20	0.06				
22.00	3.08	2.23	0.05				
23.00	3.11	2.27	0.05				
24.00	**3.15**	**2.30**	0.05				
25.00	3.15	2.30	0.00				
26.00	3.15	2.30	0.00				
27.00	3.15	2.30	0.00				
28.00	3.15	2.30	0.00				
29.00	3.15	2.30	0.00				
30.00	3.15	2.30	0.00				
31.00	3.15	2.30	0.00				
32.00	3.15	2.30	0.00				
33.00	3.15	2.30	0.00				
34.00	3.15	2.30	0.00				
35.00	3.15	2.30	0.00				
36.00	3.15	2.30	0.00				
37.00	3.15	2.30	0.00				
38.00	3.15	2.30	0.00				
39.00	3.15	2.30	0.00				
40.00	3.15	2.30	0.00				
41.00	3.15	2.30	0.00				
42.00	3.15	2.30	0.00				
43.00	3.15	2.30	0.00				
44.00	3.15	2.30	0.00				
45.00	3.15	2.30	0.00				
46.00	3.15	2.30	0.00				
47.00	3.15	2.30	0.00				
48.00	3.15	2.30	0.00				
49.00	3.15	2.30	0.00				
50.00	3.15	2.30	0.00				
51.00	3.15	2.30	0.00				

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 2.25" for 10-Year event
Inflow = 9.17 cfs @ 12.06 hrs, Volume= 0.601 af
Outflow = 1.28 cfs @ 12.54 hrs, Volume= 0.558 af, Atten= 86%, Lag= 29.2 min
Primary = 1.28 cfs @ 12.54 hrs, Volume= 0.558 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 571.13' @ 12.54 hrs Surf.Area= 10,145 sf Storage= 11,342 cf

Plug-Flow detention time= 284.1 min calculated for 0.558 af (93% of inflow)
Center-of-Mass det. time= 176.3 min (1,132.0 - 955.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

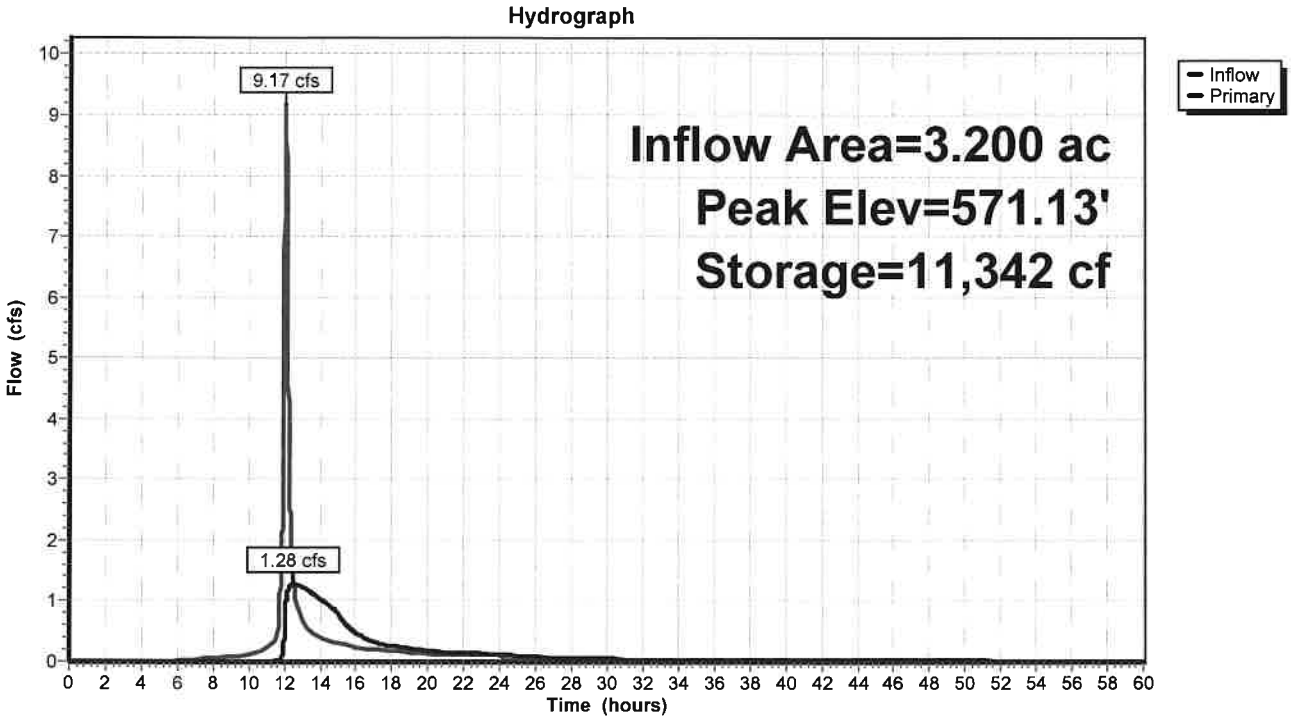
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

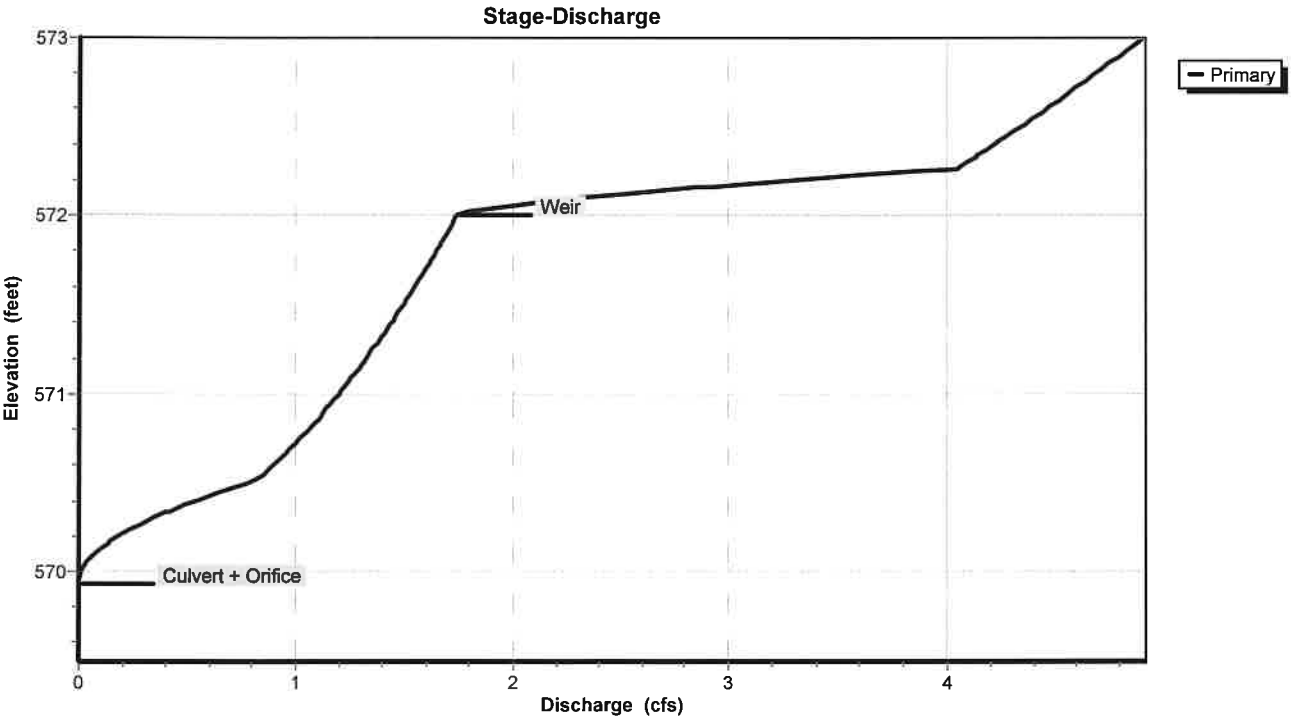
Primary OutFlow Max=1.28 cfs @ 12.54 hrs HW=571.13' (Free Discharge)
└**1=Culvert** (Passes 1.28 cfs of 2.37 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 1.28 cfs @ 4.88 fps)
  └**3=Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)



Pond 7P: Underground Storage (SMA #2)



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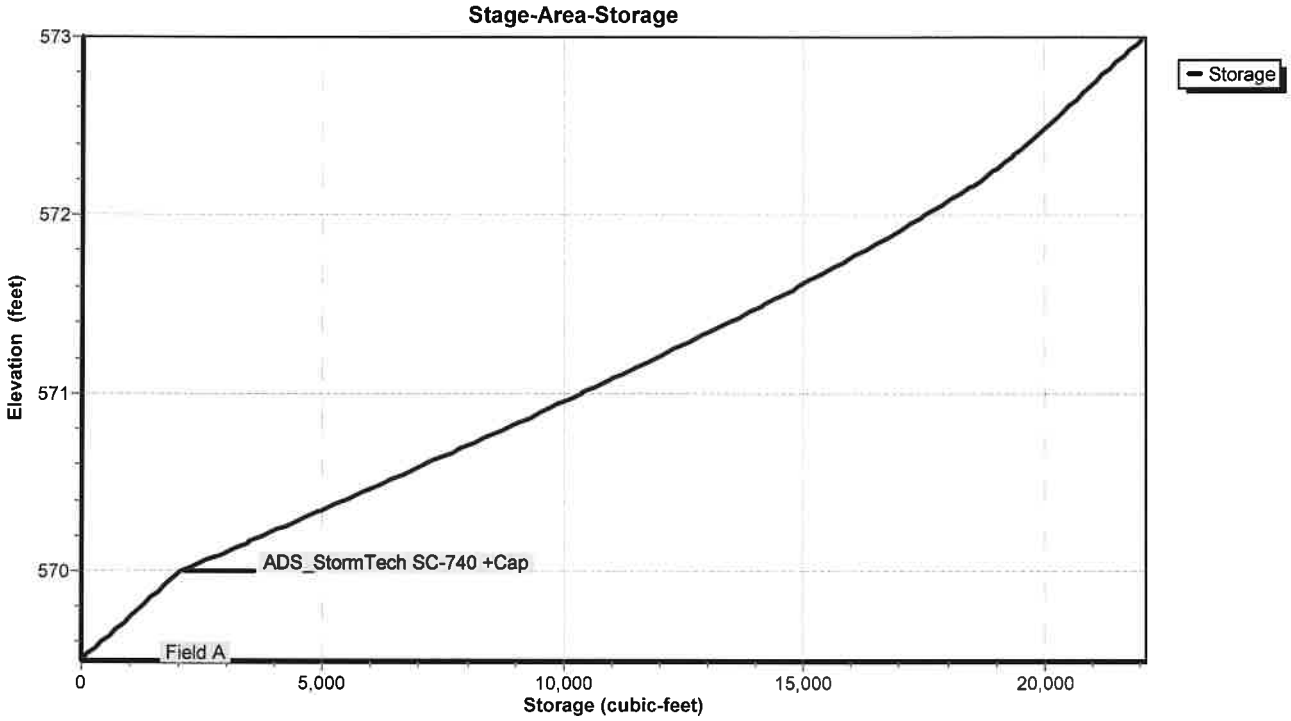
Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.01	18	569.50	0.00
8.00	0.05	241	569.56	0.00
10.00	0.12	846	569.71	0.00
12.00	**7.80**	**5,030**	**570.35**	**0.43**
14.00	**0.39**	**8,504**	**570.77**	**1.03**
16.00	0.24	5,183	570.37	0.47
18.00	0.18	4,195	570.25	0.26
20.00	0.13	3,754	570.20	0.18
22.00	0.12	3,484	570.17	0.14
24.00	0.11	3,343	570.15	0.12
26.00	0.03	2,942	570.11	0.08
28.00	0.03	2,728	570.08	0.05
30.00	0.03	2,611	570.07	0.05
32.00	0.03	2,544	570.06	0.04
34.00	0.03	2,500	570.05	0.04
36.00	0.03	2,470	570.05	0.03
38.00	0.03	2,448	570.05	0.03
40.00	0.03	2,430	570.05	0.03
42.00	0.03	2,416	570.05	0.03
44.00	0.03	2,404	570.04	0.03
46.00	0.03	2,393	570.04	0.03
48.00	0.01	2,331	570.04	0.03
50.00	0.00	2,206	570.02	0.02
52.00	0.00	2,098	570.01	0.01
54.00	0.00	2,015	570.00	0.01
56.00	0.00	1,960	569.98	0.01
58.00	0.00	1,921	569.97	0.00
60.00	0.00	1,893	569.97	0.00

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Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 2.30" for 10-Year event
Inflow = 5.28 cfs @ 12.00 hrs, Volume= 0.288 af
Outflow = 4.27 cfs @ 12.06 hrs, Volume= 0.288 af, Atten= 19%, Lag= 3.5 min
Primary = 4.27 cfs @ 12.06 hrs, Volume= 0.288 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.72' @ 12.06 hrs Surf.Area= 6,219 sf Storage= 4,001 cf

Plug-Flow detention time= 318.6 min calculated for 0.288 af (100% of inflow)
Center-of-Mass det. time= 318.8 min (1,116.8 - 798.1)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

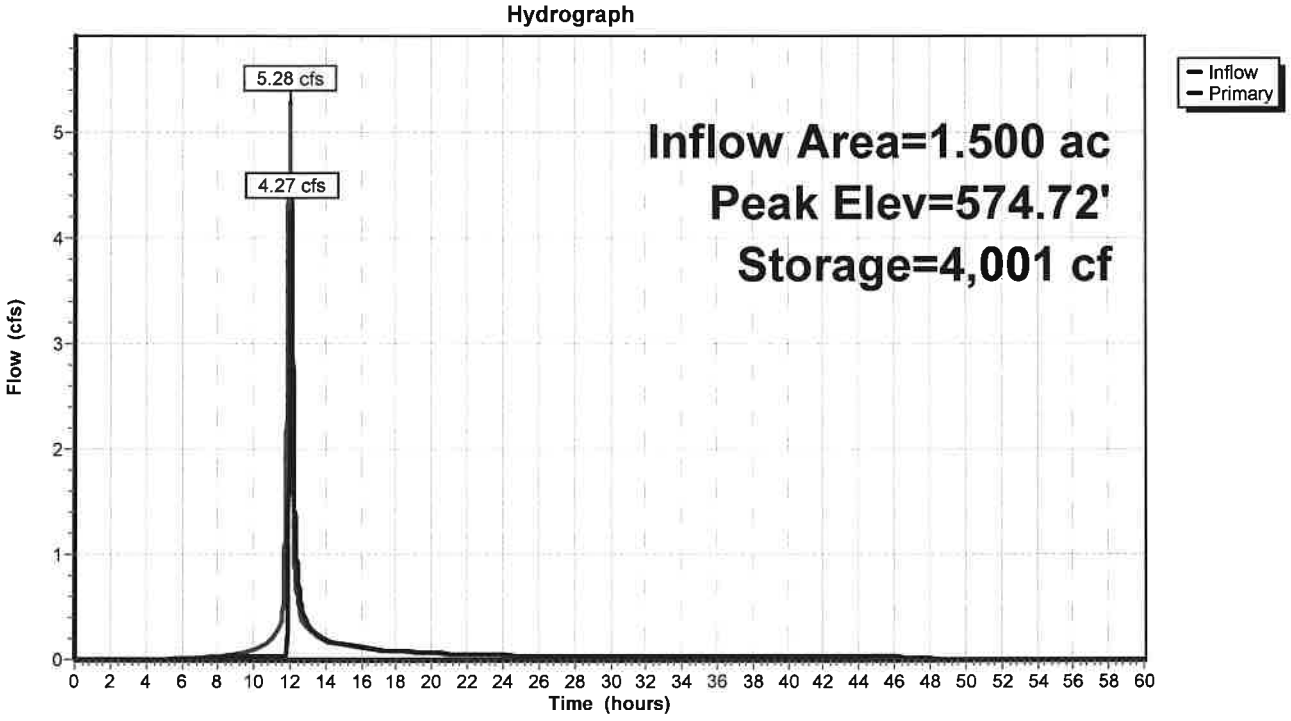
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

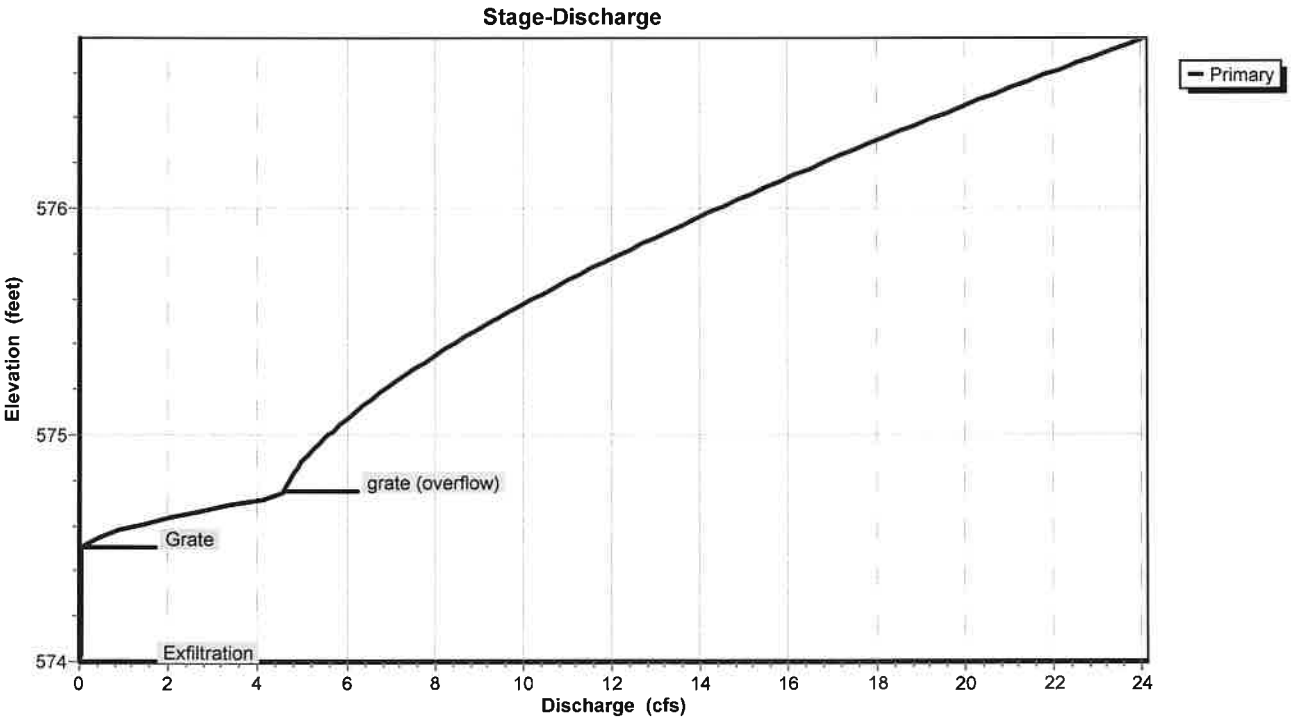
Primary OutFlow Max=4.36 cfs @ 12.06 hrs HW=574.72' (Free Discharge)
- **1=8" pipe** (Passes 4.36 cfs of 4.57 cfs potential flow)
  - **2=Grate** (Weir Controls 4.32 cfs @ 1.54 fps)
  - **3=Exfiltration** (Controls 0.04 cfs)
- **4=grate (overflow)** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3



Pond 9P: Bioretention Area 3



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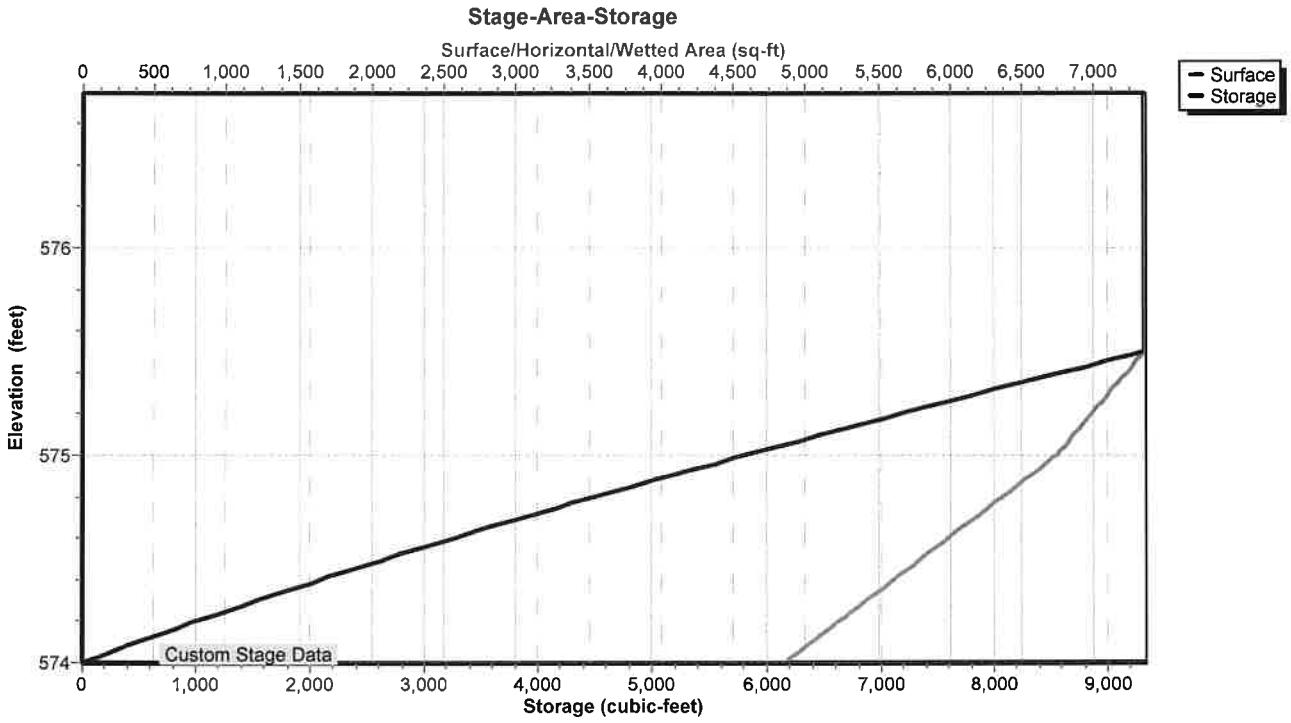
Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.01	21	574.00	0.00
8.00	0.03	99	574.02	0.02
10.00	0.09	335	574.07	0.03
12.00	**5.27**	**3,799**	**574.69**	**3.45**
14.00	0.18	**2,801**	**574.52**	**0.19**
16.00	0.11	2,738	574.51	0.12
18.00	0.08	2,710	574.51	0.09
20.00	0.06	2,689	574.50	0.06
22.00	0.05	2,681	574.50	0.06
24.00	0.05	2,677	574.50	0.05
26.00	0.00	2,445	574.46	0.03
28.00	0.00	2,201	574.42	0.03
30.00	0.00	1,961	574.38	0.03
32.00	0.00	1,726	574.33	0.03
34.00	0.00	1,494	574.29	0.03
36.00	0.00	1,267	574.25	0.03
38.00	0.00	1,043	574.21	0.03
40.00	0.00	824	574.16	0.03
42.00	0.00	608	574.12	0.03
44.00	0.00	397	574.08	0.03
46.00	0.00	189	574.04	0.03
48.00	0.00	44	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

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Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

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Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

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Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=2.89"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=6.35 cfs 0.410 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=2.99"
Flow Length=345' Tc=9.1 min CN=92 Runoff=6.75 cfs 0.374 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=571.73' Storage=15,804 cf Inflow=11.11 cfs 0.784 af
Outflow=1.61 cfs 0.740 af

Pond 9P: Bioretention Area 3 Peak Elev=574.82' Storage=4,638 cf Inflow=6.75 cfs 0.374 af
Outflow=4.78 cfs 0.374 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.784 af Average Runoff Depth = 2.94"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

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Summary for Subcatchment 8S: Front Area 2

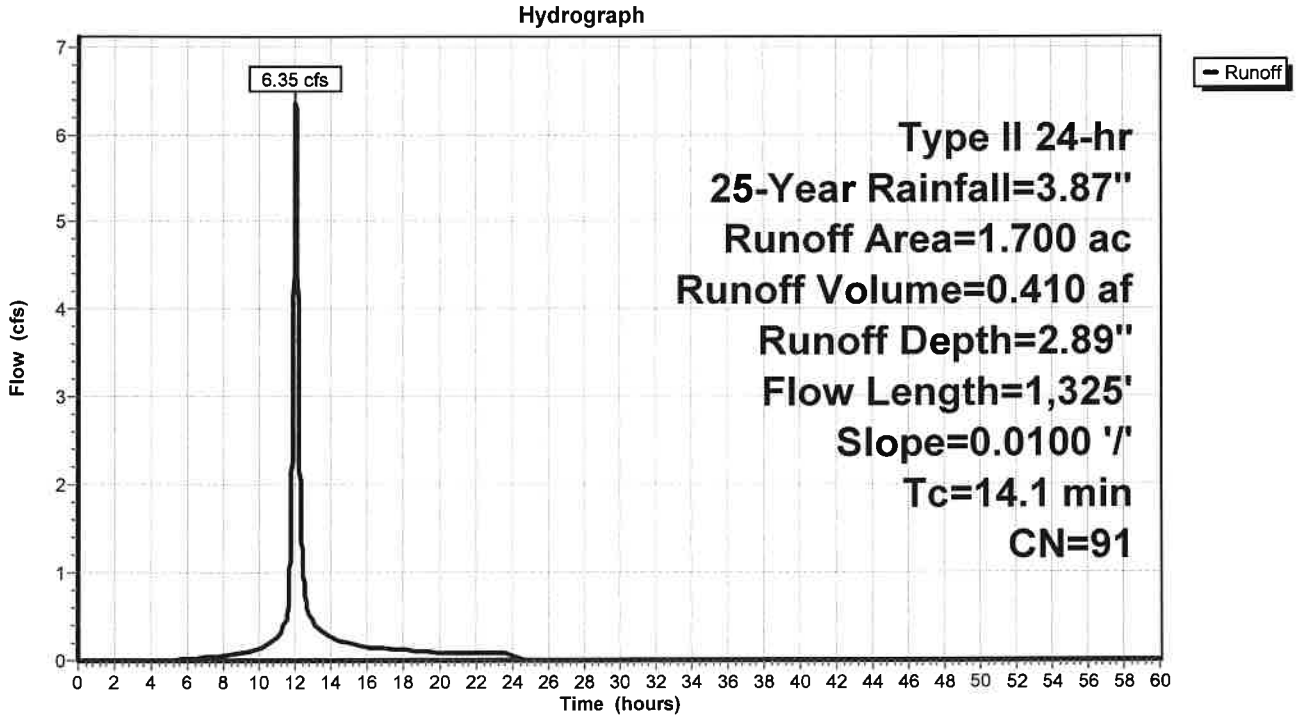
Runoff = 6.35 cfs @ 12.05 hrs, Volume= 0.410 af, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.00	0.01
6.00	0.31	0.01	0.02
7.00	0.38	0.03	0.04
8.00	0.46	0.06	0.05
9.00	0.57	0.10	0.09
10.00	0.70	0.17	0.13
11.00	0.91	0.30	0.27
12.00	2.57	1.67	**5.66**
13.00	2.99	2.06	**0.45**
14.00	3.17	2.23	0.26
15.00	3.30	2.36	0.20
16.00	3.41	2.45	0.15
17.00	3.49	2.53	0.13
18.00	3.56	2.60	0.12
19.00	3.63	2.66	0.10
20.00	3.68	2.72	0.09
21.00	3.73	2.76	0.08
22.00	3.78	2.81	0.08
23.00	3.83	2.85	0.07
24.00	**3.87**	**2.89**	0.07
25.00	3.87	2.89	0.00
26.00	3.87	2.89	0.00
27.00	3.87	2.89	0.00
28.00	3.87	2.89	0.00
29.00	3.87	2.89	0.00
30.00	3.87	2.89	0.00
31.00	3.87	2.89	0.00
32.00	3.87	2.89	0.00
33.00	3.87	2.89	0.00
34.00	3.87	2.89	0.00
35.00	3.87	2.89	0.00
36.00	3.87	2.89	0.00
37.00	3.87	2.89	0.00
38.00	3.87	2.89	0.00
39.00	3.87	2.89	0.00
40.00	3.87	2.89	0.00
41.00	3.87	2.89	0.00
42.00	3.87	2.89	0.00
43.00	3.87	2.89	0.00
44.00	3.87	2.89	0.00
45.00	3.87	2.89	0.00
46.00	3.87	2.89	0.00
47.00	3.87	2.89	0.00
48.00	3.87	2.89	0.00
49.00	3.87	2.89	0.00
50.00	3.87	2.89	0.00
51.00	3.87	2.89	0.00
52.00	3.87	2.89	0.00
53.00	3.87	2.89	0.00
54.00	3.87	2.89	0.00
55.00	3.87	2.89	0.00
56.00	3.87	2.89	0.00
57.00	3.87	2.89	0.00
58.00	3.87	2.89	0.00
59.00	3.87	2.89	0.00
60.00	3.87	2.89	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 10S: Rear Area 2

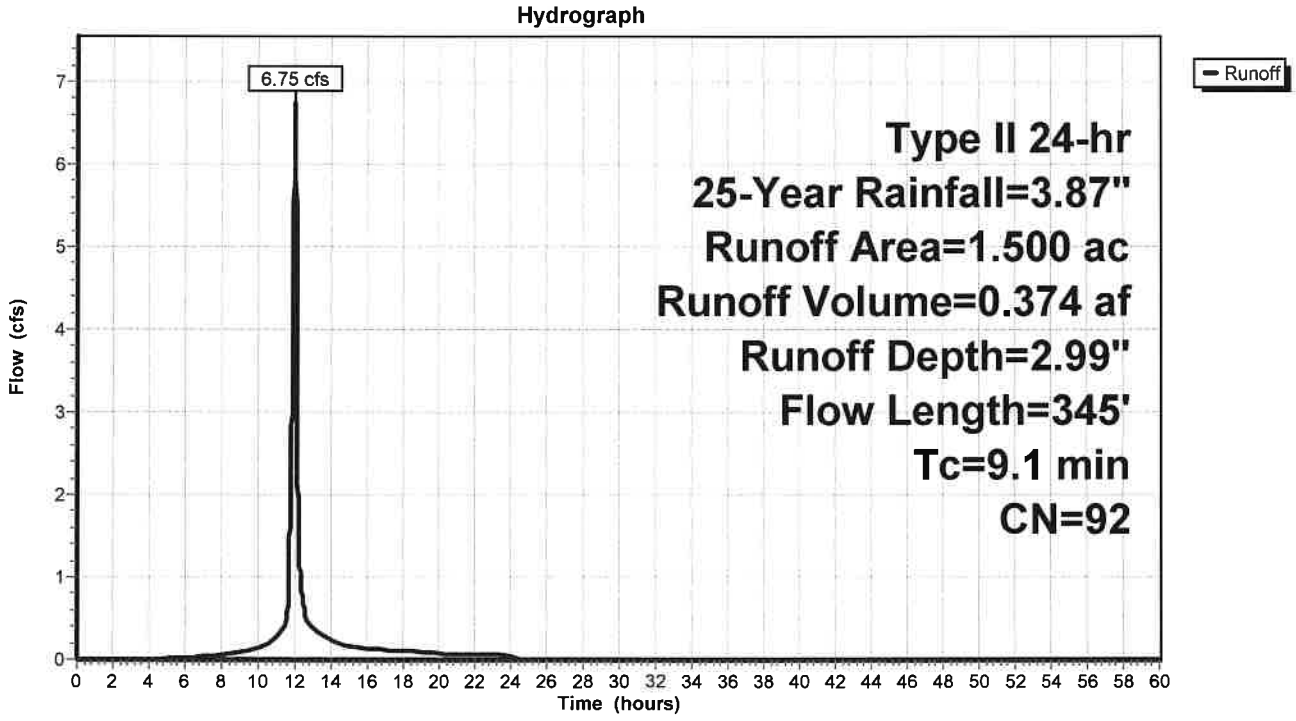
Runoff = 6.75 cfs @ 12.00 hrs, Volume= 0.374 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.87"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.13	0.00	0.00
4.00	0.19	0.00	0.00
5.00	0.24	0.01	0.01
6.00	0.31	0.02	0.02
7.00	0.38	0.04	0.04
8.00	0.46	0.07	0.05
9.00	0.57	0.12	0.09
10.00	0.70	0.20	0.13
11.00	0.91	0.34	0.27
12.00	2.57	1.75	**6.75**
13.00	2.99	2.15	0.38
14.00	3.17	2.33	0.22
15.00	3.30	2.45	0.17
16.00	3.41	2.55	0.13
17.00	3.49	2.63	0.12
18.00	3.56	2.70	0.10
19.00	3.63	2.76	0.09
20.00	3.68	2.81	0.08
21.00	3.73	2.86	0.07
22.00	3.78	2.91	0.07
23.00	3.83	2.95	0.07
24.00	**3.87**	**2.99**	0.06
25.00	3.87	2.99	0.00
26.00	3.87	2.99	0.00
27.00	3.87	2.99	0.00
28.00	3.87	2.99	0.00
29.00	3.87	2.99	0.00
30.00	3.87	2.99	0.00
31.00	3.87	2.99	0.00
32.00	3.87	2.99	0.00
33.00	3.87	2.99	0.00
34.00	3.87	2.99	0.00
35.00	3.87	2.99	0.00
36.00	3.87	2.99	0.00
37.00	3.87	2.99	0.00
38.00	3.87	2.99	0.00
39.00	3.87	2.99	0.00
40.00	3.87	2.99	0.00
41.00	3.87	2.99	0.00
42.00	3.87	2.99	0.00
43.00	3.87	2.99	0.00
44.00	3.87	2.99	0.00
45.00	3.87	2.99	0.00
46.00	3.87	2.99	0.00
47.00	3.87	2.99	0.00
48.00	3.87	2.99	0.00
49.00	3.87	2.99	0.00
50.00	3.87	2.99	0.00
51.00	3.87	2.99	0.00
52.00	3.87	2.99	0.00
53.00	3.87	2.99	0.00
54.00	3.87	2.99	0.00
55.00	3.87	2.99	0.00
56.00	3.87	2.99	0.00
57.00	3.87	2.99	0.00
58.00	3.87	2.99	0.00
59.00	3.87	2.99	0.00
60.00	3.87	2.99	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 2.94" for 25-Year event
Inflow = 11.11 cfs @ 12.06 hrs, Volume= 0.784 af
Outflow = 1.61 cfs @ 12.54 hrs, Volume= 0.740 af, Atten= 85%, Lag= 29.2 min
Primary = 1.61 cfs @ 12.54 hrs, Volume= 0.740 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 571.73' @ 12.54 hrs Surf.Area= 10,145 sf Storage= 15,804 cf

Plug-Flow detention time= 252.2 min calculated for 0.740 af (94% of inflow)
Center-of-Mass det. time= 168.6 min (1,084.7 - 916.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

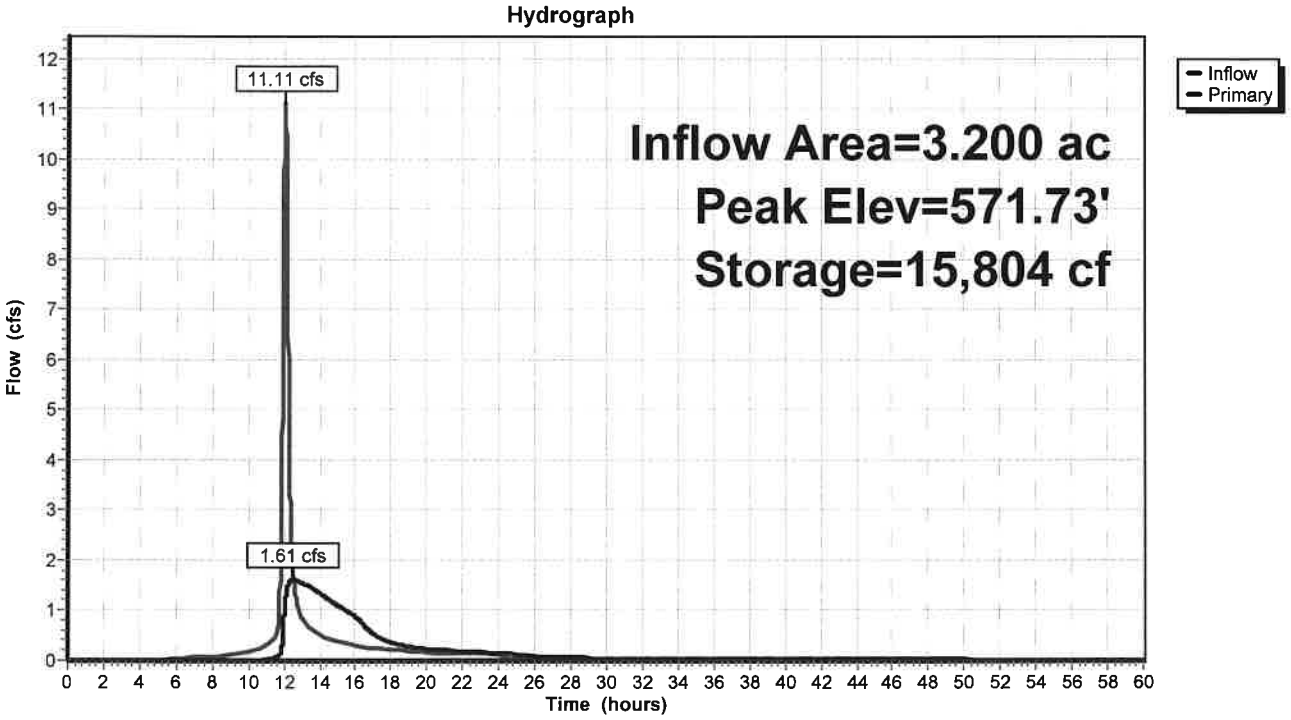
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

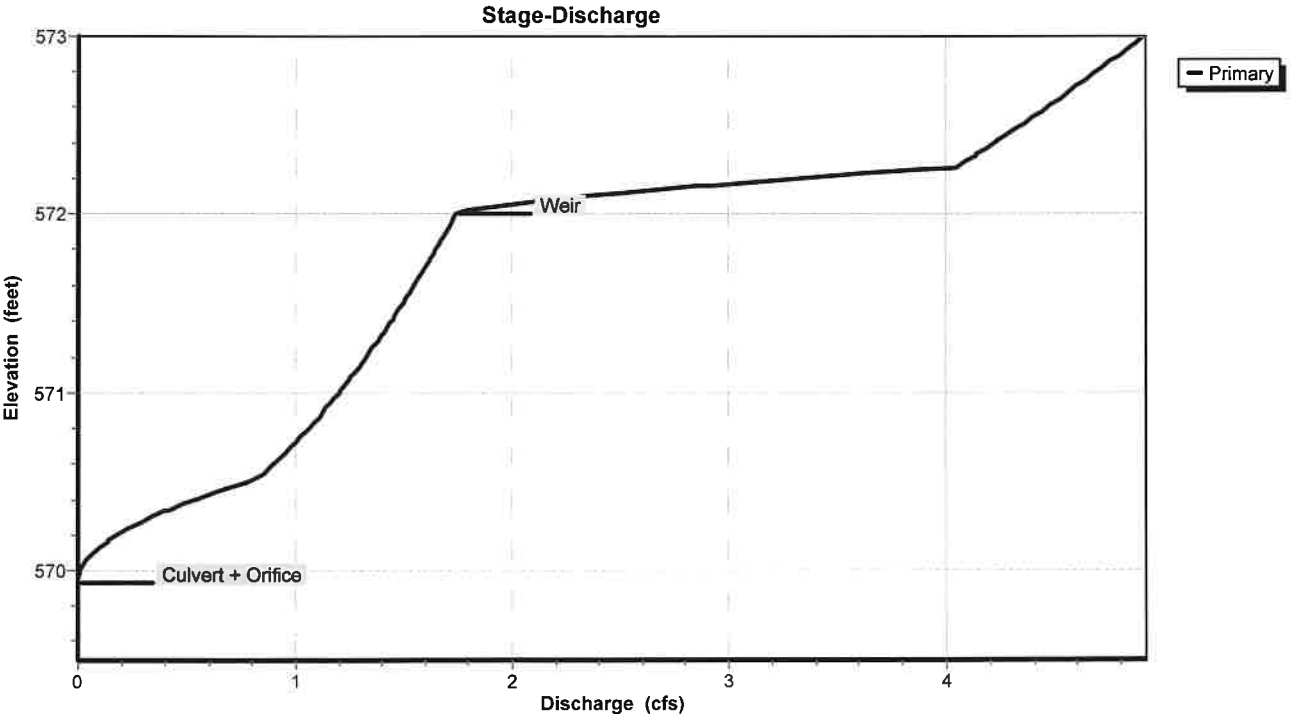
Primary OutFlow Max=1.61 cfs @ 12.54 hrs HW=571.73' (Free Discharge)
└**1=Culvert** (Passes 1.61 cfs of 3.29 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 1.61 cfs @ 6.16 fps)
  └**3=Weir** (Controls 0.00 cfs)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)

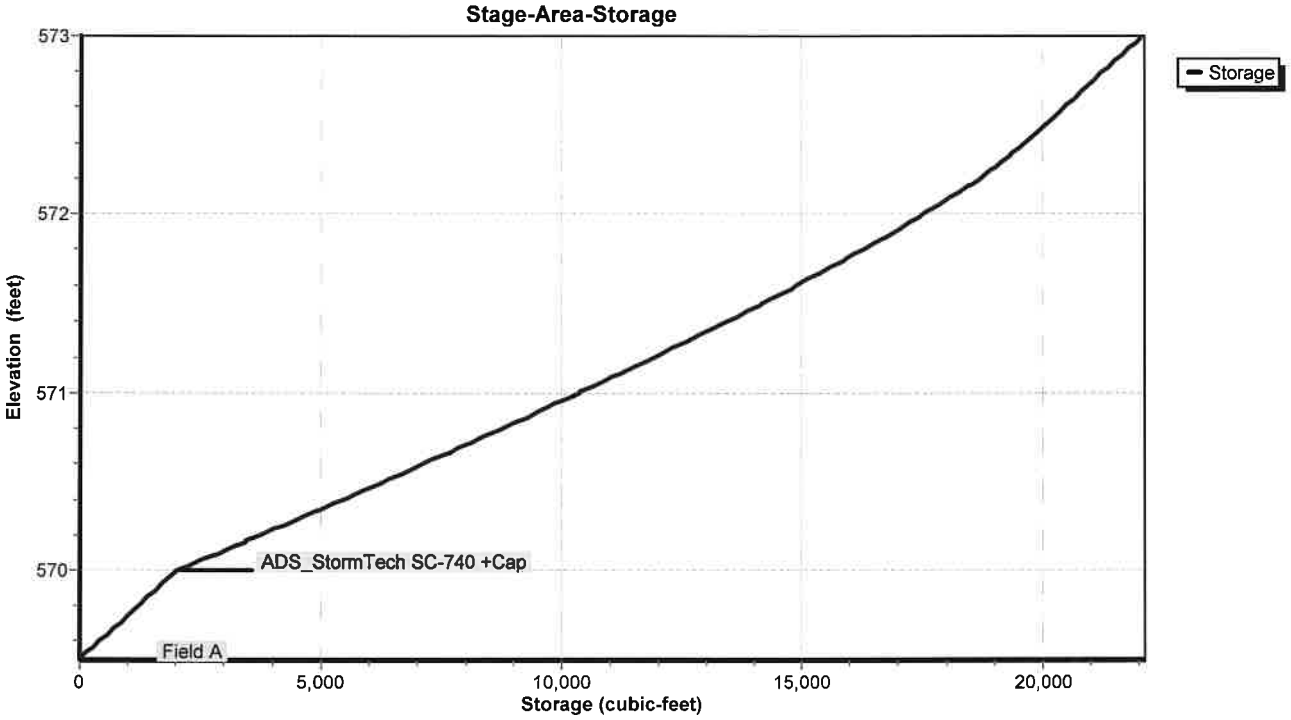


Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	0	569.50	0.00
6.00	0.03	85	569.52	0.00
8.00	0.08	499	569.62	0.00
10.00	0.16	1,337	569.83	0.00
12.00	**10.28**	**7,562**	**570.65**	**0.94**
14.00	**0.49**	**12,132**	**571.23**	**1.34**
16.00	0.30	6,914	570.58	0.87
18.00	0.22	4,703	570.31	0.36
20.00	0.16	4,045	570.24	0.23
22.00	0.15	3,711	570.20	0.17
24.00	0.13	3,549	570.18	0.15
26.00	0.03	3,038	570.12	0.09
28.00	0.03	2,775	570.09	0.06
30.00	0.03	2,637	570.07	0.05
32.00	0.03	2,558	570.06	0.04
34.00	0.03	2,510	570.06	0.04
36.00	0.03	2,476	570.05	0.04
38.00	0.03	2,451	570.05	0.03
40.00	0.03	2,433	570.05	0.03
42.00	0.03	2,418	570.05	0.03
44.00	0.03	2,405	570.04	0.03
46.00	0.03	2,394	570.04	0.03
48.00	0.01	2,335	570.04	0.03
50.00	0.00	2,210	570.02	0.02
52.00	0.00	2,101	570.01	0.01
54.00	0.00	2,017	570.00	0.01
56.00	0.00	1,961	569.98	0.01
58.00	0.00	1,922	569.97	0.00
60.00	0.00	1,894	569.97	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)
569.50	0
569.55	203
569.60	406
569.65	609
569.70	812
569.75	1,014
569.80	1,217
569.85	1,420
569.90	1,623
569.95	1,826
570.00	2,029
570.05	2,459
570.10	2,889
570.15	3,318
570.20	3,746
570.25	4,173
570.30	4,598
570.35	5,022
570.40	5,444
570.45	5,865
570.50	6,284
570.55	6,701
570.60	7,116
570.65	7,529
570.70	7,940
570.75	8,349
570.80	8,756
570.85	9,160
570.90	9,562
570.95	9,962
571.00	10,359
571.05	10,754
571.10	11,145
571.15	11,534
571.20	11,919
571.25	12,301
571.30	12,680
571.35	13,056
571.40	13,428
571.45	13,797
571.50	14,161
571.55	14,522
571.60	14,879
571.65	15,230
571.70	15,577
571.75	15,917
571.80	16,252
571.85	16,582
571.90	16,906
571.95	17,224
572.00	17,535
572.05	17,838
572.10	18,133
572.15	18,417
572.20	18,690
572.25	18,946
572.30	19,188
572.35	19,417
572.40	19,637
572.45	19,850
572.50	20,057
572.55	20,260
572.60	20,463
572.65	20,665
572.70	20,868
572.75	21,071
572.80	21,274
572.85	21,477
572.90	21,680
572.95	21,883
573.00	**22,086**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 2.99" for 25-Year event
Inflow = 6.75 cfs @ 12.00 hrs, Volume= 0.374 af
Outflow = 4.78 cfs @ 12.08 hrs, Volume= 0.374 af, Atten= 29%, Lag= 4.5 min
Primary = 4.78 cfs @ 12.08 hrs, Volume= 0.374 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.82' @ 12.08 hrs Surf.Area= 6,409 sf Storage= 4,638 cf

Plug-Flow detention time= 252.6 min calculated for 0.374 af (100% of inflow)
Center-of-Mass det. time= 252.8 min (1,043.6 - 790.7)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

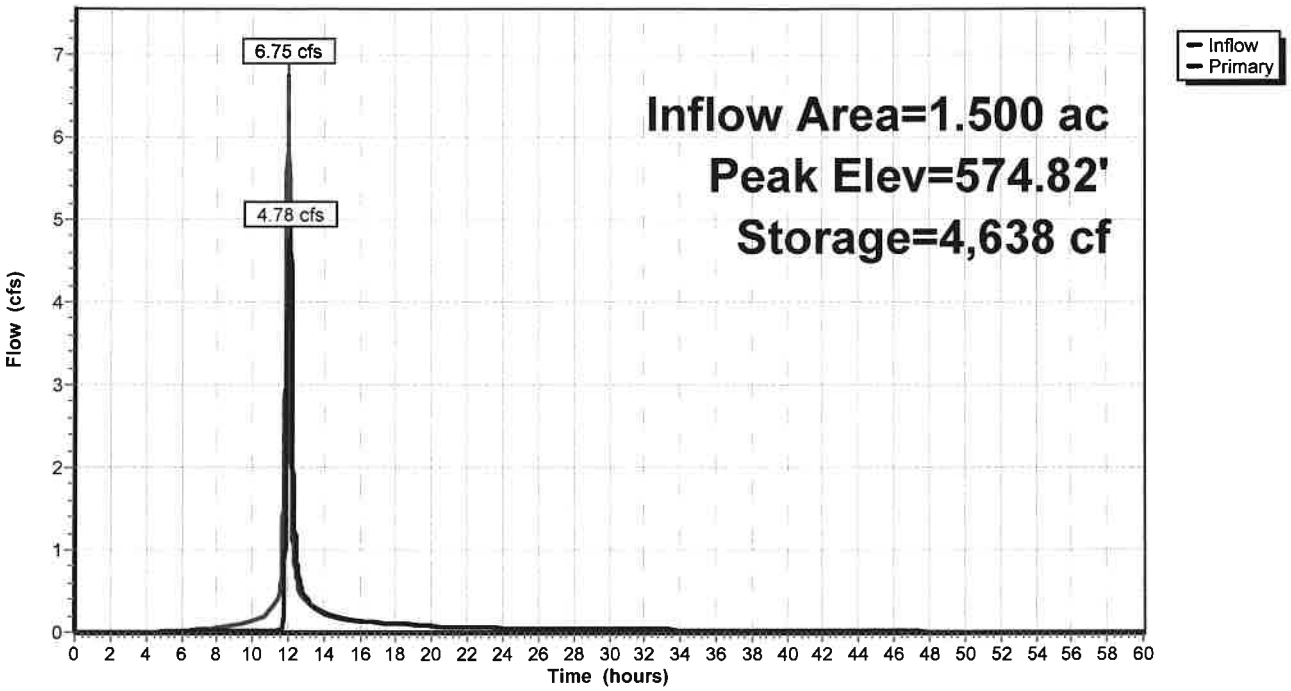
Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

Primary OutFlow Max=4.78 cfs @ 12.08 hrs HW=574.82' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.65 cfs @ 5.92 fps)
  - **2=Grate** (Passes < 5.74 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 0.13 cfs @ 0.87 fps)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

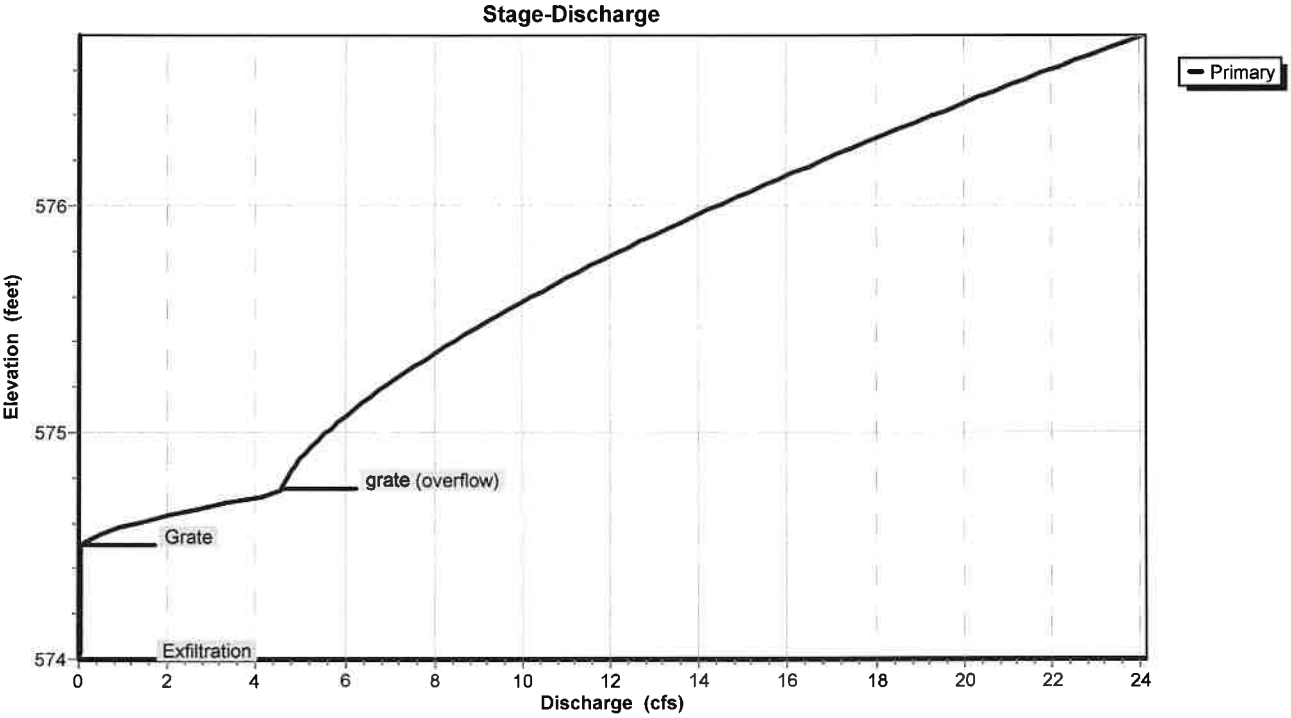
Pond 9P: Bioretention Area 3

Hydrograph



Pond 9P: Bioretention Area 3

Stage-Discharge



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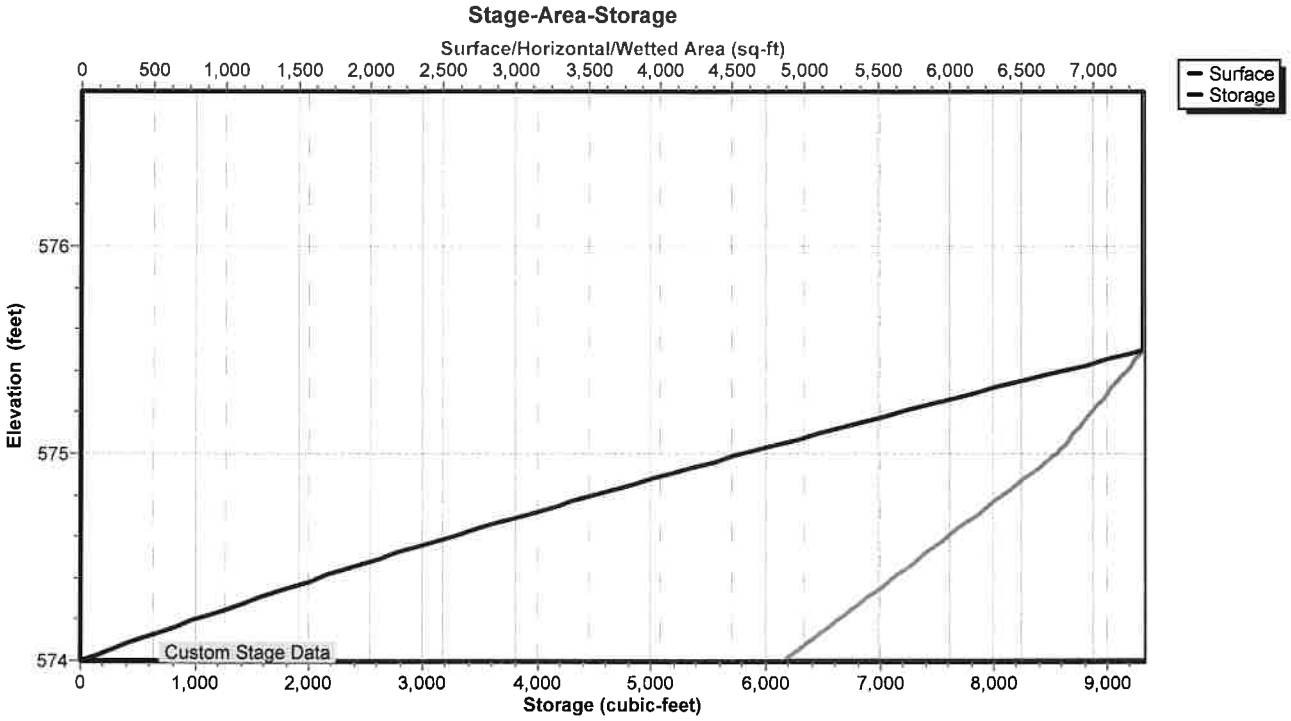
Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.00	0	574.00	0.00
6.00	0.02	55	574.01	0.01
8.00	0.05	177	574.04	0.03
10.00	0.13	612	574.12	0.03
12.00	**6.75**	**4,265**	**574.77**	**4.62**
14.00	0.22	**2,825**	**574.53**	**0.24**
16.00	0.13	2,765	574.52	0.14
18.00	0.10	2,730	574.51	0.11
20.00	0.08	2,704	574.51	0.08
22.00	0.07	2,694	574.51	0.07
24.00	0.06	2,689	574.50	0.06
26.00	0.00	2,452	574.46	0.03
28.00	0.00	2,208	574.42	0.03
30.00	0.00	1,968	574.38	0.03
32.00	0.00	1,733	574.34	0.03
34.00	0.00	1,501	574.29	0.03
36.00	0.00	1,273	574.25	0.03
38.00	0.00	1,050	574.21	0.03
40.00	0.00	830	574.17	0.03
42.00	0.00	614	574.12	0.03
44.00	0.00	403	574.08	0.03
46.00	0.00	195	574.04	0.03
48.00	0.00	46	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

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Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=3.52"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=7.64 cfs 0.498 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=3.62"
Flow Length=345' Tc=9.1 min CN=92 Runoff=8.07 cfs 0.453 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=572.23' Storage=18,837 cf Inflow=12.80 cfs 0.951 af
Outflow=3.61 cfs 0.907 af

Pond 9P: Bioretention Area 3 Peak Elev=574.93' Storage=5,333 cf Inflow=8.07 cfs 0.453 af
Outflow=5.22 cfs 0.453 af

Total Runoff Area = 3.200 ac Runoff Volume = 0.951 af Average Runoff Depth = 3.57"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 8S: Front Area 2

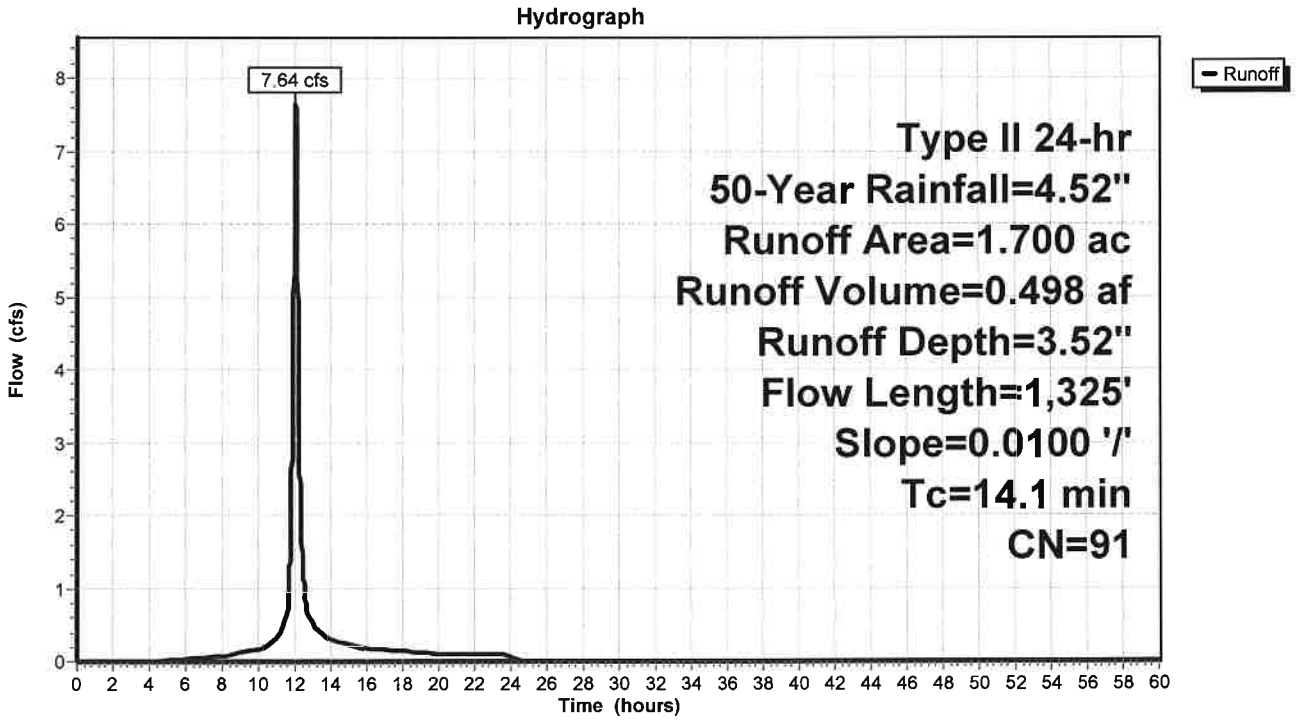
Runoff = 7.64 cfs @ 12.05 hrs, Volume= 0.498 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.00
5.00	0.28	0.01	0.02
6.00	0.36	0.02	0.03
7.00	0.45	0.05	0.05
8.00	0.54	0.09	0.07
9.00	0.66	0.15	0.12
10.00	0.82	0.24	0.17
11.00	1.06	0.40	0.34
12.00	3.00	2.07	**6.84**
13.00	3.49	2.53	**0.53**
14.00	3.71	2.74	0.30
15.00	3.86	2.88	0.23
16.00	3.98	3.00	0.18
17.00	4.08	3.09	0.16
18.00	4.16	3.17	0.14
19.00	4.24	3.25	0.12
20.00	4.30	3.31	0.10
21.00	4.36	3.36	0.09
22.00	4.42	3.42	0.09
23.00	4.47	3.47	0.09
24.00	**4.52**	**3.52**	0.08
25.00	4.52	3.52	0.00
26.00	4.52	3.52	0.00
27.00	4.52	3.52	0.00
28.00	4.52	3.52	0.00
29.00	4.52	3.52	0.00
30.00	4.52	3.52	0.00
31.00	4.52	3.52	0.00
32.00	4.52	3.52	0.00
33.00	4.52	3.52	0.00
34.00	4.52	3.52	0.00
35.00	4.52	3.52	0.00
36.00	4.52	3.52	0.00
37.00	4.52	3.52	0.00
38.00	4.52	3.52	0.00
39.00	4.52	3.52	0.00
40.00	4.52	3.52	0.00
41.00	4.52	3.52	0.00
42.00	4.52	3.52	0.00
43.00	4.52	3.52	0.00
44.00	4.52	3.52	0.00
45.00	4.52	3.52	0.00
46.00	4.52	3.52	0.00
47.00	4.52	3.52	0.00
48.00	4.52	3.52	0.00
49.00	4.52	3.52	0.00
50.00	4.52	3.52	0.00
51.00	4.52	3.52	0.00
52.00	4.52	3.52	0.00
53.00	4.52	3.52	0.00
54.00	4.52	3.52	0.00
55.00	4.52	3.52	0.00
56.00	4.52	3.52	0.00
57.00	4.52	3.52	0.00
58.00	4.52	3.52	0.00
59.00	4.52	3.52	0.00
60.00	4.52	3.52	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 10S: Rear Area 2

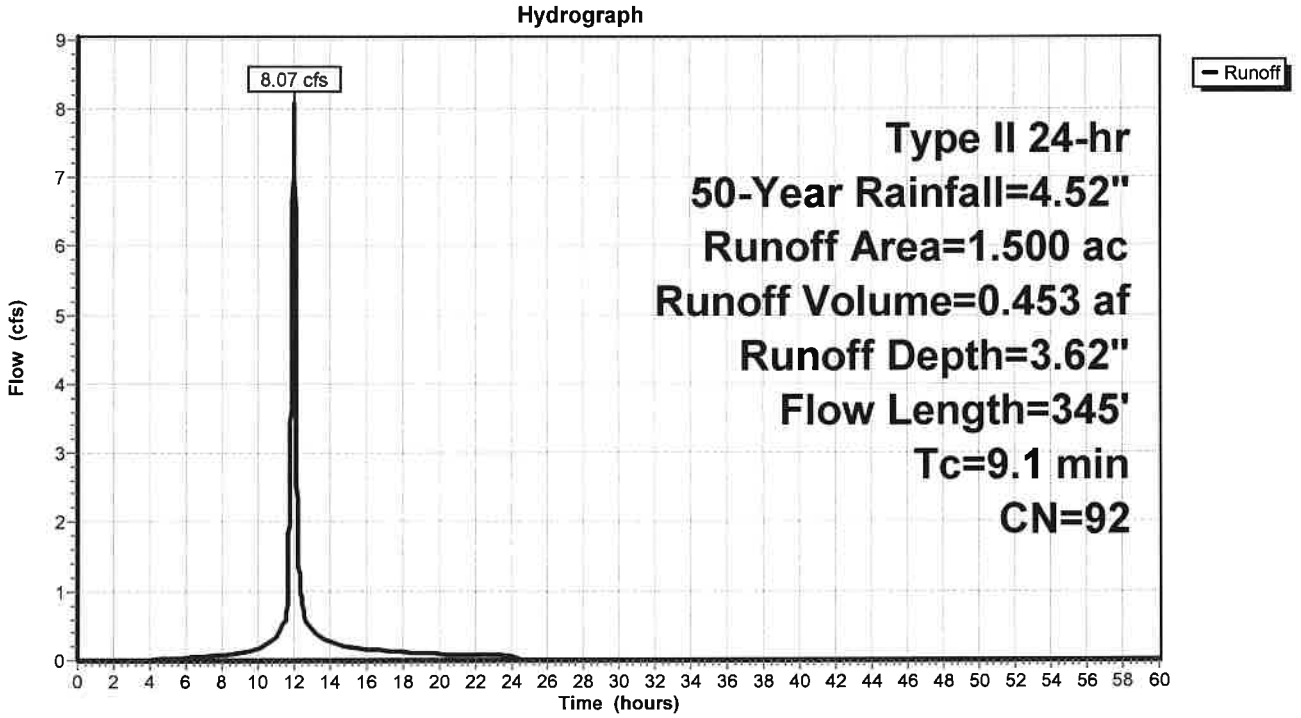
Runoff = 8.07 cfs @ 12.00 hrs, Volume= 0.453 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=4.52"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.10	0.00	0.00
3.00	0.16	0.00	0.00
4.00	0.22	0.00	0.01
5.00	0.28	0.01	0.02
6.00	0.36	0.03	0.04
7.00	0.45	0.07	0.06
8.00	0.54	0.11	0.07
9.00	0.66	0.18	0.12
10.00	0.82	0.27	0.17
11.00	1.06	0.45	0.34
12.00	3.00	2.16	**8.07**
13.00	3.49	2.63	0.45
14.00	3.71	2.83	0.26
15.00	3.86	2.98	0.20
16.00	3.98	3.10	0.16
17.00	4.08	3.19	0.14
18.00	4.16	3.28	0.12
19.00	4.24	3.35	0.11
20.00	4.30	3.41	0.09
21.00	4.36	3.47	0.08
22.00	4.42	3.52	0.08
23.00	4.47	3.57	0.08
24.00	**4.52**	**3.62**	0.07
25.00	4.52	3.62	0.00
26.00	4.52	3.62	0.00
27.00	4.52	3.62	0.00
28.00	4.52	3.62	0.00
29.00	4.52	3.62	0.00
30.00	4.52	3.62	0.00
31.00	4.52	3.62	0.00
32.00	4.52	3.62	0.00
33.00	4.52	3.62	0.00
34.00	4.52	3.62	0.00
35.00	4.52	3.62	0.00
36.00	4.52	3.62	0.00
37.00	4.52	3.62	0.00
38.00	4.52	3.62	0.00
39.00	4.52	3.62	0.00
40.00	4.52	3.62	0.00
41.00	4.52	3.62	0.00
42.00	4.52	3.62	0.00
43.00	4.52	3.62	0.00
44.00	4.52	3.62	0.00
45.00	4.52	3.62	0.00
46.00	4.52	3.62	0.00
47.00	4.52	3.62	0.00
48.00	4.52	3.62	0.00
49.00	4.52	3.62	0.00
50.00	4.52	3.62	0.00
51.00	4.52	3.62	0.00
52.00	4.52	3.62	0.00
53.00	4.52	3.62	0.00
54.00	4.52	3.62	0.00
55.00	4.52	3.62	0.00
56.00	4.52	3.62	0.00
57.00	4.52	3.62	0.00
58.00	4.52	3.62	0.00
59.00	4.52	3.62	0.00
60.00	4.52	3.62	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 3.57" for 50-Year event
Inflow = 12.80 cfs @ 12.06 hrs, Volume= 0.951 af
Outflow = 3.61 cfs @ 12.36 hrs, Volume= 0.907 af, Atten= 72%, Lag= 17.7 min
Primary = 3.61 cfs @ 12.36 hrs, Volume= 0.907 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 572.23' @ 12.36 hrs Surf.Area= 10,145 sf Storage= 18,837 cf

Plug-Flow detention time= 228.3 min calculated for 0.907 af (95% of inflow)
Center-of-Mass det. time= 158.8 min (1,051.4 - 892.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

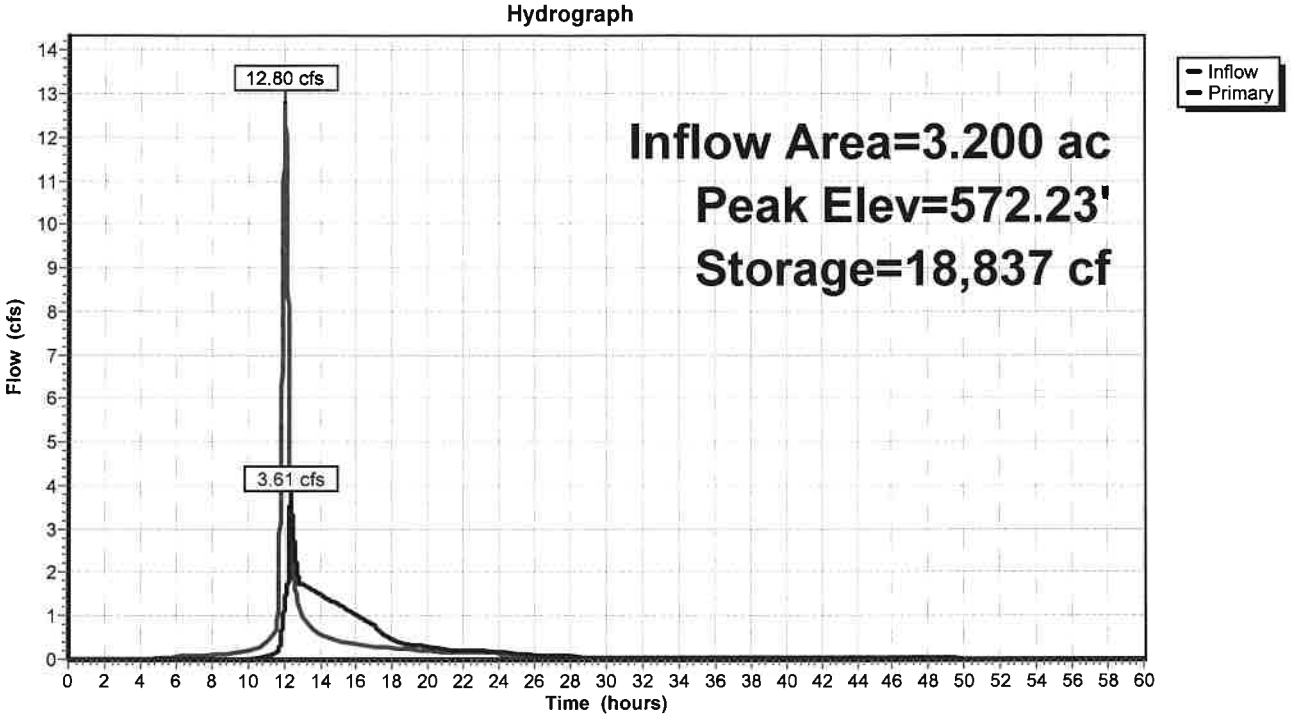
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

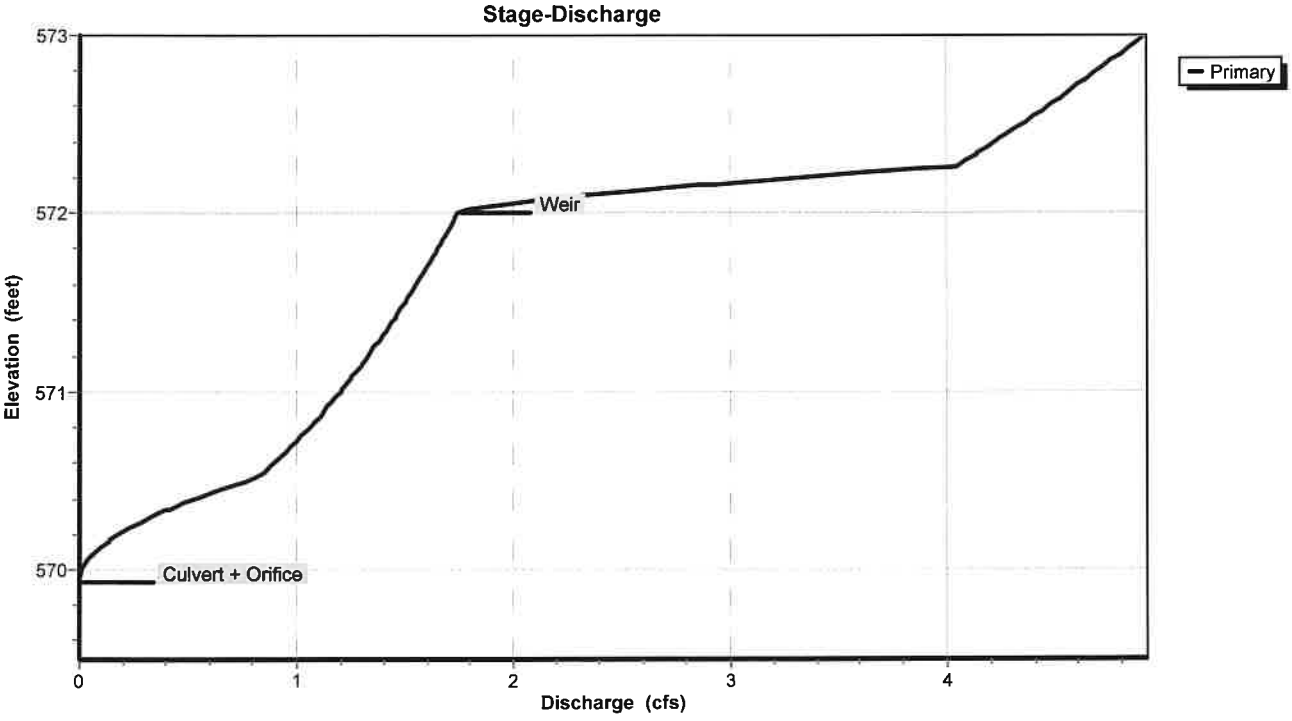
Primary OutFlow Max=3.60 cfs @ 12.36 hrs HW=572.23' (Free Discharge)
└**1=Culvert** (Passes 3.60 cfs of 4.00 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 1.84 cfs @ 7.03 fps)
  └**3=Weir** (Weir Controls 1.76 cfs @ 1.56 fps)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)

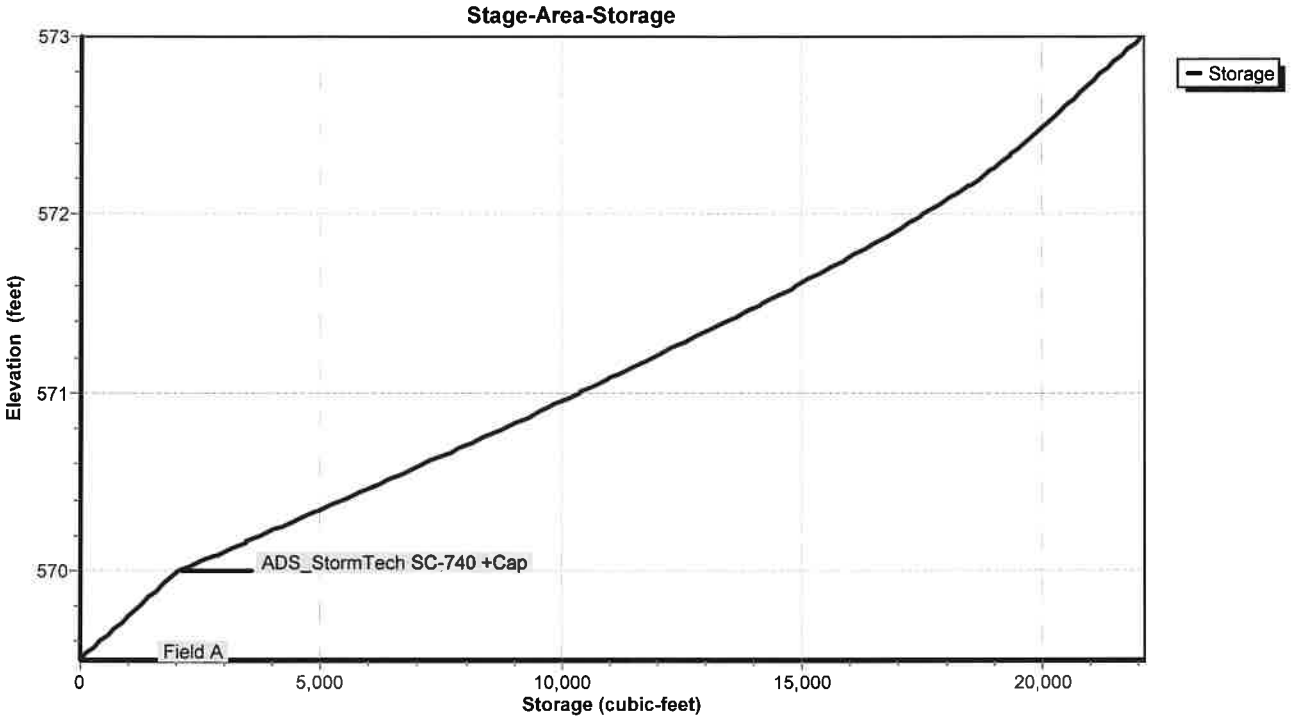


Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.00	1	569.50	0.00
6.00	0.05	184	569.55	0.00
8.00	0.10	755	569.69	0.00
10.00	0.20	1,811	569.95	0.00
12.00	**11.66**	**9,752**	**570.92**	**1.15**
14.00	**0.59**	**14,219**	**571.51**	**1.50**
16.00	0.35	8,385	570.75	1.02
18.00	0.26	5,166	570.37	0.47
20.00	0.19	4,282	570.26	0.27
22.00	0.17	3,893	570.22	0.20
24.00	0.16	3,718	570.20	0.18
26.00	0.03	3,113	570.13	0.09
28.00	0.03	2,810	570.09	0.06
30.00	0.03	2,657	570.07	0.05
32.00	0.03	2,569	570.06	0.04
34.00	0.03	2,516	570.06	0.04
36.00	0.03	2,480	570.05	0.04
38.00	0.03	2,454	570.05	0.03
40.00	0.03	2,435	570.05	0.03
42.00	0.03	2,419	570.05	0.03
44.00	0.03	2,406	570.04	0.03
46.00	0.03	2,395	570.04	0.03
48.00	0.01	2,338	570.04	0.03
50.00	0.00	2,213	570.02	0.02
52.00	0.00	2,103	570.01	0.01
54.00	0.00	2,018	570.00	0.01
56.00	0.00	1,962	569.98	0.01
58.00	0.00	1,923	569.97	0.00
60.00	0.00	1,894	569.97	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 3.62" for 50-Year event
Inflow = 8.07 cfs @ 12.00 hrs, Volume= 0.453 af
Outflow = 5.22 cfs @ 12.09 hrs, Volume= 0.453 af, Atten= 35%, Lag= 5.1 min
Primary = 5.22 cfs @ 12.09 hrs, Volume= 0.453 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 574.93' @ 12.09 hrs Surf.Area= 6,611 sf Storage= 5,333 cf

Plug-Flow detention time= 214.9 min calculated for 0.453 af (100% of inflow)
Center-of-Mass det. time= 215.2 min (1,000.7 - 785.5)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

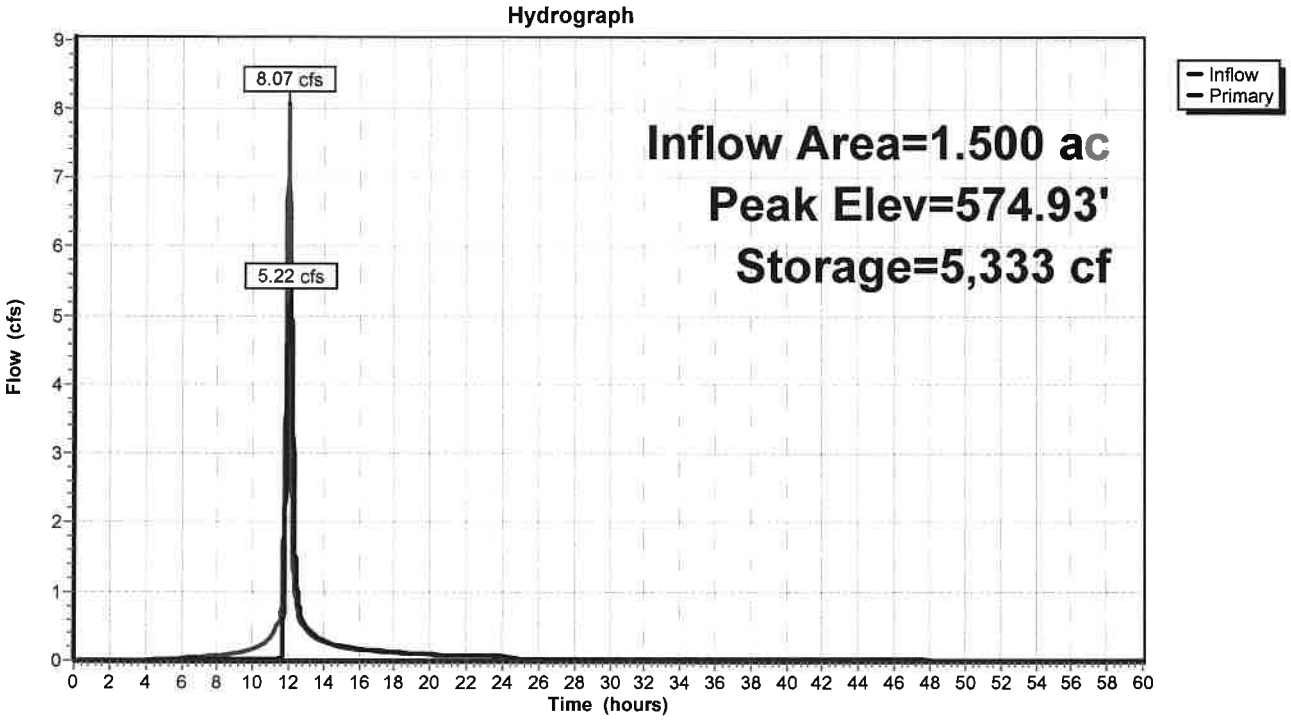
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

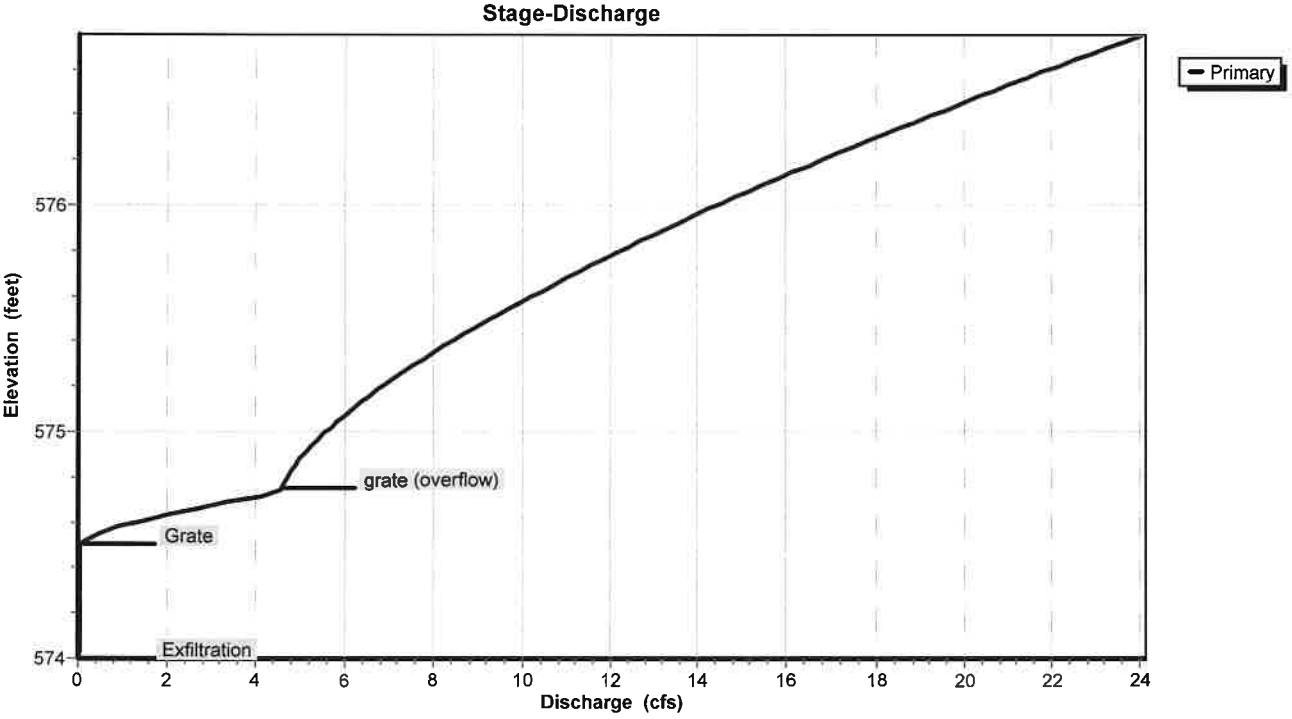
Primary OutFlow Max=5.22 cfs @ 12.09 hrs HW=574.93' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.73 cfs @ 6.02 fps)
  - **2=Grate** (Passes < 6.61 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 0.49 cfs @ 1.36 fps)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3

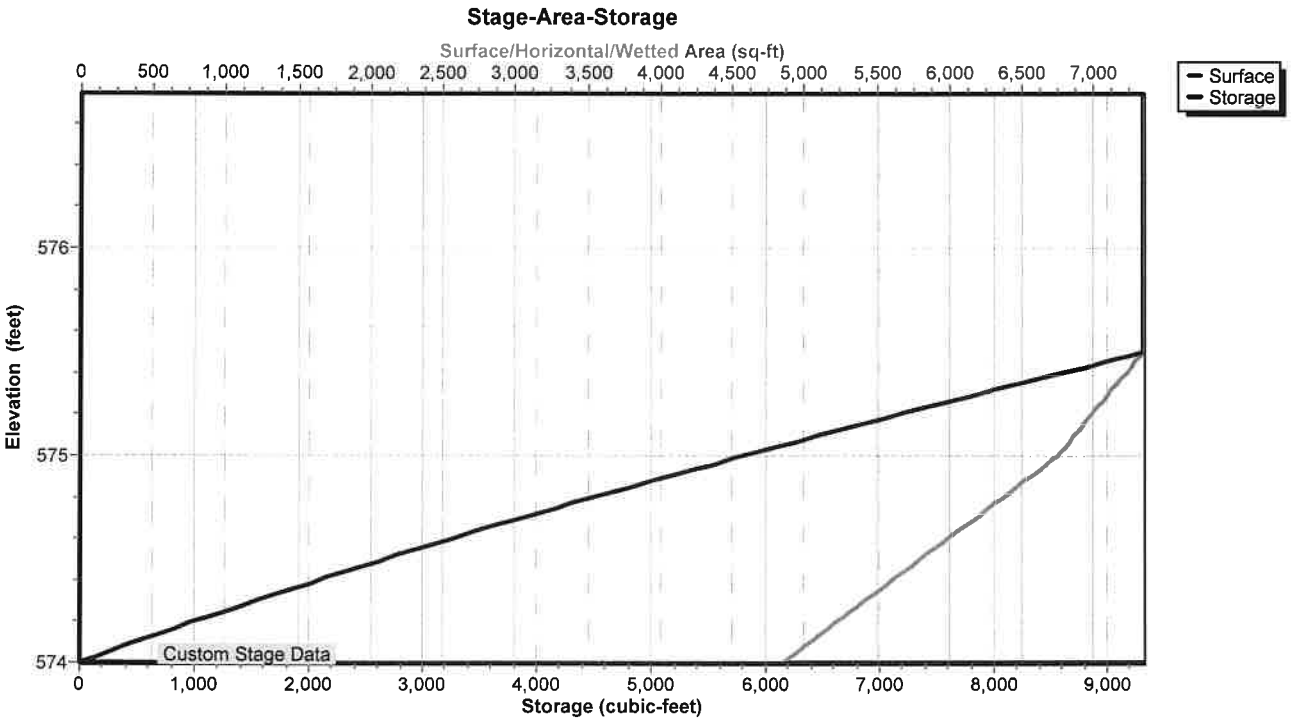


Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.01	6	574.00	0.00
6.00	0.04	95	574.02	0.02
8.00	0.07	296	574.06	0.03
10.00	0.17	928	574.18	0.03
12.00	**8.07**	**4,720**	**574.84**	**4.83**
14.00	0.26	**2,846**	**574.53**	**0.28**
16.00	0.16	2,787	574.52	0.17
18.00	0.12	2,748	574.51	0.13
20.00	0.09	2,717	574.51	0.09
22.00	0.08	2,706	574.51	0.08
24.00	0.07	2,699	574.51	0.07
26.00	0.00	2,457	574.46	0.03
28.00	0.00	2,213	574.42	0.03
30.00	0.00	1,974	574.38	0.03
32.00	0.00	1,738	574.34	0.03
34.00	0.00	1,506	574.29	0.03
36.00	0.00	1,278	574.25	0.03
38.00	0.00	1,055	574.21	0.03
40.00	0.00	835	574.17	0.03
42.00	0.00	619	574.12	0.03
44.00	0.00	407	574.08	0.03
46.00	0.00	199	574.04	0.03
48.00	0.00	47	574.01	0.01
50.00	0.00	10	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	0	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 8S: Front Area 2 Runoff Area=1.700 ac 58.82% Impervious Runoff Depth=4.25"
Flow Length=1,325' Slope=0.0100 '/' Tc=14.1 min CN=91 Runoff=9.15 cfs 0.603 af

Subcatchment 10S: Rear Area 2 Runoff Area=1.500 ac 66.67% Impervious Runoff Depth=4.36"
Flow Length=345' Tc=9.1 min CN=92 Runoff=9.61 cfs 0.545 af

Pond 7P: Underground Storage (SMA #2) Peak Elev=572.92' Storage=21,772 cf Inflow=14.92 cfs 1.148 af
Outflow=4.83 cfs 1.105 af

Pond 9P: Bioretention Area 3 Peak Elev=575.05' Storage=6,150 cf Inflow=9.61 cfs 0.545 af
Outflow=5.89 cfs 0.545 af

Total Runoff Area = 3.200 ac Runoff Volume = 1.148 af Average Runoff Depth = 4.31"
37.50% Pervious = 1.200 ac 62.50% Impervious = 2.000 ac

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 8S: Front Area 2

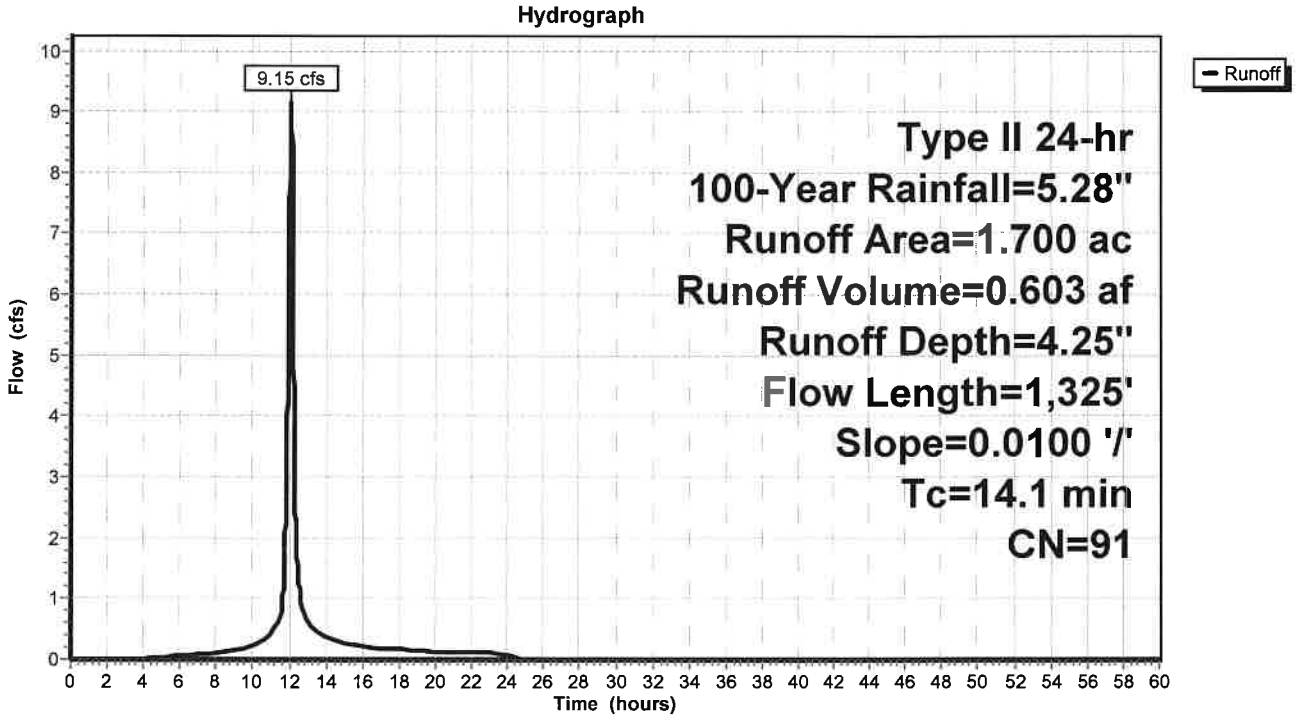
Runoff = 9.15 cfs @ 12.05 hrs, Volume= 0.603 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
0.700	98	Paved parking, HSG D
0.300	98	Roofs, HSG D
0.700	80	>75% Grass cover, Good, HSG D
1.700	91	Weighted Average
0.700		41.18% Pervious Area
1.000		58.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	40	0.0100	0.09		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
7.1	1,285		3.00		**Direct Entry, Pipe flow**
14.1	1,325	Total			

Subcatchment 8S: Front Area 2



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 8S: Front Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.28	4.25	0.00
1.00	0.06	0.00	0.00	53.00	5.28	4.25	0.00
2.00	0.12	0.00	0.00	54.00	5.28	4.25	0.00
3.00	0.18	0.00	0.00	55.00	5.28	4.25	0.00
4.00	0.25	0.00	0.01	56.00	5.28	4.25	0.00
5.00	0.33	0.02	0.03	57.00	5.28	4.25	0.00
6.00	0.42	0.04	0.05	58.00	5.28	4.25	0.00
7.00	0.52	0.08	0.07	59.00	5.28	4.25	0.00
8.00	0.63	0.13	0.10	60.00	5.28	4.25	0.00
9.00	0.78	0.21	0.16				
10.00	0.96	0.33	0.22				
11.00	1.24	0.54	0.43				
12.00	3.50	2.54	**8.21**				
13.00	4.08	3.09	**0.63**				
14.00	4.33	3.33	0.36				
15.00	4.51	3.50	0.28				
16.00	4.65	3.64	0.21				
17.00	4.76	3.75	0.18				
18.00	4.86	3.85	0.16				
19.00	4.95	3.93	0.14				
20.00	5.03	4.01	0.12				
21.00	5.09	4.07	0.11				
22.00	5.16	4.14	0.11				
23.00	5.22	4.20	0.10				
24.00	**5.28**	**4.25**	0.10				
25.00	5.28	4.25	0.00				
26.00	5.28	4.25	0.00				
27.00	5.28	4.25	0.00				
28.00	5.28	4.25	0.00				
29.00	5.28	4.25	0.00				
30.00	5.28	4.25	0.00				
31.00	5.28	4.25	0.00				
32.00	5.28	4.25	0.00				
33.00	5.28	4.25	0.00				
34.00	5.28	4.25	0.00				
35.00	5.28	4.25	0.00				
36.00	5.28	4.25	0.00				
37.00	5.28	4.25	0.00				
38.00	5.28	4.25	0.00				
39.00	5.28	4.25	0.00				
40.00	5.28	4.25	0.00				
41.00	5.28	4.25	0.00				
42.00	5.28	4.25	0.00				
43.00	5.28	4.25	0.00				
44.00	5.28	4.25	0.00				
45.00	5.28	4.25	0.00				
46.00	5.28	4.25	0.00				
47.00	5.28	4.25	0.00				
48.00	5.28	4.25	0.00				
49.00	5.28	4.25	0.00				
50.00	5.28	4.25	0.00				
51.00	5.28	4.25	0.00				

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Subcatchment 10S: Rear Area 2

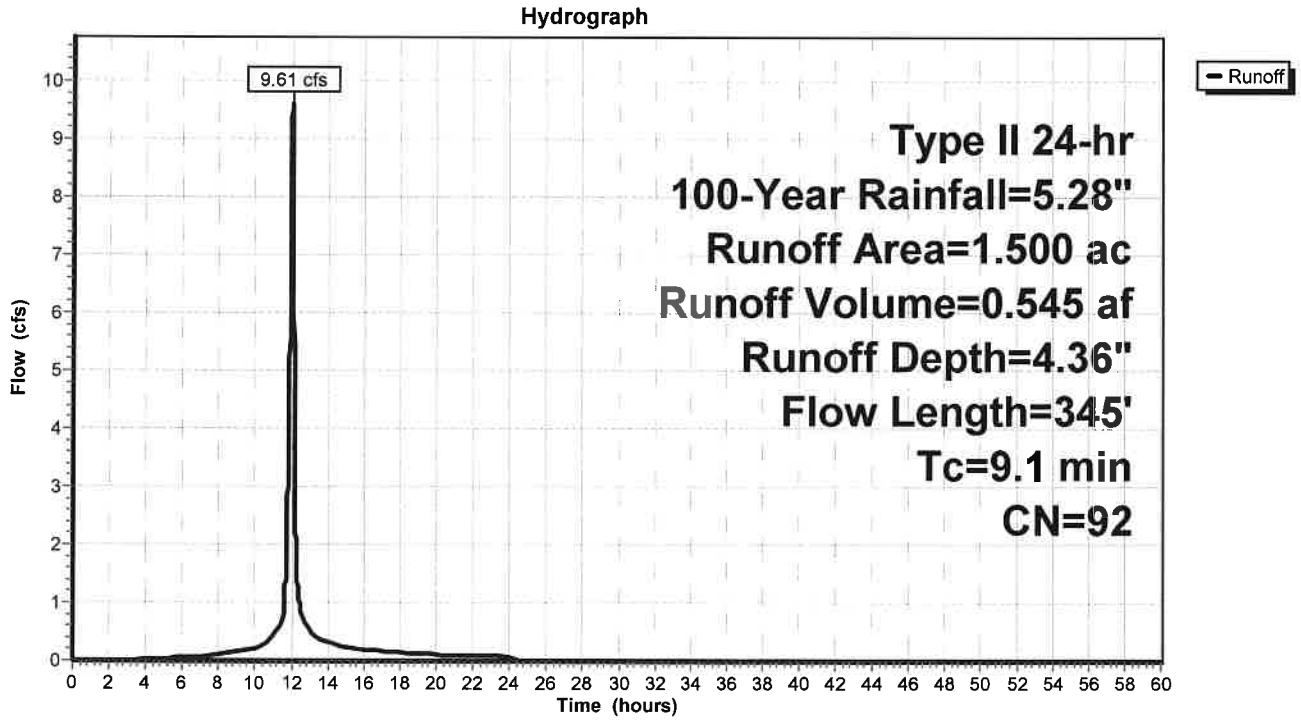
Runoff = 9.61 cfs @ 12.00 hrs, Volume= 0.545 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.28"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	Roofs, HSG D
0.500	80	>75% Grass cover, Good, HSG D
1.500	92	Weighted Average
0.500		33.33% Pervious Area
1.000		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.0200	0.13		**Sheet Flow, grass** Grass: Short n= 0.150 P2= 2.50"
0.8	45	0.0170	0.97		**Sheet Flow, pavement** Smooth surfaces n= 0.011 P2= 2.50"
1.4	245		3.00		**Direct Entry, Pipe flow**
9.1	345	Total			

Subcatchment 10S: Rear Area 2



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Subcatchment 10S: Rear Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.12	0.00	0.00
3.00	0.18	0.00	0.00
4.00	0.25	0.01	0.02
5.00	0.33	0.02	0.03
6.00	0.42	0.06	0.05
7.00	0.52	0.10	0.08
8.00	0.63	0.16	0.10
9.00	0.78	0.25	0.16
10.00	0.96	0.37	0.22
11.00	1.24	0.59	0.42
12.00	3.50	2.64	**9.61**
13.00	4.08	3.19	0.53
14.00	4.33	3.44	0.31
15.00	4.51	3.61	0.24
16.00	4.65	3.74	0.19
17.00	4.76	3.86	0.16
18.00	4.86	3.96	0.14
19.00	4.95	4.04	0.12
20.00	5.03	4.12	0.10
21.00	5.09	4.18	0.10
22.00	5.16	4.24	0.09
23.00	5.22	4.30	0.09
24.00	**5.28**	**4.36**	0.09
25.00	5.28	4.36	0.00
26.00	5.28	4.36	0.00
27.00	5.28	4.36	0.00
28.00	5.28	4.36	0.00
29.00	5.28	4.36	0.00
30.00	5.28	4.36	0.00
31.00	5.28	4.36	0.00
32.00	5.28	4.36	0.00
33.00	5.28	4.36	0.00
34.00	5.28	4.36	0.00
35.00	5.28	4.36	0.00
36.00	5.28	4.36	0.00
37.00	5.28	4.36	0.00
38.00	5.28	4.36	0.00
39.00	5.28	4.36	0.00
40.00	5.28	4.36	0.00
41.00	5.28	4.36	0.00
42.00	5.28	4.36	0.00
43.00	5.28	4.36	0.00
44.00	5.28	4.36	0.00
45.00	5.28	4.36	0.00
46.00	5.28	4.36	0.00
47.00	5.28	4.36	0.00
48.00	5.28	4.36	0.00
49.00	5.28	4.36	0.00
50.00	5.28	4.36	0.00
51.00	5.28	4.36	0.00
52.00	5.28	4.36	0.00
53.00	5.28	4.36	0.00
54.00	5.28	4.36	0.00
55.00	5.28	4.36	0.00
56.00	5.28	4.36	0.00
57.00	5.28	4.36	0.00
58.00	5.28	4.36	0.00
59.00	5.28	4.36	0.00
60.00	5.28	4.36	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 7P: Underground Storage (SMA #2)

Inflow Area = 3.200 ac, 62.50% Impervious, Inflow Depth = 4.31" for 100-Year event
Inflow = 14.92 cfs @ 12.06 hrs, Volume= 1.148 af
Outflow = 4.83 cfs @ 12.36 hrs, Volume= 1.105 af, Atten= 68%, Lag= 18.1 min
Primary = 4.83 cfs @ 12.36 hrs, Volume= 1.105 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 572.92' @ 12.36 hrs Surf.Area= 10,145 sf Storage= 21,772 cf

Plug-Flow detention time= 201.7 min calculated for 1.105 af (96% of inflow)
Center-of-Mass det. time= 143.6 min (1,016.5 - 873.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	569.50'	8,947 cf	**53.75'W x 188.74'L x 3.50'H Field A** 35,506 cf Overall - 13,139 cf Embedded = 22,367 cf x 40.0% Voids
#2A	570.00'	13,139 cf	**ADS_StormTech SC-740 +Cap** x 286 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 11 Rows of 26 Chambers
		22,086 cf	Total Available Storage

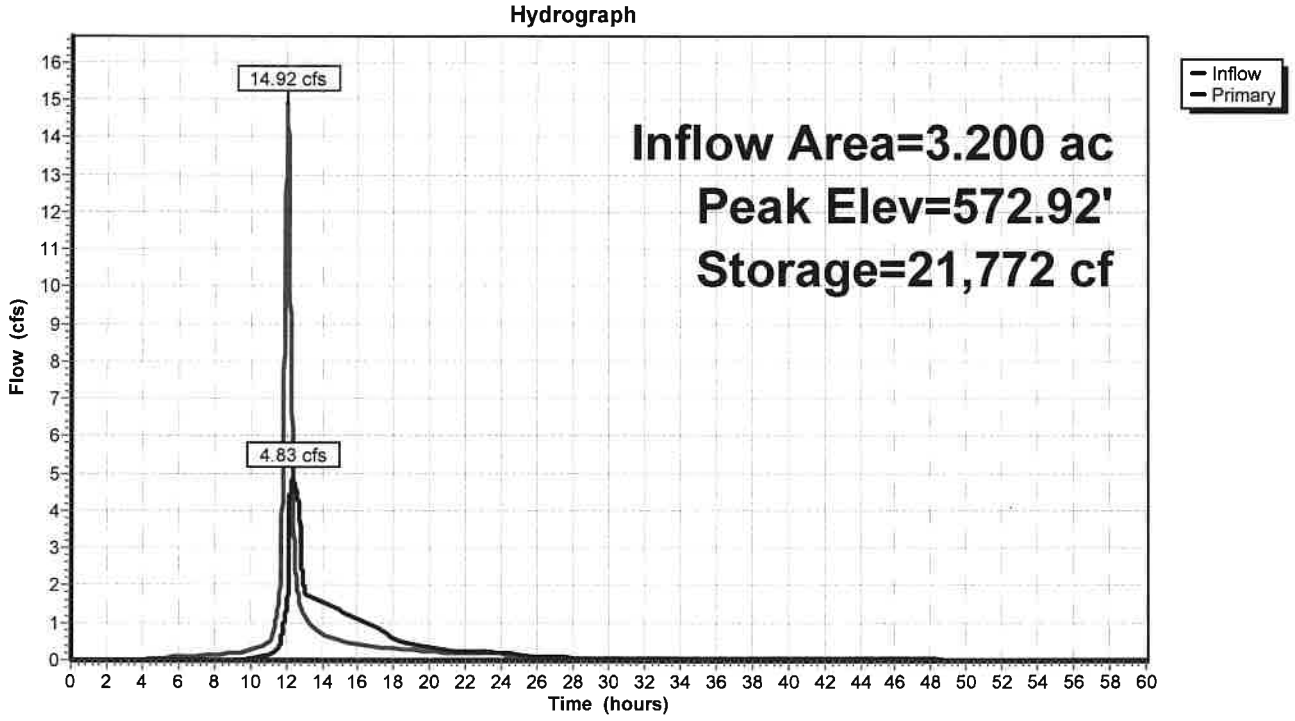
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	569.93'	**12.0" Round Culvert** L= 72.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.93' / 569.71' S= 0.0031 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	569.93'	**4.0" Vert. Orifice X 3.00** C= 0.600
#3	Device 1	572.00'	**5.0' long Weir** 2 End Contraction(s)

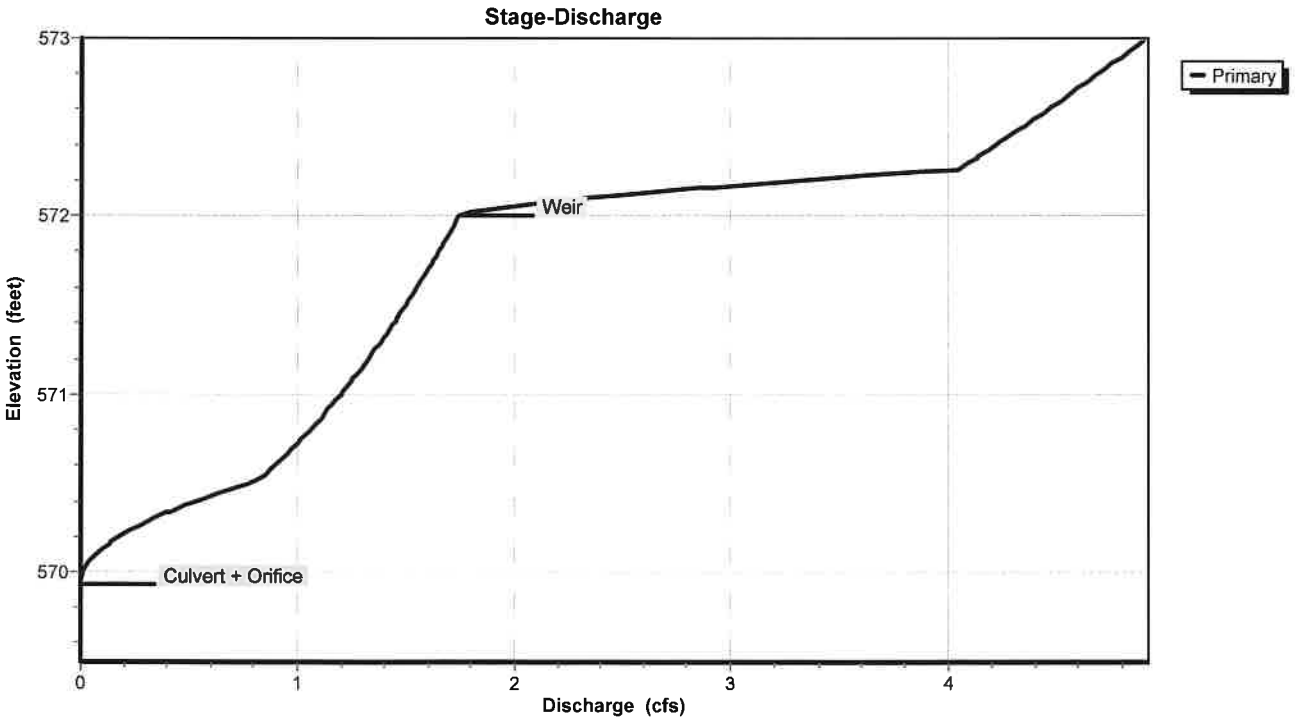
Primary OutFlow Max=4.83 cfs @ 12.36 hrs HW=572.92' (Free Discharge)
↑**1=Culvert** (Barrel Controls 4.83 cfs @ 6.16 fps)
↑**2=Orifice** (Passes < 2.12 cfs potential flow)
3=Weir (Passes < 13.95 cfs potential flow)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)

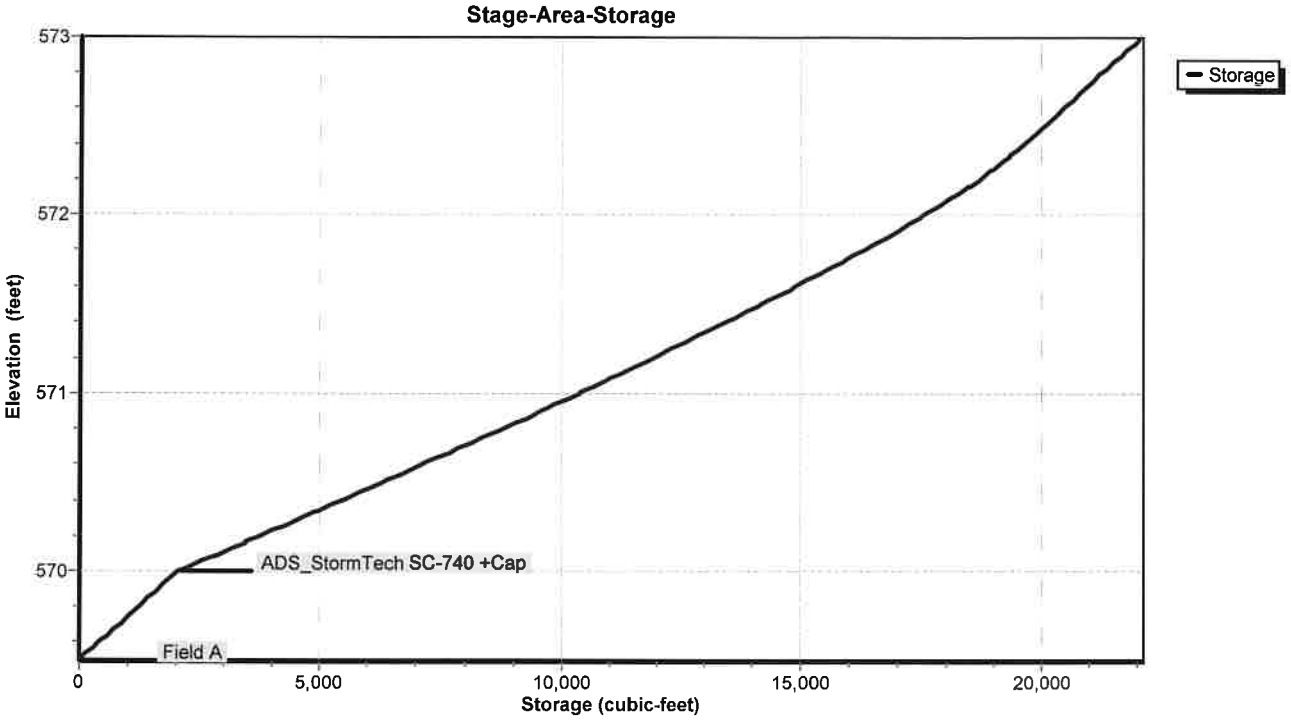


Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 7P: Underground Storage (SMA #2)



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 7P: Underground Storage (SMA #2)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	569.50	0.00
2.00	0.00	0	569.50	0.00
4.00	0.01	16	569.50	0.00
6.00	0.08	340	569.58	0.00
8.00	0.13	1,076	569.77	0.00
10.00	0.25	2,364	570.04	0.03
12.00	**13.40**	**12,150**	**571.23**	**1.34**
14.00	**0.69**	**15,059**	**571.63**	**1.56**
16.00	0.41	9,280	570.86	1.10
18.00	0.31	5,592	570.42	0.57
20.00	0.23	4,514	570.29	0.32
22.00	0.20	4,084	570.24	0.24
24.00	0.19	3,896	570.22	0.21
26.00	0.03	3,188	570.13	0.10
28.00	0.03	2,846	570.09	0.07
30.00	0.03	2,675	570.08	0.05
32.00	0.03	2,579	570.06	0.04
34.00	0.03	2,522	570.06	0.04
36.00	0.03	2,484	570.05	0.04
38.00	0.03	2,457	570.05	0.03
40.00	0.03	2,436	570.05	0.03
42.00	0.03	2,420	570.05	0.03
44.00	0.03	2,407	570.04	0.03
46.00	0.03	2,395	570.04	0.03
48.00	0.01	2,341	570.04	0.03
50.00	0.00	2,216	570.02	0.02
52.00	0.00	2,105	570.01	0.01
54.00	0.00	2,020	570.00	0.01
56.00	0.00	1,963	569.98	0.01
58.00	0.00	1,923	569.97	0.00
60.00	0.00	1,895	569.97	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
569.50	0.00	570.54	0.84	571.58	1.54	572.62	4.49
569.52	0.00	570.56	0.86	571.60	1.55	572.64	4.52
569.54	0.00	570.58	0.88	571.62	1.56	572.66	4.54
569.56	0.00	570.60	0.89	571.64	1.57	572.68	4.56
569.58	0.00	570.62	0.91	571.66	1.58	572.70	4.58
569.60	0.00	570.64	0.93	571.68	1.59	572.72	4.61
569.62	0.00	570.66	0.95	571.70	1.60	572.74	4.63
569.64	0.00	570.68	0.96	571.72	1.61	572.76	4.65
569.66	0.00	570.70	0.98	571.74	1.62	572.78	4.68
569.68	0.00	570.72	1.00	571.76	1.63	572.80	4.70
569.70	0.00	570.74	1.01	571.78	1.64	572.82	4.72
569.72	0.00	570.76	1.03	571.80	1.65	572.84	4.74
569.74	0.00	570.78	1.04	571.82	1.65	572.86	4.77
569.76	0.00	570.80	1.06	571.84	1.66	572.88	4.79
569.78	0.00	570.82	1.07	571.86	1.67	572.90	4.81
569.80	0.00	570.84	1.09	571.88	1.68	572.92	4.83
569.82	0.00	570.86	1.10	571.90	1.69	572.94	4.85
569.84	0.00	570.88	1.12	571.92	1.70	572.96	4.88
569.86	0.00	570.90	1.13	571.94	1.71	572.98	4.90
569.88	0.00	570.92	1.14	571.96	1.72	573.00	**4.92**
569.90	0.00	570.94	1.16	571.98	1.73		
569.92	0.00	570.96	1.17	572.00	1.74		
569.94	0.00	570.98	1.18	572.02	1.79		
569.96	0.00	571.00	1.20	572.04	1.89		
569.98	0.01	571.02	1.21	572.06	2.01		
570.00	0.01	571.04	1.22	572.08	2.14		
570.02	0.02	571.06	1.24	572.10	2.30		
570.04	0.03	571.08	1.25	572.12	2.47		
570.06	0.04	571.10	1.26	572.14	2.65		
570.08	0.05	571.12	1.28	572.16	2.85		
570.10	0.07	571.14	1.29	572.18	3.06		
570.12	0.09	571.16	1.30	572.20	3.28		
570.14	0.11	571.18	1.31	572.22	3.51		
570.16	0.13	571.20	1.32	572.24	3.75		
570.18	0.15	571.22	1.34	572.26	4.00		
570.20	0.18	571.24	1.35	572.28	4.07		
570.22	0.21	571.26	1.36	572.30	4.10		
570.24	0.24	571.28	1.37	572.32	4.12		
570.26	0.27	571.30	1.38	572.34	4.15		
570.28	0.30	571.32	1.39	572.36	4.17		
570.30	0.34	571.34	1.41	572.38	4.20		
570.32	0.37	571.36	1.42	572.40	4.23		
570.34	0.41	571.38	1.43	572.42	4.25		
570.36	0.45	571.40	1.44	572.44	4.27		
570.38	0.49	571.42	1.45	572.46	4.30		
570.40	0.53	571.44	1.46	572.48	4.32		
570.42	0.58	571.46	1.47	572.50	4.35		
570.44	0.62	571.48	1.48	572.52	4.37		
570.46	0.67	571.50	1.49	572.54	4.40		
570.48	0.72	571.52	1.50	572.56	4.42		
570.50	0.76	571.54	1.51	572.58	4.44		
570.52	0.81	571.56	1.52	572.60	4.47		

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Area-Storage for Pond 7P: Underground Storage (SMA #2)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
569.50	0	572.10	18,133
569.55	203	572.15	18,417
569.60	406	572.20	18,690
569.65	609	572.25	18,946
569.70	812	572.30	19,188
569.75	1,014	572.35	19,417
569.80	1,217	572.40	19,637
569.85	1,420	572.45	19,850
569.90	1,623	572.50	20,057
569.95	1,826	572.55	20,260
570.00	2,029	572.60	20,463
570.05	2,459	572.65	20,665
570.10	2,889	572.70	20,868
570.15	3,318	572.75	21,071
570.20	3,746	572.80	21,274
570.25	4,173	572.85	21,477
570.30	4,598	572.90	21,680
570.35	5,022	572.95	21,883
570.40	5,444	573.00	**22,086**
570.45	5,865		
570.50	6,284		
570.55	6,701		
570.60	7,116		
570.65	7,529		
570.70	7,940		
570.75	8,349		
570.80	8,756		
570.85	9,160		
570.90	9,562		
570.95	9,962		
571.00	10,359		
571.05	10,754		
571.10	11,145		
571.15	11,534		
571.20	11,919		
571.25	12,301		
571.30	12,680		
571.35	13,056		
571.40	13,428		
571.45	13,797		
571.50	14,161		
571.55	14,522		
571.60	14,879		
571.65	15,230		
571.70	15,577		
571.75	15,917		
571.80	16,252		
571.85	16,582		
571.90	16,906		
571.95	17,224		
572.00	17,535		
572.05	17,838		

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary for Pond 9P: Bioretention Area 3

Inflow Area = 1.500 ac, 66.67% Impervious, Inflow Depth = 4.36" for 100-Year event
Inflow = 9.61 cfs @ 12.00 hrs, Volume= 0.545 af
Outflow = 5.89 cfs @ 12.09 hrs, Volume= 0.545 af, Atten= 39%, Lag= 5.5 min
Primary = 5.89 cfs @ 12.09 hrs, Volume= 0.545 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 575.05' @ 12.09 hrs Surf.Area= 6,805 sf Storage= 6,150 cf

Plug-Flow detention time= 184.7 min calculated for 0.545 af (100% of inflow)
Center-of-Mass det. time= 185.0 min (965.5 - 780.5)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	9,318 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

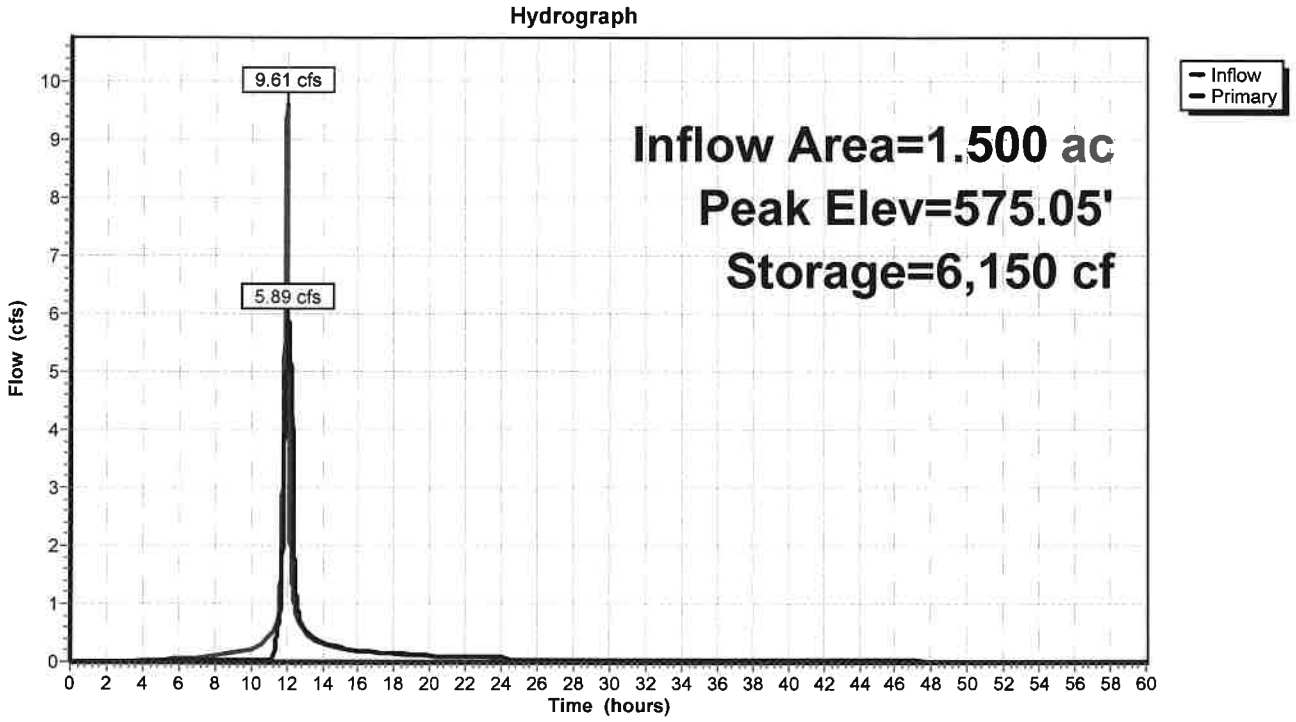
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
574.00	4,851	0	0
575.00	6,743	5,797	5,797
575.50	7,342	3,521	9,318

Device	Routing	Invert	Outlet Devices
#1	Primary	571.41'	**12.0" Round 8" pipe** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 571.41' / 570.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	574.50'	**8.0" Horiz. Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	574.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 560.00'
#4	Primary	574.75'	**24.0" W x 24.0" H Vert. grate (overflow)** C= 0.600

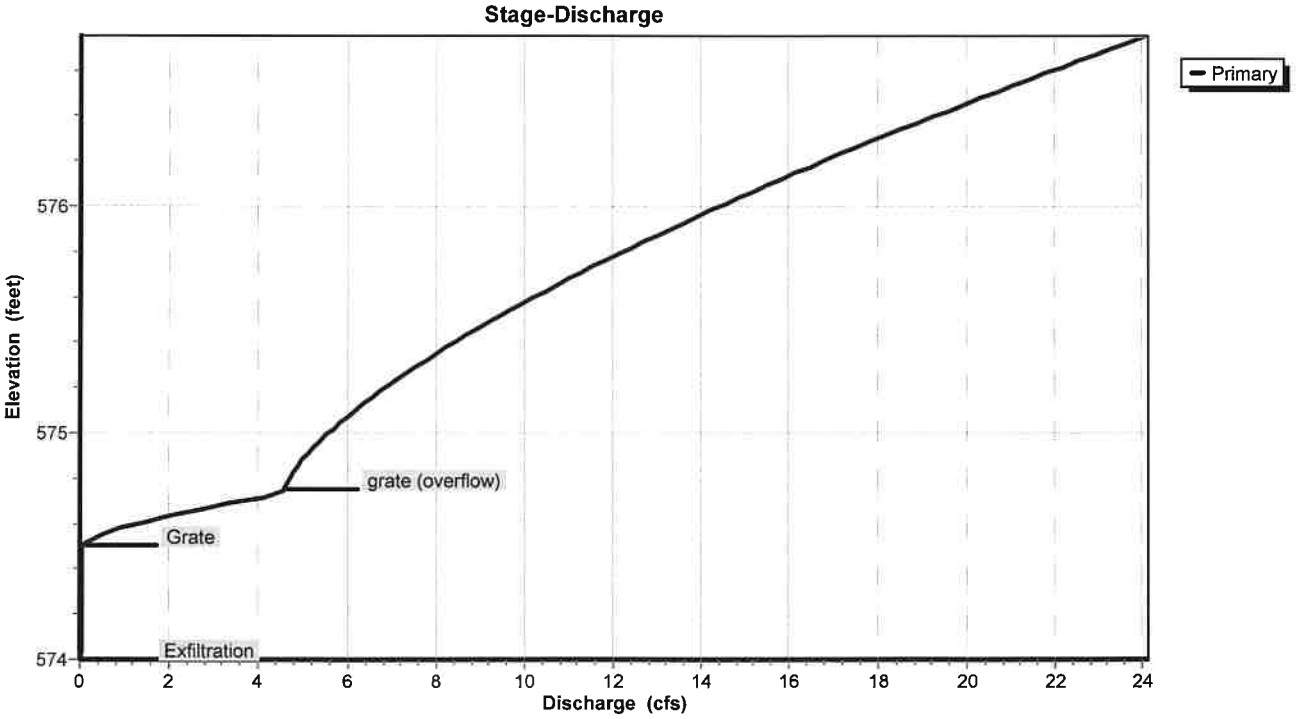
Primary OutFlow Max=5.88 cfs @ 12.09 hrs HW=575.05' (Free Discharge)
- **1=8" pipe** (Barrel Controls 4.82 cfs @ 6.14 fps)
  - **2=Grate** (Passes < 7.49 cfs potential flow)
  - **3=Exfiltration** (Passes < 0.04 cfs potential flow)
- **4=grate (overflow)** (Orifice Controls 1.06 cfs @ 1.76 fps)

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Pond 9P: Bioretention Area 3



Pond 9P: Bioretention Area 3



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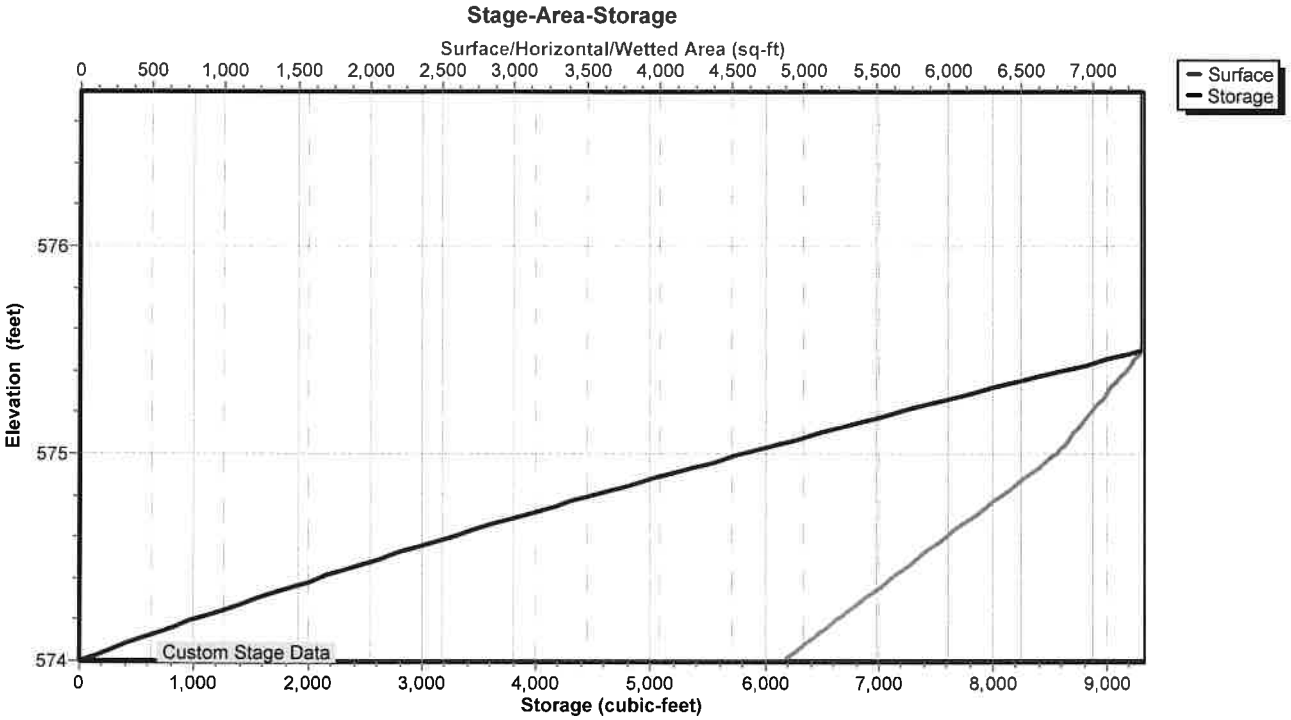
Pond 9P: Bioretention Area 3



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Hydrograph for Pond 9P: Bioretention Area 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	574.00	0.00
2.00	0.00	0	574.00	0.00
4.00	0.02	22	574.00	0.00
6.00	0.05	149	574.03	0.03
8.00	0.10	484	574.10	0.03
10.00	0.22	1,353	574.27	0.03
12.00	**9.61**	**5,288**	**574.92**	**5.19**
14.00	0.31	**2,872**	**574.54**	**0.33**
16.00	0.19	2,803	574.52	0.19
18.00	0.14	2,769	574.52	0.15
20.00	0.10	2,732	574.51	0.11
22.00	0.09	2,719	574.51	0.10
24.00	0.09	2,712	574.51	0.09
26.00	0.00	2,463	574.47	0.03
28.00	0.00	2,219	574.42	0.03
30.00	0.00	1,979	574.38	0.03
32.00	0.00	1,743	574.34	0.03
34.00	0.00	1,511	574.29	0.03
36.00	0.00	1,283	574.25	0.03
38.00	0.00	1,059	574.21	0.03
40.00	0.00	839	574.17	0.03
42.00	0.00	624	574.13	0.03
44.00	0.00	412	574.08	0.03
46.00	0.00	204	574.04	0.03
48.00	0.00	49	574.01	0.01
50.00	0.00	11	574.00	0.00
52.00	0.00	2	574.00	0.00
54.00	0.00	1	574.00	0.00
56.00	0.00	0	574.00	0.00
58.00	0.00	0	574.00	0.00
60.00	0.00	0	574.00	0.00

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Stage-Discharge for Pond 9P: Bioretention Area 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
574.00	0.00	575.04	5.81	576.08	15.37
574.02	0.03	575.06	5.93	576.10	15.60
574.04	0.03	575.08	6.06	576.12	15.84
574.06	0.03	575.10	6.18	576.14	16.08
574.08	0.03	575.12	6.31	576.16	16.32
574.10	0.03	575.14	6.45	576.18	16.56
574.12	0.03	575.16	6.58	576.20	16.81
574.14	0.03	575.18	6.72	576.22	17.05
574.16	0.03	575.20	6.87	576.24	17.30
574.18	0.03	575.22	7.01	576.26	17.55
574.20	0.03	575.24	7.16	576.28	17.80
574.22	0.03	575.26	7.31	576.30	18.05
574.24	0.03	575.28	7.46	576.32	18.30
574.26	0.03	575.30	7.62	576.34	18.56
574.28	0.03	575.32	7.78	576.36	18.81
574.30	0.03	575.34	7.94	576.38	19.07
574.32	0.03	575.36	8.10	576.40	19.33
574.34	0.03	575.38	8.26	576.42	19.59
574.36	0.03	575.40	8.43	576.44	19.85
574.38	0.03	575.42	8.60	576.46	20.11
574.40	0.03	575.44	8.78	576.48	20.38
574.42	0.03	575.46	8.95	576.50	20.64
574.44	0.03	575.48	9.13	576.52	20.91
574.46	0.03	575.50	9.31	576.54	21.18
574.48	0.03	575.52	9.49	576.56	21.45
574.50	0.03	575.54	9.67	576.58	21.72
574.52	0.15	575.56	9.86	576.60	22.00
574.54	0.36	575.58	10.05	576.62	22.27
574.56	0.64	575.60	10.24	576.64	22.55
574.58	0.97	575.62	10.43	576.66	22.83
574.60	1.34	575.64	10.62	576.68	23.10
574.62	1.74	575.66	10.82	576.70	23.38
574.64	2.19	575.68	11.02	576.72	23.67
574.66	2.67	575.70	11.22	576.74	**23.95**
574.68	3.18	575.72	11.42		
574.70	3.71	575.74	11.62		
574.72	4.28	575.76	11.83		
574.74	4.59	575.78	12.04		
574.76	4.61	575.80	12.25		
574.78	4.65	575.82	12.46		
574.80	4.70	575.84	12.67		
574.82	4.77	575.86	12.89		
574.84	4.84	575.88	13.10		
574.86	4.91	575.90	13.32		
574.88	4.99	575.92	13.54		
574.90	5.08	575.94	13.76		
574.92	5.17	575.96	13.99		
574.94	5.27	575.98	14.21		
574.96	5.37	576.00	14.44		
574.98	5.48	576.02	14.67		
575.00	5.59	576.04	14.90		
575.02	5.70	576.06	15.13		

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Stage-Area-Storage for Pond 9P: Bioretention Area 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
574.00	4,851	0
574.05	4,946	245
574.10	5,040	495
574.15	5,135	749
574.20	5,229	1,008
574.25	5,324	1,272
574.30	5,419	1,540
574.35	5,513	1,814
574.40	5,608	2,092
574.45	5,702	2,375
574.50	5,797	2,662
574.55	5,892	2,954
574.60	5,986	3,251
574.65	6,081	3,553
574.70	6,175	3,859
574.75	6,270	4,170
574.80	6,365	4,486
574.85	6,459	4,807
574.90	6,554	5,132
574.95	6,648	5,462
575.00	6,743	5,797
575.05	6,803	6,136
575.10	6,863	6,477
575.15	6,923	6,822
575.20	6,983	7,170
575.25	7,043	7,520
575.30	7,102	7,874
575.35	7,162	8,230
575.40	7,222	8,590
575.45	7,282	8,953
575.50	**7,342**	**9,318**
575.55	7,342	9,318
575.60	7,342	9,318
575.65	7,342	9,318
575.70	7,342	9,318
575.75	7,342	9,318
575.80	7,342	9,318
575.85	7,342	9,318
575.90	7,342	9,318
575.95	7,342	9,318
576.00	7,342	9,318
576.05	7,342	9,318
576.10	7,342	9,318
576.15	7,342	9,318
576.20	7,342	9,318
576.25	7,342	9,318
576.30	7,342	9,318
576.35	7,342	9,318
576.40	7,342	9,318
576.45	7,342	9,318
576.50	7,342	9,318
576.55	7,342	9,318
576.60	7,342	9,318
576.65	7,342	9,318
576.70	7,342	9,318
576.75	7,342	9,318

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Green Infrastructure & Water Quality Calculations

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Version 1.7
Last Updated: 2/22/21

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	

Design Point:	1	
P=	1.00	*inch*

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	6.10	3.30	54%	0.54	11,888	
2	1.00	0.00	0%	0.05	182	
3	4.40	2.70	61%	0.60	9,620	
4	1.70	1.00	59%	0.58	3,576	
5	1.50	1.00	67%	0.65	3,539	
6						
7						
8						
9						
10						
Subtotal (1-30)	14.70	8.00	54%	0.54	**28,804**	**Subtotal 1**
Total	14.70	8.00	54%	0.54	**28,804**	**Initial WQv**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	1.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**1.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	14.70	8.00	54%	0.54	28,804
Subtract Area	-1.00	0.00			
WQv adjusted after Area Reductions	**13.70**	**8.00**	58%	0.58	28,623
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	13.70	8.00	58%	0.58	**28,623**
WQv reduced by Area Reduction techniques					182

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Total Water Quality Volume Calculation

WQv(acre-feet) = [(P)(Rv)(A)] /12

All Subcatchments						
Catchment	Total Area (Acres)	Impervious Cover (Acres)	Percent Impervious %	Runoff Coefficient Rv	WQv (ft^3)	Description
1	6.10	3.30	0.54	0.54	11888.25	
2	1.00	0.00	0.00	0.05	182	
3	4.40	2.70	0.61	0.60	9619.50	
4	1.70	1.00	0.59	0.58	3575.55	
5	1.50	1.00	0.67	0.65	3539.25	
6						
7						
8						
9						
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Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	6.10	3.30	0.54	0.54	11888.25	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	54%	0.54	11,888	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		11,888	*ft^3*	
Enter Depth of Soil Media	*df*	1.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**8916**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	100	*ft*	
Filter Length	110	*ft*	
Filter Area	11000	*ft^2*	
Actual Volume Provided	14667	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?			Select Practice	
RRv	5,867			
RRv applied	**5,867**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	6,022	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

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Bioretention Worksheet

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor & Schueler, 1996)

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
5	1.50	1.00	0.67	0.65	3539.25	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	67%	0.65	3,539	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		3,539	*ft^3*	
Enter Depth of Soil Media	*df*	1.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**2654**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	49	*ft*	
Filter Length	100	*ft*	
Filter Area	4900	*ft^2*	
Actual Volume Provided	6533	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?		No	Select Practice	
RRv	2,613			
RRv applied	**2,613**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	926	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

(For use on HSG C or D Soils with underdrains)

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Conservation of Natural Areas

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice

Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft^3)	Precipitation (in)	Description
2	1.00	0.00	0.00	0.05	181.50	1.00	

Design Elements

Is Contiguous Area ≥ 10,000 ft2?	*Yes*
Will limits of disturbance be clearly shown on all construction drawings and marked in field/project development site with structural barriers?	*Yes*
Is the Conservation area located in an acceptable conservation easement instrument that ensures perpetual protection of proposed area?	*Yes*
Does the easement specify how the natural area vegetation will be managed and boundaries will be marked?	*Yes*
Does the conservation area receive runoff from other contributing areas?	*No*
Does Conservation Area drain to a Design Point?	*No*
Is Sheet Flow to Riparian Buffer or another area based practice already being Used for this area?	*No*

Are All Criteria in Section 5.3.1 Met?	*Yes*

Area Reduction Adjustments

Subtract	***1.00***	***Acres from Total Area***
Subtract	***0.00***	***Acres from Total Impervious Area***

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Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A		55%
B		40%
C		30%
D	**17.40**	20%
Total Area	17.4	
Calculate the Minimum RRv		
S =	**0.20**	
Impervious =	8.00	*acre*
Precipitation	1	*in*
Rv	0.95	
Minimum RRv	**5,518**	***ft3***
	0.13	af

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NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	28804	*0.661*
30	Total RRV Provided	8662	*0.199*
31	Is RRv Provided ≥WQv Required?	No	
32	Minimum RRv	5518	*0.127*
32a	Is RRv Provided ≥ Minimum RRv Required?	Yes	
33a	Total WQv Treated	159626	*3.664*
34	Sum of Volume Reduced & Treated	168287	*3.863*
34	Sum of Volume Reduced and Treated	168287	*3.863*
35	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes	

Apply Peak Flow Attenuation			
36	Channel Protection	*Cpv*	
37	Overbank	*Qp*	
37	Extreme Flood Control	*Qf*	
	Are Quantity Control requirements met?		

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Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		Total Contributing Area	Total Contributing Impervious Area	WQv Reduced (RRv)	WQv Treated
			(acres)	(acres)	cf	cf
Area/Volume Reduction	Conservation of Natural Areas	RR-1	1.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4	0.00			
	Bioretention & Infiltration Bioretention	F-5	7.60	4.30	8480	6948
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5	9.8	3.40		152678.000
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction →			1.00	0.00	182	
Totals by Volume Reduction →			0.00	0.00	0	
Totals by Standard SMP w/RRV →			7.60	4.30	8480	6948
Totals by Standard SMP →			9.80	3.40		152678
Totals (Area + Volume + all SMPs) →			18.40	7.70	8,662	159,626
	Impervious Cover √	error				

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Stage-Area-Storage for Pond 6P: WQv

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
563.00	710	0
563.15	776	111
563.30	843	233
563.45	909	364
563.60	975	506
563.75	1,042	657
563.90	1,108	818
564.05	1,181	989
564.20	1,267	1,173
564.35	1,353	1,369
564.50	1,439	1,579
564.65	1,524	1,801
564.80	1,610	2,036
564.95	1,696	2,284
565.10	1,796	2,546
565.25	1,901	2,823
565.40	2,007	3,116
565.55	2,113	3,425
565.70	2,219	3,750
565.85	2,324	4,090
566.00	2,430	4,447
566.15	2,561	4,821
566.30	2,692	5,215
566.45	2,822	5,629
566.60	2,953	6,062
566.75	3,084	6,515
566.90	3,215	6,987
567.05	3,356	7,479
567.20	3,519	7,995
567.35	3,681	8,535
567.50	3,844	9,100
567.65	4,007	9,688
567.80	4,169	10,301
567.95	4,332	10,939
568.10	4,731	11,613
568.25	5,249	12,361
568.40	5,767	13,188
568.55	6,285	14,091
568.70	6,802	15,073
568.85	7,320	16,132
569.00	7,838	17,269
569.15	8,402	18,487
569.30	8,965	19,790
569.45	9,529	21,177
569.60	10,093	22,648
569.75	10,657	24,204
569.90	11,220	25,845
570.05	11,796	27,571
570.20	12,398	29,385
570.35	13,000	31,290
570.50	13,601	33,285
570.65	14,202	35,371
570.80	14,804	37,546
570.95	15,406	39,812
571.10	16,056	42,170
571.25	16,731	44,629
571.40	17,406	47,189
571.55	18,081	49,851
571.70	18,756	52,614
571.85	19,431	55,478
572.00	20,106	58,443
572.15	20,820	61,512
572.30	21,534	64,689
572.45	22,248	67,973
572.60	22,961	71,363
572.75	23,675	74,861
572.90	24,389	78,466
573.05	25,107	82,178
573.20	25,834	85,998
573.35	26,561	89,928
573.50	27,288	93,967
573.65	28,014	98,114
573.80	28,741	102,371
573.95	29,468	106,737
574.10	32,660	111,335
574.25	37,086	116,565
574.40	41,511	122,460
574.55	45,937	129,019
574.70	50,362	136,241
574.85	54,788	144,127
575.00	**59,213**	**152,678**

WQv

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WMA ENGINEERING DPC|DBA
EMPIRE GEOTECHNICAL ENGINEERING SERVICES

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September 15, 2021
Project No. WB-21-054
(SJB Project No. BE-21-054

William T. Severyn
Severyn Development, Inc.
43 Central Avenue
Lancaster, New York 14086

Re: Geotechnical Engineering Report
Proposed Site Development
Sawyer's Landing
Sweet Home Road and Dodge Road
Amherst, New York

Dear Mr. Severyn:

Empire Geotechnical Engineering Services (Empire), is pleased to submit the enclosed Geotechnical Engineering Report for the above referenced project to Severyn Development, on behalf of SJB Services, Inc. (SJB). An electronic copy (pdf file format) of this report has also been emailed, for your use and for distribution, as appropriate.

Please contact me should you have any questions or wish to discuss this report. Thank you for considering SJB/Empire for this work and we look forward to working with you throughout the completion of this project.

Sincerely,

Empire Geotechnical Engineering Services

Wanda M. Allen, P.E.
Geotechnical Engineer

Enc.: Geotechnical Engineering Report

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Geotechnical Evaluation Report for Proposed Site Development Sawyer's Landing Sweet Home Road and Dodge Road Amherst, New York

Prepared For:

Severyn Development, Inc.
43 Central Avenue
Lancaster, New York 14086

Prepared By:

WMA Engineering, DPC dba
Empire Geotechnical Engineering Services
5167 South Park Avenue
Hamburg, New York 14075

9/15/21

Project No.: WB-21-054
Ref. SJB Project No.: BE-21-054
September 2021

A Woman Owned Firm

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APPENDICES

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1.00 INTRODUCTION

1.10 GENERAL

This report summarizes the results of a subsurface exploration program and geotechnical engineering evaluation completed by Empire Geotechnical Engineering Services (Empire) for the proposed Sawyers Landing Housing project planned at Sweet Home Road and Dodge Road in Amherst, New York.

The geotechnical engineering evaluation was completed by Empire at the request of and as authorized by SJB Services, Inc. (SJB), our affiliated drilling and testing company, who was retained by Severyn Development, Inc. (Severyn) to complete this work. Our evaluation and recommendations are based on a total of seven (7) test borings completed by SJB at the proposed project site. In addition, SJB competed laboratory testing on selected soil samples to aid in our evaluation.

Empire prepared this report, which summarizes the subsurface conditions encountered by the test borings and presents geotechnical engineering considerations and recommendations to assist Severyn in the development of the site.

1.20 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The proposed Sawyer's Landing Housing project site is located off the north side of Dodge Road, east of Sweet Home Road in Amherst, Erie County, New York. The entrance to the project site is located at the northeast corner of the intersection of Sweet Home Road and Dodge Road. The approximate location of the project site is shown on Figure No. 1. The project site is heavily wooded.

The proposed site development is planned to include construction of forty-nine, two-story, wood framed duplex structures. Three, four-story apartment buildings are also planned which will consist of a combination of steel and wood framed construction. The proposed housing structures are planned to be supported on a shallow spread foundation system. The duplexes may contain a basement structure. The ground floors will be constructed as slab-on-grade.

Based on the subsurface conditions encountered, it appears a shallow spread foundation system should be conducive for the lightly loaded, wood frame type buildings provided the site grade filling is limited and/or completed in a controlled manner with sufficient time provided to allow consolidation of the underlying very soft clay soils, as discussed further below. Depending on the actual wall and column loads, a deep foundation system to support the proposed four-story apartment buildings may be necessary.

The site appears to be relatively level based on the ground surface elevations (El.) obtained at the test boring locations which vary from El. 570.8 feet (B-1) and 571.8 feet (B-3 and B-5). It is our understanding the existing site grades are to be raised six feet, and therefore, if sufficient time is not allotted for consolidation of the underlying very soft clay soils due to site grade fill, then a deep foundation may also be necessary to support the duplex structures, as discussed further below.

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A Google Earth™ aerial photograph of the existing site conditions, along with the test boring locations, is presented as Figure 2. A site plan, showing the proposed site development, along with the test boring locations completed as part of this study, is presented on Figure 3.

2.00 SUBSURFACE EXPLORATION

The subsurface exploration program completed consisted of a total of seven (7) test borings, designated as B-1 through B-7. The test borings were completed by SJB between June 1st and 4th, 2021.

The test boring locations were established by Empire on a site plan provided by Severyn. The borings were located to provide general coverage of the proposed site. SJB then established the coordinates of the exploration locations using Google Earth™. The exploration locations were then located / staked in the field, using a handheld GPS instrument with slight modifications for access. The GPS coordinates of the boring locations were then obtained and recorded and used to prepare Figure 2 using a Google Earth™ aerial photograph. The aerial was then overlaid on the site plan provided by Severyn to create Figure 3. The GPS coordinates are summarized on Figure 2. The locations should be considered approximate based on the methodologies utilized.

A laser level was used to determine the ground surface elevation at the test boring locations using the top of the fire hydrant located off the east side of Dodge Road, near the northwest corner of the project site, as a benchmark. The approximate benchmark location is shown on Figure 3. The benchmark has a reported elevation (El.) of 577.69 feet.

The test borings were made with a Central Mine Equipment model 550X, rubber tire all-terrain type vehicle mounted drill rig. The borings were advanced in the overburden soils using hollow stem auger and split spoon sampling techniques until a depth of at least 25 feet below the existing ground surface. Test borings B-1 and B-4 were further advanced until auger refusal was met at depths of 58.0 feet and 59.0 feet, respectively. Split spoon samples and Standard Penetration Tests (SPTs) were taken continuously from the ground surface to a depth of 16 feet or 18 feet and then in intervals of five feet or less until boring completion or until sample spoon refusal was met at depths of 56.1 feet and 56.2 feet. The split spoon samples and SPTs were completed in general accordance with *ASTM D1586 – "Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils"*.

A relatively undisturbed Shelby tube sample of the very soft clay soils was obtained between depths of 30.0 feet and 32.0 feet from test boring B-4 for laboratory testing. The Shelby tube sample was obtained in general accordance with *ASTM D 1587 - "Standard Practice for Thin-Walled Tube Geotechnical Sampling of Soils"*.

The refusal material encountered in boring B-4 was cored using a NQ size double tube core barrel in accordance with *ASTM D 2113 – "Standard Practice for Rock core Drilling and Sampling of Rock for Site Investigation"*. Three (3) feet of the refusal material was cored at this location after reaching auger refusal.

A geologist from SJB prepared the test boring logs based on visual observation of the recovered soil and rock samples and review of the driller's field notes. The soil samples were described based on visual/manual estimation of the grain size distribution, along with characteristics such as color,

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relative density, consistency, moisture, etc. In addition, the Unified Soil Classification System (USCS) group symbols were also established and are presented on the logs for the soil types encountered. The recovered core sample was also described, including characteristics such as color, rock type, hardness, weathering, bedding thickness, core recovery and rock quality designation (RQD). The test boring logs are presented in Appendix A, along with general information and a key of terms and symbols used to prepare the logs.

3.00 LABORATORY TESTING

Selected recovered soil samples from the test borings, including the clay soil collected from the Shelby tube sample were tested in SJB's geotechnical testing laboratory to confirm soil classifications and provide index properties to aid in our recommendations. The laboratory testing program included the following tests:

- Moisture content testing in general accordance with *ASTM D 2216 – "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass"*;
- Grain size analysis in general accordance with *ASTM D 6913 – "Standard Test Method for Particle-Size Distribution (Gradation) of Soils using Sieve Analysis"*;
- Liquid limit, plastic limit and plasticity index of cohesive fine grained soil samples in accordance with *ASTM D 4318 – "Standard Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils"*;
- Torvane shear and pocket penetrometer testing of undisturbed portions of the clay soil extracted from the Shelby tube sample to provide an estimated indication of the undrained shear strength of the clay soil. The torvane shear testing was performed in general accordance with *ASTM D 4648 – Standard Test Method for Laboratory Miniature Vane Shear Test for Saturated Fine-Grained Cohesive Soils*;
- Consolidation testing of an undisturbed portion of the clay soil extracted from the Shelby tube sample in accordance with *ASTM D 2435 – "Standard Test Method for One-Dimensional Consolidation Properties of Soils Using Incremental Loading";* and

The results of the laboratory test data are summarized further below and are presented in Appendix B.

4.00 SUBSURFACE CONDITIONS

The general stratigraphy encountered in the test borings consisted of surface topsoil followed by indigenous sand, silty clay and gravel soil deposits overlying Shale rock. Man placed fill soils were not apparent at the test boring locations. However, it should be expected that fill soils and/or possible reworked indigenous soils will be encountered near the adjacent, previously developed properties. The soil and bedrock stratigraphy encountered, and the groundwater conditions observed are described in more detail below and on the test boring logs in Appendix A.

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The upper indigenous soils consisted predominately of brown to gray, fine to coarse sand with varying amounts of silt, clay and gravel. Beneath the sand soils, at depths varying from about 2 feet to 8 feet, brown to brown-gray, silty clay soil deposits were encountered. The silty clay soils extend to boring completion at the shallower test boring locations. At test boring locations B-1 and B-4, brown to gray, fine gravel intermixed with varying proportions of fine-coarse sand and silty clay was recovered in the split spoons collected below depths of about 40 feet. The indigenous soils are classified as CL, SC-SM, SM-SC, SP-SW, GC-GM and GP group soils using the Unified Soil Classification System (ASTM D2488).

The SPT "N" values obtained in the indigenous silty clay soil deposits ranged from "w.o.h. - weight of hammer" (i.e. the sample spoon was advanced with only the weight of the drop hammer and drill rods applied statically to the sample spoon) to 22, indicating the cohesive soils vary from a very soft to very stiff consistency. The medium to very soft consistency clay soils were encountered generally at and below a depth of about 10 to 12 feet at the test boring locations. The relative density of the upper sand soils varies from loose to firm based on SPT "N" values ranging from 5 to 25. The underlying, gravel soil deposits are of a firm to very compact relative density based on SPT "N" values ranging from 21 to greater than 50. Sample Spoon Refusal – "REF" (i.e. 50 blows to advance the split spoon with 6-inches or less of penetration) was also encountered within the gravel soil deposits which can be an indication that some cobbles and boulders are present.

Auger refusal was encountered in test borings B-1 and B-4 at depths of 58.0 feet and 59.0 feet, respectively, corresponding to El. 512.8 feet and El. 512.6 feet. The refusal material encountered at boring B-4 was cored after auger refusal was met.

The upper 6-inches or so of the material recovered consisted of brown, fine-coarse sand with some silty clay and little fine gravel. Beneath the sand, gray Shale rock was recovered. The Shale rock is described as gray, hard, highly weathered, laminated to bedded. Both natural and mechanical fractures were noted within the rock core recovered. The core recovery for the Shale rock was 83%, while the rock quality designation (RQD) value was 14%, indicating the recovered rock core has a very poor rock mass quality.

Water level measurements were made in the test borings at the completion of overburden drilling and soil sampling and are noted on the subsurface exploration logs in Appendix A. Freestanding water was present in borings B-1 and B-4 at depths of about 6 feet and 10.8 feet, respectively. Freestanding water was not present in the remaining test holes immediately following the completion of drilling operations. Given the fine grained indigenous clay soils present, which can partially seal the sides of the boreholes, it appears groundwater did not have sufficient time to accumulate or fully stabilize in the boring holes within the time that had elapsed from the completion of drilling operations and the time of the observations/measurements. It appears that the clay soils are saturated at a depth of about 10 feet and below, based on the moist-wet to wet nature and relatively softer consistency of the clay soils obtained at and below this depth.

In addition, based on the moist-wet to wet nature of the upper sand soil deposits, it should be expected that some zones of perched or trapped groundwater could be present at various times and locations in the upper more permeable indigenous sand soils, which overlie the less permeable clay soil deposits. Perched groundwater conditions can be particularly more prevalent following heavy or extended periods of precipitation and during seasonally wet periods.

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The installation of a groundwater observation well(s) would help to better define the groundwater conditions present on the site. It should be expected that groundwater conditions could vary with location and with changes in soil conditions, precipitation and seasonal conditions, including site drainage conditions.

5.00 LABORATORY TESTING RESULTS

The grain size analyses of the samples obtained at test boring locations B-5 and B-7 generally confirmed our visual soil classifications as summarized on test boring logs included in Appendix A.

The moisture content of the silty clay soil samples tested from test boring B-4, between depths of about 8 feet to 37 feet, generally increase with depth from 23.9% to 48.9% The moisture content, liquid limit, plastic limit and plasticity index of the silty clay soil samples tested from the borings are as follows:

Summary of Moisture Contents and Atterberg Limits

Boring	Sample Depth	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
B-1	10’-12’	39.4 %	44	18	26
B-4	14’-16’	40.0 %	36	17	19
B-4	30’-32'	46.5 %	49	23	26

The plasticity indices indicate the silty clay deposits vary from a medium (plasticity index less than 20) to high plasticity (plasticity index greater than 20).

Consolidation testing and the undrained shear strength (Torvane and Pocket Penetrometer values) of the Shelby tube sample obtained within the very soft clay soil (B-4, 30’-32’), suggest that these soil deposits have a pre-consolidation pressure in the range of about 0.7 to 1.0 tsf. Based on the current overburden stress, the stratum of soft to very soft silty clay is considered to be normally consolidated. Accordingly, the settlement from placement of the site grading fill load is expected to the result in predominately virgin consolidation within this stratum.

The modified recompression index ($C_r/1+e_o$), obtained from the consolidation test was 0.026 and the modified compression index ($C_c/1+e_o$) was 0.141. The time rate coefficient of consolidation within the virgin loading range of around 1.5 tsf was about 0.05 ft^2/day.

The Torvane shear strength and Pocket Penetrometer unconfined compressive strength tests performed on the Shelby tube samples resulted in an undrained shear strength in the range of 180 (psf) to 280 psf. The Torvane and Pocket Penetrometer tests are considered to be a crude test indicator and therefore may not be fully representative of the undrained shear strength.

Refer to the laboratory test data presented in Appendix B for additional information.

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6.00 GEOTECHNICAL CONSIDERATIONS AND RECOMMENDATIONS

6.10 GENERAL

Development of the proposed Sawyer's Landing project site will be impacted primarily by the very soft to medium clay soils encountered at and below a depth of about 10 to 12 feet. These soil conditions are considered marginal for the support of building structures on a spread foundation system, particularly if heavier structure loads would be planned, such as associated with multiple story steel frame and concrete/masonry buildings and large spans. Support of the relatively lightly loaded, wood framed building structures, as currently planned, however, can be accomplished using a spread foundation system, provided a relatively low bearing pressure [1,250 pounds per square foot (psf)] is used for the spread foundation design and that net site grade fills are limited to around 1 to 2 feet or less.

In addition, foundations should also not be designed to bear at grades lower than about El. 564 feet to provide sufficient separation from the underlying very soft to medium clay soils with regard to bearing capacity and settlement. Continuous wall footings should also not be greater than 2.5 feet in width, and column footings should not be greater than 5.0 feet in width, in order to limit potential bearing/shearing failure and excess settlement. Accordingly, the wall and column loads would be limited to about 3.1 kips per square feet and 31 kips, respectively.

In all cases a minimum of 30-inches of separation between the bottom of the footings and the very soft to soft clay soils will need to be maintained. Accordingly, if the foundations are to be constructed below an elevation of about 564 feet, corresponding to a depth of about 7 to 8 feet below existing site grades, the existing soils would need to be removed a minimum of 30-inches and replaced with Engineered fill (i.e. compacted Structural Fill or flowable fill), to provide the necessary separation between the bottom of the footings and the softer clay soils.

As mentioned above, currently about 6 feet of site grade fill is planned for site development. Therefore, it does not appear any of the building foundations will bear below about El. 564 feet. However, the proposed site grading should be reviewed for each individual building to determine if undercutting maybe required. Additional test borings, or excavation of test pits at the time of construction, could be completed to determine the actual depth/elevation of the medium to very soft clay soils as compared to the proposed bearing grade elevations, at each building location where footings may bear near El. 564 feet. In addition, due to the upper generally loose soil conditions in correlation with the poorly graded silty sand soils, which are highly sensitive to disturbance and strength degradation when groundwater is present, it should be anticipated that the foundation bearing grades may need to be undercut in localized areas to establish a firm and stable subgrade for the foundations. The subsurface conditions between and away from the test boring locations are also expected to vary and may require adjustments in the suitable subgrade elevation based on actual conditions encountered at the time of construction. Accordingly, close inspection of the foundation bearing grades by qualified geotechnical personnel should be required at the time of construction.

Placement of subgrade fill to raise site grades, as anticipated, will need to proceed sufficiently ahead of foundation and slab on grade construction. Currently, net grade increases of about 6 feet of fill are planned across the proposed project site.

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The surcharge weight of approximately 2 feet of fill is expected to result in a total of around 2-inches of consolidation settlement within the underlying soft to very soft clay soil deposits. It is estimated that 6 feet of fill could potentially result in a total of about 5 to 6-inches of consolidation settlement. The settlement from the surcharge weight of the site grading fill placement will be independent of the additional settlement (i.e. about ¾-inch) that will occur from the duplexes' structural loads.

It is anticipated that where site grade increases within an individual building structure is generally uniform, the settlement should be relatively uniform and therefore would have minimal impacts on the building foundations and ground floor slabs. However, if the site grade fill within an individual building would vary from about nil to 2 feet, differential settlement on the order of 2-inches could occur and therefore may result in cracking and distortion of the building foundations and floor slabs. The Structural Engineer should be consulted to determine a tolerable range for differential settlement.

The time rate for about 60% to 70% of the consolidation settlement to occur from the site filling is estimated to be about 3 to 4 years. "Surcharging" the building site(s) to decrease the time allotted for consolidation of the clay soils could be considered. Accordingly, the site grade fill could be overbuilt 4 to 5 feet above the finished floor grades to provide some additional surcharging to further induce, and help accelerate, the settlement. Any additional fill should extend out about 20 feet from the building limits and should then be removed a few weeks prior to the foundation and building construction. The site grade fill can proceed following proper preparation of the subgrades as summarized in Section 6.70.3. All fill placement and compaction should be closely monitored and tested on a "full-time" basis by qualified geotechnical personnel, as recommended in Appendix C.

The installation of wick drains could also be considered to shorten the time period to allow consolidation settlement to occur. A settlement monitoring program (i.e. installation of settlement plates and piezometers) should be implemented for the fill construction to monitor the settlement and confirm that the settlement has generally stabilized. This should be implemented especially in any areas at which the amount of fill placement within an individual building will vary by more than 2 feet to limit differential settlement effects.

If the project schedule cannot accommodate a preloading waiting period, load compensation with geofoam blocks or depressed raft foundations may be a possible alternative. In this way, the geofoam block or raft foundation would be used in place of normal weight fill and used to replace existing soils as necessary such that there is no increase in net load beneath the foundations and floor slabs. Lightweight aggregate fill may also be an option to mitigate settlement.

Alternatively, support of the building foundations and floor slabs (structural floor) on a deep foundation system could be considered. However, negative skin friction (downdrag forces) due to the site filling settlement would need to be considered in the design of deep foundations. It should be anticipated that on-going maintenance of the pavement areas and underground utilities may also be necessary due to consolidation of the underlying subgrade soils if these areas are not preloaded.

Empire can be consulted to further assist in planning the site grade fill options (surcharging/wick drains/settlement monitoring plates and piezometers) to ensure the majority of the consolidation settlement will occur prior to foundation and slab on grade floor construction, or the options for use of a deep foundation system.

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More detailed recommendations to assist in planning for site development and design of building foundations and slab-on-grade floor construction are provided in the following report sections.

6.20 SPREAD FOUNDATION DESIGN

Spread foundations should bear on suitable, relatively undisturbed, indigenous soil subgrades or they can bear on Engineered Fill (i.e. compacted Structural Fill or Flowable Backfill) placed over suitable indigenous soil subgrades. Suitable indigenous soil bearing grades should consist of generally stiff, silty clay and firm silty sand soil deposits, which are free of topsoil, fill, organics, loose, soft, wet, "mucky" or otherwise deleterious conditions.

Suitable indigenous bearing subgrades at the test boring locations were generally encountered at a depth of about 2 feet below existing site grades. However, as noted above, foundations should not be designed to bear below about El. 564 feet, corresponding to a depth of about 7 to 8 feet below existing site grades, due to influence of the softer clay soils with regard to bearing capacity and settlement.

In areas where the proposed foundations will bear on site grade fill, it is recommended the final 1.5 feet of fill consist of Structural fill. If Structural Fill is placed beneath spread foundations, it should extend beyond the foundation limits a horizontal distance equal to at least 0.75 times the thickness of the Structural Fill layer beneath the foundation. Excavations, therefore, will need to be planned and sized accordingly. Recommendations for Structural Fill material along with its placement and compaction are presented in Appendix C. An underlying stabilization geotextile (i.e. Mirafi 500X or suitable equivalent) should be placed beneath the compacted Structural Fill material.

Flowable backfill material, if used as Engineered fill beneath foundations, should consist of a non-swelling cement - fine aggregate type material and should have a minimum 28-day compressive strength (f'c) of 250 pounds per square inch (psi). The flowable backfill should extend at least 12 inches horizontally beyond the foundation limits for its entire depth.

Spread foundations constructed on suitable indigenous soil bearing grades or on properly constructed Engineered Fill materials placed over the suitable soil bearing grades can be sized based on a maximum net allowable bearing pressure of 1,250 psf. However, it is recommended that continuous wall footers not exceed 2.5 feet in width and isolated column foundations not exceed 5.0 feet in width.

Interior building foundations should be embedded a minimum of 1.0 foot below the finished floor elevation to develop adequate bearing capacity. Exterior foundations should be embedded a minimum of 4.0 feet below finished exterior grades for frost protection. All foundations, however, must bear on suitable bearing grades in accordance with our recommendations.

It is estimated that spread foundations sized and properly constructed in accordance with our site preparation recommendations would undergo normal consolidation settlement of around ¾-inch. The foundation settlement is independent from the settlement due to the surcharge weight of site grade fill, as discussed above.

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6.30 SLAB-ON-GRADE FLOOR DESIGN

The slab-on-grade floor for the proposed buildings can be constructed over the existing soil subgrades or on properly placed and compacted site grade fill, which is placed to raise site grades following proper subgrade preparation, as outlined in Section 6.70.3. If any organic soils are present at the subgrade elevation, they should be removed and replaced with compacted Suitable Granular Fill or Structural Fill as described in Appendix C.

A minimum of 8 inches of Subbase Stone is recommended beneath the lightly loaded floor slabs. The subbase stone should be increased to 12 inches where heavier loading conditions are anticipated (i.e. mechanical rooms, storage areas, etc.). Recommendations for Subbase Stone are presented in Appendix C. A suitable stabilization/separation geotextile, such as Mirafi 500X, should be placed over the existing soil subgrades prior to placement of Suitable Granular Fill to raise the site grades, where necessary, or the subbase stone layer.

The floor slabs may be designed as slab-on-grade using a modulus of subgrade reaction of 150 pounds per cubic inch (pci) at the top of the subbase layer. It is recommended that the slab-on-grade floors be constructed such that they float on the subbase and subgrades and are not structurally connected to, or resting directly on, perimeter walls or column footings in order to limit potential differential settlement effects, unless the slab / wall or column interface is designed with sufficient reinforcement to bridge potential differential settlement effects at these interfaces.

It is noted that the above subbase stone thicknesses are not designed for carrying construction vehicle loads. Therefore, it may be desirable for the Contractor to temporarily increase the Subbase Stone thickness within the building pad areas to provide a suitable working surface to stage the construction, carry construction vehicle loads and protect the underlying subgrades. This will be particularly important if construction proceeds during seasonally wet periods. The additional subbase stone material could then be removed in preparation for the actual floor construction and re-used as foundation backfill, pavement subbase, or as otherwise determined appropriate.

6.40 LATERAL EARTH PRESSURES FOR BELOW GRADE WALL DESIGN

The below grade walls of the basement structure should be designed based on lateral earth pressures caused by the load of backfill against the wall and the surcharge effects from any permanent or temporary loads. In addition, due to the possible presence of perched groundwater conditions, foundation drains to relieve potential hydrostatic pressure against the walls, along with damp proofing, as discussed below, should be incorporated into the design. Alternatively, basement structures could be designed to resist potential full hydrostatic pressure. In such case it should also be waterproofed.

Below grade walls should be designed to resist “at rest” lateral earth pressure computed on the basis of an “equivalent fluid unit weight” of 65 pounds per cubic foot (pcf). This is based on the assumption that suitable perimeter exterior foundation drainage will be provided, and the wall backfill beyond the drainage system is a Suitable Granular Fill or Structural Fill, as described in Appendix C.

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6.50 FOUNDATION DRAINS

Depressed foundation walls should include a foundation drainage system to intercept any perched groundwater and relieve potential hydrostatic pressures from developing against the walls. The foundation drainage system should be properly designed, installed and maintained for long-term performance and should drain to a sump and pump system or gravity drain to a down slope relief point. The foundation drainage system design should include the following:

1. It is recommended that the exterior of the foundation walls be coated with an appropriate damp proofing material.

2. The foundation drainage system should include a drainage/separation geotextile installed around drainage stone, which surrounds a slotted under-drainpipe. The drainage stone should be sized in accordance with the pipe slotting. A crushed aggregate conforming to NYSDOT Standard Specifications Section 703-02, Size Designation No. 1 (½-inch washed gravel or stone) is generally acceptable for slotted under-drainpipe. The foundation under-drainpipes should be set at a depth of about 1 foot below the top of the finish floor grade.

3. A pervious granular backfill or a suitable geosynthetic drainage composite (i.e. Miradrain, Delta MS, etc.) should be placed against the foundation wall, above the drainage system, to allow infiltration to the drainage system. Concrete Sand, which meets the minimum requirements of NYSDOT Standard Specifications Section 703-07 (100 percent passing 3/8 inch sieve to maximum of 3 percent passing a No. 200 sieve), is generally acceptable as pervious granular backfill. Crusher run stone Structural Fill is also acceptable. The pervious granular backfill against the wall should be a nominal 2 feet in width and should extend to about 1 to 2 feet below the finished grade surface, where it may be capped off with the on-site soil.

6.60 SEISMIC DESIGN CONSIDERATIONS

Based on the subsurface conditions encountered in the test borings, the proposed Sawyer's Landing Housing project site should be classified as Seismic Site Class "E" in accordance with ASCE 7-16, Table 20.3-1, as referenced in the 2020 Building Code of New York State (IBC 2018). Therefore, seismic design can be based on this seismic site classification.

The spectral response accelerations at the project site were obtained by Empire using the SEAOC / OSHPD web site application https://seismicmaps.org/. Using the site location, the spectral response accelerations are 0.169g for the short period (0.2 second) response (S_S) and 0.045g for the one second response (S_1). For design purposes, these spectral response accelerations must be adjusted for the Seismic Site Class "E" soil profile determined for the project site.

Accordingly, the adjusted spectral response accelerations for Site Class "E" are as follows:

- Short Period Response (S_{MS}) - 0.406g
- 1 Second Period Response (S_{M1}) - 0.190g

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The corresponding five percent damped design spectral response accelerations (S_{DS} and S_{D1}) are as follows:

- S_{DS} - 0.271g
- S_{D1} - 0.126g

6.70 SITE PREPARATION AND CONSTRUCTION

6.70.1 Construction Dewatering

It is anticipated permanent groundwater conditions are present at a depth of about 8 to 10 feet below existing site grades. Therefore, deeper utility excavations may encounter permanent groundwater conditions. It is anticipated that shallow excavations will encounter perched groundwater. Accordingly, construction dewatering will be required for surface water control and for excavations, which encounter groundwater conditions.

Surface water should be diverted away from and prevented from accumulating on exposed soil subgrades. The exposed soil subgrades will be susceptible to strength degradation in the presence of excess moisture. Surface water should be controlled with diversion berms, swales, and proper site grading.

Dewatering should be implemented in conjunction with excavation work such that the work generally proceeds in the dry. Groundwater levels should be maintained at least 1 to 2 feet below the bottom of the foundation excavations. It is anticipated that diversion berms, proper site grading, and sump and pump methods of dewatering will be sufficient to control surface water and perched groundwater conditions, if encountered. Placement of a working mat of drainage stone, in the bottom of the excavation, in conjunction with sumps and pumps placed in the drainage layer, will also aid in dewatering these excavations. Surface water and groundwater dewatering plans should include implementation of measures to control erosion, sedimentation and the migration of soil fines.

6.70.2 Excavation and Foundation Construction

All topsoil, organics, disturbed soils, and any soft, loose, wet or otherwise deleterious indigenous soil material, beneath the proposed foundation bearing grades, should be undercut and removed. Resulting excavations should be backfilled with controlled Structural Fill or flowable backfill.

Excavation to the proposed foundation bearing grades should be performed using a method, which reduces disturbance to the indigenous soil bearing grades, such as a backhoe equipped with a smooth blade bucket. The proposed foundation bearing grades should be observed and evaluated by qualified geotechnical personnel, prior to placement of Engineered Fill and/or the foundation. Any placement and compaction of Structural Fill beneath foundations should be observed and tested by qualified personnel.

All soil bearing grades for foundation construction should be protected from precipitation and surface water. Water should not be allowed to accumulate on the soil bearing grades and the bearing grades should not be allowed to freeze, either prior to or after construction of foundations. If bearing grades are not protected and degrade, they must be undercut/removed accordingly.

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After completion of the foundation construction, the excavations should be backfilled as soon as possible and prior to construction of the superstructure. It is recommended that the foundation excavations, within slab-on-grade and pavement areas, be backfilled with a Suitable Granular Fill or Structural Fill, as described in Appendix C.

6.70.3 Subgrade Preparation for Slab-On-Grade Construction

The site preparation work should be performed during dry periods to minimize potential degradation of the subgrade soils and undercuts which may be required to establish a stable base for construction. It should be understood that the existing subgrade soils will be sensitive and can be expected to degrade and lose strength when they are wet and disturbed by construction equipment traffic.

Accordingly, efforts should be made to maintain the subgrades in a dry and stable condition at all times and minimize construction traffic directly over these soils. These efforts should include installation of drainage swales and underdrains (i.e. “French drains”) to intercept and divert surface runoff and groundwater away from the construction areas, proper grading and sloping of the subgrade and “sealing” of the surface, at the end of each day or when rain is anticipated, with a smooth drum roller to promote runoff, and restricting construction equipment traffic from traveling directly over the subgrade surfaces, especially when they are wet.

All trees, stumps, tree root matter, vegetation, topsoil, and any other deleterious materials within the proposed slab-on-grade and pavement areas should be removed. It is noted that the upper surface soils (i.e. above a depth of about 2 feet) are relatively loose/soft. Standing water was also noted across the project site. In addition, organics were noted within the upper soil samples. Therefore, it should be anticipated that stripping the site beyond the topsoil layer will be necessary to remove the soft/wet and/or organic soils present. As noted, the site preparation work should be performed during seasonal dry periods to minimize potential degradation of the subgrade soils and undercuts which may be required to establish a stable base for construction. In addition, the surface soils are considered to have generally very poor drainage characteristics, and therefore, proper grading of the project site should be considered during the development of the project.

Following stripping of the surface materials and underlying organic indigenous soils, the exposed subgrades should be proof-rolled. The proof-rolling should be performed, prior to the any overlying fill placement, using a smooth drum roller weighing at least 10 tons. The roller should be operated in the static mode and complete at least two (2) passes over the exposed subgrades. The subgrade proof-rolling should be done under the guidance of, and observed by, qualified geotechnical personnel. It may be necessary to waive the proof-rolling requirement if wet subgrades are present. Any undercuts, which may be required as the result of the proof-rolling, should be performed based on guidance and evaluation of the conditions of qualified geotechnical personnel.

The placement of an initial lift of oversized stone fill material (i.e. "6-inch minus crusher run stone", No.3 & No.4 Stone, etc.), encased in stabilization geotextile (i.e. Mirafi 500X or suitable equivalent) top and bottom, as appropriate, can also be used to help stabilize subgrades prior placement of site grade fil or subbase material, if any of the existing subgrades are found to be in a soft/wet condition.

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Subgrade fill placement may proceed following preparation and acceptance of the existing subgrades. As mentioned above, the fill required to raise site grades in the proposed building areas will need to proceed sufficiently prior to the foundation construction. This would allow the settlement associated with the site grade increases to occur prior to the foundation construction and thus minimize post construction foundation settlement. Suitable Granular Fill or Structural Fill, as described in Appendix C can be used as subgrade fill to raise the site grades, beneath the Subbase Stone course for slab-on-grade and pavement construction. Fill containing topsoil, organics, man-made rubble constituents, and otherwise unsuitable soils should not be used for subgrade fill within the building and pavement areas. All fill placement and compaction should be closely monitored and tested on a "full-time" basis by qualified geotechnical personnel.

In general, depending on the time of year (predominantly summer months), the on-site soils can be used for constructing the fills for establishing the building pad and pavement areas, provided they can be properly placed and compacted in a controlled manner and to a stable well engineered condition. However, it should be expected that the use of the fine grained on-site soils for site filling will be difficult to work with (i.e. dry for proper compaction) versus an imported Suitable Granular Fill or Structural fill, particularly during seasonally inclement or wet weather, which could delay construction.

In all cases, subgrade fill should be placed to a stable condition and should not "pump" or show signs of movement or significant deflection (i.e. unstable conditions) as it is being constructed. The contractor should take precautions to limit construction traffic over the subgrades. Any subgrades, including existing soil subgrades or new subbase, which become damaged, rutted or unstable should be undercut and repaired as necessary prior to placement of the subbase course or pavement. The fill subgrades should also be properly graded, drained and protected from moisture and frost. Placement of fill over wet, soft, snow covered, or frozen subgrades is not acceptable.

7.00 CONCLUDING REMARKS

This report was prepared to assist in development of the Sawyers Landing Housing Project planned at Sweet Home Road and Dodge Road in Amherst, New York. The report has been prepared for the exclusive use of Severyn Development, Inc. and other members of the design team, for specific application to this site and this project only.

The project information and recommendations presented in this report were prepared based on Empire's understanding of the proposed project and the subsurface exploration work completed by SJB Services, Inc. as described herein, and through the application of generally accepted soils and foundation engineering practices. Empire should be consulted with any questions regarding the interpretation of the findings of our work, and/or the geotechnical considerations and recommendations presented. In addition, the recommendations presented are provided as guidance to the designer and should not be considered a project specification. No warranties expressed or implied are made regarding the subsurface conditions present, or by the conclusions, opinions, recommendations or services provided.

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Additional information regarding the use and interpretation of this report is presented in Appendix D.

Respectfully Submitted:

WMA Engineering, DPC dba
EMPIRE GEOTECHNICAL ENGINEERING SERVICES

Wanda M. Allen, P.E.
Senior Geotechnical Engineer

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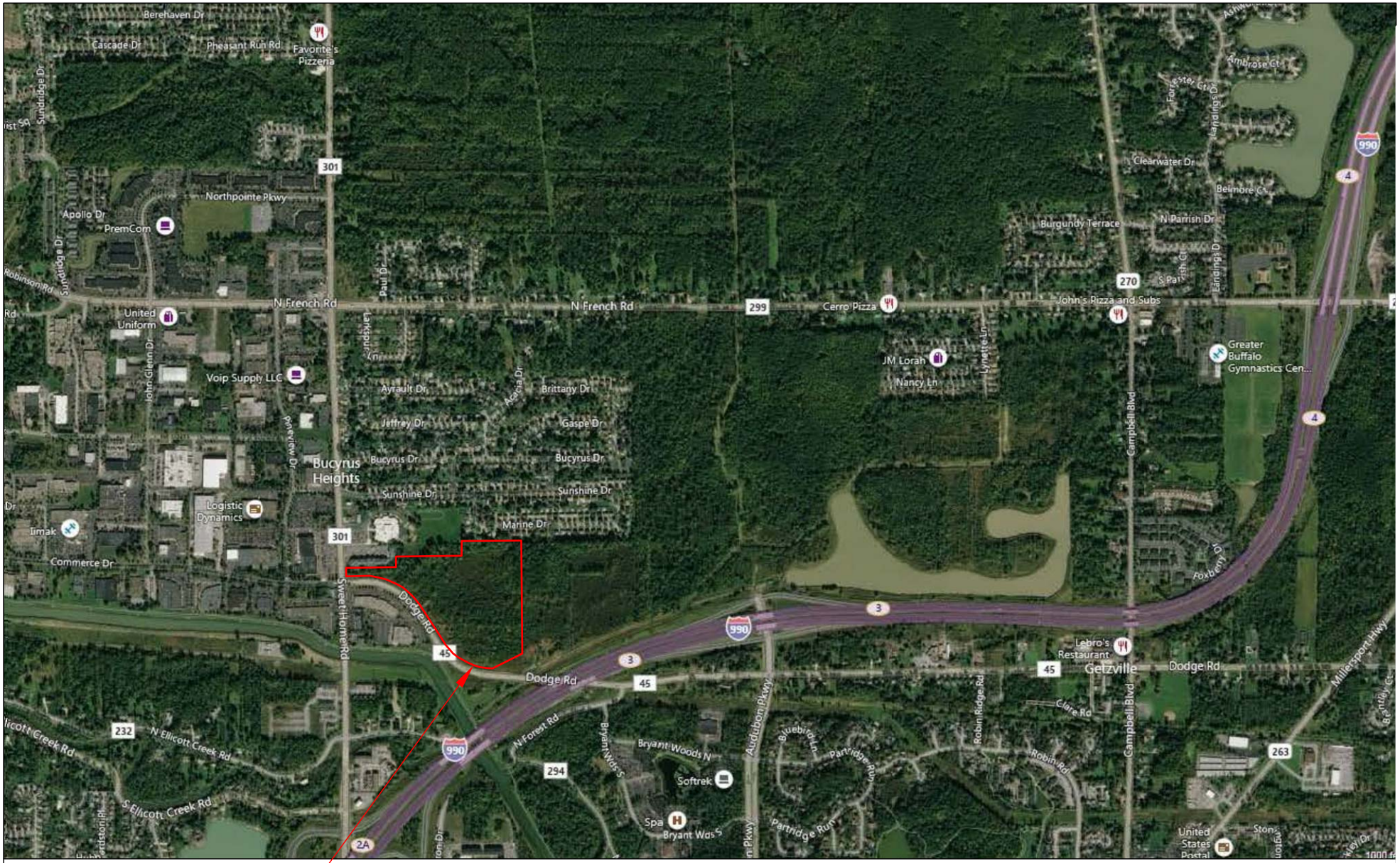
FIGURES



APPROXIMATE LIMITS OF PROPOSED DEVELOPMENT

N

NOTE:

SITE LOCATION PLAN DEVELOPED FROM BING MAPS

WMA ENGINEERING DPC|DBA
EMPIRE GEOTECHNICAL ENGINEERING SERVICES

PROPOSED SITE DEVELOPMENT
SAWYER'S LANDING
SWEET HOME ROAD & DODGE ROAD
AMHERST, NEW YORK

SITE LOCATION PLAN	DR BY: WMA	SCALE: NTS	PROJECT NO.: WB-21-054
	CHKD BY: WMA	DATE: 06/10/2021	FIGURE NO

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50

BORING	LATITUDE	LONGITUDE
B-1	43° 1' 37.1"	-78° 47' 46.6"
B-2	43° 1' 37.4"	-78° 47' 41.9"
B-3	43° 1' 39.3"	-78° 47' 37.9"
B-4	43° 1' 39.3"	-78° 47' 33.9"
B-5	43° 1' 37.7"	-78° 47' 37.6"
B-6	43° 1' 35.4"	-78° 47' 36.7"
B-7	43° 1' 35.4"	-78° 47' 41.9"

LEGEND:

B-1 INDICATES APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING.

NOTE:

FIGURE DEVELOPED FROM GOOGLE EARTH

N

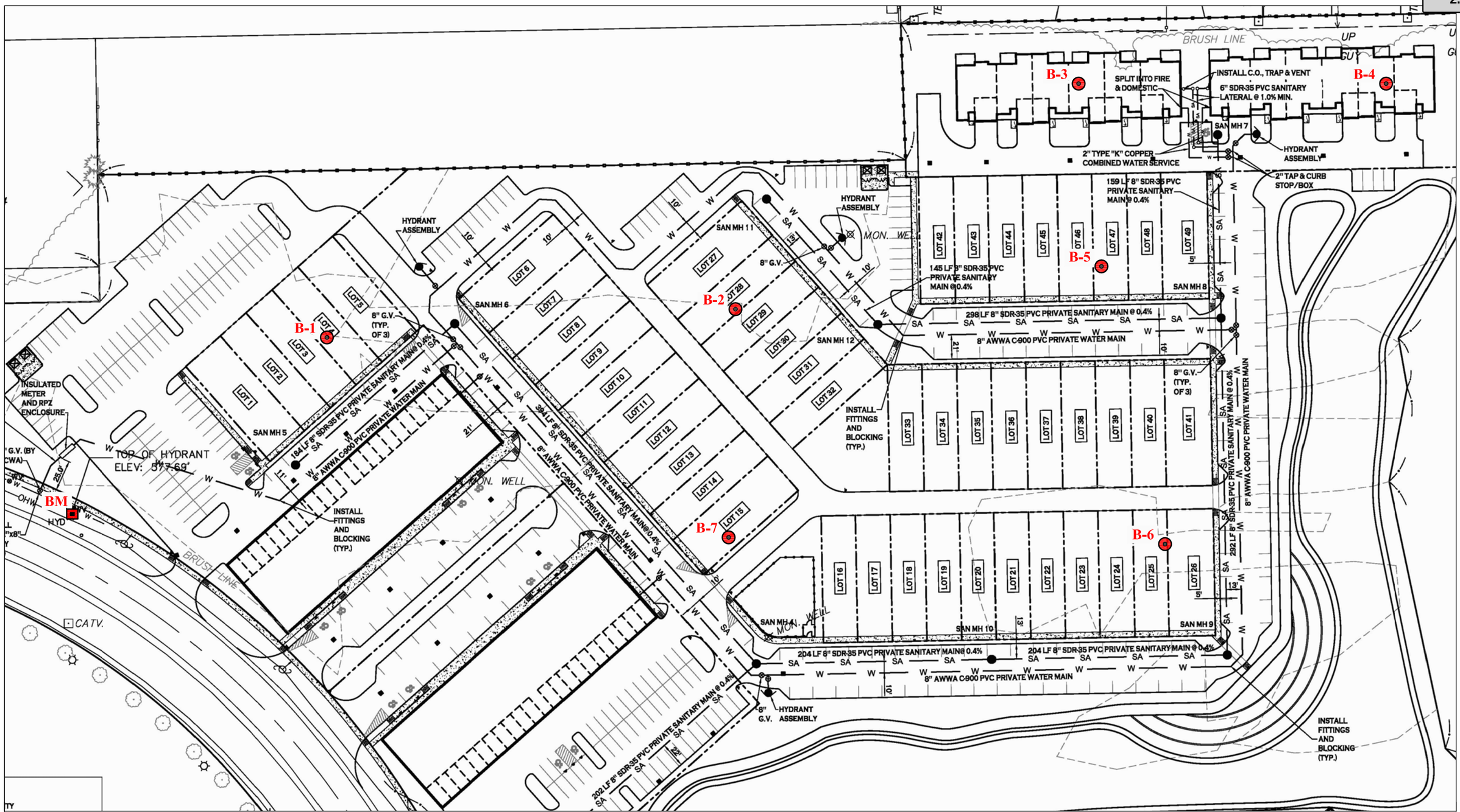
WMA ENGINEERING DPC|DBA
EMPIRE GEOTECHNICAL ENGINEERING SERVICES

PROPOSED SITE DEVELOPMENT
SAWYER'S LANDING
SWEET HOME ROAD & DODGE ROAD
AMHERST, NEW YORK

SUBSURFACE EXPLORATION PLAN
(EXISTING SITE CONDITIONS)

DR BY: WMA	SCALE: NTS	PROJECT NO.: WB-21-054
CHKD BY: WMA	DATE: 06/10/2021	FIGURE

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50



LEGEND:

B-1 ◉ INDICATES APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING.

BM ■ BENCHMARK: TOP OF FIRE HYDRANT. REPORTED ELEVATION = 577.69 FEET.

NOTE:

FIGURE DEVELOPED FROM 2/15/21 "UTILITY PLAN" PREPARED BY CARMINA WOOD MORRIS, DPC.

N

80 0 80
SCALE FEET

WMA ENGINEERING DPC|DBA
EMPIRE GEO TECHNICAL ENGINEERING SERVICES

PROPOSED SITE DEVELOPMENT
SAWYER'S LANDING
SWEET HOME ROAD & DODGE ROAD
AMHERST, NEW YORK

SUBSURFACE EXPLORATION PLAN (PROPOSED SITE DEVELOPMENT)	DR BY: WMA	SCALE: 1" ~ 80'	PROJECT NO.: WB-21-054
	CHKD BY: WMA	DATE: 06/10/2021	FIGURE NO:

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APPENDIX A

SUBSURFACE EXPLORATION LOGS

GENERAL INFORMATION & KEY TO SUBSURFACE LOGS

The Subsurface Logs attached to this report present the observations and mechanical data collected by the driller at the site, supplemented by classification of the material removed from the borings as determined through visual identification by technicians in the laboratory. It is cautioned that the materials removed from the borings represent only a fraction of the total volume of the deposits at the site and may not necessarily be representative of the subsurface condition between adjacent borings or between the sampled intervals. The data presented of the Subsurface Logs together with the recovered samples provide a basis for evaluating the character of the subsurface conditions relative to the project. The evaluation must consider all the recorded details and their procedures to more accurately evaluate the subsurface conditions. Any evaluation of the contents of this report and recovered samples must be performed by qualified professionals. The following information defines some of the procedures and terms used of the Subsurface Logs to describe the conditions encountered, consistent with the numbered identifiers shown on the Key opposite this page.

1. **The figures in the Depth column define the scale of the Subsurface Log.**
2. **The Samples column shows, graphically, the depth range from which a sample was recovered. See Table I for descriptions of the symbols used to represent the various types of samples.**
3. **The Sample No. is used for identification on sample containers and/or Laboratory Test Reports.**
4. **Blows on Sampler – shows the results of the "Penetration Test", recording the number of blows required to drive a split spoon sampler into the soil. The number of blows required for each six inches is recorded. The first 6 inches of penetration is considered a seating drive. The number of blows required for the second and third 6 inches of penetration is termed the penetration resistance, N**
5. **Blows on Casing – Shows the number of blows required to advance the casing a distance of 12 inches. The casing size, hammer weight, and length of drop are noted at the bottom of the Subsurface Log. If the casing is advanced by means other than driving, the method of advancement will be indicated in the Notes column or under the Method of Investigation at the bottom of the Subsurface Log. Alternatively, sample recovery may be shown in this column or other data consistent with the column heading.**
6. **All recovered soil samples are reviewed in the laboratory by an engineering technician, geologist, or geotechnical engineer, unless noted otherwise. Visual descriptions are made on the basis of a combination of the driller's field descriptions and noted observations together with the sample as received in the laboratory. The method of visual classification is based primarily on the Unified Soil Classification System (ASTM D 2487) with regard to the particle size and plasticity (See Table No. II), and the Unified Soil Classification System group symbols for the soil types are sometimes included with the soil classification. Additionally, the relative portion, by weight, of two or more soil types is described for granular soils in accordance with "Suggested Methods of Test for Identification of Soils" by D.M. Burmister, ASTM Special Technical Publication 479, June 1970. (See Table No. III). Description of the relative soil density or consistency is based upon the penetration records as defined in Table No. IV. The description of the soil moisture is based upon the relative wetness of the soil as recovered and is described as dry, moist, wet, and saturated. Water introduced into the boring either naturally or during drilling may have affected the moisture condition of the recovered sample. Special terms are used as required to describe soil deposition in greater detail; several such terms are listed in Table V. When sampling gravelly soils with a standard two inch diameter split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter. The presence of boulders and large gravel is sometimes, but not necessarily, detected by an evaluation of the casing and sampler blows or through the "action" of the drill rig as reported by the driller.**
7. **Rock description is based on review of the recovered rock core and the driller's notes. Frequently used rock classification terms are included in Table VI.**
8. **The stratification lines represent the approximate boundary between soil types and the transition may be gradual. Solid stratification lines delineate apparent changes in soil type, based upon review of recovered soil samples and the driller's notes. Dashed lines convey a lesser degree of certainty with respect to either a change in soil type or where such change may occur.**
9. **Miscellaneous observations and procedures noted by the driller are shown in this column, including water level observations. It is important to realize the reliability of the water level observations depends upon the soil type (water does not readily stabilize in a hole through fine grained soils), and that any drill water used to advance the boring may have influenced the observations. The ground water level will fluctuate seasonally, typically. One or more perched or trapped water levels may exist in the ground seasonally. All the available readings should be evaluated. If definite conclusions cannot be made, it is often prudent to examine the conditions more thoroughly through test pit excavations or groundwater observation wells.**
10. **The length of core run is defined as the length of penetration of the core barrel. Core recovery is the length of core recovered divided by the core run. The RQD (Rock Quality Designation) is the total length of pieces of NX core exceeding 4 inches divided by the core run. The size core barrel used is also noted in the Method of Investigation at the bottom of the Subsurface Log.**

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DATE

STARTED _____

FINISHED _____

SHEET _____ OF _____

SJB SERVICES, INC.
SUBSURFACE LOG

PROJ. No. _____

HOLE No. _____

SURF. ELEV. _____

G.W. DEPTH _____

PROJECT _____ LOCATION _____

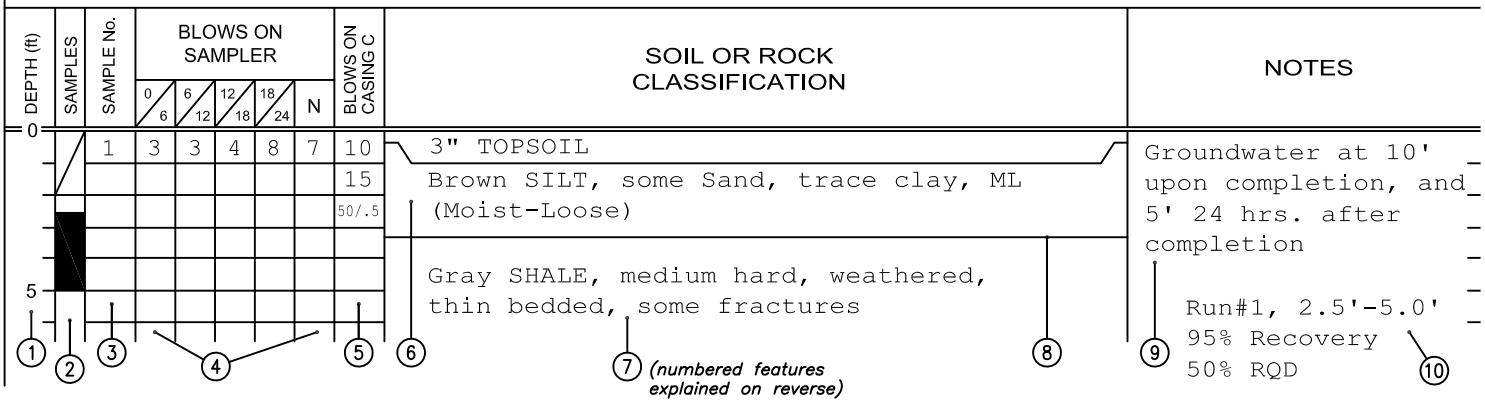

TABLE I

- Split Spoon Sample
- Shelby Tube Sample
- Geoprobe Macro-Core
- Auger or Test Pit Sample
- Rock Core

TABLE II

Identification of soil type is made on basis of an estimate of particle sizes, and in the case of fine grained soils also on basis of plasticity.

Soil Type	Soil Particle Size	
Boulder	>12"	Coarse Grained (Granular)
Cobble	3" - 12"	
Gravel - Coarse	3" - 3/4"	
- Fine	3/4" - #4	
Sand - Coarse	#4 - #10	
- Medium	#10 - #40	
- Fine	#40 - #200	
Silt - Non Plastic (Granular) Clay - Plastic (Cohesive)	<#200	Fine Grained

TABLE III

The following terms are used in classifying soils consisting of mixtures of two or more soil types. The estimate is based on weight of total sample.

Term	Percent of Total Sample
"and"	35 - 50
"some"	20 - 35
"little"	10 - 20
"trace"	less than 10

(When sampling gravelly soils with a standard split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter.)

TABLE IV

The relative compactness or consistency is described in accordance with the following terms:

Granular Soils		Cohesive Soils	
Term	**Blows per Foot, N**	**Term**	**Blows per Foot, N**
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Firm	10 - 30	Medium	4 - 8
Compact	30 - 50	Stiff	8 - 15
Very Compact	>50	Very Stiff	15 - 30
		Hard	>30

(Large particles in the soils will often significantly influence the blows per foot recorded during the penetration test)

TABLE V

Varved	Horizontal uniform layers or seams of soil(s).
Layer	Soil deposit more than 6" thick.
Seam	Soil deposit less than 6" thick.
Parting	Soil deposit less than 1/8" thick.
Laminated	Irregular, horizontal and angled seams and partings of soil(s).

TABLE VI

Rock Classification Term		Meaning
Hardness	- Soft	Scratched by fingernail
	- Medium Hard	Scratched easily by penknife
	- Hard	Scratched with difficulty by penknife
	- Very Hard	Cannot be scratched by penknife
Weathering	- Very Weathered	Judged from the relative amounts of disintegration, iron staining, core recovery, clay seams, etc.
	- Weathered	
	- Sound	

Rock Classification Term		Meaning	
Bedding	- Laminated	(<1")	Natural breaks in Rock Layers
	- Thin Bedded	(1" - 4")	
	- Bedded	(4" - 12")	
	- Thick Bedded	(12" - 36")	
	- Massive	(>36")	

(Fracturing refers to natural breaks in the rock oriented at some angle to the rock layers)

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DATE:
START 6/1/2021
FINISH 6/1/2021
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-1
SURF. ELEV 570.8'
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	1			Brown-Gray Silty CLAY, some fine Sand, tr. organics	
		3	2		4	(moist, medium, CL)	
	2	4	5			Brown f-m SAND, little Clayey Silt, tr. organics	
		4	4		9	(wet, loose, SM-SC)	
5	3	5	4			Brown-Gray Silty CLAY, some fine Sand, tr. organics	S-3: Contains Wood
		6	6		10	(moist-wet, stiff, CL)	
	4	7	10			Contains little fine Sand, no organics (v. stiff)	
		12	15		22		
	5	1	4			Contains tr. sand (stiff)	
10		7	8		11		
	6	1	2			Becomes Brown (wet, medium)	
		2	4		4		
	7	1	2			(moist-wet)	
		2	2		4		
15	8	2	1			(wet, soft)	
		1	2		2		
20							
	9	WOH/2.0				(v. soft)	WOH = Weight of Hammer and Rods
					WOH		
25							
	10	WOH/2.0				Contains tr. gravel	
					WOH		
30							
	11	WOH/2.0					
					WOH		
35							
	12	WOH/2.0				Contains no gravel	
					WOH		
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

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DATE
START 6/1/2021
FINISH 6/1/2021
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-1
SURF. ELEV 570.8'
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
40	13	WOH	1			Brown fine GRAVEL, some Silty Clay, little f-c Sand	
		20	25		21	(moist, firm, GC-GM)	WOH = Weight of Hammer and Rods
45	14	50/0.4			REF		S-14: No Recovery
							REF = Sample Spoon Refusal
	15	40	50			Gray fine GRAVEL, some f-c Sand, tr. silty clay	
50		40	45		90	(moist, compact, GP)	
55	16	40	45			Brown fine GRAVEL, some Silty Clay, little f-c Sand	
		50/0.2			REF	(moist, v. compact, GC-GM)	
60						Boring Complete at 58.0' with Auger Refusal	Free Standing Water recorded at 6.0' at boring completion
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

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DATE:
START 6/2/2021
FINISH 6/2/2021
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-2
SURF. ELEV 571.1'
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	2			TOPSOIL	Driller noted Topsoil at the surface
		3	5		5	Brown-Gray f-m SAND, little Silty Clay, tr. organics	
	2	6	6			(moist, loose, SC-SM)	
		5	6		11	Brown f-m SAND, little Clayey Silt (wet, firm, SM-SC)	
5	3	7	7			Gray f-c SAND, tr. clayey silt (wet, firm, SP-SW)	
		7	7		14		
	4	6	8			Brown Silty CLAY, tr. sand, Silt Partings	
		10	10		18	(wet, firm, CL)	
	5	3	4			(moist-wet, stiff)	
10		6	8		10		
	6	3	3			(medium)	
		4	3		7		
	7	4	4			Contains no Silt Partings (wet)	
		2	2		6		
15	8	1	1			(soft)	
		1	1		2		WOH = Weight of Hammer and Rods
	9	WOH/2.0				(v. soft)	
					WOH		
20							
	10	WOH/2.0					
					WOH		
	11	WOH/2.0					
25					WOH		
						Boring Complete at 25.0'	No Free Standing Water encountered at boring completion
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

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DATE:
START 6/3/2021
FINISH 6/3/2021
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-3
SURF. ELEV 571.8'
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	2			TOPSOIL	Driller noted Topsoil at the surface
		3	3		5	Brown Silty CLAY, some f-m Sand, tr. organics	
	2	5	5			(moist, medium, CL)	
		6	7		11	Brown f-m SAND, little Clayey Silt (wet, firm, SM-SC)	
5	3	6	8			Brown-Gray f-m SAND, tr. clayey silt	
		11	11		19	(wet, firm, SP-SW)	
	4	7	5			Becomes Gray (moist-wet)	
		4	4		9	Brown Silty CLAY, tr. sand, Silt Partings	
	5	2	3			(moist, stiff, CL)	
10		5	6		8		
	6	2	3				
		6	6		9		
	7	3	4			(moist-wet)	
		4	3		8		
15	8	WOH/2.0				(wet, v. soft)	
					WOH		WOH = Weight of Hammer and Rods
20							
	9	WOH/2.0					
					WOH		
	10	WOH/2.0					
25					WOH		
						Boring Complete at 25.0'	No Free Standing Water encountered at boring completion
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

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DATE:
START 6/3/2021
FINISH 6/4/2021
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-4
SURF. ELEV 571.6
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	2			TOPSOIL	Driller noted Topsoil at the surface
		4	5		6	Brown-Gray Silty CLAY, some f-m Sand, tr. organics	
	2	4	7			(moist, medium, CL)	
		7	5		14	Brown f-m SAND, little Clayey Silt (wet, firm, SM-SC)	
5	3	6	6				
		8	8		14		
	4	11	9			Gray f-m SAND, tr. clayey silt (moist-wet, firm, SP)	
		8	6		17		
	5	6	8			Brown Silty CLAY, tr. sand, Silt Partings	
10		9	8		17	(moist, v. stiff, CL)	
	6	2	3			(moist-wet, stiff)	
		5	5		8		
	7	3	3			Contains no Silt Partings (medium)	
		2	2		5		
15	8	WOH/1.5				(wet, v. soft)	
			2		WOH		WOH = Weight of Hammer and Rods
20							
	9	WOH/2.0					
					WOH		
25							
	10	WOH/1.0					
		WOH	1		WOH		
30							
	11	Shelby Tube					Shelby Tube T-1: 30'-32'
		T-1					REC: 2.0'
35							
	12	WOH/2.0					
					WOH		
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

DATE
START 6/3/2021
FINISH 6/3/2021
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-4
SURF. ELEV 571.6'
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
40	13	WOH	7			Brown fine GRAVEL, some Silty Clay, little f-c Sand (moist-wet, compact, GC-GM)	
		28	50/0.2		21		WOH = Weight of Hammer and Rods
45	14	50/0.3			REF	Gray fine GRAVEL, little f-c Sand, tr. silty clay (moist, v. compact, GP)	REF = Sample Spoon Refusal
50	15	50/0.4			REF	Brown fine GRAVEL, some f-c Sand, little Silty Clay (moist, v. compact, GC-GM)	
55	16	27	45			Brown Silty CLAY, some fine Gravel, little f-c Sand (moist, hard, CL)	
		50/0.1			REF		NQ '2' Size Rock Core
60						Brown f-c SAND, some Silty Clay, little fine Gravel (moist-wet)	Run #1: 59' - 62'
						Gray SHALE Rock, hard, highly weathered, laminated to bedded, both natural and mechanical fractures	REC = 83% RQD = 14%
65						Boring Complete at 62.0'	Free Standing Water recorded at 10.8' before coring
70							Free Standing Water recorded at 14.0' after coring
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

DATE:
START 6/3/2021
FINISH 6/3/2021
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-5
SURF. ELEV 571.8'
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	WOH	3			TOPSOIL	Driller noted Topsoil at the surface
		4	5		7	Brown-Gray f-m SAND, little Silty Clay, tr. organics	
	2	4	5			(moist-wet, loose, SC-SM)	
		7	10		12	Brown f-m SAND, little Clayey Silt (wet, firm, SM-SC)	
5	3	8	10			Contains "and" Clayey Silt	
		11	7		21		
	4	6	8			Brown Silty CLAY, tr. sand, Silt Partings	
		8	10		16	(moist-wet, v. stiff, CL)	
	5	4	5			(stiff)	
10		7	7		12		
	6	2	4				
		4	4		8		
	7	3	3			Contains no Silt Partings (wet, medium)	
		2	2		5		
15	8	WOH/2.0				(v. soft)	
					WOH		WOH = Weight of Hammer and Rods
20							
	9	WOH/2.0					
					WOH		
	10	WOH/2.0					
25					WOH		
						Boring Complete at 25.0'	No Free Standing Water encountered at boring completion
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

DATE:
START 6/2/2021
FINISH 6/2/2021
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-6
SURF. ELEV 571.6'
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	WOH	5			TOPSOIL	Driller noted Topsoil at the surface
		7	7		12	Brown-Gray f-m SAND, little Silty Clay, tr. organics	
	2	7	8			(moist, firm, SC-SM)	
		10	13		18	Brown f-m SAND, little Clayey Silt (wet, firm, SM-SC)	
5	3	5	6			Brown Silty CLAY, tr. sand, Silt Parings	
		5	5		11	(moist, stiff, CL)	
	4	5	6				
		6	6		12		
	5	4	6			Becomes Brown-Gray (v. stiff)	
10		10	10		16		
	6	4	4			(moist-wet, medium)	
		3	5		7		
	7	3	2			Contains no Silt Partings (wet)	
		3	2		5		
15	8	WOH/1.0				Becomes Brown (v. soft)	
		WOH	1		WOH		WOH = Weight of Hammer and Rods
20							
	9	WOH/1.0				(soft)	
		2	1		2		
	10	WOH	1				
25		1	1		2		
						Boring Complete at 25.0'	No Free Standing Water encountered at boring completion
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

DATE:
START 6/2/2021
FINISH 6/2/2021
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-7
SURF. ELEV 571.2'
G.W. DEPTH See Notes

PROJECT: SAWYER'S LANDING HOUSING PROJECT
PROJ. NO.: BE-21-054
LOCATION: DODGE RD & SWEET HOME RD
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	2			TOPSOIL	Driller noted Topsoil at the surface
		3	4		5	Brown-Gray f-m SAND, some Silty Clay, little fine Gravel, tr. organics (moist, loose, SC-SM)	
	2	4	6				
		7	6		13	Brown f-m SAND, some Clayey Silt, tr. organics (wet, firm, SM-SC)	
5	3	5	12				
		13	13		25	Gray f-m SAND, tr. clayey silt (wet, firm, SP) (moist-wet)	
	4	5	7				
		10	11		17	Brown Silty CLAY, tr. sand, Silt Partings (moist, v. stiff, CL)	
	5	5	7				
10		7	6		14	(stiff)	
	6	2	5			Becomes Brown-Gray, Contains no Silt Partings (moist-wet)	
		6	6		11		
	7	4	3			Becomes Brown (wet, medium)	
		3	3		6		
15	8	1	1			Contains tr. gravel (soft)	
		1	1		2		WOH = Weight of Hammer and Rods
20							
	9	WOH/1.0				Contains no gravel (v. soft)	
		WOH	1		WOH		
	10	1	1			(soft)	
25		1	1		2		
						Boring Complete at 25.0'	No Free Standing Water encountered at boring completion
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ JR.

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

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APPENDIX B

LABORATORY TEST DATA

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Sawyer's Landing**

CLIENT: **Severyn Development**

DATE: **June 24, 2021**

PROJECT NO.: BE-21-054
REPORT NO.: LTR-1

SJB Sample Number: 21-302
Sample Location: B-1, S-6: 10' - 12'

ASTM D-2216:Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
39.4 %	44	18	26

ASTM D-2216:Laboratory Determination of Water (Moisture) Content of Soil &Rock

SJB Sample Number	Sample Location	Moisture Content
21-303	B-4, S-5: 8' – 10'	23.9 %
21-304	B-4, S-6: 10' – 12'	29.1 %
21-305	B-4, S-7: 12' – 14'	39.2 %
21-306	B-4, S-8: 14' – 16'	40.0 %
21-307	B-4, S-9: 20' – 22'	48.9 %
21-308	B-4, S-10: 25' – 27'	46.0 %
21-309	B-4, T-1: 30' – 32'	46.5 %
21-310	B-4, S-12: 35' – 37'	38.7 %

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Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Sawyer's Landing**

CLIENT: **Severyn Development**

DATE: **June 24, 2021**

PROJECT NO.: BE-21-054
REPORT NO.: LTR-1

SJB Sample Number: 21-306
Sample Location: B-4, S-8: 14' – 16'

ASTM D-2216:Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
40.0 %	36	17	19

SJB Sample Number: 21-309
Sample Location: B-4, T-1: 30' – 32'

ASTM D-2216:Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
46.5 %	49	23	26

ASTM D 4648: Standard Test Method for Laboratory Miniature Vane Shear Test for Saturated Fine-Grained Clayey Soil
EGE TM-1: Measure of Approximate Unconfined Compressive Strength of Cohesive Soils

Undrained Shear Strength = 0.14 tons/ft^2
Approximate Unconfined Compressive Strength = 0.18 tons/ft^2

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5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: Sawyer's Landing
CLIENT: Severyn Development
DATE: June 24, 2021

PROJECT NO.: BE-21-054
REPORT NO.: LTR-1

SJB Sample Number: 21-311
Sample Location: B-5, S-3: 4' - 6'

ASTM D-2216:Laboratory Determination of Water (Moisture) Content of Soil &Rock
Moisture Content = 21.0 %

ASTM D-6913: Particle Size Distribution (Gradation) of Soils Using Sieve Analysis

Sieve Size	*Percent Passing*
¼"	100.0
#4	99.7
#10	98.8
#20	96.8
#40	94.3
#100	79.5
#200	39.0

SJB Sample Number: 21-312
Sample Location: B-7, S-2: 2' - 4'

ASTM D-2216:Laboratory Determination of Water (Moisture) Content of Soil &Rock
Moisture Content = 19.5 %

ASTM D-6913: Particle Size Distribution (Gradation) of Soils Using Sieve Analysis

Sieve Size	*Percent Passing*
¼"	100.0
#4	99.9
#10	99.5
#20	98.8
#40	94.8
#100	42.0
#200	22.7

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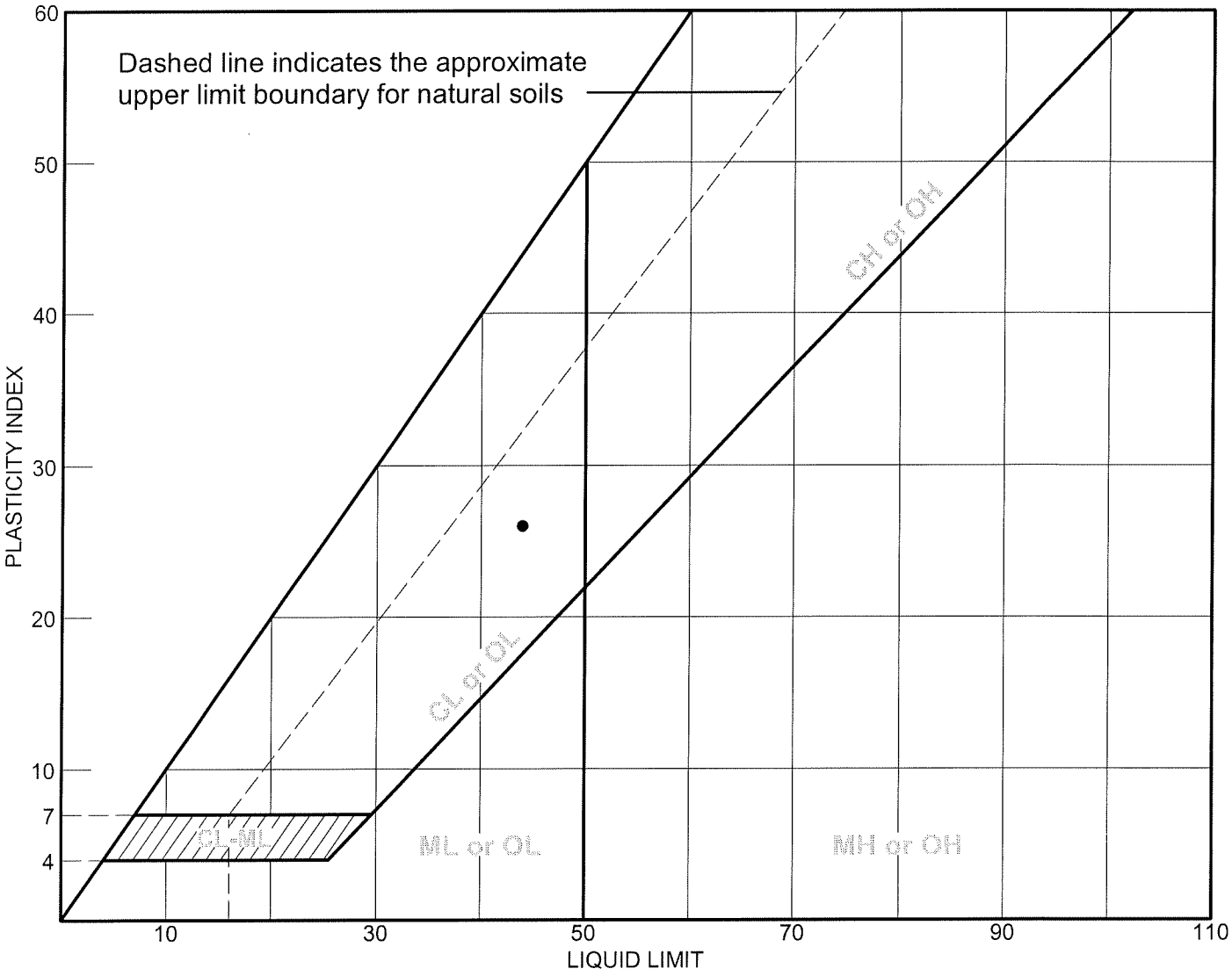
LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-1	S-6	10' - 12'	39.4 %	18	44	26	

LIQUID AND PLASTIC LIMITS TEST REPORT

SJB SERVICES, INC.

Client: SEVERYN DEVELOPMENT

Project: SAWYER'S LANDING

Project No.: BE-21-054

Plate

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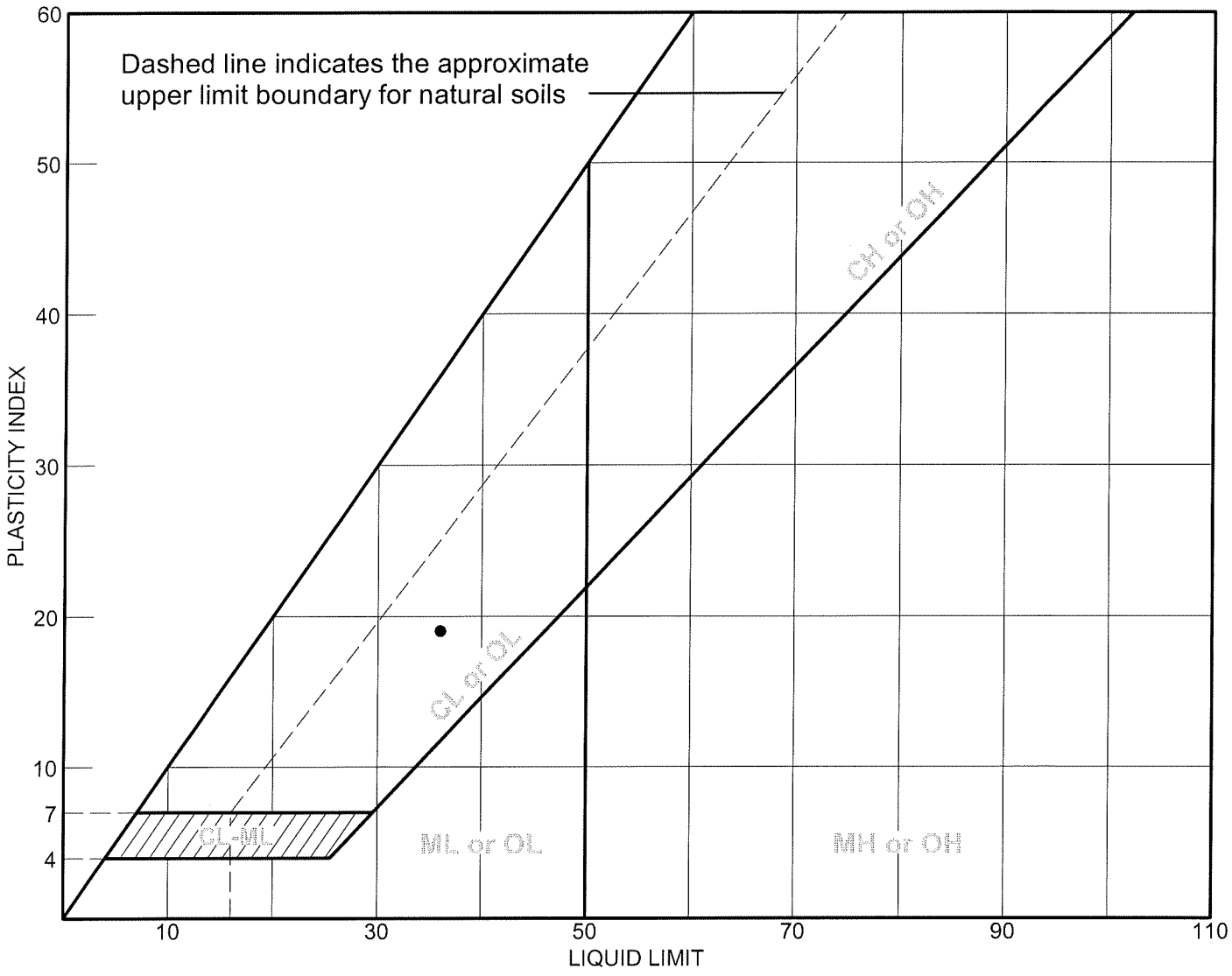
LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-4	S-8	14' - 16'	40.0 %	17	36	19	

LIQUID AND PLASTIC LIMITS TEST REPORT

SJB SERVICES, INC.

Client: SEVERYN DEVELOPMENT

Project: SAWYER'S LANDING

Project No.: BE-21-054

Plate

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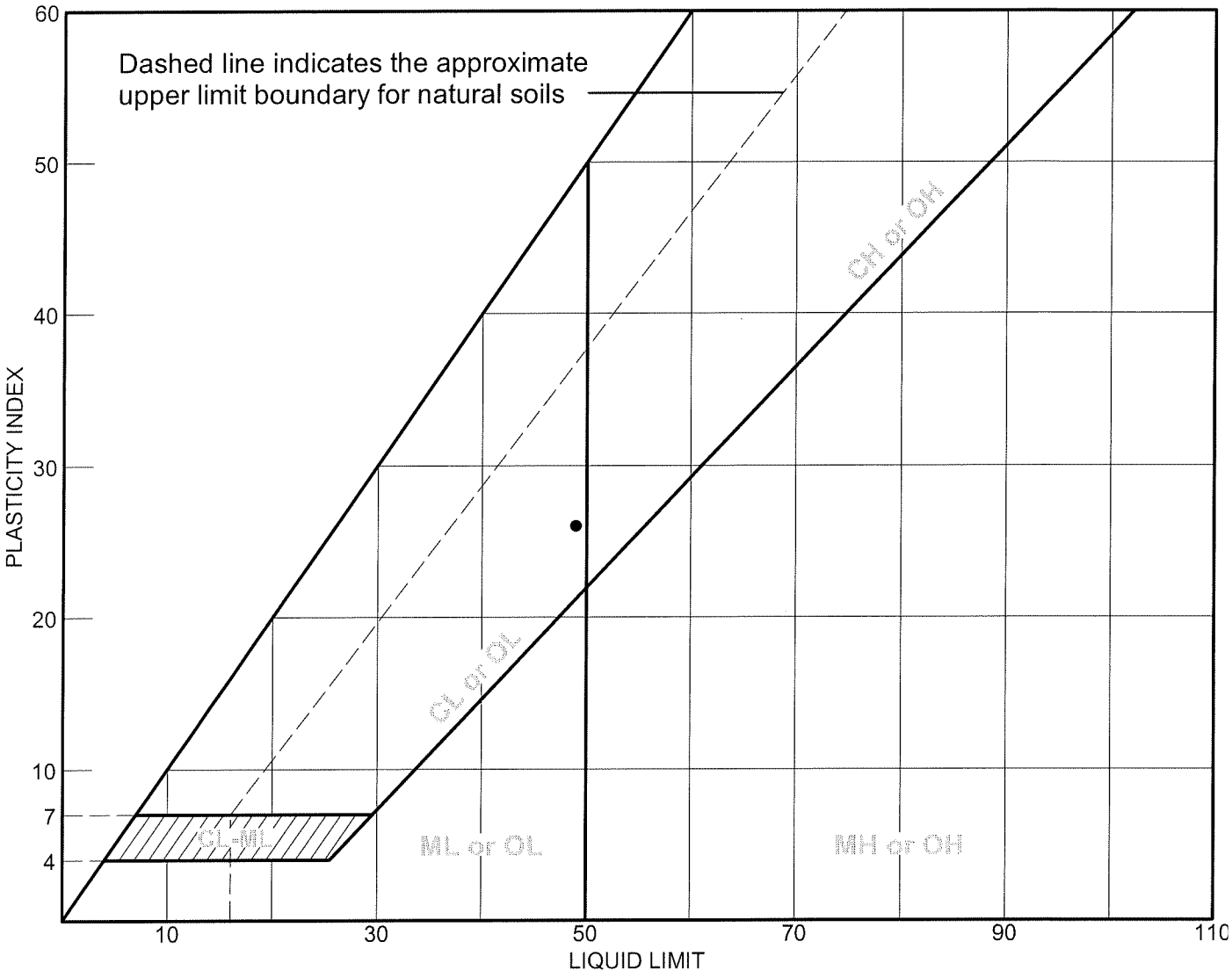
LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-4	T-1	30' - 32'	46.5 %	23	49	26	

LIQUID AND PLASTIC LIMITS TEST REPORT

SJB SERVICES, INC.

Client: SEVERYN DEVELOPMENT

Project: SAWYER'S LANDING

Project No.: BE-21-054

Plate

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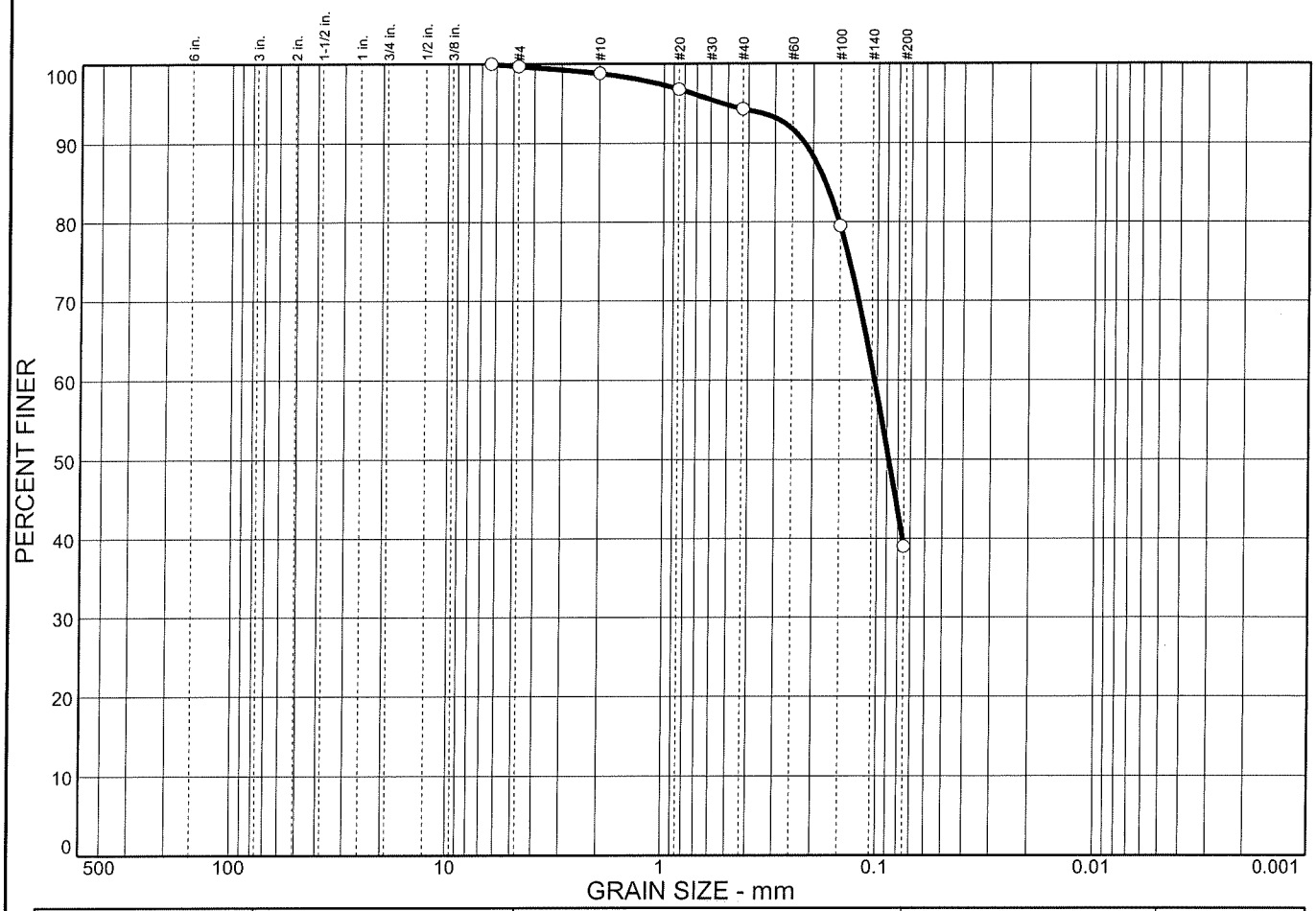
Particle Size Distribution Report ASTM D-6913



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.3	60.7	39.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.25 in.	100.0		
#4	99.7		
#10	98.8		
#20	96.8		
#40	94.3		
#100	79.5		
#200	39.0		

* (no specification provided)

Soil Description

B-5, S-3: 4' - 6'

MOISTURE CONTENT = 21.0 %

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.176 D_{60}= 0.103 D_{50}= 0.0884
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

LTR-1
SAMPLE NUMBER: 21-311

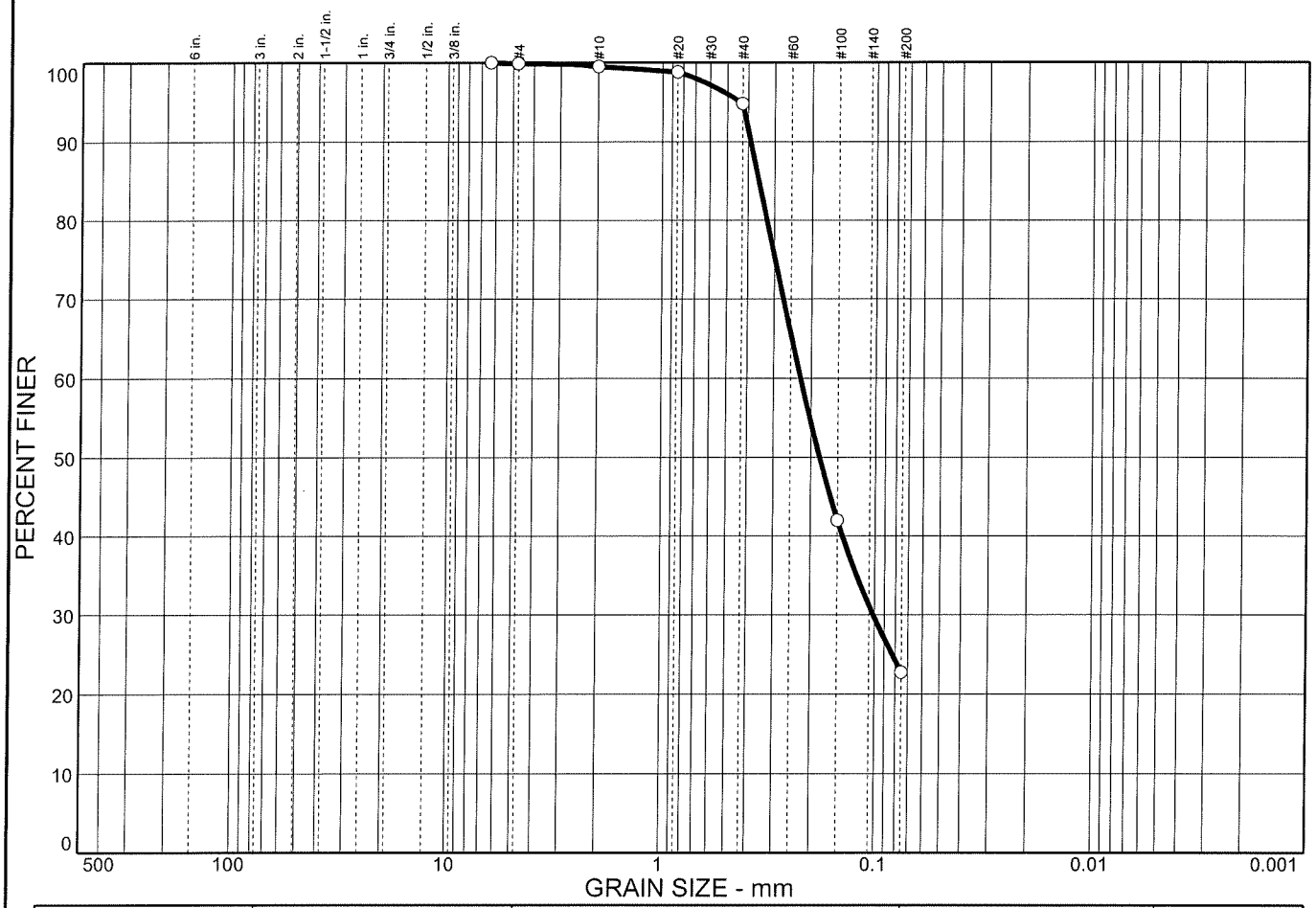
Sample No.: S-3 **Source of Sample:** B-5 **Date:** 6-21-2021
Location: B-5, S-3: 4' - 6' **Elev./Depth:** 4' - 6'

SJB SERVICES, INC.

Client: SEVERYN DEVELOPMENT
Project: SAWYER'S LANDING
Project No: BE-21-054 **Plate**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Particle Size Distribution Report ASTM D-6913



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.1	77.2	22.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.25 in.	100.0		
#4	99.9		
#10	99.5		
#20	98.8		
#40	94.8		
#100	42.0		
#200	22.7		

* (no specification provided)

Soil Description

B-7, S-2: 2' - 4'

MOISTURE CONTENT = 19.5 %

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.357 D_{60}= 0.225 D_{50}= 0.182
D_{30}= 0.102 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

LTR-1
SAMPLE NUMBER: 21-312

Sample No.: S-2 **Source of Sample:** B-7 **Date:** 6-21-2021
Location: B-7, S-2: 2' - 4' **Elev./Depth:** 2' - 4'

SJB SERVICES, INC.

Client: SEVERYN DEVELOPMENT
Project: SAWYER'S LANDING
Project No: BE-21-054 **Plate**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Sawyer's Landing**

CLIENT: **Severyn Development**

DATE: **July 7, 2021**

PROJECT NO.: BE-21-054
REPORT NO.: LTR-2
Page 1 of 1

SJB Sample Number: 21-309
Sample Location: B-4, T-1: 30' – 32'

ASTM D-2216:Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
46.5 %	49	23	26

ASTM D 4648: Standard Test Method for Laboratory Miniature Vane Shear Test for Saturated Fine-Grained Clayey Soil
EGE TM-1: Measure of Approximate Unconfined Compressive Strength of Cohesive Soils

Undrained Shear Strength = 0.14 tons/ft^2
Approximate Unconfined Compressive Strength = 0.18 tons/ft^2

ASTM D-2435
One-Dimensional Consolidation Properties of Soils Using Incremental Loading

Refer to attached paperwork for test results

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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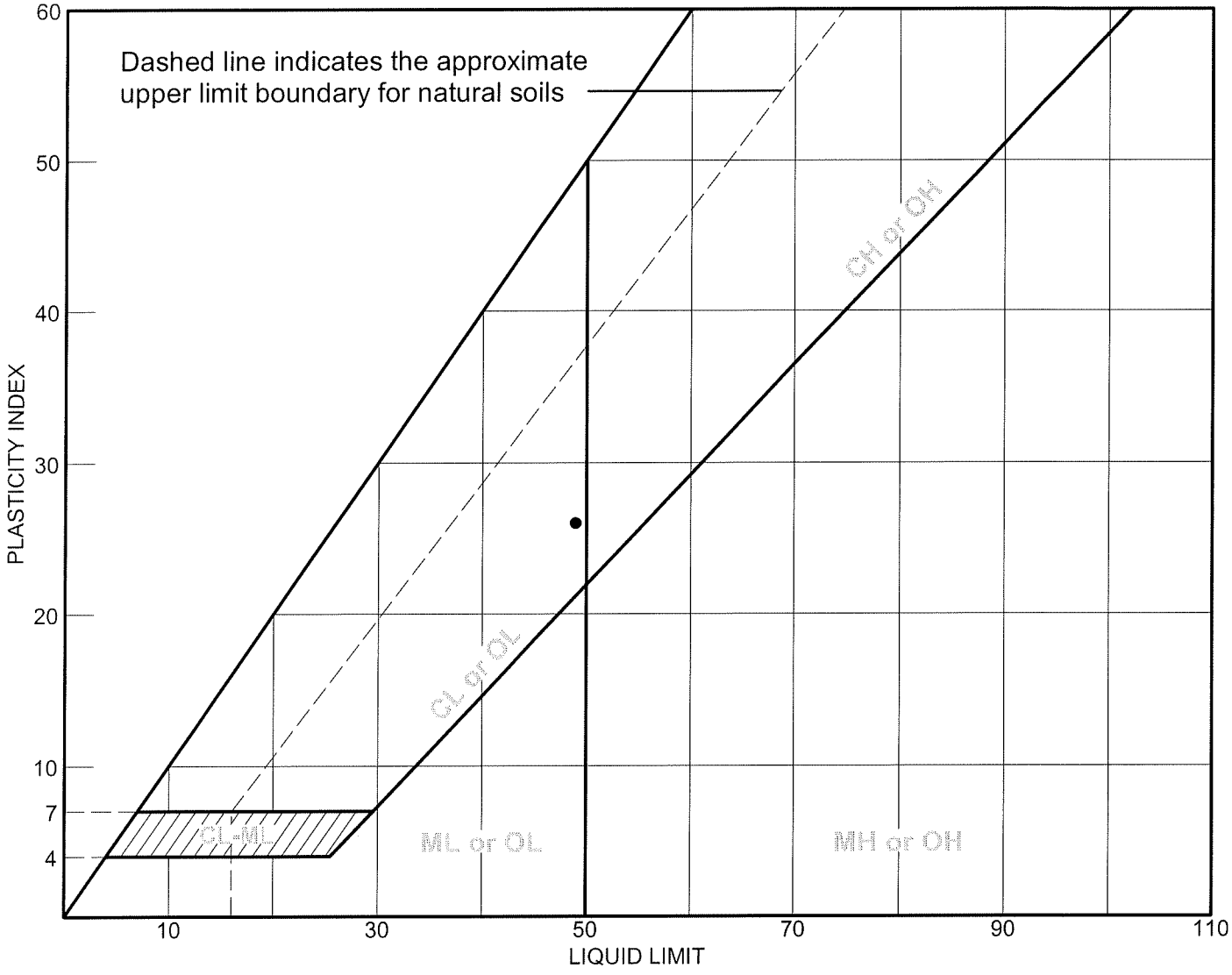
LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-4	T-1	30' - 32'	46.5 %	23	49	26	

LIQUID AND PLASTIC LIMITS TEST REPORT

SJB SERVICES, INC.

Client: SEVERYN DEVELOPMENT

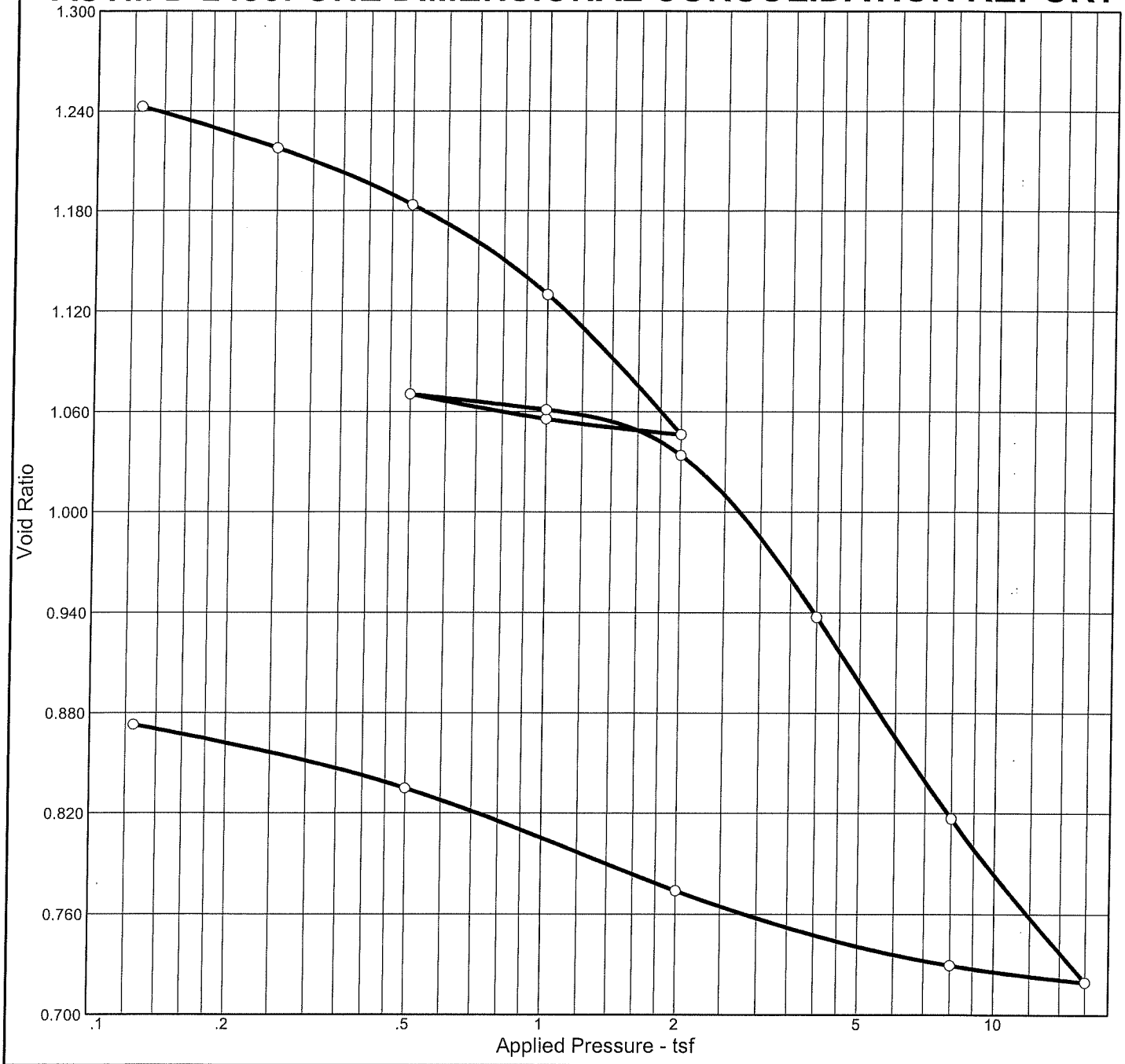
Project: SAWYER'S LANDING

Project No.: BE-21-054

Plate

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

ASTM D-2435: ONE DIMENSIONAL CONSOLIDATION REPORT



Natural Sat.	Natural Moist.	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Swell Press. (tsf)	Heave %	e_o
99.2 %	46.5 %	74.5	49	26	2.7		0.72	0.32				1.267

MATERIAL DESCRIPTION	USCS	AASHTO
B-4, T-1: 30' - 32'		

Project No. BE-21-054 **Client:** SEVERYN DEVELOPMENT

Project: SAWYER'S LANDING

Location: B-4, T-1: 30' - 32'

Remarks:

LTR-2
SAMPLE NUMBER: 21-309

ASTM D-2435: ONE DIMENSIONAL CONSOLIDATION REPORT

SJB SERVICES, INC.

Plate

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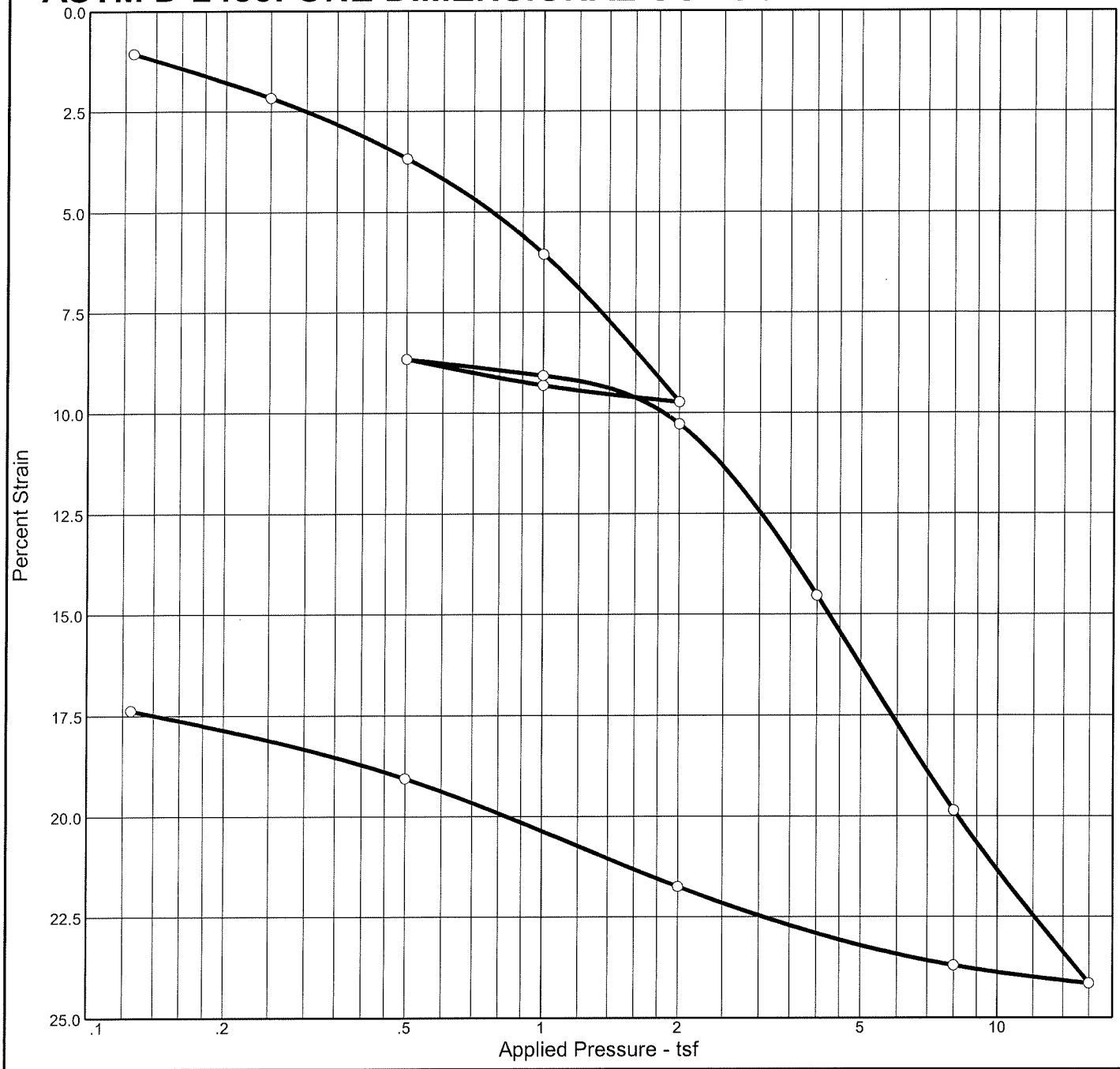
ASTM D-2435: ONE DIMENSIONAL CONSOLIDATION REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Swell Press. (tsf)	Heave %	e_o
Sat.	Moist.											
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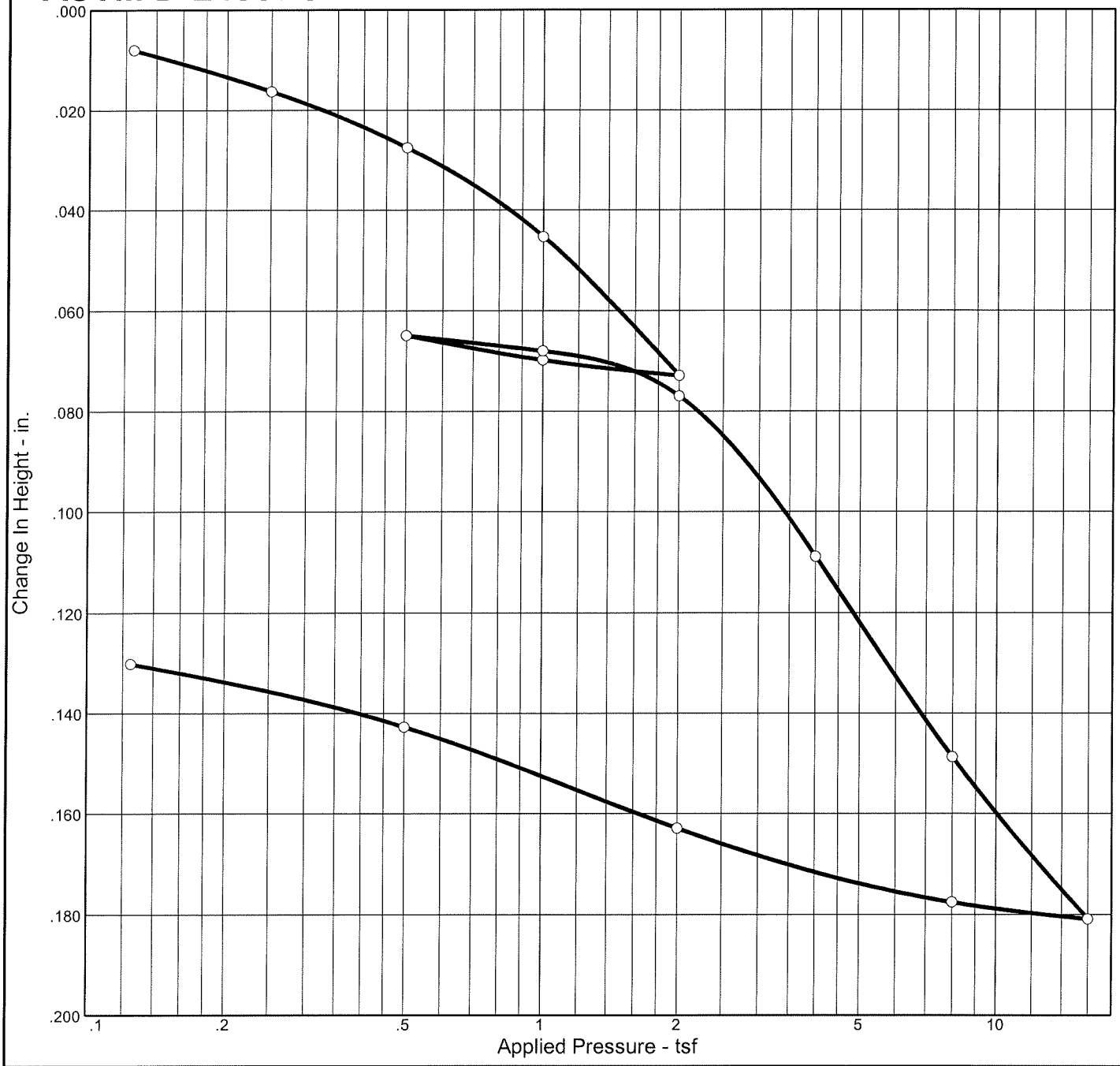

Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Swell Press. (tsf)	Heave %	e_o
Sat.	Moist.											
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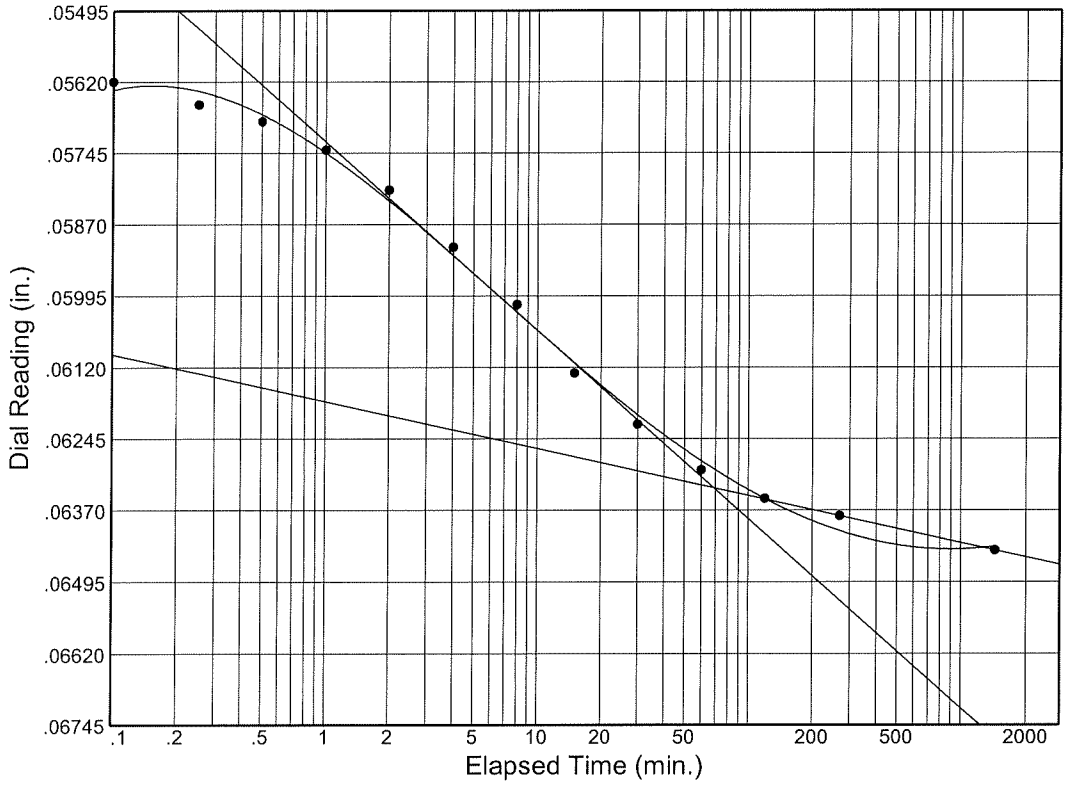
Dial Reading vs. Time

Project No.: BE-21-054
Project: SAWYER'S LANDING

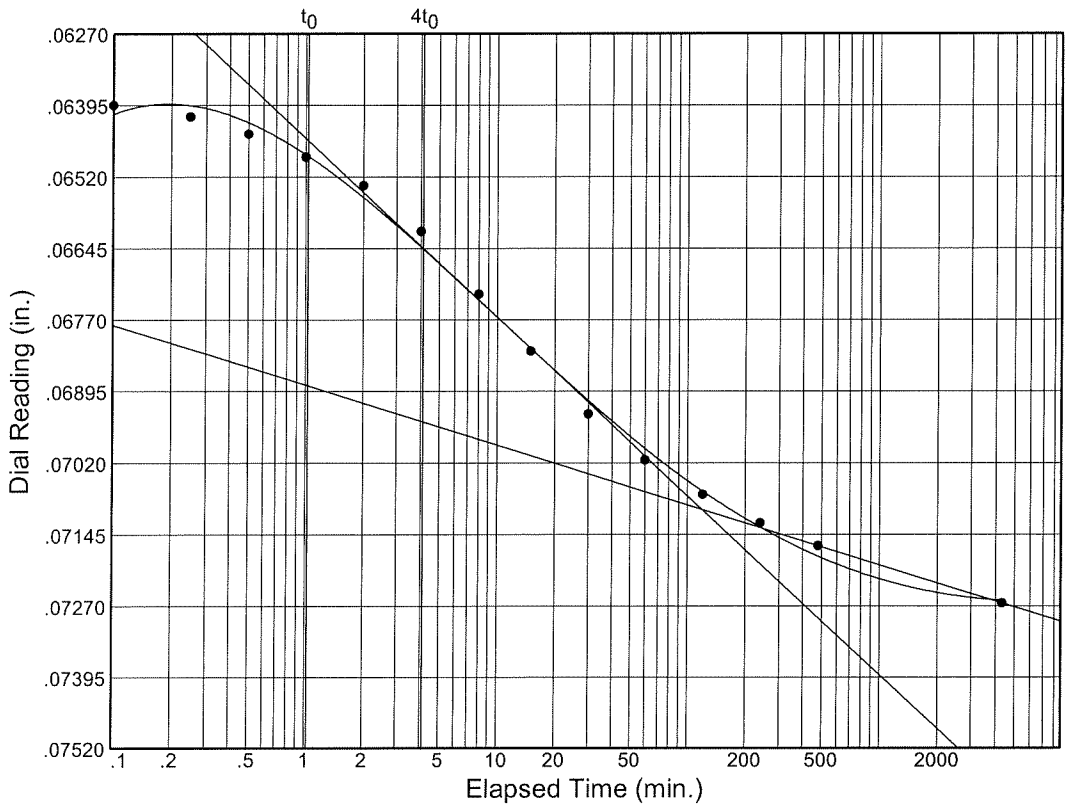
Location: B-4, T-1: 30' - 32'



Load No.= 1
Load= 0.13 tsf
D_0 = 0.05640
D_{50} = 0.05985
D_{100} = 0.06331
T_{50} = 6.13 min.

C_v @ T_{50}
0.04 ft.^{2}/day

C_α = 0.001



Load No.= 2
Load= 0.25 tsf
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D_{50} = 0.06711
D_{100} = 0.07101
T_{50} = 6.69 min.

C_v @ T_{50}
0.04 ft.^{2}/day

C_α = 0.001

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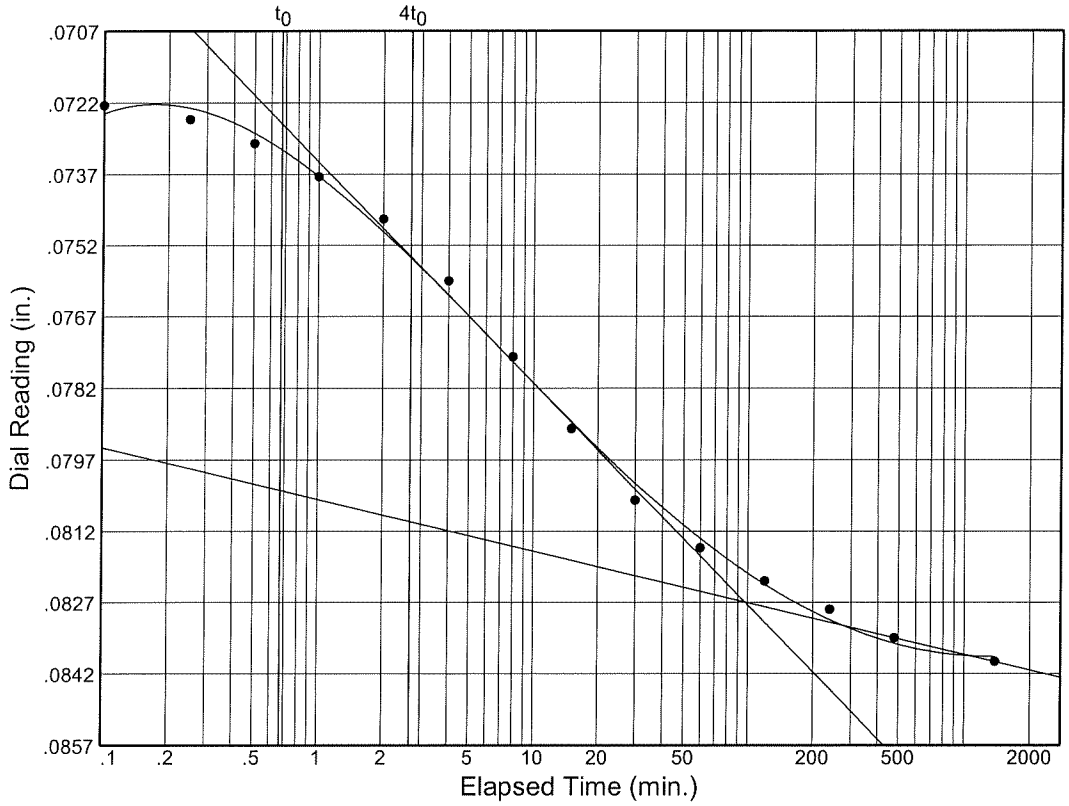
Dial Reading vs. Time

Project No.: BE-21-054
Project: SAWYER'S LANDING

Location: B-4, T-1: 30' - 32'



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Load= 0.50 tsf
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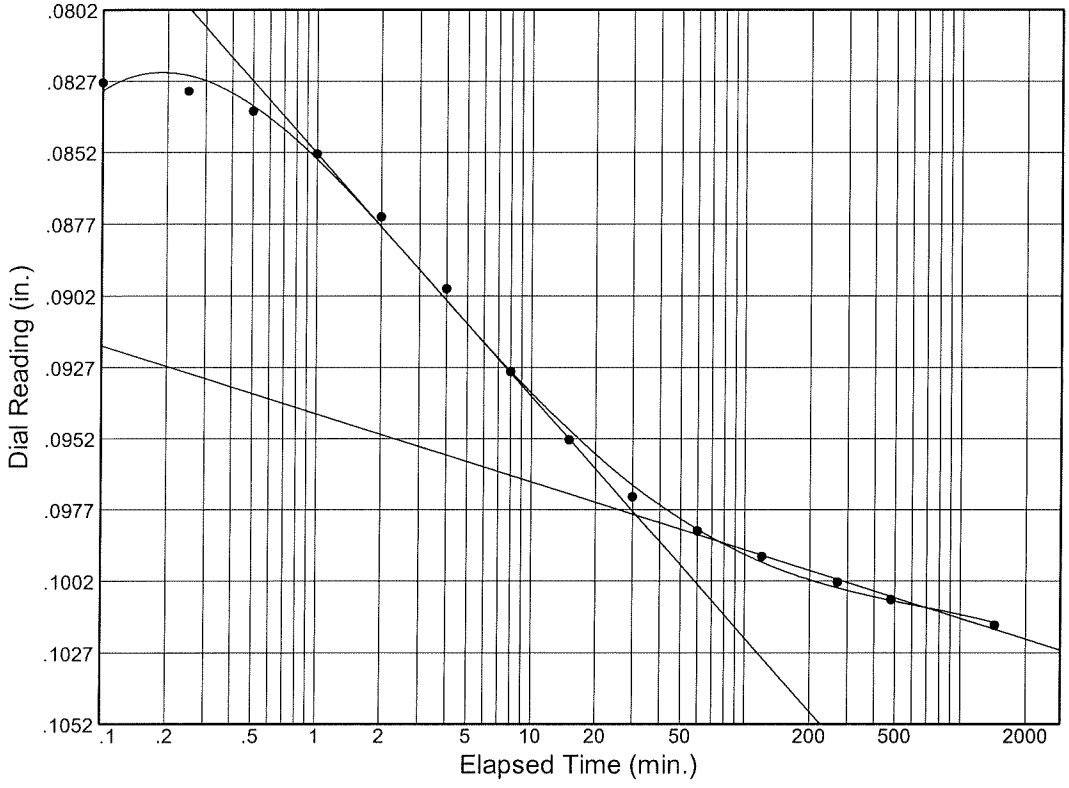
D_{50} = 0.07679
D_{100} = 0.08269
T_{50} = 5.22 min.

C_v @ T_{50}
0.05 ft.^{2}/day

C_α = 0.001



Load No.= 4
Load= 1.00 tsf
D_0 = 0.08395
D_{50} = 0.09092
D_{100} = 0.09790
T_{50} = 4.69 min.

C_v @ T_{50}
0.05 ft.^{2}/day

C_α = 0.003

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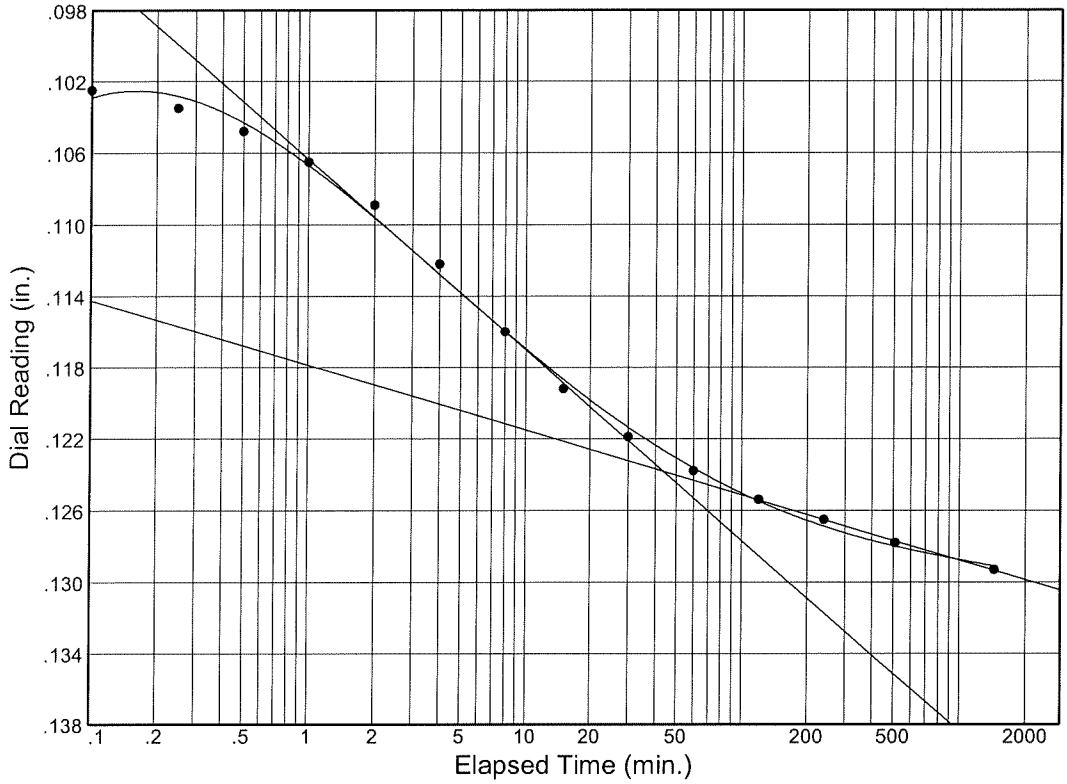
Dial Reading vs. Time

Project No.: BE-21-054
Project: SAWYER'S LANDING

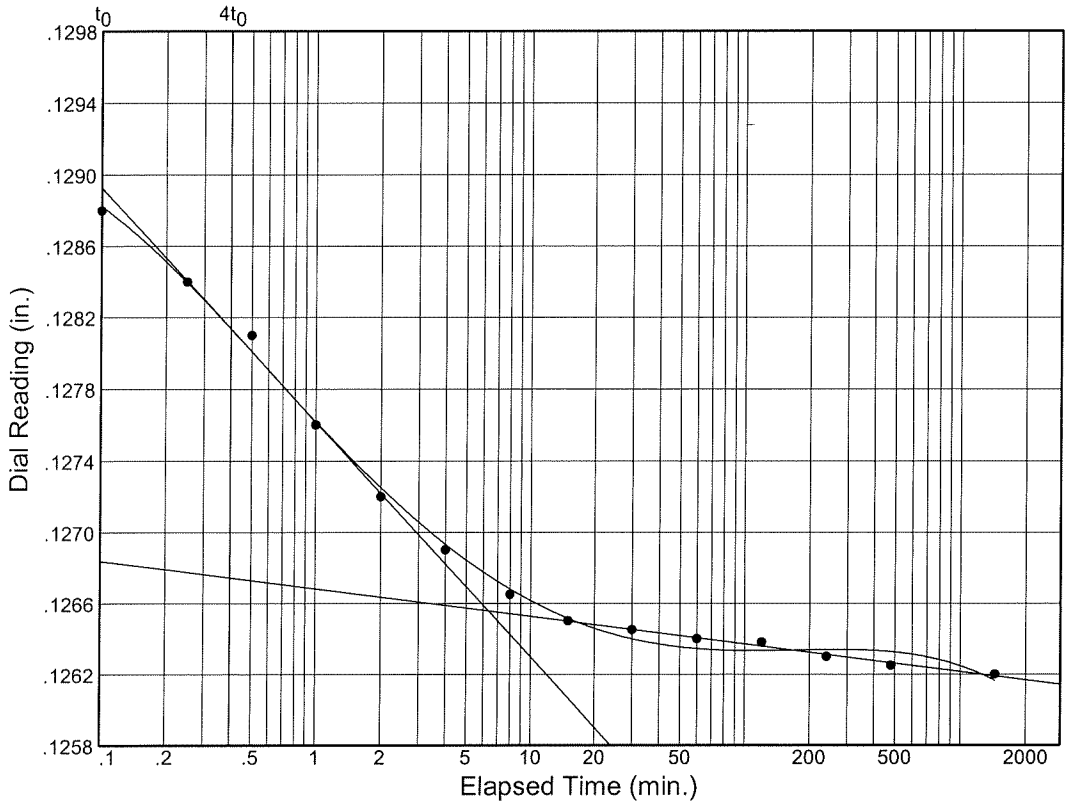
Location: B-4, T-1: 30' - 32'



Load No.= 5
Load= 2.00 tsf
D_0 = 0.10175
D_{50} = 0.11278
D_{100} = 0.12382
T_{50} = 3.99 min.

C_v @ T_{50}
0.06 ft.^{2}/day

C_α = 0.005



Load No.= 6
Load= 1.00 tsf
D_0 = 0.12951
D_{50} = 0.12803
D_{100} = 0.12656
T_{50} = 0.48 min.

C_v @ T_{50}
0.47 ft.^{2}/day

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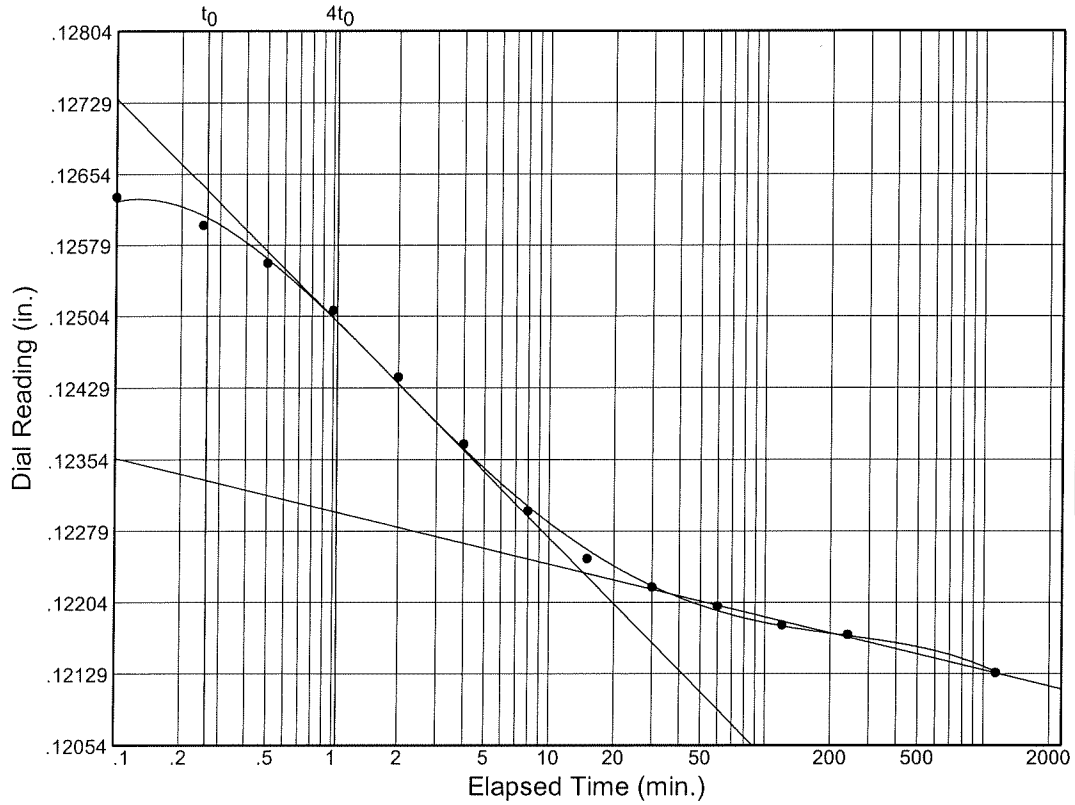
Dial Reading vs. Time

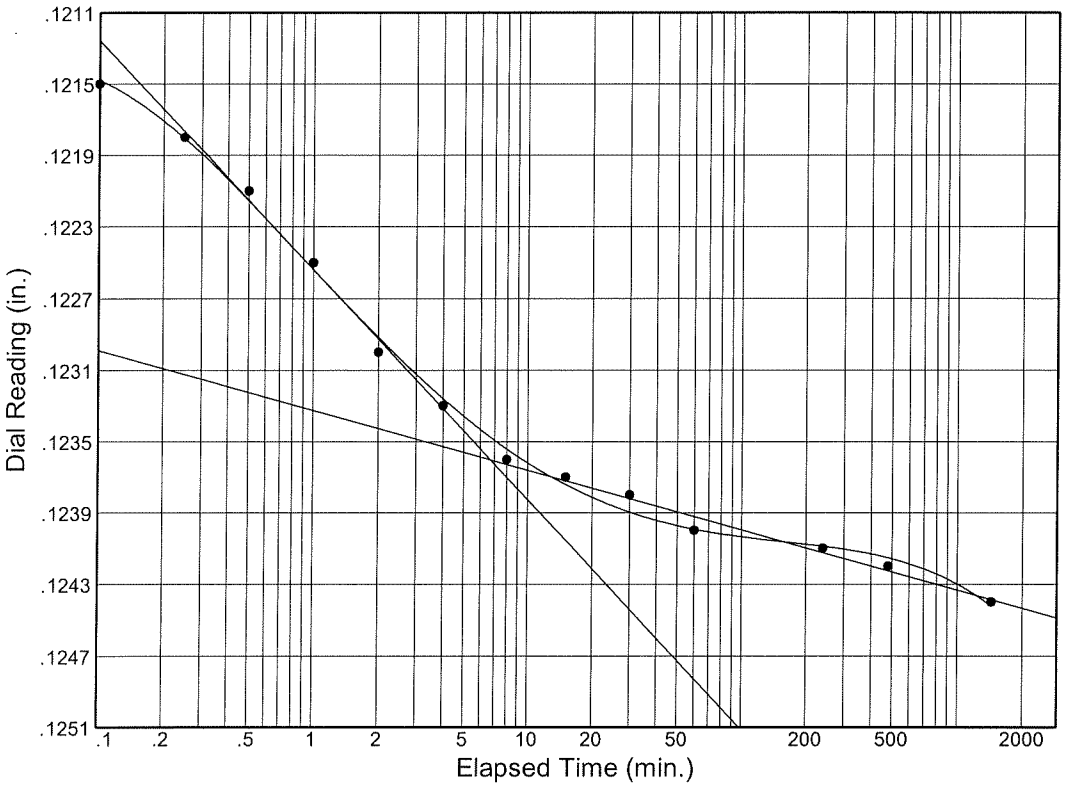
Project No.: BE-21-054
Project: SAWYER'S LANDING

Location: B-4, T-1: 30' - 32'



Load No.= 7
Load= 0.50 tsf
D_0 = 0.12718
D_{50} = 0.12477
D_{100} = 0.12236
T_{50} = 1.29 min.

C_v @ T_{50}
0.18 ft.^{2}/day



Load No.= 8
Load= 1.00 tsf
D_0 = 0.12130
D_{50} = 0.12245
D_{100} = 0.12360
T_{50} = 0.85 min.

C_v @ T_{50}
0.27 ft.^{2}/day

C_α = 0.000

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Dial Reading vs. Time

Project No.: BE-21-054
Project: SAWYER'S LANDING

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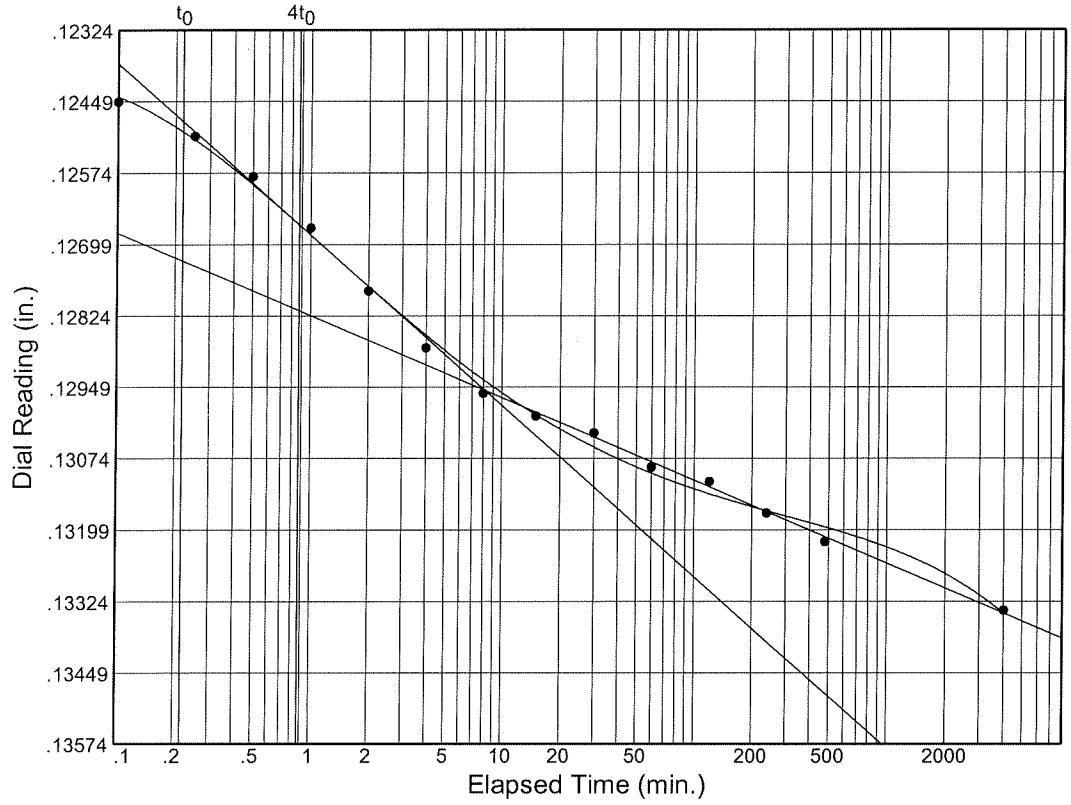
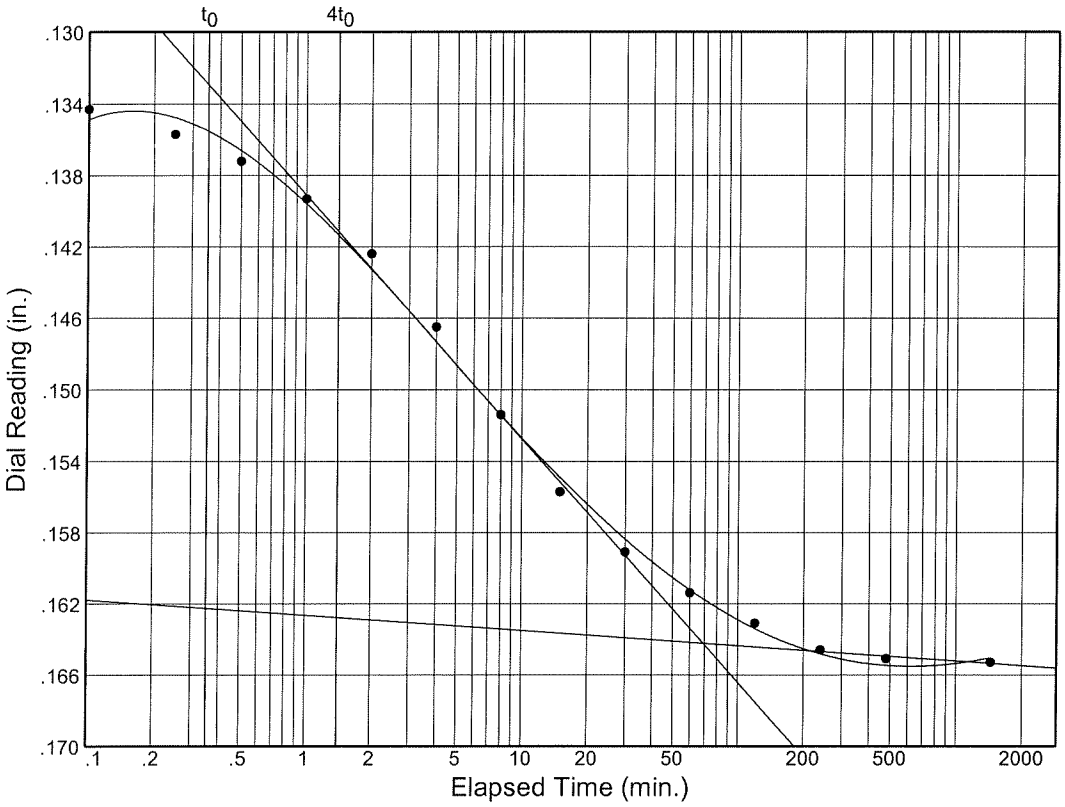


Load No.= 9
Load= 2.00 tsf
D_0 = 0.12340
D_{50} = 0.12647
D_{100} = 0.12955
T_{50} = 0.76 min.

C_v @ T_{50}
0.30 ft.^{2}/day

C_α = 0.002



Load No.= 10
Load= 4.00 tsf
D_0 = 0.12966
D_{50} = 0.14694
D_{100} = 0.16423
T_{50} = 3.75 min.

C_v @ T_{50}
0.06 ft.^{2}/day

C_α = 0.001

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Dial Reading vs. Time

Project No.: BE-21-054
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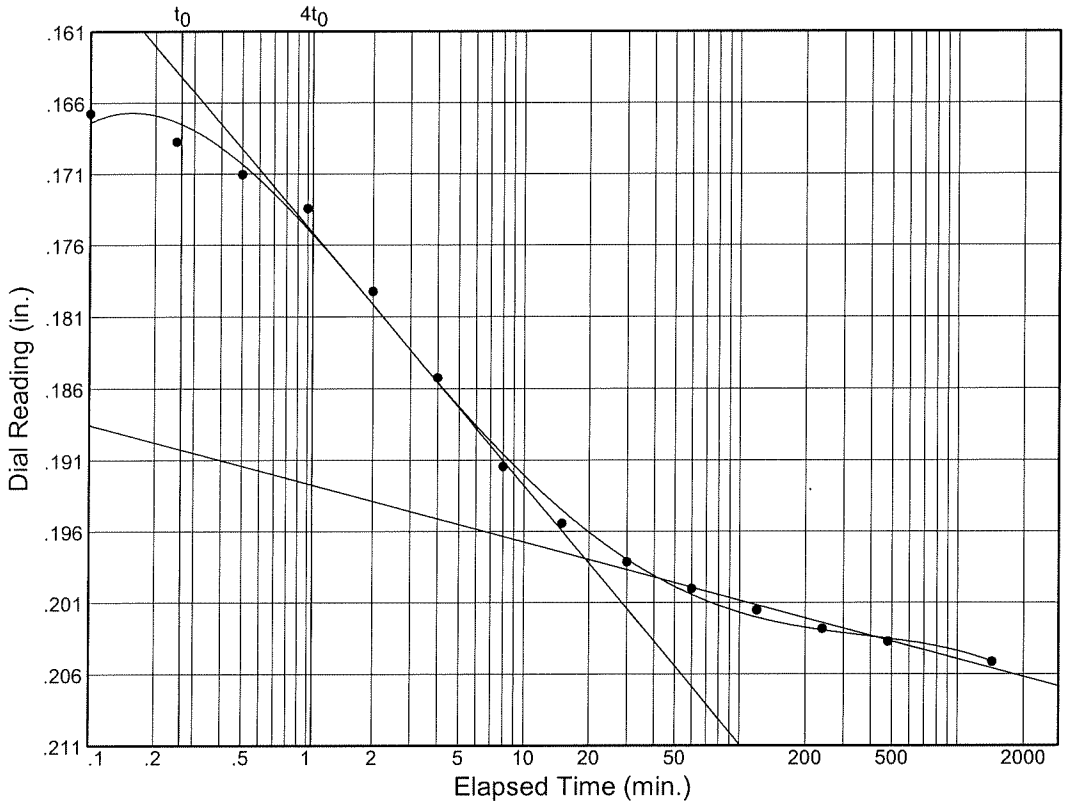
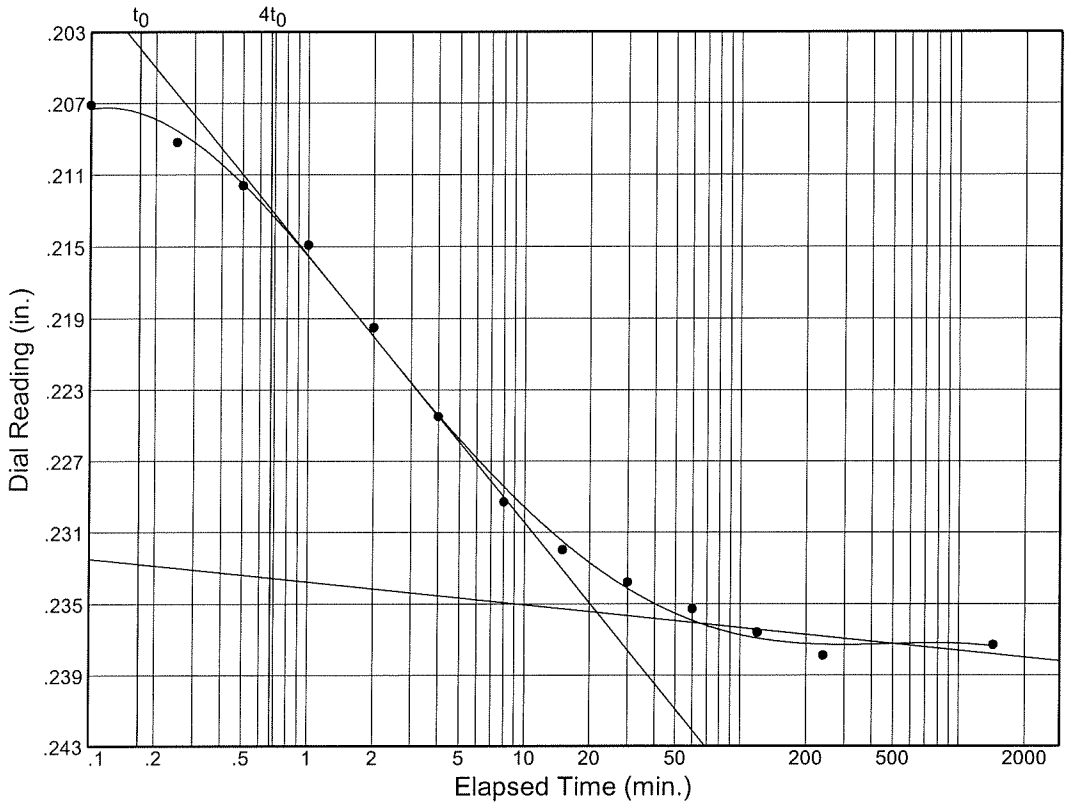


Load No.= 11
Load= 8.00 tsf
D_0 = 0.15978
D_{50} = 0.17884
D_{100} = 0.19791
T_{50} = 1.69 min.

C_v @ T_{50}
0.11 ft.^{2}/day

C_α = 0.006



Load No.= 12
Load= 16.00 tsf
D_0 = 0.20193
D_{50} = 0.21870
D_{100} = 0.23548
T_{50} = 1.64 min.

C_v @ T_{50}
0.10 ft.^{2}/day

C_α = 0.002

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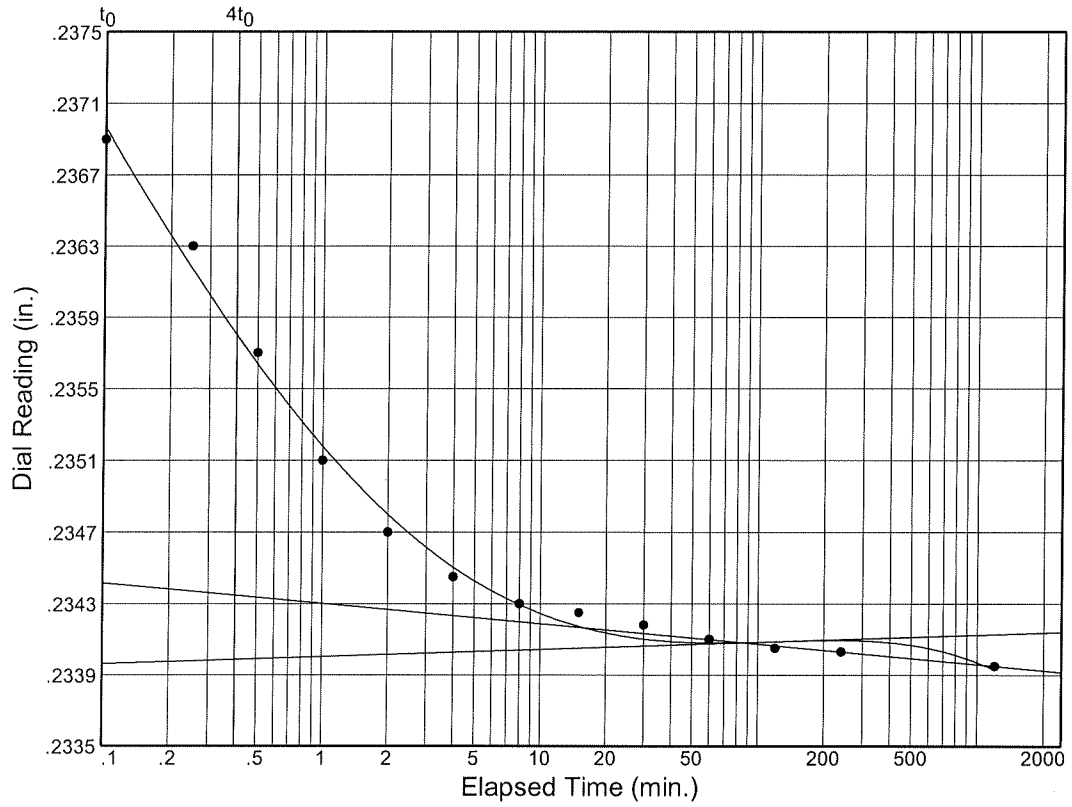
Dial Reading vs. Time

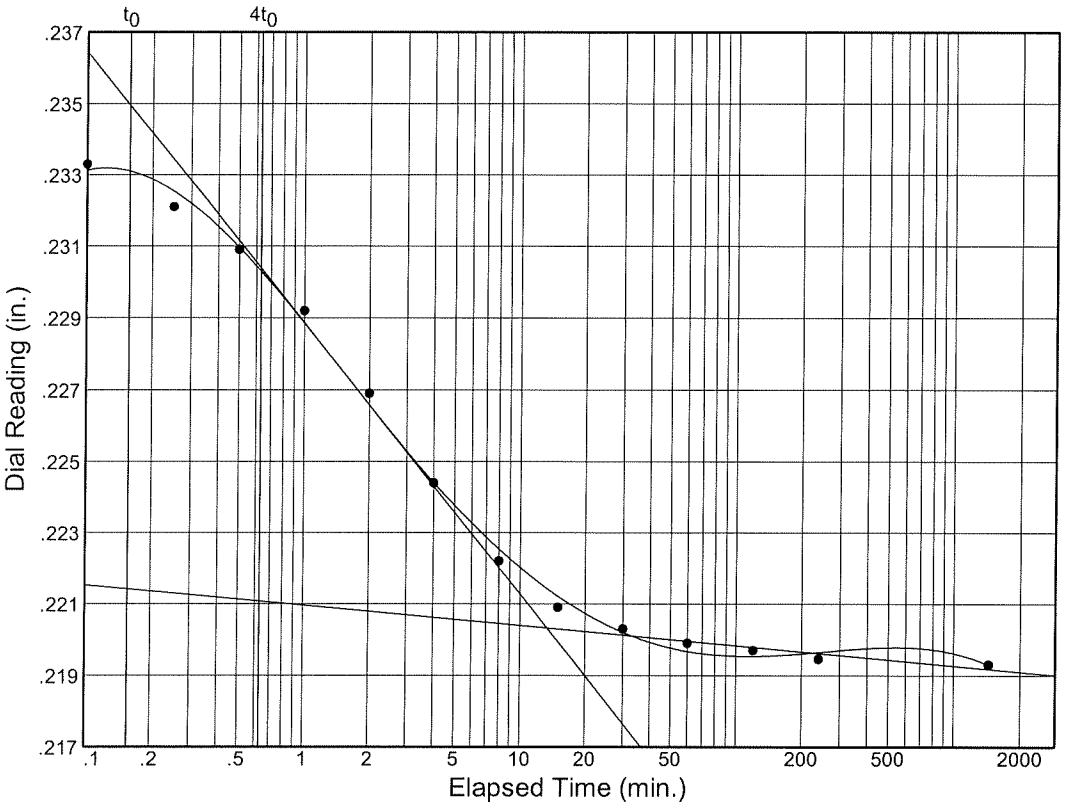
Project No.: BE-21-054
Project: SAWYER'S LANDING

Location: B-4, T-1: 30' - 32'



Load No.= 13
Load= 8.00 tsf
D_0 = 0.23813
D_{50} = 0.23611
D_{100} = 0.23408
T_{50} = 0.24 min.

C_v @ T_{50}
0.66 ft.^{2}/day



Load No.= 14
Load= 2.00 tsf
D_0 = 0.23592
D_{50} = 0.22812
D_{100} = 0.22032
T_{50} = 1.25 min.

C_v @ T_{50}
0.13 ft.^{2}/day

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Dial Reading vs. Time

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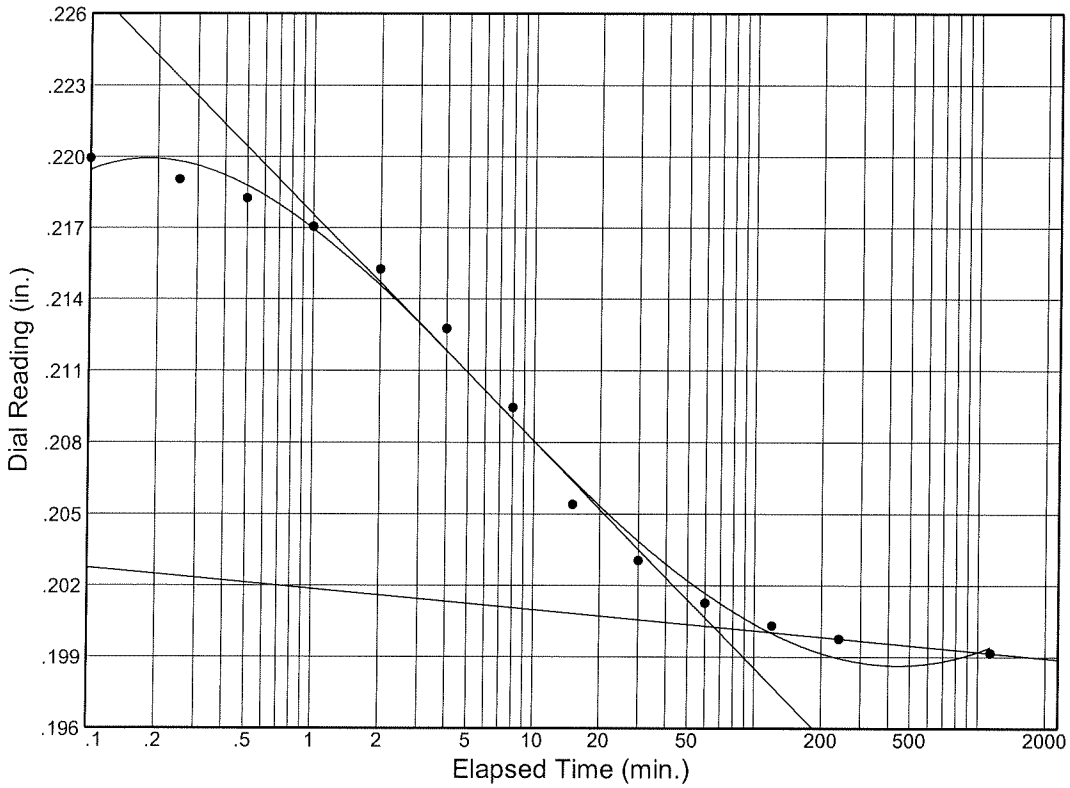
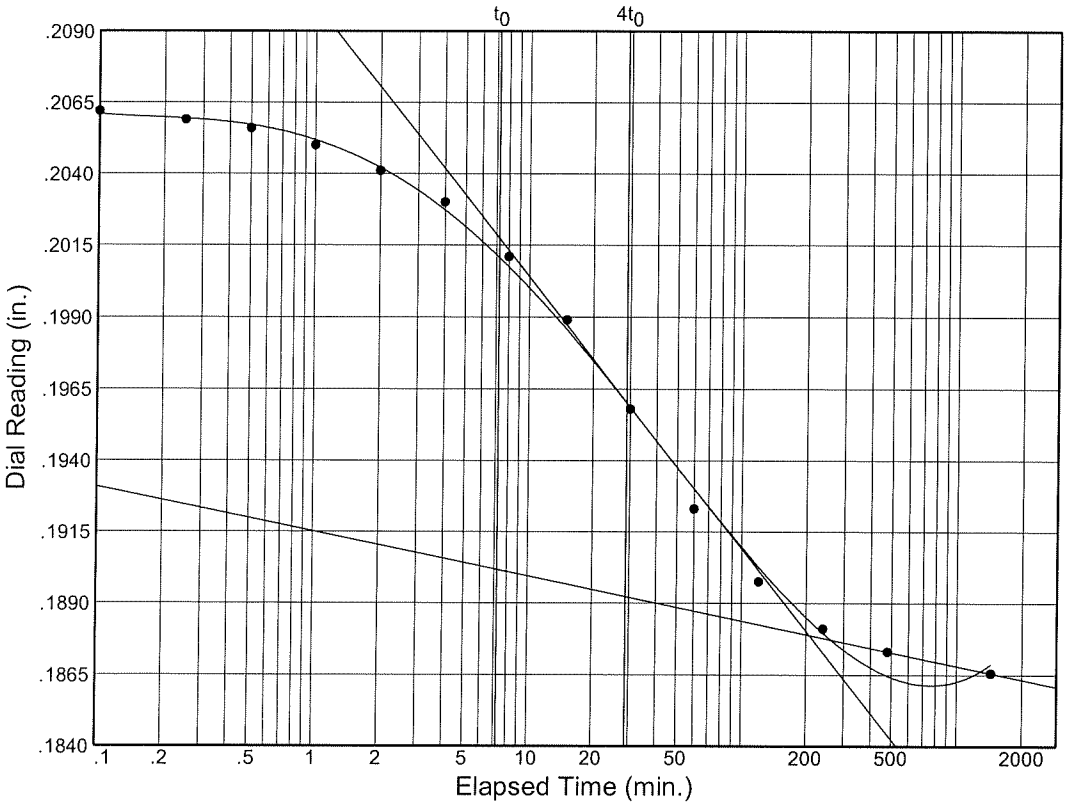


Load No.= 15
Load= 0.50 tsf
D_0 = 0.21930
D_{50} = 0.20977
D_{100} = 0.20025
T_{50} = 6.58 min.

C_v @ T_{50}
0.03 ft.^{2}/day



Load No.= 16
Load= 0.13 tsf
D_0 = 0.20613
D_{50} = 0.19700
D_{100} = 0.18787
T_{50} = 22.51 min.

C_v @ T_{50}
0.01 ft.^{2}/day

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APPENDIX C

FILL MATERIAL AND EARTHWORK RECOMMENDATIONS

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FILL MATERIAL AND EARTHWORK RECOMMENDATIONS

I. Material Recommendations

A. Structural Fill

Structural Fill should consist of a crusher run stone, free of clay, organics and friable or deleterious particles. As a minimum, the crusher stone should meet the requirements of New York State Department of Transportation, Standard Specifications, Item 304.12 – Type 2 Subbase, with the following gradation requirements.

Sieve Size Distribution	Percent Finer by Weight
2 inch	100
¼ inch	25-60
No. 40	5-40
No. 200	0-10

B. Subbase Stone

The subbase stone course placed as the aggregate course beneath slab-on-grade and pavement construction should conform to the same material requirements as Structural Fill as stated above.

C. Suitable Granular Fill

Suitable soil material, which is well graded from coarse to fine, and classified as GW, GP, GM, SW, SP and SM soils using the Unified Soil Classification System (ASTM D-2487) and having no more than 85- percent by weight material passing the No. 4 sieve, no more than 20- percent by weight material passing the No. 200 sieve and which is generally free of particles greater than 4 inches, will be acceptable as Suitable Granular Fill. It should also be free of topsoil, asphalt, concrete rubble, wood, debris, clay and other deleterious materials. Suitable Granular Fill can be used as foundation backfill and as subgrade fill to raise site grades beneath slab-on-grade and pavement construction.

Material meeting the requirements of New York State Department of Transportation, Standard Specifications, Item 203.07 – Select Granular Fill is acceptable for use as Suitable Granular Fill.

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II. Placement and Compaction Requirements

Structural Fill placed beneath foundations, slab on grade floors and pavement, or used as foundation backfill should be compacted to a minimum of 95 percent of the maximum dry density as measured by the modified Proctor test (ASTM D1557). Fill placed in non-loaded grass areas can be compacted to a minimum of 90 percent of the maximum dry density (ASTM D1557).

Placement of fill should not exceed a maximum loose lift thickness of 8 to 10 inches with the exception of subgrade undercuts and the subbase courses beneath slab-on-grade and pavement construction, which can be placed in a single or initial lift not exceeding 12 inches. The loose lift thickness should be reduced in conjunction with the compaction equipment used so that the required density is attained.

Fill should have a moisture content within two percent of the optimum moisture content prior to compaction. Subgrades should be properly drained and protected from moisture and frost. Placement of fill on frozen subgrades is not acceptable. It is recommended that all fill placement and compaction be monitored and tested by a representative of Empire Geotechnical Engineering Services.

III. Quality Assurance Testing

The following minimum laboratory and field quality assurance testing frequencies are recommended to confirm fill material quality and post placement and compaction conditions. These minimum frequencies are based on generally uniform material properties and placement conditions. Should material properties vary or conditions at the time of placement vary (i.e. moisture content, placement and compaction, procedures or equipment, etc.) Then additional testing is recommended. Additional testing, which may be necessary, should be determined by qualified geotechnical personnel, based on evaluation of the actual fill material and construction conditions.

A. Laboratory Testing of Material Properties

- Moisture content (ASTM D-2216) - 1 test per 2,000 cubic yards or no less than 2 tests per each material type.
- Grain Size Analysis (ASTM D-422) - 1 test per 3,000 cubic yards or no less than 2 tests per each material type.
- Liquid and Plastic Limits (ASTM D-4318) 1 test per 3,000 cubic yards or no less than 2 tests per each material type. Liquid and Plastic Limit testing is necessary only if appropriate, based on material composition (i.e. clayey or silty soils).

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- Modified Proctor Moisture Density Relationship (ASTM D-1557) 1 test per 4,000 cubic yards or no less than 1 test per each material type. A maximum/minimum density relationship (ASTM D-4253 and ASTM D-4254) may be an appropriate substitute for ASTM D-1557 depending on material gradation.

B. Field In-Place Moisture/Density Testing (ASTM D-3017 and ASTM D-2922)

- Backfilling along trenches and foundation walls - 1 test per 50 lineal feet per lift.
- Backfilling Isolated Excavations (i.e. column foundations, manholes, etc.) 1 test per lift.
- Filling in open areas for slab-on-grade and pavement construction - 1 test per 2,500 square feet per lift.

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APPENDIX D

GEOTECHNICAL REPORT LIMITATIONS

GEOTECHNICAL REPORT LIMITATIONS

WMA Engineering DPC / DBA Empire Geotechnical Engineering Services (Empire) has endeavored to meet the generally accepted standard of care for the services completed, and in doing so is obliged to advise the geotechnical report user of our report limitations. Empire believes that providing information about the report preparation and limitations is essential to help the user reduce geotechnical-related delays, cost over-runs, and other problems that can develop during the design and construction process. Empire would be pleased to answer any questions regarding the following limitations and use of our report to assist the user in assessing risks and planning for site development and construction.

PROJECT SPECIFIC FACTORS: The conclusions and recommendations provided in our geotechnical report were prepared based on project specific factors described in the report, such as size, loading, and intended use of structures; general configuration of structures, roadways, and parking lots; existing and proposed site grading; and any other pertinent project information. Changes to the project details may alter the factors considered in development of the report conclusions and recommendations. *Accordingly, Empire cannot accept responsibility for problems which may develop if we are not consulted regarding any changes to the project specific factors that were assumed during the report preparation.*

SUBSURFACE CONDITIONS: The site exploration investigated subsurface conditions only at discrete test locations. Empire has used judgement to infer subsurface conditions between the discrete test locations, and on this basis the conclusions and recommendations in our geotechnical report were developed. It should be understood that the overall subsurface conditions inferred by Empire may vary from those revealed during construction, and these variations may impact on the assumptions made in developing the report conclusions and recommendations. *For this reason, Empire should be retained during construction to confirm that conditions are as expected, and to refine our conclusions and recommendations in the event that conditions are encountered that were not disclosed during the site exploration program.*

USE OF GEOTECHNICAL REPORT: Unless indicated otherwise, our geotechnical report has been prepared for the use of our client for specific application to the site and project conditions described in the report. *Without consulting with Empire, our geotechnical report should not be applied by any party to other sites or for any uses other than those originally intended.*

CHANGES IN SITE CONDITIONS: Surface and subsurface conditions are subject to change at a project site subsequent to preparation of the geotechnical report. Changes may include, but are not limited to, floods, earthquakes, groundwater fluctuations, and construction activities at the site and/or adjoining properties. *Empire should be informed of any such changes to determine if additional investigative and/or evaluation work is warranted.*

MISINTERPRETATION OF REPORT: The conclusions and recommendations contained in our geotechnical report are subject to misinterpretation. *To limit this possibility, Empire should review project plans and specifications relative to geotechnical issues to confirm that the recommendations contained in our report have been properly interpreted and applied.*

Subsurface exploration logs and other report data are also subject to misinterpretation by others if they are separated from the geotechnical report. This often occurs when copies of logs are given to contractors during the bid preparation process. *To minimize the potential for misinterpretation, the subsurface logs should not be separated from our geotechnical report and the use of excerpted or incomplete portions of the report should be avoided.*

OTHER LIMITATIONS: Geotechnical engineering is less exact than other design disciplines, as it is based partly on judgement and opinion. For this reason, our geotechnical report may include clauses that identify the limits of Empire's responsibility, or that may describe other limitations specific to a project. These clauses are intended to help all parties recognize their responsibilities and to assist them in assessing risks and decision making. Empire would be pleased to discuss these clauses and to answer any questions that may arise.

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PASSERO
engineering architecture

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June 17, 2024

Attn: **Daniel J. Ulatowski, AICP // Principal Planner/ZEO**
Town of Amherst Planning Department
5583 Main Street
Williamsville, New York 14221

Re: **Sawyer's Landing Mixed-Use Project, Town of Amherst, NY**
50 Dodge Road [Formerly Portion of 1081 North French Road - Site "A" of Muir Woods Property]
Alternative Parking Plan
Passero Project No: 20243845.0002

Dear Mr. Ulatowski:

This technical letter provides an updated shared parking demand assessment for the proposed mixed-use project (Sawyer's Landing Development) located in the Town of Amherst in connection with the request for the approval of an Alternate Parking Plan per Section 7-1-7A of the Zoning Code.

This letter updates a previous version of the Alternative Parking Plan dated December 18, 2023, and is consistent with the most recently updated plans prepared by Carmina Wood Design to be submitted in connection with a request to Amend the Findings Statement pursuant to the State Environmental Quality Review Act ("SEQRA"). Additionally, per Town feedback, this letter performs a shared parking sensitivity analysis of residential parking demands should more residents decide to work from home rather than leave the project site. All supporting materials are included in the attachments. The following tasks were undertaken:

- Estimated parking demands using Town Zoning Code requirements.
- Estimated mixed-use parking demands considering shared parking principles based on nationally accepted methodology developed, in part, by the Urban Land Institute (ULI), Institute of Transportation Engineers (ITE), International Council of Shopping Centers (ICSC), and National Parking Association (NPA).

1. PROJECT DESCRIPTION

The proposed mixed-use project consists of the following:

- **Residential:**
  - **Apartments:** 102 units with a total of 108 bedrooms
  - **2-Unit Attached Townhomes:** 44 units with a total of 88 bedrooms
  - **2-Story Townhomes:** 63 units with a total of 189 bedrooms
  - **Total Units:** 209 units
- **Self-Storage Building:** 105,600 SF
- **Building 1 (South Building) – 12,562 SF:**
  - 3,901 SF restaurant
  - 8,002 SF gym for outside membership
  - 227 SF meter room
  - 432 leasing office
- **Building 2 (North Building) – 15,154 SF:**

- 2,300 SF office
- 12,854 SF retail

The project will provide 407 total parking spaces split into:

- 94 parallel spaces
- 171 9'x19' spaces
- 63 townhouse garage spaces
- 63 spaces in front of townhouse garage spaces
- 16 garage spaces in 4-story buildings

2. PARKING REQUIREMENTS PER ZONING CODE

Section 7-1-6A of the Zoning Code sets forth the off-street parking requirements for different categories of land uses. Strict application of the parking requirements is depicted in **Table 1**.

Table 1: *Town Code Parking Requirements*

Use Type	Parking Requirement	Size	Result
Residential	2 spaces per unit	209 units	418
Office	1 space per 200 NFA	2,300 GFA (1,955 NFA)	10
Retail	5.5 spaces per 1,000 NFA	12,854 GFA (10,925 NFA)	61
Athletic Club (Gym)	1 per 2 persons of posted maximum capacity	160 persons	80
Restaurant	1 space per 3 seats + 1 space per 100 SF of take-out area	100 seats + 500 SF	38
Self-Storage	1 space per 5,000 SF devoted to storage		22
Total Required Parking			**629**

GFA = gross floor area.
NFA = net floor area.
For single story, multiple tenant building – 85% of GFA. This was applied to the office and retail uses.
Athletic club assumed 50 GSF per person according to the 2020 NYS Building Code.

Strict application of the off-street parking standards results in a parking requirement of 629 spaces. Based on the current supply of 407 spaces, the site has a theoretical deficit of 222 spaces.

3. SHARED PARKING PRINCIPLES

Shared parking studies are conducted to establish the total number of spaces necessary by mixed-use developments to effectively serve expected parking demands. The shared parking concept builds upon the premise that land uses in a mixed-use development often do not share the same peak demand period, so spaces can be shared between the different land uses during different peak periods.

Each land use typically has a peak demand period where it would occupy the maximum number of spaces that the use requires and an off-peak period where a lesser percentage of the maximum spaces would be occupied; be it by time of day, day of week, or even month of the year. This allows for the project to provide fewer spaces than would be required if the land uses on a project site were to be treated separately with individual parking demands. The concept of shared parking is well recognized within the real estate and regulatory community and is proven to work.

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4. SHARED PARKING DEMAND

To estimate the number of parking spaces required for the proposed project, this assessment used the ULI methodology for shared parking. This methodology is utilized by transportation engineers and planners when evaluating the parking demand for a mixed-use project. The ULI *Shared Parking (3rd Edition)* includes state-of-the-art practice methodologies for determining parking demand in these types of projects.

Accompanying the publication is an interactive Shared Parking Calculation Model (Model) that is used to estimate the shared parking demand. The Model requires a user to input the number of units associated with each proposed land use. Within the Model, 32 land uses are identified – some of which are subdivided into more refined categories – with 44 different recommended base parking ratios based on suburban locations with little or no transit. Data contained within the Model is from a combination of ULI surveys and the ITE *Parking Generation Manual*. Outputs consist of a summary table describing the base parking demand and shared parking reduction; a monthly demand comparison; weekday and weekend demand by month; and weekday and weekend demand by hour.

Several important factors to consider when estimating demand for residential uses include the following:

- The residential demand is based on the number of units per bedroom type (e.g., studio efficiency, one-bedroom, two-bedroom, and three or more bedrooms).
- Time of day factors for demand vary throughout a typical 24-hour period for both weekday and weekend periods. Demands may also vary based on suburban or urban settings. Reserved spaces are assumed to have a 100% utilization rate for all hours. Reserved spaces are those that are dedicated to tenants. In this case, the garage spaces, and the surface spaces in front of them qualify as reserved. 128 spaces are assumed to be reserved for residential use only.
- For a typical weekday, residential suburban factors vary from 100% between 12:00 AM and 5:00 AM and fall to as low as 40% from 12:00 PM through 3:00 PM. In an urban setting, the demand varies from 100% between 12:00 AM and 5:00 AM and falls to as low as 50% between 12:00 PM and 2:00 PM.
- For a typical weekend, residential suburban factors range from 100% between 12:00 AM and 6:00 AM and fall to as low as 65% from 1:00 PM through 2:00 PM. In an urban setting, the demand varies from 100% between 12:00 AM and 5:00 AM and falls to as low as 50% at 6:00 PM.

This demand analysis reviewed residential parking accumulations in urban settings for the weekday and weekend to present the outcomes of the site if 50% of future residents remain on-site throughout a typical weekday.

The peak hour demand, respective to weekday, weekend, and seasonal demands, is projected to occur at 8:00 PM on a December weekday. The projected peak hour demand (i.e., the busiest hour of the busiest weekday or weekend of the year) is 403 spaces. The ULI does not have data for Self-Storage; therefore, 22 spaces were conservatively assumed without adjustment during weekdays and weekends. Parking demand accumulations for the peak weekday and weekend periods are presented in **Table 2**.

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Table 2: *Shared Parking Demand*

Land Use	Size	Weekday		Weekend	
		Max Demand	Shared Demand	Max Demand	Shared Demand
Residential	246 units	278	254	289	265
Office	2,300 SF	10	0	2	0
Retail	12,854 SF	47	39	53	32
Athletic Club	8,002 SF	57	36	48	19
Restaurant	3,901 SF	69	52	68	45
Self-Storage	105,600 SF	22	22	22	22
Total Parking Demands		**483**	**403**	**482**	**383**

Weekday shared demand occurs in December at 8:00 PM.
Weekend shared demand occurs in December at 7:00 PM.

It is known that parking demands can be affected by seasonality. The *Shared Parking Model* notes that the site is expected to peak at 100% in December (the holiday season). Monthly adjustments as a percentage of the peak month of December are calculated. **Table 3** depicts the monthly comparison and projected demands on the peak weekday at 8:00 PM.

Table 3: *Monthly Adjustments and Projected Demands*

Month	Shared Parking Monthly Comparison	Projected Demand WITH Self-Storage	Projected Demand WITHOUT Self-Storage
January	94%	379	357
February	94%	378	356
March	95%	382	360
April	93%	374	352
May	93%	376	354
June	93%	374	352
July	91%	368	346
August	92%	371	349
September	93%	375	353
October	94%	379	357
November	94%	380	358
December	100%	403	381
Late December	94%	379	357

Tables 2 and 3 assume that the self-storage facility is 100% parked, which is extremely unlikely to occur during the peak demand period. Outside of December, parking demands can be adequately satisfied by the proposed parking supply. **Table 3** also depicts the parking demands with and without the self-storage facility. The proposed supply will satisfy the project demands at all times of the year.

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Please feel free to contact me directly with any questions.

Sincerely,

David Kruse, AICP, PTP
Senior Transportation Planner
dkruse@passero.com • 585-505-6012

Attachments

cc: William Severyn // Severyn Development, Inc.
Sean Hopkins, Esq. // Hopkins Sorgi & McCarthy PLLC
Chris Wood, PE // Carmina Wood Design

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ATTACHMENTS

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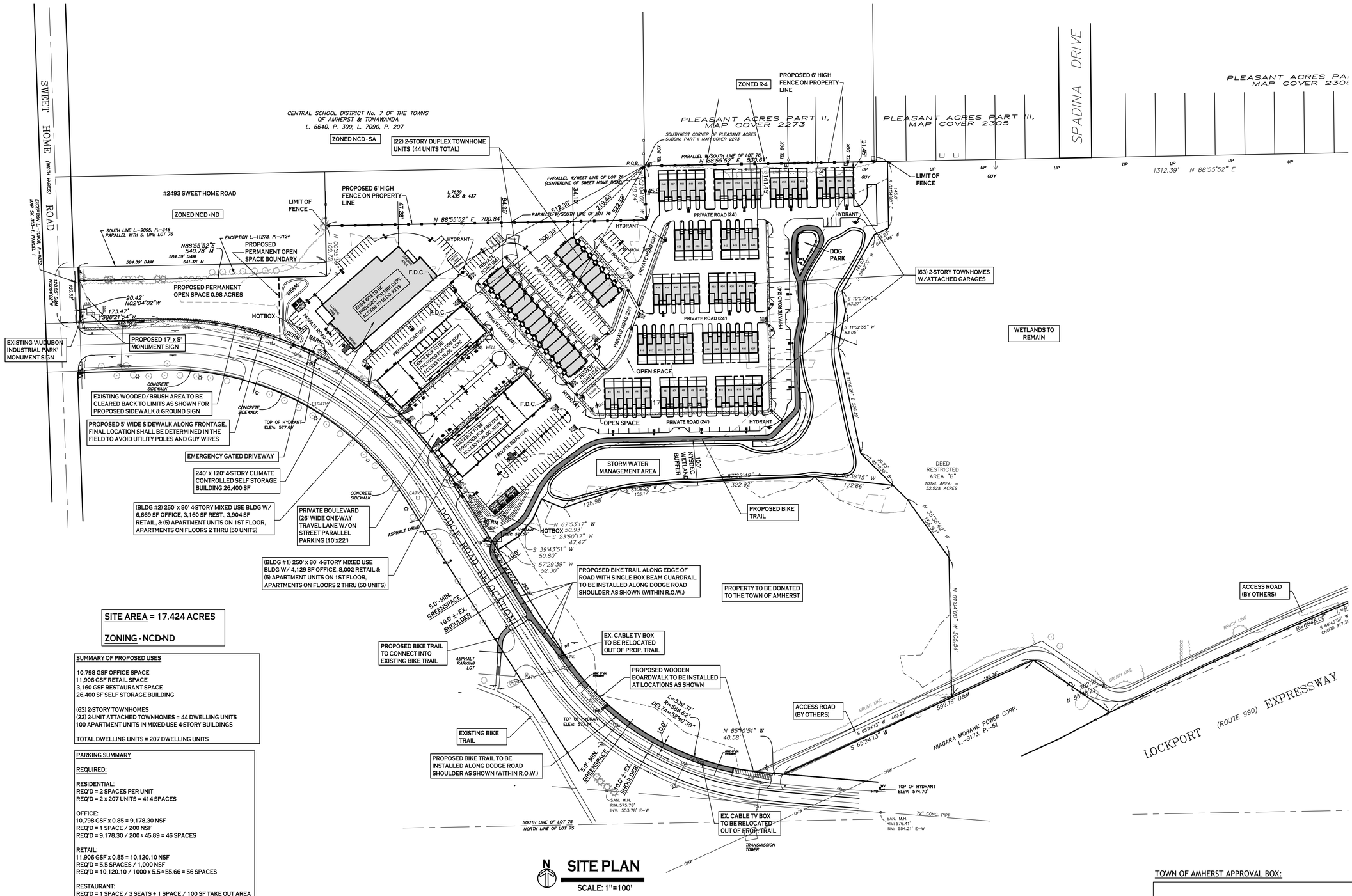
SWEET HOME ROAD (MAIN STREET)
#2493 SWEET HOME ROAD
CENTRAL SCHOOL DISTRICT No. 7 OF THE TOWNS OF AMHERST & TONAWANDA L. 6640, P. 309, L. 7090, P. 207
PLEASANT ACRES PART II, MAP COVER 2273
PLEASANT ACRES PART III, MAP COVER 2305
SPADINA DRIVE
ZONED NCD - SA
ZONED NCD - ND
ZONED R-4
(22) 2-STORY DUPLEX TOWNHOME UNITS (44 UNITS TOTAL)
PROPOSED 6' HIGH FENCE ON PROPERTY LINE
LIMIT OF FENCE
PROPOSED PERMANENT OPEN SPACE BOUNDARY
PROPOSED PERMANENT OPEN SPACE 0.98 ACRES
EXISTING 'AUDUBON INDUSTRIAL PARK' MONUMENT SIGN
PROPOSED 17' x 5' MONUMENT SIGN
EXISTING WOODED/BRUSH AREA TO BE CLEARED BACK TO LIMITS AS SHOWN FOR PROPOSED SIDEWALK & GROUND SIGN
PROPOSED 5' WIDE SIDEWALK ALONG FRONTAGE, FINAL LOCATION SHALL BE DETERMINED IN THE FIELD TO AVOID UTILITY POLES AND GUY WIRES
EMERGENCY GATED DRIVEWAY
240' x 120' 4-STORY CLIMATE CONTROLLED SELF STORAGE BUILDING 26,400 SF
(BLDG #2) 250' x 80' 4-STORY MIXED USE BLDG W/ 6,669 SF OFFICE, 3,160 SF REST., 3,904 SF RETAIL, & (5) APARTMENT UNITS ON 1ST FLOOR, APARTMENTS ON FLOORS 2 THRU (50 UNITS)
PRIVATE BOULEVARD (26' WIDE ONE-WAY TRAVEL LANE W/ON STREET PARALLEL PARKING (10'x22')
(BLDG #1) 250' x 80' 4-STORY MIXED USE BLDG W/ 4,129 SF OFFICE, 8,002 RETAIL & (5) APARTMENT UNITS ON 1ST FLOOR, APARTMENTS ON FLOORS 2 THRU (50 UNITS)
PROPOSED BIKE TRAIL ALONG EDGE OF ROAD WITH SINGLE BOX BEAM GUARDRAIL TO BE INSTALLED ALONG DODGE ROAD SHOULDER AS SHOWN (WITHIN R.O.W.)
PROPERTY TO BE DONATED TO THE TOWN OF AMHERST
PROPOSED BIKE TRAIL TO CONNECT INTO EXISTING BIKE TRAIL
EX. CABLE TV BOX TO BE RELOCATED OUT OF PROP. TRAIL
PROPOSED WOODEN BOARDWALK TO BE INSTALLED AT LOCATIONS AS SHOWN
EXISTING BIKE TRAIL
PROPOSED BIKE TRAIL TO BE INSTALLED ALONG DODGE ROAD SHOULDER AS SHOWN (WITHIN R.O.W.)
EX. CABLE TV BOX TO BE RELOCATED OUT OF PROP. TRAIL
(63) 2-STORY TOWNHOMES W/ ATTACHED GARAGES
WETLANDS TO REMAIN
STORM WATER MANAGEMENT AREA
PROPOSED BIKE TRAIL
DEED RESTRICTED AREA "B" TOTAL AREA = 32.52± ACRES
ACCESS ROAD (BY OTHERS)
DOG PARK
OPEN SPACE
PRIVATE ROAD (24')
HYDRANT
F.D.C.
HOTBOX
BERM
CONCRETE SIDEWALK
ASPHALT DRIVE
DODGE ROAD RELOCATION
5.0' MIN. GREENSPACE
10.0'± EX. SHOULDER
ASPHALT PARKING LOT
TOP OF HYDRANT ELEV: 577.68'
TOP OF HYDRANT ELEV: 574.70'
SAN. M.H. RIM: 575.78' INV: 553.78' E-W
SAN. M.H. RIM: 576.41' INV: 554.21' E-W
72" CONC. PIPE
NIAGARA MOHAWK POWER CORP. L.-9173, P.-51
LOCKPORT (ROUTE 990) EXPRESSWAY
TRANSMISSION TOWER
ACCESS ROAD (BY OTHERS)
BRUSH LINE
P.O.B.
N 88°55'52" E 530.61'
1312.39' N 88°55'52" E
N 88°55'52" E 700.84'
S 88°55'52" W 542.58'
S 88°55'52" W 619.48'
S 88°55'52" W 513.36'
S 88°55'52" W 94.10'
94.25'
47.28'
500.34'
141.45'
31.45'
45.8'
584.39' D&M
541.38' M
540.78' M
N88°55'52"E
90.42'
N02°04'02"W
173.47'
S88°21'54"W
N 67°53'17" W 128.98'
N 67°53'17" W HOTBOX 50.93'
S 23°01'17" W 47.47'
S 39°43'51" W 50.80'
S 57°29'39" W 52.30'
S 87°22'49" W 322.92'
N 38°15' W 122.66'
N 35°38'40" W 58.95'
N 01°40'00" W 305.54'
S 10°07'24" E 43.27'
S 11°02'55" W 83.05'
S 17°39'28" E 236.39'
S 65°24'13" W 403.22'
S 65°24'13" W 599.16' D&M
N 85°10'51" W 40.58'
L=539.31' R=586.82' DEL. TA=52°40'20"
R=6848.00' L=2
S 56°46'59" W CHORD 917.3
N 56°38'24" W 782.74'
S 01°40'00" E 1312.39'
S 88°55'52" E 530.61'
S 88°55'52" E 541.45'
S 88°55'52" E 31.45'
N 88°55'52" E 1312.39'
N 01°40'00" W 1312.39'
S 01°40'00" E 1312.39'
S 88°55'52" E 1312.39'
N 01°40'00" W 1312.39'
N 88°55'52" E

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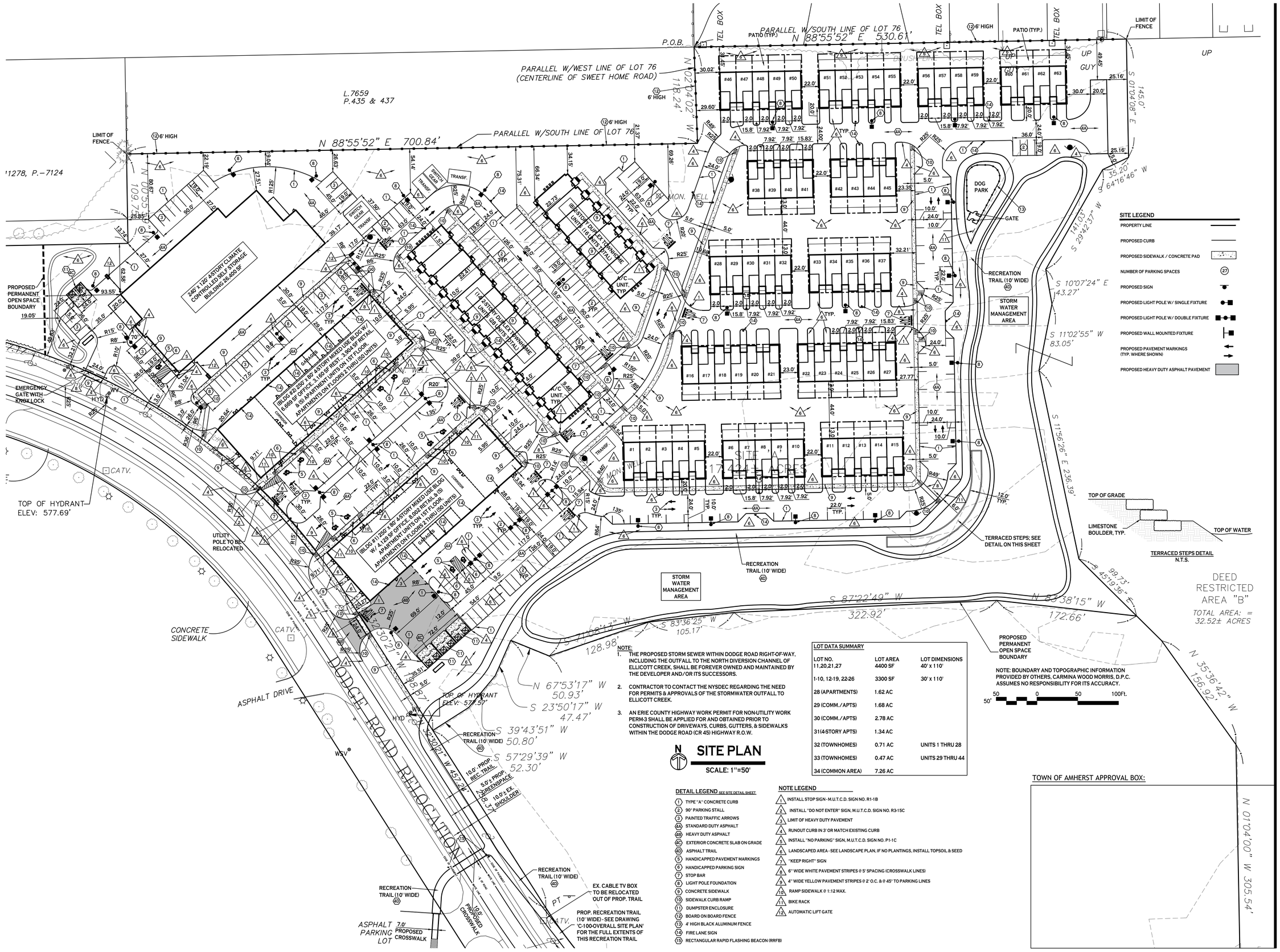

SITE LEGEND

- PROPERTY LINE
- PROPOSED CURB
- PROPOSED SIDEWALK / CONCRETE PAD
- NUMBER OF PARKING SPACES (27)
- PROPOSED SIGN
- PROPOSED LIGHT POLE W/ SINGLE FIXTURE
- PROPOSED LIGHT POLE W/ DOUBLE FIXTURE
- PROPOSED WALL MOUNTED FIXTURE
- PROPOSED PAVEMENT MARKINGS (TYP. WHERE SHOWN)
- PROPOSED HEAVY DUTY ASPHALT PAVEMENT

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

50' 0 50 100Ft.

NOTE:
1. THE PROPOSED STORM SEWER WITHIN DODGE ROAD RIGHT-OF-WAY, INCLUDING THE OUTFALL TO THE NORTH DIVERSION CHANNEL OF ELLICOTT CREEK, SHALL BE FOREVER OWNED AND MAINTAINED BY THE DEVELOPER AND/OR ITS SUCCESSORS.
2. CONTRACTOR TO CONTACT THE NYSDEC REGARDING THE NEED FOR PERMITS & APPROVALS OF THE STORMWATER OUTFALL TO ELLICOTT CREEK.
3. AN ERIE COUNTY HIGHWAY WORK PERMIT FOR NON-UTILITY WORK PERM3 SHALL BE APPLIED FOR AND OBTAINED PRIOR TO CONSTRUCTION OF DRIVEWAYS, CURBS, GUTTERS, & SIDEWALKS WITHIN THE DODGE ROAD (CR 45) HIGHWAY R.O.W.

SITE PLAN

SCALE: 1"=50'

LOT DATA SUMMARY		
LOT NO.	LOT AREA	LOT DIMENSIONS
11,20,21,27	4400 SF	40' x 110'
1-10, 12-19, 22-26	3300 SF	30' x 110'
28 (APARTMENTS)	1.62 AC	
29 (COMM./APTS)	1.68 AC	
30 (COMM./APTS)	2.78 AC	
31(4-STORY APTS)	1.34 AC	
32 (TOWNHOMES)	0.71 AC	UNITS 1 THRU 28
33 (TOWNHOMES)	0.47 AC	UNITS 29 THRU 44
34 (COMMON AREA)	7.26 AC	

DETAIL LEGEND SEE SITE DETAIL SHEET

1. TYPE "A" CONCRETE CURB
2. 90° PARKING STALL
3. PAINTED TRAFFIC ARROWS
4A. STANDARD DUTY ASPHALT
4B. HEAVY DUTY ASPHALT
4C. EXTERIOR CONCRETE SLAB ON GRADE
4D. ASPHALT TRAIL
5. HANDICAPPED PAVEMENT MARKINGS
6. HANDICAPPED PARKING SIGN
7. STOP BAR
8. LIGHT POLE FOUNDATION
9. CONCRETE SIDEWALK
10. SIDEWALK CURB RAMP
11. DUMPSTER ENCLOSURE
12. BOARD ON BOARD FENCE
13. 4' HIGH BLACK ALUMINUM FENCE
14. FIRE LANE SIGN
15. RECTANGULAR RAPID FLASHING BEACON (RRFB)

NOTE LEGEND

1. INSTALL STOP SIGN - M.U.T.C.D. SIGN NO. R1-1B
2. INSTALL "DO NOT ENTER" SIGN, M.U.T.C.D. SIGN NO. R3-15C
3. LIMIT OF HEAVY DUTY PAVEMENT
4. RUNOUT CURB IN 3' OR MATCH EXISTING CURB
5. INSTALL "NO PARKING" SIGN, M.U.T.C.D. SIGN NO. P1-1C
6. LANDSCAPED AREA - SEE LANDSCAPE PLAN, IF NO PLANTINGS, INSTALL TOPSOIL & SEED
7. "KEEP RIGHT" SIGN
8. 6" WIDE WHITE PAVEMENT STRIPES @ 5' SPACING (CROSSWALK LINES)
9. 4" WIDE YELLOW PAVEMENT STRIPES @ 2' O.C. & @ 45° TO PARKING LINES
10. RAMP SIDEWALK @ 1:12 MAX.
11. BIKE RACK
12. AUTOMATIC LIFT GATE

TOWN OF AMHERST APPROVAL BOX:

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/22/24
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Site Plan

DRAWING NO.

C-101

Project no.: 21-011

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Project: Sawyer's Landing
Description:

Shared Parking Demand Summary
Peak Month: DECEMBER -- Peak Period: 8 PM, WEEKDAY

Land Use	Project Data		Weekday					Weekend					Weekday			Weekend		
	Quantity	Unit	Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit For Ratio	Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit For Ratio	Peak Hr Adj 8 PM	Peak Mo Adj December	Estimated Parking Demand	Peak Hr Adj 7 PM	Peak Mo Adj December	Estimated Parking Demand
Retail																		
Retail (<400 ksf)	12,854	sf GLA	2.90	100%	95%	2.76	ksf GLA	3.20	100%	95%	3.03	ksf GLA	85%	100%	31	60%	100%	24
Employee			0.70	100%	96%	0.67		0.80	100%	95%	0.76		90%	100%	8	80%	100%	8
Food and Beverage																		
Family Restaurant	3,901	sf GLA	15.25	100%	92%	14.04	ksf GLA	15.00	100%	90%	13.44	ksf GLA	80%	100%	44	70%	100%	37
Employee			2.15	100%	96%	2.06		2.10	100%	95%	1.99		95%	100%	8	95%	100%	8
Entertainment and Institutions																		
Health Club	8,002	sf GLA	6.60	100%	81%	5.34	ksf GLA	5.50	100%	62%	3.40	ksf GLA	80%	100%	34	60%	100%	17
Employee			0.40	100%	96%	0.38		0.25	100%	95%	0.24		50%	100%	2	75%	100%	2
Hotel and Residential																		
Residential, Suburban																0%		
Studio Efficiency	12	units	0.38	100%	100%	0.38	unit	0.38	100%	100%	0.38	unit	80%	100%	4	80%	100%	4
1 Bedroom	106	units	0.41	100%	100%	0.41	unit	0.41	100%	100%	0.41	unit	80%	100%	34	80%	100%	34
2 Bedrooms	91	units	0.74	100%	100%	0.74	unit	0.74	100%	100%	0.74	unit	80%	100%	54	80%	100%	54
3+ Bedrooms		units	1.13	100%	100%	1.13	unit	1.13	100%	100%	1.13	unit	80%	100%	-	80%	100%	-
Reserved	55%	res spaces	0.67	100%	100%	0.67	unit	0.67	100%	100%	0.67	unit	100%	100%	141	100%	100%	141
Visitor	209	units	0.10	100%	100%	0.10	unit	0.15	100%	100%	0.15	unit	100%	100%	21	100%	100%	32
Office																		
Office <25 ksf	2,300	sf GFA	0.30	100%	100%	0.30	ksf GFA	0.03	100%	100%	0.03	ksf GFA	1%	100%	-	0%	100%	-
Reserved		empl	0.00	100%	100%	0.00		0.00	100%	100%	0.00		100%	100%	-	100%	100%	-
Employee			3.50	100%	33%	1.16		0.35	100%	33%	0.12		5%	100%	-	0%	100%	-
Additional Land Uses																		
Self Storage	105,600	sf GFA	0.20	100%	100%	0.20	sf GFA	0.20	100%	100%	0.20	sf GFA	0%	0%	-	0%	0%	-
Employee			0.00	100%	100%	0.00		0.00	100%	100%	0.00		0%	0%	-	0%	0%	-

Customer/Visitor	130	Customer	110
Employee/Resident	111	Employee/Resident	111
Reserved	141	Reserved	141
Total	382	Total	362
Shared Parking Reduction	21%		25%

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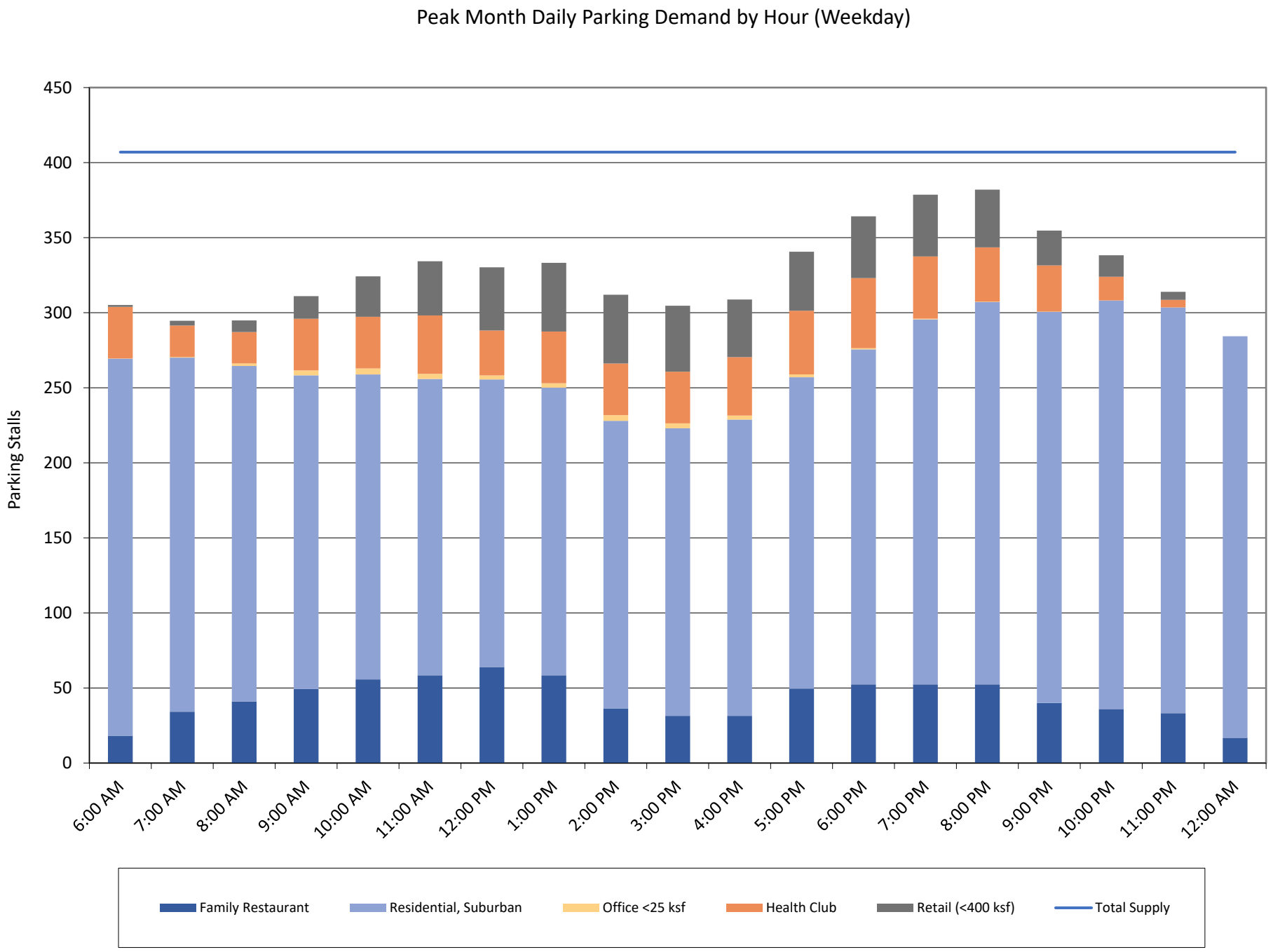

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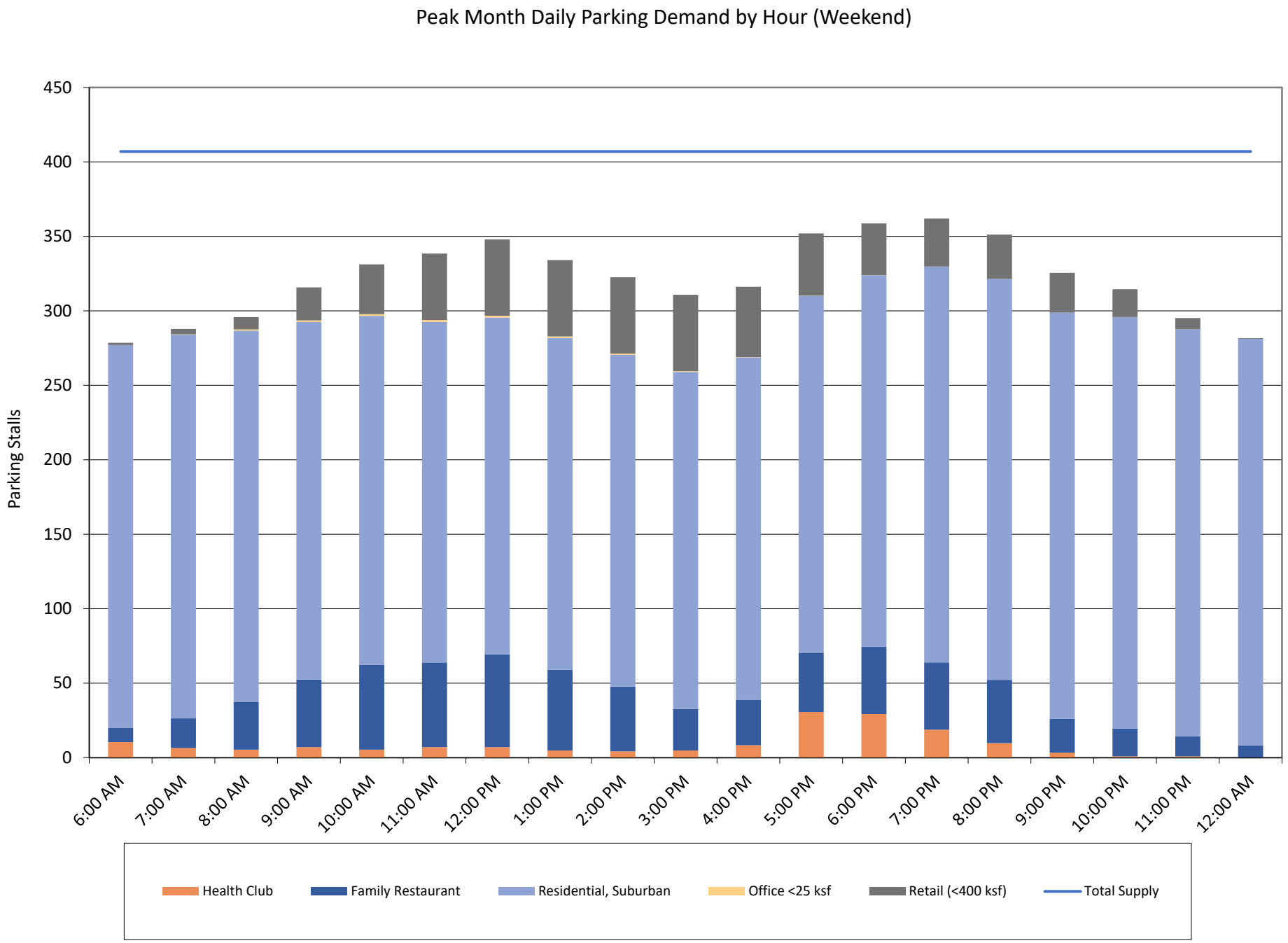

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TRAFFIC IMPACT REPORT UPDATE

June 24, 2024

20243845.0001

SAWYER'S LANDING DEVELOPMENT UPDATE

TOWN OF AMHERST, NY

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1.0 EXECUTIVE SUMMARY

The purpose of this updated report is to evaluate the potential traffic impacts related to the proposed Sawyer's Landing development to be located on the property at 50 Dodge Road, which is along the north side of Dodge Road in the Town of Amherst, NY (Commonly referred to as Site "A" of the Muir Woods Project Site"). Within this report, the operating characteristics of the proposed access points and impacts to the adjacent roadway network are evaluated and mitigating measures are identified (if needed) to minimize operational concerns.

To define traffic impact, this analysis establishes existing baseline traffic conditions, projects background traffic flow including area growth, and determines the traffic operations that would result from the proposed project.

Project Location and Description

The project site is located along the north side of Dodge Road, west of Interstate 990, in the Town of Amherst, Erie County, New York. The project site is bounded by a residential development and Heritage Heights Elementary School to the north, vacant land to the east, offices to the south, and a medical plaza to the west. Land uses in the vicinity of the project site include residential, office, medical, and educational uses. The project site currently consists of a vacant building.

The proposed Sawyer's Landing development will consist of constructing:

- Mixed-Use Building 1 (four-stories)
  - 51 Mid-Rise apartment units,
  - a ±3,901 square foot (SF) restaurant,
  - a ±432 SF leasing office,
  - and an ±8,002 SF membership-based gym
- Mixed-Use Building 2 (four-stories)
  - 51 Mid-Rise apartment units,
  - a ±3,901 square foot (SF) retail store,
  - a ±8,953 square foot (SF) retail store,
  - and a ±2,300 SF office
- a four-story ±26,400 SF self-storage building (±105,600 SF in total),
- 22 two-story duplex townhome buildings containing two units each for a total of 44 duplex townhome units,
- 63 two-story townhomes with attached garages.

Access to the site will be provided via one enter only driveway and one exit only driveway along Dodge Rd and one full access driveway along Dodge Rd to the south of the enter only driveway. There will also be an emergency access driveway along Dodge Road to the north of the exit only driveway with an emergency gate.

Study Area

To ensure a comprehensive analysis of potential traffic impacts, a study area was selected consisting of the following two (2) intersections:

1. Dodge Road/Sweet Home Road
2. Dodge Road/North Forest Road

Existing and Background Conditions

Turning movement traffic counts were collected by Passero Associates on Thursday, March 3, 2022, at the Dodge Rd/North Forest Rd study intersection for both the weekday AM and PM peak hour periods. Turning movement traffic counts were collected by the Town of Amherst on Tuesday May 14, 2024, at the Dodge Rd/Sweet Home Rd study

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intersection for both the weekday AM and PM peak hour periods. Traffic counts were conducted between 7:00-9:00 AM for the weekday AM peak period and 4:00-6:00 PM for the weekday PM peak period. The peak hour traffic periods generally occurred between 7:30-8:30 AM and 4:30-5:30 PM.

Construction of the proposed project is anticipated to reach full build-out within approximately two years. The widely accepted methodology for preparing traffic impact studies requires that any projects in the study area that are currently approved and/or under construction must be considered in the traffic analysis. Projects that are contemplated but not yet approved are not included in a traffic analysis. Local municipal personnel were contacted to discuss any other specific projects that are currently approved or under construction that would generate additional traffic in the study area. The following projects were identified and are listed below:

- Aspen Heights Student Housing – Traffic generated by this student housing development was added to the study intersections.
- 480 Dodge Road - Traffic generated by this approved but not yet constructed multifamily project was added to the study intersections.
- 775 John James Audubon Pkwy – Traffic generated by this approved project is included in the background growth rate.

A review of available historical NYSDOT traffic volume data in the vicinity of the site indicates that traffic has decreased between 2010 and 2019 in the study area. To account for normal increases in background traffic growth, including the approved development noted above as well as any unforeseen developments in the study area, a growth rate of 1.0% per year was applied to the existing traffic volumes for the two-year build out period.

Conclusions and Recommendations

This updated Traffic Impact Study identified and evaluated the potential traffic impacts that can be expected from the proposed Sawyer's Landing development to be located on the property at 50 Dodge Road, which is along the north side of Dodge Road in the Town of Amherst, NY (Commonly referred to as Site "A" of the Muir Woods Project Site"). The results of this study determined that the existing transportation network can adequately accommodate the projected traffic volumes and resulting minor impacts to study area intersections. The following sets forth the conclusions and recommendations based upon the results of the analyses:

Conclusions

1. The proposed project is expected to generate approximately 76 entering/102 exiting vehicle trips during the AM peak hour and 163 entering/136 exiting vehicle trips during the PM peak hour.

2. However, not all these driveway volumes are new, but instead a portion of the proposed volumes will visit more than one land use during one trip to the site. Thus, based upon internal capture rates from the NCHRP 684 model and professional judgement, the proposed site is expected to generate approximately 69 entering/92 exiting new vehicle trips during the AM peak hour and 133 entering/110 exiting new vehicle trips during the PM peak hour.

3. Based upon the results of the traffic signal warrant at the Dodge Rd/North Forest Rd intersection, a traffic signal is not warranted at this intersection.

4. All movements generally operate at an acceptable LOS "D" or better under existing, projected background, and full build conditions (with proposed development) during both peak hours at all study intersections except for the northbound left approach at the Sweet Home Rd/Dodge Rd intersection during the AM peak hour, which

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operates at LOS "F" under background and full build conditions. There are no LOS changes at any of the study intersections that require mitigation.

5. The detailed analysis contained in this Traffic Impact Study demonstrates the proposed project will not result in any potentially significant adverse environmental impacts for the purpose of the environmental review of the project pursuant to the State Environmental Quality Review Act ("SEQRA").

Recommendations

1. The proposed exit driveway along Dodge Rd should be designed to provide one exiting lane.

2. The proposed enter driveway along Dodge Rd should be designed to provide one entering lane.

3. The proposed southerly driveway along Dodge Rd should be designed to provide one entering and one exiting lane.

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2.0 INTRODUCTION

2.1 Study Purpose and Objectives

The purpose of this updated report is to evaluate the potential traffic impacts related to the proposed Sawyer's Landing development to be l located on the property at 50 Dodge Road, which is along the north side of Dodge Road in the Town of Amherst, NY (Commonly referred to as Site "A" of the Muir Woods Project Site"). Within this report, the operating characteristics of the proposed access points and impacts to the adjacent roadway network are evaluated and mitigating measures are identified (if needed) to minimize operational concerns.

To define traffic impact, this analysis establishes existing baseline traffic conditions, projects background traffic flow including area growth, and determines the traffic operations that would result from the proposed project.

2.2 Project Location

The project site is located along the north side of Dodge Road, west of Interstate 990, in the Town of Amherst, Erie County, New York. The project site is bounded by a residential development and Heritage Heights Elementary School to the north, vacant land to the east, offices to the south, and a medical plaza to the west. Land uses in the vicinity of the project site include residential, office, medical, and educational uses. The project site currently consists of a vacant building.

Study Area

To ensure a comprehensive analysis of potential traffic impacts, a study area was selected consisting of the following two (2) intersections:

1. Dodge Road/Sweet Home Road
2. Dodge Road/North Forest Road

The project site location and study area are illustrated in **Figure 1** (all figures are included at the end of this report).

3.0 TRANSPORTATION SETTING

3.1 Description of Study Area Roadways

The information outlined in **Table 1** provides a description of the existing roadway network within the study area. **Figure 2** illustrates the lane geometry and traffic control at each of the study intersections and the Annual Average Daily Traffic (AADT) volumes on the study roadways. The AADTs reflect the most recently collected data obtained from the NYSDOT.

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Table 1: *Existing Highway System*

ROADWAY	CLASS[1]	AGENCY[2]	SPEED LIMIT[3]	TRAVEL LANES[4]	ORIENTATION OF TRAVEL	AADT[5]
Dodge Road	16	ECDPW	40	2	Two-Way/ East-West	6,738 NYSDOT (2017)
Sweet Home Road	16	ECDPW	45	4	Two-way/ North-South	18,050 NYSDOT (2019)
North Forest Road	19	Town of Amherst	35	2	Two-way/ North-South	1,797 NYSDOT (2019)

Notes:
1. State functional classification of roadway
2. Jurisdictional agency of roadway.
3. Posted or statewide limit in miles per hour (mph).
4. Number of travel lanes. Excludes turning/auxiliary lanes developed at intersections.
5. Estimated AADT in vehicles per day (vpd). AADT source (Year).

The Highway Functional Classification System defines the role a roadway plays in the overall road network. Functional classification of highways within the study area is determined by the NYSDOT and the Federal Highway Administration (FHWA).

Urban Minor Arterial (Class 16)

An urban minor arterial interconnects and augments the higher-level arterials as well as serves trips of moderate length at a somewhat lower level of travel mobility than Principal Arterials. They distribute traffic to smaller geographic areas than those served by higher-level Arterials and provide more land access than Principal Arterials without penetrating identifiable neighborhoods. They also provide urban connections for Rural Collectors.

Urban Local (Class 19)

According to the FHWA, this class of roadway includes all facilities not in one of the higher systems (e.g., arterial, collector, etc.). It primarily permits direct access to abutting lands and connections to the higher order systems and is not intended for use in long distance travel. As public roads, they should be accessible for public use throughout the year. Generally, the streets carry little to no through-traffic flows.

3.2 Description of Multimodal Network

Table 2 summarizes the traffic controls, pedestrian, bicycle, and transit accommodations within the study area.

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Table 2: *Multimodal Network*

INTERSECTION	Dodge Rd/Sweet Home Rd	Dodge Rd/North Forest Rd
Intersection Control Type	Signalized	Unsignalized
Sidewalks	◍	○
Crosswalks	●	○
Curb Ramps	●	○
Pedestrian Signal	●	○
Pedestrian Push Button	●	○
Pedestrian Countdown	●	○
Bicycle Facilities	○	○
Street Lighting	●	○
Transit Route	N/A	N/A

● Present at entire intersection
◍ Present at portion of intersection
○ Not present at intersection

3.3 Planned/Programmed Highway Improvements

There are no planned highway improvement projects in the study area.

4.0 EXISTING CONDITIONS ANALYSIS

4.1 Peak Intervals for Analysis

Given the functional characteristics of the corridors, adjacent land uses, and the proposed land use for the project site, the peak hours selected for analysis are the weekday AM and weekday PM peak periods. The combination of site traffic and adjacent street traffic produces the greatest demand during these time periods.

4.2 Existing Traffic Volume Data

Turning movement traffic counts were collected by Passero Associates on Thursday, March 3, 2022, at the Dodge Rd/North Forest Rd study intersection for both the weekday AM and PM peak hour periods. Turning movement traffic counts were collected by the Town of Amherst on Tuesday May 14, 2024, at the Dodge Rd/Sweet Home Rd study intersection for both the weekday AM and PM peak hour periods. Traffic counts were conducted between 7:00-9:00 AM for the weekday AM peak period and 4:00-6:00 PM for the weekday PM peak period. The peak hour traffic periods generally occurred between 7:30-8:30 AM and 4:30-5:30 PM.

All turning movement count data was collected on a typical weekday while local schools were in session. No adverse weather conditions impacted the traffic counts. The traffic volumes were reviewed for seasonality and to confirm the accuracy and relative balance of the collective traffic counts. The actual differences in traffic volumes can be attributed to temporal variations in traffic volumes as well as activity related to driveways located in the segments between the study intersections. Additionally, the volumes at the Dodge Rd/North Forest Rd intersection were increased using a

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0.5% growth rate based on the historical traffic data described in Section 5.0 to account for any growth in traffic between the time of data collection and now. The existing peak hour traffic volumes are shown in **Figure 3**.

4.3 Existing Crash Investigation

The purpose of this crash analysis is to identify inherent safety issues by studying and quantifying historical crashes at the study intersections and identifying potential crash patterns and clusters.

A crash cluster is defined as an abnormal occurrence of similar crash types occurring at approximately the same location or involving the same geometric features. The severity of the crashes should also be considered. A history of crashes is an indication that further analysis is required to determine the cause(s) of the crash(es) and to identify what actions, if any, could be taken to mitigate the crashes.

A crash investigation within the study area was conducted to assess the safety history from January 1, 2019, through December 31, 2023.

Reportable (non-injury, injury, and fatal injury) type crashes are defined as damage to one person's property in the amount of $1,001 or more. The Non-Reportable type crashes result in property damage of $1,000 or less. Crash rates were computed for the study intersections and compared with NYSDOT average crash rates for similar intersections, as summarized in **Table 3**. Intersection rates are listed as crashes per million entering vehicle (CR/MEV).

Table 3: *Intersection Crash Rate Analysis*

INTERSECTION	NUMBER OF CRASHES	NUMBER OF ENTERING VEHICLES	ACTUAL CRASH RATE	STATEWIDE AVERAGE CRASH RATE
Sweet Home Rd at Dodge Rd	30	29,442 vpd	0.56	0.26
Dodge Rd at North Forest Rd	6	6,379 vpd	0.52	0.19

Notable crash clusters are approaches with three or greater identifiable consistent crash types.

1. **Sweet Home Rd at Dodge Rd**

As shown in **Table 3**, the intersection has a crash rate that is approximately 2.15 times higher than the statewide average crash rate for similar intersections. The following crashes occurred: rear end (7), left turn (9), right angle (8), sideswipe (3), and backing (2). The following crash patterns were reported:

- Left Turn
  - Northbound (three crashes)
  - Southbound (four crashes)
- Rear End
  - Southbound (three crashes)
- Right Angle
  - Northbound (five crashes)

The reported rear end crashes (23%) are characteristic of moderate to heavily trafficked signalized intersections. The causes of the rear end crashes were generally due to driver inattention, driver error, unsafe speeds, or following too closely. The causes of the left turn crashes were generally due to failure to yield the right of way. The causes of the right angle crashes were generally driver inattention, driver error, and brake failure. Flashing yellow left turn arrows were installed sometime after June 2022 based on review of historical aerial imagery of the intersection. Based on the

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descriptions in the MV-104 crash reports, there has only been one left turn crash and three right angle crashes at the intersection since the new traffic signal was installed. No other discernible crash patterns exist; thus, no geometric improvements are recommended.

2. **Dodge Rd at North Forest Rd**

As shown in **Table 3**, the intersection has a crash rate that is approximately 2.73 times higher than the statewide average crash rate for similar intersections. The following crashes occurred: rear end (2), right angle (1), and fixed object (3). No discernible crash patterns exist; thus, no geometric improvements are recommended.

5.0 BACKGROUND (NO BUILD) CONDITIONS

Construction of the proposed project is anticipated to reach full build-out within approximately two years. The widely accepted methodology for preparing traffic impact studies requires that any projects in the study area that are currently approved and/or under construction must be considered in the traffic analysis. Projects that are contemplated but not yet approved are not included in a traffic analysis. Local municipal personnel were contacted to discuss any other specific projects that are currently approved or under construction that would generate additional traffic in the study area. The following projects were identified and are listed below:

- Aspen Heights Student Housing – Traffic generated by this student housing development was added to the study intersections.
- 480 Dodge Road - Traffic generated by this approved but not yet constructed multifamily project was added to the study intersections.
- 775 John James Audubon Pkwy – Traffic generated by this approved project is included in the background growth rate.

A review of available historical NYSDOT traffic volume data in the vicinity of the site indicates that traffic has decreased between 2010 and 2019 in the study area. To account for normal increases in background traffic growth, including the approved development noted above as well as any unforeseen developments in the study area, a growth rate of 1.0% per year was applied to the existing traffic volumes for the two-year build out period. The background traffic volumes are depicted in **Figure 4.**

6.0 PROPOSED DEVELOPMENT CONDITIONS

6.1 Project Description

The proposed Sawyer's Landing development will consist of constructing:

- Mixed-Use Building 1 (four-stories)
  - 51 Mid-Rise apartment units,
  - a ±3,901 square foot (SF) restaurant,
  - a ±432 SF leasing office,
  - and an ±8,002 SF membership-based gym
- Mixed-Use Building 2 (four-stories)
  - 51 Mid-Rise apartment units,
  - a ±3,901 square foot (SF) retail store,
  - a ±8,953 square foot (SF) retail store,

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    - and a ±2,300 SF office
- a four-story ±26,400 SF self-storage building (±105,600 SF in total),
- 22 two-story duplex townhome buildings containing two units each for a total of 44 duplex townhome units,
- 63 two-story townhomes with attached garages.

Access to the site will be provided via one enter only driveway and one exit only driveway along Dodge Rd and one full access driveway along Didge Rd, to the south of the enter only driveway. There will also be an emergency access driveway along Dodge Road to the north of the exit only driveway with an emergency gate.

6.2 Proposed Traffic Generation

The volume of traffic generated by a site is dependent on the intended land use and size of the development. Trip generation is an estimate of the number of trips generated by a specific building or land use. These trips represent the volume of traffic entering and exiting the development. *Trip Generation Manual* (11th Edition) published by the Institute of Transportation Engineers (ITE) is used as a reference for this information. The trip rate for the peak hour of the generator may or may not coincide in time or volume with the trip rate for the peak hour of adjacent street traffic. Volumes generated during the peak hour of the adjacent street traffic and proposed land uses, in this case, the weekday commuter AM and PM peak hours, represent a more critical volume when analyzing the capacity of the system; those intervals will provide the basis of this analysis.

The proposed project consists of multiple different land uses (residential, office, retail, and restaurant) and is considered mixed-use (multi-use). According to the Institute of Transportation Engineers Trip Generation Handbook, (3rd Edition), "…a multi-use development is typically a single real-estate project that consists of two or more ITE land use classifications between which trips can be made without using the off-site road system. Because of the nature of these land uses, the trip-making characteristics are interrelated, and some trips are made among the on-site uses. This capture of trips internal to the site has the net effect of reducing vehicle trip generation between the overall development site and the external street system (compared to the total number of trips generated by comparable, standalone sites)." "In some multi-use developments, these internal trips can be made by walking or by vehicles entirely on internal pathways or internal roadways without using streets external to the site."

The Handbook indicates internal capture rates for trips within a multi-use development to vary between residential, office, retail, restaurant, and entertainment and recreational uses during the AM and PM peak hours. Given the proposed land use components and interconnection between these components, multi-use total volume trips will likely occur.

Methodology contained in National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Development was consulted to perform the mixed-use adjustment. The interactive spreadsheet considers baseline mode shares and vehicle occupancy factors for the proposed land uses, as described in the Handbook, as well as average land use interchange distances (feet walking distance) to determine the internal capture percentage. In order to accurately capture the internal site trips that will occur in the site, the existing office land use that will remain was included in the internal capture calculations. This completed spreadsheet model is included in the Appendices.

The NCHRP 684 model reported an internal baseline capture percentage of 13% during the AM peak hour, and 26% during the PM peak hour. In order to be conservative, an internal baseline capture percentage of 10% was used during the AM peak hour, and 20% was used during the PM peak hour. These multi-use trip projection adjustments were applied to the respective site generated trips and subtracted from the traffic entering and exiting the site during the peak periods.

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Table 4 shows the estimated site generated trips that will be added to the existing roadway system under full project development.

Table 4: *Site Generated Trips*

DESCRIPTION	ITE LUC[1]	SIZE	PM PEAK HOUR		SAT PEAK HOUR	
			ENTER	EXIT	ENTER	EXIT
General Office Building	710	±2,300 sf	6	1	1	6
Strip Retail Plaza (<40k)	822	±12,854 sf	18	12	47	47
High-Turnover (Sit-Down) Restaurant	932	±3,901 sf	21	17	22	14
Single Family Attached Housing	215	107 units	12	37	36	25
Multifamily Housing (Mid-Rise)	221	102 units	8	26	24	16
Mini-Warehouse	151	±105,600 sf	6	4	7	8
Health/Fitness Club	492	±8,002 sf	5	5	26	20
Total Site Generated Trips			**76**	**102**	**163**	**136**
Internal Capture Adjustment			*-7*	*-10*	*-30*	*-26*
Total Primary Site Generated Trips			**69**	**92**	**133**	**110**

Note:
1. LUC = Land Use Code.

The proposed project is expected to generate approximately 76 entering/102 exiting vehicle trips during the AM peak hour and 163 entering/136 exiting vehicle trips during the PM peak hour. However, not all these driveway volumes are new, but instead a portion of the proposed volumes will visit more than one land use during one trip to the site. Thus, based upon internal capture rates from the NCHRP 684 model and professional judgement, the proposed site is expected to generate approximately 69 entering/92 exiting new vehicle trips during the AM peak hour and 133 entering/110 exiting new vehicle trips during the PM peak hour.

6.3 Trip Distribution

The cumulative effect of site-generated traffic on the transportation network is dependent on the origins and destinations of that traffic and the location of the access drives serving the site. The proposed arrival/departure distribution of traffic generated by the proposed project is considered a function of several parameters, including:

- Employment centers in the local area and region.
- Population centers in the local area and region.
- Proximity and access to Interstate 990.
- Proximity to the North Campus of the University at Buffalo.
- Site access drive locations and internal roadway circulation.
- Existing highway network.
- Existing traffic patterns.
- Existing traffic conditions and controls.

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Figure 5 shows the anticipated trip distribution pattern percentage for the project site. **Figures 6** illustrate the total peak hour site-generated traffic.

6.4 Full Development Volumes

The proposed design hour traffic volumes are developed for the peak hours by combining the background traffic conditions (Figure 4) and the new site-generated traffic volumes (Figure 6) to yield the traffic volumes under full development conditions. **Figure 7** illustrates the total peak hour volumes anticipated for the proposed project under full build-out conditions.

7.0 TRAFFIC OPERATIONS AND ANALYSIS

7.1 Traffic Signal Warrant Investigation

A traffic signal warrant analysis was conducted at the existing Dodge Rd/North Forest Rd intersection under full build conditions. The evaluation is based on traffic exiting North Forest Rd (i.e. northbound traffic). The need for a traffic signal is determined by comprehensive investigation of existing traffic conditions and physical characteristics at the location. The *Standard Specifications Update for the adoption of the National MUTCD (FHWA)* and the *New York State Supplement* were reviewed to investigate the need for a traffic control signal at this location. There are nine (9) warrants, and they are as follows:

- Warrant 1 Eight-Hour Vehicular Volume
- Warrant 2 Four-Hour Vehicular Volume
- Warrant 3 Peak Hour Vehicular Volume
- Warrant 4 Pedestrian Volume
- Warrant 5 School Crossing
- Warrant 6 Coordinated Signal System
- Warrant 7 Crash Experience
- Warrant 8 Roadway Network
- Warrant 9 Intersection Near a Grade Crossing

Prior to applying warrants, the MUTCD suggests consideration of the effects of right-turn volumes on the minor street approach, a 20% reduction was taken in the number of right turning vehicles to be conservative. ITE data and the trip distribution percentages from Figure 5 were used to project the hourly distribution of traffic going to and from the proposed project through this intersection. The posted speed limit on Dodge Rd is 40 MPH, thus 70% thresholds in Table 4C-1, Figure 4C-2, and Figure 4C-4 are used as a basis for analysis.

1. Warrant 1 is subdivided into Condition A and Condition B. The Minimum Vehicular Volume, Condition A, is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal. The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street. These conditions are satisfied when, for each of any eight hours of an average day, anticipated volumes on the artery and side road are more than the minimum values presented in Tables 4C-1 in the MUTCD. **The warrant for Condition A is not met, and the warrant for Condition B is not met.**

2. Warrant 2, the Four-Hour Vehicular Volume signal warrant conditions, are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. This warrant

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stipulates that for any four hours of a day, minimum threshold volumes are met on the artery and side road. **This warrant is not met.**

3. Warrant 3 is intended for application where minor street traffic suffers undue delay in entering or crossing the major street for one hour of the day. It stipulates that the warrant shall be applied in unusual cases (high-occupancy vehicle facilities – i.e., shopping centers, office parks) where a large number of vehicles discharge over a short period of time. **This warrant is not met.**

4. Warrant 4 is met when pedestrians experience excessive delay in crossing the major street because the traffic volumes are so heavy. The intersection currently has low pedestrian activity and is not likely to increase significantly under future development phases. **This warrant is not met.**

5. Warrant 5 is met when a sufficient number of gaps in traffic do not exist for certain size and frequency of school children to cross the major roadway. **This warrant is not met.**

6. Warrant 6 is met when a traffic signal is needed to maintain progressive movement and vehicle platooning in a coordinated signal system. The intersection would likely be coordinated with adjacent signals, if warranted. There is currently no issue with platooning along the Dodge Rd corridor, therefore, **this warrant is not met.**

7. Warrant 7 is intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal. The need for a traffic control signal shall be considered if *all* of the following criteria are met:

    a. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce crash frequency.

    b. Five (5) or more reported crashes, of types susceptible to correction by a traffic signal, to have occurred within a 12-month period, each crash involving a personal injury or property damage.

    This warrant is not met.

8. Warrant 8 is met when a traffic signal might encourage concentration and organization of traffic flow on a roadway network. This warrant primarily focuses on two major intersecting roadways, which is not the case at the study intersection. **This warrant is not met.**

9. Warrant 9 is applicable when an intersection is located near an at-grade rail crossing. **This warrant is not met.**

Table 5: *Signal Warrant Analysis Results*

WARRANT	SATISFACTION OF WARRANTS
1A – Eight-Hour Condition A	NO
1B – Eight-Hour Condition B	NO
2 – Four-Hour	NO
3 – Peak-Hour	NO
4 – Pedestrian Volume	NO
5 – School Crossing	NO
6 – Coordinated Signal System	NO

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WARRANT	SATISFACTION OF WARRANTS
7 – Crash Experience	NO
8 – Roadway Network	NO
9 – Intersection Near a Grade Crossing	NO

Table 5 summarizes the signal warrant findings at the existing Dodge Rd/North Forest Rd intersection under full build conditions. Based upon the results, a traffic signal is not warranted at this intersection.

7.2 Description of Capacity Analysis

Capacity analysis is a technique used for determining a measure of effectiveness for a section of roadway and/or intersection based on the number of vehicles during a specific time period. The measure of effectiveness used for the capacity analysis is referred to as a Level of Service (LOS). Levels of service are calculated to provide an indication of the amount of delay that a motorist experiences while traveling along a roadway or through an intersection. Since the most amount of delay to motorists usually occurs at intersections, capacity analysis focuses on intersections, as opposed to highway segments.

The standard procedure for capacity analysis of signalized and unsignalized intersections is outlined in the *Highway Capacity Manual* (HCM) 7th Edition published by the Transportation Research Board (TRB). Traffic analysis software, Synchro 12, which is based on procedures and methodologies contained in the HCM, was used to analyze operating conditions at study area intersections. The procedure yields a level of service based on the HCM as an indicator of how well intersections operate.

Six levels of service are defined for analysis purposes. They are assigned letter designations, from "A" to "F", with LOS "A" representing the conditions with little to no delay, and LOS "F" conditions with very long delays. Suggested ranges of service capacity and an explanation of levels of service are included in the Appendices. LOS "C" or better is desirable, but LOS "D" for signalized locations and LOS "E" for unsignalized locations are generally thresholds of acceptable operation during peak periods so long as the volume to capacity ratio (v/c) is below 1.0. **Table 6** depicts level of service criteria for both signalized and unsignalized intersections.

Table 6: *Level of Service Criteria*

LEVEL OF SERVICE	SIGNALIZED CONTROL DELAY PER VEHICLE (seconds)	STOP CONTROL DELAY PER VEHICLE (seconds)
A	< 10	< 10
B	10 – 20	10 – 15
C	20 – 35	15 – 25
D	35 – 55	25 – 35
E	55 – 80	35 – 50
F	> 80	> 50

LOS for signalized intersections is defined in terms of delay specifically, average total delay per vehicle for a 15-minute analysis period. LOS for unsignalized intersections, however, are different from a signalized intersection. The primary reason for this is driver expectation that a signalized intersection is designed to carry higher volumes than an unsignalized intersection. Unsignalized intersections are also associated with more uncertainty for users, as delays are less predictable than they are at signals.

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The v/c ratio, also referred to as degree of saturation, represents the sufficiency of an intersection to accommodate the vehicular demand. A v/c ratio less than 0.85 generally indicates that adequate capacity is available, and vehicles are not expected to experience significant queues and delays. As the v/c ratio approaches 1.0, traffic flow may become unstable, and delay and queuing conditions may occur.

7.3 Capacity Analysis Results

Existing and background operating conditions during the peak study periods are evaluated to determine a basis for comparison with the projected future conditions. The future traffic conditions generated by the project were analyzed to assess the operation of the study area intersections. Capacity results for existing, background, and full development conditions are listed in **Table 7**. The discussion following the table summarizes capacity conditions. The detailed Synchro capacity analysis worksheets are contained in the Appendices.

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TABLE 7: CAPACITY ANALYSIS RESULTS

INTERSECTION	2024 EXISTING BASE CONDITIONS				2026 BACKGROUND CONDITIONS				2026 FULL BUILD CONDITIONS			
	AM		PM		PM		SAT		PM		SAT	
1. Sweet Home Rd/Dodge Rd/Commerce Dr (S)												
EB Left - Commmerce Dr	C	20.7	C	21.3	C	20.7	C	21.5	C	20.4	C	22.7
EB Thru/Right - Commerce Dr	C	31.9	C	34.3	C	33.4	C	34.6	C	34.0	D	36.1
WB Left - Dodge Rd	A	8.9	B	16.4	A	9.1	B	19.2	A	9.0	C	21.5
WB Thru - Dodge Rd	C	21.7	C	22.9	C	22.1	C	24.0	C	23.0	C	27.0
WB Right - Dodge Rd	C	25.3	C	21.1	C	25.2	C	25.4	C	25.7	C	30.4
NB Left - Sweet Home Rd	E	72.5	B	15.6	F	106.1	B	16.0	F	112.6	B	16.3
NB Thru/Right - Sweet Home Rd	B	19.2	D	36.2	C	20.5	D	38.2	C	21.4	D	45.4
SB Left- Sweet Home Rd	B	11.4	C	21.9	B	12.8	C	22.9	B	14.4	C	27.7
SB Thru/Right - Sweet Home Rd	C	24.2	C	25.3	C	26.0	C	25.7	C	26.7	C	25.5
Overall LOS	**C**	**29.6**	**C**	**27.1**	**D**	**36.0**	**C**	**28.9**	**D**	**37.1**	**C**	**32.7**
Volume-to-Capacity (v/c) Ratio	**1.03**		**0.83**		**1.12**		**0.86**		**1.14**		**0.92**	
2. Dodge Rd/Proposed Exit Only Driveway (U)												
SB - Proposed Exit Only Driveway	N/A		N/A		N/A		N/A		B	11.6	B	12.8
4. Dodge Rd/Proposed Southerly Driveway (U)												
EB Left - Dodge Rd	N/A		N/A		N/A		N/A		A	7.9	A	8.3
SB - Proposed Southerly Driveway									B	12.1	B	13.6
5. Dodge Rd/N Forest Rd (U)												
WB Left - Dodge Rd	A	7.9	A	7.8	A	7.9	A	7.9	A	8.0	A	8.0
NB - N Forest Rd	B	11.9	B	14.5	B	12.4	C	15.9	B	13.1	C	18.7

Notes:

1. A(2.8) = Level of Service (Delay in seconds per vehicle)
2. NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound
3. (S) = Signalized; (U) = Unsignalized
4. N/A = Approach does not exist and/or was not analyzed during this condition
5. Green shaded cells indicate low delays, yellow shaded cells indicate moderate delays, red shaded cells indicate long delays.

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Dodge Road/Sweet Home Road (Signalized)
All approaches operate at LOS "D" or better under all conditions during both peak hours with the exception of the northbound left approach which operates at LOS "F" during the AM peak hour under background and full build conditions. In between background and full build conditions, the eastbound thru/right approach is projected to change from LOS "C" to "D" during the PM peak hour period, however, this is considered a borderline condition as the threshold between LOS "C" and "D" is 35.0 seconds per vehicle and the actual increase in delay projected is 1.5 seconds per vehicle. Also, between background and full build conditions, the westbound left approach is projected to change from LOS "B" to "C" during the PM peak hour period, however, this is also considered a borderline condition as the threshold between LOS "B" and "C" is 20.0 seconds per vehicle and the actual increase in delay projected is 2.3 seconds per vehicle. No other changes in levels of service are anticipated and no improvements are warranted nor recommended at this location.

Dodge Road/Proposed Exit Driveway (Unsignalized)
The southbound approach operates at LOS "B" under full build conditions during both peak hours. The proposed exit driveway should consist of one exiting lane.

Dodge Road/Proposed Southerly Driveway (Unsignalized)
All approaches operate at LOS "B" or better under full build conditions during both peak hours. The proposed southerly driveway should consist of one entering and one exiting lane.

Dodge Road/North Forest Road (Signalized)
All approaches operate at LOS "C" or better under all conditions during both peak hours. No changes in level of service are anticipated and no improvements are warranted nor recommended at this location.

8.0 CONCLUSIONS AND RECOMMENDATIONS

This updated Traffic Impact Study identified and evaluated the potential traffic impacts that can be expected from the proposed Sawyer's Landing development to be located on the property at 50 Dodge Road, which is along the north side of Dodge Road in the Town of Amherst, NY (Commonly referred to as Site "A" of the Muir Woods Project Site"). The results of this study determined that the existing transportation network can adequately accommodate the projected traffic volumes and resulting minor impacts to study area intersections. The following sets forth the conclusions and recommendations based upon the results of the analyses:

Conclusions

1. The proposed project is expected to generate approximately 76 entering/102 exiting vehicle trips during the AM peak hour and 163 entering/136 exiting vehicle trips during the PM peak hour.

2. However, not all these driveway volumes are new, but instead a portion of the proposed volumes will visit more than one land use during one trip to the site. Thus, based upon internal capture rates from the NCHRP 684 model and professional judgement, the proposed site is expected to generate approximately 69 entering/92 exiting new vehicle trips during the AM peak hour and 133 entering/110 exiting new vehicle trips during the PM peak hour.

3. Based upon the results of the traffic signal warrant at the Dodge Rd/North Forest Rd intersection, a traffic signal is not warranted at this intersection.

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4. All movements generally operate at an acceptable LOS "D" or better under existing, projected background, and full build conditions (with proposed development) during both peak hours at all study intersections except for the northbound left approach at the Sweet Home Rd/Dodge Rd intersection during the AM peak hour, which operates at LOS "F" under background and full build conditions. There are no LOS changes at any of the study intersections that require mitigation.

5. The detailed analysis contained in this Traffic Impact Study demonstrates the proposed project will not result in any potentially significant adverse environmental impacts for the purpose of the environmental review of the project pursuant to the State Environmental Quality Review Act ("SEQRA").

Recommendations

1. The proposed exit driveway along Dodge Rd should be designed to provide one exiting lane.

2. The proposed enter driveway along Dodge Rd should be designed to provide one entering lane.

3. The proposed southerly driveway along Dodge Rd should be designed to provide one entering and one exiting lane.

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9.0 REFERENCES

- Synchro 12 Software. Cubic ITS.
- Highway Capacity Manual (HCM 7th Edition). Transportation Research Board (TRB). Washington, DC. 2016.
- Highway Functional Classification Concepts, Criteria, and Procedures. FHWA. 2013.
- Trip Generation (11th Edition). Institute of Transportation Engineers (ITE). Washington, DC. 2021.
- OnTheMap. US Census Bureau. 2023.
- NCHRP Report 684 Enhancing Internal Trip Capture Estimation for Mixed-Use Develpoments. TRB. 1985.
- Traffic Data Viewer. New York State Department of Transportation (NYSDOT). 2023.

10.0 FIGURES

Figures 1 through 7 are included on the following pages.

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

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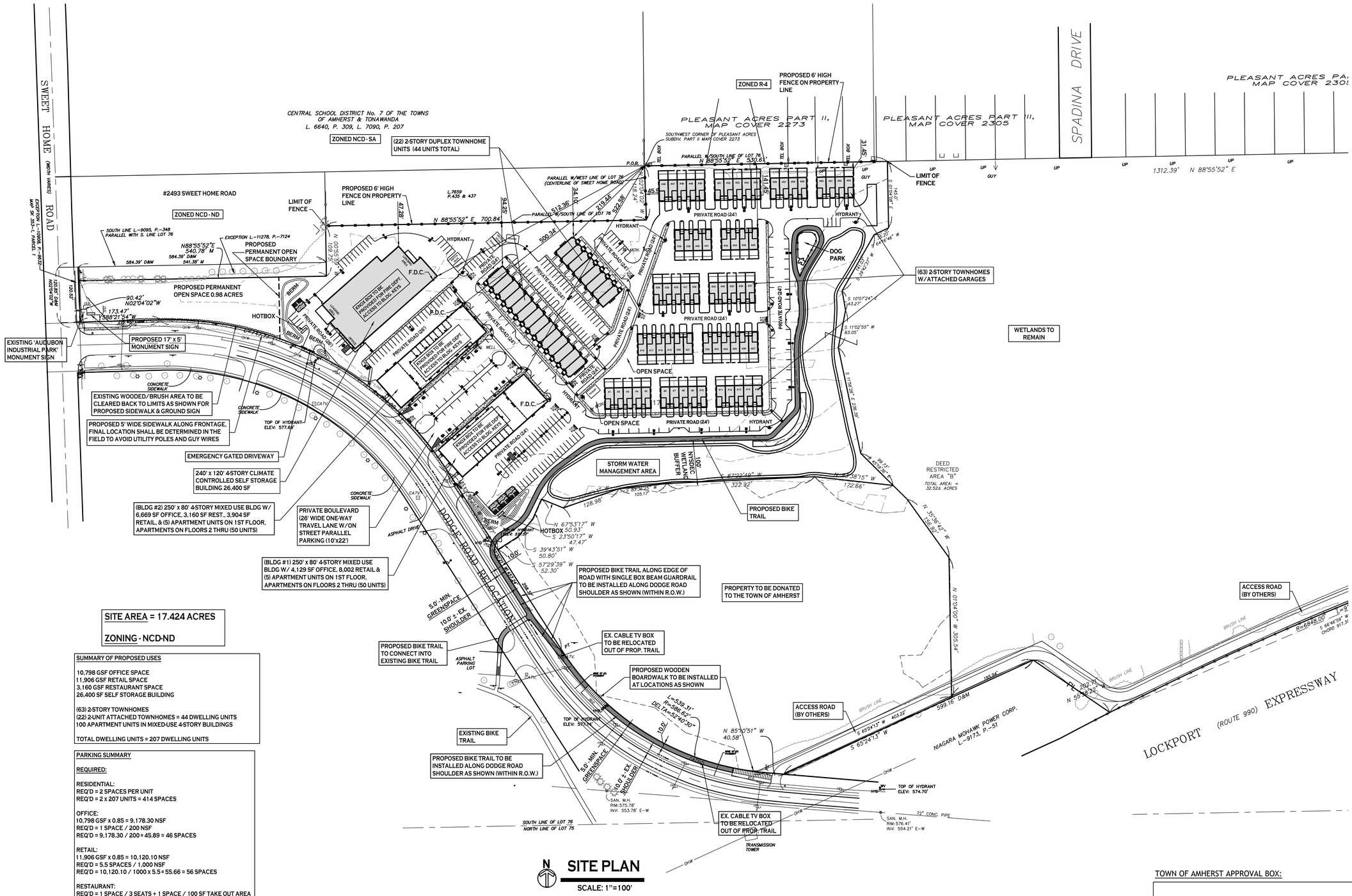

N **SITE PLAN**

SCALE: 1"=100'

SITE AREA = 17.424 ACRES

ZONING - NCD-ND

SUMMARY OF PROPOSED USES

10,798 GSF OFFICE SPACE
11,906 GSF RETAIL SPACE
3,160 GSF RESTAURANT SPACE
26,400 SF SELF STORAGE BUILDING

(63) 2-STORY TOWNHOMES
(22) 2-UNIT ATTACHED TOWNHOMES = 44 DWELLING UNITS
100 APARTMENT UNITS IN MIXED-USE 4-STORY BUILDINGS

TOTAL DWELLING UNITS = 207 DWELLING UNITS

PARKING SUMMARY

REQUIRED:

RESIDENTIAL:
REQ'D = 2 SPACES PER UNIT
REQ'D = 2 x 207 UNITS = 414 SPACES

OFFICE:
10,798 GSF x 0.85 = 9,178.30 NSF
REQ'D = 1 SPACE / 200 NSF
REQ'D = 9,178.30 / 200 = 45.89 = 46 SPACES

RETAIL:
11,906 GSF x 0.85 = 10,120.10 NSF
REQ'D = 5.5 SPACES / 1,000 NSF
REQ'D = 10,120.10 / 1000 x 5.5 = 55.66 = 56 SPACES

RESTAURANT:
REQ'D = 1 SPACE / 3 SEATS + 1 SPACE / 100 SF TAKE OUT AREA
REQ'D = 100 SEAT / 3 + 500 SF / 100 = 38 SPACES

SELF STORAGE:
REQ'D = 1 SPACE / 5,000 AREA DEVOTED TO STORAGE
REQ'D = (26,400 SF x 4) / 5,000 SF = 22 SPACES

TOTAL REQ'D = 576 SPACES

PROVIDED:

94 PARALLEL PARKING SPACES
171 9'x19' SPACES
63 TOWNHOUSE GARAGE SPACES
63 SPACES IN FRONT OF TOWNHOUSE GARAGE SPACES
16 GARAGE SPACES IN 4-STORY BLDGS.
407 TOTAL SPACES

PERMANENT OPEN SPACE SUMMARY

TOTAL PROPOSED PERMANENT OPEN SPACE = 0.98 ACRES

WETLAND SUMMARY

FEDERAL IMPACTS PROPOSED = 6.089 AC
FEDERAL IMPACTS PREVIOUSLY PROPOSED = 13.01 AC
DECREASE = 6.921 AC (53% DECREASE)

NYSDEC IMPACTS PROPOSED = 1.20 AC
NYSDEC IMPACTS PREVIOUSLY PROPOSED = 9.46 AC
DECREASE = 8.26 AC (87% DECREASE)

NYSDEC BUFFER IMPACT PROPOSED = 3.65 AC
NYSDEC BUFFER IMPACTS PREVIOUSLY PROPOSED = 4.20 AC
DECREASE = 0.55 AC (13% DECREASE)

NOTE: NYSDEC IMPACTS INCLUDES FEDERAL WETLAND IMPACT OVERLAP AREAS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

100' 100 0 100 200Ft.

TOWN OF AMHERST APPROVAL BOX:

Carmina Wood Morris DPC
487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Development plans for:

Sawyer's Landing

Portion of 1081 North French Road
Amherst, New York

Date: 2/22/24
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Overall Site Plan

DRAWING NO.

C-100

Project no.: 21.011

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Figure 1

PASSERO engineering architecture

Sawyer's Landing Development | Town of Amherst, Erie County, NY

0 400 800 1,600 Feet N

Site Location and Study Area

Key:
- # Study Intersection
- # Proposed Intersection

Proje

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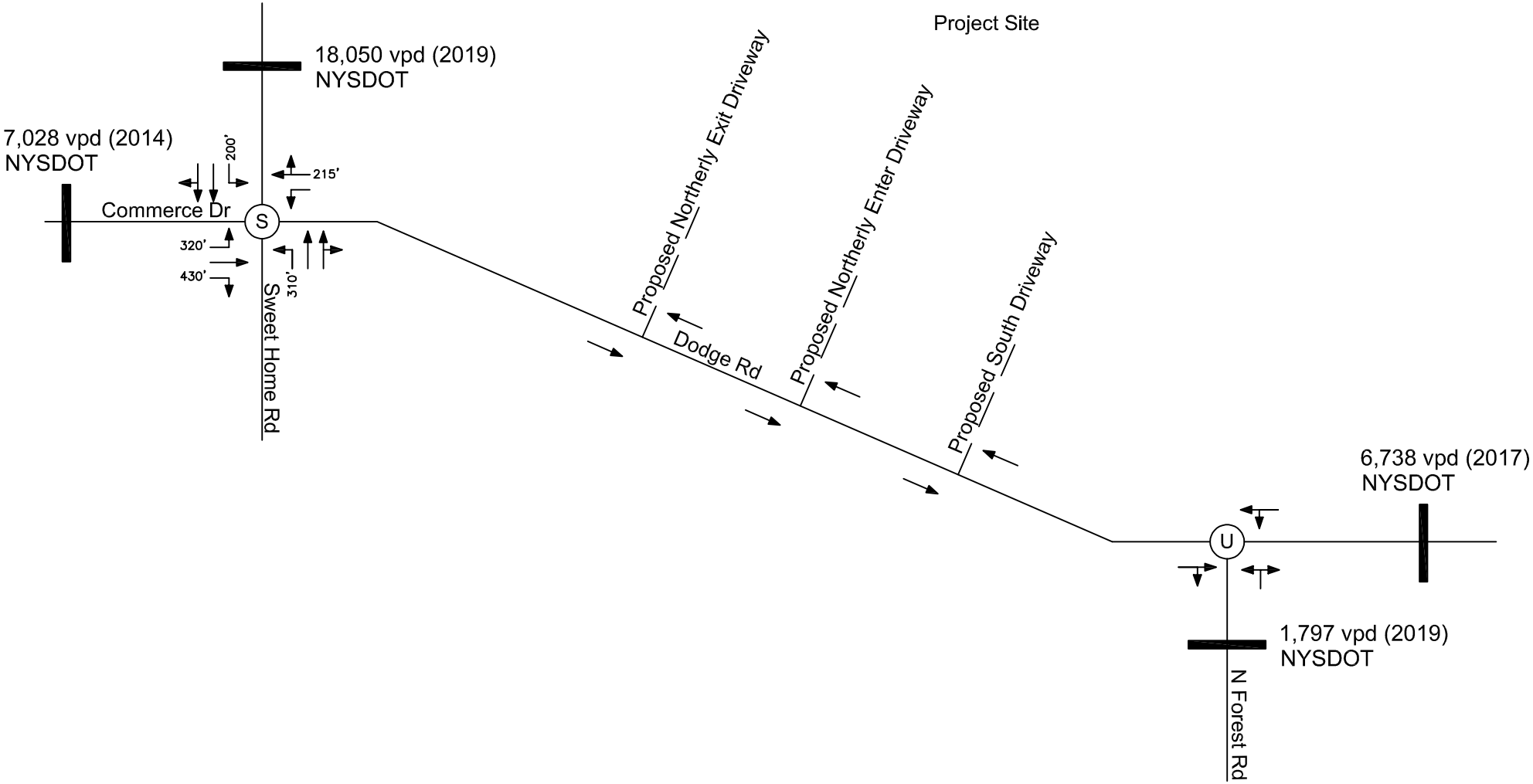
Figure 2

PASSERO engineering architecture

Notes:
1. All AADT volumes by those noted:
   1.1. NYSDOT = New York State Department of Transportation.
2. vpd = Vehicles per day.
3. The planned NYSDOT project will include the indicated storage lengths.



N
NOT TO SCALE

Sawyer's Landing Development | Town of Amherst, NY

Lane Geometry and Intersection Control

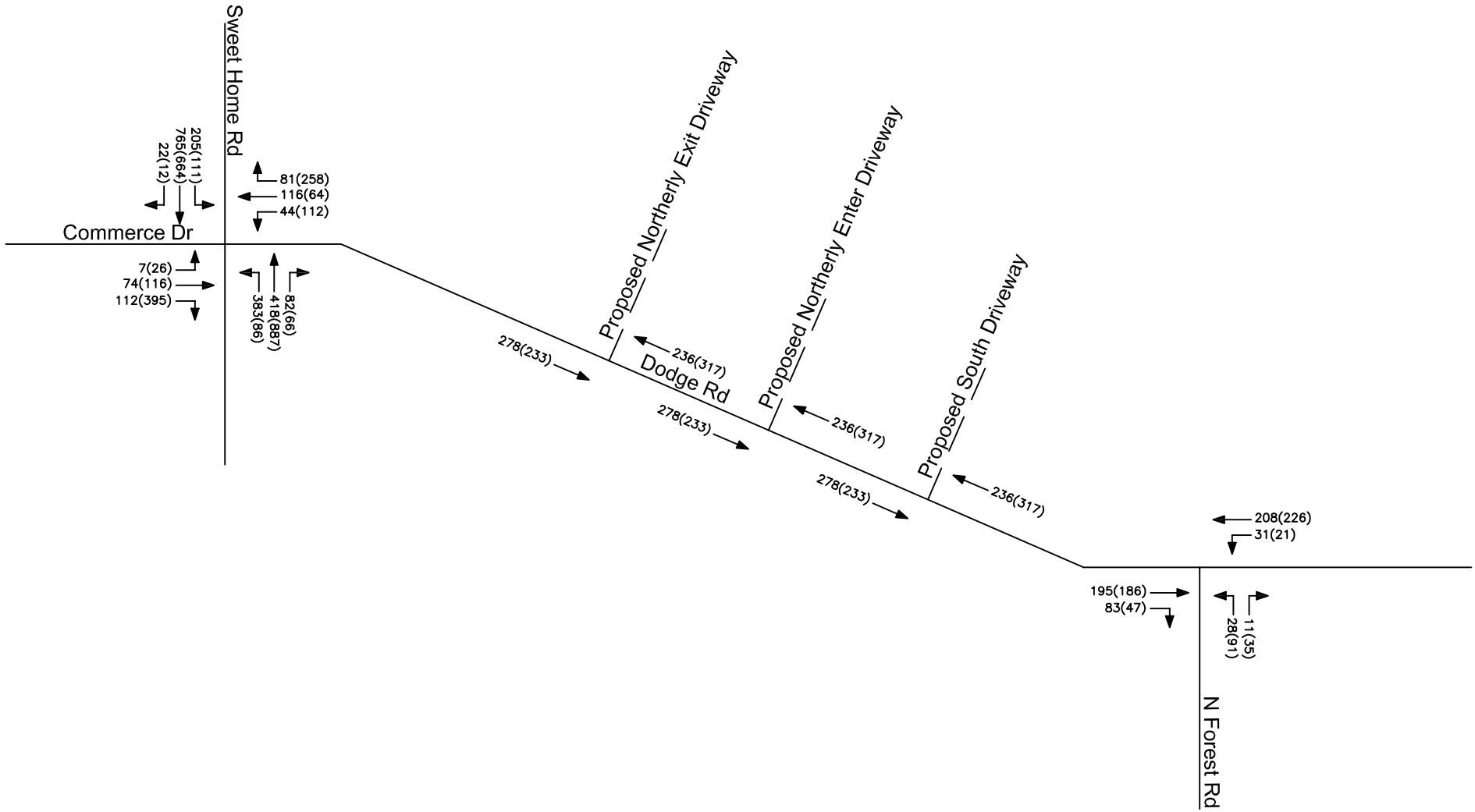
KEY:
– – – Proposed Access
U = Unsignalized

Project

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Figure 3

PASSERO engineering architecture



Sawyer's Landing Development | Town of Amherst, NY

N
NOT TO SCALE

Peak Hour Volumes
2024 Existing Base Conditions

KEY:
00(00) = AM(PM)
– – – Proposed Access

Packet Pg. 1371

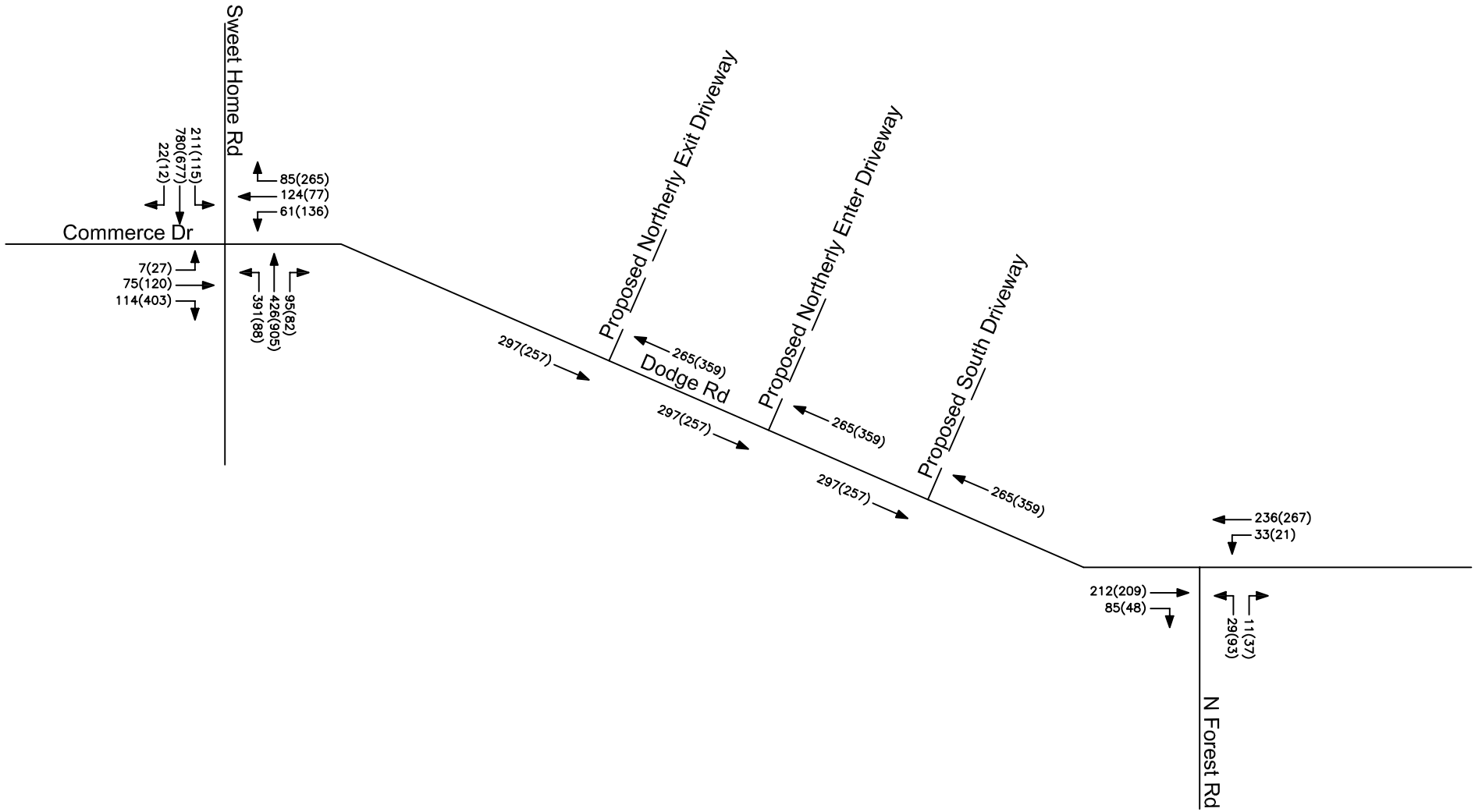
2.c

Project

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Figure 4

PASSERO
engineering architecture



Sawyer's Landing Development | Town of Amherst, NY

NOT TO SCALE

Peak Hour Volumes
2026 Background Conditions

KEY:
00(00) = AM(PM)
– – – Proposed Access

Packet Pg. 1372

2.c

Project

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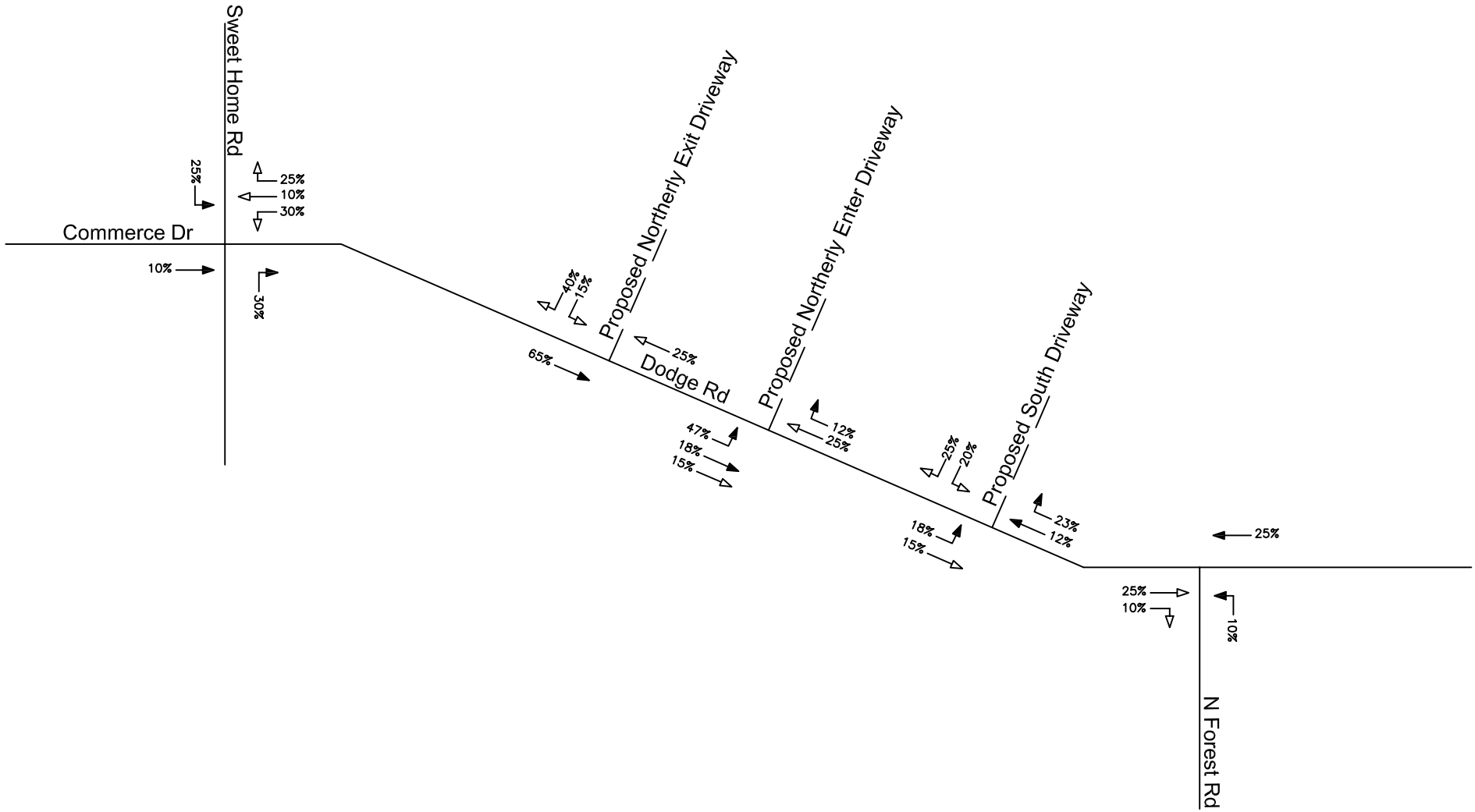
Figure 5

PASSERO
engineering architecture



Sawyer's Landing Development | Town of Amherst, NY

Trip Distribution

N
NOT TO SCALE

KEY:
00(00) = AM(PM)
→ Entering Trip

Packet Pg. 1373

2.c

Project

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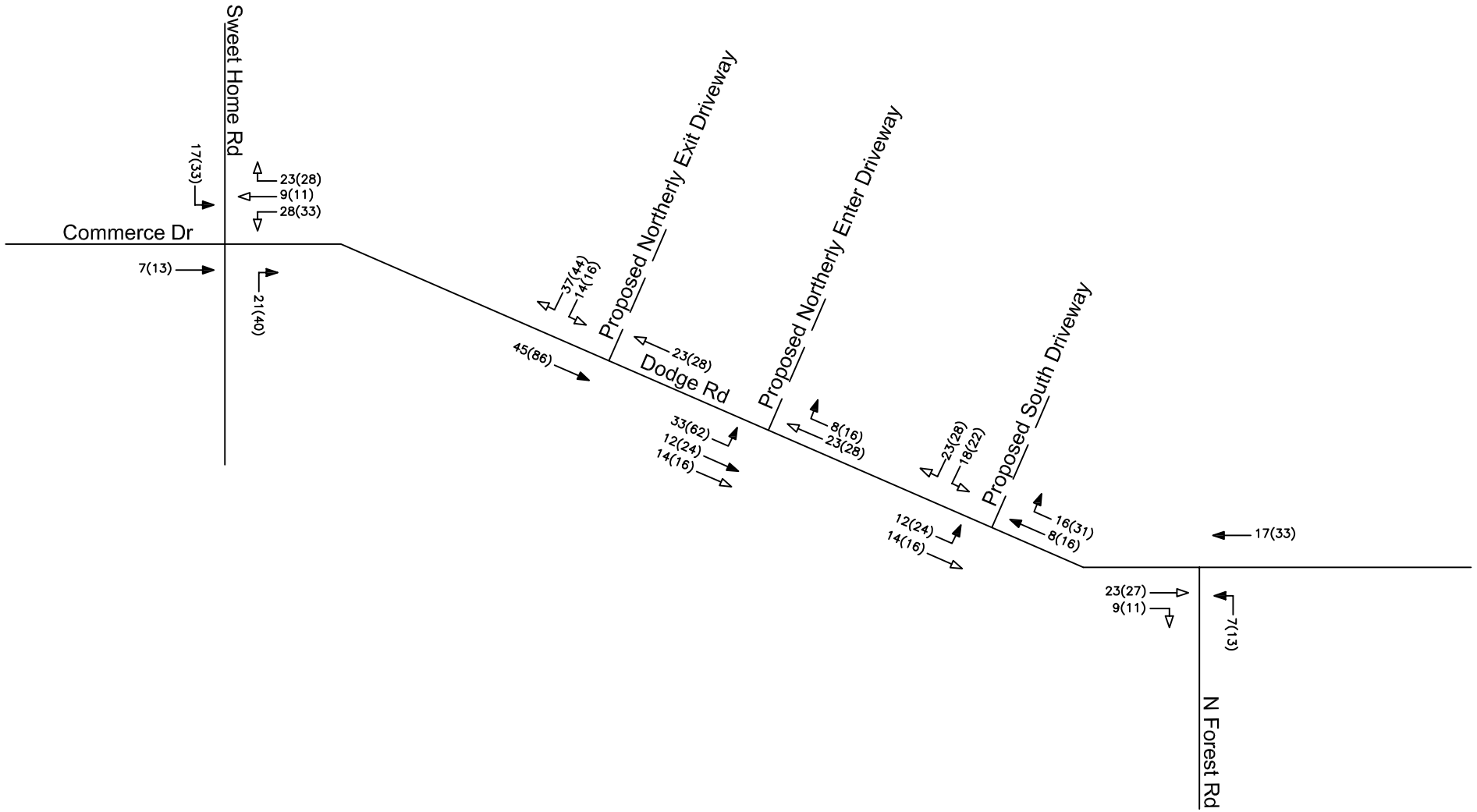
Figure 6

PASSERO
engineering architecture



Sawyer's Landing Development | Town of Amherst, NY

Site Generated Trips

N
NOT TO SCALE

KEY:
00(00) = AM(PM)
→ Entering Trip

Packet Pg. 1374

2.c

Project

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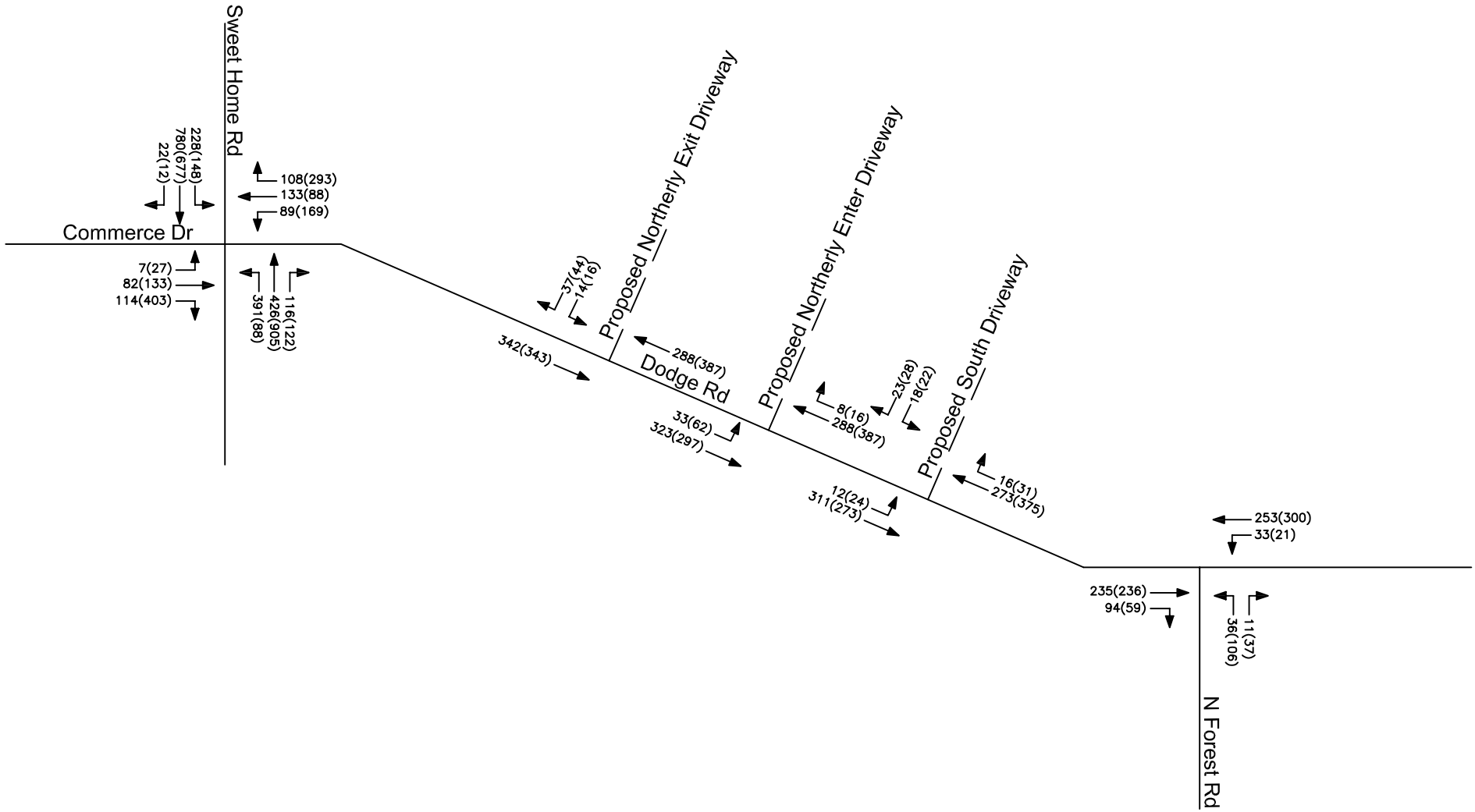
:cess

Figure 7

PASSERO engineering architecture



Sawyer's Landing Development | Town of Amherst, NY

N
NOT TO SCALE

Peak Hour Volumes
Full Development Conditions

KEY:
00(00) = AM(PM)
– – – Proposed Access

Packet Pg. 1375

2.c

Project

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APPENDICES

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

APPENDIX A: EXISTING TRAFFIC COUNT DATA

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022
Full Length (7 AM-7 PM)
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US

Leg / Direction	Dodge Rd Westbound					N.Forest Rd Northbound					Dodge Rd Eastbound					
Time	T	L	U	App	Ped*	R	L	U	App	Ped*	R	T	U	App	Ped*	Int
2022-03-03 7:00AM	23	2	0	**25**	0	2	4	0	**6**	0	9	25	0	**34**	0	**65**
7:15AM	27	6	0	**33**	0	0	1	0	**1**	0	14	38	0	**52**	0	**86**
7:30AM	54	5	0	**59**	0	3	6	0	**9**	0	23	48	0	**71**	0	**139**
7:45AM	56	9	0	**65**	0	0	5	0	**5**	0	24	44	0	**68**	0	**138**
Hourly Total	160	22	0	**182**	0	5	16	0	**21**	0	70	155	0	**225**	0	**428**
8:00AM	48	12	0	**60**	0	4	8	0	**12**	0	17	50	0	**67**	0	**139**
8:15AM	48	5	0	**53**	0	4	9	0	**13**	0	18	51	0	**69**	0	**135**
8:30AM	35	5	0	**40**	0	2	9	0	**11**	0	13	46	0	**59**	0	**110**
8:45AM	41	3	0	**44**	0	6	10	0	**16**	0	18	56	0	**74**	0	**134**
Hourly Total	172	25	0	**197**	0	16	36	0	**52**	0	66	203	0	**269**	0	**518**
9:00AM	37	3	0	**40**	0	0	7	0	**7**	0	10	38	0	**48**	0	**95**
9:15AM	35	4	0	**39**	0	5	9	0	**14**	0	18	41	0	**59**	0	**112**
9:30AM	30	6	0	**36**	0	2	5	0	**7**	0	15	46	0	**61**	0	**104**
9:45AM	35	7	0	**42**	0	4	9	0	**13**	0	8	32	0	**40**	0	**95**
Hourly Total	137	20	0	**157**	0	11	30	0	**41**	0	51	157	0	**208**	0	**406**
10:00AM	27	6	0	**33**	0	5	14	0	**19**	0	10	34	0	**44**	0	**96**
10:15AM	35	4	0	**39**	0	3	9	0	**12**	0	8	32	0	**40**	0	**91**
10:30AM	32	3	0	**35**	0	2	13	0	**15**	0	11	32	0	**43**	0	**93**
10:45AM	26	2	0	**28**	0	2	8	0	**10**	0	13	35	0	**48**	0	**86**
Hourly Total	120	15	0	**135**	0	12	44	0	**56**	0	42	133	0	**175**	0	**366**
11:00AM	34	1	0	**35**	0	2	13	0	**15**	0	11	31	0	**42**	0	**92**
11:15AM	32	5	0	**37**	0	3	12	0	**15**	0	9	38	0	**47**	0	**99**
11:30AM	33	4	0	**37**	0	3	12	0	**15**	0	12	29	0	**41**	0	**93**
11:45AM	31	7	0	**38**	0	4	17	0	**21**	0	16	38	0	**54**	0	**113**
Hourly Total	130	17	0	**147**	0	12	54	0	**66**	0	48	136	0	**184**	0	**397**
12:00PM	40	6	0	**46**	0	4	12	0	**16**	0	17	41	0	**58**	0	**120**
12:15PM	31	6	0	**37**	0	7	13	0	**20**	0	15	36	0	**51**	0	**108**
12:30PM	36	2	0	**38**	0	5	22	0	**27**	0	19	38	0	**57**	0	**122**
12:45PM	32	6	0	**38**	0	2	13	0	**15**	0	10	40	0	**50**	0	**103**
Hourly Total	139	20	0	**159**	0	18	60	0	**78**	0	61	155	0	**216**	0	**453**
1:00PM	42	7	0	**49**	0	5	12	2	**19**	0	13	25	0	**38**	0	**106**
1:15PM	40	6	0	**46**	0	1	15	0	**16**	0	20	36	0	**56**	0	**118**
1:30PM	32	5	0	**37**	0	6	16	0	**22**	0	7	21	0	**28**	0	**87**
1:45PM	35	2	0	**37**	0	2	15	0	**17**	0	12	34	0	**46**	0	**100**
Hourly Total	149	20	0	**169**	0	14	58	2	**74**	0	52	116	0	**168**	0	**411**
2:00PM	36	2	0	**38**	0	7	14	0	**21**	0	11	38	0	**49**	0	**108**
2:15PM	39	5	0	**44**	0	3	18	0	**21**	0	10	31	0	**41**	0	**106**
2:30PM	38	3	0	**41**	0	6	13	0	**19**	0	18	44	0	**62**	0	**122**
2:45PM	34	6	0	**40**	0	4	13	0	**17**	0	7	39	0	**46**	0	**103**
Hourly Total	147	16	0	**163**	0	20	58	0	**78**	0	46	152	0	**198**	0	**439**
3:00PM	49	8	0	**57**	0	4	20	0	**24**	0	11	49	0	**60**	0	**141**
3:15PM	42	2	0	**44**	0	5	15	0	**20**	0	14	43	0	**57**	0	**121**
3:30PM	43	6	0	**49**	0	6	12	0	**18**	0	15	49	0	**64**	0	**131**
3:45PM	51	5	0	**56**	0	6	15	0	**21**	0	15	50	0	**65**	0	**142**
Hourly Total	185	21	0	**206**	0	21	62	0	**83**	0	55	191	0	**246**	0	**535**
4:00PM	48	2	0	**50**	0	15	36	0	**51**	0	14	47	0	**61**	0	**162**
4:15PM	47	3	0	**50**	0	5	14	0	**19**	0	14	51	0	**65**	0	**134**
4:30PM	56	5	0	**61**	0	10	22	0	**32**	0	14	47	0	**61**	0	**154**
4:45PM	59	3	0	**62**	0	8	23	0	**31**	0	7	36	0	**43**	0	**136**
Hourly Total	210	13	0	**223**	0	38	95	0	**133**	0	49	181	0	**230**	0	**586**
5:00PM	62	8	0	**70**	0	13	28	0	**41**	0	17	53	0	**70**	0	**181**
5:15PM	47	5	0	**52**	0	4	17	0	**21**	0	9	48	0	**57**	0	**130**
5:30PM	38	4	0	**42**	0	5	15	0	**20**	0	2	39	0	**41**	0	**103**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

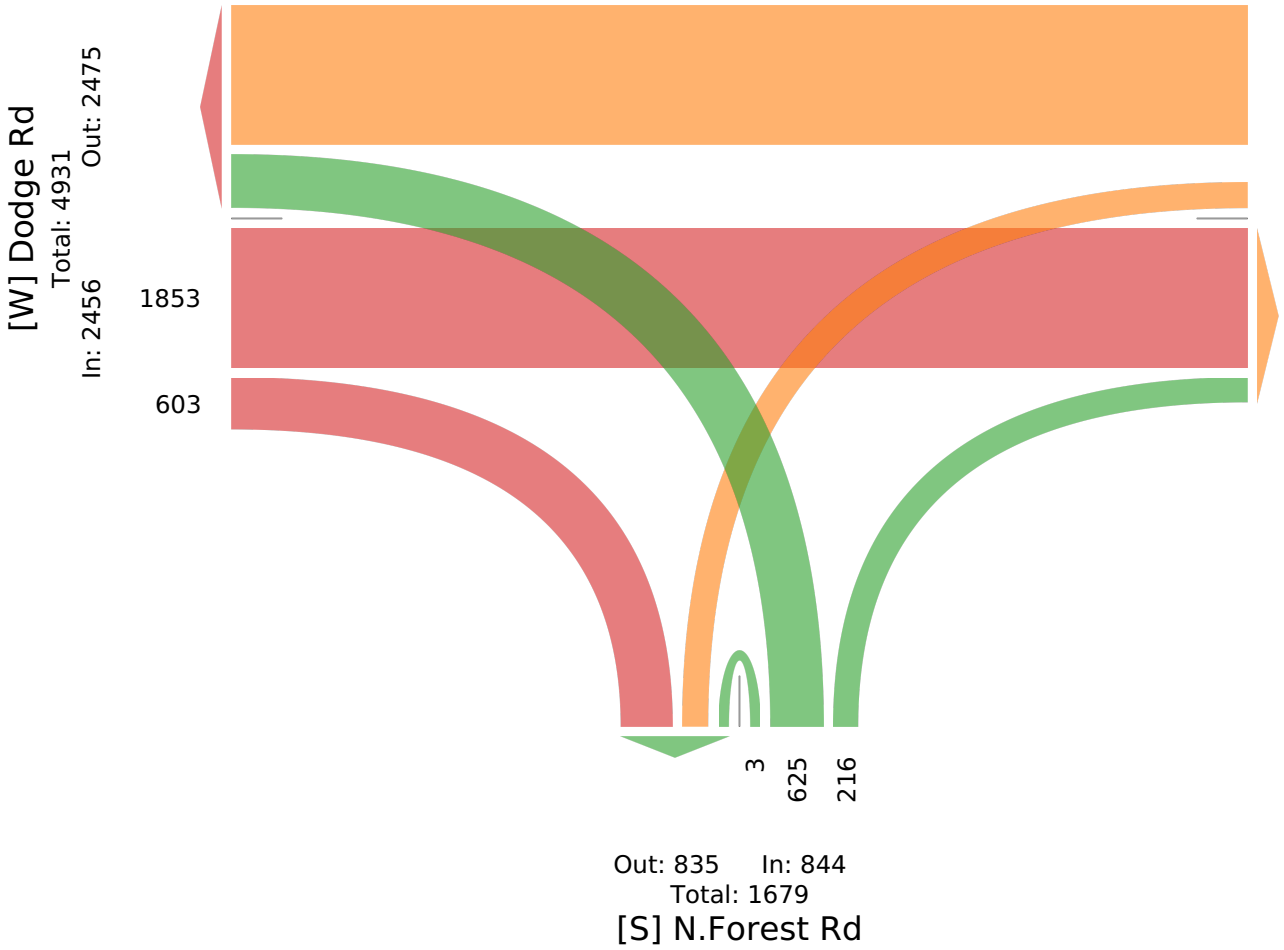
Leg	Dodge Rd					N.Forest Rd					Dodge Rd					
Direction	Westbound					Northbound					Eastbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
5:45PM	37	4	0	**41**	0	3	7	0	**10**	0	10	31	0	**41**	0	**92**
Hourly Total	184	21	0	**205**	0	25	67	0	**92**	0	38	171	0	**209**	0	**506**
6:00PM	33	2	0	**35**	0	8	19	1	**28**	0	6	27	0	**33**	0	**96**
6:15PM	23	3	0	**26**	0	6	7	0	**13**	0	8	29	0	**37**	0	**76**
6:30PM	34	6	0	**40**	0	4	13	0	**17**	0	9	26	0	**35**	0	**92**
6:45PM	27	8	0	**35**	0	6	6	0	**12**	0	2	21	0	**23**	0	**70**
Hourly Total	117	19	0	**136**	0	24	45	1	**70**	0	25	103	0	**128**	0	**334**
Total	1850	229	0	**2079**	0	216	625	3	**844**	0	603	1853	0	**2456**	0	**5379**
% Approach	89.0%	11.0%	0%	**-**	-	25.6%	74.1%	0.4%	**-**	-	24.6%	75.4%	0%	**-**	-	-
% Total	34.4%	4.3%	0%	**38.7%**	-	4.0%	11.6%	0.1%	**15.7%**	-	11.2%	34.4%	0%	**45.7%**	-	-
Motorcycles	0	0	0	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Motorcycles	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Lights	1808	227	0	**2035**	-	211	616	3	**830**	-	591	1796	0	**2387**	-	5252
% Lights	97.7%	99.1%	0%	**97.9%**	-	97.7%	98.6%	100%	**98.3%**	-	98.0%	96.9%	0%	**97.2%**	-	97.6%
Heavy	42	2	0	**44**	-	5	9	0	**14**	-	12	57	0	**69**	-	127
% Heavy	2.3%	0.9%	0%	**2.1%**	-	2.3%	1.4%	0%	**1.7%**	-	2.0%	3.1%	0%	**2.8%**	-	2.4%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC
Thu Mar 3, 2022
Full Length (7 AM-7 PM)
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022
AM Peak (7:30 AM - 8:30 AM)
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US

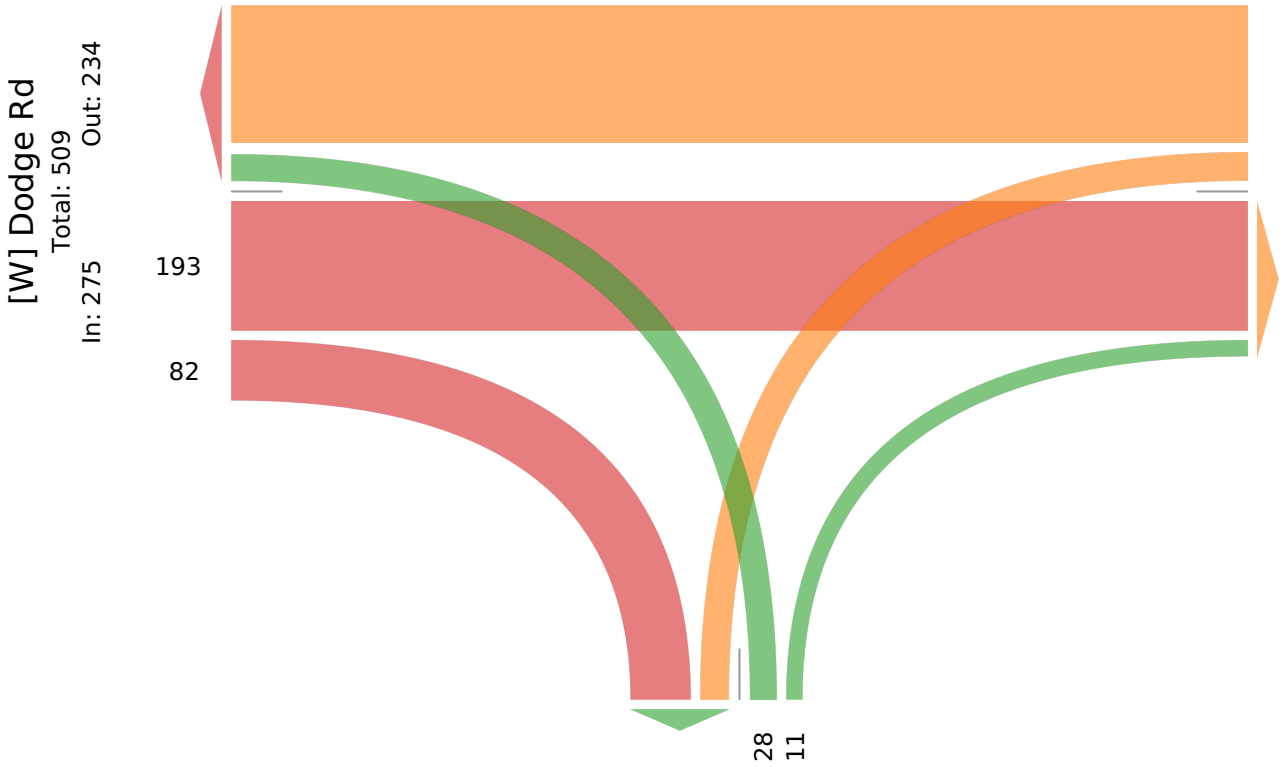
Leg Direction	Dodge Rd Westbound					N.Forest Rd Northbound					Dodge Rd Eastbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2022-03-03 7:30AM	54	5	0	**59**	0	3	6	0	**9**	0	23	48	0	**71**	0	**139**
7:45AM	56	9	0	**65**	0	0	5	0	**5**	0	24	44	0	**68**	0	**138**
8:00AM	48	12	0	**60**	0	4	8	0	**12**	0	17	50	0	**67**	0	**139**
8:15AM	48	5	0	**53**	0	4	9	0	**13**	0	18	51	0	**69**	0	**135**
Total	206	31	0	**237**	0	11	28	0	**39**	0	82	193	0	**275**	0	**551**
% Approach	86.9%	13.1%	0%	**-**	-	28.2%	71.8%	0%	**-**	-	29.8%	70.2%	0%	**-**	-	-
% Total	37.4%	5.6%	0%	**43.0%**	-	2.0%	5.1%	0%	**7.1%**	-	14.9%	35.0%	0%	**49.9%**	-	-
PHF	0.920	0.646	-	**0.912**	-	0.688	0.778	-	**0.750**	-	0.854	0.946	-	**0.968**	-	0.991
Motorcycles	0	0	0	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Motorcycles	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Lights	202	31	0	**233**	-	11	27	0	**38**	-	81	188	0	**269**	-	540
% Lights	98.1%	100%	0%	**98.3%**	-	100%	96.4%	0%	**97.4%**	-	98.8%	97.4%	0%	**97.8%**	-	98.0%
Heavy	4	0	0	**4**	-	0	1	0	**1**	-	1	5	0	**6**	-	11
% Heavy	1.9%	0%	0%	**1.7%**	-	0%	3.6%	0%	**2.6%**	-	1.2%	2.6%	0%	**2.2%**	-	2.0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC
Thu Mar 3, 2022
AM Peak (7:30 AM - 8:30 AM)
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022
Midday Peak (11:45 AM - 12:45 PM)
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US

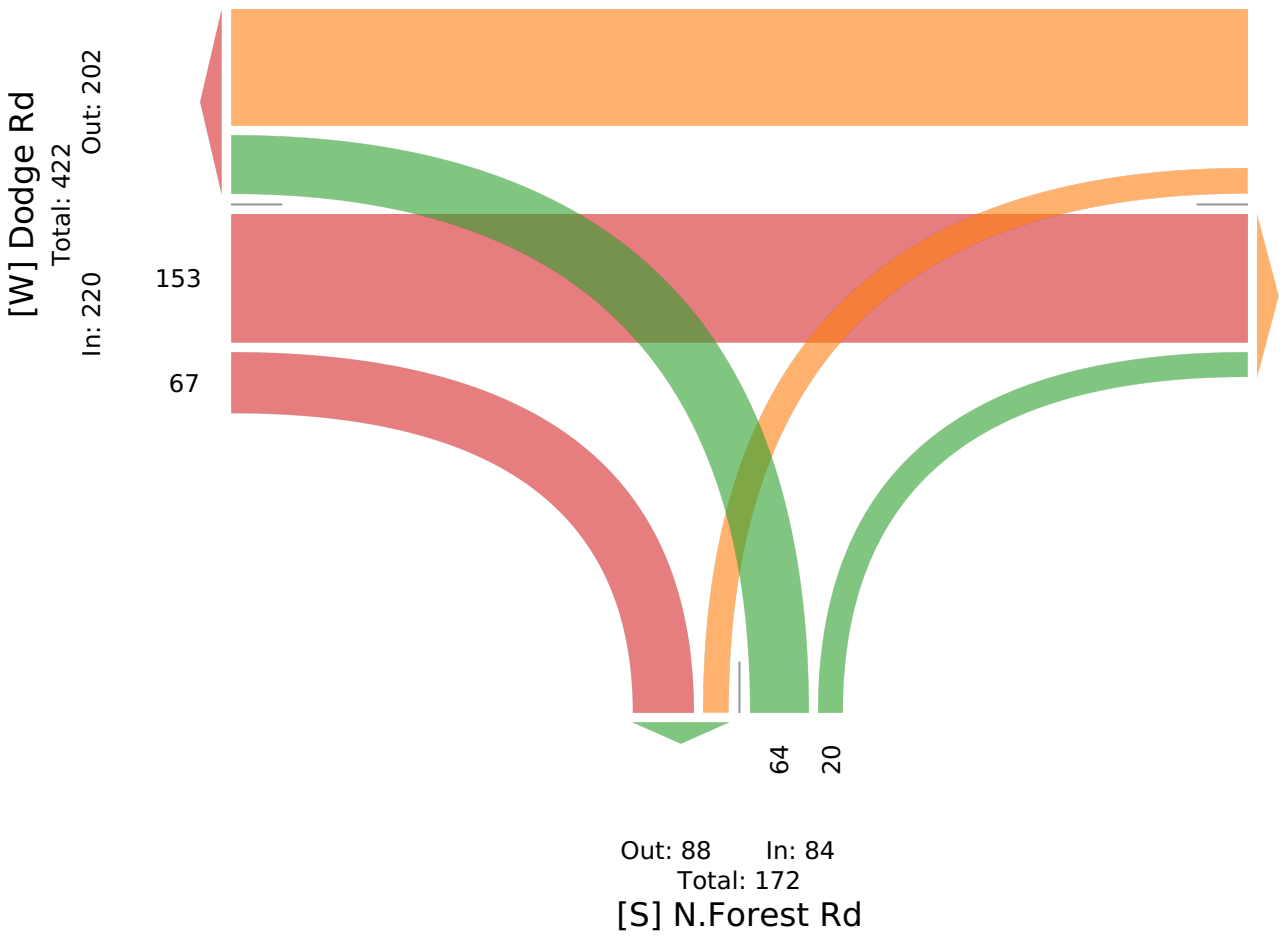
Leg / Direction	Dodge Rd Westbound					N.Forest Rd Northbound					Dodge Rd Eastbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2022-03-03 11:45AM	31	7	0	**38**	0	4	17	0	**21**	0	16	38	0	**54**	0	**113**
12:00PM	40	6	0	**46**	0	4	12	0	**16**	0	17	41	0	**58**	0	**120**
12:15PM	31	6	0	**37**	0	7	13	0	**20**	0	15	36	0	**51**	0	**108**
12:30PM	36	2	0	**38**	0	5	22	0	**27**	0	19	38	0	**57**	0	**122**
Total	138	21	0	**159**	0	20	64	0	**84**	0	67	153	0	**220**	0	**463**
% Approach	86.8%	13.2%	0%	**-**	-	23.8%	76.2%	0%	**-**	-	30.5%	69.5%	0%	**-**	-	-
% Total	29.8%	4.5%	0%	**34.3%**	-	4.3%	13.8%	0%	**18.1%**	-	14.5%	33.0%	0%	**47.5%**	-	-
PHF	0.863	0.750	-	**0.864**	-	0.714	0.727	-	**0.778**	-	0.882	0.933	-	**0.948**	-	0.949
Motorcycles	0	0	0	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Motorcycles	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Lights	137	21	0	**158**	-	18	62	0	**80**	-	65	150	0	**215**	-	453
% Lights	99.3%	100%	0%	**99.4%**	-	90.0%	96.9%	0%	**95.2%**	-	97.0%	98.0%	0%	**97.7%**	-	97.8%
Heavy	1	0	0	**1**	-	2	2	0	**4**	-	2	3	0	**5**	-	10
% Heavy	0.7%	0%	0%	**0.6%**	-	10.0%	3.1%	0%	**4.8%**	-	3.0%	2.0%	0%	**2.3%**	-	2.2%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC
Thu Mar 3, 2022
Midday Peak (11:45 AM - 12:45 PM)
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US

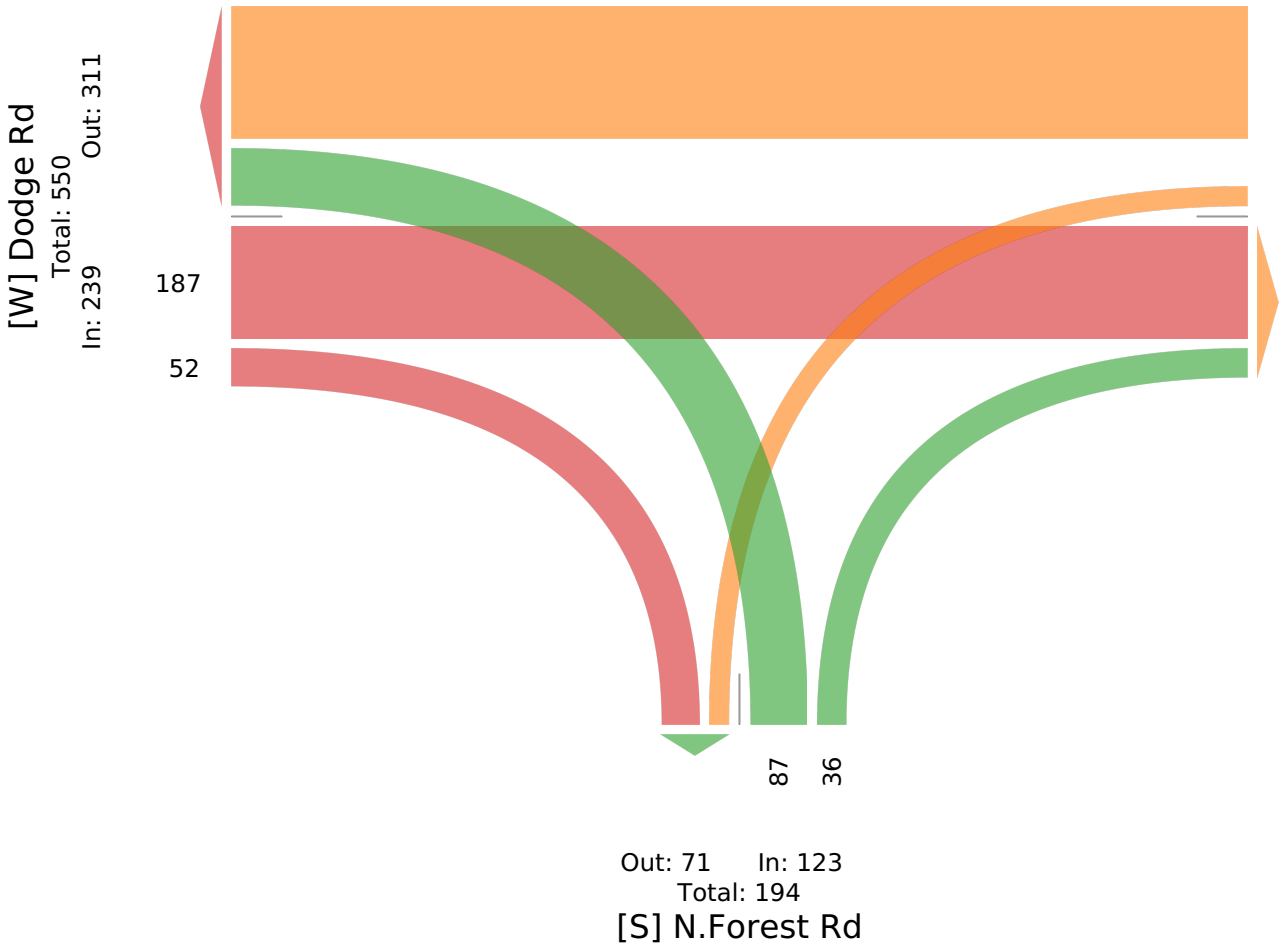
Leg / Direction	Dodge Rd Westbound					N.Forest Rd Northbound					Dodge Rd Eastbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2022-03-03 4:15PM	47	3	0	**50**	0	5	14	0	**19**	0	14	51	0	**65**	0	**134**
4:30PM	56	5	0	**61**	0	10	22	0	**32**	0	14	47	0	**61**	0	**154**
4:45PM	59	3	0	**62**	0	8	23	0	**31**	0	7	36	0	**43**	0	**136**
5:00PM	62	8	0	**70**	0	13	28	0	**41**	0	17	53	0	**70**	0	**181**
Total	224	19	0	**243**	0	36	87	0	**123**	0	52	187	0	**239**	0	**605**
% Approach	92.2%	7.8%	0%	**-**	-	29.3%	70.7%	0%	**-**	-	21.8%	78.2%	0%	**-**	-	-
% Total	37.0%	3.1%	0%	**40.2%**	-	6.0%	14.4%	0%	**20.3%**	-	8.6%	30.9%	0%	**39.5%**	-	-
PHF	0.903	0.594	-	**0.868**	-	0.692	0.777	-	**0.750**	-	0.765	0.882	-	**0.854**	-	0.836
Motorcycles	0	0	0	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Motorcycles	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Lights	221	19	0	**240**	-	36	86	0	**122**	-	52	185	0	**237**	-	599
% Lights	98.7%	100%	0%	**98.8%**	-	100%	98.9%	0%	**99.2%**	-	100%	98.9%	0%	**99.2%**	-	99.0%
Heavy	3	0	0	**3**	-	0	1	0	**1**	-	0	2	0	**2**	-	6
% Heavy	1.3%	0%	0%	**1.2%**	-	0%	1.1%	0%	**0.8%**	-	0%	1.1%	0%	**0.8%**	-	1.0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC
Thu Mar 3, 2022
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC

Thu Mar 3, 2022
Forced Peak (4:30 PM - 5:30 PM)
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US

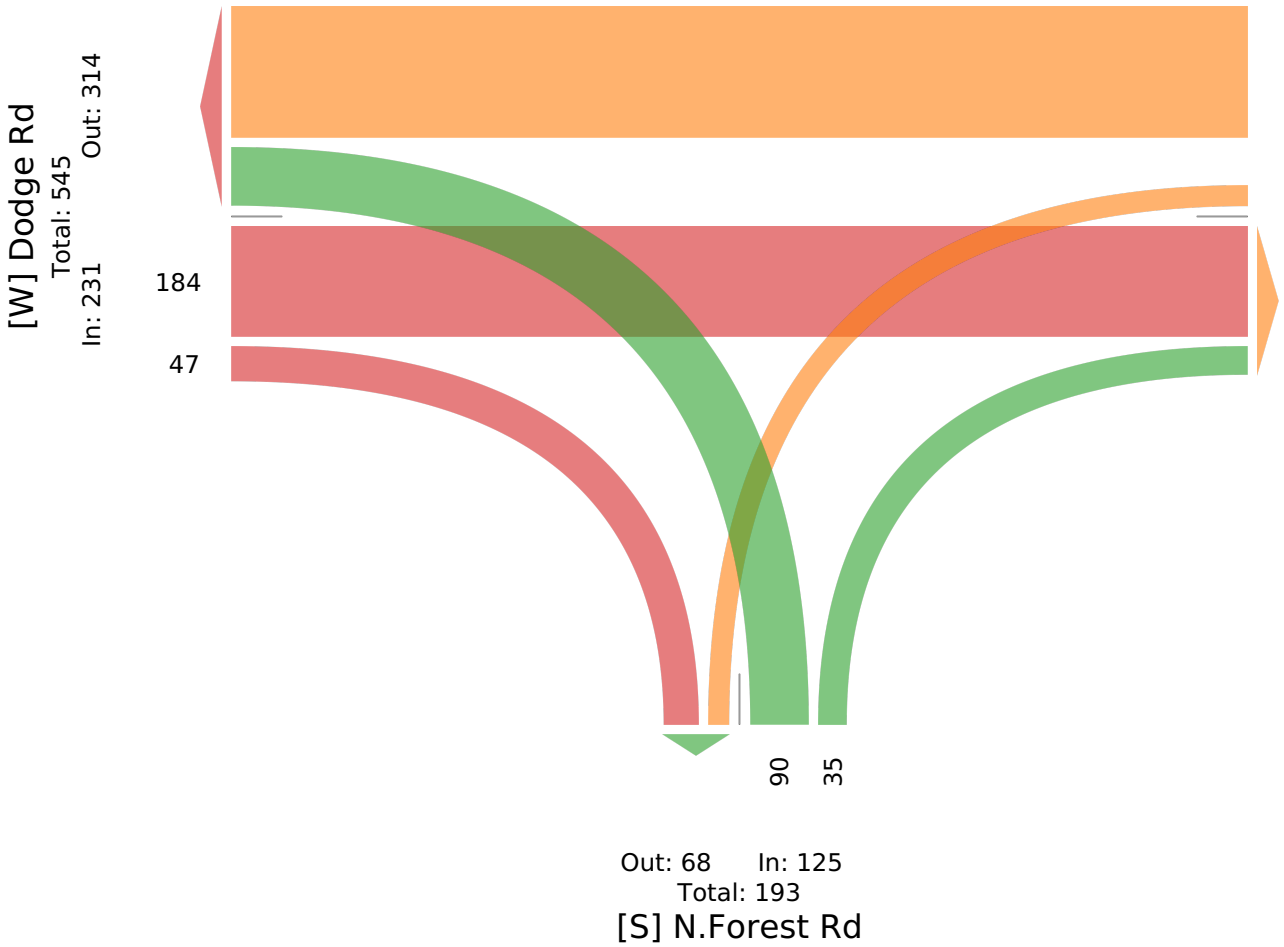
Leg / Direction	Dodge Rd Westbound					N.Forest Rd Northbound					Dodge Rd Eastbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2022-03-03 4:30PM	56	5	0	**61**	0	10	22	0	**32**	0	14	47	0	**61**	0	**154**
4:45PM	59	3	0	**62**	0	8	23	0	**31**	0	7	36	0	**43**	0	**136**
5:00PM	62	8	0	**70**	0	13	28	0	**41**	0	17	53	0	**70**	0	**181**
5:15PM	47	5	0	**52**	0	4	17	0	**21**	0	9	48	0	**57**	0	**130**
Total	224	21	0	**245**	0	35	90	0	**125**	0	47	184	0	**231**	0	**601**
% Approach	91.4%	8.6%	0%	**-**	-	28.0%	72.0%	0%	**-**	-	20.3%	79.7%	0%	**-**	-	-
% Total	37.3%	3.5%	0%	**40.8%**	-	5.8%	15.0%	0%	**20.8%**	-	7.8%	30.6%	0%	**38.4%**	-	-
PHF	0.903	0.656	-	**0.875**	-	0.673	0.804	-	**0.762**	-	0.691	0.868	-	**0.825**	-	0.830
Motorcycles	0	0	0	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Motorcycles	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Lights	223	21	0	**244**	-	35	89	0	**124**	-	47	183	0	**230**	-	598
% Lights	99.6%	100%	0%	**99.6%**	-	100%	98.9%	0%	**99.2%**	-	100%	99.5%	0%	**99.6%**	-	99.5%
Heavy	1	0	0	**1**	-	0	1	0	**1**	-	0	1	0	**1**	-	3
% Heavy	0.4%	0%	0%	**0.4%**	-	0%	1.1%	0%	**0.8%**	-	0%	0.5%	0%	**0.4%**	-	0.5%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

N.Forest Rd/Dodge Rd - TMC
Thu Mar 3, 2022
Forced Peak (4:30 PM - 5:30 PM)
All Classes (Motorcycles, Lights, Heavy, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 927236, Location: 43.023705, -78.787962

Provided by: Tri-State Traffic Data: New York Division
1016 Hoosick Rd, Troy, NY, 12180, US



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Summary

Study Name	Sweet Home Road @ Dodge Rd. & Commerce Rd.
Project	
Project Code	
Legs and Movements	
Bin Size	15 minutes
Time Zone	
Start Time	2024-05-14 00:00:00 +0000
End Time	2024-05-17 00:00:00 +0000
Location	Sweet Home Road @ Dodge Rd. & Commerce Rd.
Latitude and Longitude	43.02669108,-78.79913032

AM Peak	7:30-8:30
Midday Peak	15:00-16:00
PM Peak (Overall Peak Hour)	16:30-17:30

ArticulatedTruck

Entry	North				East			South				West			
Direction	Southbound				Westbound			Northbound				Eastbound			
Start Time	Left	Thru	Right	U-Turn	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right	
2024-05-14 07:00:00 +0000	0	1	0	0	0	0	0	0	0	0	0	0	1		
2024-05-14 07:15:00 +0000	0	0	0	0	0	0	0	1	0	0	0	0	1		
2024-05-14 07:30:00 +0000	0	1	0	0	0	0	0	1	1	0	0	0	0	3	
2024-05-14 07:45:00 +0000	0	0	0	0	0	0	0	1	0	0	0	0	1	2	
2024-05-14 08:00:00 +0000	0	1	0	0	0	0	0	2	1	0	0	0	0	4	
2024-05-14 08:15:00 +0000	0	0	0	0	0	0	0	1	1	0	0	0	2	4	
2024-05-14 08:30:00 +0000	0	0	0	0	0	0	0	0	1	0	0	0	0		
2024-05-14 08:45:00 +0000	0	0	0	0	0	0	0	1	1	0	0	0	1		
2024-05-14 16:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0		
2024-05-14 16:15:00 +0000	0	1	0	0	0	0	0	1	1	0	0	0	1		
2024-05-14 16:30:00 +0000	0	0	0	0	0	1	0	0	0	0	0	0	0	1	
2024-05-14 16:45:00 +0000	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
2024-05-14 17:00:00 +0000	0	1	0	0	0	0	0	0	0	0	0	0	1	2	
2024-05-14 17:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
2024-05-14 17:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	1		
2024-05-14 17:45:00 +0000	0	0	0	0	0	1	0	0	1	0	0	0	1	0	
7:30-8:30	0	2	0	0	0	0	0	5	3	0	0	0	0	3	
4:30-5:30	0	2	0	0	0	1	0	0	0	0	0	0	0	2	

Bicycle															
Entry	North				East			South				West			
Direction	Southbound				Westbound			Northbound				Eastbound			
Start Time	Left	Thru	Right	U-Turn	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right	
2024-05-14 07:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 07:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 07:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 07:45:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 08:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 08:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 08:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 08:45:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 16:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 16:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 16:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 16:45:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 17:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 17:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 17:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 17:45:00 +0000	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30-5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Bus																
Entry	North				East			South				West				
Direction	Southbound				Westbound			Northbound				Eastbound				
Start Time	Left	Thru	Right	U-Turn	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right		
2024-05-14 07:00:00 +0000	0	15	1	0	0	0	0	0	3	0	0	0	0	1		
2024-05-14 07:15:00 +0000	1	1	0	0	0	0	1	0	9	0	0	1	0	0		
2024-05-14 07:30:00 +0000	0	4	1	0	0	0	0	0	5	0	0	0	0	0	10	
2024-05-14 07:45:00 +0000	1	2	0	0	0	0	1	0	3	1	0	1	0	0	9	
2024-05-14 08:00:00 +0000	0	8	0	0	0	0	0	2	6	0	0	0	0	0	16	
2024-05-14 08:15:00 +0000	0	3	0	0	0	0	0	3	3	0	0	1	0	0	10	
2024-05-14 08:30:00 +0000	0	5	1	0	0	0	0	3	4	0	0	1	1	4		
2024-05-14 08:45:00 +0000	0	8	0	0	0	3	0	3	2	0	0	2	7	4		
2024-05-14 16:00:00 +0000	0	6	1	0	0	0	0	0	10	0	0	0	0	0		
2024-05-14 16:15:00 +0000	0	8	0	0	0	0	0	0	2	0	0	1	0	1		
2024-05-14 16:30:00 +0000	1	3	1	0	0	0	0	0	1	0	0	0	0	1	7	
2024-05-14 16:45:00 +0000	0	1	0	0	0	0	0	0	1	0	0	1	0	0	3	
2024-05-14 17:00:00 +0000	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	
2024-05-14 17:15:00 +0000	0	1	1	0	0	0	0	0	1	0	0	1	0	0	4	
2024-05-14 17:30:00 +0000	0	1	0	0	0	0	0	0	0	0	0	0	0	0		
2024-05-14 17:45:00 +0000	0	0	1	0	0	0	0	0	1	0	0	1	0	0		
7:30-8:30	1	17	1	0	0	0	1	5	17	1	0	2	0	0		
4:30-5:30	1	5	2	0	0	0	0	0	4	0	0	2	0	2		

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lights

Entry	North				East			South				West			
Direction	Southbound				Westbound			Northbound				Eastbound			
Start Time	Left	Thru	Right	U-Turn	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right	
2024-05-14 07:00:00 +0000	27	164	3	0	3	14	9	60	61	7	0	1	7	38	
2024-05-14 07:15:00 +0000	35	183	3	0	6	13	15	76	97	11	0	3	14	30	
2024-05-14 07:30:00 +0000	49	202	5	0	7	19	21	78	99	15	0	1	27	32	555
2024-05-14 07:45:00 +0000	58	194	6	0	6	39	20	113	96	18	0	0	18	21	589
2024-05-14 08:00:00 +0000	47	150	5	0	10	32	19	93	97	17	0	1	16	27	514
2024-05-14 08:15:00 +0000	47	190	5	0	8	26	18	84	103	17	0	3	13	24	538
2024-05-14 08:30:00 +0000	40	162	1	0	12	22	22	71	84	19	0	3	10	30	
2024-05-14 08:45:00 +0000	41	158	5	0	7	18	19	65	101	21	0	1	14	24	
2024-05-14 16:00:00 +0000	27	141	3	0	22	13	56	21	222	15	0	7	20	88	
2024-05-14 16:15:00 +0000	20	141	2	0	26	14	52	19	208	13	0	4	19	69	
2024-05-14 16:30:00 +0000	26	160	2	0	25	12	68	19	221	17	0	11	28	104	693
2024-05-14 16:45:00 +0000	29	155	4	0	28	13	59	19	226	16	0	2	29	92	672
2024-05-14 17:00:00 +0000	24	176	1	0	34	18	80	21	208	17	0	6	37	131	753
2024-05-14 17:15:00 +0000	29	163	1	0	24	17	50	22	222	16	0	5	22	59	630
2024-05-14 17:30:00 +0000	28	170	4	0	18	10	54	17	207	19	0	5	17	47	
2024-05-14 17:45:00 +0000	27	142	3	0	20	9	42	15	174	12	0	3	15	35	
7:30-8:30	201	736	21	0	31	116	78	368	395	67	0	5	74	104	
4:30-5:30	108	654	8	0	111	60	257	81	877	66	0	24	116	386	

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

MotorizedVehicle															
Entry	North				East			South				West			
Direction	Southbound				Westbound			Northbound				Eastbound			
Start Time	Left	Thru	Right	U-Turn	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right	
2024-05-14 07:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2024-05-14 07:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2024-05-14 07:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 07:45:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 08:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 08:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 08:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2024-05-14 08:45:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2024-05-14 16:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2024-05-14 16:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2024-05-14 16:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 16:45:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 17:00:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 17:15:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024-05-14 17:30:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2024-05-14 17:45:00 +0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:30-5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

SingleUnitTruck

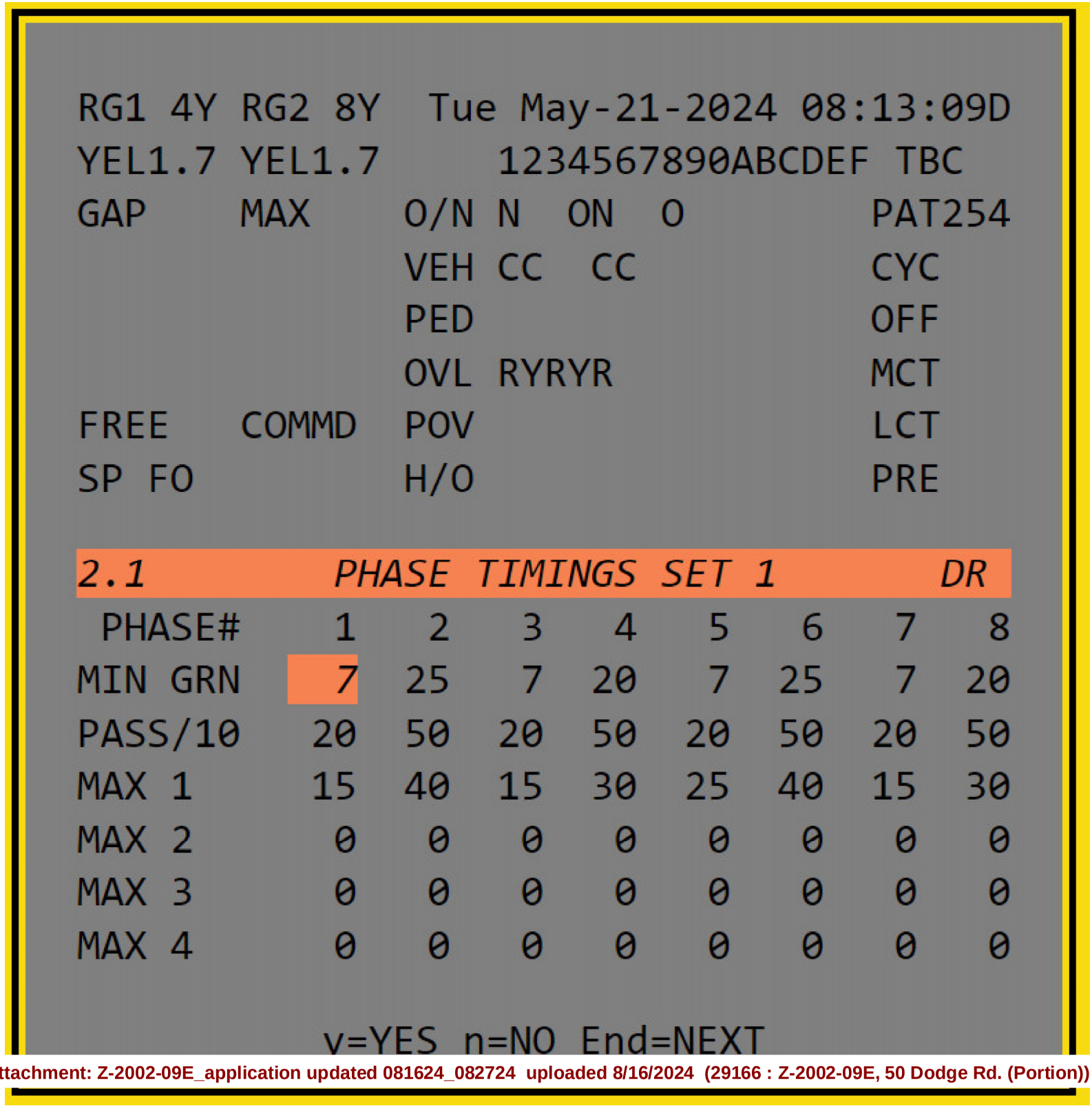
Entry	North				East			South				West			
Direction	Southbound				Westbound			Northbound				Eastbound			
Start Time	Left	Thru	Right	U-Turn	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right	
2024-05-14 07:00:00 +0000	0	1	0	0	1	0	0	0	1	1	0	0	1	2	
2024-05-14 07:15:00 +0000	0	1	0	0	2	0	0	1	0	2	0	0	0	2	
2024-05-14 07:30:00 +0000	0	3	0	0	3	0	1	0	0	5	0	0	0	2	14
2024-05-14 07:45:00 +0000	1	1	0	0	3	0	0	1	0	4	0	0	0	1	11
2024-05-14 08:00:00 +0000	1	3	0	0	4	0	1	2	1	2	0	0	0	1	15
2024-05-14 08:15:00 +0000	1	3	0	0	3	0	0	2	2	3	0	0	0	1	15
2024-05-14 08:30:00 +0000	2	1	0	0	3	0	1	3	3	3	0	0	0	2	
2024-05-14 08:45:00 +0000	0	4	0	0	2	0	2	2	2	2	0	0	0	2	
2024-05-14 16:00:00 +0000	0	2	0	0	0	1	0	2	2	0	0	0	0	1	
2024-05-14 16:15:00 +0000	1	1	0	0	0	1	0	1	1	0	0	1	0	1	
2024-05-14 16:30:00 +0000	0	1	0	0	0	1	1	1	2	0	0	0	0	2	8
2024-05-14 16:45:00 +0000	1	2	0	0	0	2	0	1	1	0	0	0	0	1	8
2024-05-14 17:00:00 +0000	1	0	1	0	0	0	0	1	1	0	0	0	0	1	5
2024-05-14 17:15:00 +0000	0	0	1	0	1	0	0	2	2	0	0	0	0	1	7
2024-05-14 17:30:00 +0000	0	1	1	0	0	2	1	0	1	0	0	0	0	0	
2024-05-14 17:45:00 +0000	0	2	0	0	0	0	0	1	1	0	0	0	0	1	
7:30-8:30	3	10	0	0	13	0	2	5	3	14	0	0	0	5	
4:30-5:30	2	3	2	0	1	3	1	5	6	0	0	0	0	5	

Direction	Southbound				Westbound			Northbound				Eastbound		
Start Time	Left	Thru	Right	U-Turn	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right
AM Peak	205	765	22	0	44	116	81	383	418	82	0	7	74	112
PM Peak	111	664	12	0	112	64	258	86	887	66	0	26	116	395
AM HV%	2.00%	3.80%	4.50%	#DIV/0!	29.50%	0.00%	3.70%	3.90%	5.50%	18.30%	#DIV/0!	28.60%	0.00%	7.10%
PM HV%	2.70%	1.50%	33.30%	#DIV/0!	0.90%	6.30%	0.40%	5.80%	1.10%	0.00%	#DIV/0!	7.70%	0.00%	2.30%

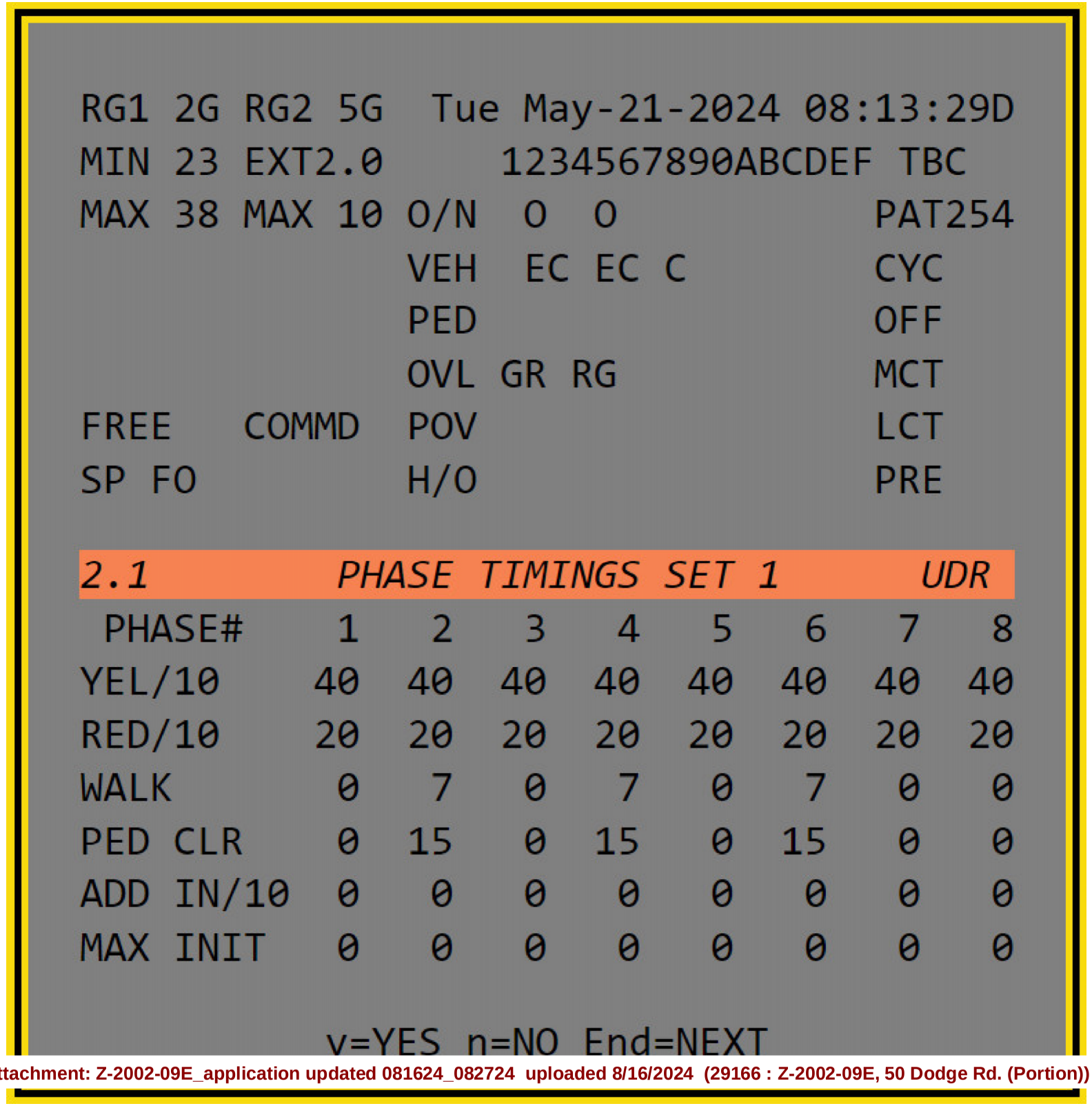
AM PHF:	582	PM PHF:	709
	611		684
	549		762
	567		642
	0.944763		0.917651

APPENDIX B: MISCELLANEOUS CALCULATIONS

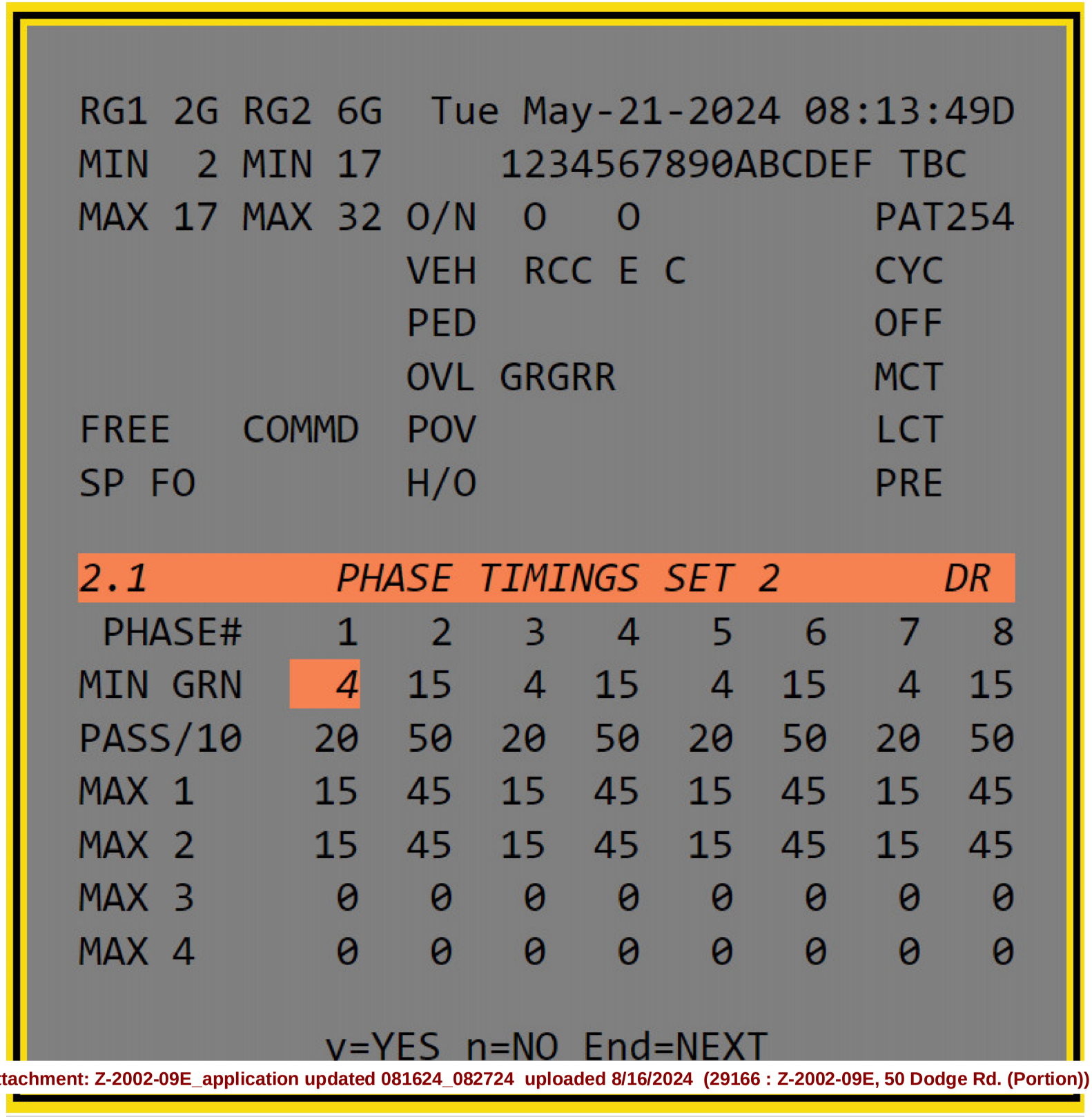
Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



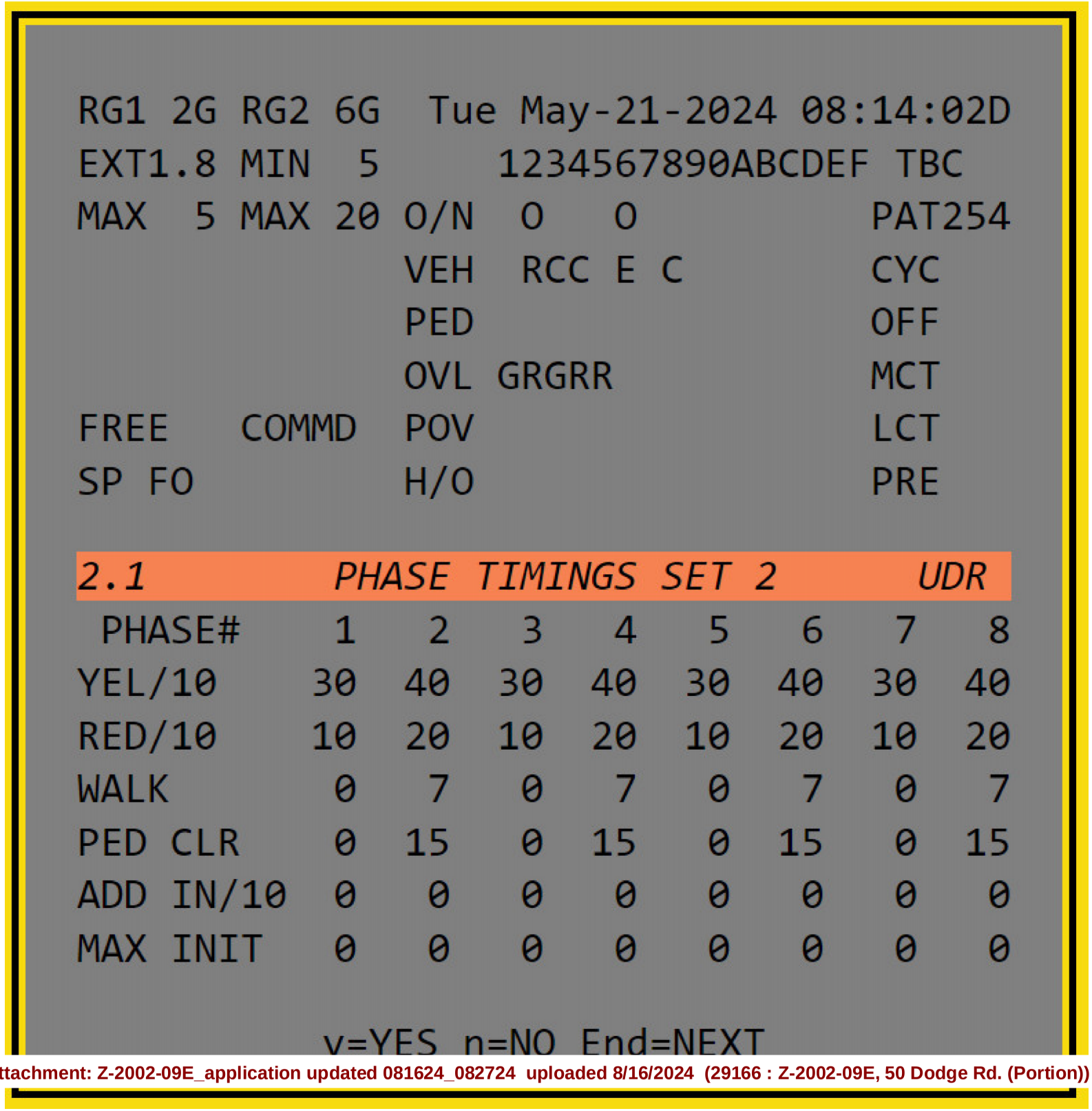
Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

PASSERO
engineering architecture

Sawyer's Landing Development, Town of Amherst, NY

Documentation of Ambient Traffic Volume Growth

Roadway	Segment starts at	Segment end at	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Annual Growth
North Forest Rd	Turtle Creek Apts	Dodge Rd			2,189			1,809		1,825	1,845		-2.81%
Dodge Rd	Sweet Home Rd	Campbell Rd			5,440				7,058	6,738			-4.53%
Sweet Home Rd	Commerce Dr	North French Rd		16,606		15,052			16,008			18,050	2.07%
Sweet Home Rd	N Ellicott Rd	Commerce Dr	21,021						21,437				0.33%
												AVERAGE	**-1.24%**

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection Crash Rate Calculations
Sawyer's Landing Development

Intersection #1:	Sweet Home Rd at Dodge Rd
Date of Count:	Tuesday, May 14, 2024
Number of Crashes:	30
Number of Injuries:	11
Number of Fatalities:	0
Entering Vehicles (PM):	2797
ADT:	29442
Start Date:	January 1, 2019
End Date:	December 31, 2023
Number of Years:	5
Intersection Type:	4 Legged
Area Type:	Urban
Control Type:	Signal w/ Left Turn 5 or More Lanes

crash rate = Number of Crashes x 1 Million / ADT x 365 Days per Year x Number of Years

crash rate = 30 x 1,000,000 / 29442 x 365 x 5

	Crash Rate		Fatality Rate	Injury Rate
Study Intersection	**0.56**	**cr/mve**	**0%**	**37%**
Statewide Average*	**0.26**	**cr/mve**		

ADT = Average Daily Total vehicles entering intersection
cr/mve = crashes per million entering vehicles
* Most recent available 2019 Average Crash Rates for State Highways by Facility Type

Type	Direction: Northbound	Southbound	Eastbound	Westbound	Unknown	Totals
Left turn	3	4		2		9
Rear-end	1	3	2	1		7
Overtaking						0
Right Angle	5	1	1	1		8
Right Turn				1		1
Head On						0
Side-swipe	1	1	1			3
Fixed Object						0
Backing		1	1			2
Other						0
Bike/Ped						0
Animal						0
Totals	10	10	5	5	0	30

PDO	19
Injury	11
Injury + PDO	
Fatal	
NR	
Total	30

Intersection Crash Rate Calculations
Sawyer's Landing Development

Intersection #5:	Dodge Rd at North Forest Rd
Date of Count:	Thursday, March 3, 2022
Number of Crashes:	6
Number of Injuries:	0
Number of Fatalities:	0
Entering Vehicles (PM):	606
ADT:	6379
Start Date:	January 1, 2019
End Date:	December 31, 2023
Number of Years:	5
Intersection Type:	3 Legged
Area Type:	Urban
Control Type:	Sign 1-3 Lanes

crash rate = Number of Crashes x 1 Million / ADT x 365 Days per Year x Number of Years

crash rate = 6 x 1,000,000 / 6379 x 365 x 5

	Crash Rate		Fatality Rate	Injury Rate
Study Intersection	**0.52**	**cr/mve**	**0%**	**0%**
Statewide Average*	**0.19**	**cr/mve**		

ADT = Average Daily Total vehicles entering intersection
cr/mve = crashes per million entering vehicles
* Most recent available 2019 Average Crash Rates for State Highways by Facility Type

Type	Direction: Northbound	Southbound	Eastbound	Westbound	Unknown	Totals
Left turn						0
Rear-end	1			1		2
Overtaking						0
Right Angle	1					1
Right Turn						0
Head On						0
Side-swipe						0
Fixed Object	2		1			3
Backing						0
Other						0
Bike/Ped						0
Animal						0
Totals	4	0	1	1	0	6

PDO	6
Injury	
Injury + PDO	
Fatal	
NR	
Total	6

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PROPOSED SAWYER'S LANDING DEVELOPMENT
TOWN OF AMHERST, NY
AM PEAK

Fig 3 Fig 4 Fig 6 Fig 7 Fig 8

Num of yrs: 2

LOCATION NUMBER	INTERSECTION DESCRIPTION	Existing Volumes	2024 Existing Volumes	2026 Bkgd Vol 1.00%	Aspen Heights	480 Dodge Rd	2026 Bkgrd Volumes	Sawyer's Landing Enter Dist. %	Sawyer's Landing Exit Dist. %	Sawyer's Landing Trips IN 69	Sawyer's Landing Trips OUT 92	Total Site Trips	FULL Build Volumes
1	Sweet Home Road Dodge Road/Commerce Drive												
	SR	22	22	22			22						22
	ST	765	765	780			780						780
	SL	205	205	209		2	211	25%		17		17	228
	WR	81	81	83		2	85		25%		23	23	108
	WT	116	116	118	3	3	124		10%		9	9	133
	WL	44	44	45	15	1	61		30%		28	28	89
	NR	82	82	84	11		95	30%		21		21	116
	NT	418	418	426			426						426
	NL	383	383	391			391						391
	ER	112	112	114			114						114
	ET	74	74	75			75	10%		7		7	82
	EL	7	7	7			7						7
2	Dodge Road Proposed Northerly Exit Driveway												
	SR								40%		37	37	37
	ST												
	SL								15%		14	14	14
	WR												
	WT	234	236	241	18	6	265		25%		23	23	288
	WL												
	NR												
	NT												
	NL												
	ER												
	ET	275	278	284	11	2	297	65%		45		45	342
	EL												
3	Dodge Road Proposed Northerly Enter Driveway												
	SR												
	ST												
	SL												
	WR							12%		8		8	8
	WT	234	236	241	18	6	265		25%		23	23	288
	WL												
	NR												
	NT												
	NL												
	ER												
	ET	275	278	284	11	2	297	18%	15%	12	14	26	323
	EL							47%		33		33	33
4	Dodge Road Proposed South Driveway												
	SR								25%		23	23	23
	ST												
	SL								20%		18	18	18
	WR							23%		16		16	16
	WT	234	236	241	18	6	265	12%		8		8	273
	WL												
	NR												
	NT												
	NL												
	ER												
	ET	275	278	284	11	2	297		15%		14	14	311
	EL							18%		12		12	12
5	Dodge Road North Forest Road		0.5% 2										
	SR												
	ST												
	SL												
	WR												
	WT	206	208	212	18	6	236	25%		17		17	253
	WL	31	31	32		1	33						33
	NR	11	11	11			11						11
	NT												
	NL	28	28	29			29	10%		7		7	36
	ER	82	83	85			85		10%		9	9	94
	ET	193	195	199	11	2	212		25%		23	23	235
	EL												

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PROPOSED SAWYER'S LANDING DEVELOPMENT
TOWN OF AMHERST, NY
PM PEAK

Fig 3 Fig 4 Fig 6 Fig 7 Fig 8

Num of yrs: 2

LOCATION NUMBER	INTERSECTION DESCRIPTION	Existing Volumes	2024 Existing Volumes	2026 Bkgd Vol 1.00%	Aspen Heights	480 Dodge Rd	2026 Bkgrd Volume	Sawyer's Landing Enter Dist. %	Sawyer's Landing Exit Dist. %	Sawyer's Landing Trips IN 133	Sawyer's Landing Trips OUT 110	Total Site Trips	FULL Build Volumes
1	Sweet Home Road Dodge Road/Commerce Drive												
	SR	12	12	12			12						12
	ST	664	664	677			677						677
	SL	111	111	113		2	115	25%		33		33	148
	WR	258	258	263		2	265		25%		28	28	293
	WT	64	64	65	11	1	77		10%		11	11	88
	WL	112	112	114	21	1	136		30%		33	33	169
	NR	66	66	67	13	2	82	30%		40		40	122
	NT	887	887	905			905						905
	NL	86	86	88			88						88
	ER	395	395	403			403						403
	ET	116	116	118		2	120	10%		13		13	133
	EL	26	26	27			27						27
2	Dodge Road Proposed Northerly Exit Driveway												
	SR								40%		44	44	44
	ST												
	SL								15%		16	16	16
	WR												
	WT	314	317	323	32	4	359		25%		28	28	387
	WL												
	NR												
	NT												
	NL												
	ER												
	ET	231	233	238	13	6	257	65%		86		86	343
	EL												
3	Dodge Road Proposed Northerly Enter Driveway												
	SR												
	ST												
	SL												
	WR							12%		16		16	16
	WT	314	317	323	32	4	359		25%		28	28	387
	WL												
	NR												
	NT												
	NL												
	ER												
	ET	231	233	238	13	6	257	18%	15%	24	16	40	297
	EL							47%		62		62	62
4	Dodge Road Proposed South Driveway												
	SR								25%		28	28	28
	ST												
	SL								20%		22	22	22
	WR							23%		31		31	31
	WT	314	317	323	32	4	359	12%		16		16	375
	WL												
	NR												
	NT												
	NL												
	ER												
	ET	231	233	238	13	6	257		15%		16	16	273
	EL							18%		24		24	24
5	Dodge Road North Forest Road		0.5% 2										
	SR												
	ST												
	SL												
	WR												
	WT	224	226	231	32	4	267	25%		33		33	300
	WL	21	21	21			21						21
	NR	35	35	36		1	37						37
	NT												
	NL	90	91	93			93	10%		13		13	106
	ER	47	47	48			48		10%		11	11	59
	ET	184	186	190	13	6	209		25%		27	27	236
	EL												

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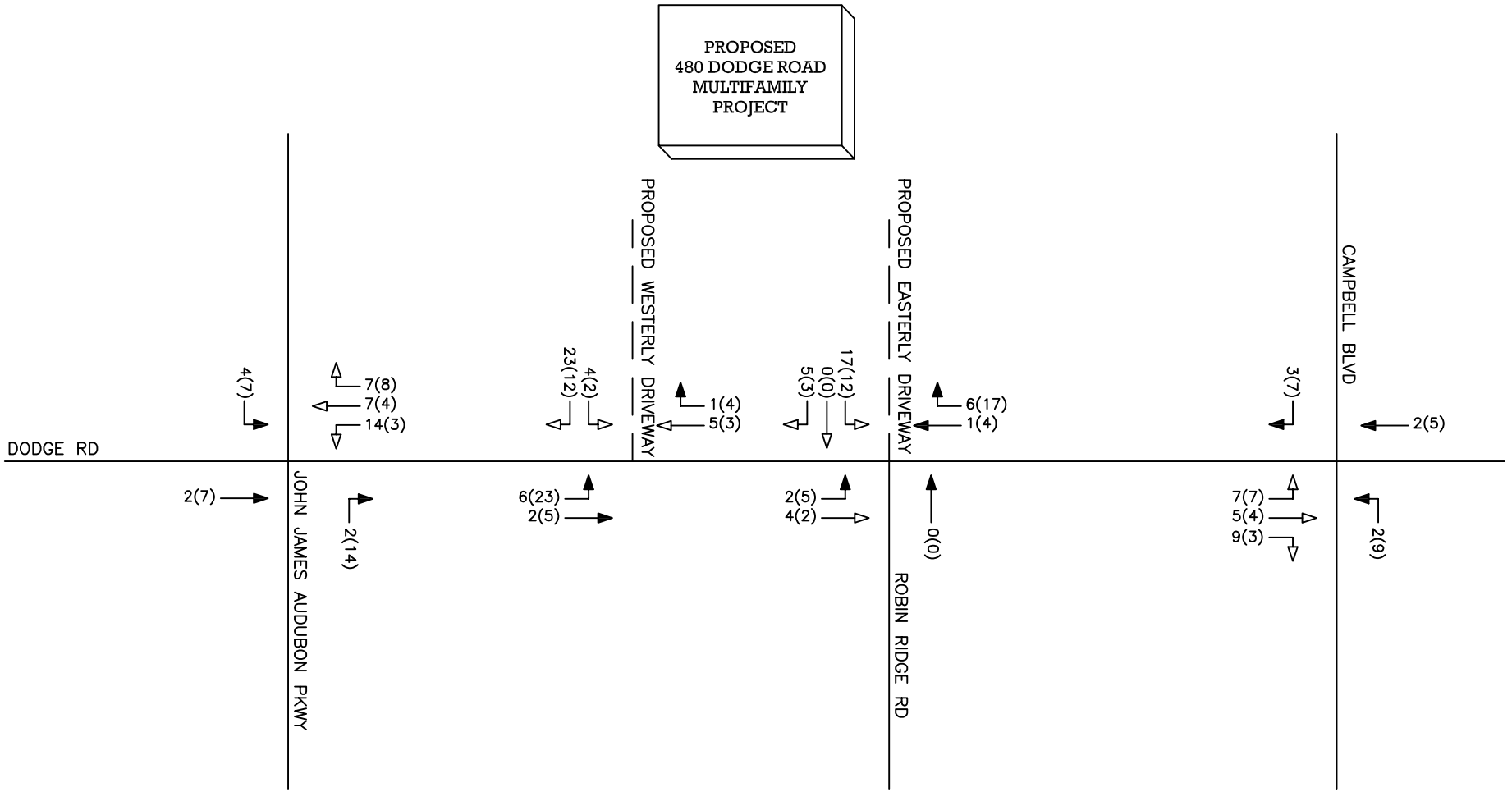

N

NOT TO SCALE

FIGURE 7

TOTAL SITE GENERATED TRIPS

PROPOSED 480 DODGE ROAD MULTIFAMILY PROJECT
TOWN OF AMHERST, NY

KEY

00(00) = AM(PM)

→ = ENTERING TRIPS

→ = EXITING TRIPS

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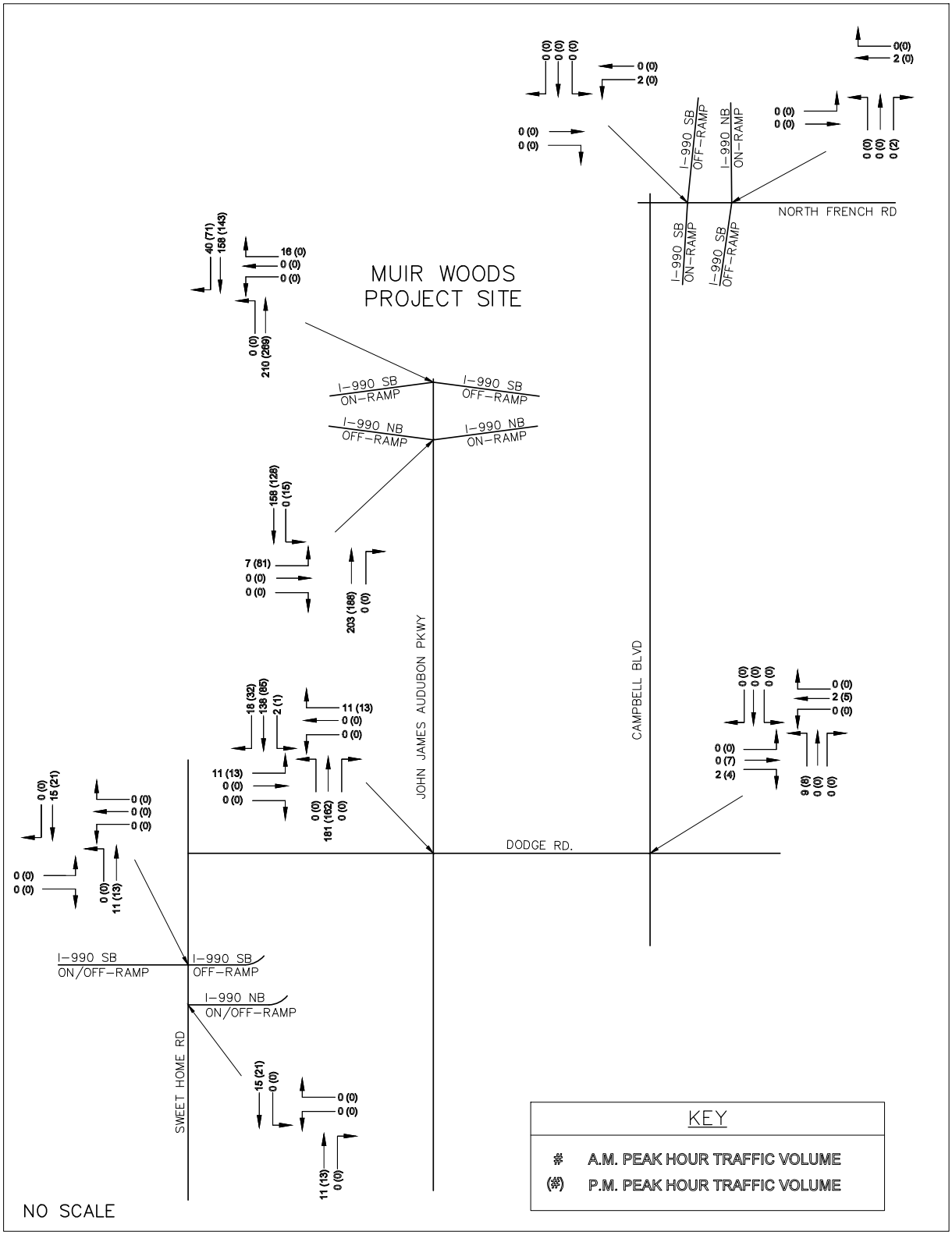

EXHIBIT VII
SITE GENERATED TRAFFIC

Greenman-Pedersen, Inc.
Engineering and Construction Services
Engineering - Surveying - Planning
BUFFALO (716) 852-4444 • ROCHESTER (585) 486-4555 • JAMESTOWN (716) 484-3503

BUF-2013062 MARCH 2020

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PROJECT DETAILS

Project Name:	Sawyers Landing	Type of Project:	
Project No:		City:	
Country:		Built-up Area(Sq.ft):	
Analyst Name:	Amy Dake	Clients Name:	
Date:	5/24/2024	ZIP/Postal Code:	
State/Province:		No. of Scenarios:	2
Analysis Region:			

SCENARIO SUMMARY

Scenarios	Name	No. of Land Uses	Phases of Development	No. of Years to Project Traffic	User Group	Estimated New Vehicle Trips		
						Entry	Exit	Total
Scenario - 1	AM Peak	7	1	0		76	102	178
Scenario - 2	PM Peak	7	1	0		163	136	299

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Scenario - 1

Scenario Name: AM Peak
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method	Entry	Exit	Total
					Rate/Equation	Split%	Split%	
710 - General Office Building	General	1000 Sq. Ft. GFA	2.3	Weekday, Peak Hour of	Best Fit (LOG)	6	1	7
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	Ln(T) =0.86Ln(X) + 1.16	88%	12%	
822 - Strip Retail Plaza (<40k)	General	1000 Sq. Ft. GLA	12.85	Weekday, Peak Hour of	Average	18	12	30
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	2.36	60%	40%	
151 - Mini-Warehouse	General	1000 Sq. Ft. GFA	105.6	Weekday, Peak Hour of	Average	6	4	10
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	0.09	59%	41%	
215 - Single-Family Attached Housing	General	Dwelling Units	107	Weekday, Peak Hour of	Best Fit (LIN)	12	37	49
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	T = 0.52(X) - 5.70	25%	75%	
221 - Multifamily Housing (Mid-Rise) - Not	General	Dwelling Units	102	Weekday, Peak Hour	Best Fit (LIN)	8	26	34
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			of Adjacent Street	T = 0.44(X) - 11.61	23%	77%	
932 - High-Turnover (Sit-Down) Restaurant	General	1000 Sq. Ft. GFA	3.90	Weekday, Peak Hour of	Average	21	17	38
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	9.57	55%	45%	
492 - Health/Fitness Club	General	1000 Sq. Ft. GFA	8.00	Weekday, Peak Hour of	Average	5	5	10
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	1.31	51%	49%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
710 - General Office Building	99	100	1.1	1.1	88	12
822 - Strip Retail Plaza (<40k)	100	100	1	1	60	40
151 - Mini-Warehouse	100	100	1	1	59	41
215 - Single-Family Attached Housing	100	100	1	1	25	75
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	100	100	1	1	23	77
932 - High-Turnover (Sit-Down) Restaurant	100	100	1	1	55	45
492 - Health/Fitness Club	100	100	1	1	51	49

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
710 - General Office Building	6	1	0	0	6	1
	7		0		7	
822 - Strip Retail Plaza (<40k)	18	12	0	0	18	12
	30		0		30	
151 - Mini-Warehouse	6	4	0	0	6	4
	10		0		10	
215 - Single-Family Attached Housing	12	37	0	0	12	37
	49		0		49	
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	8	26	0	0	8	26
	34		0		34	
932 - High-Turnover (Sit-Down) Restaurant	21	17	0	0	21	17

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932 - High-Turnover (Sit-Down) Restaurant	38		0		38	
492 - Health/Fitness Club	5	5	0	0	5	5
	10		0		10	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
710 - General Office Building	6	1	7
822 - Strip Retail Plaza (<40k)	18	12	30
151 - Mini-Warehouse	6	4	10
215 - Single-Family Attached Housing	12	37	49
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	8	26	34
932 - High-Turnover (Sit-Down) Restaurant	21	17	38
492 - Health/Fitness Club	5	5	10

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	76	102	178
External Vehicle Trips	76	102	178
New Vehicle Trips	76	102	178

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Scenario - 2

Scenario Name: PM Peak
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method Rate/Equation	Entry Split%	Exit Split%	Total
710 - General Office Building	General	1000 Sq. Ft. GFA	2.3	Weekday, Peak Hour of	Best Fit (LOG)	1	6	7
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	Ln(T) =0.83Ln(X) + 1.29	17%	83%	
822 - Strip Retail Plaza (<40k)	General	1000 Sq. Ft. GLA	12.85	Weekday, Peak Hour of	Best Fit (LOG)	47	47	94
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	Ln(T) =0.71Ln(X) + 2.72	50%	50%	
151 - Mini-Warehouse	General	1000 Sq. Ft. GFA	105.6	Weekday, Peak Hour of	Average	7	8	15
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	0.15	47%	53%	
215 - Single-Family Attached Housing	General	Dwelling Units	107	Weekday, Peak Hour of	Best Fit (LIN)	36	25	61
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	T = 0.60(X) - 3.93	59%	41%	
221 - Multifamily Housing (Mid-Rise) - Not	General	Dwelling Units	102	Weekday, Peak Hour	Best Fit (LIN)	24	16	40
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			of Adjacent Street	T = 0.39(X) + 0.34	61%	39%	
932 - High-Turnover (Sit-Down) Restaurant	General	1000 Sq. Ft. GFA	3.90	Weekday, Peak Hour of	Average	22	14	36
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	9.05	61%	39%	
492 - Health/Fitness Club	General	1000 Sq. Ft. GFA	8.00	Weekday, Peak Hour of	Best Fit (LOG)	26	20	46
Data Source: Trip Generation Manual, 11th Ed	Urban/Suburban			Adjacent Street Traffic,	Ln(T) =0.67Ln(X) + 2.44	57%	43%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
710 - General Office Building	100	99	1.1	1.1	17	83
822 - Strip Retail Plaza (<40k)	100	100	1	1	50	50
151 - Mini-Warehouse	100	100	1	1	47	53
215 - Single-Family Attached Housing	100	100	1	1	59	41
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	100	100	1	1	61	39
932 - High-Turnover (Sit-Down) Restaurant	100	100	1	1	61	39
492 - Health/Fitness Club	100	100	1	1	57	43

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
710 - General Office Building	1	7	0	0	1	7
	8		0		8	
822 - Strip Retail Plaza (<40k)	47	47	0	0	47	47
	94		0		94	
151 - Mini-Warehouse	7	8	0	0	7	8
	15		0		15	
215 - Single-Family Attached Housing	36	25	0	0	36	25
	61		0		61	
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	24	16	0	0	24	16
	40		0		40	
932 - High-Turnover (Sit-Down) Restaurant	22	14	0	0	22	14

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932 - High-Turnover (Sit-Down) Restaurant	36		0		36	
492 - Health/Fitness Club	26	20	0	0	26	20
	46		0		46	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
710 - General Office Building	1	6	7
822 - Strip Retail Plaza (<40k)	47	47	94
151 - Mini-Warehouse	7	8	15
215 - Single-Family Attached Housing	36	25	61
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	24	16	40
932 - High-Turnover (Sit-Down) Restaurant	22	14	36
492 - Health/Fitness Club	26	20	46

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	163	136	299
External Vehicle Trips	163	136	299
New Vehicle Trips	163	136	299

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NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Sawyer's Landing Development	**Organization:**	Passero Associates
Project Location:	Town of Amherst, NY	**Performed By:**	Nick Merrifield
Scenario Description:		**Date:**	May 2024
Analysis Year:	2026	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	2,300	SF	7	6	1
Retail	822	12,854	SF	30	18	12
Restaurant	932	3,901	SF	38	21	17
Cinema/Entertainment				0		
Residential	215/221	209	Units	83	20	63
Hotel				0		
All Other Land Uses[2]	492/151	8,002/105,600	SF	20	11	9
Total				178	76	102

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.06	0%	1%	1.06	0%	0%
Retail	1.17	0%	0%	1.16	0%	0%
Restaurant	1.41	0%	1%	1.39	0%	2%
Cinema/Entertainment						
Residential	1.13	0%	3%	1.09	0%	2%
Hotel						
All Other Land Uses[2]	1.00	0%	0%	1.00	0%	0%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		2	0	0	0
Restaurant	1	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	6	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	208	91	117
Internal Capture Percentage	13%	14%	11%
External Vehicle-Trips[3]	156	66	90
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	2	1	1

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	17%	0%
Retail	14%	14%
Restaurant	27%	17%
Cinema/Entertainment	N/A	N/A
Residential	4%	10%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Project Name:	Sawyer's Landing Development
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.06	6	6	1.06	1	1
Retail	1.17	18	21	1.16	12	14
Restaurant	1.41	21	30	1.39	17	24
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.13	20	23	1.09	63	69
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	1	0	0	0
Retail	4		2	0	2	0
Restaurant	7	3		0	1	1
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	14	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		7	7	0	0	0
Retail	0		15	0	0	0
Restaurant	1	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	4	6	0		0
Hotel	0	1	2	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	5	6	5	0	0
Retail	3	18	21	15	0	0
Restaurant	8	22	30	16	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	22	23	19	0	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	11	11	11	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	1	1	1	0	0
Retail	2	12	14	10	0	0
Restaurant	4	20	24	14	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	7	62	69	56	0	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	9	9	9	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

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NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Sawyer's Landing Development	**Organization:**	Passero Associates
Project Location:	Town of Amherst, NY	**Performed By:**	Nick Merrifield
Scenario Description:		**Date:**	May 2024
Analysis Year:	2026	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	2,300	SF	7	1	6
Retail	822	12,854	SF	94	47	47
Restaurant	932	3,901	SF	36	22	14
Cinema/Entertainment				0		
Residential	215/221	209	Units	101	60	41
Hotel				0		
All Other Land Uses[2]	492/151	8,002/105,600	SF	61	33	28
Total				299	163	136

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.11	0%	0%	1.07	0%	0%
Retail	1.21	0%	0%	1.18	0%	0%
Restaurant	1.41	0%	1%	1.39	0%	2%
Cinema/Entertainment						
Residential	1.15	0%	3%	1.21	0%	4%
Hotel						
All Other Land Uses[2]	1.00	0%	0%	1.00	0%	0%

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	194		283	
Retail					283	
Restaurant					283	
Cinema/Entertainment						
Residential		283	283			
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	0		9	0	14	0
Restaurant	0	8		0	3	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	6	4	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	349	191	158
Internal Capture Percentage	26%	24%	28%
External Vehicle-Trips[3]	222	125	97
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	4	2	2

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	0%	17%
Retail	26%	42%
Restaurant	42%	58%
Cinema/Entertainment	N/A	N/A
Residential	25%	20%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Project Name:	Sawyer's Landing Development
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.11	1	1	1.07	6	6
Retail	1.21	47	57	1.18	47	55
Restaurant	1.41	22	31	1.39	14	19
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.15	60	69	1.21	41	50
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	1		16	2	14	3
Restaurant	1	8		2	3	1
Cinema/Entertainment	0	0	0		0	0
Residential	2	20	10	0		2
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	1	0	3	0
Retail	0		9	0	32	0
Restaurant	0	29		0	11	0
Cinema/Entertainment	0	2	1		3	0
Residential	1	6	4	0		0
Hotel	0	1	2	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	1	1	1	0	0
Retail	15	42	57	35	0	0
Restaurant	13	18	31	13	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	17	52	69	43	0	2
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	33	33	33	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	5	6	5	0	0
Retail	23	32	55	27	0	0
Restaurant	11	8	19	6	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	10	40	50	31	0	2
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	28	28	28	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

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Table 7.1a Adjusted Internal Trip Capture Rates for Trip Origins within a Multi-Use Development			
Land Use Pairs		Weekday	
		AM Peak Hour	PM Peak Hour
From OFFICE	To Office	0.0%	0.0%
	To Retail	28.0%	20.0%
	To Restaurant	63.0%	4.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	1.0%	2.0%
	To Hotel	0.0%	0.0%
From RETAIL	To Office	29.0%	2.0%
	To Retail	0.0%	0.0%
	To Restaurant	13.0%	29.0%
	To Cinema/Entertainment	0.0%	4.0%
	To Residential	14.0%	26.0%
	To Hotel	0.0%	5.0%
From RESTAURANT	To Office	31.0%	3.0%
	To Retail	14.0%	41.0%
	To Restaurant	0.0%	0.0%
	To Cinema/Entertainment	0.0%	8.0%
	To Residential	4.0%	18.0%
	To Hotel	3.0%	7.0%
From CINEMA/ENTERTAINMENT	To Office	0.0%	2.0%
	To Retail	0.0%	21.0%
	To Restaurant	0.0%	31.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	8.0%
	To Hotel	0.0%	2.0%
From RESIDENTIAL	To Office	2.0%	4.0%
	To Retail	1.0%	41.0%
	To Restaurant	20.0%	20.5%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	0.0%
	To Hotel	0.0%	3.0%
From HOTEL	To Office	75.0%	0.0%
	To Retail	14.0%	16.0%
	To Restaurant	9.0%	68.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	2.0%
	To Hotel	0.0%	0.0%

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Table 7.2a Adjusted Internal Trip Capture Rates for Trip Destinations within a Multi-Use Development			
Land Use Pairs		Weekday	
		AM Peak Hour	PM Peak Hour
To OFFICE	From Office	0.0%	0.0%
	From Retail	4.0%	31.0%
	From Restaurant	14.0%	30.0%
	From Cinema/Entertainment	0.0%	6.0%
	From Residential	3.0%	57.0%
	From Hotel	3.0%	0.0%
To RETAIL	From Office	32.0%	8.0%
	From Retail	0.0%	0.0%
	From Restaurant	8.0%	50.0%
	From Cinema/Entertainment	0.0%	4.0%
	From Residential	17.0%	9.8%
	From Hotel	4.0%	2.0%
To RESTAURANT	From Office	23.0%	2.0%
	From Retail	50.0%	29.0%
	From Restaurant	0.0%	0.0%
	From Cinema/Entertainment	0.0%	3.0%
	From Residential	20.0%	13.7%
	From Hotel	6.0%	5.0%
To CINEMA/ENTERTAINMENT	From Office	0.0%	1.0%
	From Retail	0.0%	26.0%
	From Restaurant	0.0%	32.0%
	From Cinema/Entertainment	0.0%	0.0%
	From Residential	0.0%	0.0%
	From Hotel	0.0%	0.0%
To RESIDENTIAL	From Office	0.0%	4.0%
	From Retail	2.0%	46.0%
	From Restaurant	5.0%	16.0%
	From Cinema/Entertainment	0.0%	4.0%
	From Residential	0.0%	0.0%
	From Hotel	0.0%	0.0%
To HOTEL	From Office	0.0%	0.0%
	From Retail	0.0%	17.0%
	From Restaurant	4.0%	71.0%
	From Cinema/Entertainment	0.0%	1.0%
	From Residential	0.0%	12.0%
	From Hotel	0.0%	0.0%

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Project: **Sawyer's Landing Development**
Location: **Town of Amherst, NY**

Description	ITE LUC	SIZE/ UNITS	AM PEAK HOUR		PM PEAK HOUR		% of Total Trips	
			Enter	Exit	Enter	Exit	AM	PM
General Office Building	710	2,300 SF	6	1	1	6	4%	2%
Strip Retail Plaza (<40k)	822	12,854 SF	18	12	47	47	17%	31%
High-Turnover (Sit-Down) Restaurant	932	3,901 SF	21	17	22	14	21%	12%
Single Family Attached Housing	215	107 Units	12	37	36	25	28%	20%
Multifamily Housing (Mid-Rise)	221	102 Units	8	26	24	16	19%	13%
Mini-Warehouse	151	105,600 SF	6	4	7	8	6%	5%
Health/Fitness Club	492	8,002 SF	5	5	26	20	6%	15%
Sub-Total Site Generated Trips			**76**	**102**	**163**	**136**	100%	100%
General Office Building	710	2,300 SF	5	1	1	5	4%	3%
Strip Retail Plaza (<40k)	822	12,854 SF	16	10	37	33	17%	29%
High-Turnover (Sit-Down) Restaurant	932	3,901 SF	17	14	14	8	19%	9%
Single Family Attached Housing	215	107 Units	12	34	29	21	28%	21%
Multifamily Housing (Mid-Rise)	221	102 Units	8	24	19	14	20%	14%
Mini-Warehouse	151	105,600 SF	6	4	7	8	6%	6%
Health/Fitness Club	492	8,002 SF	5	5	26	20	6%	19%
Total Net Site Generated Trips			**69**	**92**	**133**	**110**	100%	100%
Multi-use Trips			7	10	30	26		

Base Internal Capture Percentages

AM PEAK HOUR		PM PEAK HOUR	
Enter	Exit	Enter	Exit
17%	0%	0%	17%
14%	14%	26%	42%
27%	17%	42%	58%
4%	10%	25%	20%
4%	10%	25%	20%
0%	0%	0%	0%
0%	0%	0%	0%
Adjusted Internal Capture Percentages			
12%	0%	0%	12%
10%	13%	22%	30%
19%	15%	35%	41%
3%	9%	21%	14%
3%	9%	21%	14%
0%	0%	0%	0%
0%	0%	0%	0%

enter	exit	enter	exit	
14%	11%	24%	28%	**Base %**
10%	10%	20%	20%	**Adjusted %**
29%	9%	17%	29%	**% change**

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Traffic Signal Warrant Analysis

Dodge Rd/North Forest Rd - Full Build Conditions

Town of Amherst, Erie County, NY

Hour			2026 Background Volumes on Dodge Rd	Hourly Fluctuation	**2026 Full Build Artery Volume on Dodge Rd**	2026 Background Volumes on North Forest Rd	**Total Hourly Volumes Exiting North Forest Rd under Full Build Conditions**	Warrant 1 - Condition A	Warrant 1 - Condition B	Warrant 2 - 4 hour	Warrant 3 - Peak hour
			Two-Way	Two-Way	**Total**	SB		350/105	525/53	60 vph	75 vph
7:00 AM	to	8:00 AM	419	5.14%	**464**	20	**28**	N	N	N	N
8:00 AM	to	9:00 AM	480	4.65%	**521**	50	**57**	N	N	N	N
9:00 AM	to	10:00 AM	376	4.04%	**412**	40	**46**	N	N	N	N
10:00 AM	to	11:00 AM	319	4.40%	**358**	55	**61**	N	N	N	N
11:00 AM	to	12:00 PM	341	5.90%	**393**	65	**74**	N	N	N	N
12:00 PM	to	1:00 PM	387	6.65%	**446**	77	**87**	N	N	N	N
1:00 PM	to	2:00 PM	347	6.20%	**402**	71	**80**	N	N	N	N
2:00 PM	to	3:00 PM	372	6.72%	**431**	77	**87**	N	N	N	N
3:00 PM	to	4:00 PM	466	6.90%	**527**	82	**92**	N	Y	N	N
4:00 PM	to	5:00 PM	467	8.63%	**543**	130	**143**	Y	Y	Y	N
5:00 PM	to	6:00 PM	426	9.81%	**513**	90	**104**	N	N	N	N
6:00 PM	to	7:00 PM	272	7.94%	**342**	66	**78**	N	N	N	N
								1	2	1	0

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Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

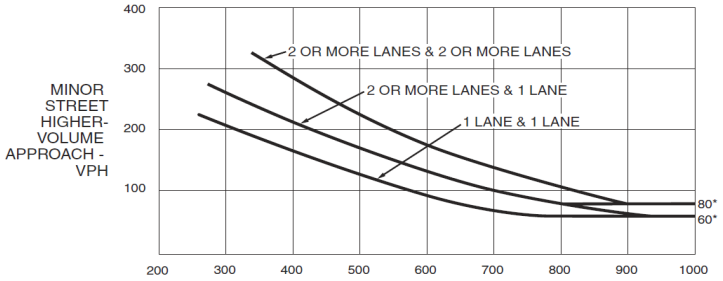
Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

[a] Basic minimum hourly volume
[b] Used for combination of Conditions A and B after adequate trial of other remedial measures
[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000
[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

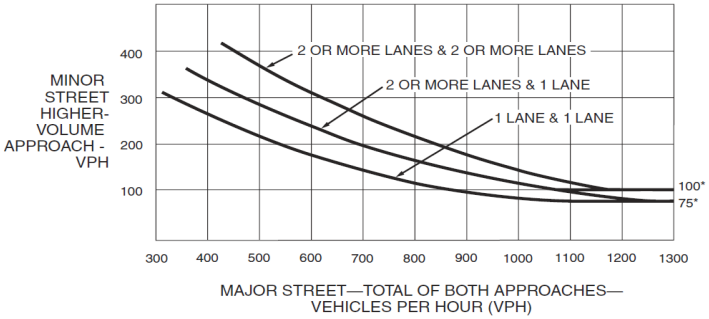
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

ASSERO
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PROJECT DETAILS

Project Name:	Sawyers Landing - Full Day	Type of Project:	
Project No:		City:	
Country:		Built-up Area(Sq.ft):	
Analyst Name:	Amy Dake	Clients Name:	
Date:	5/24/2024	ZIP/Postal Code:	
State/Province:		No. of Scenarios:	1
Analysis Region:			

SCENARIO SUMMARY

Scenarios	Name	No. of Land Uses	Phases of Development	No. of Years to Project Traffic	User Group	Estimated New Vehicle Trips		
						Entry	Exit	Total
Scenario - 1	Full Day	6	1	0		1260	1260	2520

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Scenario - 1

Scenario Name: Full Day
User Group:
Dev. phase: 1
No. of Years to Project Traffic : 0
Analyst Note:
Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method / Rate/Equation	Entry / Split%	Exit / Split%	Total
710 - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	2.3	Weekday	Best Fit (LOG)	22	22	44
Data Source: Trip Generation Manual, 11th Ed					Ln(T) =0.87Ln(X) + 3.05	50%	50%	
822 - Strip Retail Plaza (<40k)	General Urban/Suburban	1000 Sq. Ft. GLA	12.85	Weekday	Average	350	350	700
Data Source: Trip Generation Manual, 11th Ed					54.45	50%	50%	
151 - Mini-Warehouse	General Urban/Suburban	1000 Sq. Ft. GFA	105.6	Weekday	Average	77	77	154
Data Source: Trip Generation Manual, 11th Ed					1.45	50%	50%	
215 - Single-Family Attached Housing	General Urban/Suburban	Dwelling Units	107	Weekday	Best Fit (LIN)	382	382	764
Data Source: Trip Generation Manual, 11th Ed					T = 7.62(X) - 50.48	50%	50%	
221 - Multifamily Housing (Mid-Rise) - Not	General Urban/Suburban	Dwelling Units	102	Weekday	Best Fit (LIN)	220	220	440
Data Source: Trip Generation Manual, 11th Ed					T = 4.77(X) - 46.46	50%	50%	
932 - High-Turnover (Sit-Down) Restaurant	General Urban/Suburban	1000 Sq. Ft. GFA	3.90	Weekday	Average	209	209	418
Data Source: Trip Generation Manual, 11th Ed					107.20	50%	50%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
710 - General Office Building	100	100	1.1	1.1	50	50
822 - Strip Retail Plaza (<40k)	100	100	1	1	50	50
151 - Mini-Warehouse	100	100	1.6	1.6	50	50
215 - Single-Family Attached Housing	100	100	1	1	50	50
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	100	100	1	1	50	50
932 - High-Turnover (Sit-Down) Restaurant	100	100	1.5	1.5	50	50

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
710 - General Office Building	24	24	0	0	24	24
	48		0		48	
822 - Strip Retail Plaza (<40k)	350	350	0	0	350	350
	700		0		700	
151 - Mini-Warehouse	122	122	0	0	122	122
	244		0		244	
215 - Single-Family Attached Housing	382	382	0	0	382	382
	764		0		764	
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	220	220	0	0	220	220
	440		0		440	
932 - High-Turnover (Sit-Down) Restaurant	314	314	0	0	314	314
	628		0		628	

NEW VEHICLE TRIPS

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Land Use	New Vehicle Trips		
	Entry	Exit	Total
710 - General Office Building	22	22	44
822 - Strip Retail Plaza (<40k)	350	350	700
151 - Mini-Warehouse	77	77	154
215 - Single-Family Attached Housing	382	382	764
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	220	220	440
932 - High-Turnover (Sit-Down) Restaurant	209	209	418

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	1260	1260	2520
External Vehicle Trips	1260	1260	2520
New Vehicle Trips	1260	1260	2520

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

PASSERO ASSOCIATES
engineering architecture

PROJECT: _____ SHEET: ____ OF ____
PROJECT NO: _____ COMPUTED BY: _____
SUBJECT: _____ CHECKED BY: _____
_____ DATE: _____

Health/fitness PM Exiting Trips = 26

% of total weekday vols = 12.3%

Weekday Trips = $\frac{26}{.123}$ = 211

Sawyers Landing Total Trips = 211 + 1260

= 1471

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

APPENDIX C: LOS CALCULATIONS – EXISTING CONDITIONS

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

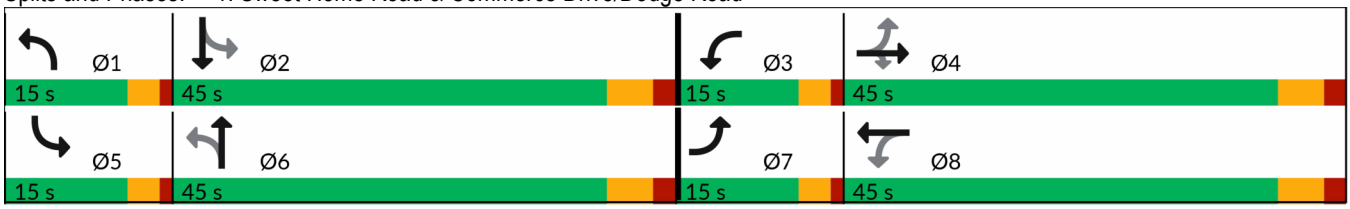
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	74	112	44	116	81	383	418	82	205	765	22
Future Volume (vph)	7	74	112	44	116	81	383	418	82	205	765	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.938			0.975			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1399	1900	1509	1388	1753	0	1736	3260	0	1770	3456	0
Flt Permitted	0.627			0.597			0.197			0.423		
Satd. Flow (perm)	923	1900	1509	873	1753	0	360	3260	0	788	3456	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			119		31			20			2	
Link Speed (mph)		30			40			45			45	
Link Distance (ft)		684			420			772			679	
Travel Time (s)		15.5			7.2			11.7			10.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	29%	0%	7%	30%	0%	4%	4%	6%	18%	2%	4%	5%
Adj. Flow (vph)	7	79	119	47	123	86	407	445	87	218	814	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	79	119	47	209	0	407	532	0	218	837	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	8.0	28.0	28.0	8.0	28.0		8.0	28.0		8.0	28.0	
Total Split (s)	15.0	45.0	45.0	15.0	45.0		15.0	45.0		15.0	45.0	
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%		12.5%	37.5%		12.5%	37.5%	
Maximum Green (s)	11.0	39.0	39.0	11.0	39.0		11.0	39.0		11.0	39.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	21.0	16.1	16.1	24.3	20.8		43.8	30.4		40.8	29.0	
Actuated g/C Ratio	0.27	0.20	0.20	0.31	0.26		0.55	0.38		0.52	0.37	
v/c Ratio	0.02	0.20	0.29	0.15	0.43		1.02	0.41		0.41	0.66	
Control Delay (s/veh)	20.7	31.9	8.9	21.7	25.3		72.5	19.2		11.4	24.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	20.7	31.9	8.9	21.7	25.3		72.5	19.2		11.4	24.2	
LOS	C	C	A	C	C		E	B		B	C	
Approach Delay (s/veh)		18.2			24.7			42.3			21.6	
Approach LOS		B			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 79.1			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay (s/veh): 29.6		Intersection LOS: C	
Intersection Capacity Utilization 68.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	195	83	31	208	28	11
Future Volume (vph)	195	83	31	208	28	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.960				0.962	
Flt Protected				0.994	0.965	
Satd. Flow (prot)	1781	0	0	1856	1715	0
Flt Permitted				0.994	0.965	
Satd. Flow (perm)	1781	0	0	1856	1715	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	3%	1%	0%	2%	4%	0%
Adj. Flow (vph)	197	84	31	210	28	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	281	0	0	241	39	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

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Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	195	83	31	208	28	11
Future Vol, veh/h	195	83	31	208	28	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	1	0	2	4	0
Mvmt Flow	197	84	31	210	28	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	281	0	512	239
Stage 1	-	-	-	-	239	-
Stage 2	-	-	-	-	273	-
Critical Hdwy	-	-	4.1	-	6.44	6.2
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.2	-	3.536	3.3
Pot Cap-1 Maneuver	-	-	1293	-	519	805
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	769	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1293	-	504	805
Mov Cap-2 Maneuver	-	-	-	-	504	-
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	747	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.02	11.86
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	564	-	-	233	-
HCM Lane V/C Ratio	0.07	-	-	0.024	-
HCM Control Delay (s/veh)	11.9	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lanes, Volumes, Timings
1: Sweet Home Road & Commerce Drive/Dodge Road

Sawyer's Landing Development
Existing PM

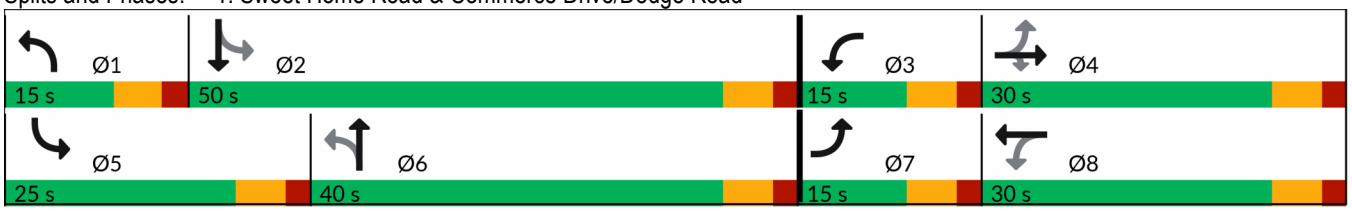
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	116	395	112	64	258	86	887	66	111	664	12
Future Volume (vph)	26	116	395	112	64	258	86	887	66	111	664	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.880			0.990			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	1900	1583	1787	1652	0	1703	3541	0	1752	3510	0
Flt Permitted	0.384			0.574			0.285			0.107		
Satd. Flow (perm)	676	1900	1583	1080	1652	0	511	3541	0	197	3510	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			327		167			7			2	
Link Speed (mph)		30			40			45			45	
Link Distance (ft)		684			420			772			679	
Travel Time (s)		15.5			7.2			11.7			10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	0%	2%	1%	6%	0%	6%	1%	0%	3%	2%	33%
Adj. Flow (vph)	28	126	429	122	70	280	93	964	72	121	722	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	126	429	122	350	0	93	1036	0	121	735	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	25.0		7.0	25.0	
Minimum Split (s)	13.0	28.0	28.0	13.0	28.0		13.0	31.0		13.0	31.0	
Total Split (s)	15.0	30.0	30.0	15.0	30.0		15.0	40.0		25.0	50.0	
Total Split (%)	13.6%	27.3%	27.3%	13.6%	27.3%		13.6%	36.4%		22.7%	45.5%	
Maximum Green (s)	9.0	24.0	24.0	9.0	24.0		9.0	34.0		19.0	44.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	28.0	21.0	21.0	32.9	27.7		41.1	33.4		45.0	37.5	
Actuated g/C Ratio	0.29	0.22	0.22	0.34	0.29		0.43	0.35		0.47	0.39	
v/c Ratio	0.10	0.30	0.71	0.28	0.58		0.29	0.83		0.50	0.53	
Control Delay (s/veh)	21.3	34.3	16.4	22.9	21.1		15.6	36.2		21.9	25.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	21.3	34.3	16.4	22.9	21.1		15.6	36.2		21.9	25.3	
LOS	C	C	B	C	C		B	D		C	C	
Approach Delay (s/veh)		20.6			21.6			34.5			24.8	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 95.7			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay (s/veh): 27.1		Intersection LOS: C	
Intersection Capacity Utilization 69.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	186	47	21	226	91	35
Future Volume (vph)	186	47	21	226	91	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.973				0.963	
Flt Protected				0.996	0.965	
Satd. Flow (prot)	1834	0	0	1892	1753	0
Flt Permitted				0.996	0.965	
Satd. Flow (perm)	1834	0	0	1892	1753	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	1%	0%	0%	0%	1%	0%
Adj. Flow (vph)	224	57	25	272	110	42
Shared Lane Traffic (%)						
Lane Group Flow (vph)	281	0	0	297	152	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.9%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	186	47	21	226	91	35
Future Vol, veh/h	186	47	21	226	91	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	1	0	0	0	1	0
Mvmt Flow	224	57	25	272	110	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	281	0	575	252
Stage 1	-	-	-	-	252	-
Stage 2	-	-	-	-	323	-
Critical Hdwy	-	-	4.1	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-	3.509	3.3
Pot Cap-1 Maneuver	-	-	1293	-	481	791
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	736	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1293	-	470	791
Mov Cap-2 Maneuver	-	-	-	-	470	-
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	719	-

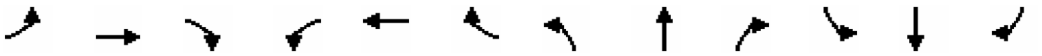
Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.67	14.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	530	-	-	153	-
HCM Lane V/C Ratio	0.287	-	-	0.02	-
HCM Control Delay (s/veh)	14.5	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	0.1	-

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

APPENDIX D: LOS CALCULATIONS – BACKGROUND CONDITIONS

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



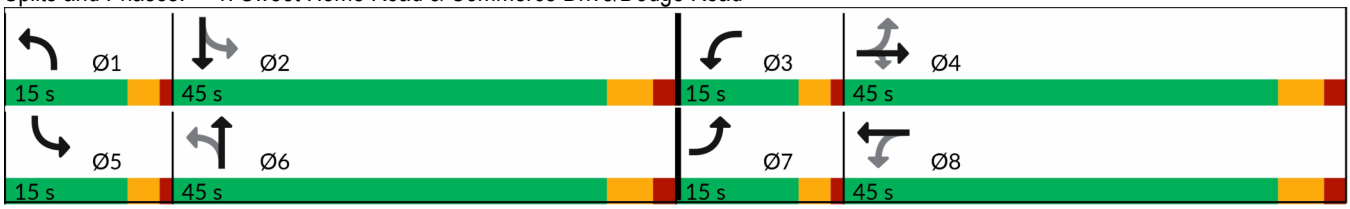
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	75	114	61	124	85	391	426	95	211	780	22
Future Volume (vph)	7	75	114	61	124	85	391	426	95	211	780	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.939			0.973			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1399	1900	1509	1388	1756	0	1736	3247	0	1770	3456	0
Flt Permitted	0.620			0.579			0.181			0.398		
Satd. Flow (perm)	913	1900	1509	846	1756	0	331	3247	0	741	3456	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121		30			24			2	
Link Speed (mph)		30			40			45			45	
Link Distance (ft)		684			420			772			679	
Travel Time (s)		15.5			7.2			11.7			10.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	29%	0%	7%	30%	0%	4%	4%	6%	18%	2%	4%	5%
Adj. Flow (vph)	7	80	121	65	132	90	416	453	101	224	830	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	80	121	65	222	0	416	554	0	224	853	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	8.0	28.0	28.0	8.0	28.0		8.0	28.0		8.0	28.0	
Total Split (s)	15.0	45.0	45.0	15.0	45.0		15.0	45.0		15.0	45.0	
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%		12.5%	37.5%		12.5%	37.5%	
Maximum Green (s)	11.0	39.0	39.0	11.0	39.0		11.0	39.0		11.0	39.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	21.9	16.0	16.0	27.2	23.5		44.1	30.8		41.4	29.4	
Actuated g/C Ratio	0.27	0.19	0.19	0.33	0.29		0.54	0.37		0.50	0.36	
v/c Ratio	0.02	0.21	0.30	0.19	0.42		1.12	0.45		0.45	0.68	
Control Delay (s/veh)	20.7	33.4	9.1	22.1	25.2		106.1	20.5		12.8	26.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	20.7	33.4	9.1	22.1	25.2		106.1	20.5		12.8	26.0	
LOS	C	C	A	C	C		F	C		B	C	
Approach Delay (s/veh)		18.9			24.5			57.2			23.3	
Approach LOS		B			C			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 82.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay (s/veh): 36.0		Intersection LOS: D	
Intersection Capacity Utilization 69.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	212	85	33	236	29	11
Future Volume (vph)	212	85	33	236	29	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.961				0.963	
Flt Protected				0.994	0.965	
Satd. Flow (prot)	1783	0	0	1856	1716	0
Flt Permitted				0.994	0.965	
Satd. Flow (perm)	1783	0	0	1856	1716	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	3%	1%	0%	2%	4%	0%
Adj. Flow (vph)	214	86	33	238	29	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	300	0	0	271	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.9%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	212	85	33	236	29	11
Future Vol, veh/h	212	85	33	236	29	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	1	0	2	4	0
Mvmt Flow	214	86	33	238	29	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	300	0	562	257
Stage 1	-	-	-	-	257	-
Stage 2	-	-	-	-	305	-
Critical Hdwy	-	-	4.1	-	6.44	6.2
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.2	-	3.536	3.3
Pot Cap-1 Maneuver	-	-	1273	-	485	786
Stage 1	-	-	-	-	781	-
Stage 2	-	-	-	-	743	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1273	-	470	786
Mov Cap-2 Maneuver	-	-	-	-	470	-
Stage 1	-	-	-	-	781	-
Stage 2	-	-	-	-	721	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.97	12.37
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	529	-	-	221	-
HCM Lane V/C Ratio	0.076	-	-	0.026	-
HCM Control Delay (s/veh)	12.4	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	120	403	136	77	265	88	905	82	115	677	12
Future Volume (vph)	27	120	403	136	77	265	88	905	82	115	677	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.884			0.988			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	1900	1583	1787	1657	0	1703	3534	0	1752	3510	0
Flt Permitted	0.347			0.569			0.277			0.105		
Satd. Flow (perm)	610	1900	1583	1070	1657	0	497	3534	0	194	3510	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			311		144			9			2	
Link Speed (mph)		30			40			45			45	
Link Distance (ft)		684			420			772			679	
Travel Time (s)		15.5			7.2			11.7			10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	0%	2%	1%	6%	0%	6%	1%	0%	3%	2%	33%
Adj. Flow (vph)	29	130	438	148	84	288	96	984	89	125	736	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	130	438	148	372	0	96	1073	0	125	749	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

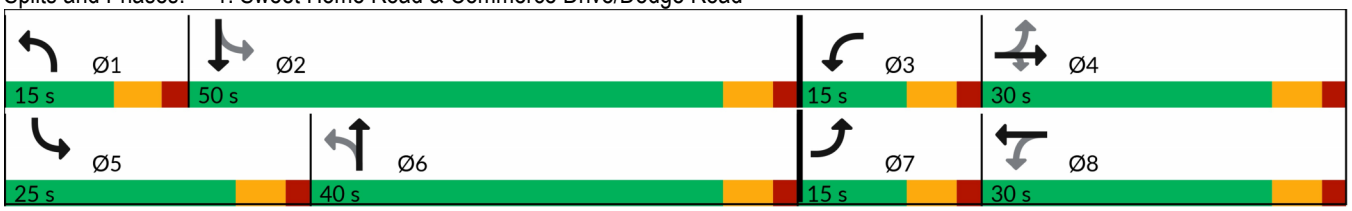
Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	25.0		7.0	25.0	
Minimum Split (s)	13.0	28.0	28.0	13.0	28.0		13.0	31.0		13.0	31.0	
Total Split (s)	15.0	30.0	30.0	15.0	30.0		15.0	40.0		25.0	50.0	
Total Split (%)	13.6%	27.3%	27.3%	13.6%	27.3%		13.6%	36.4%		22.7%	45.5%	
Maximum Green (s)	9.0	24.0	24.0	9.0	24.0		9.0	34.0		19.0	44.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	28.4	21.3	21.3	33.4	28.2		41.9	34.1		45.9	38.2	
Actuated g/C Ratio	0.29	0.22	0.22	0.34	0.29		0.43	0.35		0.47	0.39	
v/c Ratio	0.11	0.31	0.74	0.34	0.63		0.30	0.86		0.52	0.54	
Control Delay (s/veh)	21.5	34.6	19.2	24.0	25.4		16.0	38.2		22.9	25.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	21.5	34.6	19.2	24.0	25.4		16.0	38.2		22.9	25.7	
LOS	C	C	B	C	C		B	D		C	C	
Approach Delay (s/veh)		22.7			25.0			36.4			25.3	
Approach LOS		C			C			D			C	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 97.1
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay (s/veh): 28.9 Intersection LOS: C
Intersection Capacity Utilization 71.4% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	209	48	21	267	93	37
Future Volume (vph)	209	48	21	267	93	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.975				0.961	
Flt Protected				0.996	0.966	
Satd. Flow (prot)	1838	0	0	1892	1751	0
Flt Permitted				0.996	0.966	
Satd. Flow (perm)	1838	0	0	1892	1751	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	1%	0%	0%	0%	1%	0%
Adj. Flow (vph)	252	58	25	322	112	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	310	0	0	347	157	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.5%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	209	48	21	267	93	37
Future Vol, veh/h	209	48	21	267	93	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	1	0	0	0	1	0
Mvmt Flow	252	58	25	322	112	45

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	310	0	653	281
Stage 1	-	-	-	-	281	-
Stage 2	-	-	-	-	372	-
Critical Hdwy	-	-	4.1	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-	3.509	3.3
Pot Cap-1 Maneuver	-	-	1262	-	434	763
Stage 1	-	-	-	-	769	-
Stage 2	-	-	-	-	699	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1262	-	423	763
Mov Cap-2 Maneuver	-	-	-	-	423	-
Stage 1	-	-	-	-	769	-
Stage 2	-	-	-	-	682	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.58	15.94
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	484	-	-	131	-
HCM Lane V/C Ratio	0.323	-	-	0.02	-
HCM Control Delay (s/veh)	15.9	-	-	7.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	0.1	-

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

APPENDIX E: LOS CALCULATIONS – FULL BUILD CONDITIONS

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

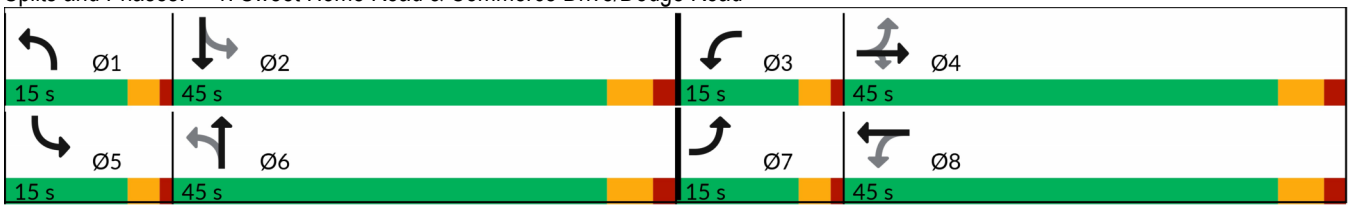
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	82	114	89	133	108	391	426	116	228	780	22
Future Volume (vph)	7	82	114	89	133	108	391	426	116	228	780	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.933			0.968			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1399	1900	1509	1388	1741	0	1736	3219	0	1770	3456	0
Flt Permitted	0.601			0.578			0.184			0.373		
Satd. Flow (perm)	885	1900	1509	845	1741	0	336	3219	0	695	3456	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121		36			30			2	
Link Speed (mph)		30			40			45			45	
Link Distance (ft)		684			420			772			679	
Travel Time (s)		15.5			7.2			11.7			10.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	29%	0%	7%	30%	0%	4%	4%	6%	18%	2%	4%	5%
Adj. Flow (vph)	7	87	121	95	141	115	416	453	123	243	830	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	87	121	95	256	0	416	576	0	243	853	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

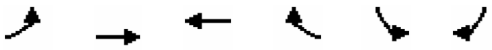
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	15.0	15.0	4.0	15.0		4.0	15.0		4.0	15.0	
Minimum Split (s)	8.0	28.0	28.0	8.0	28.0		8.0	28.0		8.0	28.0	
Total Split (s)	15.0	45.0	45.0	15.0	45.0		15.0	45.0		15.0	45.0	
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%		12.5%	37.5%		12.5%	37.5%	
Maximum Green (s)	11.0	39.0	39.0	11.0	39.0		11.0	39.0		11.0	39.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	22.3	16.4	16.4	28.5	24.8		44.7	31.3		42.6	30.3	
Actuated g/C Ratio	0.26	0.19	0.19	0.34	0.29		0.53	0.37		0.50	0.36	
v/c Ratio	0.02	0.23	0.31	0.28	0.47		1.14	0.47		0.50	0.68	
Control Delay (s/veh)	20.4	34.0	9.0	23.0	25.7		112.6	21.4		14.4	26.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	20.4	34.0	9.0	23.0	25.7		112.6	21.4		14.4	26.7	
LOS	C	C	A	C	C		F	C		B	C	
Approach Delay (s/veh)		19.5			25.0			59.7			24.0	
Approach LOS		B			C			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 84.4			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay (s/veh): 37.1		Intersection LOS: D	
Intersection Capacity Utilization 70.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	342	288	0	14	37
Future Volume (vph)	0	342	288	0	14	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.902	
Flt Protected					0.987	
Satd. Flow (prot)	0	1845	1863	0	1658	0
Flt Permitted					0.987	
Satd. Flow (perm)	0	1845	1863	0	1658	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		161	84		307	
Travel Time (s)		2.6	1.4		7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	0	372	313	0	15	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	372	313	0	55	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.0%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	0.9

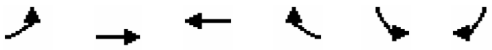
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	342	288	0	14	37
Future Vol, veh/h	0	342	288	0	14	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	2	2	2
Mvmt Flow	0	372	313	0	15	40

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	685	313
Stage 1	-	-	-	-	313	-
Stage 2	-	-	-	-	372	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	414	727
Stage 1	0	-	-	0	741	-
Stage 2	0	-	-	0	697	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	414	727
Mov Cap-2 Maneuver	-	-	-	-	414	-
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	697	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	11.58
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	602
HCM Lane V/C Ratio	-	-	0.092
HCM Control Delay (s/veh)	-	-	11.6
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.3

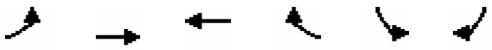
Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	33	323	288	8	0	0
Future Volume (vph)	33	323	288	8	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.996			
Flt Protected		0.995				
Satd. Flow (prot)	0	1837	1855	0	0	0
Flt Permitted		0.995				
Satd. Flow (perm)	0	1837	1855	0	0	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		84	108		365	
Travel Time (s)		1.4	1.8		8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	36	351	313	9	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	387	322	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	12	311	273	16	18	23
Future Volume (vph)	12	311	273	16	18	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.993		0.925	
Flt Protected		0.998			0.978	
Satd. Flow (prot)	0	1842	1850	0	1685	0
Flt Permitted		0.998			0.978	
Satd. Flow (perm)	0	1842	1850	0	1685	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		108	576		362	
Travel Time (s)		1.8	9.8		8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	13	338	297	17	20	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	351	314	0	45	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.1%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	311	273	16	18	23
Future Vol, veh/h	12	311	273	16	18	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	2	2	2
Mvmt Flow	13	338	297	17	20	25

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	314	0	-	0	670	305
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	364	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1246	-	-	-	422	734
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	703	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1246	-	-	-	417	734
Mov Cap-2 Maneuver	-	-	-	-	417	-
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	703	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.29	0	12.12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	67	-	-	-	550
HCM Lane V/C Ratio	0.01	-	-	-	0.081
HCM Control Delay (s/veh)	7.9	0	-	-	12.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	235	94	33	253	36	11
Future Volume (vph)	235	94	33	253	36	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.961				0.968	
Flt Protected				0.994	0.963	
Satd. Flow (prot)	1783	0	0	1856	1718	0
Flt Permitted				0.994	0.963	
Satd. Flow (perm)	1783	0	0	1856	1718	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	3%	1%	0%	2%	4%	0%
Adj. Flow (vph)	237	95	33	256	36	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	332	0	0	289	47	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.6%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	1.3

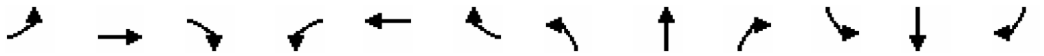
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	235	94	33	253	36	11
Future Vol, veh/h	235	94	33	253	36	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	1	0	2	4	0
Mvmt Flow	237	95	33	256	36	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	332	0	607	285
Stage 1	-	-	-	-	285	-
Stage 2	-	-	-	-	322	-
Critical Hdwy	-	-	4.1	-	6.44	6.2
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.2	-	3.536	3.3
Pot Cap-1 Maneuver	-	-	1238	-	456	759
Stage 1	-	-	-	-	759	-
Stage 2	-	-	-	-	730	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1238	-	442	759
Mov Cap-2 Maneuver	-	-	-	-	442	-
Stage 1	-	-	-	-	759	-
Stage 2	-	-	-	-	707	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.92	13.14
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	490	-	-	208	-
HCM Lane V/C Ratio	0.097	-	-	0.027	-
HCM Control Delay (s/veh)	13.1	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



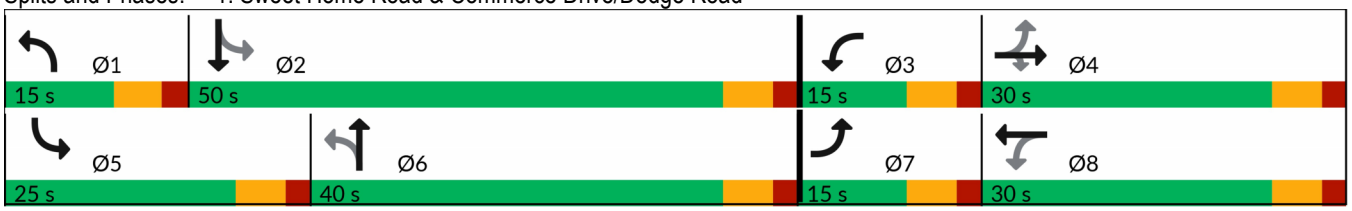
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	133	403	169	88	293	88	905	122	148	677	12
Future Volume (vph)	27	133	403	169	88	293	88	905	122	148	677	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	320		430	0		215	310		0	200		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.885			0.982			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	1900	1583	1787	1658	0	1703	3514	0	1752	3510	0
Flt Permitted	0.273			0.539			0.293			0.100		
Satd. Flow (perm)	480	1900	1583	1014	1658	0	525	3514	0	184	3510	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			295		139			14			2	
Link Speed (mph)		30			40			45			45	
Link Distance (ft)		684			420			772			679	
Travel Time (s)		15.5			7.2			11.7			10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	0%	2%	1%	6%	0%	6%	1%	0%	3%	2%	33%
Adj. Flow (vph)	29	145	438	184	96	318	96	984	133	161	736	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	145	438	184	414	0	96	1117	0	161	749	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2	2	2	2		2	2		2	2	
Detector Template												
Leading Detector (ft)	49	49	49	49	49		49	49		49	49	
Trailing Detector (ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Position(ft)	-1	-1	-1	-1	-1		-1	-1		-1	-1	
Detector 1 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	29	29	29	29	29		29	29		29	29	
Detector 2 Size(ft)	20	20	20	20	20		20	20		20	20	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

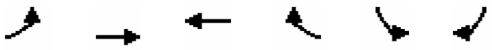
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	25.0		7.0	25.0	
Minimum Split (s)	13.0	28.0	28.0	13.0	28.0		13.0	31.0		13.0	31.0	
Total Split (s)	15.0	30.0	30.0	15.0	30.0		15.0	40.0		25.0	50.0	
Total Split (%)	13.6%	27.3%	27.3%	13.6%	27.3%		13.6%	36.4%		22.7%	45.5%	
Maximum Green (s)	9.0	24.0	24.0	9.0	24.0		9.0	34.0		19.0	44.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0		2.0	5.0		2.0	5.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	
Flash Dont Walk (s)		15.0	15.0		15.0			15.0			15.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	29.0	22.0	22.0	34.3	29.1		41.9	34.1		49.2	40.0	
Actuated g/C Ratio	0.29	0.22	0.22	0.34	0.29		0.42	0.34		0.49	0.40	
v/c Ratio	0.12	0.34	0.75	0.44	0.71		0.30	0.92		0.61	0.53	
Control Delay (s/veh)	22.7	36.1	21.5	27.0	30.4		16.3	45.4		27.7	25.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	22.7	36.1	21.5	27.0	30.4		16.3	45.4		27.7	25.5	
LOS	C	D	C	C	C		B	D		C	C	
Approach Delay (s/veh)		25.1			29.4			43.2			26.0	
Approach LOS		C			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 99.7			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay (s/veh): 32.7		Intersection LOS: C	
Intersection Capacity Utilization 85.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Sweet Home Road & Commerce Drive/Dodge Road



Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	343	387	0	16	44
Future Volume (vph)	0	343	387	0	16	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.900	
Flt Protected					0.987	
Satd. Flow (prot)	0	1881	1792	0	1655	0
Flt Permitted					0.987	
Satd. Flow (perm)	0	1881	1792	0	1655	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		134	50		272	
Travel Time (s)		3.0	1.1		6.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	1%	6%	2%	2%	2%
Adj. Flow (vph)	0	373	421	0	17	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	373	421	0	65	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.6%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	1

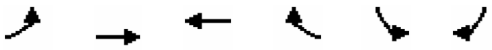
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↾	
Traffic Vol, veh/h	0	343	387	0	16	44
Future Vol, veh/h	0	343	387	0	16	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	1	6	2	2	2
Mvmt Flow	0	373	421	0	17	48

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	793	421
Stage 1	-	-	-	-	421	-
Stage 2	-	-	-	-	373	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	357	633
Stage 1	0	-	-	0	662	-
Stage 2	0	-	-	0	697	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	357	633
Mov Cap-2 Maneuver	-	-	-	-	357	-
Stage 1	-	-	-	-	662	-
Stage 2	-	-	-	-	697	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	12.83
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	525
HCM Lane V/C Ratio	-	-	0.124
HCM Control Delay (s/veh)	-	-	12.8
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.4

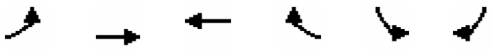
Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	62	297	387	16	0	0
Future Volume (vph)	62	297	387	16	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995			
Flt Protected		0.991				
Satd. Flow (prot)	0	1846	1853	0	0	0
Flt Permitted		0.991				
Satd. Flow (perm)	0	1846	1853	0	0	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		50	136		277	
Travel Time (s)		0.9	2.3		6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	67	323	421	17	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	390	438	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.1%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	273	375	31	22	28
Future Volume (vph)	24	273	375	31	22	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.990		0.925	
Flt Protected		0.996			0.978	
Satd. Flow (prot)	0	1855	1844	0	1685	0
Flt Permitted		0.996			0.978	
Satd. Flow (perm)	0	1855	1844	0	1685	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		136	606		319	
Travel Time (s)		2.3	10.3		7.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	297	408	34	24	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	323	442	0	54	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.2%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	24	273	375	31	22	28
Future Vol, veh/h	24	273	375	31	22	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	297	408	34	24	30

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	441	0	-	0	773	424
Stage 1	-	-	-	-	424	-
Stage 2	-	-	-	-	349	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1119	-	-	-	367	630
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	714	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1119	-	-	-	357	630
Mov Cap-2 Maneuver	-	-	-	-	357	-
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	714	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.67	0	13.63
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	145	-	-	-	471
HCM Lane V/C Ratio	0.023	-	-	-	0.115
HCM Control Delay (s/veh)	8.3	0	-	-	13.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	236	59	21	300	106	37
Future Volume (vph)	236	59	21	300	106	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.973				0.965	
Flt Protected				0.997	0.964	
Satd. Flow (prot)	1834	0	0	1894	1755	0
Flt Permitted				0.997	0.964	
Satd. Flow (perm)	1834	0	0	1894	1755	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	314			290	218	
Travel Time (s)	7.1			6.6	5.0	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	1%	0%	0%	0%	1%	0%
Adj. Flow (vph)	284	71	25	361	128	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	355	0	0	386	173	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.8%		ICU Level of Service A	
Analysis Period (min) 15			

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	236	59	21	300	106	37
Future Vol, veh/h	236	59	21	300	106	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	1	0	0	0	1	0
Mvmt Flow	284	71	25	361	128	45

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	355	0	732	320
Stage 1	-	-	-	-	320	-
Stage 2	-	-	-	-	412	-
Critical Hdwy	-	-	4.1	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-	3.509	3.3
Pot Cap-1 Maneuver	-	-	1214	-	390	726
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	671	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1214	-	380	726
Mov Cap-2 Maneuver	-	-	-	-	380	-
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	653	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.53	18.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	433	-	-	118	-
HCM Lane V/C Ratio	0.398	-	-	0.021	-
HCM Control Delay (s/veh)	18.7	-	-	8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.9	-	-	0.1	-

Attachment: Z-2002-09E_application updated 081624_082724 uploaded 8/16/2024 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

TOWN OF AMHERST
PLANNING BOARD
AMEND THE SEQR CERTIFICATION OF FINDINGS
AMEND THE DECLARATION OF RESTRICTIONS
AMENDMENT #77 TO THE AUDUBON DEVELOPMENT PLAN
Z-2002-09_E

PETITIONER

Sawyers Landing LLC
c/o Sean Hopkins
Hopkins Sorgi & McCarthy
5500 Main Street, Suite 343
Williamsville, NY

PROPERTY LOCATION

50 Dodge Road (portion)

AUG 29 2024 PM2

WHEREAS the Town of Amherst Planning Board on Tuesday, August 27, 2024 held a public hearing on a request to amend the SEQR Certification of Findings, to amend the Declaration of Restrictions and for Amendment #77 to the Audubon New Community District Development Plan to include the property location for use as a Local Center (LC) for the "Muir Woods Site A", and

WHEREAS the Planning Board has reviewed the plans and supporting documentation for the request, and

WHEREAS the Amendments have been referred to the various Town and County and State review agencies, and

WHEREAS the Planning Board finds that:

A. The proposed request meets the intent and objectives of a New Community District as expressed in Subsection 1-1.1.

B. The proposed request meets all the requirements of Section 5-2-3 through 5-2-6.

C. The proposed request is conceptually sound in that it meets present and future community needs.

D. There are or will be adequate services and utilities available or proposed to be made available in the construction of the development.

E. The proposed amendments to the SEQR Certification of Findings, Declaration of Restrictions and the Audubon Development Plan are consistent with the Town Comprehensive Plan.

NOW THEREFORE BE IT RESOLVED that pursuant to Local Law #3-82, as amended, the Planning Board recommends that the Town Board determine that the requirements of SEQR are complete and that the subject proposal is not expected to have a significant adverse effect on the environment, and

Attachment: Z-2002-09E signed resolution 082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

TOWN OF AMHERST
PLANNING BOARD
AMEND THE SEQR CERTIFICATION OF FINDINGS
AMEND THE DECLARATION OF RESTRICTIONS
AMENDMENT #77 TO THE AUDUBON DEVELOPMENT PLAN
Z-2002-09_E

PETITIONER	PROPERTY LOCATION
Sawyers Landing LLC	50 Dodge Road (portion)

AUG 29 2024 PM2

BE IT FURTHER RESOLVED that the Planning Board, in accordance with Section 8-15-2 of the Zoning Ordinance offers a positive report and recommends Town Board approval of the request to amend the SEQR Certification of Findings and amend the Declaration of Restrictions and Amendment #77 to the Audubon Development Plan.

The foregoing resolution was adopted by the Town of Amherst Planning Board, August 27, 2024; moved by Gill; seconded by Raffaele; ayes 4; noes 0; absent 3 (Davis, Giuliani, Penberthy).

Michael J. Chmiel, Planning Board Chair

8/29/24
Date

SM/ac
X:\Current_Planning\Files\Rezonings\2002\Z-2002-09_E_(50_Dodge_Rd)_2024\Z-2002-09_E_resolution_082724.docx
cc: Town Clerk
Commissioner of Building
Highway Superintendent
Town Engineer
Traffic/Safety Coordinator
Sean Hopkins, Hopkins Sorgi & McCarthy, 5500 Main St., Suite 343, Williamsville, NY 14221
Chris Wood, Carmina Wood Design, 80 Silo City Row, Buffalo, NY 14203
William Severyn, Severyn Development, 43 Central Ave., Lancaster, NY 14086

Attachment: Z-2002-09E signed resolution 082724 (29166 : Z-2002-09E, 50 Dodge Rd. (Portion))

Amherst Planning Board
5583 Main Street
Williamsville, NY 14221

ADOPTED

Meeting: 08/27/24 06:30 PM
Department: Planning
Category: Miscellaneous
Prepared By: Bryan Fadel
Initiator: Dan Howard
Sponsors:
DOC ID: 29081

PLANNING BOARD ITEM (ID # 29081)

Local Law to Amend §204 of Town Code - the Subdivision Regulations, ZTA-2024-01

Town of Amherst, Petitioner

Various amendments to Chapter 204 of the Town Code (Subdivision Regulations), amendments include changes to minimum right-of-way width, increased sidewalk width, detailed tree planting specifications and uniformity in allowed curb type.

June 25, 2024

Dan Ulatowski, Assistant Planning Director, represented the petitioner, explained the proposal and was available to answer questions from the Board.

No further comments were heard on this proposal. The hearing was closed.

Following discussion, Ms. Kahn moved to adjourn the request. The motion was seconded by Mr. Davis and carried. Ayes 4, Noes 0, Absent 3 (Chmiel, Penberthy, Raffaele).

August 27, 2024

Dan Ulatowski, Assistant Planning Director, represented the petitioner, explained the proposal and was available to answer questions from the Board.

No further comments were heard on this proposal. The hearing was closed.

Following discussion, Mr. Gill moved to approve the request based on the resolution. The motion was seconded by Ms. Kahn and carried. Ayes 4, Noes 0, Absent 3 (Davis, Giuliani, Penberthy).

HISTORY:

06/25/24	**Planning Board**	**ADJOURNED**	**Next: 08/27/24**

ATTACHMENTS:

- ZTA-2024-01_application_062524 (PDF)
- ZTA-2024-01 signed resolution 082724 (PDF)

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Harbinder Gill, Board Member
SECONDER:	Carrie H. Kahn, Board Member
AYES:	Michael Chmiel, Harbinder Gill, Carrie H. Kahn, Joseph P. Raffaele Jr.
ABSENT:	John B. Davis, Dal Giuliani, Brittany Lee Penberthy

TOWN OF AMHERST PLANNING DEPARTMENT

Zoning & Subdivision Text Amendment Application

File # ZTA-2024-01

1. Zoning Ordinance Text Amendment ☐
2. Subdivision Regulations Text Amendment ☒

PETITIONER:

- ☐ Town Board
- ☐ Planning Board
- ☐ Zoning Board of Appeals
- ☐ Commissioner of Building
- ☐ Planning Director
- ☒ Zoning Enforcement Officer

Sections Proposed to be Amended: (Attach sheets as necessary.)

Chapter 204: Subdivision Regulations Parts 1 – 5

Description of Amendments: (Attached sheets as necessary.)

Revisions to Part 2 Definitions,
Part 3 Design Standards, and
Part 4 Subdivision Classification

Materials Received by Planning Department

RECEIVED BY 5/28/2024 DATE

Materials Filed with Town Clerk

ACCEPTED BY DATE

X:\Current_Planning\Application Forms 2019\Zoning or Subdivision Text Amend App 2022.doc

Attachment: ZTA-2024-01_application_062524 (29081 : Zta-2024-01)

Full Environmental Assessment Form
Part 1 - Project and Setting

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Town of Amherst Chapter 204 Subdivision Regulation Amendments		
Project Location (describe, and attach a general location map): Town-wide		
Brief Description of Proposed Action (include purpose or need): Proposed amendments to Chapter 204 (Subdivision Regulations) of the Code of the Town of Amherst		
Name of Applicant/Sponsor: Town of Amherst, New York	Telephone: 716-631-7051 E-Mail:	
Address: 5583 Main Street		
City/PO: Williamsville	State: NY	Zip Code: 14221
Project Contact (if not same as sponsor; give name and title/role): Daniel J. Ulatowski, AICP, Assistant Planning Director/ZEO	Telephone: 716-631-7051 E-Mail: dulatowski@amherst.ny.us	
Address: 5583 Main Street		
City/PO: Williamsville	State: NY	Zip Code: 14221
Property Owner (if not same as sponsor):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:

Attachment: ZTA-2024-01_application_062524 (29081 : Zta-2024-01)

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town Board Approval	July 8, 2024
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board Recommendation	June 24, 2024
c. City, Town or Village Zoning Board of Appeals ☐Yes ☐No		
d. Other local agencies ☐Yes ☐No		
e. County agencies ☑Yes ☐No	239M GML	May 28, 2024
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSDEC	May 28, 2024
h. Federal agencies ☐Yes ☑No		

i. Coastal Resources.
i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☑Yes ☐No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☑Yes ☐No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No (affects entire town)

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☐Yes ☐No N/A

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☐Yes ☑No

If Yes, identify the plan(s):

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☑Yes ☐No

If Yes, identify the plan(s):

the subdivision regulations apply to the entire community.

Attachment: ZTA-2024-01_application_062524 (29081 : Zta-2024-01)

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
the subdivision regulations affect the entire community and is applicable in every zoning district.

b. Is the use permitted or allowed by a special or conditional use permit? N/A ☐ Yes ☐ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site? _____

C.4. Existing community services. N/A - The subdivision regulations affect the entire community.

a. In what school district is the project site located? _____

b. What police or other public protection forces serve the project site?

c. Which fire protection and emergency medical services serve the project site?

d. What parks serve the project site?

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)?

b. a. Total acreage of the site of the proposed action? _____ acres
b. Total acreage to be physically disturbed? _____ acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? _____ acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☐ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☐ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? _____
iv. Minimum and maximum proposed lot sizes? Minimum _____ Maximum _____

e. Will the proposed action be constructed in multiple phases? ☐ Yes ☐ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____ year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

Attachment: ZTA-2024-01_application_062524 (29081 : Zta-2024-01)

f. Does the project include new residential uses? ☐Yes ☐No
If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				
At completion of all phases				

g. Does the proposed action include new non-residential construction (including expansions)? ☐Yes ☐No
If Yes,
i. Total number of structures _____
ii. Dimensions (in feet) of largest proposed structure: _____height; _____width; and _____ length
iii. Approximate extent of building space to be heated or cooled: _____ square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☐Yes ☐No
If Yes,
i. Purpose of the impoundment: _____
ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☐Other specify:
_____
iii. If other than water, identify the type of impounded/contained liquids and their source.
_____
iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: _____ acres
v. Dimensions of the proposed dam or impounding structure: _____ height; _____ length
vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):
_____

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? ☐Yes ☐No
(Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite)
If Yes:
i .What is the purpose of the excavation or dredging? _____
ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?
- Volume (specify tons or cubic yards): _____
- Over what duration of time? _____

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.
_____
_____
iv. Will there be onsite dewatering or processing of excavated materials? ☐Yes ☐No
If yes, describe. _____
_____
v. What is the total area to be dredged or excavated? _____acres
vi. What is the maximum area to be worked at any one time? _____ acres
vii. What would be the maximum depth of excavation or dredging? _____ feet
viii. Will the excavation require blasting? ☐Yes ☐No
ix. Summarize site reclamation goals and plan: _____
_____
_____

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐Yes ☐No
If Yes:
i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): _____
_____

Attachment: ZTA-2024-01_application_062524 (29081 : Zta-2024-01)

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

_____

_____

_____

_____

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☐No

If Yes, describe: _____

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☐No

If Yes:

- acres of aquatic vegetation proposed to be removed: _____
- expected acreage of aquatic vegetation remaining after project completion: _____
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access): _____

_____

- proposed method of plant removal: _____
- if chemical/herbicide treatment will be used, specify product(s): _____

v. Describe any proposed reclamation/mitigation following disturbance: _____

_____

c. Will the proposed action use, or create a new demand for water? ☐Yes ☐No

If Yes:

i. Total anticipated water usage/demand per day: _____ gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☐Yes ☐No

If Yes:

- Name of district or service area: _____
- Does the existing public water supply have capacity to serve the proposal? ☐Yes ☐No
- Is the project site in the existing district? ☐Yes ☐No
- Is expansion of the district needed? ☐Yes ☐No
- Do existing lines serve the project site? ☐Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☐No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

_____

- Source(s) of supply for the district: _____

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No

If, Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- Proposed source(s) of supply for new district: _____

v. If a public water supply will not be used, describe plans to provide water supply for the project: _____

_____

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☐Yes ☐No

If Yes:

i. Total anticipated liquid waste generation per day: _____ gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each): _____

_____

_____

iii. Will the proposed action use any existing public wastewater treatment facilities? ☐Yes ☐No

If Yes:

- Name of wastewater treatment plant to be used: _____
- Name of district: _____
- Does the existing wastewater treatment plant have capacity to serve the project? ☐Yes ☐No
- Is the project site in the existing district? ☐Yes ☐No
- Is expansion of the district needed? ☐Yes ☐No

Attachment: ZTA-2024-01_application_062524 (29081 : Zta-2024-01)

- Do existing sewer lines serve the project site? ☐Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☐No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

_____

_____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☐No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

_____

_____

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

_____

_____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☐Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or _____ acres (impervious surface)

_____ Square feet or _____ acres (parcel size)

ii. Describe types of new point sources. _____

_____

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

_____

_____

- If to surface waters, identify receiving water bodies or wetlands: _____

_____

_____

- Will stormwater runoff flow to adjacent properties? ☐Yes ☐No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☐Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☐No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

_____

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

_____

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

_____

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☐No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

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h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☐No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

_____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☐No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

_____

_____

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☐No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend

☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

_____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

_____

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☐Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

_____

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

_____

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☐No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: _____
- Saturday: _____
- Sunday: _____
- Holidays: _____

ii. During Operations:

- Monday - Friday: _____
- Saturday: _____
- Sunday: _____
- Holidays: _____

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m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☐Yes ☐No

If yes:

i. Provide details including sources, time of day and duration:

_____

_____

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐Yes ☐No

Describe: _____

_____

n. Will the proposed action have outdoor lighting? ☐Yes ☐No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

_____

_____

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐Yes ☐No

Describe: _____

_____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐Yes ☐No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

_____

_____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐Yes ☐No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities: _____

_____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☐No

If Yes:

i. Describe proposed treatment(s):

_____

_____

_____

_____

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☐No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☐ Yes ☐No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: _____ tons per _____ (unit of time)
- Operation : _____ tons per _____ (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: _____

_____

- Operation: _____

_____

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: _____

_____

- Operation: _____

_____

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s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☐ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☐ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☐ Commercial ☐ Residential (suburban) ☐ Rural (non-farm)
☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other (specify): _____

ii. If mix of uses, generally describe:

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces			
• Forested			
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)			
• Agricultural (includes active orchards, field, greenhouse etc.)			
• Surface water features (lakes, ponds, streams, rivers, etc.)			
• Wetlands (freshwater or tidal)			
• Non-vegetated (bare rock, earth or fill)			
• Other Describe: _____			

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c. Is the project site presently used by members of the community for public recreation? ☐Yes☐No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐Yes☐No
If Yes,
i. Identify Facilities:
_____
_____

e. Does the project site contain an existing dam? ☐Yes☐No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:
_____
_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐Yes☐No
If Yes:
i. Has the facility been formally closed? ☐Yes☐ No
- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:
_____
_____
iii. Describe any development constraints due to the prior solid waste activities: _____
_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐Yes☐No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:
_____
_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐Yes☐ No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐Yes☐No
☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): _____
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____
_____
_____
iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐Yes☐No
If yes, provide DEC ID number(s): _____
iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):
_____
_____

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v. Is the project site subject to an institutional control limiting property uses? ☐Yes ☐No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐Yes ☐No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? _____ feet

b. Are there bedrock outcroppings on the project site? ☐Yes ☐No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____%

c. Predominant soil type(s) present on project site: _____ _____%
_____ _____%
_____ _____%

d. What is the average depth to the water table on the project site? Average: _____ feet

e. Drainage status of project site soils: ☐ Well Drained: _____% of site
☐ Moderately Well Drained: _____% of site
☐ Poorly Drained _____% of site

f. Approximate proportion of proposed action site with slopes: ☐ 0-10%: _____% of site
☐ 10-15%: _____% of site
☐ 15% or greater: _____% of site

g. Are there any unique geologic features on the project site? ☐Yes ☐No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☐Yes ☐No

ii. Do any wetlands or other waterbodies adjoin the project site? ☐Yes ☐No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☐Yes ☐No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name _____ Approximate Size _____
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐Yes ☐No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐Yes ☐No

j. Is the project site in the 100-year Floodplain? ☐Yes ☐No

k. Is the project site in the 500-year Floodplain? ☐Yes ☐No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐Yes ☐No
If Yes:

i. Name of aquifer: _____

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m. Identify the predominant wildlife species that occupy or use the project site: _____

n. Does the project site contain a designated significant natural community? ☐Yes ☐No

If Yes:

i. Describe the habitat/community (composition, function, and basis for designation): _____

ii. Source(s) of description or evaluation: _____

iii. Extent of community/habitat:

- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☐No

If Yes:

i. Species and listing (endangered or threatened): _____

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐Yes ☐No

If Yes:

i. Species and listing: _____

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☐No

If yes, give a brief description of how the proposed action may affect that use: _____

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☐No

If Yes, provide county plus district name/number: _____

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☐No

i. If Yes: acreage(s) on project site? _____

ii. Source(s) of soil rating(s): _____

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☐No

If Yes:

i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature

ii. Provide brief description of landmark, including values behind designation and approximate size/extent: _____

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☐No

If Yes:

i. CEA name: _____

ii. Basis for designation: _____

iii. Designating agency and date: _____

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e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☐ Yes ☐ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☐ Yes ☐ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☐ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☐ No

If Yes:

i. Identify resource: _____

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): _____

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☐ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name Daniel J. Ulatowski, AICP Date 05/24/2024

Signature _____ Title Assistant Planning Director/ZEO

PRINT FORM

Attachment: ZTA-2024-01_application_062524 (29081 : Zta-2024-01)

LOCAL LAW NO. ____-2024

TOWN OF AMHERST
COUNTY OF ERIE, STATE OF NEW YORK

A Local Law Making Amendments To Chapter 204 Of The Code Of The Town Of Amherst, Also Known As Subdivision Regulations.

Be it enacted by the Town Board of the Town of Amherst as follows:

~~Strikethrough~~ = Deleted; Underline = Added

PART 1
GENERAL PROVISIONS

§ 1-1. Title

The official name of this Local Law and this document shall be "Town of Amherst Subdivision Regulations" hereinafter referred to as the "Subdivision Regulations" or "these Regulations."

§ 1-2. Purpose and Intent

The purpose of these Subdivision Regulations and the intent of the use of legislative authority is to provide for the future growth and development of the town and the affording of adequate facilities for the housing, transportation, distribution, comfort, convenience, safety, health and welfare of its population by regulating the development of residential subdivision pursuant to the authority set forth in Town Law § 271 and § 276. The Town Board finds and determines that these subdivision regulations are necessary to protect and safeguard the Town of Amherst and its residents with respect to subdivision developments in the town which, once accepted, become a permanent unit in the basic physical structure of the community which the future community will of necessity be forced to adhere. It is the purpose of this law that all subdivision and platting of land shall be designed to achieve, among others, the following objectives:

1-2-1. To ensure orderly development and redevelopment of land to obtain harmonious and stable residential and nonresidential areas.

1-2-2. To ensure the design and installation of high-quality improvements and infrastructure in compliance with the specifications and standards established by the Town of Amherst, and the correct and complete recording of improvements.

1-2-3. To minimize ongoing costs of operating and replacing the Town's infrastructure.

1-2-4. To provide coordination of land development activities in accordance with the objectives of the Zoning Ordinance and the Comprehensive Plan.

1-2-5. To coordinate local subdivision actions with the requirements of county, state and federal statutes.

1-2-6. To provide safe and convenient vehicular and pedestrian circulation.

1-2-7. To require reservation of space for school, recreation, and other public use.

1-2-8. To ensure accurate preparation and recording of plats.

1-2-9. To ensure subdivision design mindful of avoiding, minimizing, or mitigating natural hazards and protecting natural resources.

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§ 1-3. Authority, Local Supercission

This Local Law is enacted under the authority of subparagraphs (a)(12) and (d)(3) of the Municipal Home Rule Law § 10(1)(iii) and Municipal Home Rule Law § 22. It is the intent of this legislation to supersede the provisions of New York State Town Law dealing with subdivisions and the Highway Law in the following circumstances:

(a) Highway Law § 171(c) — Minimum right-of-way width of three rods.

(b) Town Law § 276(11) — Filing of final plat; expiration of approval.

(c) Town Law § 277(9)(a) — Furnishing performance bond.

(d) Town Law § 277(9)(b) — Security where plat is approved in sections.

§ 1-4. Interpretation

1-4-1. The provisions of these Regulations shall be construed to be the minimum requirements necessary for the preservation of public health, safety, and welfare within the Town.

1-4-2. These regulations are not intended to repeal, abrogate, or supersede any existing regulation of the Town, nor to conflict with any statutes, laws, or regulations of the State of New York, or Erie County, except that these Regulations shall prevail in cases where they impose a lawful restriction or requirement more severe than existing statutes, laws, or regulations. The Town shall not enforce private deed or plat restrictions.

1-4-3. The Zoning Enforcement Officer shall be responsible for the interpretation of this Local Law. **[Amended 3-4-2019 by L.L. No. 7-2019]**

§ 1-5. Delegation of Authority

By the authority of Article 16, § 276 of the Town Law of the State of New York and resolution of the Town Board of the Town of Amherst, Erie County, New York, dated,[1] the Planning Board of the Town of Amherst is authorized and empowered to approve plats showing lots, blocks or sites, with or without streets or highways, and to approve preliminary plats, within that part of the Town of Amherst outside the limits of the Village of Williamsville.

§ 1-6. Jurisdiction

These Regulations shall govern all subdivision and resubdivision of land lying within the Town limits of the Town of Amherst outside the limits of the Village of Williamsville.

§ 1-7. Application

1-7-1. In accordance with Article 16, § 278 of the Town Law of the State of New York, no plat of any subdivision shall be recorded in the Erie County Clerk's Office or have any validity until it shall have been approved in the manner prescribed in these Regulations and is in full compliance with them.

1-7-2. No building permit or certificate of occupancy shall be issued for any parcel or plot of land which was created by subdivision after the effective date of, and not in conformity with, the provisions of these subdivision regulations and no excavation of land or construction of any public or private improvements shall take place or be commenced except in conformity with these Regulations.

§ 1-8. Validity

Should any section or provision of these Subdivision Regulations be declared invalid such decision shall not affect the validity of these Regulations as a whole, or any part thereof, other than the section or provision so declared to be invalid, nor shall the decision affect its application to different facts or circumstances.

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§ 1-9. Duration of Planning Board Approval

1-9-1. Approval of the following procedures shall expire in accordance with the following table.

Application	Duration of Approval
Sketch Plan	2 years
Preliminary Plat	6 months
Final Plat	1 year

1. So in original.

PART 2
DEFINITIONS

§ 2-1. Definition of Terms

2-1-1. Words in this Local Law are normally used in their ordinary English usage. Certain terms shall have the meanings that follow, except where the context clearly indicates a different meaning.

2-1-2. The word "shall" is mandatory; the word "may" is permissive; "should" is to be interpreted as expressing that which is desired and not specifically required.

2-1-3. All words used in the singular include the plural, and all words used in the present tense include the future tense.

§ 2-2. Abbreviations

FEMA Federal Emergency Management Agency United States Department of Homeland Security

PE Professional Engineer

ROW Right of Way

SEQR State Environmental Quality Review Act

§ 2-3. General Terms

BUILDING DEPARTMENT The Building Department of the Town of Amherst, New York.

COMMISSIONER OF BUILDING Commissioner of Building of the Town of Amherst, New York.

COUNTY Erie County, New York.

HIGHWAY SUPERINTENDENT Highway Superintendent of the Town of Amherst, New York.

LAW Law, ordinance, rule or regulation of the federal, state, county or town governments, as appropriate.

PERSON Includes a firm, association, organization, partnership, company or corporation as well as an individual.

PETITIONER Any person who (1) having an interest in land, causes it, directly or indirectly, to be divided into a subdivision or who (2) directly or indirectly, sells, leases or develops or offers to sell, lease or develop, or advertises for sale, lease or development, any interest, lot, parcel site, unit or plot in a subdivision, or who (3) constructs or contracts to construct improvements on subdivided land or who (4) is directly or indirectly controlled by, or under direct or indirect common control with any of the foregoing.

PLANNING BOARD Planning Board of the Town of Amherst, New York.

PLANNING DIRECTOR Planning Director of the Town of Amherst, New York.

TOWN Town of Amherst, Erie County, New York, outside the Village of Williamsville, New York.

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TOWN BOARD Elected legislative body, Town of Amherst, New York.

TOWN ENGINEER Town Engineer of the Town of Amherst, New York.

ZONING ENFORCEMENT OFFICER Zoning Enforcement Officer of the Town of Amherst, New York.**[Added 3-4-2019 by L.L. No. 7-2019]**

ZONING ORDINANCE The officially adopted Zoning Ordinance and Zoning Map of the Town of Amherst, together with any and all amendments and conditions adopted by the Town Board thereto.

§ 2-4. Specific Terms

ACCESS MANAGEMENT The process of locating and designing vehicular access connections to preserve the flow of traffic in terms of safety, capacity and speed.

ARCHITECT A New York State licensed professional authorized to practice architecture as defined by New York State laws.

BUILDING LINE (OR FRONT SETBACK) A line parallel to the street right-of-way line, or edge of pavement for a private road, between which line and the street right-of-way no structure may be built.

COMPREHENSIVE PLAN Materials, written and graphic, including maps, charts, studies, resolutions, reports and other descriptive material that identify the goals, objectives, principles, guidelines, policies, standards, devices and instruments for the immediate and long-range protection, enhancement, growth and development which have been adopted and may be amended by the Amherst Town Board in accordance with NYS Town Law § 272-a.

CONSTRUCTION DETAILS PLAN See Public and Private Improvement Permit.

CURB CUT A curb break, or a place or way provided for the purpose of gaining vehicular access between a street and abutting property.

DEVELOPMENT The act of building structures or installing site improvements.

EASEMENT An authorization by a property owner for the use by another, and for a specified purpose, of any designated part of the property.

ENGINEER A New York State licensed professional engineer (P.E.) authorized to practice engineering as defined by New York State laws.

EXCEPTION. ~~See Reserve.~~ A parcel or portion of a parcel that is not included or being considered as part of a proposed subdivision (See Reserve).

GRADES

1. STREET GRADE. 1) The elevation of the street as measured at its crown; or 2) the slope of the street as measured between two points.

2. NATURAL GRADE. The elevation above North American Vertical Datum of 1988, of the surface of the ground prior to any development. Within special flood hazard areas, the National Geodetic Vertical Datum of 1929 shall also be used.

3. FINISHED GRADE. The elevation of the finished surface of the ground adjoining the building after final grading and normal settlement.

HOMEOWNERS ASSOCIATION An incorporated non-profit organization operating under recorded land agreements through which each lot owner of a developed area is a member and each lot is subject to charges for a proportionate share of the expenses for the organization's activities such as maintaining common property.

IMPROVEMENTS (PRIVATE) Any facility or service together with its associated site necessary to provide street pavements, curbs, gutters, sidewalks, crosswalks, water mains, sanitary and storm sewers, street trees,

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utilities, and other appropriate items provided in the development installed privately, and to be owned, maintained or operated by a private entity, such as an individual, corporation or homeowners association.

IMPROVEMENTS (PUBLIC) Any public facility or service together with its associated public site or right-of-way necessary to provide street pavements, curbs, gutters, sidewalks, crosswalks, water mains, sanitary and

storm sewers, street trees, utilities, and other appropriate items as installed or provided in the development and to be owned, maintained, and operated by the municipality or special district.

IMPROVEMENTS (PUBLIC) Any public facility or service together with its associated public site or right-of-way necessary to provide street pavements, curbs, gutters, sidewalks, crosswalks, water mains, sanitary and storm sewers, street trees, utilities, and other appropriate items as installed or provided in the development and to be owned, maintained, and operated by the municipality or special district.

LAND SURVEYOR A New York State licensed professional authorized to practice land surveying as defined by New York State Laws.

LOT A parcel of land for a structure, use and the accessory structures or uses customarily incident to it, including such yards as are required by ordinance and such yards as are arranged and designed to be used in connection with such structure.

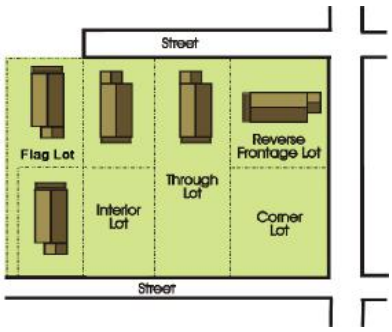
LOT LINE Any boundary line of a lot.

LOT MEASUREMENTS

1. DEPTH. The mean horizontal distance between the front and rear lot lines.
2. WIDTH. The horizontal distance of a lot measured along the building line at right angles to the mean lot depth line.

LOT TYPES

1. CORNER LOT. A parcel of land having lot lines at the junction of two or more streets or having lot lines on the same street forming an interior angle of intersection not more than 135 degrees.
2. FLAG LOT. A lot so shaped that the main building site area is set back from the street on which it fronts and includes only a long narrow access strip connecting the main building site with the frontage street.
3. INTERIOR LOT. A lot other than a corner lot.
4. THROUGH LOT. An interior lot which has frontage on more than one street.
5. REVERSE FRONTAGE LOT. A lot on which the frontage is at right angles or approximately right angles to the general pattern in the area. A reverse frontage lot may also be a corner lot, an interior lot or a through lot.



LOT OF RECORD Land designated as a separate parcel on a plat map or deed filed or recorded in the office of the Clerk of Erie County, New York.

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MARGINAL ACCESS STREET A local street or alley that provides access to abutting properties parallel and adjacent to an arterial street.

OPEN SPACE An area unobstructed by buildings from the ground upward, except for walks, paths, landscaping or other site features in public, common or other private ownership. Yards of individual lots occupied by dwellings shall not constitute open space.

OPEN SPACE-COMMON A parcel or parcels of land or an area of water, or a combination of land and water within the site, privately owned and designed and intended for the use and enjoyment of two or more households residing in the site or in specified portions thereof, or other users if permitted by the owners of the common open space. Common open space may contain such structures and improvements as are necessary and appropriate for the benefit and enjoyment of persons served by such common open space.

OWNER Shall include, in addition to its usual meaning, tenant, lessee, occupant, or other user.

PEDESTRIAN WALK A public or private right-of-way intended solely for pedestrian circulation which may be located within a street right-of-way.

PERFORMANCE BOND An agreement by and between a petitioner and a bonding company or personal fidelity or property bond in favor of the Town for the amount of the estimated construction cost, and guaranteeing the completion of physical improvements according to approved plans and specifications within the time prescribed by the petitioner's agreement.

PLAT A drawing showing the proposed plan of the subdivision and supplementary information which is submitted for approval to the Planning Board.

PLAT, PRELIMINARY A map and related material submitted to the Planning Board in order to obtain approval for a proposed subdivision of land. If approved by the Planning Board, it provides the basis for proceeding with the preparation of the final plat of a subdivision.

PLAT, FINAL A survey record of the subdivision, or part thereof, showing location of lots, street right-of-way, easements, and other pertinent data as required in these Regulations.

PUBLIC AND PRIVATE IMPROVEMENT PERMIT Permit to build a public or private improvement approved by the Town Board and issued by the Town Engineer.

PRIVATE UTILITY A utility whose ownership is not fixed in a public body as electrical, gas and phone lines and supporting apparatus, structures or markers.

RESERVE A parcel of land within a subdivision that is intended for future use, or interim continued existing use.

RESERVE STRIP A strip of land not dedicated to public use located between a private parcel and a public right-of-way that prevents access to the public right-of-way.

RESUBDIVISION A change in a map of an approved or recorded subdivision plat if such change affects any street layout shown on such map, or area reserved thereon for public use, or any lot line, or if it affects any map or plan legally recorded prior to the adoption of any regulations controlling subdivision. This process is also referred to as replatting.

RIGHT-OF-WAY (ROW) The width, between property lines, of a street, alley, or easement (measured at right angles to the center line of a street).

RURAL SUBDIVISION Residential subdivisions in the AG, Agricultural, or R-R, Rural Residential Districts, or on land which is outside the utility service area for wastewater services and for which the provision of these services will be accommodated through the use of individual, privately owned systems.

SALE OR LEASE Any immediate or future transfer of ownership, including contract of sale or transfer, or an interest in a subdivision or part thereof.

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SKETCH PLAN A simple sketch of the proposed layout of streets, lots, and other features of a proposed subdivision in relation to existing conditions, including topography, prepared by the petitioner and submitted to the Planning Board for the purpose of obtaining the advice and assistance of the Planning Department Staff and approval of the Planning Board before preparation of the preliminary plat.

SPECIAL FLOOD HAZARD AREA As defined by § 7-7-4 of the Zoning Code of the Town of Amherst.

STREET A public or private way which permits conducting of vehicular travel and/or affords a primary means of access by vehicles and pedestrians to abutting properties including the entire area within the right-of-way. The term includes those ways as shown on plats filed in the Office of the Erie County Clerk, whether improved or not.

STREET CLASSIFICATIONS

1. EXPRESSWAY. A divided arterial highway for through traffic to which access from the abutting properties is prohibited and all street crossings are made by grade-separated intersections.

2. MAJOR ARTERIAL. A high volume roadway that carries the major portion of daily trips to centers of activity in the metropolitan area. Major arterials (also called principal arterials) place a greater emphasis on mobility rather than access to land and include fully and partially controlled access facilities in three categories: Interstates, Expressways, and Streets. A major arterial serves major through movements between important centers of activities in a metropolitan area, and a substantial portion of trips entering and leaving the area. It also connects freeways with major traffic generators.

3. MINOR ARTERIAL. A street that connects and augments the major arterial system. Although its main function is still traffic mobility, a minor arterial performs this function at a somewhat lower level and places more emphasis on land access than does a major arterial. A system of minor arterials serves trips of moderate length and distributes travel to geographical areas smaller than those served by a major arterial.

4. COLLECTOR. Street that distributes trips from and channels trips to arterials. Additionally, these roadways provide access and circulation within residential neighborhoods. Collector streets provide for both access and circulation within residential, commercial, and industrial areas. Their access function is more important than that of arterials, and unlike arterials, their operation is not always dominated by traffic signals.

5. LOCAL COLLECTOR. A street that distributes lower volumes of traffic from predominantly residential developments to collector streets and arterials. Local collectors carry through traffic, but at lower volumes than collectors.

6. LOCAL STREETS. A street that provides for local traffic and the lowest level of mobility. Through traffic movement is discouraged on local streets.

7. NARROW RESIDENTIAL STREET. A private roadway built to Town specifications.

8. ALLEY. A narrow passageway between or behind buildings; a public or private rear access or service

STREET GRADE — The slope of the street as measured between two adjacent points located on the street centerline (See Grades).

STREET LINE — The right-of-way line associated with: 1) a public street; or 2) edge of pavement abutting a private street.

STREET PAVEMENT — The wearing or exposed surface of the roadway used by vehicular traffic excluding gutters, shoulders, and curbing.

SUBDIVISION — The division of any parcel of land into five or more lots, blocks or sites in any three year period, with or without streets or highways, for sale or for rent for residential lots or residential building plots.

Such division shall include resubdivision of parcels of land for which an approved plat has already been filed in the office of the County Clerk and which is entirely or partially undeveloped.

SUBDIVISION, RURAL CLUSTER — A residential development in accordance with § 278 of NYS Town Law in the R-R District that helps retain viable agriculture and open space; minimizes land use conflicts; provides for

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recreational and habitat corridors through linked open space networks; achieves flexibility, efficiency and cost reduction in the provision of services and infrastructure; and does not rely on central sewer facilities.

SUBDIVISION, MAJOR — See § 4-3-2.

SUBDIVISION, MINOR— See § 4-3-1.

SUBMISSION DATE — Date upon which the sketch plan, preliminary plat, or final subdivision plat, complete and accompanied by a fee, if required, and all supporting data required, has been received by the Planning Department.

SUPERELEVATION — The banking of a roadway along a horizontal curve so that motorists can safely and comfortably maneuver the curve at reasonable speeds.

THOROUGHFARE PLAN — The plan and recommendations adopted by the Planning Board or Town Board indicating existing and proposed freeways and streets.

TRAFFIC CALMING — The combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users. Examples of traffic calming devices include speed tables, speed humps, diverters, neck-downs, chicanes, bump-outs, and roundabouts.

UTILITIES — All lines and facilities related to the provision, distribution, collection, transmission or disposal of water, sanitary and storm sewage, oil, gas, power, information, telecommunication and telephone cable.

WETLAND — Areas regulated by the New York State Department of Environmental Conservation or applicable Federal agencies as Fresh Water Wetlands as prescribed by law.

PART 3
DESIGN STANDARDS

§ 3-1. General

3-1-1. **Intent.** These design standards are intended as a guide to sound land planning and are for typical development conditions. Should there be unusual topographic or physical development conditions, these standards may be waived in accordance with § 4-7.

3-1-2. **Conformity to Comprehensive Plan.** Subdivisions shall be designed to be in agreement with objectives of the Comprehensive Plan and in general compliance with the plan for the area.

3-1-3. **Conformity with Thoroughfare and Utilities Specifications.** The arrangement, character, extent, size, grade and location of all streets and public utilities shall be consistent with the Thoroughfare and Public Utilities Plans and shall be considered in their relation to existing and planned streets and utilities. Proposed subdivisions shall be designed in such a way as to avoid casting an undue burden on the street system, drainage system, or other public facilities planned for the area. Subdivisions shall be designed in conformance with the Town of Amherst Standard Details and Specifications and are available at the Town of Amherst Engineering Department.

3-1-4. **Conformity to the Zoning Ordinance.** Subdivisions shall conform to the Zoning Ordinance regulations and Zoning Map for the area involved.

3-1-5. **Suitability of Land and Relation to Natural Features.** Land deemed by the Planning Board to be unsuitable for human habitation because of health, safety, public welfare, or sanitary problems shall not be platted for residential use, nor for such other uses as may involve danger to health, life, or property. Such land within a plat shall be set aside for uses appropriate to existing conditions. In subdividing any land, due regard shall be shown for all natural features, such as tree growth, water courses, historic locations, or similar conditions.

§ 3-2. Streets

3-2-1. Hierarchy.

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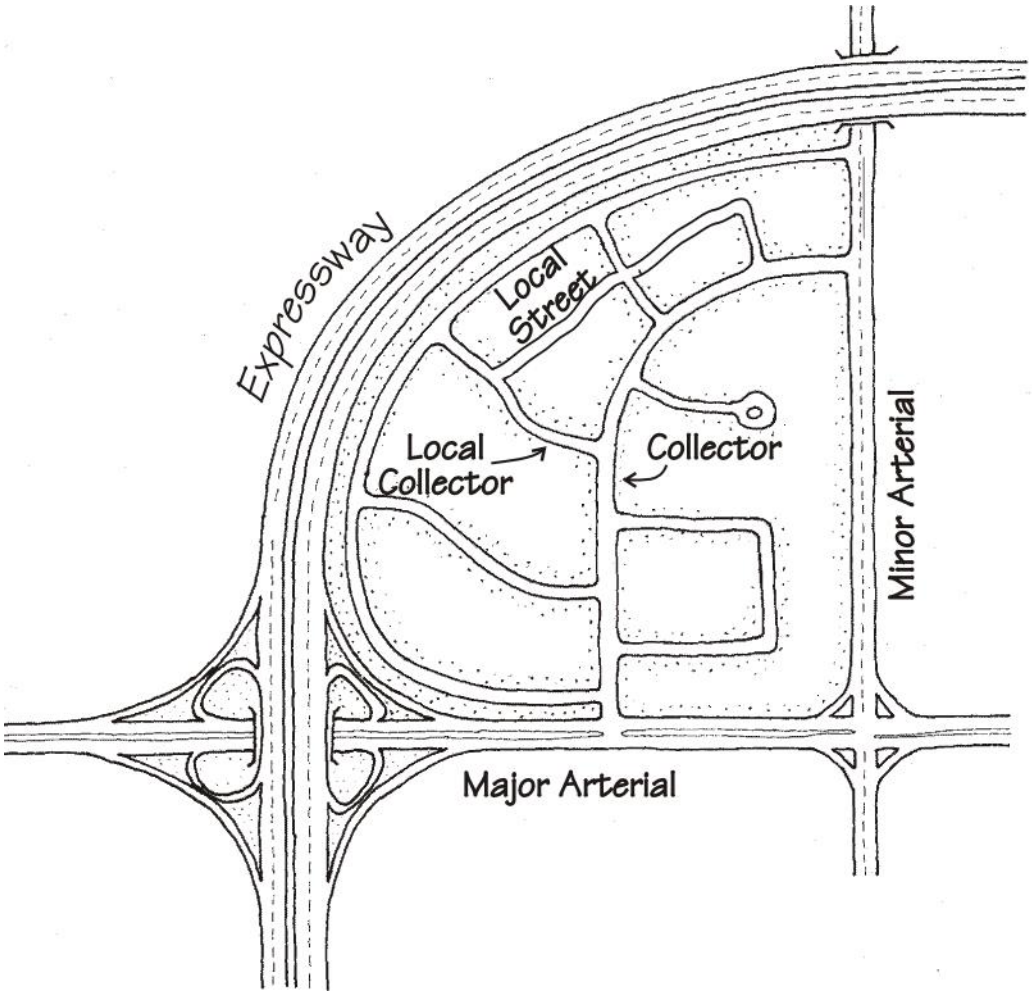
A. A street is a public way for purposes of vehicular travel and includes the entire area within the right-of-way. The street also serves pedestrian traffic and often accommodates public utility facilities within the right-of-way or on easements adjacent thereto. The improvement or development of streets is based on a functional street classification system which is part of the Comprehensive Plan.

B. A typical hierarchy of streets is shown below



3-2-2. General Design Guidelines. The following are general design guidelines for all public streets.

A. Street and pedestrian circulation patterns shall be compatible with objectives established by the Future Thoroughfare System in the Comprehensive Plan.

B. Planned layouts shall minimize overall length of local streets.

C. Driveway entrances shall be prohibited on arterial streets and shall be avoided wherever possible on collector streets.

D. Streets shall provide safe and convenient access to housing.

E. All dwellings shall be accessible by emergency and service vehicles.

F. Roadway networks shall improve efficiency and connectivity while preserving neighborhood character.

G. Traffic calming and access management measures shall be used in conjunction with a connected roadway network where needed.

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H. Provide for looping of utilities, where appropriate and desirable.

I. Necessary lighting along streets and walkways shall be provided.

J. Use of signs shall be minimized and signposts shall be unobtrusive.

K. Informational signs shall not compete with traffic control signs for driver attention.

L. Use of break-away street furniture shall be considered wherever possible and shall be grouped for aesthetic as well as safety values.

M. Sight distances shall be consistent with probable traffic speed, terrain, alignments, and climatic extremes.

N. Pedestrian, bicycle, and vehicular traffic shall be separated to the extent feasible.

O. Parks, play areas, and interior block open spaces, shall be visible from the street.

P. Horizontal and vertical street alignments shall relate to the natural contours of the site insofar as is practical and shall be consistent with other design objectives.

Q. Horizontal and vertical alignment of streets shall be selected to minimize grading quantities.

R. Wherever possible, street layouts shall be planned to avoid excessive runoff concentration.

S. Streets crossing drainageways inevitably will function as dams, and shall be designed to minimize adverse backwater effects, scour, and erosion.

3-2-3. General Construction Principles.

A. Pavement designs should be appropriate for the specific traffic load, subgrade soil, surface drainage, ground water, and climatic conditions existing at the pavement's location.

B. The thickness of a pavement should be a function of both the assured load supporting value of the earth subgrade beneath the pavement and the wheel load distribution characteristics of the pavement materials.

C. Pavement edge treatments other than curb and gutter may be used where conditions permit adequate drainage and the roadway base will not be adversely affected, subject to approval by the Highway Superintendent.

3-2-4. Specific Design Standards.

A. Geometric and Pavement Standards.

(1) Local Streets.

(a) The following standards shall apply to all local streets.

Overall Design Parameters	
Local streets are to be designed to provide the minimum stopping sight distance, maximum grade, minimum curve radii, and minimum design speed in accordance with American Association of State Highway Transportation Officials (AASHTO) Design Standards.	
~~Dinimum stopping~~ sight distance	~~115'~~
~~M~~aximum grade	~~8~~%

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~~M~~inimum curve radius	~~7~~2’
~~D~~esign speed	~~2~~0 – 30 mph
Roadway Requirements	
Minimum pavement width	28'
Minimum right-of-way width	~~52~~2'60’
Geometric Parameters	
Travel lane width and number	Two lanes 14’ wide
Median width	None required; additional width required for development requesting medians
Parking lane width	Two lanes, 7’ wide
Sidewalk width	~~4’’~~ 5’
Bike lane width	None required; share street
Planting strip/snow storage area	11’~~additional width optional~~ minimum

(b) The following figure illustrates the location and relationships between the parameters and requirements listed in the table.

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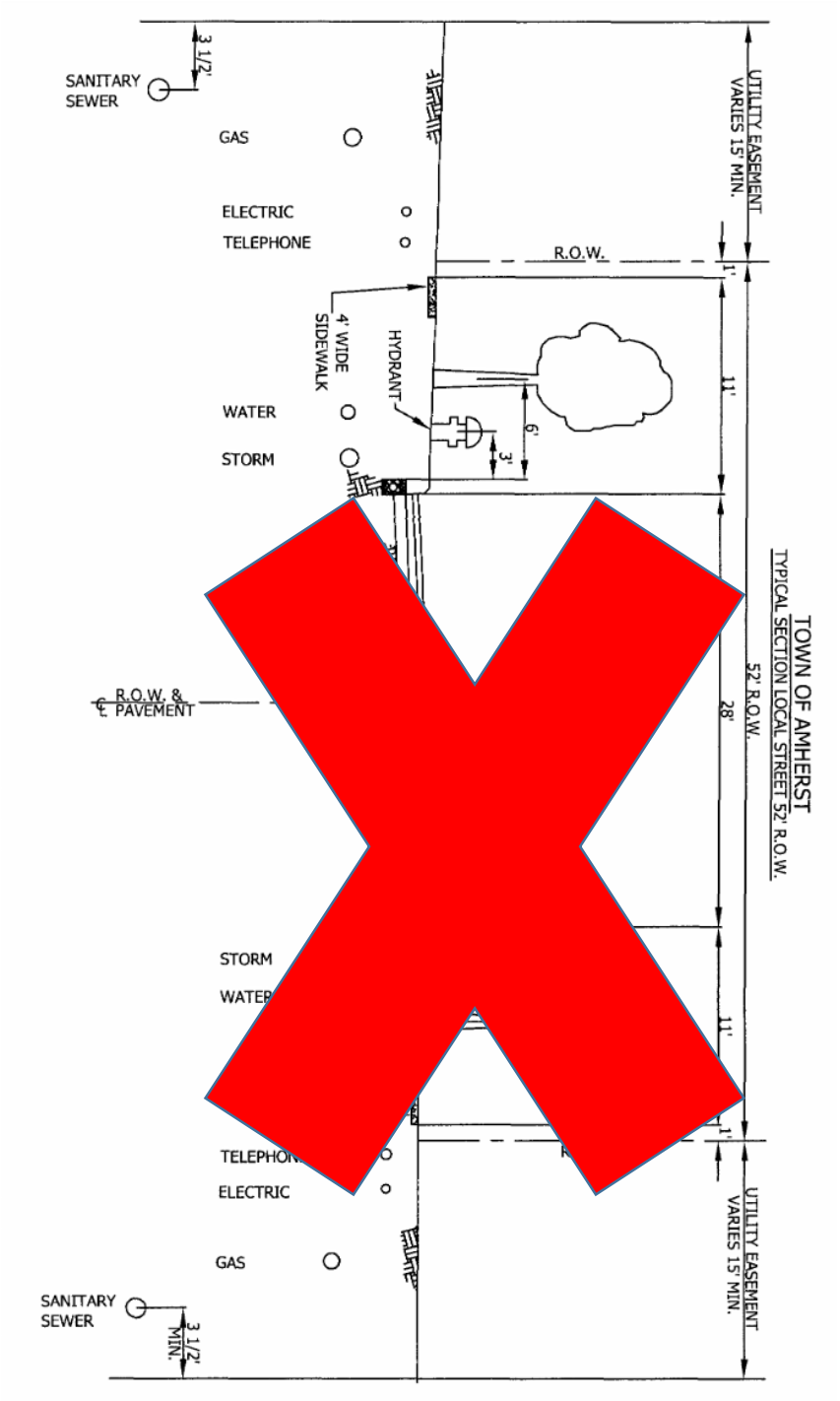

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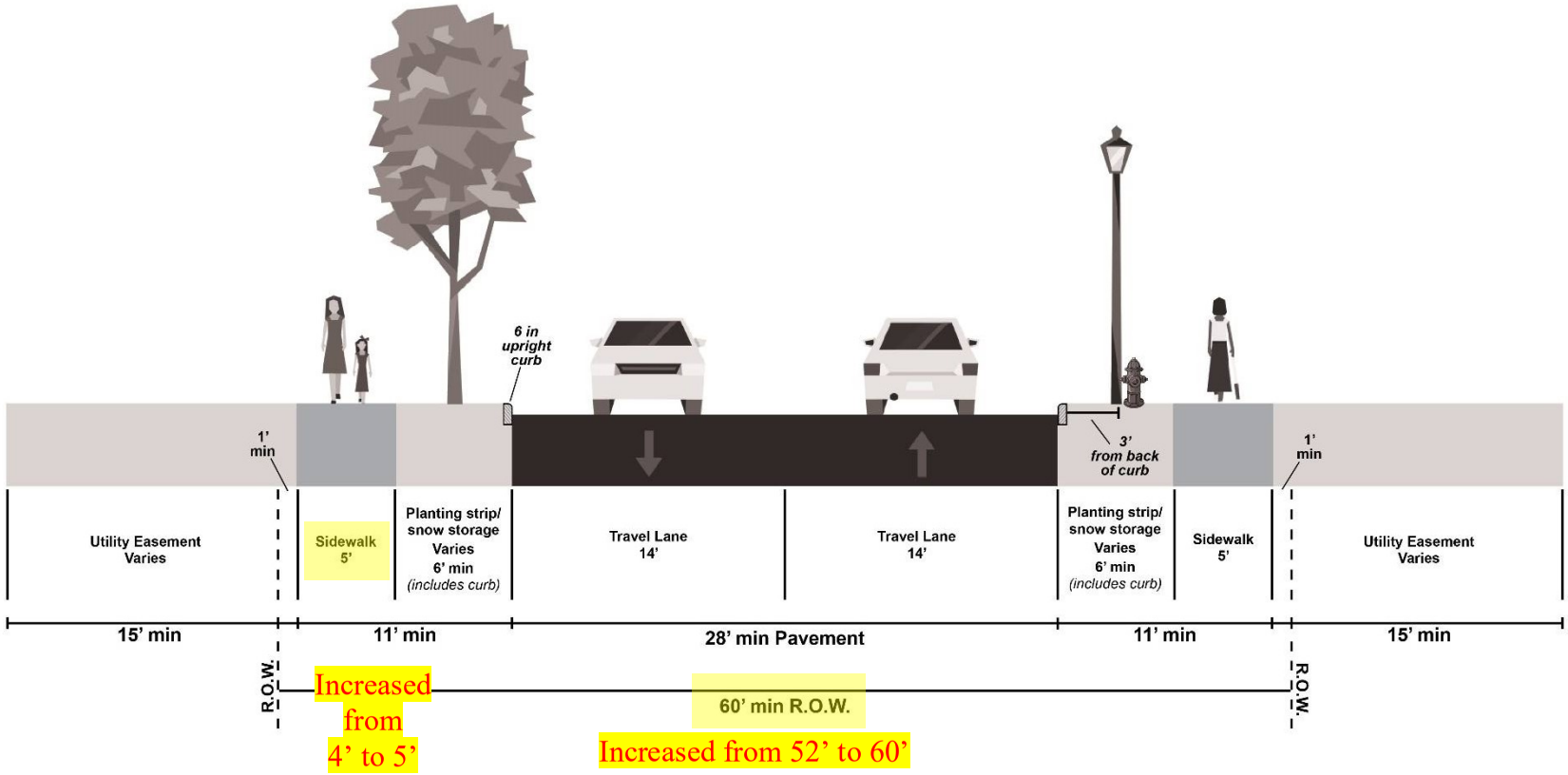
NEW SECTION REPLACES OLD SECTION DRAWING

Typical Section - Local Street



NOTE: Location of utilities to be determined by the applicable approving agency

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(2) Local Collectors.

(a) The following standards shall apply to all local collectors.

Overall Design Parameters	
Local collectors are to be designed to provide the minimum stopping sight distance, maximum grade, minimum curve radii, and speed in accordance with AASHTO Design Standards.	
~~Minimum stopping sight distance~~	~~235'~~
~~Maximum grade~~	~~7%~~
~~Minimum curve radius~~	~~200'~~
~~Design Speed~~	~~20 — 30 mph~~
Roadway Requirements	
Minimum pavement width	28'
Minimum right-of-way width	~~52'~~60'
Geometric Parameters	
Travel lane width and number	Two lanes 14' wide
Median width	None required; except where necessary to control access and/or to provide pedestrian refuge. Additional roadway and ROW width will be required.
Parking lane width	7 — 8' if required
Sidewalk width	~~4'~~5'
Bike lane width	None required; share street
Planting strip/snow storage area	15'; additional width optional.

(b) The following figure illustrates the location and relationships between the parameters and requirements listed in the table.

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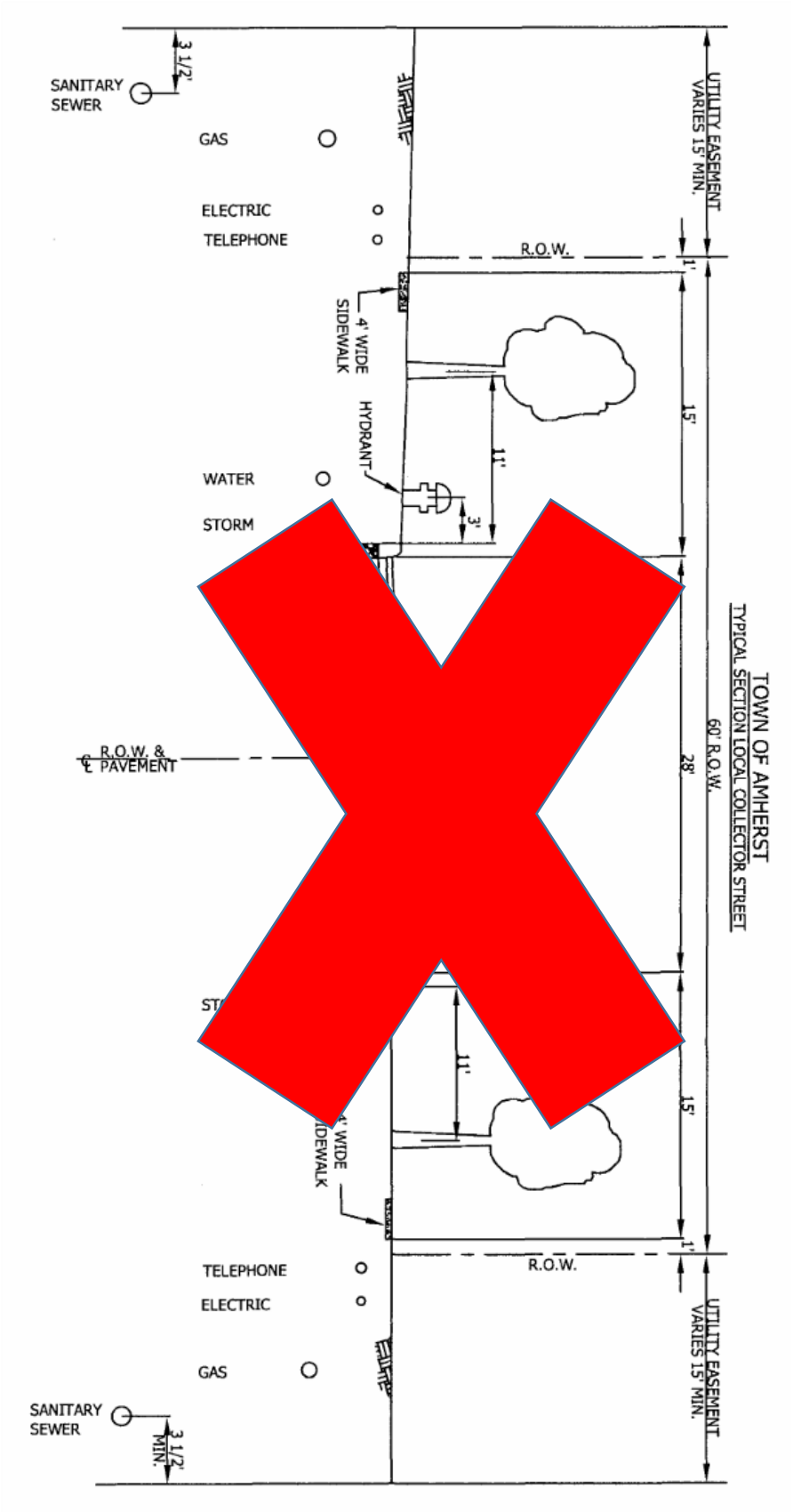

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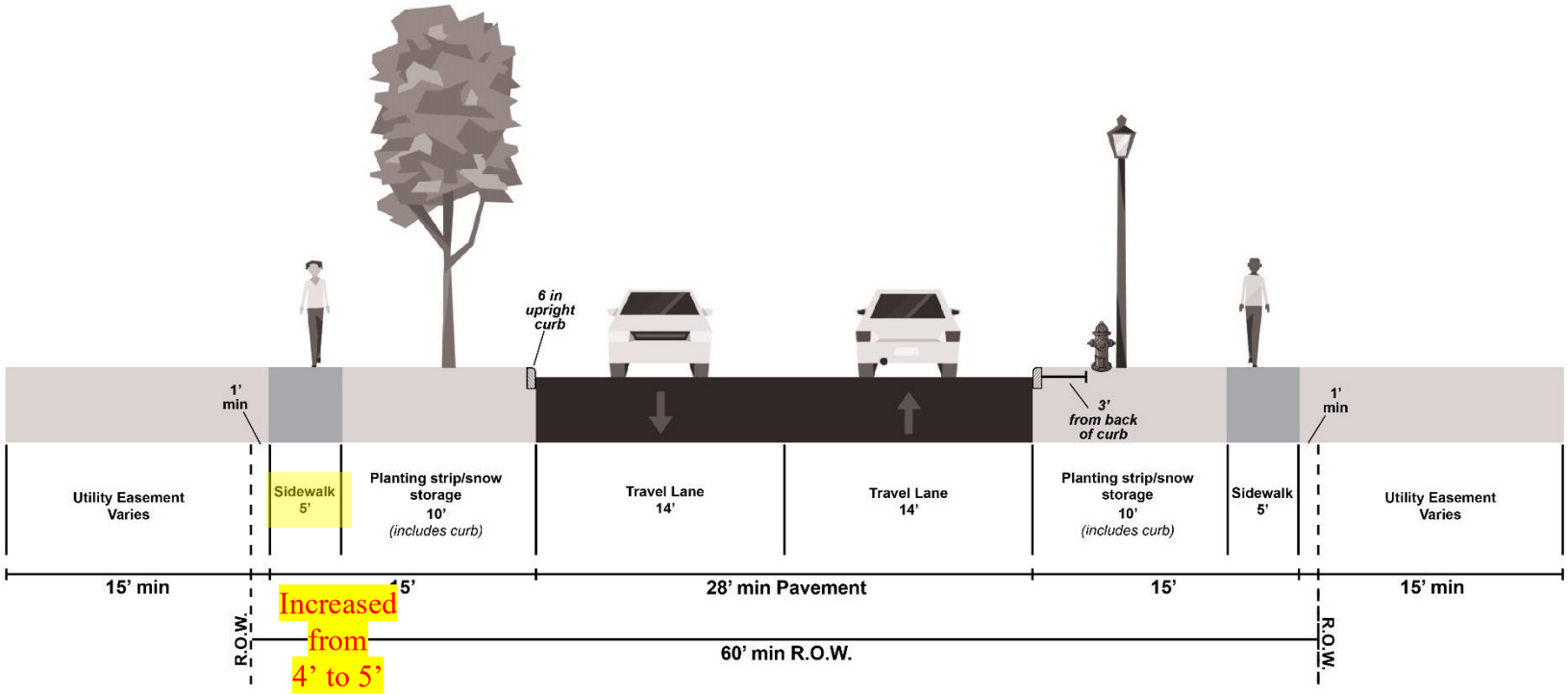
NEW SECTION REPLACES OLD SECTION DRAWING

Typical Section - Local Collector



NOTE: Location of utilities to be determined by the applicable approving agency

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(3) Collectors.

(a) The following standards shall apply to collectors.

Overall Design Parameters	
Collectors are to be designed to provide the minimum stopping sight distance, maximum grade, minimum curve radii, and speed in accordance with AASHTO Design Standards.	
~~Minimum stopping site distance~~	~~275'~~
~~Maximum grade~~	~~7%~~
~~Minimum curve radius~~	~~285'~~
~~Design Speed~~	~~30-60 mph~~
Roadway Requirements	
Minimum pavement width	32'
Minimum right-of-way width	70'
Geometric Parameters	
Travel lane width and number	Two 12' wide lanes
Median width	None required, except where necessary to control access and/or to provide pedestrian refuge. Additional roadway and ROW width will be required.
Parking lane width	Min. one 8' wide parking lane required.
Sidewalk width	5'
Bike lane width	Optional; where provided, two one-way 5' wide lanes located on the outside of the travel lanes.
Planting strip/snow storage area	19'; additional width optional.

(b) The following figure illustrates the location and relationships between the parameters and requirements listed in the table.

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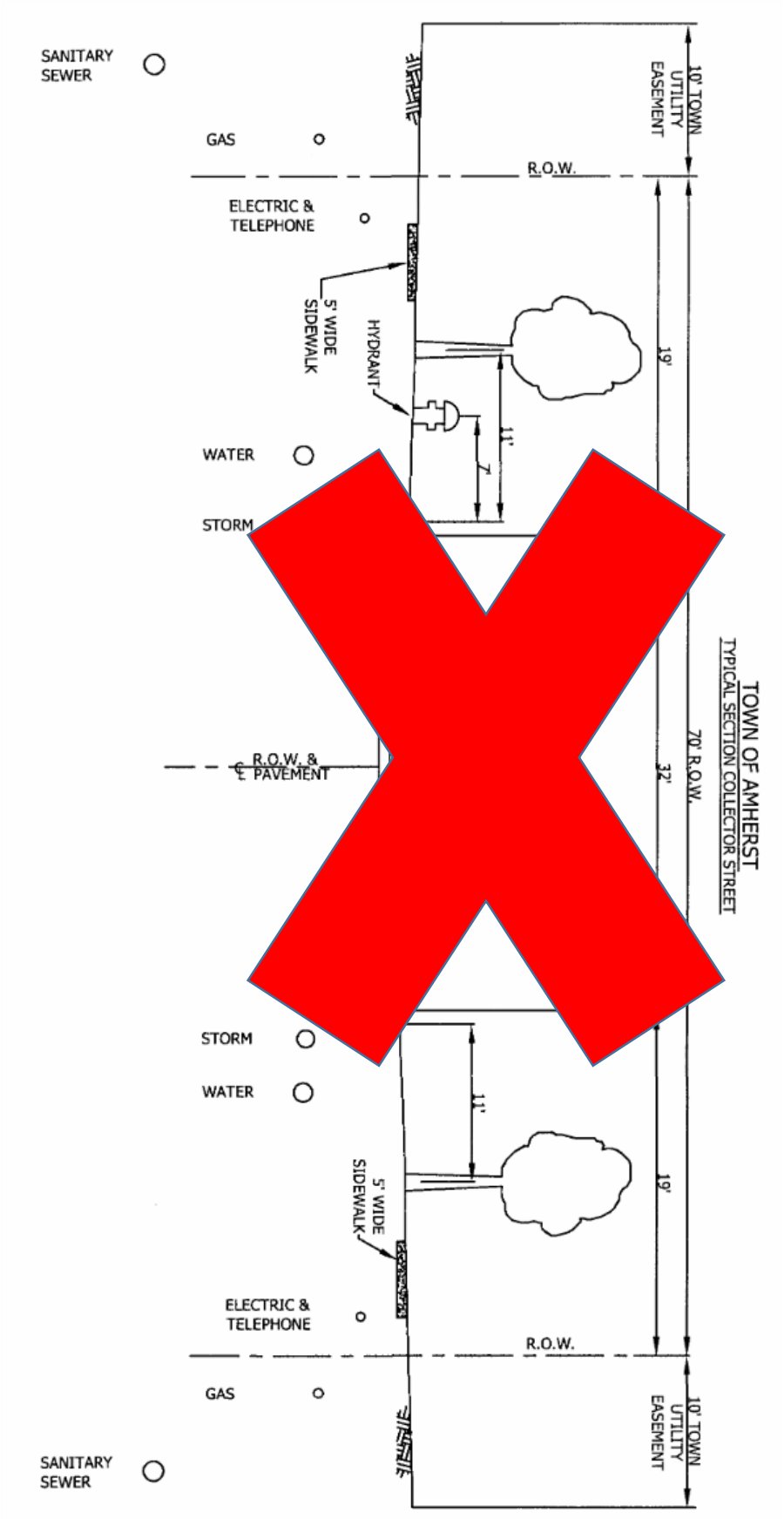

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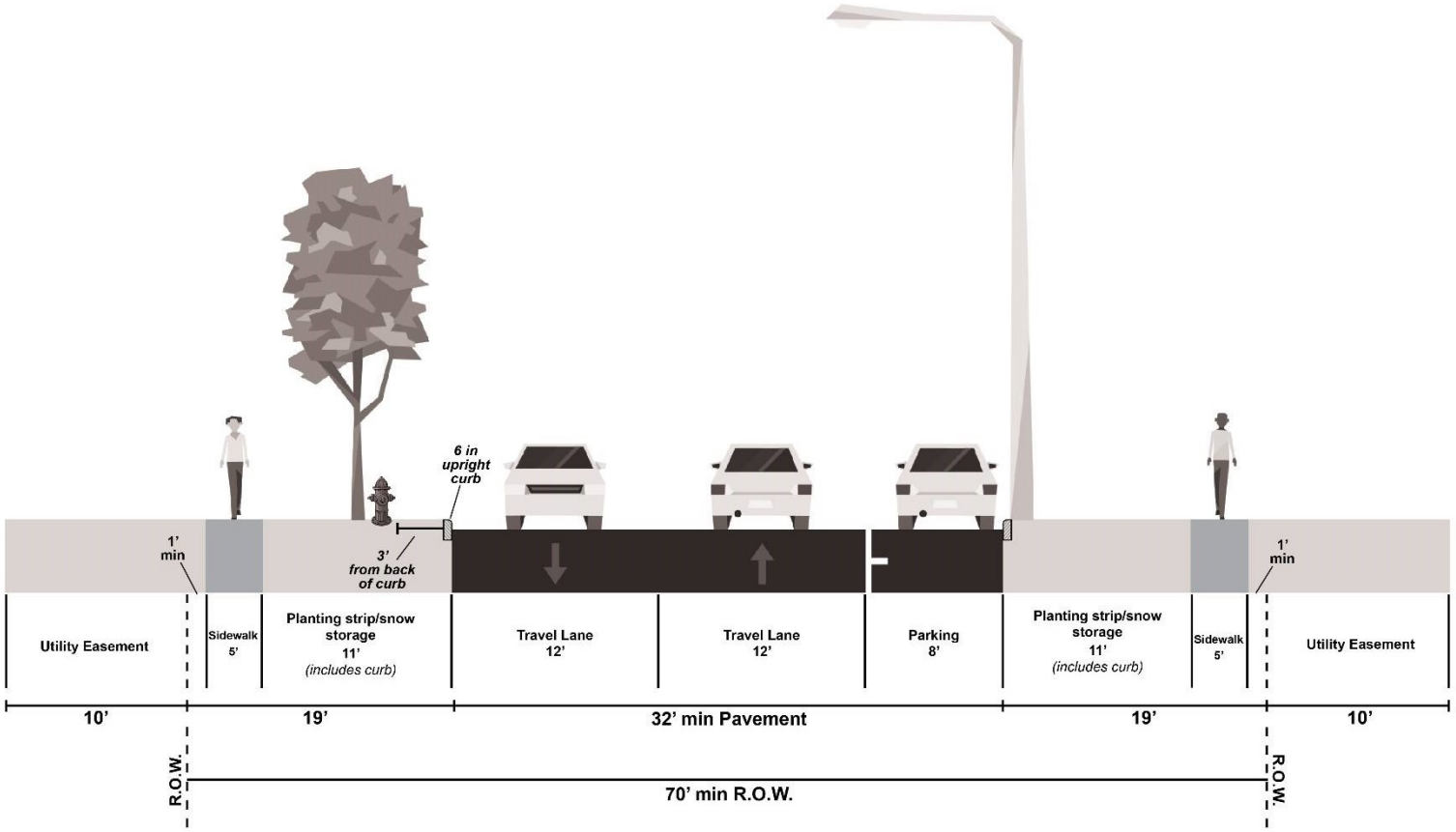
NEW SECTION REPLACES OLD SECTION DRAWING

Typical Section - Collector



NOTE: Location of utilities to be determined by the applicable approving agency

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(4) Minor Arterials.

(a) The following standards shall apply to all minor arterials.

Overall Design Parameters	
Minor Arterials are to be designed to provide the minimum stopping sight distan maximum grade, minimum curve radii, and speed in accordance with AASHTO Standards.	ign
~~Minimum stopping sight distance~~	~~275'~~
~~Maximum grade~~	~~7%~~
~~Minimum curve radius~~	~~443'~~
~~Design Speed~~	~~30 60 mph~~
Roadway Requirements	
Minimum pavement width	24'
Minimum right-of-way width	90'
Geometric Parameters	
Travel lane width and number	Two 12' wide lanes
Median/center turn lane width	13' where required
Parking lane width	8' where required
Sidewalk width	5'
Bike lane width	Optional; where provided, two o wide lanes located on the outsi travel lanes.
Planting strip/snow storage area	Distance from centerline to curb of plowed area in feet x 0.6; ac width optional.

(b) The following figure illustrates the location and relationships between the parameters and requirements listed in the table.

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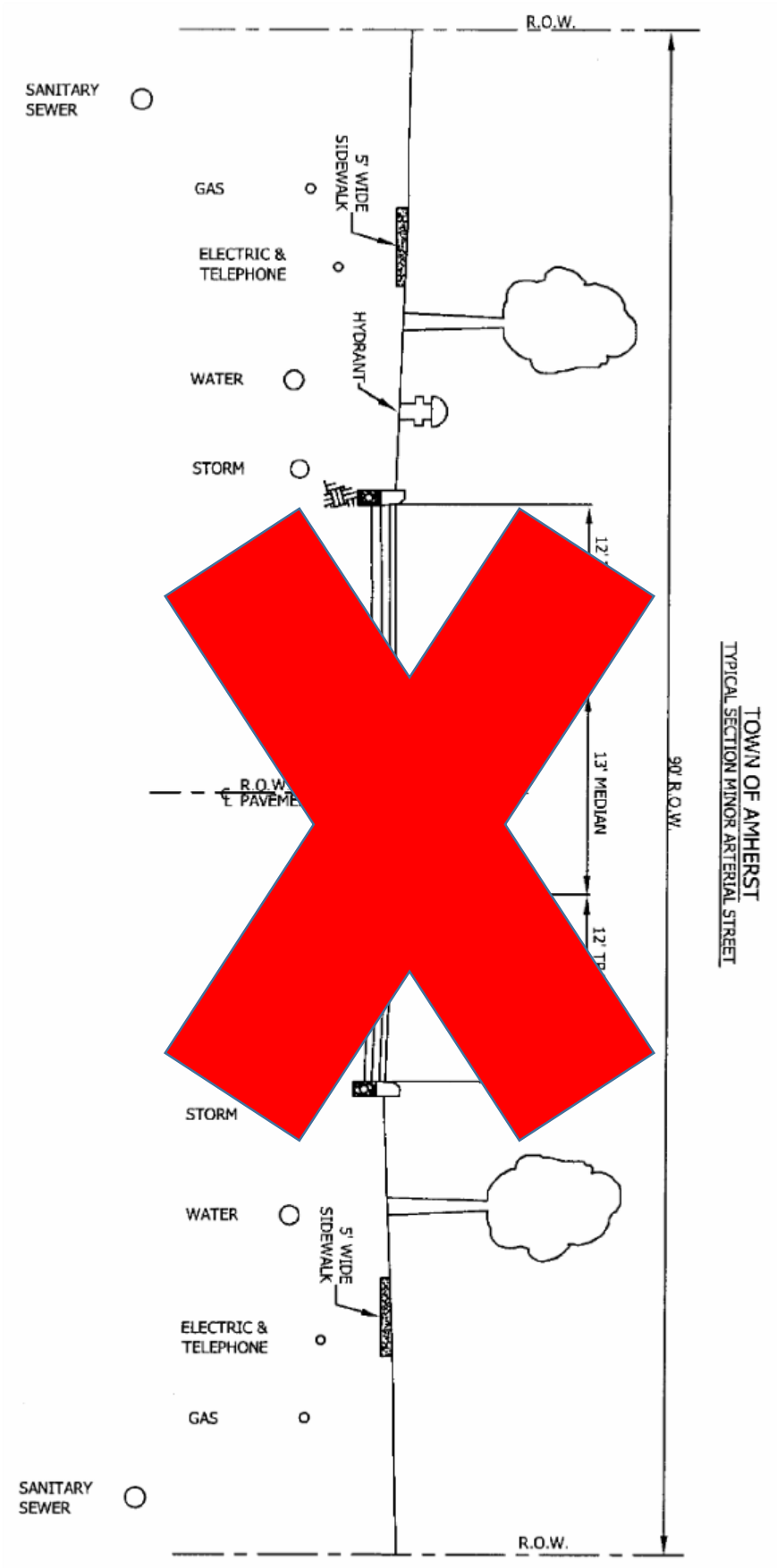

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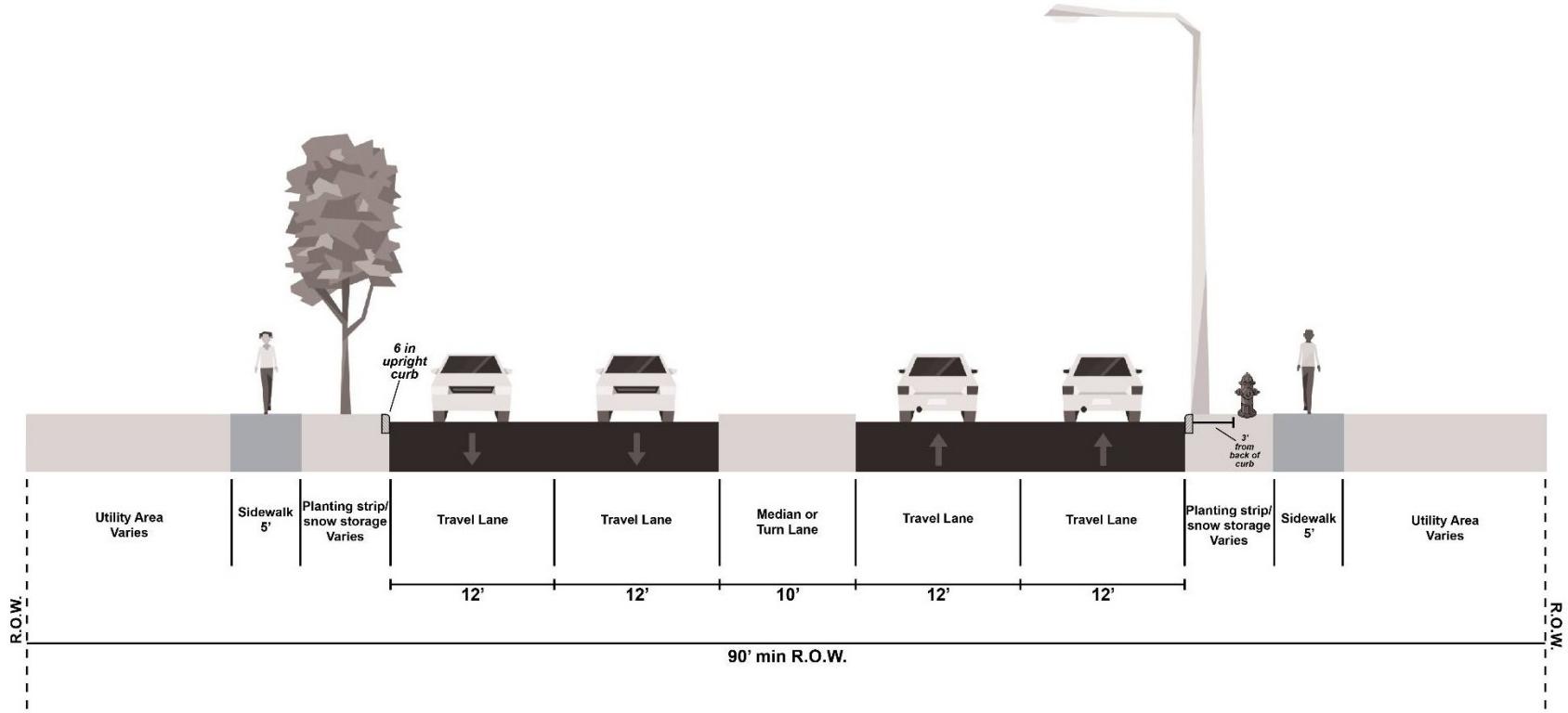
NEW SECTION REPLACES OLD SECTION DRAWING

Typical Section - Minor Arterial



NOTE: Location of utilities to be determined by the applicable approving agency

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(5) Narrow Residential Streets.

(a) The following standards shall apply to all narrow residential streets. Narrow residential streets shall be used in conjunction with a private alley.

Overall Design Parameters	
Narrow Residential streets are to be designed to provide the minimum stopping sight distance, maximum grade, minimum curve radii, and speed in accordance with AASHTO Design Standards.	
~~Minimum stopping sight distance~~	1~~15~~’
~~Maximum grade~~	8%
~~Minimum curve radius~~	7~~2~~’
~~Design Speed~~	2~~0 mph~~
Roadway Requirements	
Minimum pavement width	24'
Minimum right-of-way width	45'49.5'
Geometric Parameters	
Travel lane width and number	One 17' lane
Median width	None required
Parking lane width	One 7' lane
Sidewalk width	4'
Bike lane width	None required
Planting strip/snow storage area	10.5'; additional width optional.

(b) The following figure illustrates the location and relationships between the parameters and requirements listed in the table.

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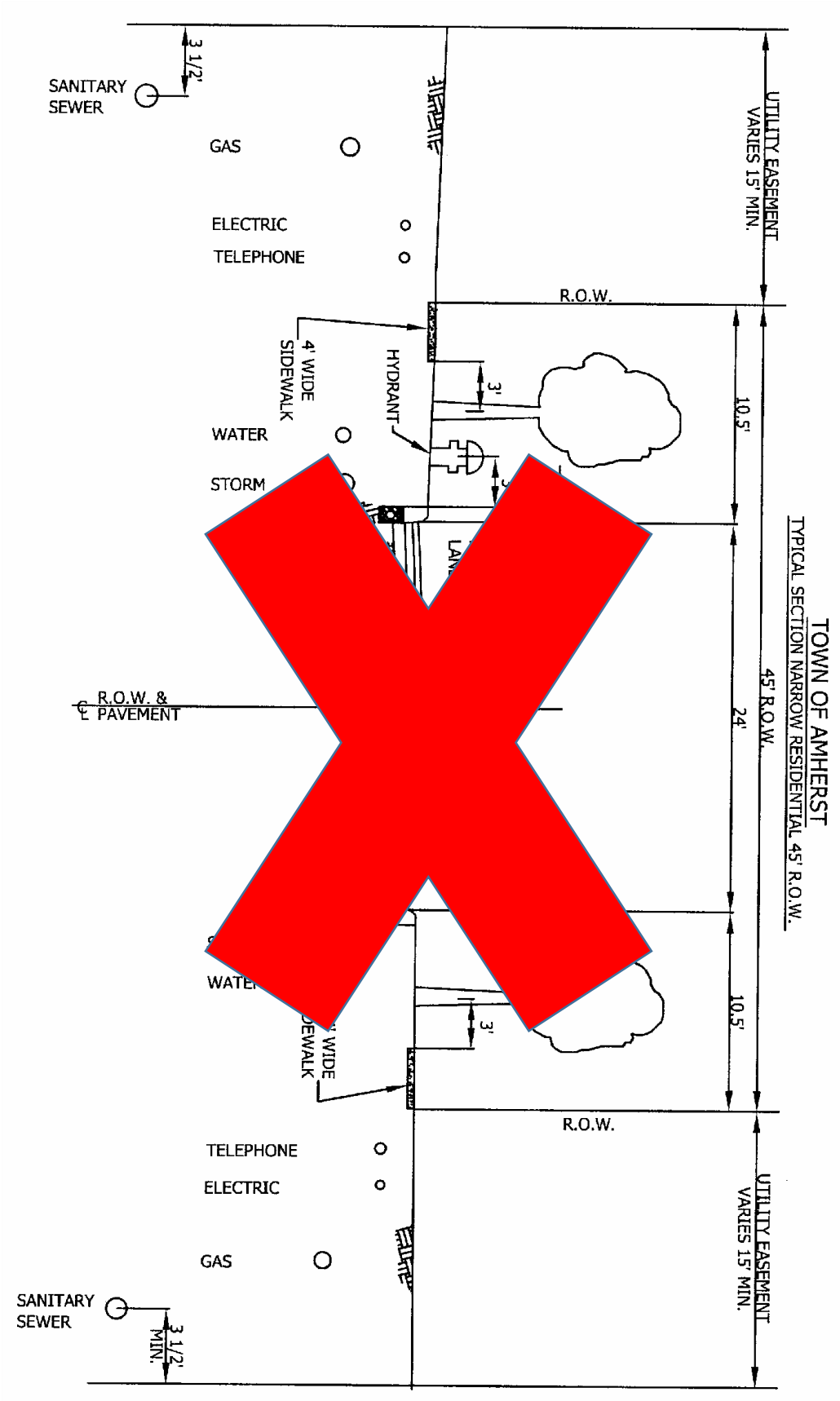

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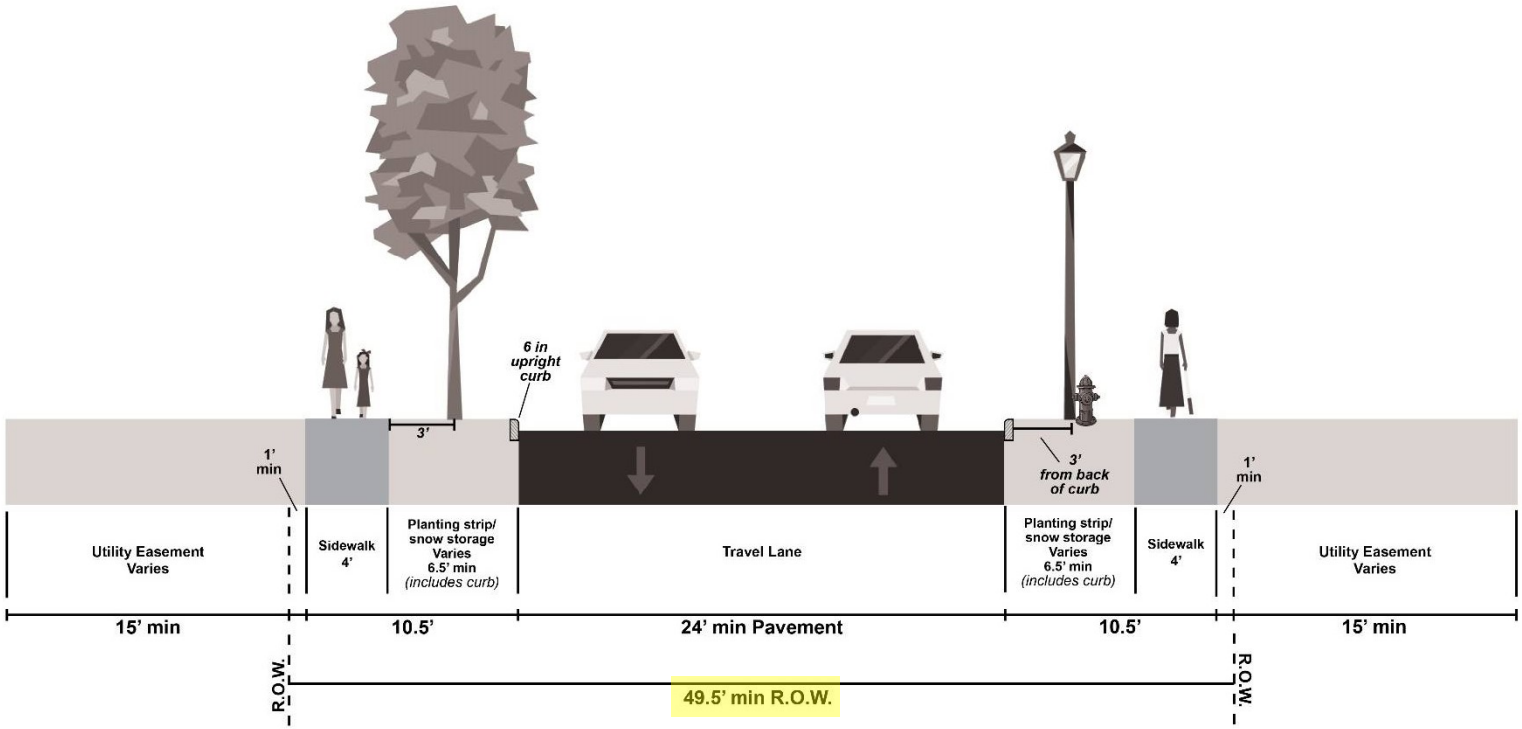
NEW SECTION REPLACES OLD SECTION DRAWING

Typical Section - Narrow Residential

**Private Streets*



Increased from 45' to 49.5'

NOTE: Location of utilities to be determined by the applicable approving agency

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(6) Alleys. A narrow passageway between or behind buildings; a public or private rear access or service roadway.

(a) The following standards shall apply to all alleys.

Overall Design Parameters	
Alleys are to be designed to provide the minimum stopping sight distance, maximum grade, minimum curve radii, and speed in accordance with AASHTO Design Standards.	
~~Minimum stopping sight distance~~	50~~'~~
~~Maximum grade~~	8~~%~~
~~Minimum curve radius~~	72~~'~~
~~Design Speed~~	20 ~~mph~~
Roadway Requirements	
Minimum pavement width	
Minimum right-of-way	
Geometric Parameters	
Travel lane width and number	One 12-20' lane
Median width	None required
Parking lane width	None required
Sidewalk width	None required
Bike lane width	None required
Planting strip/snow storage area	One 12-20' lane

(b) The following figure illustrates the location and relationships between the parameters and requirements listed in the table.

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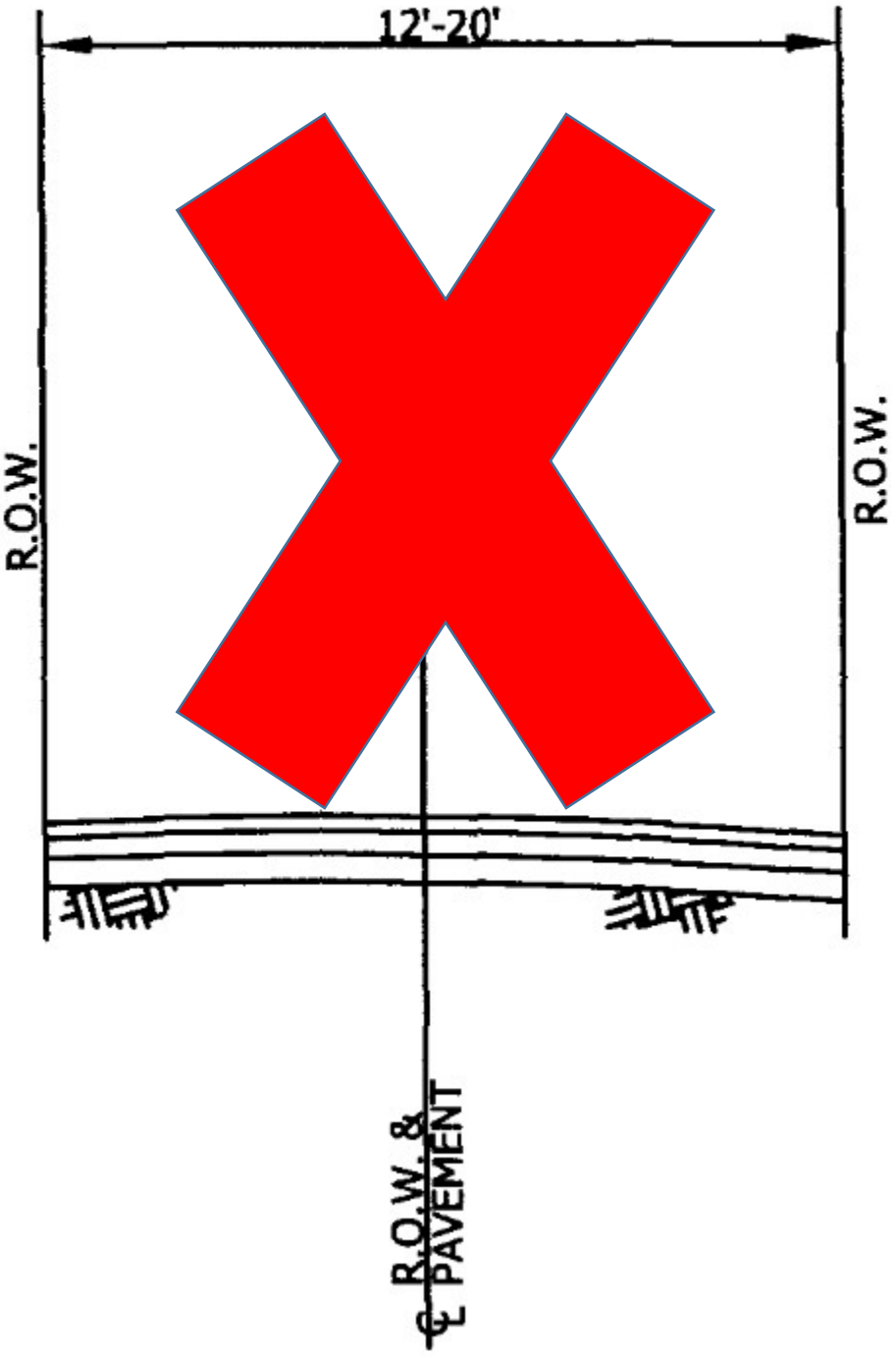
TOWN OF AMHERST

TYPICAL SECTION ALLEY 12'-20' R.O.W.



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Typical Section - Alley

NEW SECTION REPLACES OLD SECTION DRAWING

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(7) Standards Applying to all Streets.

(a) In order to provide for proper drainage, the minimum grade shall be 0.4 percent for streets with outer curbs. A grade of 0.35 percent may be used where there is a high type pavement, accurately crowned and supported on firm subgrade.

(b) An easement, when required, shall be a minimum of 15 feet for local streets and local collectors.

(c) Private streets shall be designed in accordance with the applicable standards in the tables above; and lot (parcel) lines are to be carried to the center of the roadway (not right-of-way).

B. Layout. The arrangement, character, extent, width and location of all streets shall be considered in their relation to existing and planned streets, to topographical conditions, to public convenience and safety, and in appropriate relation to the proposed uses of the land to be served by such streets. Where such streets are not shown on the Comprehensive Plan, the arrangement of streets in a subdivision shall either:

(1) Provide for the continuation or appropriate projection of existing streets ~~in~~ to surrounding areas; or

(2) Conform to a plan for the neighborhood approved or adopted by the Planning Board.

C. Alignment.

(1) Streets shall be laid out so as to intersect as nearly as possible at right angles and no streets shall intersect any other street at less than 80 degrees.

(2) The edge of pavement at street intersections shall be rounded with a radius of 20 feet, or of a greater radius where the Planning Board, Highway Superintendent, or Traffic and Safety Board deem it necessary.

(3) In the case of dead-end streets, where needed, the Board may require the reservation of a 50-foot wide easement or dedication, to provide for continuation of pedestrian traffic and utilities to the next street.

(4) Local streets shall connect with surrounding streets ~~where necessary~~ to permit the convenient movement of traffic, or to facilitate access to neighborhoods by emergency service vehicles, or for other sufficient reasons. ~~but connections shall be designed to avoid the use of such streets by substantial through traffic.~~

(5) ~~henever C~~connections to anticipated or proposed surrounding streets are required.~~, the~~ The right-of-way shall be extended to the property line, ~~and~~ the street shall be developed to the property line of the subdivided property (or to the edge of the remaining undeveloped portion of a single tract) at the point where the connection to the anticipated or proposed street is expected. No lot shall take access from the terminal end of such streets. The Planning Board may also require temporary turn-arounds to be constructed at the end of such streets pending their extension when such turn-arounds appear necessary to facilitate the flow of traffic or accommodate emergency or service vehicles.

(6) Street jogs with centerline offsets of less than 150 feet shall not be permitted.

(7) A tangent at least 100 feet long shall be introduced between reverse curves on major arterial and collector streets.

(8) An intersection of more than two streets shall be avoided unless specific conditions of design indicate otherwise.

(9) In general, street lines within a block, deflecting from each other at any one point by more than 10 degrees, shall be connected with a curve, the radius of which for the centerline of street shall not be less than 400 feet on major streets and collector streets and 200 feet on local streets.

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(10) Minor or secondary street openings into collector or major arterial roads shall, in general, be at least 500 feet apart.

(11) Where a tract is subdivided into lots substantially larger than the minimum size required in the zoning district in which a subdivision is located, the Board may require that streets and lots be laid out so as to permit future re-subdivision in accordance with the requirements contained in these Regulations.

(12) Alignment in residential areas shall fit closely with the existing topography so as to minimize the need for cuts or fills. There is advantage in residential areas in purposely making the alignment of such nature as to discourage high speed through traffic. Caution shall be taken in the design of the alignment that the safety of the facility is not reduced.

(13) Where curves are superelevated lower values apply, but the radius shall never be less than 115 feet for local streets and 275 feet for collector streets.

D. Intersections.

(1) **Design Principles.**

(a) Paved areas within intersections shall be minimized.

(b) Oblique intersections and large corner radii shall be avoided.

(c) Wherever possible, intersections on curves should be avoided.

(2) **Intersection Design.**

(a) Intersections, including median openings, shall be designed with adequate corner sight distance and the area kept free of obstacles.

(i) The corner sight distance for collector streets shall be a minimum of 300 feet.

(ii) For local streets the corner sight distance shall be a minimum of 200 feet.

(b) Intersecting streets shall meet at approximately a 90 degree angle.

(c) The minimum off-set for "T" intersections shall be 125 feet centerline to centerline.

(d) Intersections and stacking areas shall be designed with a flat grade; the maximum grade on the approach leg shall be less than five percent.

(e) At street intersections in residential areas and elsewhere where there are heavy pedestrian movements, the minimum radius of curb return where curbs are used or the outside edge of pavement where curbs are not used, shall be a minimum radius of 30 feet.

E. Street Connectivity Requirements. An interconnected street system is necessary in order to promote orderly and safe development by ensuring that streets function in an interdependent manner, provide adequate access for emergency and service vehicles, enhance access by ensuring connected transportation routes, and provide continuous and comprehensible traffic routes.

(1) **Connectivity Defined.**

(a) Connectivity is defined by the ratio of links to nodes in any subdivision.

(b) Connectivity is defined by the ratio of links to nodes in any subdivision.

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(c) Connectivity ratio is the number of street links divided by the number of nodes or end links, including cul-de-sac heads.

(d) A link is any portion of a public or private street meeting Town specifications and is legally accessible defined by a node at each end or at one end. Stubs to adjacent property shall be considered links. Alleys shall not be considered links.

(e) A node is the terminus of a street or the intersection of two or more streets.

(f) Any location where a street name changes shall be considered a node.

(g) Any curve or bend of a street that exceeds 75 degrees shall receive credit as a node. Any curve or bend of a street that does not exceed 75 degrees shall not be considered a node.

(2) **Required Ratio.**

(a) The street network for a subdivision of ~~30~~ 6 acres or more ~~lots~~ with internal roads or access to any public road shall achieve a connectivity ratio of not less than 1.40, measured within the subdivision.

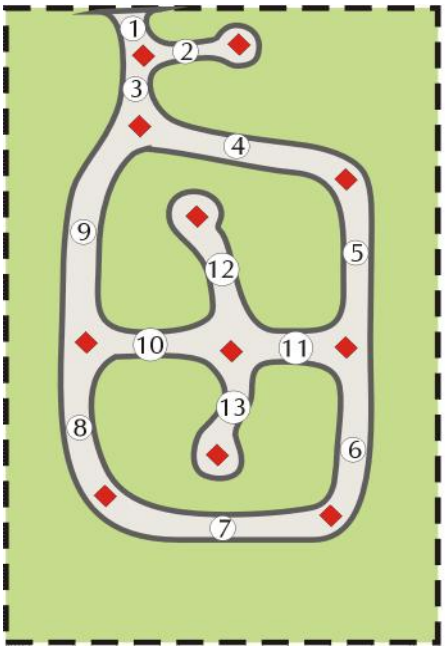
(b) Street links and nodes along a local collector, collector or arterial street providing access to a proposed subdivision shall not be considered in computing the connectivity ratio.

(c) A higher connectivity ratio in a surrounding area shall not provide justification to reduce the required connectivity of a proposed subdivision.

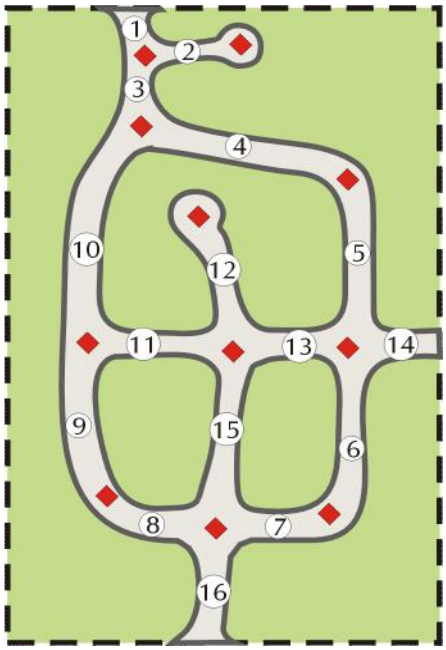
(d) The Planning Board may permit a lower connectivity ratio based upon site constraints.

(3) **Sample Calculation.** The following sample calculation and figures show how the street connectivity ratio for a subdivision shall be calculated.

EXAMPLE 1: Does not meet ratio



EXAMPLE 2: Modified to meet ratio



Number = Link ♦ = Node

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(4) **External Access Required.**

(a) All subdivisions shall provide the appropriate number of fire apparatus access roads, as described in § 7-6-7(c) of the Zoning Ordinance, Fire Apparatus Access Road Requirements.

F. Cul-de-sac Streets.

(1) ~~A curbed permanent turnaround shall be provided at the end of any permanent dead-end street. This turnaround may be T- or circular-shaped. The commonly used circular form shall have the following dimensions. A curbed permanent turnaround shall be provided at the end of any permanent dead-end street. This turnaround may be T- or circular-shaped. The commonly used circular form shall have the following dimensions.~~ Cul-de-sac street designs are discouraged in favor of future road connections and may only be used where there is no opportunity for a roadway extension and approved by the Town of Amherst Planning Board. This roadway terminus shall be circular-shaped. The circular form shall have the following dimensions.

(a) Approval by the Planning Board;

(b) Cul-de-sacs are only to be used when no opportunity for roadway extensions exist.

Standard	Without Island	With Island
Minimum Cul-de-Sac Radii (including ROW)	62 ft	66 ft
Minimum Cul-de-Sac Radii (to inside of curb)	52 ft	56 ft
Minimum pavement width	28 ft	36 ft
Right-of-way width, minimum	50 ft	50 ft
Utility Easement Width	15 ft	15 ft*
Maximum island radii	—	20 ft
* May be modified by the Planning Board or Director.		

(2) An unpaved island may be provided at the center of the turnaround in accordance with the standards in the table above and provided that:

(a) The island shall be surrounded by ~~an island curb~~ a mountable curb.

(b) The surface of the island shall be ~~landscaped~~ delineated with vegetative landscape material.

(c) Landscaping or other elements located in the island shall not interfere with the sight distance standards in § 3-2-4D(2).

(d) The island shall have a minimum diameter of 20 feet measured to the back of the curb.

(e) The petitioner shall provide for perpetual maintenance of the unpaved island through a homeowners association or other acceptable organization.

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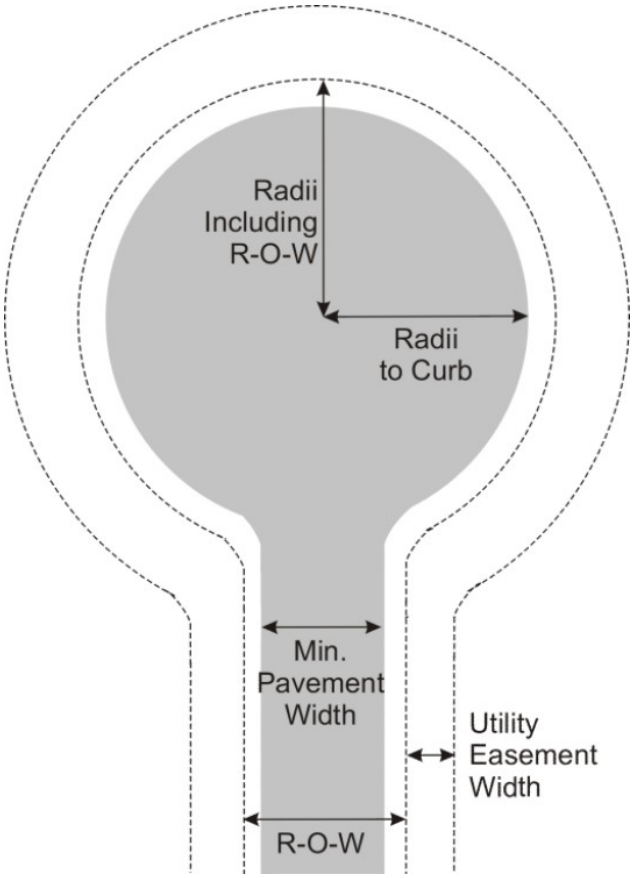
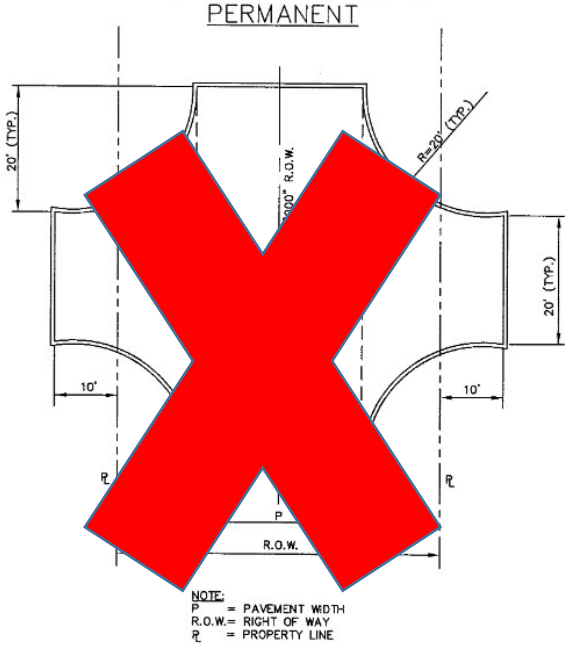


(3) The T-shaped turnaround shall have the dimensions required in the figures below.

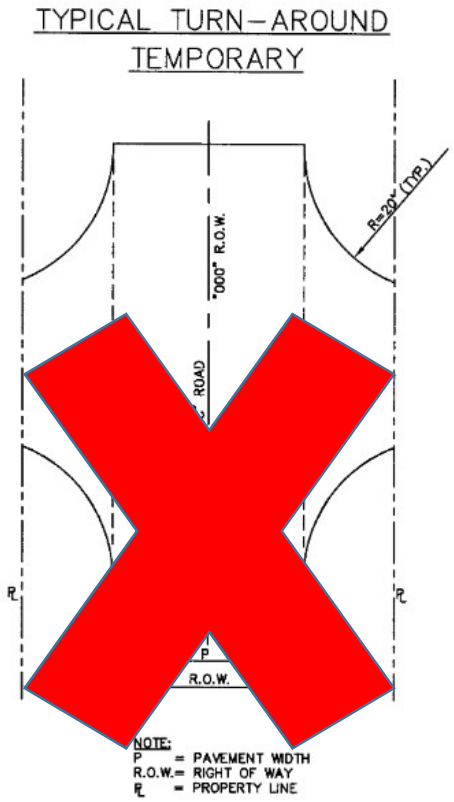
(a) No lot shall take access to a temporary turnaround ~~unless permission is granted at the discretion of the Highway Superintendent.~~ All temporary turnarounds must meet Appendix D of NYS Fire Code.

TYPICAL TURN–AROUND
PERMANENT



NOTE:
TEMPORARY & PERMANENT TURNAROUNDS CONSTRUCTED
USING STANDARD PAVEMENT SECTION

TYPICAL TURN–AROUND
TEMPORARY



NOTE:
TEMPORARY & PERMANENT TURNAROUNDS CONSTRUCTED
USING STANDARD PAVEMENT SECTION

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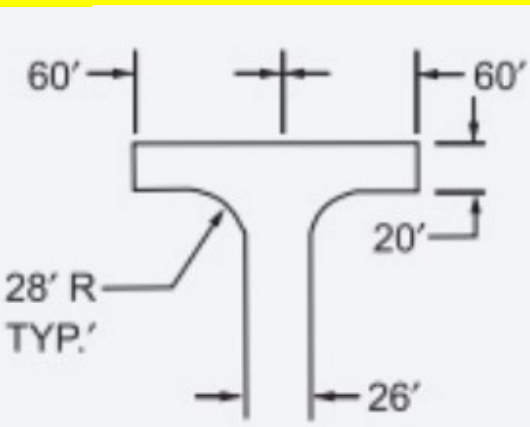
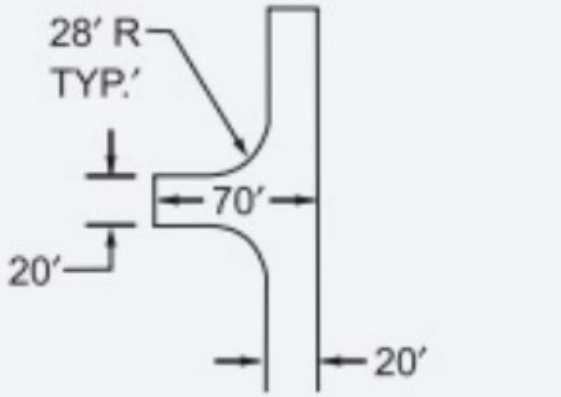
(4) All turnarounds shall contain adequate space for snow storage and for the maneuvering of emergency vehicles.

NEW IMAGES TO REPLACE EXISTING ONES



120′ HAMMERHEAD



ACCEPTABLE ALTERNATIVE
TO 120′ HAMMERHEAD

G~~G~~. **Curbs.** Minimum curb specifications and the measurement at pavement width are shown in the figure below. ~~There are three types of curbing which shall be permitted. However, i~~It is the policy of the Town of Amherst that Type "A" curbing shall be used for new public streets.~~wherever possible. The final selection of curbing shall be dependent on the site conditions, design character of the proposed subdivision and the anticipated traffic.~~

Type "A" Curbing

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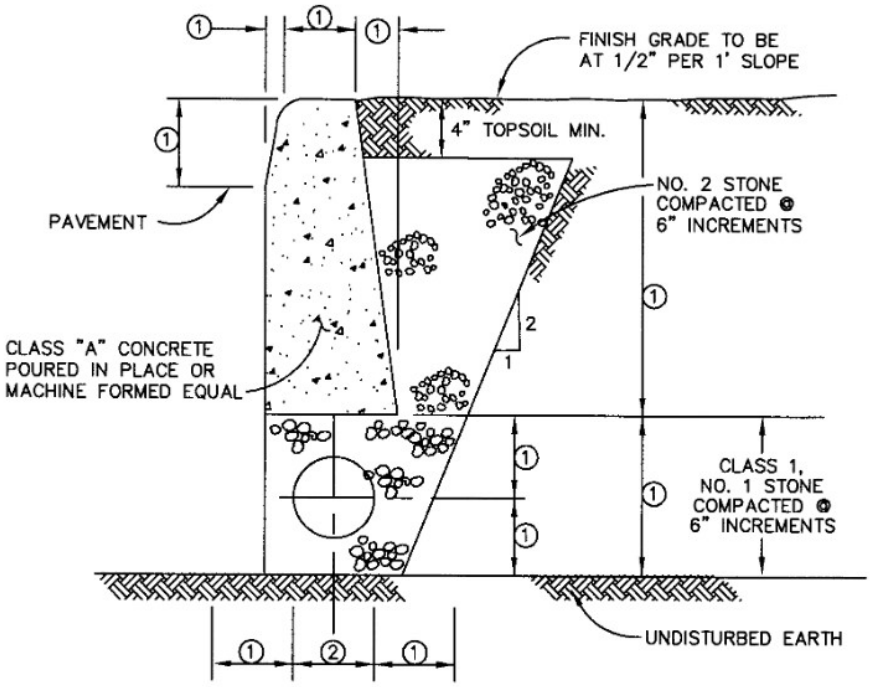

NOTE:
① DIMENSIONS ARE FOUND ON THE CURRENT STANDARD DETAILS ON FILE AT THE TOWN ENGINEERING DEPARTMENT
② P.V.C. UNDERDRAIN TO BE SDR-35, ASTM 27-29 OR EQUAL

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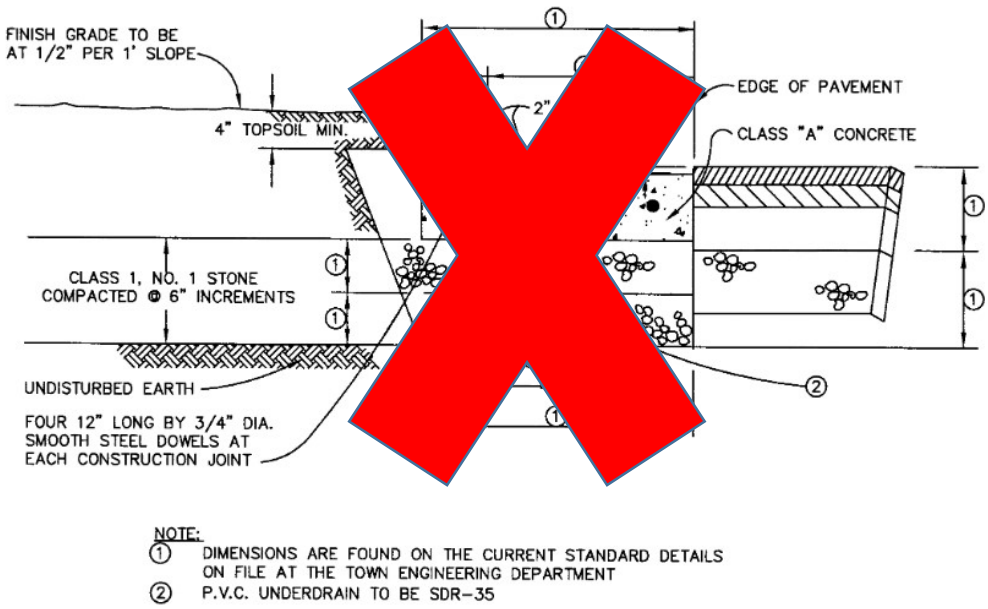
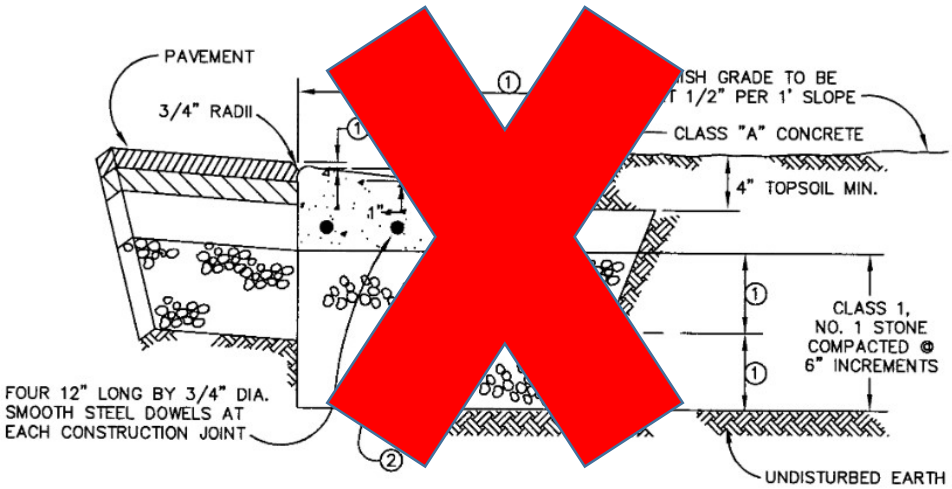
Type "B" Curbing
Poured in Place



NOTE:
① DIMENSIONS ARE FOUND ON THE CURRENT STANDARD DETAILS ON FILE AT THE TOWN ENGINEERING DEPARTMENT
② P.V.C. UNDERDRAIN TO BE SDR-35

Type "C" Curbing
Poured in Place



NOTE:
① DIMENSIONS ARE FOUND ON THE CURRENT STANDARD DETAILS ON FILE AT THE TOWN ENGINEERING DEPARTMENT
② P.V.C. UNDERDRAIN TO BE SDR-35

H. **Sidewalks and Pedestrian Circulation.** A plan for safe and convenient pedestrian circulation within the subdivision and between the subdivision and surrounding areas shall be provided. Such plan ~~may~~ shall provide for walks along ~~the~~ proposed and existing streets, along rear property lines or in some other location acceptable to the Planning Board. The pedestrian circulation plan as approved by the Planning Board shall be based on expected use

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and function consistent with the following standards. A list of roads and their functional classifications is available from the Town of Amherst Planning Department.

(1) Pedestrians shall have convenient access to schools, shopping, and existing or possible public transportation load points.

(2) Pedestrian and bicycle-way alignments shall have a reasonable relationship to foreseeable movement, parking, and community facilities, and shall be safe, secure, and attractive.

(3) Potential pedestrian, bicycle, and vehicular conflicts shall be minimized.

(4) Pedestrian and bicycle travel routes shall be selected to have minimum practical change in grade (elevation) throughout their lengths.

(5) S~~S~~idewalks shall be installed on existing and proposed streets unless waived by the Planning Board as a part of an approved ~~site plan~~ subdivision or by the Town Board. ~~in which event they shall be constructed in accordance with Chapter 83, Building Construction Administration, of the Town Code and located in accordance with § 3-2-4A.~~

(6) Sidewalks shall be installed on all collector streets and arterials on all road frontages, as applicable, and shall be located in accordance with § 3-2-4A.

(7) Sidewalks shall be of a width as required in the specifications for sidewalk construction available from the Town of Amherst Engineering Department, Town of Amherst Standard Details and Specifications and Chapter 83, Building Construction Administration, of the Town Code.

(8) All required ramps and curb cuts shall be constructed to be in compliance with the requirements of the Americans with Disabilities Act and be included and constructed with the P.I.P. for the roadway.

(9) The Planning Board may require that sidewalks on existing or proposed streets be included and constructed with the P.I.P. for the roadway.

I. ~~R~~**Roadway Width for Bridges and Culverts.** The minimum clear width for all new bridges and culverts shall accommodate sidewalks or an area for pedestrians on both sides. The width of the sidewalk or areas shall depend on the road classification. ~~on streets with curbed approaches shall be the same as the curb-to-curb width of the approaches. For streets with shoulders and no curbs, the bridge width shall be the same as the approach roadway including shoulders. Sidewalks on the approaches shall be carried across all new structures and shall be considered an additional width to the bridge. There shall be at least one sidewalk on all sidewalk bridges.~~ There shall be ssidewalks installed on both sides of all bridges/culverts. ~~and the Right-of-Way must include reserve for future sidewalk installation on the other side.~~

J. Pavement.

(1) The design of the pavement and subbase shall be consistent with the specifications in the Town of Amherst Standard Details and Specifications, available at the Town of Amherst Engineering Department.

(2) Due to the variables inherent in any design there can be no minimal standard. Each design shall be reviewed ~~on its own merits.~~and approved by the Town of Amherst Engineering Department on its own merits.

~~(3) Pavement cross slope shall be adequate to provide proper drainage. The recommended standard is 0.020 feet per foot.~~

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K. **Superelevation.**

(1) Superelevation is advantageous for street traffic operation, but in built up areas the combination of wide pavement areas, proximity of adjacent development, control of cross slope and profile for drainage, the frequency of cross streets and other urban features combine to make its use impractical or undesirable. Usually superelevation is not provided on local streets in residential and commercial areas; it should be considered on those in industrial areas. Superelevation shall be provided on collector streets wherever operating speeds will not be low.

(2) Where superelevation is used, street curves shall be designed for a maximum superelevation rate of 0.04 to 0.06 feet per foot.

L. **Paved Shoulders.** Paved shoulders, exclusive of on-street parking, are permitted on arterial or collector roads. Such shoulders shall be a minimum of six feet in width and shall be designed as an integral part of the road, accommodate other modes of mobility, and shall be constructed according to the Town's minimum specifications as detailed in the Town of Amherst Standard Details and Specifications, available at the Town of Amherst Engineering Department.

M. **Railroad-Street Grade Crossings.** Railroad-street grade crossings are to be designed in accordance with AASHTO Standards and the appropriate grade crossing protection devices shall be installed at all railroad-street grade crossings.

~~Appropriate grade crossing protection devices shall be installed at all railroad-street grade crossings.~~

~~The minimum stopping sight distance for any street that intersects a railroad track shall be 200 feet.~~

N. **Clearance to Above-Grade Obstructions.** A minimum clearance of two feet shall be provided between the face of curb or edge of shoulder and above-grade obstructions, such as utility poles, lighting poles, and fire hydrants. On all streets these obstructions shall be located at or near the right-of-way line and outside of sidewalks.

O. **Roadway Lighting. [Amended 10-17-2022 by L.L. No. 20-2022]**

(1) Roadway lighting is required at all intersections and continuous lighting shall be provided on all proposed or existing roadways within a subdivision. If applicable the Town's lighting district shall be expanded to incorporate the proposed subdivision.

(2) The Planning Board as part of subdivision approval may waive the requirement for street lighting taking into consideration pedestrian and vehicle safety. The Planning Board may request independent reports or refer such a request to other agencies for recommendation.

P. **Traffic Control Devices.**

(1) It is important that there be consistent and uniform application of traffic control devices. Details of the standard devices and warrants for many conditions are found in the "Manual on Uniform Traffic Control Devices" prepared by the Federal Highway Administration and supplemented by the New York State D.O.T.

(2) Geometric design of streets should include full consideration of the types of traffic control to be used, especially at intersections where multiphase or actuated traffic signals are likely to be needed.

Q. **Landscaping, Erosion Control, and Street Trees.**

(1) **Landscaping and Erosion Control.**

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(a) The Planning Board can require and shall carefully consider all landscaping elements within the right-of-way. ~~especially in cul-de-sacs, islands, and other areas where public ownership and maintenance will be required.~~ A detailed planting plan shall be submitted for the planting/snow storage area, and all other such areas as required and approved by the Planning Board, after receiving a recommendation from the Town's Planning Director, as a part of the preliminary platting process.

(b) A Landscape Plan for the area within ten feet ~~form~~ from the edge of pavement along private streets shall be submitted with the preliminary plat. The owner shall be responsible for all planting, maintenance, and necessary replacement.

(2) **Street Trees.**

(a) **Tree Removal Permit.** No trees shall be removed from an area in anticipation of development unless a Tree Removal Permit has been obtained under the Tree Local Law, Town Code Chapter 179.

(b) **Trees Required.**

(i) The issuance of each building permit for buildings adjacent to a public street shall be subject to planting one tree per forty feet of street frontage ~~–~~as per Local Tree Law, Town Code Chapter 179, Trees.

(ii) At the time of filing the building permit, the Town Clerk shall collect the cost of planting the required trees which cost shall be determined by the Town Board from time to time.

(c) **Specifications for Planting.**

(~~(~~i) All trees shall be guaranteed for one year from the date of planting and shall be handled and transported in a manner conducive to good nursery practices (American Nursery Standards) at all times. ~~All trees shall be pruned and planted and refilled with soil acceptable to the Highway Superintendent in a tree pit two imes the ball diameter and one-and one-half times the ball depth, or twelve inches greater than the spread of the bare root stock and six inches greater in depth.~~ Each tree shall be well planted, existing earth excavated and removed from the site, set correctly and properly backfilled. The extent of excavation required for each plant is equivalent to three (3) times the diameter of the root ball (mass). Depth of pits for trees shall be sufficient to accommodate base or roots when the plant is set to one inch above finished grade, allowing a six-inch mound of undisturbed subsoil or compacted soil mix in the bottom of the pit. Set plants upright and faced to give the best appearance or relationship to adjacent structures or walks. Set Root Flare at or slightly above grade (due to nursery practices, this may require removing soil from the top of the root ball to properly locate the root flare).

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Balled and burlapped (B&B) plants: Remove natural fiber burlap from the top 2/3 of the root ball. Cut and remove all but that which is under the root ball when burlap is of a synthetic or treated fiber. Leave no burlap above soil surface. Cut and remove all of the wire baskets; except that which is under the root ball's lower portion and flat. All plant material within the right-of-way shall be mulched to a depth of not less than three (3) inches nor more than four (4) inches beginning four inches from stem, in a radius of at least two (2) feet (unless otherwise specified by the Town). Each planting shall be well watered at the time of planting. The pruning of bare root and B&B plants should be restricted to the removal of damaged branches and the correction of structural weaknesses.

(ii) Stakes shall be hard wood, ~~eight~~six-foot minimum height, and will be placed at time of planting outside the tree placement cavity with a minimum of two stakes per tree. The top four inches to six inches of each stake shall be painted a color as specified by the Superintendent of Highways. In addition, all trees will be wrapped with tree wrap-up to the first branch. ~~(ii) The top four inches to six inches of each stake shall be painted a color as specified by the Superintendent of Highways. In addition, all trees will be wrapped with tree wrap-up to the first branch. Fertilizer should be one-half pound per inch of caliper, worked into the trees' pit soil.~~ The fertilizer shall be "time release" only and will be placed in the hole and covered by 4 to 6 inches of soil before the plant is placed in position.

(iii) All trees shall ~~be~~ conform to American Nursery Standards and have well developed fibrous root systems, straight trunks with well developed, healthy canopies and the caliper shall be measured at a point six inches above ground level. All deciduous shade trees shall be a minimum caliper of one and three-quarters inches. The caliper shall be measured at a point six inches above ground level. All plants shall meet the requirements of the State and Federal laws with respect to disease and insect infestation and shall not be on the prohibited or regulated plant list under 6 NYCRR 575.

(iv) All trees shall be planted in accordance with § 179 of the Local Tree Law, Planting distance requirements, under direction of the Division of Forestry. The soil shall consist of 1 part compost and 2 parts topsoil. Topsoil will be furnished and hauled by the contractor to the site, and shall be free from subsoil, roots, stones over one (1) inch in diameter and other extraneous materials.

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(v.) All backfill from construction activities shall be removed from the location of street tree plantings. The tree planting strip/snow storage area shall have a minimum soil depth of 3-feet from top of final grade between the roadway (curb or gutter) to the sidewalk. All deciduous shade trees shall be a minimum caliper of one and three-quarters inches. The caliper shall be measured at a point six inches above ground level. All plants shall meet the requirements of the State and Federal laws with respect to disease and insect infestation and shall not be on the prohibited or regulated plant list under 6 NYCRR 575.

(vi.) The Town under the direction of the Highway Superintendent and Division of Forestry reserve the right to reject plant material or require ~~the~~ a tree to be re-planted at any time during construction.

R. **Yard Drainage — General.**

(1) Yards and areas shall be properly drained and connected to a storm sewer or other approved outfall.

(2) See the Town of Amherst Standard Details and Specifications, available at the Town of Amherst Chapter 83, Building Construction Administration, of the Town Code for details, including rear yard drainage and Sump Pump and Downspout Pipe Discharge.

S. **Rural Residential Subdivision Streets.** Each lot in a rural residential subdivision shall be provided with access to a durable and maintainable public or private street with adequate capacity, while retaining rural aesthetics and cost effectiveness, and without compromise to the Thoroughfare Plan.

(1) **Exceptions to Street Standards for Rural Residential Subdivisions.** The subdivision may contain roadside ditches in lieu of curb and gutter.

3-2-5. Grading and Topography. The street plan of a proposed subdivision shall bear a logical relationship to the topography of the property, and all streets shall be arranged so as to obtain as many building sites as possible at or above the grade of the streets. Grades of streets shall conform as closely as possible to the original topography and shall be in accordance with the Town Specifications for Public Improvements.

3-2-6. Marginal Access Streets.

A. Where a subdivision abuts or contains an existing or proposed arterial street as specified in the Comprehensive Plan, the Planning Board may require the following:

(1) Marginal access streets, and controlled access points;

(2) Reverse frontage with screen planting contained in a non-access reservation along the rear property line;

(3) Deep lots with rear service access; or

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(4) Such other treatment as may be necessary for adequate protection of residential properties and to afford separation of through and local traffic.

B. Where a subdivision borders on or contains a railroad right-of-way or limited access thoroughfare right-of-way, the Planning Board may require a street approximately parallel to and on each side of the right-of-way at a distance suitable for the appropriate use of the intervening land as for the following purposes:

(1) Parks;

(2) Deep residential lots backing to railroad or arterial street with planting screen in a no-access area at rear property lines of lots; or

(3) Motor vehicle parking, business or industry in appropriate districts.

C. Such distances shall be determined with due regard for the requirements of approach grades and future grade separations.

3-2-7. Other Street Improvements. Design standards for other required improvements such as fire hydrants, water main, and the location of sanitary and storm sewers are also available within the Town of Amherst Standard Details and Specifications on file at the Town's Engineering Department. Street lighting, traffic control signs, and street signs are found within Town Specifications for Public Improvements. Public and Private Improvement Permits are issued on the basis of compliance with these specifications.

3-2-8. Reserve Strips. Reserve strips controlling access to streets shall be prohibited except where their control is definitely placed with the Town under conditions approved by the Planning Board, Town Engineer, and Town Attorney.

3-2-9. Street Designation. Street names for a proposed subdivision shall be proposed by the owner which shall not duplicate or be confused with the names of existing streets in Erie County irrespective of modifying terms such as street, avenue, boulevard, etc. Streets that are or will eventually be continuations of existing or platted streets shall be of the same name. Street names shall be subject to the policies established by the Town Board and the approval of the Planning Director.

§ 3-3. Utilities

3-3-1. Underground Utilities. Utilities, to the extent practicable, are to be placed underground throughout a subdivision area and in conformance with Town Specifications for Public and Private Improvements.

3-3-2. Utility Easements. Suitable easements shall be provided for any utility service, including storm water drainage, as determined by the Town Engineer. They shall be established at sanitary sewers and applicable lot lines so as to provide continuity of alignment from block to block.

3-3-3. Storm Drainage Easements. Where a subdivision is traversed by an existing or proposed watercourse, storm sewer, drainage way, channel or stream, there shall be provided a permanent public or private drainage easement conforming substantially with the limits of such watercourse, which may include additional area adjoining such watercourse as determined by the Town Engineer and/or Highway Superintendent.

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3-3-4. Pipes for Ditches. Street side ditch piping for stormwater along an existing street shall be the responsibility of the lot owner (or petitioner) and construction, removal, or replacement shall be in accordance with Town Specifications. Maintenance of a public facility shall be the responsibility of the Town.

3-3-5. Sewers.

A. Any building that has sanitary facilities, or is used by human occupants for living or sleeping, must be connected to a sanitary sewer system approved by the Erie County Health Department, if such sewer is available.

B. All sanitary sewers and laterals must be installed before a street is improved and construction shall be in accordance with Town Specifications for Public Improvements. Sanitary sewers for conveyance to the Town, shall be accepted only as part of a public highway.

C. The Town reserves the rights to require the installation of improvements necessary for non-rural subdivisions when the site is within a sewer district but public wastewater utility services are not currently available.

3-3-6. Water Distribution and Fire Hydrants.

A. Waterline types and installation shall be in accordance with Town of Amherst Engineering Department specifications.

B. Waterline size shall be a minimum of eight inches and on a grid system or interconnected wherever possible, based on generally accepted engineering practices for required fire flow. Waterlines for conveyance to the Town, shall be accepted only as part of a public highway.

C. Fire hydrant type and installation shall be in accordance with Town of Amherst Engineering Department specifications.

D. Fire hydrants shall be located a maximum of 500 feet apart.

3-3-7. Roadway Illumination. [Added 10-17-2022 by L.L. No. 20-2022]

A. Roadway illumination, associated fixtures and installation shall be in accordance with Town of Amherst Engineering Department specifications.

B. All light fixtures, conduit and associated electrical equipment shall be installed before a street is fully improved and construction shall be in accordance with Town Specifications for Public Improvements.

C. All conduit to the extent practicable shall be placed underground throughout a subdivision and shall be in accordance with Town Specifications for Public Improvements.

D. Light poles generally are to be spaced at 150 foot staggered intervals along a roadway, unless the roadway alignment(s) would require otherwise as determined by the Town of Amherst Engineering Department.

§ 3-4. Blocks

3-4-1. Shape. No specific rule concerning the shape of blocks is made, but blocks shall fit readily into the overall plan of the subdivision, and their design shall ~~evidence consideration of~~ indicate topographical conditions, lot planning, traffic flow, pedestrian circulation and public open space areas.

3-4-2. Block Dimensions.

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A. The maximum lengths of blocks containing a majority of lots measuring seventy-five feet in width and over ~~in width~~ shall be 1,800 feet, and the maximum length of blocks containing a majority of lots less than seventy-five feet in width shall be 1,200 feet.

B. Blocks over 900 feet long may, at the discretion of the Planning Board, require pedestrian ways at their approximate centers. The provision of additional access ways to schools, parks or other destinations may be required by the Planning Board.

C. Blocks shall have sufficient width to accommodate two tiers of lots including any additional allowance for natural features in between such as an existing watercourse. This standard shall not apply where single tier lots are required to separate residential development from arterial traffic, to separate lots from an incompatible use, to accommodate a requirement for single loaded streets, to allow for unusual topographical conditions or when adjacent to the outer perimeter of the subdivision, or when the Town wants to limit the length of dead end cul de sac streets which have no opportunities for future connection.~~.~~

§ 3-5. Lots

3-5-1. Buildable. All lots shall meet the minimum area and lot dimensions required by the Town of Amherst Zoning Ordinance for the zoning district in which the lot is located.

3-5-2. Shape.

A. Generally, side lines of lots shall be at right angles to straight street lines and radial to curved street lines.

B. The average depth of a lot shall not generally exceed three and one-half times its average width unless approved by the Town of Amherst Planning Board.

C. Flag lots shall be discouraged ~~in non-rural subdivisions~~, except where environmental, design or other ~~constraints render subdividing otherwise unreasonable.~~considerations favor such lot shapes.

3-5-3. Access.

A. All lots shall have adequate access to the public thoroughfare system, and lots shall abut a public dedicated street or private drive or have access to such street or drive via a public alley. See NYS Town Law § 280-a(4) for streets not having frontage on a public street.

B. No lot shall take access from the turnaround areas described in § 3-2-4F.

C. In an effort to minimize the number of curb cuts and maximize green space, the Planning Board may require the sharing of curb cuts by adjacent lots.

3**-5-4. Corner Lots.** All ~~C~~c~~C~~orner lots shall ~~.be increased in width over the width of typical interior lots, in accordance with the Zoning Ordinance.~~meet the minimum area and lot dimensions required by the Town of Amherst Zoning Ordinance for the zoning district in which the lot is located.

3-5-5. Through Lots. Through lots shall not be permitted except under the following circumstances:

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A. Where lots back upon an arterial, local collector or collector street. In such instances, vehicular access between the lots and the arterial or collector street is prohibited.

B. Where topographic or other conditions render subdividing otherwise unreasonable. Such through lots shall have an additional depth, as determined by the Planning Board, in order to allow for a protective screen planting on one frontage.

3-5-6. Lots Abutting a Watercourse.

A. **Riparian Buffer.**

(1) Riparian buffers shall be clearly indicated on all sketch plans, preliminary plats and final plats. Where maps show a difference in stream type for a particular reach of stream, the map that shows the greater level of stream protection shall apply.

(2)

A riparian easement is required as part of the application and is to be shown on the subdivision plot and plan.

B. **Buffer Width.** Riparian buffers shall apply on each side of the watercourse and shall begin at the most landward limit of the top of the bank perpendicular to the direction of stream flow. Riparian buffers shall be a minimum of 50 feet in total width and require an easement.

C. **Buffer Limitations.**

(1) Buildings and other features that require grading and construction shall be set back a minimum of 10 feet from the edge of the buffer.

(2) Crossings by streets, driveways, bridges, utilities, culverts, recreational features or other facilities shall be allowed provided that they are designed to minimize intrusion into the riparian buffer. Such facilities may run generally within and parallel to the buffer only where no other access to the property is practical and when their design minimizes intrusion into the buffer.

(3) Riparian buffers may be used for passive recreational activities, provided that service facilities for such activities, including but not limited to parking, picnicking and sanitary facilities, shall be located outside of the ~~stream~~ riparian buffer.

3-5-7. Lots in a Floodway or Flood Plain District. All structures and uses in the Special Flood Hazard Areas are subject to the Flood Damage Prevention provisions of § 7-7 of the Zoning Ordinance.

§ 3-6. Monuments and Lot Corner Markers

3-6-1. Permanent concrete monuments shall be made of concrete four inches by six inches by 24 inches, or six-inch diameter by 24 inches, or an approved equal, with 1/2-inch or larger iron pipe or iron rod cast in the center.

3-6-2. At least one permanent concrete monument shall be in each subdivision in accordance with Local Law No. 6, Chapter 119 and the Rules and Regulations 119-5.A, Town of Amherst Geodetic Survey Maintenance Network. The monument's location shall be approved by the Town Engineer.

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3-6-3. Pipe monuments 3/4-inch in diameter, or steel rods 1/2-inch in diameter by 18 inches in length, shall be placed at the corners of each lot, block, at each intersection, of street center lines at angle points and at the ends and at suitable intervals along curbs. A suitable nail may be used should any of these locations fall within the street pavement.

3-6-4. All U.S., State, County, Town or other official benchmarks, monuments or triangulation stations in or adjacent to the property shall be preserved in precise position and identified on the final plat.

§ 3-7. Commercial and Industrial Areas

3-7-1. Vehicular Movement. The location for vehicular movements between commercial and industrial areas and adjacent streets shall be indicated, and restrictions shall be recorded upon the plat which shall restrict such vehicular movements to the location shown on the plat.

3-7-2. Easements. Easements may be required providing for vehicular movements through parking areas and to and from service areas, as well as easements which can be improved as buffer areas wherever the area adjoins property zoned for residential use. The installation of planting, walls, fences or other improvements that assure a satisfactory buffer or protective screen within said easement may be required by the Planning Board

3-7-2. Easements. Easements may be required providing for vehicular movements through parking areas and to and from service areas, as well as easements which can be improved as buffer areas wherever the area adjoins property zoned for residential use. The installation of planting, walls, fences or other improvements that assure a satisfactory buffer or protective screen within said easement may be required by the Planning Board

§ 3.8. Open Space Dedication

A. General. Dedication of open space shall be in accordance with Chapter 155, Recreation and Open Space, of the Town Code. A conservation easement limiting the use of the open space in perpetuity is required and is to be shown on the subdivision plot and plan. The easement shall provide for third party enforcement of the limits placed on the open space area.

B. ~~Cluster~~ Conservation/Cluster Subdivision.

(1) Ownership of open space created as part of a ~~cluster~~ conservation subdivision shall be retained by or transferred to any of the following third-party organizations, including any combination of such organizations;

(a) The owner of the property to be developed;

(b) A homeowners association;

(c) An established land trust, created as a not-for-profit agency in accordance with § 501(c)(3) of the Internal Revenue Code;

(d) A non-profit conservation organization created in accordance with § 501(c)(3) of the Internal Revenue Code;

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(e) The Town of Amherst; or

(f) Another public agency responsible for natural resource preservation.

§3-9. Acceptance of Dedications

A. Streets

(1) Streets shall be dedicated according to all applicable State and local laws.

B. Parkland Sites

(1) Acceptance of dedications for parkland shall be by resolution of the Amherst Town Board.

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PART 4
REVIEW PROCEDURES AND ENFORCEMENT

§ 4-1. Applicability

Whenever any subdivision of land of five or more lots is proposed and before any permit for the erection of a structure or facilities in or for such proposed subdivision shall be granted, the petitioner or authorized agent shall apply for and secure approval of such proposed subdivision in accordance with the procedures set forth in this Part.

§ 4-2. Pre-Application Conference

The petitioner for subdivision approval shall schedule a pre-application conference with the Planning Director or his or her designee to discuss the requirements for the following, but not limited to: the general layout of streets and lots, the reservation of land, street improvements, drainage, soil conditions, special flood hazard areas, wetlands, sewerage, water, fire protection, other community services and facilities, and the availability of existing services.

§ 4-3. Subdivision Classification

The Planning Director shall classify the subdivision as requiring a major or minor-subdivision on the basis of the pre-application conference and in accordance with the criteria in this Section.

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4-3-1. **Minor Subdivision.**

A. The Planning Director shall only classify a subdivision as a minor subdivision where the proposal meets all of the following criteria:

(1) The subdivision contains a minimum of five lots, but not more than nine lots fronting on an existing street;

(2) The subdivision does not require the construction of new streets or roads, the extension of municipal facilities or the dedication of land;

(3) The subdivision does not adversely affect the development of the remainder of the parcel or adjoining property;

(4) The subdivision is not in conflict with any provision or portion of the Comprehensive Plan or Zoning Ordinance; and

(5) The subdivision does not require a waiver from these Regulations.

4-3-2. **Major Subdivision.** Any subdivision that contains more than nine lots shall be considered a major subdivision.

§ 4-4. Application Requirements

The following requirements shall apply to all applications for development review.

4-4-1. **Who May Submit Applications.**

A. All applications shall be reviewed by the Planning Director for his or her signature prior to filing with the Town Clerk. The Town Clerk shall receive payment of the required fees.

B. Applications shall only be accepted from persons having the legal authority to submit such applications. In general, applications shall be made by the owners or lessees of property, or persons who have contracted to purchase property contingent upon their ability to acquire the necessary approval under these Regulations.

C. The Planning Director may require a petitioner to present additional evidence of authority to submit the application.

4-4-2. **Forms.**

A. Applications required under these Regulations shall be submitted on forms and in such numbers as required by the Town.

B. All application forms are available from the Planning Department. The content of such application forms shall be determined by the Planning Director and may be amended from time to time.

4-4-3. **Fees.**

A. No application shall be accepted by the Town Clerk until all applicable fees, charges and expenses have been paid in full.

B. Filing fees shall be established from time to time by resolution of the Town Board to defray the actual cost of processing the application.

C. All required fees shall be made payable to "The Town of Amherst."

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D. A petitioner who has paid an appropriate fee pursuant to the submission of an application, but who chooses to withdraw such application within 24 hours of application shall be entitled to a full refund upon written request to the Town. After this 24-hour period, the petitioner may petition the Town Board for a partial refund. The Town Board may request a recommendation on any request for a refund considered under this Section.

4-4-4. **Applications to be Complete.**

A. An application and fee will be accepted for review when it contains all information necessary to initiate review as determined by the Planning Director or his or her designee. In addition, an application shall not be considered complete until a SEQR determination of significance under Town Code, Chapter 104, Environmental Quality Review, can be made.

B. The presumption is that all of the information required in the Town's application forms is necessary to satisfy the requirements of this Section. However, it is recognized that each application is unique, and therefore more or less information may be required according to the needs of the particular case. The petitioner may rely on the recommendations of the Planning Director as to whether more or less information should be submitted with the application.

C. An application not considered complete within six months after the initial date of submittal shall be considered null and void, except where such application is part of an ongoing SEQR review.

4-4-5. **Staff Consultation After Application Submitted.**

A. Upon determination of a complete application, the Planning Director shall review the application and confer with the petitioner to ensure that the petitioner understands the requirements of these Regulations; has submitted all of the information that the petitioner is required to submit; and that the application represents precisely and completely what the petitioner proposes to do.

B. Once the petitioner indicates that the application is as complete as the petitioner intends to make it, the application shall be distributed to the appropriate departments, officials and boards. However, if the Planning Director finds that the application remains incomplete, a recommendation to deny the application on that basis shall be provided to the Planning Board.

4-4-6. **Notice and Public Hearings.**

A. **Required Hearing.**

(1) Preliminary Plat. Within 62 days after the receipt of a preliminary plat by the Planning Board, the Planning Board shall hold a public hearing. The hearing shall be advertised at least once in a newspaper of general circulation in the Town at least five days before such hearing.

(2) Final Plat.

(a) No public hearing shall be required for review of a minor subdivision, or review of a final plat of a major subdivision provided that such plat is in substantial agreement with the approved preliminary plat.

(b) In the event that the Planning Director determines that the final plat of a major subdivision is not in substantial agreement with the approved preliminary plat, the Planning Board shall hold a public hearing within 62

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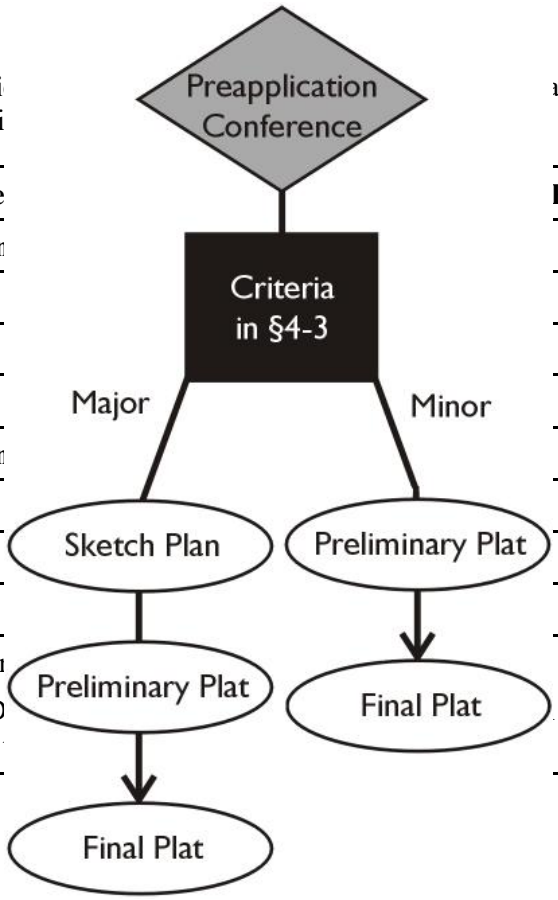
days from the time of submission of the subdivision for final plat approval. The hearing shall be advertised in a newspaper of general circulation in the Town at least five days before such hearing.

4-4-7. **Summary of Revi** ıble summarizes review and approval authori

Review Procedure	**Planning Board**
Minor Subdivisior	
Sketch Plan	Not Required
Preliminary	Decision*
Final	Decision
Major Subdivisior	
Sketch Plan†	Decision*
Preliminary	Decision*
Final	Decision
* = Public hearing ı † = The Planning D plan for a major subdivision of five	



§ 4-5. Minor Subdivision Submission Requirements

A minor plat shall be submitted and reviewed consistent with the requirements for a preliminary plat.

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§ 4-6. Major Subdivision Submission Requirements

4-6-1. **Sketch Plan Review.**

A. **Intent.** The sketch plan is not intended to be recorded. Its purpose is to show graphically all facts needed to enable the Planning Board and other Town departments to determine whether the proposed layout of land in question is satisfactory from the standpoint of public interest.

B. **Staff Review.**

(1) Copies of the sketch plan shall be referred to the Building, Highway and Engineering Departments, the Traffic and Safety Committee, the Assessor, the Youth and Recreation ~~Commission~~ Department, and any other agencies the Planning Director deems appropriate and the application is deemed complete.

(2) Within 30 days of determination of completeness, each agency shall review the application and notify the Planning Board in writing of its comments or recommendations.

C. **Planning Board Final Action.**

(1) Within 62 days from the date that the sketch plan is deemed complete, or such extension as mutually agreed upon, the Planning Board shall meet and approve, approve with conditions or disapprove the sketch plan taking into account the criteria in § 4-6-1D.

(2) If the Planning Board disapproves, it shall advise the petitioner in writing of the reasons for disapproval and the specific changes, if any, it shall require in the layout, and the character and extent of required improvements and land reservations as a prerequisite to the approval of the sketch plan.

(3) In approving the subdivision sketch plan, the Planning Board may impose such conditions as it deems necessary and consistent with the Zoning Ordinance, Comprehensive Plan, and other laws.

D. **Sketch Plan Review Criteria.**

(1) The Planning Board shall review the sketch, considering the requirements of these Regulations, the Zoning Ordinance, Comprehensive Plan, comments of the reviewing agencies and the best design use of the land being subdivided.

(2) In evaluating any sketch plan, the Planning Board shall consider the following:

(a) The arrangement, location and width of streets and their relation to the topography of the land;

(b) Vegetation, wetlands, special flood hazard area/base flood elevation;

(c) Sewage disposal, drainage requirements, water needs;

(d) Lot sizes and arrangement;

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(e) Soil conditions;

(f) Recreation facilities and open spaces;

(g) Such other concerns as may be appropriate including new streets or street extensions, and dimensions from new street to existing streets (off-sets); and

(h) Policies and recommendations of the omprehensive Plan.

4-6-2. **Preliminary Plat Review.**

A. **Submittal of Preliminary Plat and Improvement Plans.** Following approval of the sketch plan, the petitioner shall prepare a preliminary plat of a subdivision, together with improvement plans and other supplementary material as specified in these Regulations and as required by the Planning Board sketch plan approval. This plat shall cover the entire tract of land concerned, or portion thereof, unless the Planning Board has authorized a lesser area.

B. **Staff Review of Preliminary Plat.**

(1) Upon receipt of a complete application in accordance with § 4-4-4, copies of the preliminary plat and other supplementary material shall be referred to the Building, Highway and Engineering Departments, the Traffic and Safety Committee, and any other agencies the Planning Director deems appropriate.

(2) Within 30 days of determination of completeness, each agency shall review the application and notify the Planning Board in writing of its comments or recommendations.

C. **Planning Board Final Action.** Within 62 days or two consecutive Planning Board meetings after determination of completeness, the Planning Board shall approve, approve with conditions or disapprove the preliminary plat, taking into account the same criteria in § 4-6-1D(2).

D. **Preliminary Plat Review ~~Criteria.~~** In reviewing the preliminary plat, the Planning Board may impose conditions consistent with the intent and purpose of these Regulations, the Zoning Ordinance, Comprehensive Plan, sketch plan and other applicable laws. If the Planning Board recommends disapproval, it shall state its reasons in writing.

E. **Limits of Approval.** Approval of a preliminary plat shall not constitute final approval of the plat, but rather shall be deemed the approval of the design submitted on the preliminary plat as a basis to the preparation of the final plat, which shall be submitted for approval by the Planning Board and for recording in the Erie County Clerk's office upon fulfillment of the requirements of these Regulations and the conditions of the approval, if any.

F. **Failure to Take Action.** Unless an extension is mutually agreed upon, in the event the Planning Board fails to take action on a preliminary plat within the time prescribed herein, such plat shall be deemed granted preliminary approval. A certificate of the Town Clerk as to the date of submission and the failure to take action within such prescribed time shall be issued on demand and shall be sufficient in lieu of written endorsement or other evidence of approval required in these Regulations.

G. **Zoning Ordinance.** All town regulations, including the Town Code, in effect at the time of preliminary plat approval shall apply to the preparation and approval of the final plat.

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H. **Public Improvement Plans.** Engineering drawings or plans for all proposed improvements, including but not necessarily limited to streets, pedestrian pathways, sidewalks, sanitary sewers, storm drainage sewers and systems, water system, etc., shall be furnished to the Planning Board along with the preliminary plat.

I. **Phasing Plan.** If phasing of the subdivision is anticipated, a conceptual phasing plan shall be submitted for review with the preliminary plat application and used as a guide for submittal of the final plat.

4-6-3. **Final Plat Review.**

A. **Submittal of Final Plat.** After issuance of an approved preliminary plat by the Planning Director, and w~~W~~ithin six months after approval by the Planning Board of a preliminary plat, the petitioner shall submit the final plat. The plat shall conform to the layout shown on the preliminary plat and shall contain any conditions imposed by the Planning Board during preliminary plat review.

B. **Staff Review and Final Action.**

(1) The Planning Board shall approve, approve with conditions or disapprove the final plat taking into account the criteria in § 4-6-3C within 62 days of receiving or two consecutive Planning Board meetings after determination of completeness.

(2) If the Planning Board disapproves the final plat, it shall state in writing the reasons for disapproval.

(3) The petitioner shall have 180 days to satisfy the requirements upon which the approval has been conditioned and obtain the certification from the Planning Board. This period may be extended by the Planning Director, if in its opinion the circumstances warrant such extension.

(4) If the petitioner does not meet the conditions of approval within 180 days or within the extension period provided by the Planning ~~Board~~Director, then the application shall be deemed disapproved.

C. **Final Plat Review Criteria.** In evaluating any final plat, the Planning Board shall consider the following:

(1) The application is complete and the information contained within the application is correct and sufficient enough to allow adequate review and final action.

(2) The final plat is determined to be consistent with an approved preliminary plat. The petitioner must certify in writing that the final plat is consistent with the preliminary plat. Any changes to the final plat that are not consistent with the preliminary plat must be identified in writing upon submittal of the final plat application. Failure to disclose changes pursuant to this section may result in the Planning Board declaring the final plat null and void after giving the petitioner notice and an opportunity to be heard on the matter.

(3) The final plat is consistent with any Town-approved construction plans for any required or agreed improvements.

D. **Failure to Take Action.** In the event the Planning Board fails to take action on a complete final subdivision plat application within the time prescribed in New York State Town Law, such plat shall be deemed approved, unless an extension has been mutually agreed upon. A certificate of the Town Clerk as to the date of submission

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and the failure to take action within such prescribed time shall be issued on demand and shall be sufficient in lieu of written endorsement or other evidence of approval required in these Regulations.

E. **Phasing.** Prior to granting approval of a final plat, the Planning Board may permit the plat to be phased into two or more sections. The Planning Board may stipulate such requirements as it deems necessary to insure the orderly development of the plat be completed. Conditional or final approval of the phases of a final plat shall be granted concurrently with conditional or final approval of the plat. Each phase shall comply with all applicable provisions of § 3-2, Streets.

F. **Filing of Plat.**

(1) The issuance of the following shall constitute final approval of a final plat:

(a) The signature of the Chairman of the Planning Board on the final plat; or

(b) The certificate of the Amherst Town Clerk as to the date of the submission of the final plat and the failure of the Planning Board to take action thereon within the time prescribed.

(2) The plat shall expire 62 days from the date of the Chair's signature constituting such approval of the final plat, or from the date such certificate is issued, unless within such 62-day period such plat or a section thereof shall have been duly filed or recorded by the owner in the office of the County Clerk.

(3) The filing of a final plat shall be consistent with the phasing plan approved in conjunction with the final plat.

G. **Period of Exemption for Subdivision Plats.** If a final plat or the first phase thereof has been duly filed in the office of the County Clerk, provisions of a change or amendment to the Town of Amherst Zoning Ordinance which establish or increase side, rear or front yard or setback requirements in excess of those applicable to building plots under the provisions of the Zoning Ordinance in effect at the time of the filing of the said subdivision plat or first section thereof, shall not, for a period of three years after the filing of the subdivision plat or first section thereof, be applicable to or in any way affect any of the lots shown and delineated on such subdivision plat.

H. **Modifications to Plat.**

(1) No changes, erasures, modifications, or revisions shall be made in any final plat after approval has been given by the Planning Board and endorsed in writing on the plat, unless the plat is resubmitted to the Planning Director and the Director deems such modifications to be minor in accordance with (2) below.

(2) Provided the number of lots remains the same, the moving of lot lines and the rearrangement of easements shall be considered a minor modification, subject to the approval of the Planning Director, provided that the resulting lots meet the minimum requirements of the Zoning Ordinance and all other applicable regulations for the subject parcel. All other modifications shall be deemed major modifications and shall require resubmission of a preliminary plat.

(3) In the event that any such plat is recorded without complying with this requirement, the same shall be considered null and void, and the Director shall institute proceedings to have the plat stricken from the records of the County Clerk.

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I. **Approval Not Acceptance.**

(1) If any plat contains public streets, thoroughfares or easements which are to be dedicated as such, the approval of the plat shall not constitute an acceptance by the Town of Amherst of the improvements constructed or installed in the subdivision, irrespective of any acts by an officer, agent or employee of the Town with respect to such improvements.

(2) The acceptance of such improvements shall be made only by the adoption of a resolution by the Town Board after the certificate ~~there~~ has been filed with the Town Clerk and Town Attorney's Office ~~a certificate~~ ~~by~~ The Town Engineer, certifying that all improvements required to be constructed or installed in or upon such street, thoroughfares and easements in connection with the approval of the plat or subdivision by the Planning Board have been fully completed and the construction or installation thereof has been approved by the Town Engineer. Prior to issuance of any PIP for the subdivision by the Town Engineer, all accepted easements shall be filed with the plat and copies sent to the Planning, Engineering, ~~and~~ Highway Departments and Town Attorney's Office.

J. **Status of Streets on a Subdivision Plat.** Every street shown on a plat filed or recorded in the office of the County Clerk shall be deemed to be a private street until such time as it has been formally offered to the Town and formally dedicated as a public street, or alternatively until it has been accepted by the Town for use as a public street.

K. **Protective Covenants.** All protective covenants and deed restrictions required by the Planning Board as a condition of approval in form for recording shall be approved, by the Town Attorney prior to filing of the final plat with the County Clerk.

§ 4-7. Waivers

A. Where the Planning Board finds that extraordinary hardships may result from strict compliance with these Regulations, it may waive these Regulations so that substantial justice may be done and the public interest secured, provided that any such adjustment shall not have the effect of nullifying the intent and purpose of these Regulations.

B. In granting any adjustment, the Planning Board shall attach such conditions as are, in its judgment, necessary to secure substantially the objectives of the standards or requirements so adjusted.

C. Applications for waivers shall be made upon the filing of the sketch plan or preliminary plat as applicable to these regulations.

~~D. Any waivers, if known, should be included during sketch plan review.~~

§ 4-8. Text Amendments

This Local Law may, from time to time, be revised, modified, or amended.

§ 4-9. Appeal

4-9-1. Appeal of decisions made under these Subdivision Regulations by the Town Board, Planning Board, Planning Director, Commissioner of Building, the Zoning Enforcement Officer, or Town Engineer shall be heard in accordance with Article 78 of the New York Civil Practice and Law Rules.

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4-10. Enforcement

4-10-1. **Penalties for Violation.** Any person who violates any provision of this Local Law or any regulation adopted hereunder is guilty of an offense punishable by a fine not exceeding $250, or imprisonment for a period not to exceed six months, or both. Each week's continued violation shall constitute a separate violation.

4-10-2. **Administrative Procedures for Enforcement. [Amended 3-4-2019 by L.L. No. 7-2019]**

A. **General Provisions.** This local law shall be interpreted by the Zoning Enforcement Officer with the assistance of the Town Engineer, Commissioner of Building, Planning Director, the Town Clerk and other agencies as the Town Board shall direct and shall be enforced by the Town Engineer and Commissioner of Building. Those departments and agencies shall be provided with the assistance of such persons as the Town Board may direct.

B. **Records and Reports.** The Zoning Enforcement Officer shall keep, or cause to be kept, a record in his or her Department suitably indexed in regard to any decision or determination reached by him or her in connection with the interpretation or enforcement of these Regulations.

PART 5
PROVISION OF REQUIRED IMPROVEMENTS

§ 5-1. Installation of Improvements

The petitioner, at his or her own expense, shall provide (design, construct, install) the improvements required by these Regulations. All improvements shall meet Town standards and specifications as found in the Town Specifications for Public and Private Improvements.

§ 5-2. Performance Bond

5-2-1. There may be cases when, due to weather conditions or other factors beyond the control of the petitioner (exclusive of financial hardship) it would be unreasonable to require the petitioner to comply with all of the requirements of these Regulations prior to commencing the intended use of the property or occupying any buildings. In these cases, the Commissioner of Building may authorize commencement of the intended use or occupancy of buildings if the permit recipient provides a performance bond or other security of up to 125 percent of the cost of the remaining improvement to ensure that all subdivision regulations will be fulfilled within not more than three years.

5-2-2. In the event that any required improvements have not been installed in accordance with these Regulations within the term of the performance bond, the Town Board may declare the bond to be in default and collect the sum remaining payable. Upon the receipt of the proceeds of the bond, the Town shall install such improvements as are covered by the

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bond and as commensurate with the extent of building development that has taken place in the subdivision but not exceeding in cost the amount of such proceeds.

§ 5-3. Approval of Plans

5-3-1. **Public and Private Improvement Permit.** No improvement shall be constructed or installed without the prior approval of plans by the Town Board and the Town Engineer, who shall issue Public and Private Improvement Permits, as appropriate, following approval of the final plat or posting of a performance bond in accordance with § 5-2.

5-3-2. **Construction Contracts.** Prior to the start of construction of any required improvements, the petitioner shall furnish to the Town Engineer a copy of the specifications included in any contract entered into by the petitioner for such construction.

5-3-3. **Modification of Design of Improvements.** If at any time before or during the construction of the required public improvements it is demonstrated to the satisfaction of the Town Engineer that unforeseen conditions make it necessary or preferable to modify the location or design of such required improvements, the Town Engineer, in consultation with the Highway Superintendent and Planning Director, may authorize such modifications upon written request of the petitioner, provided such modifications are within the spirit and intent of the approved final plat approval and do not amount to the waiver or substantial alteration of the function of any improvement required by the Town. The Town Engineer shall issue any authorization under this Section in writing and shall transmit a copy of such authorization to the Planning Director.

§ 5-4. Inspection of Improvements

5-4-1. **Supervision of Construction.** The construction of all required improvements shall be supervised by a registered professional engineer employed by the Town of Amherst at the expense of the petitioner. After completion of construction, the supervising engineer shall certify to the Town Engineer that all required improvements have been constructed as required and approved by the Board or as such requirements have been modified by the Town Engineer. In addition, after completion of construction, the supervising engineer shall submit a certified plan showing all improvements as constructed, in the same detail as required for the Public and Private Improvement Permit drawings.

5-4-2. **Inspection by the Town.** The Town Engineer or designee shall inspect required improvements during construction to assure their satisfactory completion.

5-4-3. **Notification.** The petitioner shall notify the Town at least five days prior to the start of construction or installation of any improvement and at least 24 hours prior to the completion of such improvements.

5-4-4. **Fees.** All costs of inspection shall be charged to the petitioner at the issuance of a Public and Private Improvement Permit.

5-4-5. **Petitioner Responsible.**

A. If the Town Engineer finds, upon inspection, that any of the required improvements have not been constructed in accordance with the approved plans and specifications filed by the petitioner, he or she shall so report to the Town Board, Commissioner of Building, Zoning Enforcement Officer and Planning ~~Board~~Director. The Town Board shall then notify the petitioner and instruct the petitioner to correct any discrepancies. **[Amended 3-4-2019 by L.L. No. 7-2019]**

B. Failure to reject improvements shall not, in any way, prevent later rejection when such defects are discovered, or obligate the governing body to final acceptance.

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§ 5-5. Maintenance Bond

The required improvements shall not be considered to be completed until the installation of the improvements has been approved and certified by the Town Engineer and a final as-built map has been submitted indicating the location of monuments marking all underground utilities as actually installed. In addition, a two-year maintenance bond for all required improvements shall be submitted prior to acceptance of all the improvements by the Town Engineer and issuance of a Public and Private Improvement Permit. A maintenance bond shall be in the amount of 25 percent of the construction cost for each utility.

Section 6. Effective Date

This Local Law shall take effect immediately and be filed in the Office of the Secretary of State in accordance with Section 27 of the Municipal Home Rule Law and published pursuant to Section 130 of the Town Law and Chapter 28 of the Code of the Town of Amherst.

Francina J. Spoth
Town Clerk
Town of Amherst
County of Erie, New York

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TOWN OF AMHERST
PLANNING BOARD
ZONING TEXT AMENDMENTS
ZTA-2024-01

PETITIONER
Town of Amherst
5583 Main Street
Williamsville, NY 14221

AUG 29 2024 PM2

WHEREAS the Town of Amherst Planning Board on Tuesday August 27, 2024 held a public hearing on the proposed amendments to Chapter 204 of the Town Code (Subdivision Regulations), and

WHEREAS the Planning Board has reviewed materials regarding the text amendment proposal, and

WHEREAS the materials have been referred to the Town's various review agencies, and

WHEREAS per Section 204-4-8 of the Town Code, the Planning Board finds that:

1. The proposed text amendments are consistent with the remainder of Chapter 204.
2. The proposed text amendments do not present a new idea not considered in the existing Ordinance, or a revision necessitated by changing circumstances over time.
3. The proposed text amendments do not correct an error in the Ordinance.
4. The proposed text amendments do not revise the Ordinance to comply with state or federal statutes or case law.
5. The proposed text amendments advance the public health, safety or welfare of the community.
6. The proposed text amendment is generally consistent with the policies of the Comprehensive Plan.

NOW THEREFORE BE IT RESOLVED that the Planning Board recommends to the Town Board in accordance with Chapter 204, Section 4-8 of the Subdivision Regulations, that the request be approved.

The foregoing resolution was adopted by the Town of Amherst Planning Board, August 27, 2024; moved by Gill; seconded by Kahn; ayes 4; noes 0; absent 3 (Davis, Giuliani, Penberthy).

Michael J. Chmiel, Planning Board Chair

8/29/24
Date

DU/ac
X:\Current_Planning\Files\Text Amendments\ZTA-2024\ZTA-2024-01_(Chapter_204_Subdivision_Regulations)\ZTA-2024-01_resolution_082724.docx
cc: Traffic/Safety Coordinator
Commissioner of Building
Highway Superintendent
Town Engineer

Attachment: ZTA-2024-01 signed resolution 082724 (29081 : Zta-2024-01)

Amherst Planning Board
5583 Main Street
Williamsville, NY 14221

SCHEDULED

Meeting: 08/27/24 06:30 PM
Department: Planning
Category: Miscellaneous
Prepared By: Amy Carrato
Initiator: Dan Howard
Sponsors:
DOC ID: 29337

PLANNING BOARD ITEM (ID # 29337)

Town Board Referral - Suburban Agriculture (SA) District Alternative Report

Dan Howard, Planning Director, and Roberta Rappoccio, Associate Planner, discussed the subject report and sought input from the Board on its future use for the proposed recommened zoning changes and encouraged discussion on the potential implementation strategies for a recommendation to the Town Board.