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Windham Village Apartments

Major Subdivision - Preliminary Plan - Review Application
Windham, Maine

PREPARED FOR:
Windham Village Apartments, LLC
40 Farm Gate Road,
Falmouth, ME 04105

April 2024

SUBMITTED BY:
Gorrill Palmer
300 Southborough Drive, Suite 200
So. Portland, ME 04106
207.772.2515

ATTACHMENT I

NARRATIVE

GORRILL PALMER

300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

March 29, 2024

Mr. Steve Puleo
Town Planner
Town of Windham
8 School Road
Windham, ME 04062

Subject: Major Subdivision Preliminary Review Application
Windham Village Apartments

Dear Steve:

Gorrill Palmer has been retained by **Windham Village Apartments, LLC** to assist in design and permitting to construct a proposed residential development located between Tandberg Trail, Manchester Drive, and a Private Drive in Windham, ME. The property is identified as Map 70 and Lot 1A on the Town of Windham's tax map. The development area is approximately ± 9 acres in size and is currently undeveloped (with the exception of approximately 0.76 acres that serves as the subsurface wastewater disposal area for the Shaw's development) adjacent to the Shaw's commercial development. The project is proposed to construct 29 one-bedroom and 143 two-bedroom multifamily units (total of 172 units) along with associated utility, drainage, and stormwater infrastructure. Additionally, there are walkways, landscaped areas, and an outdoor amenity area. Connectivity with the existing surrounding community is a primary design element with a focus on accessibility for multiple travel methods.

The proposed development is located in the Commercial District (C-1) Zone. The development will require Town of Windham Major Subdivision and Site Plan Review approval. This application is limited to Major Subdivision Preliminary Review. We understand that Site Plan Review will be concurrent with the Major Subdivision Final Review procedure and submission.

A check in the amount of **$54,900** is included in this application. The fee was determined by the following:

Application Fees – Major Subdivision Preliminary Review Application	**Amount**
Application Fee ($1,300 fee + (162) lots over 10 @ $300 each)	$49,900
Review Escrow Fee	$5,000
Total Fees	**$54,900**

In support of this application, we have also provided the following material:

Attachment	Section
1	Narrative
2	Application Forms
3	Right, Title, or Interest • Purchase and Sale Agreement • Assignment and Assumption of Purchase and Sale Agreement • Third Amendment to Purchase and Sale Agreement
4	Project Location Map
5	Abutters Mailing List
6	Financial Capacity • Opinion of Site Development Cost • Bank Statement • Certificate of Good Standing
7	Historic & Natural Areas Correspondences
8	High Intensity Soil Survey
9	Stormwater Management Report
10	Erosion and Sedimentation Control Report
11	Estimated Demands for Water and Sewage Disposal & Utility District Statements
12	Subsurface Disposal Setback Figure
13	Landscaping Planting List
14	Estimated Traffic Generation & Analysis
15	Flood Insurance Rate Map (FIRM)
16	Existing & Proposed Easements & Restrictions

The below narrative further describes the proposed project:

PROPOSED PROJECT

The proposed project is located in Windham, ME and can be accessed via two entrances. One is the Existing Access Drive that steams from Manchester Drive and the second is the Private Drive on the eastern side of the property. Both the Private and Manchester Drive connect to Tandberg Trail. The subject property is ±9 acres of land proposed for development of a residential subdivision. This project will include 14 apartment buildings in total, one of which is also used as a Community Building for the development. Additionally, there are proposed walkways throughout the development, a bus pick up area to the west of the site, a plaza area, and additional outdoor amenity areas.

I. EXISTING CONDITIONS

TOPOGRAPHY

The existing topography slopes slightly south to Tandberg Trail, specifically the southwest and southeast corners of the lot. An existing subsurface disposal system is located at the northwestern corner of the property. This disposal field serves the current Shaw's building located just north of this development area.

ENVIRONMENTAL CONSIDERATIONS

From a design standpoint, natural resource conservation and environmental protection are primary concerns. The proposed development is located within the Presumpscot River watershed. There are no streams listed on the March 2023 Maine Department of Environmental Protection – Nonpoint Source Priority Watersheds List that encroach the property.

Hydrology

Based on the North Windham Quadrangle, Maine map for Significant Sand and Gravel Aquifers, the proposed project site is located on surficial deposits with moderate to good potential ground-water yield.

II. CONTACT INFORMATION OF RECORD OWNER AND APPLICANT

Please see the following table for the Record Owner's contact information:

Record Owner of Property	
Owner:	B33 Windham II LLC
Co-Owner:	C/O Bridge33 Capital
Representative:	Derrick Almassy, SVP Investments
Mailing Address:	9330 W Sahara Ave Ste 270 Las Vegas, NV 89117
Telephone:	206-538-0083
Email:	admin.requests@bridge33capital.com derrickalmassy@bridge33capital.com

Applicant	
Name:	Windham Village Apartments, LLC
Representative(s):	Loni Graiver
Mailing Address:	40 Farm Gate Road, Falmouth, ME 04105
Telephone:	207-329-7355
Email:	loni@graiverhomes.com

III. EVIDENCE OF RIGHT, TITLE, AND INTEREST

Please see Attachment 3 for a copy of the Purchase and Sale Agreement and the Assignment and Assumption of Purchase and Sale Agreement.

IV. FINANCIAL AND TECHNICAL CAPACITY

The applicant has adequate funds to complete and operate this project in compliance with the applicable regulations. A bank statement is included in Attachment 6 that demonstrates that the applicant has the financial capacity to complete the project. Included in this submission is also a Certificate of Good Standing

Windham Village Apartments, LLC has the technical capacity to complete the proposed project. The Windham Village Apartments project consists of a partnership between Graiver Homes Inc. and Coppola Properties, Inc. Graiver Homes Inc. is a family-owned home builder business with more new homes built since 2011 than any other builder in Maine. Coppola Properties, Inc specializes in the sale and lease of commercial investment properties. Together the team has knowledge and expertise in the real estate industry.

Gorrill Palmer and Flycatcher LLC have been contracted to prepare the required permit applications and development plans. Gorrill Palmer has successfully designed and permitted numerous residential and commercial projects since 1998. The firm has seven Professional Engineers in the land development group with over 120 years of experience. They have successfully designed and permitted numerous residential and commercial projects since 1998, and the senior staff has permitted more than 10,000,000 SF of building area with agencies. Flycatcher LLC personnel have a depth of environmental inventory, analysis and permitting expertise involving development, conservation, and land planning. Resumes of Gorrill Palmer and Flycatcher LLC are available upon request.

GZA Geoenvironmental, Inc has been contracted to provide subsurface explorations and groundwater monitoring services for the project team. GZA was founded in 1964 and provides over 700 staff members across 30 offices in the United States.

Below is a list of additional consultants and their responsibilities related to this project:

Firm	Services	Contact
Gorrill Palmer 300 Southborough Drive - Suite 200 South Portland, ME 04106 207.772.2515	Civil Site & Traffic Engineering	Drew Gagnon, P.E. dgagnon@gorrillpalmer.com Randy Dunton, PTOE rdunton@gorrillpalmer.com
Flycatcher LLC 106 Lafayette Street, Suite 1C Yarmouth, ME 04096 207.217.0959	HISS Mapping	Rodney Kelshaw, (CWB/CPSS/PWS/CPESC/LSE/LSS) rodney@flycatcherllc.com
Owen Haskell 390 US Route 1, Unit 10 Falmouth, ME 04105 207.774.0424	Surveyor	Randy Loubier, PLS rloubier@owenhaskell.com
GZA 707 Sable Oaks Drive Suite 150 South Portland, ME 04106 207.879.9190	Groundwater Monitoring	Matt Gozdor Senior Technical Specialist Matthew.Gozdor@gza.com

V. STATE AND FEDERAL AGENCY REVIEWS

The proposed project requires a MaineDEP Site Law Amendment due to the creation of over 3 acres of impervious area. The Applicant submitted this Site Law permit amendment in October 2023, and have been coordinating with the DEP on submission and technical items. The permit will be forwarded to the Town upon receipt. The Applicant is anticipating having this permit within the next month. It should be noted that the Stormwater technical review has been completed and signed off from the Stormwater Management Team at the Department.

The following entities were contacted for information on potential wildlife and botanical features that could be impacted by the project:

- Maine Natural Areas Program
- Maine Department of Inland Fisheries and Wildlife
- United States Department of the Interior Fish and Wildlife Service

The Maine Natural Areas Program stated that, *"According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area."*

The Maine Department of Inland Fisheries and Wildlife wrote, "*Our Department has not mapped any Essential Habitats or inland fisheries habitats that would be directly affected by your project."* They also noted several of the eight species of bats that occur in Maine likely are in the project location during migration and/or the breeding season, though the project is not anticipated to significantly impact the species of bats.

The United States Department of the Interior Fish and Wildlife Service provided an Official Species List for the approximate location of the site. The Endangered Species Act Species were given and for mammals, the Northern Long-eared Bat *Myotis septentrionalis* was named, and for insects the Monarch Butterfly *Danaus plexippus* was listed. It was also noted that "there are no critical habitats within your project area under this office's jurisdiction."

To preserve local significant history and to comply with local regulations, informational request letters were sent to the following sources:

- Maine Historic Preservation Commission
- Maine Tribal Historic Offices
    - Passamaquoddy Tribe of Indians
    - Houlton Band of Maliseet Indians
    - Penobscot Nation
    - Mi'kmaq Nation

Representatives from the above list were asked to provide cultural and historical insight within their areas of expertise relative to the planned location of the project. There were no raised concerns, though responses were received with requests to be notified immediately if cultural or historical material is discovered.

The correspondence for these entities can be found in Attachment 7.

VI. TRAFFIC IMPACTS AND ANALYSIS

The proposed project is anticipated to generate 81 trip ends in the AM and 98 trip ends in the PM peak hour of the generator. Based on this analysis, a MaineDOT Permit is not required (less than 100 vehicular trip ends in any peak hour).

In addition, offsite impacts were evaluated as part of this proposed development. A right turn lane from Tandberg Trail onto the Staples Access Road is not warranted. Sight distances were also evaluated, and it was recommended select clearing near the Manchester Drive/Shaw's Access Road should be performed as part of this project.

A full traffic analysis, report, and supporting calculations can be found in Attachment 14 of this submission.

VII. ZONING & LOT COVERAGE

The location of the site is in the Commercial District (C-1) Zone and the proposed residential development is consistent with the zoning. Lot lines with dimensions and zoning setback lines can be found in the provided plan set. The overall lot area of the property is approximately ± 9 acres. Additional Space and Bulk standards are shown in the attached plan set, and provided below for ease of review:

SPACE AND BULK STANDARDS		
ZONE: COMMERCIAL DISTRICT 1 (C1)	**Required**	**Provided**
MIN. LOT SIZE	N/A	8.9 AC
BUILDING SETBACKS		
FRONT	0-20'	VARIES
SIDE	6'	>6'
REAR	6'	>6'
MINIMUM FRONTAGE	100'	672'
MAXIMUM BUILDING HEIGHT	N/A	3 - 4 STORIES

Open space is provided in the proposed project. The Open Space standard is met under the Site Plan and Multifamily Development Standards (Chapter 120, Land Use, Section 120-814). Additional information relative to the project meeting this standard will be provided during the Site Plan application process which is anticipated to follow this preliminary subdivision submission.

The following Sections of this Narrative review the Performance and Design Standards according to *Article 9 (120-911) Subdivision Review* in *Chapter 120 Land Use* of Town Code.

VIII. Article 9; Subdivision Review - Performance and Design Standards

A. Basic Subdivision Layout:

1) **Lots:** The proposed development is located in the C-1 Zone which has no Net Residential Density Standard. The Applicant will work with local authorities for the addressing information of buildings during future Site Plan and Final Subdivision review.

2) **Utilities:** The development proposes the following companies to provide utility services:
   - Water → Portland Water District
   - Sanitary Sewer → Portland Water District
   - Electric → Central Maine Power
   - Cable/Telephone → Spectrum
   - Gas → Maine Natural Gas

   Contact and address information can be found on the Cover Sheet of the submitted plan set. Proposed locations can be found on the Utility Sheet(s) of the submitted plan set.

3) **Monuments:** Monuments shall be placed as required by the Maine Board of Licensure for Professional Land Surveyors for the previously approved Subdivision limits. Please note that no lot line adjustments are proposed as part of this preliminary subdivision application.

B. Sufficient Water; Water Supply:

Water is to be supplied by Portland Water District (PWD). An 8" watermain is proposed within the access road of the site. This watermain is proposed to connect to an existing 8" watermain to the west of the site. Water services to each building are proposed as 6" fire and 2" domestic services that stem from the proposed 8" main. In addition, an offsite watermain renewal is provided on Basin Road that will complete an 8" watermain loop for the North Windham area and increase redundancy. The watermain infrastructure is proposed as a public watermain within the access road to the site and a 45 ft utility easement is provided from Manchester Drive for access and maintenance. A request for Ability to Serve has been sent to Portland Water District. Their response will be forwarded upon receipt.

C. Erosion and Sedimentation Control:

The layout of the site including but not limited to the buildings, parking areas, through-road, stormwater management facility, etc., was located to the most extent practicable to harmonize with the existing topography. The site limited the amount of clearing, disturbed area, and fill required due to drainage considerations to the greatest extent practical. An Erosion and Sedimentation Control Report is included in Attachment 10 of this submission. Included in the report is the use of erosion and sediment control best management practices.

D. Sewage Disposal:

A new public sewer system is being designed for the Town of Windham. The system is proposed to be operational in late 2025 and it is the Applicant's intention that buildings be occupied shortly after the initial operation of this main. At closing, the site will convey a 6,500 SF lot to the Town of

Windham for a public pump station location. The Applicant has been working closely with PWD and the Town of Windham to coordinate service connection to this main to ensure the proposed project will have adequate means of sewage disposal. A request for Ability to Serve has been sent to Portland Water District. Their response will be forwarded upon receipt.

E. Impact on Natural Beauty, Aesthetics, Historic Sites, Wildlife Habitat, Rare Natural Areas or Public Access to the Shoreline:

The plan includes the planting of street trees along the private access road on site. All open space common land will remain in the Applicant's ownership and maintained by the Applicant or a property management company.

Statements from State Agencies on Wildlife habitat, rare natural areas and historic sites from the MDIFW, MNAP and MHPC, respectively, are summarized in the project narrative above and provided in Attachment 7 with additional supporting information.

F. Conformance with Land Use Ordinances:

The proposed development is located in the C-1 zoning district. The dimensional requirements have been met and discussed above previously in *VII. Zoning & Lot Coverage*.

G. Financial and Technical Capacity:

The Applicant has the Technical and Financial Capacity to complete the proposed project. Further details can be found in the above narrative in Section *IV. Financial and Technical Capacity*.

H. Impact on Groundwater Quality or Quantity:

The development will utilize a public watermain that is maintained by Portland Water District for drinking water purposes and will connect to the future North Windham Sanitary Sewer project for its sanitary disposal.

An infiltration basin is proposed as part of the Stormwater Management Plan to recharge the aquifer in accordance with Chapter 500 standards. Please see Stormwater Management Report included in Attachment 9 for details regarding this BMP.

I. Floodplain Management:

The site is not located within a mapped FEMA 100-year floodplain. It is situated with a Flood Zone C and labeled as an area of minimal flooding. The National Flood Insurance Program's Flood Insurance Rate Map (FIRM), effective September 2, 1981 (Panel 15 of 35) for the town of Windham in Cumberland County, ME can be found in Attachment 15.

J. Stormwater Management:

The fourteen proposed buildings on site are designed to utilize Drip Edge Filters to treat impervious areas from roof tops. To meet treatment requirements, a Subsurface Infiltration System is proposed in the Southeastern corner of the lot. A Stormwater Management Report is included in Attachment 9 of this submission for detailed analysis.

In addition, it was requested during previous coordination meetings with the Town that the Applicant review the offsite drainage issues at the northeast corner of the site. This is the private intersection with the Staple's Access Road and their rear loading area. GP reviewed the existing drainage infrastructure and ponding that occurs at this low point. It was determined that the stormwater and drainage structures should be cleaned of sediment, and an additional overflow pipe installed connecting to a nearby system in the event of heavy rain events. Please see C104 in the submitted plan set for details of the suggested remediation plan.

K. Conservation Subdivisions:

The proposed project is not a conservation subdivision.

L. Compliance with Timber Harvesting Rules:

The definition of "liquidation harvesting" in accordance with 12 M.R.S.A §8868, Subsection 6 is, "… the purchase of timberland followed by a harvest that removes most or all commercial value in standing timber, without regard for long-term forest management principles, and the subsequent sale or attempted resale of the harvested land within 5 years." As this goal for this project is not resale of harvested land, the proposed project is in compliance with the Timber Harvesting Rules.

M. Traffic Conditions and Streets:

A complete traffic analysis is provided in Section VI of this narrative and additional details provided in Attachment 14.

The proposed private access road that connects the Shaw's private roads through the site has been designed under the Multifamily Development Standards for Access Drives as a residential street. Details on the proposed section will be discussed during a future site plan review. There are cross references within the Thoroughfare Standards to the Major Private Road standards (Tables 3 and 4). The applicant has met the major private street construction standards for the applicable standards.

N. Maintenance of Common Elements:

The proposed project will contain rental apartments. Association documents are not applicable for this use as the ownership will remain in the Applicant's name. Existing and proposed easement language is provided in Attachment 16 of this submission detailing the utility and access easements on site. Please note the easements provided are draft and still in review with the current owner of the property, BWW Windham II LLC.

The project team looks forward to hearing from you. If you have any questions with the information being submitted, please contact me at 772-2515 or dgagnon@gorrillpalmer.com

Sincerely,

GORRILL PALMER

Drew Gagnon, PE
Project Manager
Phone 207-772-2515 x288
dgagnon@gorrillpalmer.com

c: Loni Graiver, Windham Village Apartments, LLC
Angelo Coppola, Windham Village Apartments, LLC

ATTACHMENT 2

APPLICATION FORMS

Town of Windham
Planning Department:
8 School Road
Windham, Maine 04062
Tel: (207) 894-5960 ext. 2
Fax: (207) 892-1916 -
www.windhammaine.us

MAJOR SUBDIVISION - PRELIMINARY PLAN - REVIEW APPLICATION

FEES FOR MAJOR SUBDIVISION PRELIMINARY PLAN REVIEW	**APPLICATION FEE:** + EACH LOT > 10 = $300/LOT	☑ $1,300.00 ☑ $ 48,600	**AMOUNT PAID:** $_____ DATE: _____ *Office Use:*	*Office Stamp:*	
	REVIEW ESCROW: Up to 10 Lots = $2,500 11 – 15 Lots = $3,000 16 – 30 Lots = $4,000 30 + Lots = $5,000	☑ $ 5,000			

PROPERTY DESCRIPTION	**Parcel ID**	**Map(s) #** 70	**Lot(s) #** 1A	**Zoning District(s)**	C-1	**Total Land Area SF:**	395,925
	# Lots/dwelling units:		**Total Distr. >1Ac.** ☑ Y ☐ N			**Est. Road Length(ft):**	
	Physical Address	770 Roosevelt Trail, Windham, ME 04062		**Watershed:**	Presumpscot River		

PROPERTY OWNER'S INFORMATION	**Name**	B33 Windham II LLC	**Name of Business**	Bridge 33 Capital
	Phone	206-538-0083	**Mailing Address:**	9330 W Sahara Ave Ste 270
	Fax or Cell			Las Vegas, NV 89117
	Email	derrick.almassy@bridge33capital.com		
APPLICANT'S INFORMATION (*IF DIFFERENT FROM OWNER*)	**Name**	Windham Village Apartments, LLC	**Name of Business:**	
	Phone	207-329-7355	**Mailing Address**	40 Farm Gate Road
	Fax or Cell			Falmouth, ME 04105
	Email	loni@graiverhomes.com		
APPLICANT'S AGENT INFORMATION	**Name**	Drew Gagnon	**Name of Business**	Gorrill Palmer
	Phone	207-772-2515	**Mailing Address**	300 Southborough Drive, Suite 200 South Portland, ME 04106
	Fax or Cell	207-653-8748		
	Email	dgagnon@gorrillpalmer.com		

PROJECT INFORMATION

Existing Land Use *(Use extra paper, if necessary)*:

The site is a portion of the existing Shaw's Grocery Parcel. The site is wooded and contains an existing septic disposal field for the Shaw's store.

Provide a narrative description of the Proposed Project *(Use extra paper, if necessary)*:

The project is proposed to construct 29 one-bedroom and 143 two-bedroom multifamily units (total of 172 units) along with associated utility, drainage, and stormwater infrastructure. Additionally, there are walkways, landscaped areas, open space and outdoor amenity areas provided. The proposed development will have access to two existing private access roads that connect to Manchester Drive and Tandberg Trail, respectively. A proposed private residential access street will serve the site and connect both existing private access roads through the site.

Provide a narrative description of construction constraints (wetlands, shoreland zone, flood plain, non-conformance, etc.):

No wetlands exist on site. The site is mostly sand and existing topography general slopes slightly south towards Tandberg trail.

MAJOR SUBDIVISION - PRELIMINARY PLAN - REVIEW APPLICATION REQUIREMENTS

Section 910 of the Land Use Ordinance

The submission shall contain, five (5) copies of the following information, including full plan sets. Along with one (1) electronic version of the entire submission unless a waiver of a submission requirement is granted.

The Major Plan document/map:

A) Plan size: 24" X 36"
B) Plan Scale: No greater 1":100'
C) Title block: Applicant's name and address

- Name of the preparer of plans with professional information
- Parcel's tax map identification (map and lot) and street address, if available

- Complete application submission deadline: three (3) weeks before the desired Staff Review Committee meeting.
  - Five copies of the application and plans
  - Application Payment and Review Escrow
- A pre-submission meeting with the Town staff is required.
- Contact information:
  Windham Planning Department (207) 894-5960, ext. 2
  Steve Puleo, Town Planner sjpuleo@windhammaine.us
  Amanda Lessard, Planning Director allessard@windhammaine.us

APPLICANT/PLANNER'S CHECKLIST FOR MAJOR SUBDIVISION REVIEW

SUBMITTALS THAT THE TOWN PLANNER DEEMS SUFFICIENTLY LACKING IN CONTENT WILL NOT BE SCHEDULED FOR PLANNING BOARD REVIEW.

The following checklist includes items generally required for development by the Town of Windham's LAND USE ORDINANCE, Sections 907.B., 910.C., & 911. Due to projects specifics, are required to provide a complete and accurate set of plans, reports, and supporting documentation (as listed in the checklist below).

IT IS THE RESPONSIBILITY OF THE APPLICANT TO PRESENT A CLEAR UNDERSTANDING OF THE PROJECT.

Staff recommends the applicant provide a proposed construction schedule, a draft Homeowner's Association (HOA) documentation, public open space to be provided, and written offers of cession to the Town, and/or road maintenance agreement with at the Preliminary Plan application submission.

Major Subdivision Preliminary Plan Submission Requirements:			Major Subdivision Preliminary Plan Submission Requirements (Continued):	Applicant	Staff
A. Mandatory Written Information submitted in a bound format:	**Applicant**	**Staff**	6. Vicinity plan showing the area within 250 feet, to include:	☑	☐
1. A fully executed application form, signed by a person with right, title, or interest in the property or Authorized Agent.	☑	☐	i. approximate location of all property lines and acreage of parcels.	☑	☐
2. Evidence of payment of the application and escrow fees.	☑	☐	ii. locations, widths, and names of existing, filed, or proposed streets, easements, or building footprints.	☑	☐
3. Proposed name of the Subdivision.	☑	☐	iii. location and designations of any public spaces.	☑	☐
4. Verification of right, title, or interest in the property, and any abutting property, by deed, purchase and sales agreement, option to purchase, or some other proof of interest.	☑	☐	iv. outline of the proposed subdivision, together with its street system and an indication of future probably street system, if the proposed subdivision encompasses only part of the applicant's entire property.	☑	☐
5. Copy(ies) of the most recently recorded deed for the parcel, along with a copy(ies) of all existing deed restrictions, easements, rights-of-way, or some other proof of interest.	☑	☐	7. Standard boundary survey of the parcel, including all contiguous land in common ownership within the last 5 years.	☑	☐
6. Copy(ies) of any existing and/or proposed covenants, deed restrictions intended to cover all or part of the lots or dwellings in the subdivision.	☑	☐	8. Existing and proposed street names, pedestrian ways, lot easements, and areas to be reserved or dedicated to public use.	☑	☐
7. Copy(ies) of any existing or proposed easements on the property	☑	☐	9. Contour lines at 2-foot intervals, or intervals required by the Board, showing elevations to the required datum.	☑	☐
8. Name, registration number, and seal of Maine Licensed Professional Land Surveyor who conducted the survey.	☑	☐	10. Typical cross-sections of the proposed grading for roadways, sidewalks, etc., including width, type of pavement, elevations, and grades.	☑	☐
9. Name, registration number, and seal of the licensed professional who prepared the plan (if applicable).	☑	☐			
10. An indication of the type of sewage disposal to be used in the subdivision.			11. Wetland areas shall be delineated on the survey. If none, please note.	☑	☐
i. If connecting to the public sewer, provide a letter from Portland Water District stating the District can collect and treat the wastewater	☑	☐	12. The number of acres within the proposed subdivision, location of property lines, existing buildings, vegetative cover type, specimen trees, if present, and other essential existing physical features.	☑	☐

Mandatory Written Information submitted in a bound format (continued):	Applicant	Staff			
ii. If using subsurface wastewater disposal systems (septic), submit test pit analyses prepared by a Maine Licensed Site Evaluator or Certified Soil Scientist. Test pit locations must be shown on a map.	☐	☐	13. Rivers, streams, and brooks within or adjacent to the proposed subdivision. If any portion of the proposed subdivision is in the direct watershed of a great pond, note which great pond.	☑	☐
11. Indicate the type of water supply system(s) to be used in the subdivision.	☑	☐	14. Rivers, streams, and brooks within or adjacent to the proposed subdivision. If any portion of the proposed subdivision is in the direct watershed of a great pond, note which great pond.	☑	☐
12. If connecting to public water, submit a written statement from the Portland Water District indicating there is adequate supply and pressure for the subdivision.	☑	☐	15. Location & size of existing and proposed sewers, water mains, culverts, bridges, and drainage ways on or adjacent to the property to be subdivided. The Board may require this information to be depicted via cross-section, plan, or profile views.	☑	☐
13. Names and addresses of the record owner, applicant, and adjoining property owners.	☑	☐	16. Location, names, and present width of existing streets, highways, easements, building lines, parks, and other open spaces on or adjacent to the subdivision.	☑	☐
14. An acceptable title opinion proving the right of access to the proposed subdivision or site for any property proposed for development on or off a private way or private road.	☑	☐	17. Location and widths of any streets, public improvements, or open space within the subdivision (if any) are shown on the official map and the comprehensive plan.	☑	☐
15. The name and contact information for the road association whose private way or road is used to access the subdivision.	☑	☐	18. All parcels of land proposed to be dedicated to public use and the conditions of such dedication.	☐	☐
16. Financial Capacity. Estimated costs of development, and an itemization of major costs.			19. Location of any open space to be preserved or common areas to be created, and general description of proposed ownership, improvement, and management	☑	☐
			20. Approximate location of treeline after development.	☑	☐
i. Estimated costs of development, and an itemization of major costs.	☑	☐	21. Delineate boundaries of any flood hazard areas and the 100-year flood elevation as depicted on the Town's Flood Insurance Rate Map.	☑	☐
			22. Show any areas within or adjacent to the proposed subdivision which has been identified by the Maine Department of Inland Fisheries and Wildlife "Beginning with Habitat project maps or within the Comprehensive Plan.		
ii. Financing - provide one of the following:	☑	☐	23. Show areas within or adjacent to the proposed subdivision which is either listed on or eligible for the National Register of Historic Places, or have been identified in the comprehensive plan or by the Maine Historic Preservation Commission as sensitive or likely to contain such sites.	☐	☐
a. Letter of commitment to funding from a financial institution, governmental agency, or other funding agency.	☐	☐			
b. Annual corporate report with explanatory material showing the availability of liquid assets to finance development	☐	☐	24. Erosion & Sedimentation control plan, prepared by MDEP Stormwater Law Chapter 500 Basic Standards, and the MDEP Maine Erosion and Sediment Control Best Management Practices, published March 2003.	☑	☐
c. Bank statement showing the availability of funds if personally financing development	☐	☐	25. A stormwater management plan, prepared by a Maine licensed Professional Engineer by the most recent edition of Stormwater Management For Maine: BMPS Technical Design Manual, published by the MDEP 2006.	☑	☐
d. Cash equity commitment.	☐	☐			
e. Financial plan for remaining financing.	☐	☐	26. For Cluster Subdivisions that do not maximize the development potential of the property being subdivided, a conceptual master plan for the remaining land showing future roads, Open Space, and lot layout, consistent with the requirements of 911.K., Custer Developments will be submitted.	☐	☐
f. Letter from financial institution indicating an intention to finance.	☑	☐	**C. Submission information for which a waiver may be granted.**	**Applicant**	**Staff**
iii. If a corporation, Certificate of Good Standing from the Secretary of State	☑	☐	1. High-intensity soil survey by a Certified Soil Scientist	☑	☐
2. Technical Capacity:			2. Landscape Plan	☑	☐
			3. Hydrogeologic assessment - required if i) subdivision is not served by public sewer and either any part of the subdivision is over a sand and gravel aquifer or has an average density of more than one dwelling unit per 100,000 square feet, or ii) where site considerations or development design indicate the greater potential of adverse impacts on groundwater quality.	☐	☐

i. A statement of the applicant's experience and training related to the nature of the development, including developments receiving permits from the Town.	☑	☐	a) Map showing basic soil types.	☐	☐
			b) Depth to the water table at representative points	☐	☐
ii. Resumes or similar documents showing experience and qualifications of full-time, permanent, or temporary staff contracted with or employed by the applicant who will design the development.	☑	☐	c) Drainage conditions throughout the subdivision.	☐	☐
			d) Data on existing groundwater quality.	☐	☐
			e) Analysis and evaluation of the effect of the subdivision on groundwater.	☐	☐
2. Name and contact information for the road association whose private way or road is used to access the subdivision (if applicable).	☑	☐	f) map showing the location of any subsurface wastewater disposal systems and drinking water wells within the subdivision & within 200 feet of the subdivision boundaries.	☐	☐
			4. Estimate the amount and type of vehicular traffic to be generated on a daily basis and at peak hours.	☑	☐
B. Mandatory Preliminary Plan Information	**Applicant**	**Staff**	5. Traffic Impact Analysis for subdivisions involving 28 or more parking spaces or projected to generate more than 140 vehicle trips per day.	☑	☐
1. Name of subdivision, date, and scale.	☑	☐			
2. Stamp of the Maine License Professional Land Surveyor that conducted the survey, including at least one copy of the original stamped seal that is embossed and signed.	☑	☐	6. If any portion of the subdivision is in the direct watershed of a great pond.	☐	☐
			i. phosphorous impact analysis and control plan.	☐	☐
3. Stamp with the date and signature of the Maine Licensed Professional Engineer that prepared the plans.	☑	☐	ii. long term maintenance plan for all phosphorous control measures.	☐	☐
4. North arrow identifying all of the following: Grid North, Magnetic North, declination between Grid and Magnetic, and whether Magnetic or Grid bearings were used in the plan design.	☑	☐	iii. contour lines at an interval of 2 feet.	☐	☐
			iv. delineate areas with sustained slopes greater than 25% covering more than one acre.	☐	☐
5. Location map showing the subdivision within the municipality.	☑	☐	**Electronic Submission**	☑	☐

The undersigned *hereby makes an application to the Town of Windham for approval of the proposed project and declares the foregoing to be true and accurate to the best of his/her knowledge.*

Drew Gagnon Digitally signed by Drew Gagnon Date: 2024.03.19 15:37:12 -04'00' 3-19-24 Drew Gagnon

APPLICANT OR AGENT'S SIGNATURE DATE PLEASE TYPE OR PRINT THE NAME

B33 WINDHAM II LLC
601 Union Street, Suite 1115
Seattle, Washington 98101

January 22, 2024

Town of Windham
Planning Department
Attn: Amanda Lessard, Planning Director
8 School Road
Windham, Maine 04062

Re: 770 Tandberg Trail, Windham | Tax Map 70, Lot 1A
Agent Authorization for Major Subdivision Review

Dear Mr. Puleo,

B33 Windham II LLC, a Delaware limited liability company, is the current record owner of land located at 770 Tandberg Trail, Windham, Maine, being designated on the Town of Windham Tax Map 70, as Lot 1A.

Windham Village Apartments LLC, a Maine limited liability company, is the buyer of an 8.93± acre portion of the aforementioned land, pursuant to the terms and conditions set forth in a Purchase and Sale Agreement, dated July 11, 2022, as amended October 11, 2022, November 9, 2022 and October 18, 2023.

Please accept this letter as authorization for Gorrill-Palmer Consulting Engineers, Inc. and Windham Village Apartments LLC, to represent us before the Town of Windham Planning Department, and Town of Windham Planning Board in connection with an application for and approval of Major Subdivision Review for the subject land.

If you have any questions about this letter, you may contact me at 360-509-0950.

Very truly yours,

B33 Windham II LLC

By: DocuSigned by: Alex Banchero 2DB5F94657134D1...
Name: Alex Banchero
Title: EVP - Operations

cc: Drew Gagnon
Loni Graiver
Mike Fisher, Esq.
Steve Puleo, Planner

AGENT AUTHORIZATION

APPLICANT/ OWNER	**Name**	Loni Gravier		
PROPERTY DESCRIPTION	**Physical Address**	770 Roosevelt Trail, Windham, ME 04062	**Map**	70
			Lot	1A
APPLICANT'S AGENT INFORMATION	**Name**	Drew Gagnon		
	Phone	772-2515	**Business Name & Mailing Address**	Gorrill Palmer 300 Southborough Drive, Suite 200 South Portland, ME 04106
	Fax/Cell	207-653-8748		
	Email	dgagnon@gorrillpalmer.com		

Said agent(s) may represent me/us before Windham Town officers and the Windham Planning Board to expedite and complete the approval of the proposed development for this parcel.

APPLICANT SIGNATURE

4-18-23
DATE

Loni Gravier
PLEASE TYPE OR PRINT NAME HERE

CO-APPLICANT SIGNATURE

DATE

PLEASE TYPE OR PRINT NAME HERE

APPLICANT'S AGENT SIGNATURE

4-18-23
DATE

Drew Gagnon
PLEASE TYPE OR PRINT NAME HERE

ATTACHMENT 3

RIGHT, TITLE, OR INTEREST

PURCHASE AND SALE AGREEMENT

PURCHASE AND SALE AGREEMENT

THIS PURCHASE AND SALE AGREEMENT (the "**Contract**") is made and entered into as of the 11th day of July, 2022 (the "**Effective Date**"), by and between **B33 WINDHAM II LLC**, a Delaware limited liability company ("**Seller**"), and **LONI GRAIVER**, his successors and assigns ("**Buyer**").

WITNESSETH:

WHEREAS, Seller is the owner of the Property (as defined below); and

WHEREAS, Buyer desires to purchase the Property, on the terms and conditions hereinafter set out.

NOW, THEREFORE, in consideration of the agreements herein contained and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Seller and Buyer agree as follows:

ARTICLE I.
PURCHASE AND SALE OF THE PROPERTY

1.1 General. Subject to the terms and provisions of this Contract, Seller agrees to sell to Buyer, and Buyer agrees to purchase from Seller, (a) that certain parcel of land as depicted in **Exhibit A** attached hereto, located generally at 770 Roosevelt Trail in Windham, Cumberland County, Maine and consisting of approximately 9+/- acres, the legal description of which shall be determined in accordance with the provisions of this Contract, as reasonably agreed between Buyer and Seller, which, upon determination shall automatically be incorporated as an update to said Exhibit A hereof, together with all rights, benefits, privileges, easements and other appurtenances to such land and, all of Seller's rights in and to strips and gores and any land lying in the bed of any public right of way adjacent to such land (collectively, the "**Real Property**"), and (b) all of Seller's right, title and interest, if any, in all tangible and intangible personal property located on and used in connection with the operation of the Premises, excluding, however, all personal property owned by parties, other than Seller, under any lease, as applicable (collectively, the "**Personal Property**", and together with the Real Property, the "**Property**").

ARTICLE II.
PURCHASE PRICE

2.1 Purchase Price. The total purchase price (the "**Purchase Price**") for the Property payable to Seller by Buyer, which Buyer agrees to pay and Seller agrees to accept, shall be the sum of [redacted] and 00/100 Dollars ([redacted]).

2.2 Earnest Money. Within two (2) days of the Effective Date, Buyer shall deposit the sum of [redacted] and 00/100 Dollars ([redacted]) (the "**Earnest Money**") with First American Title Insurance Company, 2425 East Camelback Road, Suite 300, Phoenix, Arizona 85016, Attn.: Sally Pearson (the "**Title Company**") to be held in one or more fully-insured escrow accounts. Buyer may request that the escrow account bear interest if the Title Company permits and, if so, all interest earned from the Earnest Money prior to Closing shall be Earnest Money. If the parties close on this Contract, the Earnest Money shall be credited against and applied to the Purchase Price. The Earnest Money shall be nonrefundable to Buyer, unless this Contract terminates due to Seller's default or pursuant to an express right to terminate in favor of Buyer under the terms set forth herein (unless expressly provided herein to be nonrefundable at such time of termination). The Purchase Price, less credit for the Earnest Money, and plus or minus

prorations and adjustments as set forth herein, shall be paid by the Buyer to the Seller by wire transfer of immediately available federal funds on the Closing Date (as defined below).

ARTICLE III.
TITLE AND SURVEY

3.1 Title Commitment. Within forty-five (45) days of the Effective Date, Seller shall order (a) a current commitment for an ALTA 2006 Owner's Policy of Title Insurance with respect to the Real Property, which may include additional, adjacent property owned by Seller (the "**Title Commitment**") issued by Title Company and (b) complete copies of all exception documents listed in the Title Commitment (the "**Exception Documents**").

3.2 Survey. Within five(5) days of the Effective Date, Seller shall provide to Buyer a prior survey of the Property, which survey may include additional real property. During the Governmental Approvals Period, Buyer may, at its own cost and expense, obtain a new ALTA/NSPS Land Title Survey of the Real Property (the "**Survey**").

3.3 Review of Title. Buyer shall have ten (10) days after receipt of the Title Commitment in which to notify Seller in writing (the "**Objection Notice**") of any objections Buyer has to any matters shown or referred to in the Title Commitment (the "**Objectionable Exceptions**"). Any title encumbrances or exceptions which are set forth in the Title Commitment to which Buyer does not object in the Objection Notice shall be deemed to be permitted exceptions to the status of Seller's title (the "**Permitted Exceptions**").

3.4 With regard to each of the Objectionable Exceptions, Seller shall, within seven (7) days after the date of Seller's receipt of the Objection Notice, (a) cure such objection to Buyer's reasonable satisfaction and provide evidence of such cure to Buyer or undertake to cure such objection on or before the Closing Date, or (b) notify Buyer that Seller will not undertake to cure such objection. If Seller has not cured such Objectionable Exceptions or has notified Buyer that Seller will not undertake to cure the objection within such period, Buyer may, by written notice to Seller within five (5) days thereafter, but in all events prior to expiration of the Due Diligence Period, at Buyer's option, (a) waive such Objectionable Exceptions and proceed to Closing (at which point such Objectionable Exceptions shall be deemed to be Permitted Exceptions), or (b) terminate this Contract and receive a full refund of the Earnest Money, including any interest earned therefrom. Failure to send such written notice shall be deemed a waiver by Buyer of such Objectionable Exceptions. In the event Buyer waives any of the Objectionable Exceptions by proceeding to Closing, Seller shall have no liability to Buyer for the existence of any such waived Objectionable Exception or for Seller's election to not cure or failure to cure any such waived Objectionable Exception. Buyer and Seller shall each cooperate to cause to be delivered to Buyer at Closing (as defined below) an owner's title insurance policy with extended coverage (the "**Title Policy**") issued by the Title Company. The Title Policy may contain any endorsements requested by Buyer, at Buyer's sole cost and expense.

ARTICLE IV.
REPRESENTATIONS AND WARRANTIES

4.1 Representations and Warranties of Buyer. Buyer hereby represents and warrants to Seller, as of the Effective Date and as of Closing, as follows:

(a) No Conflict. Buyer is not prohibited from consummating the transactions contemplated in this Contract, by any law, regulation, agreement, instrument, restriction, order or judgment.

(b) Organization. Buyer has all requisite power and authority to carry on its business as now being conducted, and no additional consents from any other party are required in order for Buyer to enter into this Contract.

(c) Due Authorization. Buyer has full right, title, authority and capacity to execute, deliver and perform this Contract and to consummate all of the transactions contemplated herein.

(d) No Proceedings. There are no attachments, executions, assignments for the benefit of creditors, receiverships, conservatorships or voluntary or involuntary proceedings in bankruptcy or pursuant to any other debtor relief laws contemplated or filed by Buyer or pending against Buyer.

(e) Enforceability. This Contract has been duly executed and delivered by Buyer, and assuming due authorization, execution and delivery by the other parties hereto, constitutes its valid and binding obligation, enforceable in accordance with its terms, except as such enforceability may be limited by applicable bankruptcy, insolvency, moratorium, reorganization or similar laws and the availability of equitable remedies.

(f) Survival. The representations and warranties set forth in this Section 4.1 shall survive Closing for a period of six (6) months.

4.2 Representations and Warranties of Seller. Seller hereby represents and warrants to Buyer, as of the Effective Date and as of Closing, as follows:

(a) No Conflict. Seller is not prohibited from consummating the transactions contemplated in this Contract, by any law, regulation, agreement, instrument, restriction, order or judgment.

(b) Organization. Seller is a limited liability company duly organized, validly existing and in good standing under the laws of the State of Delaware. Seller has all requisite corporate power and authority to carry on its business as now being conducted.

(c) Due Authorization. Seller has full right, title, authority and capacity to execute, deliver and perform this Contract and to consummate all of the transactions contemplated herein.

(d) No Proceedings. There are no attachments, executions, assignments for the benefit of creditors, receiverships, conservatorships or voluntary or involuntary proceedings in bankruptcy or pursuant to any other debtor relief laws contemplated or filed by Seller or pending against Seller.

(e) Enforceability. This Contract has been duly executed and delivered by Seller, and assuming due authorization, execution and delivery by the other parties hereto, constitutes its valid and binding obligation, enforceable in accordance with its terms, except as such enforceability may be limited by applicable bankruptcy, insolvency, moratorium, reorganization or similar laws and the availability of equitable remedies.

(f) Environmental. To the best of Seller's actual knowledge, and without having undertaken any independent investigation therefor, Seller has received no written notice from any governmental authority of any violation of any law applicable to the Property (including, without limitation, any environmental or health law or regulation) and, to the best of Seller's actual knowledge and without having undertaken any independent investigation (other than any Phase I or other environmental report generated during Seller's ownership), there are no hazardous materials or underground storage tanks or related equipment on or about the Property (but

excluding reasonable quantities of hazardous materials typically used in the ordinary course at properties similar to the Property).

(g) Survival. The representations and warranties set forth in this Section 4.2 shall survive Closing for a period of six (6) months.

When used in this Contract or any of its Exhibits, the phrase the "**Knowledge of Seller**", or any similar term means the actual current knowledge, without investigation of any kind or nature other than making inquiry of the owners, officer(s) or employee(s) of Seller who is/are directly responsible for administering or servicing the Property; provided, however, that such owner, officer or employee shall not be personally liable to Buyer for any matter in connection herewith. Notwithstanding anything herein to the contrary, all representations and warranties contained in this Section 4.2 shall, at the expiration of the Due Diligence Period, be deemed updated to reflect the following matters (collectively, the "**Buyer Knowledge Matters**"), as if such Buyer Knowledge Matters were originally set forth in this Contract: (i) all matters of which any Buyer had actual knowledge on or prior to the expiration of the Due Diligence Period ; and (ii) all knowledge that any Buyer should reasonably be deemed to possess solely as a result of the contents or results of, or disclosures in, any Buyer inspections or reports produced relating thereto, any Due Diligence Documents, the Title Commitment, the Survey or any other documents provided to or obtained by any Buyer in connection with this Contract on or prior to the expiration of the Due Diligence Period.

4.3 Buyer Acknowledgements; Disclaimer; Release.

(a) Buyer acknowledges that it has or will have, by the end of the Due Diligence Period, inspected the Property to the extent it deems necessary in connection with this Contract. Buyer acknowledges and agrees that, except for the representations and warranties of Seller specified in Section 4.2 of this Contract, **SELLER HAS NOT MADE, DOES NOT MAKE AND SPECIFICALLY NEGATES AND DISCLAIMS ANY REPRESENTATIONS, WARRANTIES, PROMISES, COVENANTS, AGREEMENTS OR GUARANTIES OF ANY KIND OR CHARACTER WHATSOEVER, WHETHER EXPRESS OR IMPLIED, ORAL OR WRITTEN, PAST, PRESENT OR FUTURE, OF, AS TO, CONCERNING OR WITH RESPECT TO (i) THE VALUE, NATURE, QUALITY, PHYSICAL OR ANY OTHER CONDITION OF THE PROPERTY, (ii) THE INCOME TO BE DERIVED FROM THE PROPERTY, (iii) THE SUITABILITY OF THE PROPERTY FOR ANY AND ALL ACTIVITIES AND USES WHICH BUYER MAY CONDUCT THEREON, (iv) THE COMPLIANCE OF OR BY THE PROPERTY OR THEIR OPERATION WITH ANY LAWS, RULES, ORDINANCES OR REGULATIONS OF ANY APPLICABLE GOVERNMENTAL AUTHORITY OR BODY, (v) THE HABITABILITY, MERCHANTABILITY, MARKETABILITY, PROFITABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PROPERTY (vi) THE MANNER OR QUALITY OF THE CONSTRUCTION OR MATERIALS, IF ANY, INCORPORATED INTO THE PROPERTY (vii) THE MANNER, QUALITY, STATE OF REPAIR OR LACK OF REPAIR OF THE PROPERTY, OR (viii) ANY OTHER MATTER WITH RESPECT TO THE PROPERTY AND, SPECIFICALLY, THAT SELLER HAS NOT MADE, DOES NOT MAKE AND SPECIFICALLY DISCLAIMS ANY REPRESENTATIONS REGARDING COMPLIANCE WITH ANY ENVIRONMENTAL LAW OR PROTECTION, POLLUTION OR LAND USE, ZONING OR DEVELOPMENT OR REGIONAL IMPACT LAWS, RULES, REGULATIONS, ORDERS OR REQUIREMENTS. BUYER FURTHER ACKNOWLEDGES AND AGREES THAT BUYER IS RELYING SOLELY ON ITS OWN INSPECTION OF THE PROPERTY, AND NOT ON ANY INFORMATION PROVIDED**

OR TO BE PROVIDED BY SELLER. FURTHER, BUYER AT CLOSING AGREES TO ACCEPT THE PROPERTY IN ITS "AS IS," "WHERE IS" AND "WITH ALL FAULTS" CONDITION AS OF THE CLOSING AND TO WAIVE ALL OBJECTIONS OR CLAIMS AGAINST SELLER ARISING FROM OR RELATED TO THE PROPERTY, SUBJECT ONLY TO THE REPRESENTATIONS AND WARRANTIES OF SELLER SET FORTH HEREIN OR IN THE DEED. BUYER FURTHER ACKNOWLEDGES AND AGREES THAT ANY INFORMATION PROVIDED OR TO BE PROVIDED WITH RESPECT TO THE PROPERTY WAS OBTAINED FROM A VARIETY OF SOURCES AND THAT SELLER HAS NOT MADE ANY INDEPENDENT INVESTIGATION OR VERIFICATION OF THE INFORMATION AND MAKES NO REPRESENTATIONS OR WARRANTIES AS TO THE ACCURACY OR COMPLETENESS OF THE INFORMATION. SELLER IS NOT LIABLE OR BOUND IN ANY MANNER BY ANY VERBAL OR WRITTEN STATEMENTS, REPRESENTATIONS, WARRANTIES OR INFORMATION PERTAINING TO THE PROPERTY OR THE OPERATION THEREOF, FURNISHED BY ANY REAL ESTATE BROKER, AGENT, EMPLOYEE, SERVANT OR OTHER PERSON. BUYER FURTHER ACKNOWLEDGES AND AGREES, EXCEPT FOR THE REPRESENTATIONS AND WARRANTIES OF SELLER SET FORTH IN SECTION 4.2 HEREOF, THAT TO THE MAXIMUM EXTENT PERMITTED BY LAW, THE SALE OF THE PROPERTY AS PROVIDED FOR HEREIN IS MADE ON AN "AS IS", "WHERE IS" AND "WITH ALL FAULTS" CONDITION AND BASIS. IT IS UNDERSTOOD AND AGREED THAT THE PURCHASE PRICE HAS BEEN ADJUSTED BY PRIOR NEGOTIATION TO REFLECT THAT ALL OF THE PROPERTY IS SOLD BY SELLER AND PURCHASED BY BUYER SUBJECT TO THE FOREGOING CONDITIONS.

(b) RELEASE. EXCEPT WITH RESPECT TO THE REPRESENTATIONS AND WARRANTIES OF SELLER SET FORTH IN SECTION 4.2 HEREOF AND THE DEED, BUYER, FOR ITSELF, ITS SUCCESSORS AND ASSIGNS, WAIVES, RELEASES, ACQUITS AND FOREVER DISCHARGES SELLER, ITS OFFICERS, DIRECTORS, SHAREHOLDERS, EMPLOYEES, AGENTS, ATTORNEYS, REPRESENTATIVES AND ANY OTHER PERSONS ACTING ON BEHALF OF SELLER AND THE SUCCESSORS AND ASSIGNS OF ANY OF THE PRECEDING, OF AND FROM ANY AND ALL CLAIMS, ACTIONS, CAUSES OF ACTION, DEMANDS, RIGHTS, DAMAGES, COSTS, EXPENSES OR COMPENSATION WHATSOEVER, DIRECT OR INDIRECT, KNOWN OR UNKNOWN, FORESEEN OR UNFORESEEN, WHICH BUYER OR ITS SUCCESSORS OR ASSIGNS NOW HAS OR WHICH MAY ARISE IN THE FUTURE ON ACCOUNT OF OR IN ANY WAY RELATED TO OR IN CONNECTION WITH ANY PAST, PRESENT OR FUTURE PHYSICAL CHARACTERISTIC OR CONDITION OF THE PROPERTY. NOTWITHSTANDING ANYTHING TO THE CONTRARY SET FORTH IN THIS CONTRACT, THIS RELEASE WILL SURVIVE THE CLOSING OR THE TERMINATION OF THIS CONTRACT.

ARTICLE V.
DUE DILIGENCE AND GOVERNMENTAL APPROVALS

5.1 Due Diligence. Buyer's obligation to consummate the transactions contemplated hereunder is conditioned upon satisfaction of each of the following conditions:

(a) Due Diligence Period. Buyer shall have a period of [redacted] days from the Effective Date (the "**Due Diligence Period**") in order to evaluate and inspect the physical condition of the Real Property, which inspection may include, without limitation, on-site inspections and

reports at Buyer's election (subject to the provisions set forth herein) of the Real Property to be made by Buyer or Buyer's representatives or third-party contractors during reasonable business hours and upon at least two (2) days prior notice to Seller. Such inspections of the Real Property by Buyer or Buyer's representatives are to be conducted in such a manner as not to physically damage the Real Property. Environment assessments which require any invasive testing, such as Phase II environmental assessments, may only be conducted with Seller's prior consent in Seller's sole discretion, and if Seller does not provide such consent, Buyer's sole recourse shall be to terminate this Contract prior to expiration of the Due Diligence Period, as hereinafter set forth. Seller shall use its reasonable efforts to arrange for Buyer to have access to the Real Property so that Buyer can conduct any such inspection prior to the Closing Date, at a time and under conditions reasonably acceptable to Buyer. Buyer shall insure that all third party contractors entering upon the Real Property prior to Closing shall have in effect a policy of liability insurance providing coverage to Seller for acts or omissions while upon the Real Property. Such insurance shall be a minimum of One Million and 00/100 Dollars ($1,000,000.00) in liability coverage naming Seller, a certificate of which shall be delivered to Seller prior to Buyer's access to the Real Property. Buyer shall provide Seller copies of all non-proprietary reports, surveys and assessments of the physical condition of the Real Property prepared by or on behalf of Buyer. If Buyer is not satisfied with the condition of the Real Property for any reason, Buyer may terminate the Contract on or prior to expiration of the Due Diligence Period upon written notice to Seller, at which time the Earnest Money shall be promptly returned to Buyer and the parties hereto shall have no further rights or obligations to each other hereunder other than with respect to those matters that expressly survive Closing or other termination of this Contract.

Buyer shall indemnify and hold Seller harmless from and against any and all (i) damage caused to the Real Property, or any other property by Buyer or its agents or contractors, (ii) loss, damage or injury to any person or property to the extent resulting directly or indirectly from any hazard or other condition created by Buyer or its agents or contractors, and (iii) any injury to Buyer or any of its agents or contractors arising out of the exercise of Buyer's rights under this Contract.

(b) Due Diligence Documents. Within five (5) days after the Effective Date, Seller shall provide to Buyer copies of any and all non-confidential and non-proprietary information and documents including, but not limited to, all agreements, leases, contracts, reciprocal easement agreements, declarations of easements, restrictions, covenants, permits, licenses, reports (including environmental and soils reports) regarding the Property in Seller's possession (collectively, the "**Due Diligence Documents**"). The Due Diligence Documents shall be for informational purposes only and subject in all respects to the following paragraph.

Buyer acknowledges and agrees that Seller has made no and makes no warranty, representation or affirmation whatsoever concerning the accuracy, truthfulness or completeness of any of the Due Diligence Documents or any of the information contained therein, or whether any of the Due Diligence Documents are assignable, and that Buyer relies on the Due Diligence Documents and any information contained therein at its own risk. Buyer further acknowledges and agrees that it shall keep the Due Diligence Documents confidential, and shall not disclose the same or any information contained therein to any third party without Seller's consent, except as reasonably necessary for Buyer to fulfill its conditions precedent to Closing or as required by a lawful order of a court or governmental agency. In the event this Contract terminates or the parties fail to close, Buyer shall promptly return all Due Diligence Documents to Seller. In the event the parties close, the Due Diligence Documents shall be retained by Buyer.

(c) Septic Field Easement. The parties acknowledge that the Property consists of vacant land containing a septic system (the "**Septic System**"). At Closing, the parties shall enter

into an easement agreement pertaining to the Septic System (the "**Septic Field Easement**"). The Septic Field Easement shall provide that (i) Seller, at Seller's cost, has the right to use the Septic System to the extent necessary for adequate service to its properties located adjacent to the Property (collectively, the "**Adjacent Properties**"), (ii) to the extent that Buyer's development of the Property requires modifications or improvements to the Septic System, such modifications or improvements shall be borne solely by Buyer; (iii) to the extent Buyer converts the Septic System to a sewer system, Seller shall have the right to tie in to any such conversion at Seller's cost; and (iv) all owners, occupants, and/or tenants of the Adjacent Properties shall have, at all times, adequate access to and service from utility infrastructure(s) on the Property in a manner that is substantially similar to what is currently available via the Septic System. Seller shall provide a draft of the Septic Field Easement to Buyer within fourteen (14) days of the Effective Date, and the parties shall work together, diligently and in good faith, to agree to the final form of the Septic Field Easement within forty-five (45) days of the Effective Date and in all instances prior to expiration of the Due Diligence Period.

(d) Use Restrictions. At all times following Closing, Buyer acknowledges that the use of the Property shall be in compliance with all applicable laws and regulations, as well as any use restrictions of record affecting the Property, including, but not limited to, those use restrictions contained in that certain Lease by and between Seller, as landlord (and successor-in-interest to California State Teachers' Retirement System), and Shaw's Supermarkets, Inc., as tenant, as referenced in that certain Memorandum of and Notice dated as of June 1, 2000 and recorded on June 5, 2000 in Book 15511, Page 338. Seller will provide recorded memo for Buyer's review during Due Diligence Period.

5.2 Governmental Approvals.

(a) Buyer shall have [redacted] days following the Effective Date (the "**Governmental Approvals Period**") to obtain any and all city, county, state or other governmental or third party licenses, permits, authorizations and approvals required to develop the Property in a manner acceptable to Buyer in Buyer's reasonable discretion, including but not limited to zoning approvals, variances, conditional use permits, building permits, occupancy permits, signage permits, platting and other similar approvals (collectively the "**Governmental Approvals**"). Buyer shall diligently pursue all Governmental Approvals. In the event Buyer is unable, despite its diligent efforts, to obtain all Governmental Approvals prior to the expiration of the Governmental Approvals Period, is denied any of the Governmental Approvals during such period, the appeal period for which has not expired, or does not reasonably believe it will be able to obtain such Governmental Approvals prior to the expiration of the Governmental Approvals Period, then Buyer may, at its election, (i) terminate this Contract by giving written notice to Seller prior to the expiration of the Governmental Approvals Period, in which instance the Earnest Money shall be returned to Buyer and neither party shall have any further duty or obligation hereunder except for those that expressly survive termination of this Contract, or (ii) waive the Governmental Approvals contingency and proceed with Closing. Seller shall cooperate in a reasonable manner with Buyer in Buyer's efforts to obtain the Governmental Approvals, including, without limitation, executing and delivering any applications or other documents reasonably requested by Buyer, provided that such cooperation shall be at no cost to Seller and such matters shall not be binding on the Property prior to Closing without the prior written consent of Seller. Upon request by Seller, Buyer agrees to provide Seller an update as to the status of the Governmental Approvals, the same of which may be verbal or via electronic communication and will not require substantiated documentation in order to be valid. Notwithstanding the foregoing or anything stated herein to the contrary, Buyer may not cause the Governmental Approvals to be binding on Seller or on the Property without Seller's prior written consent, which consent may be withheld in Seller's sole discretion.

(b) Notwithstanding the forgoing, Buyer may elect to extend the Governmental Approvals Period for [redacted] additional periods of [redacted] days each (each an "**Extension Option**"). To exercise an Extension Option, Buyer must provide written notice to Seller prior to the then-applicable expiration of the Government Approvals Period and, deposit with the Title Company an additional [redacted] and 00/100 Dollars ([redacted] (each an "**Extension Deposit**"). Each Extension Deposit shall be non-refundable to Buyer and shall be immediately released to Seller upon deposit, but each shall be fully-applicable to the Purchase Price at Closing. The failure of Buyer to make any Extension Deposit after providing written notice of its Extension Option shall constitute a Buyer default under this Contract.

(c) In conjunction with Buyer's obligation to keep Seller reasonably apprised of the status of obtaining Governmental Approvals, Buyer further agrees to keep Seller reasonably apprised of its plans and efforts related to the Septic System and any modifications, requirements thereto or plans for conversion to a sewer system. In the event of any required modification to the agreed upon Septic Field Easement resulting from Buyer's development plans or the Governmental Approvals, Buyer and Seller agree to work together in good faith to modify same.

(d) Notwithstanding anything contained herein to the contrary, as part of the Governmental Approvals Period, Buyer shall, with Seller's cooperation and assistance, subdivide the Real Property from the remainder of Seller's adjacent real property of the same tax parcel (the "**Parceling**"). As part of the Parceling, Buyer and Seller shall agree to the legal description for the Real Property during the Due Diligence Period. In the event the Parceling is denied, unable to be approved by the applicable governmental authorities, or materially affects Buyer's plans for the development of the Property, Buyer shall have the right to terminate this Contract, in which instance the Earnest Money shall be returned to Buyer, Seller shall reimburse Buyer for its substantiated diligence expenses incurred directly as a result of its efforts related to this Contract in an amount not to exceed [redacted], and neither party shall have any further duty or obligation hereunder except for those that expressly survive termination of this Contract. Further, as part of Buyer's diligent pursuit of its Governmental Approvals, Buyer shall provide Seller with evidence of the following (each, a "**Milestone**" and collectively, the "**Milestones**"): (i) within 90 days of the Effective Date, retention of a civil engineer of Buyer's election for the design of Buyer's planned development and for any work required to obtain site plan approval with the Town of Windham and any other applicable governing authorities; and (ii) within 150 days of the Effective Date, completion of its preliminary design of the site plan and building layout and presentation of a completed application for site plan approval to the Town of Windham planning department and any other applicable governing authorities. Buyer acknowledges achievement of the above referenced Milestones are a material consideration for Seller to enter into this Contract, and in the event of any failure by Buyer to meet either Milestone in a timely manner, Seller shall have the option to terminate this Contract by providing written notice to Buyer within ten (10) days of its failure to meet the applicable Milestone, upon which the Earnest Money shall be returned to Buyer and the parties hereto shall have no further rights or obligations to each other hereunder other than with respect to those matters that expressly survive Closing or other termination of this Contract; provided, however, Buyer shall provide copies (both .pdf and CAD drawings) to Seller of any and all plans, studies, and other due diligence material generated by Buyer with respect to the Property and Buyer's plans for development and pursuit of Governmental Approvals with respect thereto prior to the release of the Earnest Money to Buyer. Notwithstanding Seller's right to terminate hereunder, in the event Buyer is in diligent pursuit with respect to any Milestone, Seller agrees to be reasonable in its discretion with respect to any request for additional time to achieve said Milestone by Buyer.

ARTICLE VI.
CLOSING

6.1 Time and Place of Closing. The consummation of the transactions contemplated by this Contract (the "**Closing**") shall take place at the office of, or in escrow with, the Title Company on the date which is thirty (30) days following Buyer's receipt of Governmental Approvals, including expiration of any applicable appeal period; provided, however, in all events the Closing shall take place no later than eighteen (18) months from the Effective Date of this Contract (the "**Closing Date**").

6.2 Events of Closing. The transaction contemplated herein shall be closed in escrow through the Title Company as follows:

(a) Seller's Actions. On or before the Closing Date, Seller shall deposit into escrow with the Title Company the following:

(i) A Short Form Quitclaim Deed with Covenant (the "**Deed**") the form attached hereto as **Exhibit B**, conveying the Property to Buyer.

(ii) The Septic Field Easement duly executed by Seller.

(iii) Documents reasonably satisfactory to the Title Company evidencing and reflecting the authorization of the transactions herein by Seller and the authority of Seller to execute and deliver this Contract and the documents provided for hereunder.

(iv) An affidavit as required by the Title Company in form and substance sufficient to permit the Title Company to issue the Title Policy without exception for mechanics liens or parties in possession.

(v) A FIRPTA Affidavit in customary form used by the Title Company, duly executed and acknowledged by Seller.

(vi) A closing statement for this transaction in form approved by Seller and Buyer (the "**Closing Statement**"), duly executed by Seller.

(vii) A notice with respect to any underground storage facility, or underground piping associated with an above ground storage facility, located on the Property pursuant to Maine Revised Statutes Title 36 Section 563(6) & (10), as applicable.

(viii) A Form REW-3 stating that Seller is a Maine resident, or in lieu thereof or of another applicable exemption, Buyer shall be entitled to withhold and account for a portion of the Purchase Price as required by 33 M.R.S.A. §5250-A; Seller acknowledges that if Seller does not qualify as a Maine resident or does not produce a valid exemption certificate from Maine Revenue Services, Buyer may withhold two and one-half percent (2.5%) of the Purchase Price and shall remit such funds to Maine Revenue Services if withheld.

(b) Buyer's Actions. On or before the Closing Date, Buyer shall deposit into escrow with the Title Company the following:

(i) Documents reasonably satisfactory to the Title Company evidencing and reflecting the authorization of the transactions herein by Buyer and the authority of the Buyer to execute and deliver this Contract and the documents provided for hereunder.

(ii) The Septic Field Easement duly executed by Buyer.

(iii) The Closing Statement duly executed by Buyer.

(iv) A Form REW-4, as applicable.

(v) The Purchase Price (subject to adjustment for expenses and prorations and credit for Earnest Money in cash or immediately available funds.

(c) At the Closing, the parties shall execute and deliver all such documents and instruments in mutually agreeable form and take all such actions as are necessary or appropriate in order to complete all of the transactions required to be consummated hereunder as an incident to the purchase and sale of the Property. Possession of the Property shall be delivered to Buyer at Closing, subject to the Septic Field Easement.

6.3 Expenses.

(a) Paid by Seller. Seller shall pay the cost for one-half (1/2) of the escrow fees and costs charged by the Title Company, its share of the prorations as set forth in Section 6.4 hereof, one-half (1/2) of the transfer taxes as required by the laws of the State of Maine, and its own attorneys' fees. Seller shall also pay the costs for the base premium of the Title Policy and any related search fees.

(b) Paid by Buyer. Buyer shall pay the costs for its proportionate share of the prorations as set forth in Section 6.4 hereof, all third party inspections, reports, audits, or any other due diligence investigations, one-half (1/2) of the escrow fees and costs charged by the Title Company, the cost of the Survey, the cost of any extend coverage for or special endorsements to the Title Policy, the cost of recording the Deed, the cost of recording any instruments in addition to the Deed (including, but not limited to, any mortgage or other financing documents), the costs related to any financing of the Property, one-half (1/2) of the transfer taxes as required by the laws of the State of Maine, and its own attorneys' fees.

(c) Paid by Party Incurring. Except as otherwise provided in this Section, all other expenses hereunder shall be paid by the party incurring such expenses.

6.4 Prorations.

(a) Taxes. Buyer and Seller will prorate all ad valorem real estate property taxes with respect to the Property on a cash basis (i.e., based solely upon amounts payable in the year in which Closing occurs regardless of when they accrue) as of the Closing Date, based on Buyer's and Seller's respective periods of ownership. For the avoidance of doubt, given the Property is subject to Parceling, to the extent the taxes to be apportioned include additional land, as assessed, the same shall be prorated based on the acreage to the Property over the total acreage of the assessed parcel

and shall not include taxes applicable to any improvements on the assessed parcel (the same of which are solely located on the adjacent, additional land).

(b) Utilities. Charges for utilities serving the Real Property shall be determined as of the Closing Date. Buyer shall be responsible for all utility charges for the period on and after the Closing Date. Seller shall be responsible for all utility charges for the period prior to the Closing Date. Buyer shall be responsible to ensure that all such utilities are switched over into the name of Buyer as of the Closing Date, or as soon as possible thereafter, provided that Seller shall, at no cost to Seller, take all commercially reasonable actions necessary to assist Buyer in accomplishing same. Seller shall receive a credit at Closing in the amount of all refundable cash or other deposits posted with utility companies servicing the Property which utilities are duly assigned to Buyer at Closing.

ARTICLE VII.
CONDEMNATION

7.1 Condemnation. Seller agrees to give Buyer prompt notice of any actual or threatened taking or condemnation of all or any material portion of the Property of which Seller has actual knowledge, occurring between the Effective Date and the Closing Date. If prior to the Closing there shall occur the taking or condemnation of all or any material portion of the Property, then in any such event, Buyer may, at its option, terminate this Contract by providing written notice to Seller within ten (10) days of receipt of notice from Seller in which instance the Earnest Money shall be returned to Buyer. If Buyer does not so elect to terminate this Contract, then the Closing shall take place as provided herein without abatement of the Purchase Price, and there shall be assigned to Buyer at the Closing all of Seller's interest in and to any condemnation award payable to Seller on account of any such occurrence, in each instance in an amount not to exceed the Purchase Price. For purposes hereof, a taking or condemnation of less than 10% of the total acreage of the Property shall not be deemed material.

ARTICLE VIII.
TERMINATION, DEFAULT AND REMEDIES

8.1 Default by Seller or Buyer. Seller or Buyer shall be in default under this Contract if either fails to comply with any material covenant, agreement or obligation within any time limit required by this Contract. Following a default by either Seller or Buyer under this Contract, the other party shall have the following remedies:

(a) Buyer's Remedies. In the event of default by Seller hereunder (other than a failure to close the transactions contemplated hereby, for which no notice or cure period shall be provided), which default has not been remedied by Seller within fifteen (15) days of Seller's receipt of notice of such default being delivered to Seller, Buyer, as its sole and exclusive remedy for such default, may (i) pursue a claim for specific performance of Seller's obligation to convey title to the Property to Buyer pursuant to this Contract, which claim for specific performance must be filed within sixty (60) days after the scheduled Closing Date; or (ii) terminate this Contract by written notice to Seller. If Buyer elects to terminate this Contract under this Section, the Earnest Money shall be returned to Buyer upon written demand.

(b) Seller's Remedies. In the event of default by Buyer hereunder (other than a failure to close the transactions contemplated hereby, for which no notice or cure period shall be provided), which default has not been remedied by Buyer within fifteen (15) days of notice of such default being delivered to Buyer, Seller, as its sole and exclusive remedy for such default, shall be entitled to (i) specifically enforce this Contract; or (ii) terminate this Contract by written notice to Buyer and retain the Earnest Money as liquidated damages, the parties recognizing that it would be extremely difficult to ascertain the extent of actual damages caused by Buyer's breach, and that the

Earnest Money represents as fair an approximation of such actual damages as the parties can now determine.

(c) No Monetary Damages. Except as set forth above, neither Seller nor Buyer shall be entitled to a monetary damages remedy, and each party hereto expressly waives any right it might have to a monetary damages remedy; provided, however, that Seller shall be entitled to, and does not waive its right to, retain the Earnest Money as liquidated damages as set forth above. Without limitation of the aforesaid, in the event a court of competent jurisdiction renders a monetary damages judgment against Buyer or Seller without regard to the above waiver, the parties hereby agree that the amount of such award shall in no event exceed the amount of the Earnest Money.

8.2 Attorney's Fees. Notwithstanding anything to the contrary set forth herein, if, as a result of a default under this Contract, either Seller or Buyer employs an attorney to enforce its rights, the prevailing party shall reimburse the non-prevailing party for all reasonable attorneys' fees, court costs and other legal expenses incurred by the non-prevailing party in connection with the default.

8.3 Governing Law; Forum. The laws of the State of Maine shall govern the validity, enforcement and interpretation of this Contract. Any dispute or cause of action under this Contract shall be resolved in a court of competent subject matter jurisdiction in Cumberland County, Maine.

ARTICLE IX.
COVENANTS

9.1 So long as this Contract remains in effect, Seller covenants that it shall not enter into any lease or agreement to refinance in connection with the Property without the Buyer's prior written consent, which consent may not be unreasonably withheld, conditioned or delayed by Buyer.

ARTICLE X.
MISCELLANEOUS

10.1 No Assumption of Seller's Liabilities. Buyer is acquiring only the Property from Seller and is not the successor of Seller. Buyer does not assume or agree to pay, or indemnify Seller or any other person or entity against, any liability, obligation or expense of Seller or relating to the Property in any way.

10.2 Notices. Any notice required or permitted to be given under this Contract shall be in writing and shall be deemed to be an adequate and sufficient notice if given in writing and delivery is made either by (i) personal delivery, in which case the notice shall be deemed received the date of such personal delivery or refusal of receipt, (ii) nationally recognized overnight air courier service, next day delivery, prepaid, in which case the notice shall be deemed to have been received one (1) business day following delivery to such nationally recognized overnight air courier service or refusal of receipt, or (iii) email, provided that delivery thereof is acknowledged by the receiving party, evidenced by the sender's receipt of a receipt evidencing delivery from its email program, or the sender of an email notice otherwise does not receive any indication that such email did not get delivered properly to the applicable recipient, and to the addresses or email addresses, as applicable, set forth herein.

10.3 Integration; Modification; Assignment. This Contract and exhibits hereto constitute the complete and final expression of the agreement of the parties relating to subject matter hereof, and supersede all previous contracts, agreements, and understandings of the parties, either oral or written, relating to the subject matter hereof. This Contract cannot be modified, or any of the terms hereof waived (except as herein expressly provided otherwise), except by an instrument in writing (referring specifically

to this Contract) executed by the party against whom enforcement of the modification or waiver is sought. This Contract may not be assigned by either party without the prior written consent of the other party hereto, except that either party may assign this Contract without the other party's prior written consent to: (i) any entity controlling, controlled by or under common control with such party; (ii) the purchaser of substantially all of such party's assets; and (iii) any successor or newly created entity in the event of a merger or consolidation involving such party; provided, however, that in the event of such an assignment, the assigning party shall not be relieved of its obligations hereunder and shall provide the other party thereto notice of such assignment.

10.4 Counterpart Execution. This Contract may be executed in several counterparts, each of which shall be fully effective as an original and all of which together shall constitute one and the same instrument.

10.5 Headings; Construction. The headings that have been used throughout this Contract have been inserted for convenience of reference only and do not constitute matter to be construed in interpreting this Contract. Words of any gender used in this Contract shall be held and construed to include any other gender and words in the singular number shall be held to include the plural, and vice versa, unless the context requires otherwise. The words "herein," "hereof," "hereunder" and other similar compounds of the word "here" when used in this Contract shall refer to the entire Contract and not to any particular provision or section. If the last day of any time period stated herein shall fall on a Saturday, Sunday or legal holiday, then the duration of such time period shall be extended so that it shall end on the next succeeding day which is not a Saturday, Sunday or legal holiday.

10.6 Invalid Provisions. If any one or more of the provisions of this Contract, or the applicability of any such provision to a specific situation, shall be held invalid or unenforceable, such provision shall be modified to the minimum extent necessary to make it or its application valid and enforceable, and the validity and enforceability of all other provisions of this Contract and all other applications of any such provision shall not be affected thereby.

10.7 Binding Effect. This Contract shall be binding upon and inure to the benefit of Seller and Buyer, and their respective heirs, personal representatives, successors and assigns. Except as expressly provided herein, nothing in this Contract is intended to confer on any person, other than the parties hereto and their respective successors and assigns, any rights or remedies under or by reason of this Contract.

10.8 Further Acts. In addition to the acts recited in this Contract to be performed by Seller and Buyer, Seller and Buyer agree, without further consideration, to perform or cause to be performed at the Closing or after the Closing any and all such further acts as may be reasonably necessary and requested by the other party to consummate the transactions contemplated hereby, including but not limited to the execution and delivery of reasonably necessary documents. The provisions of this Section 9.9 shall survive Closing.

10.9 TIME IS OF THE ESSENCE HEREOF.

10.10 Brokerage. The parties hereby acknowledge that that [redacted] (the "**Seller's Broker**") is and has been acting as a real estate agent representing Seller regarding the transactions contemplated herein. In the event the sale contemplated herein closes and the Property is transferred by deed to Buyer, Seller shall pay the Seller's Broker a commission equal to [redacted] of the Purchase Price. Each party represents and warrants to the other except as set forth above, that it is not and has not been represented by a real estate agent or broker regarding the transactions contemplated herein. If any person or entity other than the Buyer's Broker or the Seller's Broker asserts a claim to a fee, commission or other compensation on account of alleged employment as a broker, real estate agent, finder

or for the performance of services as such in connection with this Contract, the party through whom such person or entity is claiming shall (i) indemnify, defend and hold harmless the other against and from any such claim and all costs, expenses and liabilities incurred in connection with such claim or any action or proceeding brought thereon (including, without limitation, reasonable attorney's fees), and (ii) satisfy promptly and settlement or judgment arising from any such claim or any action or proceeding brought thereon. The obligations of this Section shall survive Closing.

10.11 Exchange. Both parties shall be entitled to exchange other property of like kind and qualifying use within the meaning of Section 1031 of the Internal Revenue Code of 1986, as amended and the Regulations promulgated thereunder, for fee title in the property which is the subject of this Contract (a "**1031 Exchange**"). Seller and Buyer expressly reserve the right to assign such party's respective rights, but not its obligations, hereunder to a Qualified Intermediary on or before the Closing Date and both parties agree to cooperate with each other so long as the other party incurs no additional costs therefor. Each party specifically acknowledges that this Contract is not conditioned upon such party's ability to affect a 1031 Exchange.

10.12 Tax Appeals. In the event there are any pending property tax appeals, Buyer shall assume the prosecution of such proceedings and the contract with the party prosecuting the same, and shall pay all legal, accounting and other expenses which may be incurred in connection with such appeal. If such determination shall result in a refund or credit, then the net amount of such refund or credit (after paying therefrom pro rata all Buyer's costs including attorney's fees in connection with such proceedings) shall be apportioned between Seller and Buyer based upon the Closing Date, and any amount due to Seller shall be promptly paid by Buyer. The provisions of this section shall survive the Closing.

10.13 Exhibits. The following Exhibits are attached hereto and incorporated by reference herein:

Exhibit A Legal Description

Exhibit B Deed

10.14 Confidentiality. The parties agree to keep the existence of this Contract and the terms of the transaction contemplated herein confidential and no disclose any such information to any third party prior to the Closing, without the consent of the other party, except that such party may make such disclosure (i) to the extent required by law or an order of any court or (ii) to its affiliates, officers, directors, employees, members, partners, attorneys, accountants, environmental auditors, engineers, other consultants and permitted successors and assigns and subject to the application of this Section to the following parties, to its potential members, investors and joint ventures and their respective officers, directors, employees, members, partners, attorneys, accountants, environmental auditors, engineers, other consultants and successors and assigns as reasonably required to implement this Contract.

10.15 **Waiver of Jury Trial. BUYER AND SELLER HEREBY KNOWINGLY, IRREVOCABLY, VOLUNTARILY AND INTENTIONALLY WAIVE ANY RIGHTS EITHER MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY ACTION, PROCEEDING, COUNTERCLAIM OR DEFENSE BASED ON THIS CONTRACT, OR ARISING OUT OF, UNDER OR IN ANY CONNECTION WITH THIS CONTRACT, OR ANY COURSE OF CONDUCT, COURSE OF DEALING, STATEMENTS (WHETHER ORAL OR WRITTEN) OR ACTIONS OF ANY PARTY HERETO RELATING TO THIS CONTRACT. THIS PROVISION IS A MATERIAL INDUCEMENT FOR BUYER AND SELLER ENTERING INTO THIS CONTRACT.**

[Remainder of Page Intentionally Left Blank. Signature Page Follows]

IN WITNESS WHEREOF, the undersigned have caused this Contract to be executed and delivered as of the Effective Date above.

SELLER:

B33 WINDHAM II LLC

By: _____
Print Name: Julio Siberio
Title: Chief Investment Officer

Notice Address:

B33 WINDHAM II LLC
Attn.: Genni Ramsey and Julio Siberio
601 Union Street, Suite 1115
Seattle, Washington 98101
Email: genni@bridge33capital.com;
and julio@bridge33capital.com

With a copy to:

Polsinelli PC
900 West 48th Place, Suite 900
Kansas City, Missouri 64112
Attn: Mike Fisher and Maren Worley
Email: mfisher@polsinelli.com;
and mworley@polsinelli.com

BUYER:

By: _____
Loni Graiver, an individual

Notice Address:

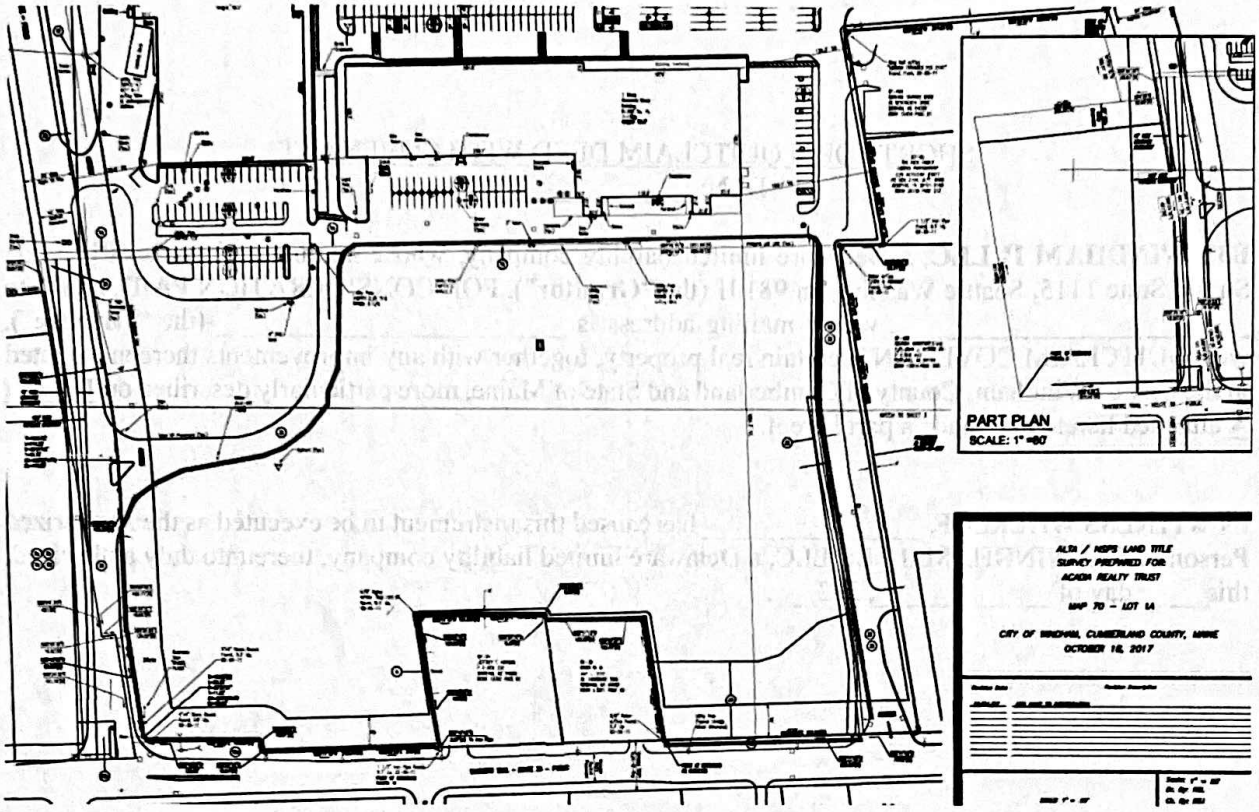
Loni Graiver
40 Farm Gate Road
Falmouth, ME 04105
Email: loni@graiverhomes.com

With a copy to:

_____
_____
_____
_____
Email: _____

EXHIBIT A

LEGAL DESCRIPTION



(To be confirmed upon receipt of the Title Commitment)

EXHIBIT B

FORM OF DEED

SHORT FORM QUITCLAIM DEED WITH COVENANT
DLN: _____

B33 WINDHAM II LLC, a Delaware limited liability company, whose mailing address is 601 Union Street, Suite 1115, Seattle Washington 98101 (the "**Grantor**"), FOR CONSIDERATION PAID, grants to _____, whose mailing address is _____ (the "**Grantee**"), with QUITCLAIM COVENANT, certain real property, together with any improvements thereon, situated in the City of Windham, County of Cumberland and State of Maine, more particularly described on **Exhibit A** attached hereto and made a part hereof.

IN WITNESS WHEREOF, _____ has caused this instrument to be executed as the Authorized Person of B33 WINDHAM II LLC LLC, a Delaware limited liability company, thereunto duly authorized, this ____ day of _____, 202___.

WITNESS:

B33 WINDHAM II LLC,
a Delaware limited liability company

_____
Name:

By: _____
Name: _____
Title: _____

STATE OF _____)
) ss
COUNTY OF _____)

On this __ day of _____, 202__, before me _____, a Notary Public in and for said state, personally appeared _____, Authorized Person of B33 WINDHAM II LLC, a Delaware limited liability company, known to me to be the person who executed the within instrument in behalf of said limited liability company and acknowledged to me that he executed the same for the purposes therein stated.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my official seal the day and year last above written.

_____
Printed Name:
Notary Public

My Commission Expires: _____

EXHIBIT A TO DEED

LEGAL DESCRIPTION

EXHIBIT B TO DEED

PERMITTED EXCEPTIONS

ASSIGNMENT AND ASSUMPTION OF PURCHASE AND SALE AGREEMENT

ASSIGNMENT AND ASSUMPTION OF PURCHASE AND SALE AGREEMENT

THIS ASSIGNMENT AND ASSUMPTION OF PURCHASE AND SALE AGREEMENT (this "**Amendment**") is effective as of September 5, 2023 (the "**Effective Date**"), by and between **LONI GRAIVER**, an individual ("**Assignor**"), and **WINDHAM VILLAGE APARTMENTS LLC**, a Maine limited liability company ("**Assignee**").

RECITALS

WHEREAS, Assignor and **B33 WINDHAM II LLC**, a Delaware limited liability company ("**Seller**") entered into that certain Purchase and Sale Agreement, dated as of July 11, 2022, as amended by that certain First Amendment to Contract for Sale of Real Estate, dated as of October 11, 2022, and that certain Second Amendment to Contract for Sale of Real Estate, dated as of November 9, 2022 (collectively, the "**Contract**"), whereby Assignor agreed to purchase the Property from Seller, as more particularly described in the Contract; and

WHEREAS, Section 10.3 of the Contractor allows Assignor to assign the Contract to an entity controlled by, or under common control with Assignor, without the need for the consent of the Seller; and

WHEREAS, Assignee is an entity controlled by or under common control with Assignor; and

WHEREAS, Assignor desires to assign all of its rights and interest in the Agreement to Assignee, and Assignee desires to assume all of the Assignor's obligations and liabilities under the Agreement, in accordance with the terms and subject to the conditions set forth in this Assignment.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignor and Assignee hereby agree as follows:

1. Incorporation of Recitals, Defined Terms. All of the foregoing Recitals are hereby incorporated as agreements of the Parties. Capitalized terms used in this Assignment and not otherwise defined herein have the meaning set forth in the Agreement.

2. Assignment and Assumption. As of the Effective Date, Assignor hereby irrevocably assigns, sets over, transfers, warrants, conveys and releases to Assignee all of Assignor's right, title and interest in and to the Agreement. Assignee hereby accepts this assignment and the rights granted herein, and Assignee hereby expressly assumes all of the obligations of Assignor from and after the Effective Date, if any, under the Agreement. Notwithstanding the foregoing, this Assignment shall not relieve Assignor of its obligations under the Contract.

3. Successors and Assigns. This Assignment shall be binding upon and shall insure to the benefit of the Assignor and Assignee and their respective successors and assigns.

4. Governing Law. This Assignment shall be governed by the laws of the State of Michigan.

5. Counterparts; Copies. The parties agree that this Assignment may be executed by the parties in one or more counterparts and each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Copies (whether facsimile, photostatic or otherwise) of signatures to this Assignment shall be deemed originals and may be relied on to the same extent as the originals.

[Remainder of Page Intentionally Left Blank; Signature Page Follows]

IN WITNESS WHEREOF, the undersigned have caused this Assignment to be executed and delivered as of the Effective Date.

ASSIGNOR:

_____
Loni Graiver

ASSIGNOR:

WINDHAM VILLAGE APARTMENTS LLC,
a Maine limited liability company

By: _____
Loni Graiver
Its: Manager

THIRD AMENDMENT TO PURCHASE AND SALE AGREEMENT

THIRD AMENDMENT TO PURCHASE AND SALE AGREEMENT

THIS THIRD AMENDMENT TO PURCHASE AND SALE AGREEMENT (this "**Amendment**") is effective as of October 18, 2023 (the "**Amendment Date**"), by and between **B33 WINDHAM II LLC**, a Delaware limited liability company ("**Seller**") and **WINDHAM VILLAGE APARTMENTS LLC**, a Maine limited liability company ("**Buyer**").

RECITALS

WHEREAS, Seller and Loni Graiver entered into that certain Purchase and Sale Agreement, dated as of July 11, 2022, as amended by that certain First Amendment to Contract for Sale of Real Estate, dated as of October 11, 2022, as further amended by that certain Second Amendment to Contract for Sale of Real Estate, dated as of November 9, 2022 (as amended, the "**Original Contract**"), the rights of and obligations of such Original Contract having been assigned by Loni Graiver to Buyer by Assignment and Assumption of Purchase and Sale Agreement dated September 5, 2023; and

WHEREAS, pursuant to the Original Contract, Buyer has agreed to purchase the Property from Seller, as more particularly described in the Original Contract; and

WHEREAS, Buyer and Seller desire to modify and amend certain terms and conditions set forth in the Original Contract as described below.

NOW, THEREFORE, in consideration of the mutual covenants, conditions, promises and agreements set forth herein and other good and valuable consideration, the receipt and legal sufficiency of which are hereby acknowledged, Seller and Buyer agree as follows:

1. Definitions. Capitalized terms in this Amendment shall have the meanings ascribed to those terms in the Original Contract unless otherwise defined herein or the context otherwise dictates.

2. Septic Field Easement. Seller and Buyer agree to work together, diligently and in good faith, to agree on a final revised form of the Septic Field Easement previously agreed to by Seller and Buyer on or before January 31, 2024. Such revisions shall reflect that, in connection with Buyer's project, and the development of the portion of the Property upon which the Septic System is located, Buyer intends to convert the Septic System to a new sanitary sewer system, and will connect, at its sole cost and expense (or pay the Seller the actual cost to connect), the Shaw's building located on Seller's Adjacent Properties to such new sanitary sewer system.

3. Additional Extension Options. Seller hereby grants Buyer five (5) additional Extension Options (for a total of fourteen (14)), subject to the payment of an Extension Deposit in connection with Buyer's exercise of each Extension Option, and such other terms as set forth in Section 5.2(b) of the Original Contract.

4. Closing. The Closing shall occur pursuant to the terms of Section 6.1 of the Original Contract, subject to this Amendment, but in no event shall it occur later than July 1, 2024.

5. Ratification. Except as modified by this Amendment, the parties ratify all the terms and conditions set forth in the Original Contract and acknowledge that the Original Contract is binding and in full force and effect, and there are no known defaults thereunder as of the date hereof.

6. Counterparts. This Amendment may be executed in multiple original, electronic or facsimile counterparts, all of which shall be deemed an original, and when combined shall constitute one complete, fully enforceable, Amendment.

IN WITNESS WHEREOF, Seller and Buyer have executed and delivered this Amendment as of the day and year first above written.

SELLER:

B33 WINDHAM II LLC,
a Delaware limited liability company

By:_____
Name: Genniveve Ramsey
Title: Authorized Person

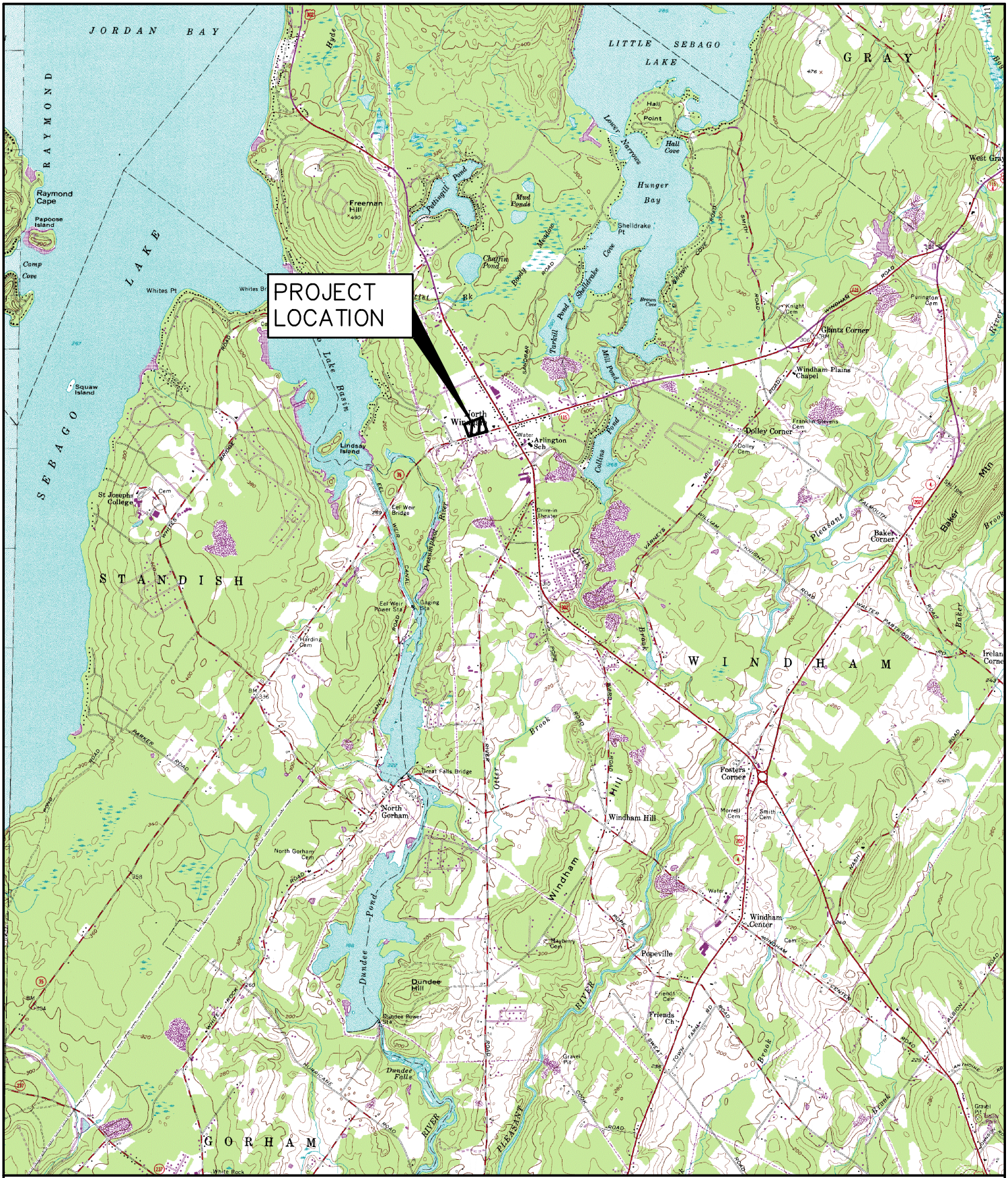
BUYER:

WINDHAM VILLAGE APARTMENTS LLC,
a Maine limited liability company

By:_____
Name: Loni Graiver
Title: Manager

ATTACHMENT 4

PROJECT LOCATION MAP



U.S.G.S. Location Map

Shaw's Site Development - Windham, Maine

U.S.G.S. North Windham, State-7.5 Minute Series (Topographic)

Design: LEL	Date: JAN 2023
Draft: CEH	Job No.: 3796
Checked: DJG	Scale: None
File Name: 3796–LOCATION.dwg	

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Figure 1

ATTACHMENT 5

ABUTTERS MAILING LIST

MBLU	Location	Owner Name	Co-Owner Name	Address 1	Address 2	City, State, Zip
67/ 28/ / /	736 ROOSEVELT TR	SYKEA REALTY II LLC		3 PLUFF AVENUE		NORTH READING, MA 01864
67/ 29/ 100/ A/	744 ROOSEVELT TR	JAV HOLDINGS LLC		113 FORESIDE ROAD		FALMOUTH, ME 04105
67/ 29/ 100/ B/	744 ROOSEVELT TR	744 ROOSEVELT TRAIL LLC		744 ROOSEVELT TR, STE 104		WINDHAM, ME 04062
67/ 29/ 101/ /	744 ROOSEVELT TR	JAV HOLDINGS LLC		113 FORESIDE ROAD		FALMOUTH, ME 04105
67/ 29/ 102/ /	744 ROOSEVELT TR	744 ROOSEVELT TRAIL LLC		744 ROOSEVELT TR, STE 104		WINDHAM, ME 04062
67/ 29/ 103/ /	744 ROOSEVELT TR	744 ROOSEVELT TRAIL LLC		744 ROOSEVELT TR, STE 104		WINDHAM, ME 04062
67/ 29/ 104/ /	744 ROOSEVELT TR	744 ROOSEVELT TRAIL LLC		744 ROOSEVELT TR, STE 104		WINDHAM, ME 04062
67/ 29/ 105/ /	744 ROOSEVELT TR	744 ROOSEVELT TRAIL LLC		744 ROOSEVELT TR, STE 104		WINDHAM, ME 04062
67/ 29/ 200/ /	744 ROOSEVELT TR	IMPORTLAND LLC		26 WAITES LANDING RD		FALMOUTH, ME 04105
67/ 29/ 201/ /	744 ROOSEVELT TR	IMPORTLAND LLC		26 WAITES LANDING RD		FALMOUTH, ME 04105
67/ 29/ 202/ /	744 ROOSEVELT TR	IMPORTLAND LLC		26 WAITES LANDING RD		FALMOUTH, ME 04105
67/ 29/ 203/ /	744 ROOSEVELT TR	GLEESON DAVID S JR		744 ROOSEVELT TR, UNIT 203		WINDHAM, ME 04062
67/ 29/ 204/ /	744 ROOSEVELT TR	IMPORTLAND LLC		26 WAITES LANDING RD		FALMOUTH, ME 04105
67/ 29/ 205/ /	744 ROOSEVELT TR	CVAL PROPERTY LLC		93 RIDGEWOOD DRIVE		FALMOUTH, ME 04105
67/ 29/ 206/ /	744 ROOSEVELT TR	ROOSEVELT TRAIL #206 LLC		9 HOPE DRIVE		GORHAM, ME 04038
67/ 29/ 207/ /	744 ROOSEVELT TR	PERKINS AARON E &	PERKINS SHARON L	744 ROOSEVELT TR, STE 207		WINDHAM, ME 04062
67/ 29/ 208/ /	744 ROOSEVELT TR	ROOSEVELT TRAIL #206 LLC		9 HOPE DRIVE		GORHAM, ME 04038
67/ 29/ 209/ /	744 ROOSEVELT TR	CLOUTIER ROBERT		744 ROOSEVELT TR, STE 209		WINDHAM, ME 04062
67/ 29/ 210/ /	744 ROOSEVELT TR	HOME SUPPORT SERVICES LLC		86A DEPOT ROAD		GRAY, ME 04039
67/ 29/ 301/ /	744 ROOSEVELT TR	DIAMOND G W & ROUX R R TRUSTEES	RAYMOND R ROUX REVOCABLE TRUST	10 CROWN POINT		WINDHAM, ME 04062
67/ 29/ 302/ /	744 ROOSEVELT TR	302 WCA LLC		C/O D MARTINES & ASSOCIATES LLC	744 ROOSEVELT TRAIL #302	WINDHAM, ME 04062
67/ 29/ 303/ /	744 ROOSEVELT TR	DIAMOND G W & ROUX R R TRUSTEES	RAYMOND R ROUX REVOCABLE TRUST	10 CROWN POINT		WINDHAM, ME 04062
67/ 30/ / /	61 TANDBERG TR	RUSTLERS REAL ESTATE HOLDINGS LL		12 DIAMOND POINT RD		WINDHAM, ME 04062
67/ 31/ / /	57 TANDBERG TR	WINDHAM RENTALS LLC		146 MAST RD		FALMOUTH , ME 04105
67/ 32/ / /	55 TANDBERG TR	CUMMINGS JAMES &	DD CUMMINGS REAL ESTATE LLC	PO BOX 957		WINDHAM , ME 04062
67/ 33/ / /	53 TANDBERG TR	53 TANDBERG TRAIL LLC		PO BOX 957		WINDHAM, ME 04062
67/ 33/ 1/ /	6 ROBIN LN	CHRISTENSEN LINDA		11 ROBIN LANE		WINDHAM, ME 04062
67/ 33/ 2/ /	10 ROBIN LN	MOREY ISABEL		10 ROBIN LN		WINDHAM, ME 04062
67/ 33/ 4/ /	12 ROBIN LN	HAMIL JOHN T JR		12 ROBIN LN		WINDHAM, ME 04062
67/ 33/ 5/ /	10 ARLENE LN	BUZZELL PATRICIA A &	SHEIL RYAN P	10 ARLENE LN		WINDHAM, ME 04062
67/ 33/ 6/ /	6 ARLENE LN	PARKER DANA A &	PARKER MELISSA D	6 ARLENE LANE		WINDHAM, ME 04062
67/ 33/ 8/ /	2 ARLENE LN	LIBBY B JUDITH		2 ARLENE LANE		WINDHAM, ME 04062
67/ 33/ 9/ /	21 ROBIN LN	RAMSAY CARLENE		21 ROBIN LN		WINDHAM, ME 04062
67/ 33/ 10/ /	23 ROBIN LN	MORTON DEBORAH		23 ROBIN LANE		WINDHAM, ME 04062
67/ 33/ 11/ /	17 ROBIN LN	REINHOLDT AUDREY		17 ROBIN LN		WINDHAM, ME 04062
67/ 33/ 12/ /	15 ROBIN LN	MOORE DONNA &	CHILDS ROGER	15 ROBIN LN		WINDHAM, ME 04062
67/ 33/ 13/ /	26 ROBIN LN	CLINE RHONDA		26 ROBIN LANE		WINDHAM, ME 04062
67/ 33/ 14/ /	28 ROBIN LN	SHEPARD KAREN L		28 ROBIN LN		WINDHAM, ME 04062
67/ 33/ 15/ /	30 ROBIN LN	DEAN RONDA		PO BOX 896		WINDHAM, ME 04062
67/ 33/ 16/ /	32 ROBIN LN	CANNELL WILLIAM H &	CANNELL LORI A	32 ROBIN LN		WINDHAM, ME 04062
67/ 33/ 17/ /	34 ROBIN LN	MACDONALD RICHARD A &	MACDONALD LINDA R	34 ROBIN LANE		WINDHAM, ME 04062
67/ 33/ 18/ /	36 ROBIN LN	KIMBALL THOMAS &	KIMBALL CAROL	36 ROBIN LANE		WINDHAM, ME 04062
67/ 33/ 19/ /	38 ROBIN LN	MASON AUDREY		38 ROBIN LANE		WINDHAM, ME 04062
67/ 33/ 20/ /	40 ROBIN LN	LEAVITT BONNIE &	PEDROSO GABRIEL	40 ROBIN LANE		WINDHAM, ME 04062
67/ 33/ 21/ /	42 ROBIN LN	GROVO SHARON L &	GROVO STEPHEN R	42 ROBIN LN		WINDHAM, ME 04062
67/ 33/ 22/ /	44 ROBIN LN	CONLEY JAMES F &	CONLEY RUTH E	44 ROBIN LANE		WINDHAM, ME 04062
67/ 33/ 23/ /	46 ROBIN LN	ALLEN SAMUEL J JR		46 ROBIN LANE		WINDHAM, ME 04062
67/ 33/ 24/ /	11 ROBIN LN	CHRISTENSEN LINDA BOWEN &	CHRISTENSEN EARL	11 ROBIN LANE		WINDHAM, ME 04062
67/ 34/ / /	48 TANDBERG TR	48 TANDBERG PROPERTIES LLC		48 TANDBERG TR, UNIT 5		WINDHAM, ME 04062
67/ 35/ / /	52 TANDBERG TR	LABERGE MARTIN		20 FIREFLY LANE		WINDHAM, ME 04062
67/ 37/ / /	62 TANDBERG TR	DEERING INVESTMENTS INC	C/O JEFFREY PETERS	505 WOODSMERE ROAD		CHESAPEAKE, VA 23322
67/ 38/ / /	64 TANDBERG TR	DEERING INVESTMENTS INC	C/O JEFFREY PETERS	505 WOODSMERE RD		CHESAPEAKE, VA 23322
67/ 39/ / /	746 ROOSEVELT TR	IRVING OIL PROPERTIES LLC	C/O CORP RE EST-KATELYN HEBERT	PO BOX 868		CALAIS, ME 04619
67/ 40/ / /	750 ROOSEVELT TR	DEERING INVESTMENTS INC	C/O JEFFREY PETERS	505 WOODSMERE ROAD		CHESAPEAKE, VA 23322
67/ 42/ / /	754 ROOSEVELT TR	DEERING INVESTMENTS INC	C/O JEFFREY PETERS	505 WOODSMERE ROAD		CHESAPEAKE, VA 23322
67/ 43/ / /	756 ROOSEVELT TR	DEERING ASSOCIATES LLC	C/O TD BANK N A	30 WELLINGTON ST, 12TH FL	ATTN: TAX ADMINISTRATOR	LONDON - ONTARIO, CA N6A 4S4
67/ 43/ A/ /	758 ROOSEVELT TR	DEERING ASSOCIATES LLC	C/O JEFFREY PETERS	505 WOODSMERE ROAD		CHESAPEAKE, VA 23322
67/ 44/ / /	760 ROOSEVELT TR	BURNHAM JONATHAN N		760 ROOSEVELT TRAIL		WINDHAM, ME 04062
67/ 45/ / /	762 ROOSEVELT TR	RICH FAMILY LIMITED PARTNERSHIP, TI	C/O AUTOZONE #3877	PO BOX 2198, DEPT 8088		MEMPHIS, TN 38101-2198
67/ 46/ A/ /	766 ROOSEVELT TR	GORHAM SAVINGS BANK		10 WENTWORTH DRIVE		GORHAM, ME 04038
67/ 47/ / /	765 ROOSEVELT TR	100M LLC		71 SAWYER STREET		WESTBROOK, ME 04092
67/ 50/ / /	755 ROOSEVELT TR	SNELL PARTNERSHIP		3941 N ESTANCIA PORT		WITCHITA, KS 67205
67/ 51/ / /	753 ROOSEVELT TR	WINDHAM Q LLC		753 ROOSEVELT TR		WINDHAM, ME 04062
68/ 1/ / /	51 TANDBERG TR	G & K MOTORS INC		51 TANDBERG TR		WINDHAM, ME 04062
68/ 2/ / /	49 TANDBERG TR	CHAPLIN MARK		PO BOX 13		WINDHAM, ME 04062
68/ 3/ / /	14 NORTHWOOD DR	CROCKETT DAVID &	CROCKETT RAYMONDE	14 NORTHWOOD DRIVE		WINDHAM, ME 04062
68/ 6/ R07/ /	4 DEER LN	DUPLESSIE WALTER B &	DUPLESSIE FAITH E	4 DEER LANE		WINDHAM, ME 04062
68/ 6/ R08/ /	8 DEER LN	SAWYER BLAINE A &	ROLLINS ELIZABETH R	8 DEER LN		WINDHAM, ME 04062
68/ 13/ / /	33 NORTHWOOD DR	CHOI WON W		33 NORTHWOOD DR		WINDHAM, ME 04062
68/ 14/ / /	29 NORTHWOOD DR	TURNER ALDEN R &	TURNER LUANNE M	29 NORTHWOOD DRIVE		WINDHAM, ME 04062
68/ 15/ / /	19 NORTHWOOD DR	SCRUGGS DAVID L		19 NORTHWOOD DR		WINDHAM, ME 04062
68/ 16/ / /	13 NORTHWOOD DR	SHANNING D & MARCHAND R TRUSTEE	MARCHAND-SHANNING FAMILY REVOC	13 NORTHWOOD DR		WINDHAM, ME 04062
68/ 18/ / /	43 TANDBERG TR	CHAPLIN MARK		PO BOX 13		WINDHAM, ME 04062
68/ 19/ / /	41 TANDBERG TR	EMERSON DONNA M		26 CRESCENT AVENUE		WINDHAM, ME 04062
68/ 19/ A/ /	4 LAMB ST	KELLEY DIANE M		4 LAMB ST		WINDHAM, ME 04062
68/ 19/ B/ /	8 LAMB ST	AUCLAIR TRAVIS FRANCIS		8 LAMB ST		WINDHAM, ME 04062
68/ 19/ C/ /	14 LAMB ST	LUND CHARLOTTE A		PO BOX 251		WINDHAM, ME 04062
68/ 19/ D/ /	16 LAMB ST	DJC BROS LLC		PO BOX 981		WINDHAM, ME 04062
68/ 19/ E/ /	3 LEISURE LN	DJC BROS LLC		PO BOX 981		WINDHAM, ME 04062
68/ 19/ F/ /	15 LAMB ST	DJC BROS LLC		PO BOX 981		WINDHAM, ME 04062
68/ 19/ G/ /	7 LEISURE LN	DJC BROS LLC		PO BOX 981		WINDHAM, ME 04062
68/ 25/ / /	23 COUNTRY LN	ROGERS DANIEL A		19 COUNTRY LANE		WINDHAM, ME 04062
69/ 1/ B/ /	31 TANDBERG TR	WALKER MICHAEL &	WALKER CHERISSIA	320 NORTHEAST RD		STANDISH, ME 04084
69/ 2/ / /	27 TANDBERG TR	LABRECQUE MARILYN A (WALKER)		27 TANDBERG TRAIL		WINDHAM, ME 04062
69/ 4/ / /	2 BASIN RD	DE HOF LAWRENCE E &	CHRISTIE JEANNE M	2 BASIN ROAD		WINDHAM, ME 04062
69/ 6/ / /	10 BASIN RD	MUNSTER MEGAN A		10 BASIN ROAD		WINDHAM, ME 04062
69/ 7/ A/ /	12 BASIN RD	KURNER BOBBIE		39 BROWN COVE ROAD		WINDHAM, ME 04062
69/ 8/ / /	17 BASIN RD	HOWARD AGRIPPINA A		17 BASIN ROAD		WINDHAM, ME 04062
69/ 9/ / /	13 BASIN RD	HANSEN GLEN S		13 BASIN ROAD		WINDHAM, ME 04062
69/ 14/ / /	32 TANDBERG TR	KINNEY FRED T		263 BLANCHARD RD		CUMBERLAND, ME 04021
69/ 15/ / /	MANCHESTER DR	TOWN OF WINDHAM	MANCHESTER DR	8 SCHOOL ROAD		WINDHAM, ME 04062
70/ 1/ / /	772 ROOSEVELT TR	FLEET BANK OF MAINE	C/O BANK OF AMERICA	CORP REAL EST ASSESSMENTS	PO BOX 32547	CHARLOTTE, NC 28232
70/ 1/ A/ /	770 ROOSEVELT TR	B33 WINDHAM II LLC	C/O BRIDGE33 CAPITAL	9330 W SAHARA AVE STE 270		LAS VEGAS, NV 89117
67/ 45/ L/ /	762 ROOSEVELT TR	AUTOZONE #3877		11000 RICHMOND AVE STE 350		HOUSTON, TX 77042
67/ 47/ 1/ /	759 ROOSEVELT TR	PF WINDHAM LLC		71 SAWYER ROAD		WESTBROOK, ME 04092

ATTACHMENT 6

FINANCIAL CAPACITY

Estimated Cost of Development		
Site Preparation	$	1,450,000
Aggregates, Pavement & Curbing	$	760,000
Utility Services & Infrastructure	$	750,000
Stormwater Collection & Infiltration	$	670,000
Erosion Control, Mobilization, Etc	$	500,000
Loam, Lawn, & Landscaping	$	450,000
Total Sitework Estimates	$	4,580,000
Estimated Total Building(s) Cost	$	23,736,000
Contingency (15%)	$	4,247,400
Estimated Total Project Cost	$	32,563,400

BANK STATEMENT

Gorham Savings Bank

November 16, 2023

Maine Department of Environmental Protection
17 State House Station
Augusta, Maine 04333-0017

Re: **Letter of Financial Capacity – Windham Village Apartments, LLC – Tanberg Trail Windham, Maine**

To whom it may concern:

Please allow this letter to serve as confirmation of a commercial banking relationship currently in place for Graiver Homes, Inc. and its president, Loni Graiver, principal of Windham Village Apartments, LLC. Gorham Savings Bank has supported Graiver Homes, Inc., for development of similar projects in recent years.

Gorham Savings Bank has reviewed the preliminary information for the proposed $36,611,000 multi-family project at Tanberg Trail Windham, Maine. We believe that the applicant has the development experience and financial capacity, based on our review of the preliminary scope of proposed construction, to successfully develop this site and complete the project on time and on budget.

This letter is not a commitment to lend funds. A commitment, if issued, would require the approval of the Bank Board of Directors and the participation of another Banking Institution.

If you have any questions or require further information, please feel free to contact me at (207) 222-1492.

Sincerely,

Karl Suchecki

Karl Suchecki
Executive Vice President

CERTIFICATE OF GOOD STANDING

MAINE
Department of the Secretary of State
Bureau of Corporations, Elections and Commissions

Corporate Name Search

Information Summary

Subscriber activity report

This record contains information from the CEC database and is accurate as of: Mon Feb 26 2024 09:44:39. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
WINDHAM VILLAGE APARTMENTS LLC	20245724DC	LIMITED LIABILITY COMPANY	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
05/03/2023	N/A	MAINE

Other Names	(A=Assumed ; F=Former)
WINDHAM CROSSING LLC	F

Principal Home Office Address

Physical	Mailing

Clerk/Registered Agent

Physical	Mailing
NICHOLAS J. MORRILL JENSEN BAIRD TEN FREE STREET PORTLAND, ME 04101	NICHOLAS J. MORRILL JENSEN BAIRD P.O. BOX 4510 PORTLAND, ME 04112

New Search

Click on a link to obtain additional information.

List of Filings	View list of filings	
Obtain additional information:		
Certificate of Existence (Good Standing) (more info)	Short Form without amendments ($30.00)	Long Form with amendments ($30.00)

You will need Adobe Acrobat version 3.0 or higher in order to view PDF files.
If you encounter problems, visit the troubleshooting page.

If you encounter technical difficulties while using these services, please contact the Webmaster. If you are unable to find the information you need through the resources provided on this web site, please contact the Division of Corporations, UCC & Commissions Reporting and Information Section at 207-624-7752 or e-mail.

ATTACHMENT 7

HISTORIC & NATURAL AREAS CORRESPONDENCES

RESPONSE FROM THE MAINE HISTORIC PRESERVATION COMMISSION

GORRILL PALMER

300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

February 24, 2023

Mr. Kirk Mohney
State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street, State House Station 65
Augusta, ME 04333-0065

Subject: Presence of Historical Areas
Residential Development
Tandberg Trail
Windham, Maine

Dear Mr. Mohney,

Gorrill Palmer has been retained to prepare plans and permit applications for a proposed residential development at 770 Roosevelt Trail in Windham, Maine. The proposed project is a 9-acre development on the corner of Manchester Drive and Tandberg Trail. The project site is shown on the attached Location Map.

To aid in the design, and as part of the permit applications, Gorrill Palmer requests information from your department relative to the presence of any nearby structure or area with historical, architectural or archeological significance as defined by the National Historic Preservation Act.

Thank you for your consideration. If you have any questions regarding the proposed project, please contact our office.

Sincerely,

Gorrill Palmer

Lauren Labbay
Design Engineer
207-772-2515 x240
llabbay@gorrillpalmer.com

Based on the information submitted, I have concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

Kirk F. Mohney, 3/8/23
Kirk F. Mohney, Date
State Historic Preservation Officer
Maine Historic Preservation Commission

Enclosure

U:\3796_Gravier Homes_Tandberg Trail Mixed Residential Housing - Windham\L Environmental\Resource Letters\Maine Historic Preservation Commission\Mohney.doc

CORRESPONDENCE TO THE MAINE NATURAL AREAS PROGRAM

GORRILL PALMER

300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

February 24, 2023

Ms. Lisa St. Hilaire
Maine Natural Areas Program
93 State House Station
Augusta, ME 04333-0093

Subject: Endangered or Threatened Species
Residential Development
Tandberg Trail
Windham, Maine

Dear Lisa,

Gorrill Palmer has been retained to prepare plans and permit applications for a proposed residential development at 770 Roosevelt Trail in Windham, Maine. The proposed project is a 9-acre development on the corner of Manchester Drive and Tandberg Trail. The project site is shown on the attached Location Map.

To aid in the design, and as part of the permit applications, Gorrill Palmer requests information from your department regarding the presence of any federally listed endangered or threatened species which might be impacted by this project.

Thank you for your consideration. If you have any questions regarding the proposed project, please contact our office.

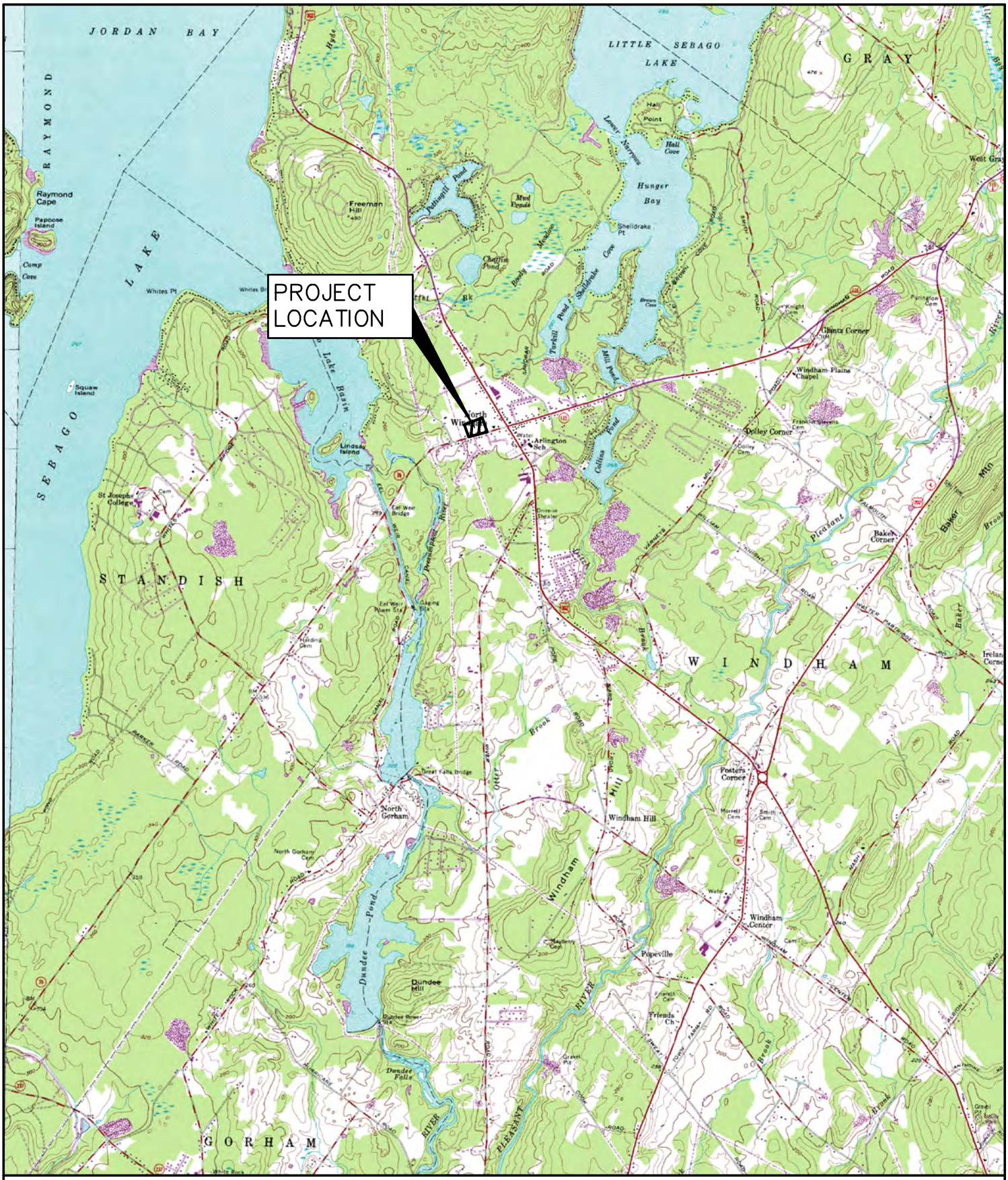
Sincerely,

Gorrill Palmer

Lauren Labbay
Design Engineer
207-772-2515 x240
llabbay@gorrillpalmer.com

Enclosure

U:\3796_Gravier Homes_Tandberg Trail Mixed Residential Housing - Windham\L Environmental\Resource Letters\Maine Natural Areas Program\MNAP Letter.doc



U.S.G.S. Location Map

Shaw's Site Development - Windham, Maine

U.S.G.S. North Windham, State-7.5 Minute Series (Topographic)

Design: LEL	Date: JAN 2023
Draft: CEH	Job No.: 3796
Checked: DJG	Scale: None
File Name: 3796–LOCATION.dwg	

GORRILL PALMER

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207.772.2515

Figure 1

RESPONSE FROM THE MAINE NATURAL AREAS PROGRAM

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
177 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

March 3, 2023

Lauren Labbay
Gorrill Palmer
300 Southborough Drive, Suite 200
South Portland, ME 04106

Via email: llabbay@gorrillpalmer.com

Re: Rare and exemplary botanical features in proximity to: #3796, Residential Development, 770 Roosevelt Trail, Windham, Maine

Dear Ms. Labbay:

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received February 24, 2023 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Windham, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM
BLOSSOM LANE, DEERING BUILDING

DEPARTMENT OF Agriculture Conservation & Forestry

PHONE: (207) 287-8044
WWW.MAINE.GOV/DACF/MNAP

The Maine Natural Areas Program (MNAP) is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. MNAP welcomes coordination with individuals or organizations proposing environmental alteration or conducting environmental assessments. If, however, data provided by MNAP are to be published in any form, the Program should be informed at the outset and credited as the source.

The Maine Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $150.00 for two hours of our services.

Thank you for using MNAP in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Lisa St. Hilaire

Lisa St. Hilaire | Information Manager | Maine Natural Areas Program
207-287-8044 | lisa.st.hilaire@maine.gov

Rare and Exemplary Botanical Features within 4 miles of
Project: #3796, 9-acre Residential Development, Tandberg Trail, Windham, , ME

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Nodding Pogonia						
	T	S2	G4?	2010-08-18	5	Hardwood to mixed forest (forest, upland)
	T	S2	G4?	2010-08-18	11	Hardwood to mixed forest (forest, upland)
Pitch Pine Bog						
		S2	G3G5	2004-06-21	10	
Red Maple Swamp						
		S5	G3G5	2004-06-21	16	
Scarlet Oak						
	E	S1	G5	1916-08	2	Hardwood to mixed forest (forest, upland)
Small Whorled Pogonia						
	E	S2	G2G3	2018-06-15	18	Hardwood to mixed forest (forest, upland)
Spicebush						
	SC	S3	G5	2006-06-11	11	Forested wetland

Date Exported: 2023-03-03 16:29

Conservation Status Ranks

State and Global Ranks: This ranking system facilitates a quick assessment of a species' or habitat type's rarity and is the primary tool used to develop conservation, protection, and restoration priorities for individual species and natural habitat types. Each species or habitat is assigned both a state (S) and global (G) rank on a scale of critically imperiled (1) to secure (5). Factors such as range extent, the number of occurrences, intensity of threats, etc., contribute to the assignment of state and global ranks. The definitions for state and global ranks are comparable but applied at different geographic scales; something that is state imperiled may be globally secure.

The information supporting these ranks is developed and maintained by the Maine Natural Areas Program (state ranks) and NatureServe (global ranks).

Rank	Definition
S1 **G1**	**Critically Imperiled** – At very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.
S2 **G2**	**Imperiled** – At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
S3 **G3**	**Vulnerable** – At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
S4 **G4**	**Apparently Secure** – At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
S5 **G5**	**Secure** – At very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
SX **GX**	**Presumed Extinct** – Not located despite intensive searches and virtually no likelihood of rediscovery.
SH **GH**	**Possibly Extinct** – Known from only historical occurrences but still some hope of rediscovery.
S#S# **G#G#**	**Range Rank** – A numeric range rank (e.g., S2S3 or S1S3) is used to indicate any range of uncertainty about the status of the species or ecosystem.
SU **GU**	**Unrankable** – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
GNR **SNR**	**Unranked** – Global or subnational conservation status not yet assessed.
SNA **GNA**	**Not Applicable** – A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities (e.g., non-native species or ecosystems.
Qualifier	**Definition**
S#? **G#?**	**Inexact Numeric Rank** – Denotes inexact numeric rank.
Q	**Questionable taxonomy that may reduce conservation priority** – Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable. The "Q" modifier is only used at a global level.
T#	**Infraspecific Taxon (trinomial)** – The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank.

State Status: Endangered and Threatened are legal status designations authorized by statute. Please refer to MRSA Title 12, §544 and §544-B.

Status	Definition
E	**Endangered** – Any native plant species in danger of extinction throughout all or a significant portion of its range within the State or Federally listed as Endangered.
T	**Threatened** – Any native plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range in the State or Federally listed as Threatened.
SC	**Special Concern** – A native plant species that is rare in the State, but not rare enough to be considered Threatened or Endangered.
PE	**Potentially Extirpated** – A native plant species that has not been documented in the State in over 20 years, or loss of the last known occurrence.

Element Occurrence (EO) Ranks: Quality assessments that designate viability of a population or integrity of habitat. These ranks are based on size, condition, and landscape context. Range ranks (e.g., AB, BC) and uncertainty ranks (e.g., B?) are allowed. The Maine Natural Areas Program tracks all occurrences of rare plants and natural communities/ecosystems (S1-S3) as well as exemplary common natural community types (S4-S5 with EO ranks A/B).

Rank	Definition
A	**Excellent** – Excellent estimated viability/ecological integrity.
B	**Good** – Good estimated viability/ecological integrity.
C	**Fair** – Fair estimated viability/ecological integrity.
D	**Poor** – Poor estimated viability/ecological integrity.
E	**Extant** – Verified extant, but viability/ecological integrity not assessed.
H	**Historical** – Lack of field information within past 20 years verifying continued existence of the occurrence, but not enough to document extirpation.
X	**Extirpated** – Documented loss of population/destruction of habitat.
U	**Unrankable** – Occurrence unable to be ranked due to lack of sufficient information (e.g., possible mistaken identification).
NR	**Not Ranked** – An occurrence rank has not been assigned.

Visit the Maine Natural Areas Program website for more information
http://www.maine.gov/dacf/mnap

maine DEPARTMENT OF Agriculture Conservation & Forestry
NATURAL AREAS

CORRESPONDENCE TO THE MAINE DEPARTMENT OF INLAND FISHERIES & WILDLIFE

GORRILL PALMER

300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

February 24, 2023

Mr. John Perry
Environmental Review Coordinator
Maine Dept. of Inland Fisheries & Wildlife
284 State Street
41 State House Station
Augusta, ME 04333-0041

Subject: Presence of Essential Habitat
Residential Development
Tandberg Trail
Windham, Maine

Dear Mr. Perry,

Gorrill Palmer has been retained to prepare plans and permit applications for a proposed residential development at 770 Roosevelt Trail in Windham, Maine. The proposed project is a 9-acre development on the corner of Manchester Drive and Tandberg Trail. The project site is shown on the attached Location Map.

To aid in the design, and as part of the permit applications, Gorrill Palmer requests information from your department regarding any threatened, endangered, and special status wildlife or fisheries species and/or habitats, within the project area which might be impacted by this project.

Thank you for your consideration. If you have any questions regarding the proposed project, please contact our office.

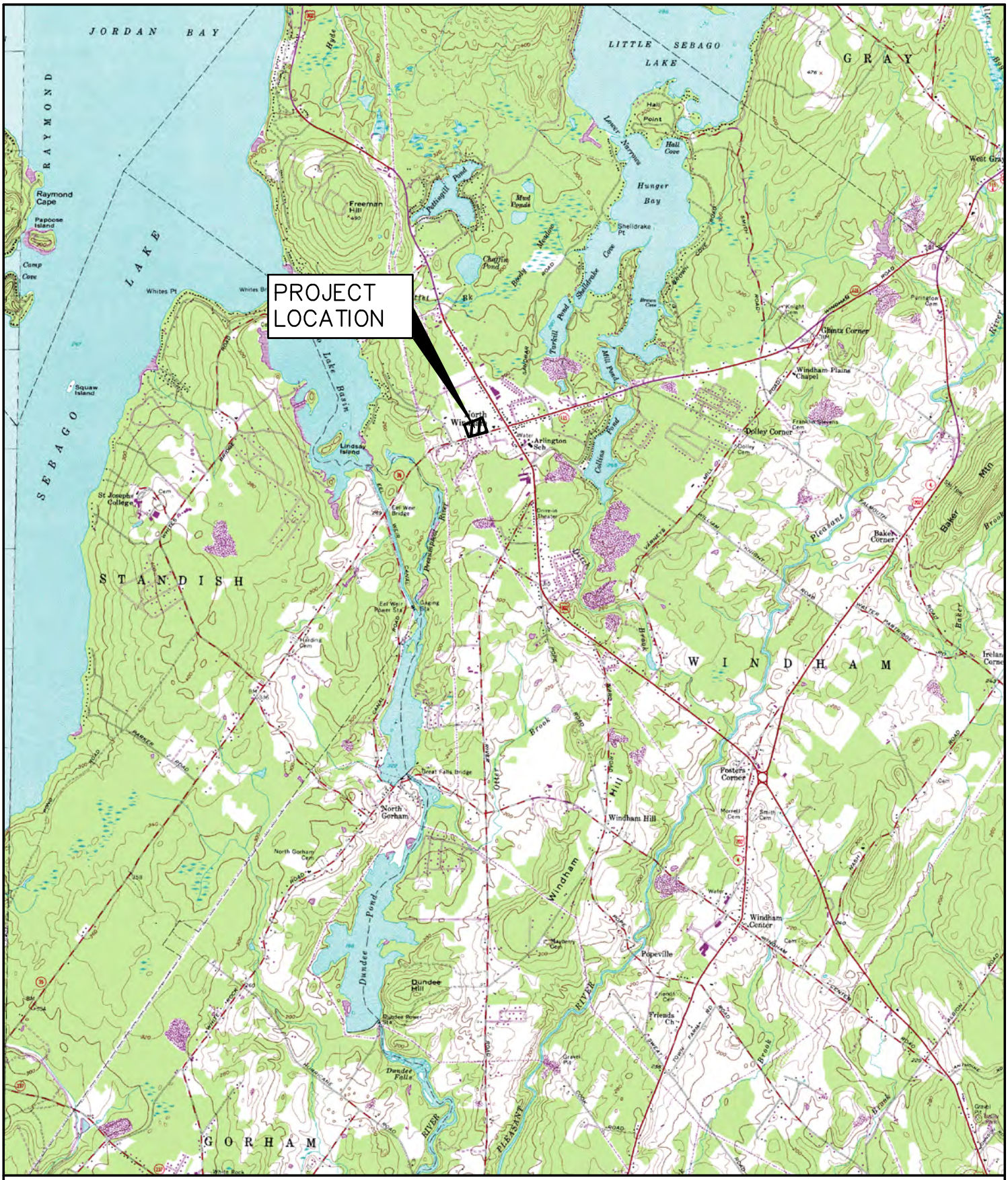
Sincerely,

Gorrill Palmer

Lauren Labbay
Design Engineer
207-772-2515 x240
llabbay@gorrillpalmer.com

Enclosure

U:\3796_Gravier Homes_Tandberg Trail Mixed Residential Housing - Windham\L Environmental\Resource Letters\Maine Department of Inland Fisheries and Wildlife\Perry.doc



U.S.G.S. Location Map

Shaw's Site Development - Windham, Maine

U.S.G.S. North Windham, State-7.5 Minute Series (Topographic)

Design: LEL	Date: JAN 2023
Draft: CEH	Job No.: 3796
Checked: DJG	Scale: None
File Name: 3796–LOCATION.dwg	

GORRILL PALMER

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www.gorrillpalmer.com
207.772.2515

Figure 1

RESPONSE FROM THE MAINE DEPARTMENT OF INLAND FISHERIES & WILDLIFE

JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
353 WATER STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041

JUDITH CAMUSO
COMMISSIONER

June 2, 2023

Lauren Labbay
Gorrill-Palmer
707 Sable Oaks Drive, Suite 30
South Portland, ME 04106

RE: Information Request – 770 Roosevelt Trail Project, Windham

Dear Lauren:

Per your request received on February 28, 2023, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and inland fisheries habitat concerns within the vicinity of the *770 Roosevelt Trail* project in Windham.

Our Department has not mapped any Essential Habitats or inland fisheries habitats that would be directly affected by your project.

Endangered, Threatened, and Special Concern Species

Bat Species – Of the eight species of bats that occur in Maine, the three *Myotis* species are protected under Maine's Endangered Species Act (MESA) and are afforded special protection under 12 M.R.S §12801 - §12810. The three *Myotis* species include little brown bat (State Endangered), northern long-eared bat (State Endangered), and eastern small-footed bat (State Threatened). The five remaining bat species are listed as Special Concern: big brown bat, red bat, hoary bat, silver-haired bat, and tri-colored bat. While a comprehensive statewide inventory for bats has not been completed, based on historical evidence it is likely that several of these species occur within the project area during migration and/or the breeding season. However, our Agency does not anticipate significant impacts to any of the bat species as a result of this project.

Significant Wildlife Habitat

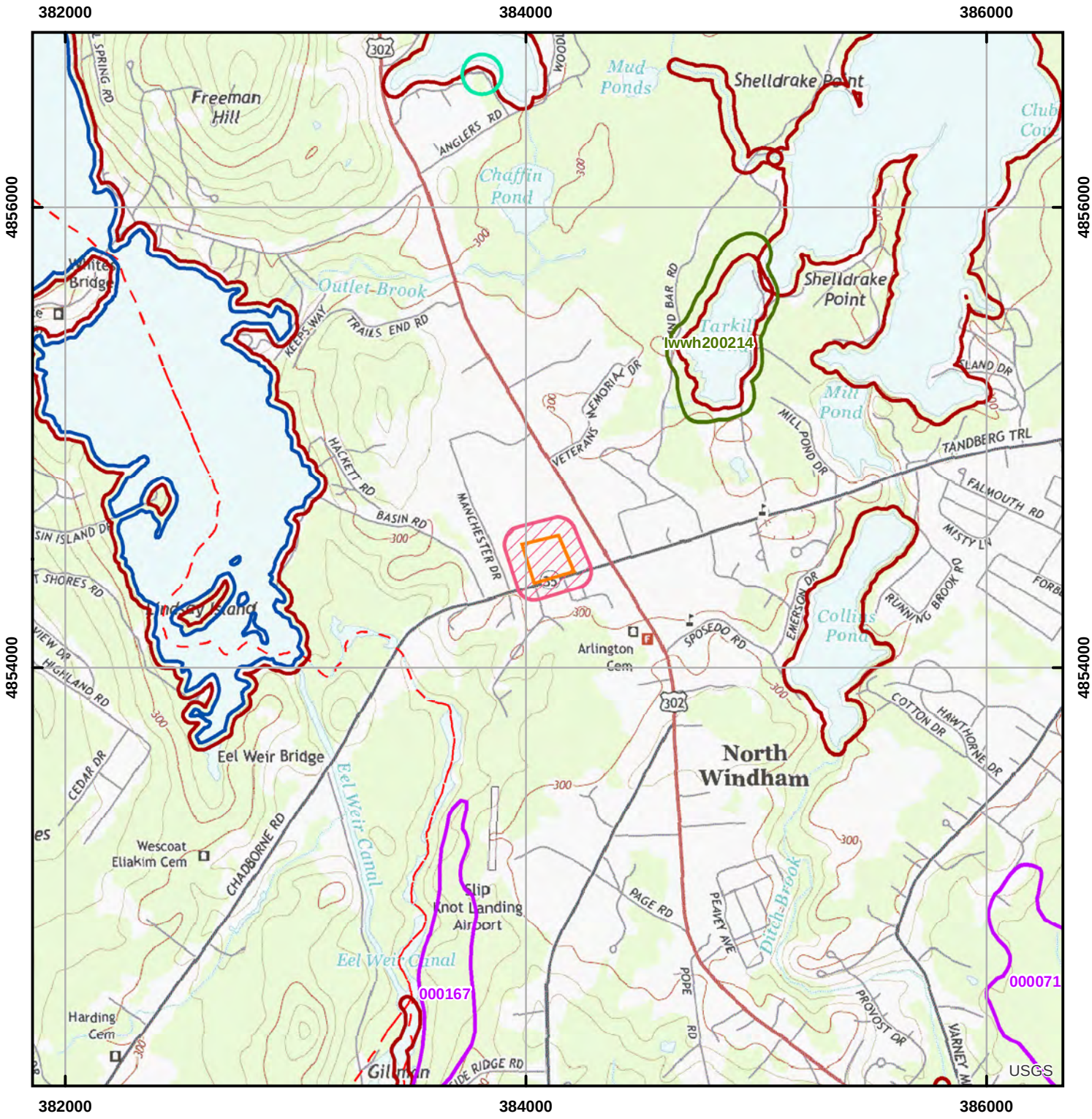
Significant Vernal Pools - At this time MDIFW Significant Wildlife Habitat (SWH) maps indicate no known presence of SWHs subject to protection under the Natural Resources Protection Act (NRPA) within the project area, which include Waterfowl and Wading Bird Habitats, Seabird Nesting Islands, Shorebird Areas, and Significant Vernal Pools. However, a comprehensive statewide inventory for Significant Vernal Pools has not been completed. Therefore, we recommend that surveys for vernal pools be conducted within the project boundary by qualified wetland scientists prior to final project design to determine whether there are Significant Vernal Pools present in the area. These surveys should extend up to 250 feet beyond the anticipated project footprint because of potential performance standard requirements for off-site Significant Vernal Pools, assuming such pools are located on land owned or controlled by the applicant. Once surveys are completed, survey forms should be submitted to our Agency for review well before the submission of any necessary permits. Our Department will need to review and verify any vernal pool data prior to final determination of significance.

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program, Maine Department of Marine Resources, and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

Emily Robinson
Wildlife Biologist



Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: 770 Roosevelt Trail, Windham
(Version 1)

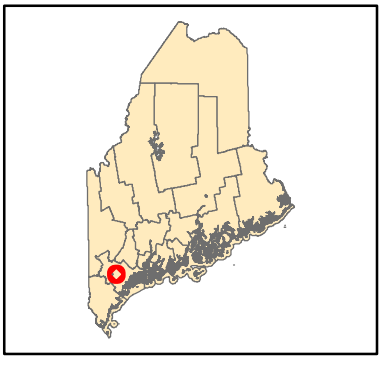
Miles
0 0.125 0.25 0.5 0.75 1

Projection: UTM, NAD83, Zone 19N

Date: 3/2/2023

Maine Department of
Inland Fisheries and Wildlife

- ProjectSearchAreas - All Versions
- Maine Cliff and Talus Areas
- Deer Winter Area
- LUPC p-fw
- Seabird Nesting Islands
- Shorebird Areas
- Inland Waterfowl and Wading Bird
- Tidal Waterfowl and Wading Bird
- Significant Vernal Pools
- Environmental Review Polygons
- Roseate Tern
- Piping Plover and Least Tern
- Aquatic ETSc - 2.5 mi review
- Rare Mussels - 5 mi review
- Maine Heritage Fish Waters
- Arctic Charr Habitat
- Redfin Pickerel and Swamp Darter Habitats - buffer100ft
- Special Concern occupied habitats - 100ft buffer
- Wild Lake Trout Habitats



INFORMATION FROM THE UNITED STATES DEPARTMENT OF THE INTERIOR – FISH AND WILDLIFE SERVICE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Maine Ecological Services Field Office
P. O. Box A
East Orland, ME 04431
Phone: (207) 469-7300 Fax: (207) 902-1588

In Reply Refer To: April 21, 2023
Project Code: 2023-0072290
Project Name: Tandberg Trail Residential Development

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Maine Ecological Services Field Office
P. O. Box A
East Orland, ME 04431
(207) 469-7300

PROJECT SUMMARY

Project Code: 2023-0072290
Project Name: Tandberg Trail Residential Development
Project Type: Residential Construction
Project Description: Location: 770 Roosevelt Trail, Windham, ME 04062
Size: +/- 9-acre lot
Scope: Residential Development with a plan for 156 two-bedroom multifamily units (13 buildings)
Timing: Anticipated construction beginning in 2024, occupancy permitting to occur after the public sewer is online (estimate of late 2025)

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.8341053,-70.44200839161681,14z

Counties: Cumberland County, Maine

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPAC USER CONTACT INFORMATION

Agency: Gorrill Palmer
Name: Lauren Labbay
Address: 300 Southborough Drive, Suite 200
City: South Portland
State: ME
Zip: 04106
Email llabbay@gorrillpalmer.com
Phone: 2077722515

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Maine Ecological Services Field Office
P. O. Box A
East Orland, ME 04431
Phone: (207) 469-7300 Fax: (207) 902-1588

In Reply Refer To: April 21, 2023
Project code: 2023-0072290
Project Name: Tandberg Trail Residential Development

Subject: Consistency letter for the 'Tandberg Trail Residential Development' project under the amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion (dated March 23, 2023) for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (NLEB).

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated April 21, 2023 to verify that the **Tandberg Trail Residential Development** (Proposed Action) may rely on the amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion Opinion (dated March 23, 2023) for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) to satisfy requirements under section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 *et seq.*).

Based on the information you provided (Project Description shown below), you have determined that the Proposed Action will have no effect on the endangered Indiana bat (*Myotis sodalis*) or the endangered northern long-eared bat (*Myotis septentrionalis*). If the Proposed Action is not modified, **no consultation is required for these two species.** If the Proposed Action is modified, or new information reveals that it may affect the Indiana bat and/or northern long-eared bat in a manner or to an extent not considered in the PBO, further review to conclude the requirements of ESA section 7(a)(2) may be required.

For Proposed Actions that include bridge/culvert or structure removal, replacement, and/or maintenance activities: If your initial bridge/culvert or structure assessments failed to detect Indiana bats and/or NLEB use or occupancy, yet later detected prior to, or during construction, please submit the Post Assessment Discovery of Bats at Bridge/Culvert or Structure Form (User Guide Appendix E) to this Service Office within 2 working days of the incident. In these instances, potential incidental take of Indiana bats and/or NLEBs may be exempted provided that the take is reported to the Service.

If the Proposed Action may affect any other federally-listed or proposed species and/or designated critical habitat, additional consultation between the lead Federal action agency and this Service Office is required. If the proposed action has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please advise the lead Federal action agency accordingly.

The following species may occur in your project area and **are not** covered by this determination:

- Monarch Butterfly *Danaus plexippus* Candidate

PROJECT DESCRIPTION

The following project name and description was collected in IPaC as part of the endangered species review process.

NAME

Tandberg Trail Residential Development

DESCRIPTION

Location: 770 Roosevelt Trail, Windham, ME 04062
Size: +/- 9-acre lot
Scope: Residential Development with a plan for 156 two-bedroom multifamily units (13 buildings)
Timing: Anticipated construction beginning in 2024, occupancy permitting to occur after the public sewer is online (estimate of late 2025)

DETERMINATION KEY RESULT

Based on the information you provided, you have determined that the Proposed Action will have no effect on the endangered Indiana bat and/or the endangered northern long-eared bat. Therefore, no consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required for these two species.

QUALIFICATION INTERVIEW

1. Is the project within the range of the Indiana bat[1]?

   [1] See Indiana bat species profile

   Automatically answered
   No

2. Is the project within the range of the northern long-eared bat[1]?

   [1] See northern long-eared bat species profile

   Automatically answered
   Yes

3. [Semantic] Does your proposed action intersect an area where Indiana bats and northern long-eared bats are not likely to occur?

   Automatically answered
   Yes

DETERMINATION KEY DESCRIPTION: FHWA, FRA, FTA PROGRAMMATIC CONSULTATION FOR TRANSPORTATION PROJECTS AFFECTING NLEB OR INDIANA BAT

This key was last updated in IPaC on April 13, 2023. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which may require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) for the endangered **Indiana bat** (*Myotis sodalis*) and the endangered **northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects. The programmatic biological opinion covers limited transportation activities that may affect either bat species, and addresses situations that are both likely and not likely to adversely affect either bat species. This decision key will assist in identifying the effect of a specific project/activity and applicability of the programmatic consultation. The programmatic biological opinion is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic biological opinion, or that may affect ESA-listed species other than the Indiana bat or NLEB, or any designated critical habitat, may require additional ESA Section 7 consultation.

IPAC USER CONTACT INFORMATION

Agency: Gorrill Palmer
Name: Lauren Labbay
Address: 300 Southborough Drive, Suite 200
City: South Portland
State: ME
Zip: 04106
Email llabbay@gorrillpalmer.com
Phone: 2077722515

LEAD AGENCY CONTACT INFORMATION

Lead Agency: U.S. Fish and Wildlife Service

CORRESPONDENCE TO THE HOULTON BAND OF MALISEET INDIANS

GORRILL PALMER

300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

February 24, 2023

Environmental Planner
Houlton Band of Maliseet Indians
88 Bell Road
Littleton, ME 04730

Subject: Residential Development
Tandberg Trail
Windham, Maine

To Environmental Planner:

Gorrill Palmer has been retained to prepare plans and permit applications for a proposed residential development at 770 Roosevelt Trail in Windham, Maine. The proposed project is a 9-acre development on the corner of Manchester Drive and Tandberg Trail. The project site is shown on the attached Location Map.

To aid in the design, and as part of the permit applications, Gorrill Palmer requests information from the Houlton Band of Maliseet Indians relative to the presence of any nearby historic, archaeological, or tribal resources.

If you have any questions or require any further additional information, please contact our office.

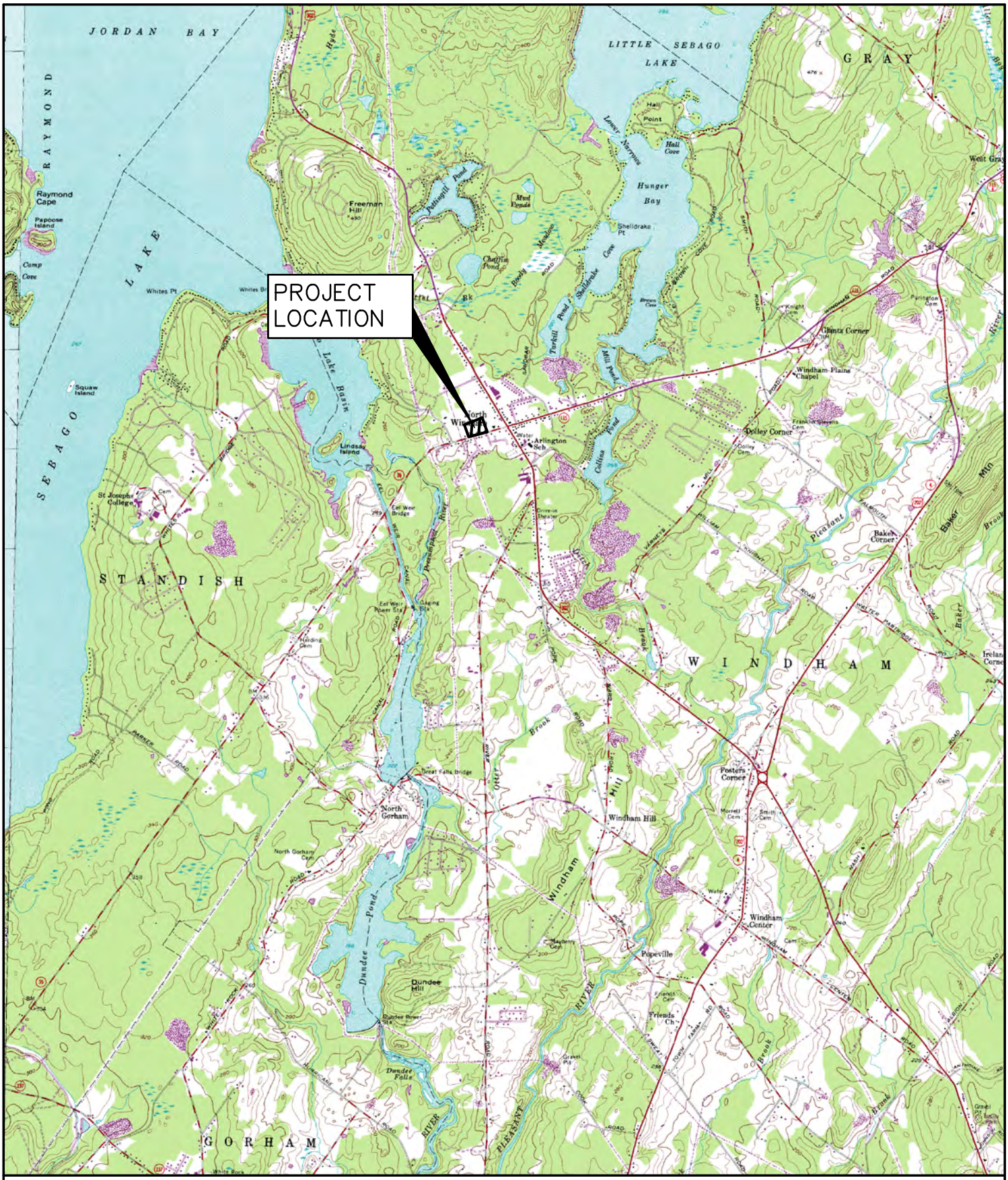
Sincerely,

Gorrill Palmer

Lauren Labbay
Design Engineer
207-772-2515 x240
llabbay@gorrillpalmer.com

Enclosure

u:\3796_gravier homes_tandberg trail mixed residential housing - windham\I environmental\resource letters\tribes\maliseet\ltr_maliseet_windham.docx



U.S.G.S. Location Map

Shaw's Site Development - Windham, Maine

U.S.G.S. North Windham, State-7.5 Minute Series (Topographic)

Design: LEL	Date: JAN 2023
Draft: CEH	Job No.: 3796
Checked: DJG	Scale: None
File Name: 3796–LOCATION.dwg	

GORRILL PALMER

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207.772.2515

Figure 1

RESPONSE FROM THE HOULTON BAND OF MALISEET INDIANS

From: Isaac St John
To: Lauren Labbay
Subject: RE: 770 Roosevelt Trail - Residential Development
Date: Thursday, May 18, 2023 10:46:51 AM
Attachments: image002.png

Good morning,

We do not have an immediate concern with your project or project site, and do not currently have the resources to fully investigate same. Should any human remains, archaeological properties or other items of historical importance be unearthed while working on this project, we recommend that you stop your project and report your findings to the appropriate authorities including the Houlton Band of Maliseet Indians.

Thank you,

Isaac St. John
Tribal Historic Preservation Officer
Houlton Band of Maliseet Indians
88 Bell Road
Littleton, ME 04730

From: Lauren Labbay [mailto:llabbay@gorrillpalmer.com]
Sent: Friday, February 24, 2023 9:54 AM
To: Isaac St. John <istjohn@maliseets.com>
Cc: Drew Gagnon <dgagnon@gorrillpalmer.com>
Subject: 770 Roosevelt Trail - Residential Development

Good Morning,

Please see the attached file for our request for review. Our project is at 770 Roosevelt Trail in Windham, ME.

Feel free to reach out with any questions.

Thank you,

Lauren Labbay | Design Engineer
GORRILL PALMER
300 Southborough Drive, Suite 200 | South Portland, ME 04106
207.772.2515 x240 (office) | (207) 837-1324 (mobile)
www.gorrillpalmer.com

CORRESPONDENCE TO MI'KMAQ NATION

GORRILL PALMER

300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

February 24, 2023

Kendyl Reis, THPO
Mi'kmaq Nation
7 Northern Road
Presque Isle, ME 04769

Subject: Residential Development
Tandberg Trail
Windham, Maine

Dear Kendyl:

Gorrill Palmer has been retained to prepare plans and permit applications for a proposed residential development at 770 Roosevelt Trail in Windham, Maine. The proposed project is a 9-acre development on the corner of Manchester Drive and Tandberg Trail. The project site is shown on the attached Location Map.

To aid in the design, and as part of the permit applications, Gorrill Palmer requests information from the Mi'kmaq Nation relative to the presence of any nearby historic, archaeological, or tribal resources.

If you have any questions or require any further additional information, please contact our office.

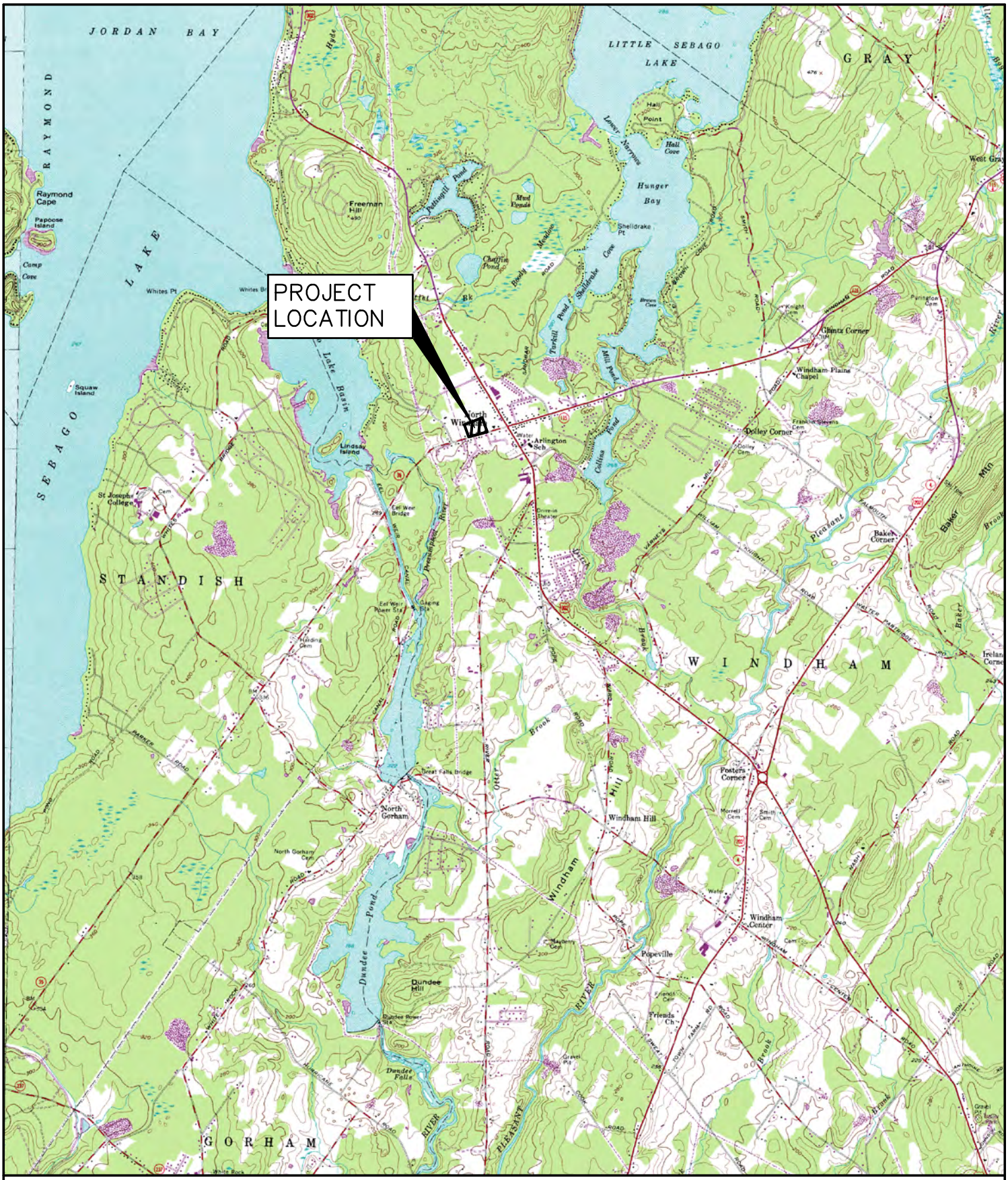
Sincerely,

Gorrill Palmer

Lauren Labbay
Design Engineer
207-772-2515 x240
llabbay@gorrillpalmer.com

Enclosure

u:\3796_gravier homes_tandberg trail mixed residential housing - windham\I environmental\resource letters\tribes\mi'kmaq nation\mi'kmaq nation_windham.docx



U.S.G.S. Location Map

Shaw's Site Development - Windham, Maine

U.S.G.S. North Windham, State-7.5 Minute Series (Topographic)

Design: LEL	Date: JAN 2023
Draft: CEH	Job No.: 3796
Checked: DJG	Scale: None
File Name: 3796–LOCATION.dwg	

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207.772.2515

Figure 1

RESPONSE FROM MI'KMAQ NATION

Tribal Historic Preservation Office
Mi'kmaq Nation (Formerly known as the Aroostook Band of Micmac)
Kendyl Reis
Tribal Historic Preservation Officer
7 Northern Road
Presque Isle, ME 04769
Phone: (207)764-1972 ext. 161
kreis@micmac-nsn.gov

770 Roosevelt Trail, Windham - Residential Development
March 10th, 2023

Based on the project description, we do not have knowledge of any specific sites or cultural features that exist at the proposed project location(s).

However, this geographic area does constitute traditional areas that were historically utilized by members of the Mi'kmaq Nation and the other Wabanaki Tribes. Therefore, we respectfully request that if during the course of excavation/construction activities, human remains, artifacts, or any other evidence of Native American presence is discovered, that site activities in the vicinity of the discovery immediately cease, pending notification to us.

In addition, if this project results in wetland disturbances requiring mitigation, we are requesting that you utilize the black ash (Fraginus nigra) as the principal wetland species for wetland restoration activities. The black ash tree has special significance in the culture of the northeastern Tribes and is used extensively for weaving baskets and other Native American crafts. The black ash tree also provides valuable food and habitat for migratory waterfowl and other wildlife. Unfortunately, however, this species has been selected against by foresters and landowners who favor other tree species. As a result of this, and other environmental factors, the black ash tree is in serious decline in Maine. The Mi'kmaq Nation has completed several black ash wetland restoration projects and have a dependable source for highly-quality seedlings, and the experience and expertise to assist you with black ash wetland restoration projects.

On the subject of human remains, artifacts, or any other evidence of Native American presence is discovered. The human remains will be reburied with the appropriate respect for the remains that is required at a distinctive and respectable site. The artifacts and other evidence of Native American discovery will be documented with appropriate detail. The items will be analyzed for the precise period of the items' distinctive period and will be documented by the Tribal Historic Preservation Officer for the Mi'kmaq Nation.

If you have any questions or comments, please feel free to contact me.

Sincerely,

Kendyl Reis
Tribal Historic Preservation Officer

CORRESPONDENCE TO THE PASSAMAQUODDY TRIBE OF INDIANS

GORRILL PALMER

300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

February 24, 2023

Mr. Donald Soctomah, THPO
Passamaquoddy Tribe of Indians
Pleasant Point & Indian Township Reservation
PO Box 343
Perry, ME 04667

Subject: Residential Development
Tandberg Trail
Windham, Maine

Dear Mr. Soctomah:

Gorrill Palmer has been retained to prepare plans and permit applications for a proposed residential development at 770 Roosevelt Trail in Windham, Maine. The proposed project is a 9-acre development on the corner of Manchester Drive and Tandberg Trail. The project site is shown on the attached Location Map.

To aid in the design, and as part of the permit applications, Gorrill Palmer requests information from the Passamaquoddy Tribe of Indians relative to the presence of any nearby historic, archaeological, or tribal resources.

If you have any questions or require any further additional information, please contact our office.

Sincerely,

Gorrill Palmer

Lauren Labbay
Design Engineer
207-772-2515 x240
llabbay@gorrillpalmer.com

Enclosure

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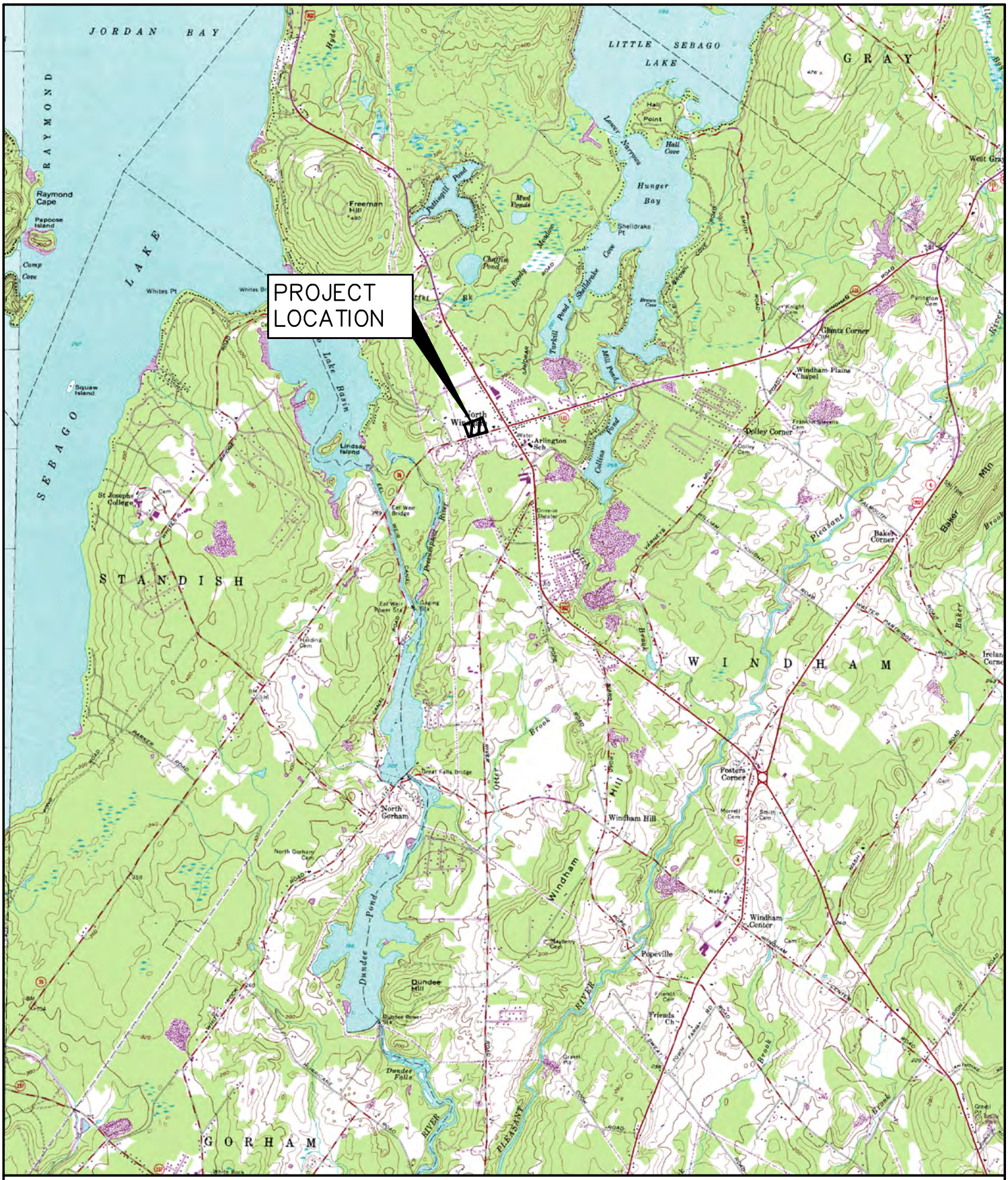

U.S.G.S. Location Map

Shaw's Site Development - Windham, Maine

U.S.G.S. North Windham, State-7.5 Minute Series (Topographic)

Design: LEL	Date: JAN 2023
Draft: CEH	Job No.: 3796
Checked: DJG	Scale: None
File Name: 3796–LOCATION.dwg	

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207.772.2515

Figure 1

RESPONSE FROM THE PASSAMAQUODDY TRIBE OF INDIANS

Tribal Historic Preservation Office
Passamaquoddy Tribe
PO Box 159 Princeton, Me. 04668
207-214-4051

November 29, 2023

Lauren Labbay
Design Engineer
GP

- Re: Tandberg Trail Project - Windham, Maine

Dear Lauren;

The Passamaquoddy THPO has reviewed the following applications regarding the historic properties and significant religious and cultural properties in accordance with NHPA, NEPA, AIRFA, NAGPRA, ARPA, Executive Order 13007 Indian Sacred Sites, Executive Order 13175 Consultation and Coordination with Indian Tribal Governments, and Executive Order 12898 Environmental Justice.

The Projects listed above will not have any impact on cultural and historical concerns of the Passamaquoddy Tribe. Should buried artifacts, human remains, cultural sites or ground features be unexpectedly unearthed during ground disturbing activities, all construction should immediately cease and the resources be examined by a professional archaeologist. Additionally, all appropriate authorities-including all pertinent tribal entities should be notified.

Sincerely;

Donald Soctomah
Soctomah@gmail.com
THPO
Passamaquoddy Tribe

CORRESPONDENCE TO PENOBSCOT NATION

GORRILL PALMER

300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

February 24, 2023

Mr. Christopher Sockalexis, THPO
Cultural & Historic Preservation Department
Penobscot Nation
12 Wabanaki Way
Indian Island, ME 04468

Subject: Residential Development
Tandberg Trail
Windham, Maine

Dear Mr. Sockalexis:

Gorrill Palmer has been retained to prepare plans and permit applications for a proposed residential development at 770 Roosevelt Trail in Windham, Maine. The proposed project is a 9-acre development on the corner of Manchester Drive and Tandberg Trail. The project site is shown on the attached Location Map.

Please confirm by return correspondence that there are no areas of the site with historical or archaeological significance of interest to the tribe as defined by the Natural Preservation Act of 1966.

If you have any questions or require any further additional information, please contact our office.

Sincerely,

Gorrill Palmer

Lauren Labbay
Design Engineer
207-772-2515 x240
llabbay@gorrillpalmer.com

Enclosure

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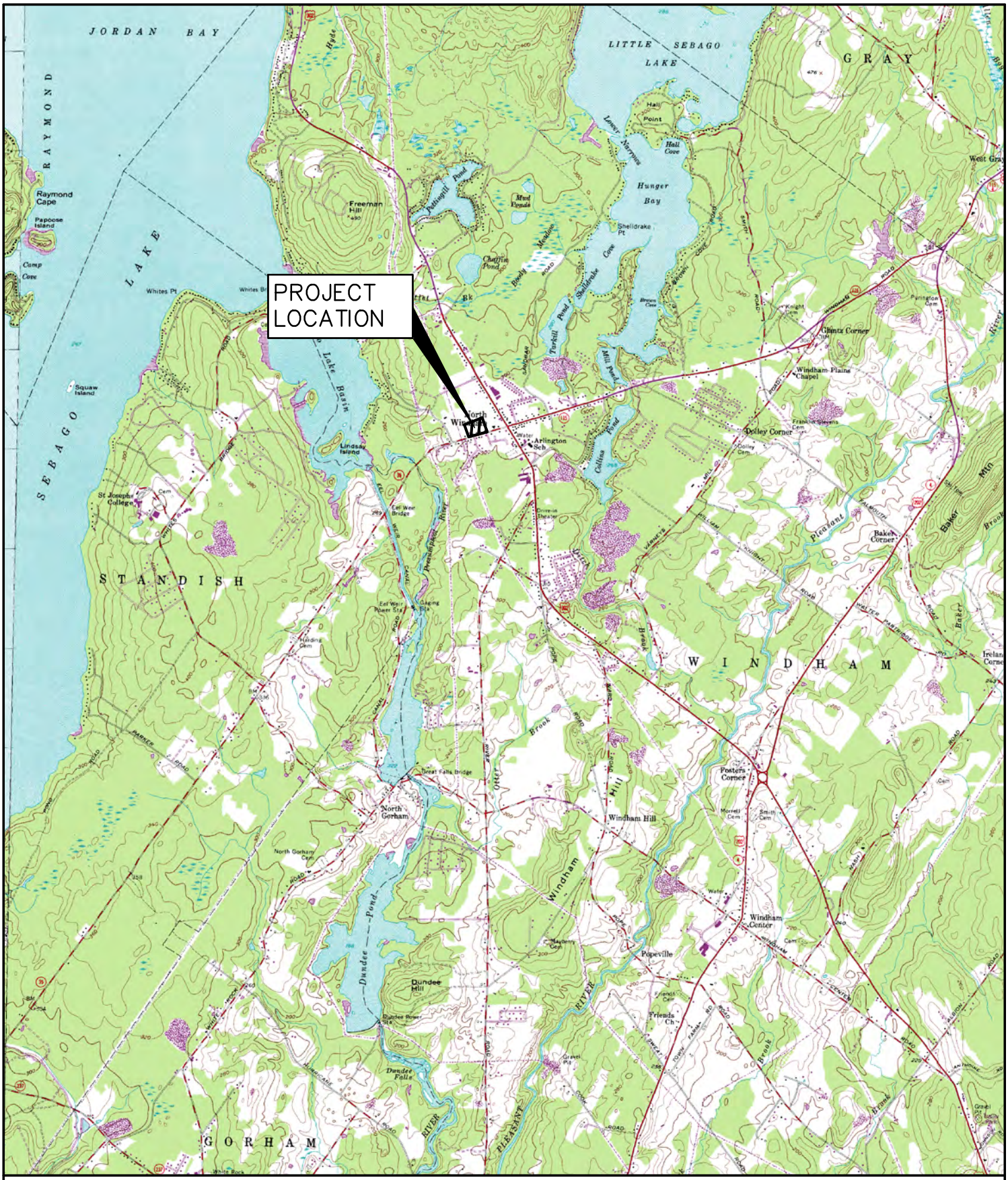

U.S.G.S. Location Map

Shaw's Site Development - Windham, Maine

U.S.G.S. North Windham, State-7.5 Minute Series (Topographic)

Design: LEL	Date: JAN 2023
Draft: CEH	Job No.: 3796
Checked: DJG	Scale: None
File Name: 3796–LOCATION.dwg	

GORRILL PALMER

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www.gorrillpalmer.com
207.772.2515

Figure 1

RESPONSE FROM PENOBSCOT NATION

PENOBSCOT NATION
CULTURAL & HISTORIC PRESERVATION
12 WABANAKI WAY, INDIAN ISLAND, ME 04468

CHRIS SOCKALEXIS – TRIBAL HISTORIC PRESERVATION OFFICER
E-MAIL: chris.sockalexis@penobscotnation.org

NAME	Lauren Labbay
ADDRESS	Gorrill Palmer 707 Sable Oaks Drive, Suite 30 South Portland, ME 04106
OWNER'S NAME	770 Roosevelt Trail
TELEPHONE	207-772-2515
EMAIL	llabbay@gorrillpalmer.com
PROJECT NAME	Residential development - 770 Roosevelt Trail
PROJECT SITE	Windham, ME
DATE OF REQUEST	February 24, 2023
DATE REVIEWED	November 16, 2023

Thank you for the opportunity to comment on the above referenced project. This project appears to have no impact on a structure or site of historic, architectural or archaeological significance to the Penobscot Nation as defined by the National Historic Preservation Act of 1966, as amended.

If there is an inadvertent discovery of Native American cultural materials during the course of the project, please contact my office at (207) 817-7471. Thank you for consulting with the Penobscot Nation Tribal Historic Preservation Office with this project.

Chris Sockalexis, THPO
Penobscot Nation

ATTACHMENT 8

HIGH INTENSITY SOIL SURVEY

CLASS A HIGH INTENSITY SOIL SURVEY REPORT: PROPOSED RESIDENTIAL DEVELOPMENT PROJECT

Tandberg Trail

Windham, Cumberland County, Maine

Prepared for:
Gorrill Palmer Consulting Engineers
707 Sable Oaks Dr #30, South Portland, ME 04106
https://www.gorrilpalmer.com

Prepared by:
Flycatcher LLC
106 Lafayette Street, Suite 2A
Yarmouth, ME 04096
http://www.flycatcherllc.com

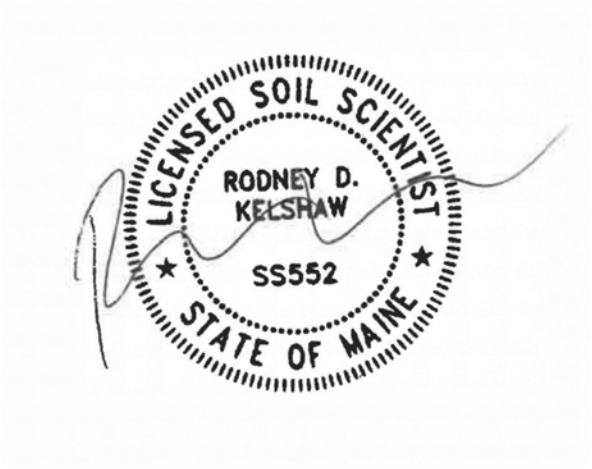
January 10, 2023

Contents

Appendices

1.0 SIGN-OFF SHEET

This soil narrative report entitled "*Class A High Intensity Soil Survey Report: Proposed Residential Devleopment Project*", accompanying soil profile descriptions and soil survey map, dated January 10, 2023, were completed in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, February 1995, as amended, and was prepared by Rodney D. Kelshaw LSS #552 of Flycatcher LLC.



2.0 INTRODUCTION AND PURPOSE

Gorrill Palmer Engineers, Inc. (GPE) requested that Flycatcher, LLC (Flycatcher) conduct a high intensity soil survey (HISS) to assist them and their client, Gravier Homes, with the planning of a proposed residential development project located on an undeveloped parcel in Windham, Maine (Survey Area) (Figures 1 and 2). A Maine Licensed Soil Scientist (R. Kelshaw, LSS #552) completed the soil survey in the Summer of 2022. This report provides a description of the methods and findings of the soil survey, and a discussion of potential limitations for project design based on soil type.

The purpose of this soil survey is to provide project planners with site-specific soil information which describes the ability or limitation of the soil to support the proposed use so as to aid in project design. This report may also be used as part of the regulatory permit application process. A soil survey is tailored to the specific project; as such, the report may not be suitable for other uses because the soil limitations and properties that are suitable for one proposed project may not be suitable for different project type.

3.0 SURVEY AREA DESCRIPTION

3.1 General Survey Area Description & Land Use

3.1.1 General Description

As depicted on Figures 1 and 2, the Survey Area is in Windham, and is situated east of Sebago Lake Basin. The Survey Area encompasses approximately 9-acres, located to the north of Tandberg Trail, east of Manchester Drive, south of the Shaw's Supermarket development complex, and east of an access road to the Shaw's Supermarket complex. Surrounding land uses include commercial development along major roadways, residential development along secondary roads, and larger areas of forest land primarily to the west toward Sebago Lake and the south.

The Survey Area consists of forested uplands and the Shaw's Supermarket subsurface wastewater disposal field located in the northcentral portion of the Survey Area. There is a network of woods roads/walking trails that extend throughout the western portion of the Survey Area.

3.1.2 Topography/Drainage

The Survey Area is nearly level, with the general slope downward from north to south. The topographic elevations within the Survey Area range from approximately 308-feet on top of the Shaw's disposal field to approximately 304-feet located along the southern boundary.

3.1.3 Vegetation

The Survey Area is almost entirely forested, dominated by eastern white pine (*Pinus strobus*), balsam fir *(Abies balsamea),* white birch (*Betula papyrifera*), and spruce (*Picea sp.*) trees.

4.0 METHODS

4.1 Standards

A Class A HISS was conducted for the approximately 9-acre Survey Area. The soil survey methodology and deliverables are designed to meet the typical requirements of Section 11 of the Site Law permit

application.[1] This report and associated maps were completed in accordance with the standards adopted by the Maine Association of Professional Soil Scientists (MAPSS) "*Guidelines for Maine Certified Soil Scientists for Soils Identification and Mapping*" (revised 2009)[2] and follows the standards detailed in the USDA NRCS "*Soil Survey Manual.*"[3] Soils are described using the standard soil terminology developed by the USDA NRCS and the MAPSS Key to Soil Drainage Classes, as well as a list of regional indicators for identification of hydric soils in the *Field Indicators for Identifying Hydric Soils in New England, Version 4.*[4]

4.2 Desktop Review

This soil survey was developed through a compilation of on-site soil investigation observations supported by publicly available data, including the USDA NRCS soil surveys for Cumberland County.[5] Prior to the on-site fieldwork, Flycatcher reviewed available data sources, including:

- Project maps provided by Gorrill Palmer;
- United States Geological Survey (USGS) topographic map;
- NRCS medium-intensity soil survey map;
- National Wetland Inventory (NWI) maps;
- National Hydrography Dataset (NHD) maps, and
- Recent and historic aerial photography (via Google Earth).

The NRCS medium intensity soil survey for Cumberland County depicts the entire Survey Area within the soil map unit: Hinckley (HiB).

4.3 Soil Survey Area Boundary Establishment and Field Methods

The Survey Area boundary depicted on the HISS maps was provided to Flycatcher by Gorrill Palmer in a site plan CAD drawing. A wetland delineation was performed by Flycatcher during the on-site soil survey fieldwork, and no wetlands were observed. The soil survey fieldwork was performed in August 2022. The weather conditions were typical for the season.

4.4 Data Collection

Site orientation and data collection was accomplished using the ESRI "Field Maps" application. Field Maps provides online ArcGIS map integration that allows the field user to view various base layer maps (e.g., USGS topographic maps, aerial photographs, etc.) while tracking their location and collecting data. Geolocation of field data was accomplished using a mapping-grade GPS antenna (i.e., Juniper Systems Geode).

Excavator dug test pits were used to observe soil morphology and characteristics. Investigations extended to a depth of refusal, pit walls slumping, or to the length of the excavator arm (up to 90-inches). Test pit locations were selected to collect representative soil data, which was then reviewed to determine the soil series or phase of the pit. Other factors used to determine soil boundaries included changes in vegetation,

[1] State of Maine, Bureau of Land and Water Quality, Department of Environmental Protection Site Location of Development 38 M.R.S.A. §§ 481-490, Revised October 2015

[2] Maine Association of Professional Soil Scientists. 2009. *Guidelines for Maine Certified Soil Scientists for Soils Identification and Mapping*.

[3] Soil Science Division Staff. 2017. *Soil Survey Manual, ed*. C. Ditzler, K.Scheffe, and H.C. Monger, USDA Handbook 18. Government Printing Office, Washington, D.C.

[4] New England Hydric Soils Technical Committee. 2019 Version 4, Field Indicators for Identifying Hydric Soils in New England. New England Interstate Water Pollution Control Commission, Lowell, MA.

[5] Source: NRCS Web Soil Survey URL: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx; reviewed multiple times in 2022.

slope, aspect, and other human influence. The soil map unit boundary was then established using the test pit descriptions along with the other factors, and similar landscape types were grouped into map units.

4.5 Soil Map Requirements

Class A (High Intensity) standards were developed to provide information for proposed projects with intensive uses where hydric soil boundaries or the location of suitable areas for moderate to heavy soil disturbance require site specific soil information. These standards are the basis of this soil survey and are detailed in Appendix D: MAPSS Class A Soil Survey Standards.

4.6 Soil Map Units

The soil survey map units conform with National Cooperative Soil Survey standards. Soil profiles are observed and then classified at the series level according to the current Keys to Soil Taxonomy. Soil map units depicted on the soil survey maps and described in this report are phases of soil series.

A soil survey map unit consists of a portion of the landscape composed of the identified soil and associated landscape properties, such as similar topography, aspect, stoniness, vegetation, depth to seasonal groundwater table, or depth to bedrock. The area enclosed by a map unit boundary has a minimum of 75% of the soil(s) that provide the name of that map unit or similar soil (i.e., soils that differ so little from the named soil(s) in the map unit that there are no important differences in interpretations). No inclusion is greater in size than the named soil(s). The total amount of dissimilar soils (soils that differ sufficiently from the named soil(s) to affect major interpretations) do not exceed 25% of the map unit.

Soil map unit boundaries are depicted on the accompanying soil survey map (Appendix A, Figure 3). Each map unit is composed of the named soil and smaller areas of other soil series or phases (inclusions). Most inclusions have properties or patterns that are similar to those of the dominant soil in the map unit and generally do not affect use and management.

5.0 FINDINGS

Appendix A contains the USGS Survey Area Location Map (Figure 1), aerial photograph Survey Area Location Map (Figure 2), and Class A High Intensity Soil Survey Map (Figure 3). Appendix B includes test pit data on the Soil Conditions Summary Table (Form E) and detailed information on the Soil Profile Classification/Information Form (Form F). Appendix C provides the Soil Map Unit Descriptions. Appendix D includes the MAPSS Class A Soil Survey standards. Appendix E provides a Glossary of terms.

5.1 Soil Survey Map Units

The Survey Area is encompassed by five map units. The Map Unit Descriptions in Appendix C describe the soil origin, textures, drainage classes, depth to bedrock, where they are located with the Survey Area, and typical physical and chemical factors which affect the proposed Project. Some key factors to consider during planning are:

- The Survey Area is nearly level, so steep slopes are not a factor for development.
- Sandy soils are not cohesive and therefore do not hold their structure and are prone to slumping during excavation.
- The soil chemistry of sandy soils is typically less conducive to growing grass in areas that are disturbed and re-seeded for soil stabilization. Fertilizer or other soil amendments may be required to grow dense grass in re-seeded areas.

- Small inclusions within the Duane map unit have an observed water table within 24-inches of the soil surface and therefore have and assigned HSG of D.

- The Eldridge map unit (ElA), which is moderately well drained, contains areas of well drained soil. These areas will likely be better for roads due to the lower water table; however, it could be more difficult to grow grass. This map unit also includes small areas of somewhat poorly drained soil. These may be more susceptible to rutting during construction and an active freeze thaw cycle due to the water table being closer to the soil surface.

- Small inclusions within the Eldridge map unit have an observed water table within 24-inches of the soil surface and therefore have and assigned HSG of D.

- The Shaw's Supermarket septic system is within the Survey Area and is the map unit HAHT:
    - The water table in close proximity to the disposal field may be higher than under natural conditions where there would not be additional water inputs to the area, and
    - During construction care should be taken to not damage the disposal field or the associated components, such as tanks and piping.

- In some areas the observed seasonal groundwater table is higher than what was expected based on the NRCS mapping.

6.0 CONCLUSIONS AND SURVEY LIMITATIONS

Results of this soil survey indicate that in some areas this site could require engineered designs to address the limiting factors for the proposed development. However, with proper planning, engineering, and construction techniques, the soils are adequate for the proposed Project and are not dissimilar from limitations for other successfully constructed developments in this area. The most limiting factors at this site are upland areas with a moderately shallow water table and non-cohesive soil structure.

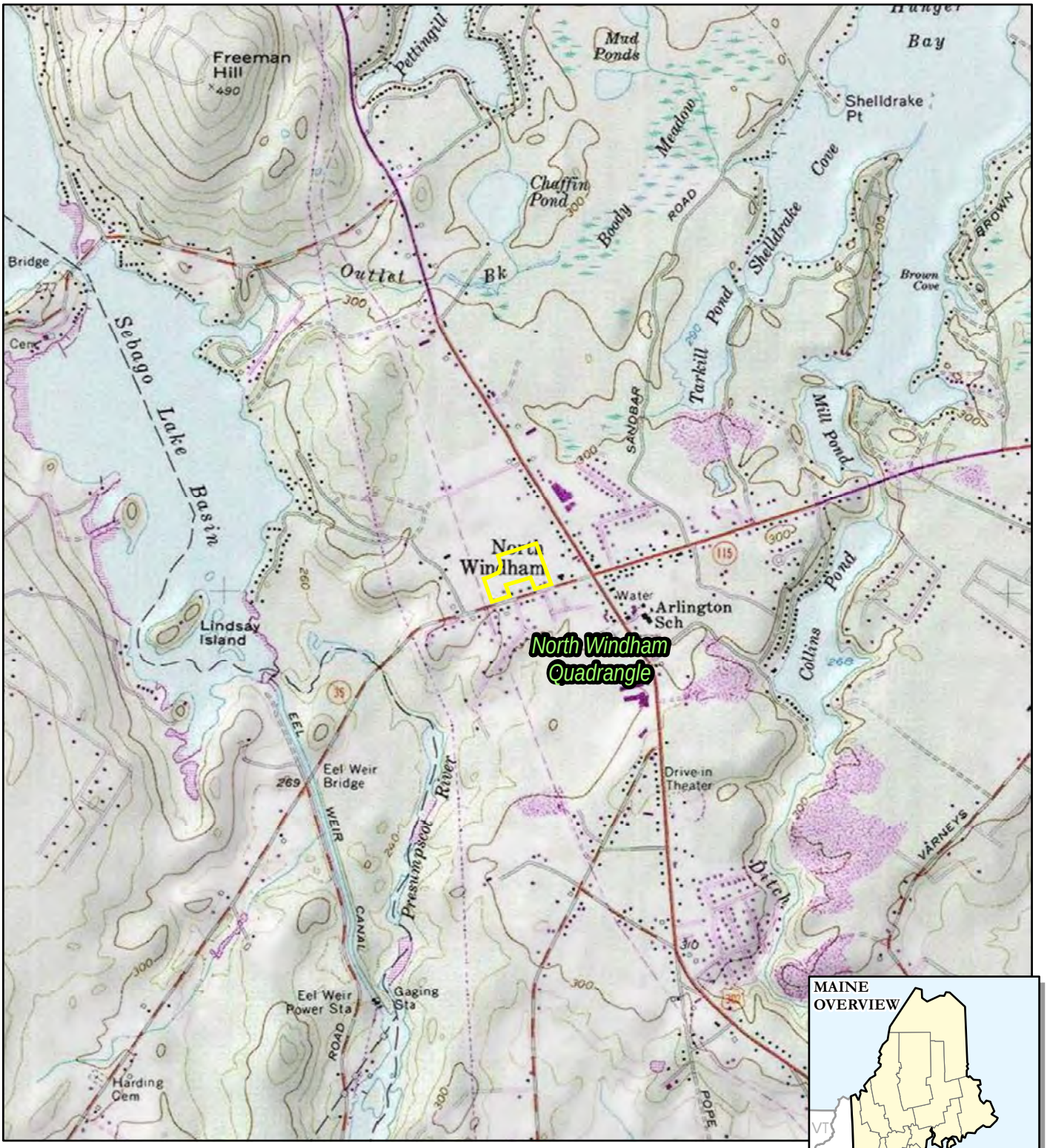
The scope of this investigation was conducted in accordance with the Class A High Intensity Soil Survey standards and guidelines established by MAPSS. The conclusions and recommendations presented in this soil report are based on data obtained from on-site investigation and supplemental USDA NRCS soil maps and information. This soil report and associated soil figures were prepared for exclusive use by Project planners for specific application of the proposed development Project.

APPENDIX A: FIGURES

Figure 1. USGS Survey Area Location Map

Figure 2. Aerial Photo Survey Area Location Map

Figure 3. Class A High Intensity Soil Survey Map



BASE MAP FROM USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.

1 " = 2,000 '
1:24,000

0 2,000 4,000 FEET

GORRILL PALMER

Flycatcher
LAND + SCIENCE + PEOPLE

PROJECT:

GORILL PALMER
TANDBERG TRAIL
WINDHAM, CUMBERLAND COUNTY, MAINE

LEGEND:

SURVEY AREA
USGS 7.5-MINUTE QUADRANGLE BOUNDARY

DRAWN BY:	D. KENWORTHY
CHECKED BY:	R. KELSHAW
MONTH:	JANUARY
YEAR:	2023
PROJ. NO.:	20F-17
CLIENT:	GP

FIGURE 1 - USGS LOCATION MAP

C:\FLYCATCHER\Projects\GorrillPalmer\GP_20F17_TandbergTr_Fig1_USGS_8x11P.mxd -- Saved By: DREWKENWORTHY on 1/4/2023, 14:06:55 PM

Plot Date: 1/4/2023, 14:15:43 PM by DREWKENWORTHY -- LAYOUT: ANSI B(11"x17")
Path: C:\FLYCATCHER\Projects\GorrillPalmer\GP_20F17_TandbergTr_Fig2_Aerial_11x17L.mxd

Coordinate System: NAD 1983 StatePlane Maine West FIPS 1802 Feet (Foot US)
Map Rotation: 0

LEGEND

SURVEY AREA

NOTES:

1 BASEMAP IMAGERY FROM ESRI/NAIP "WORLD IMAGERY" SERVICE LAYER.

0 200 400
Feet
1 " = 200 '
1:2,400

PROJECT:

GORILL PALMER
TANDBERG TRAIL
WINDHAM, CUMBERLAND COUNTY, MAINE

TITLE:

AERIAL PHOTO
SURVEY AREA LOCATION MAP

DRAWN BY:	D. KENWORTHY	PROJ NO.:	20F-17
CHECKED BY:	R. KELSHAW		
MONTH:	JANUARY		**FIGURE 2**
YEAR:	2023		

Flycatcher LAND + SCIENCE + PEOPLE

GORRILL PALMER

FILE NO.: GP_20F17_TandbergTr_Fig2_Aerial_11x17L.mxd

MAP UNIT LEGEND		
Map Unit	Map Unit Name	HSG
DsA	Duane fsl, swpdr, 0-3% slopes	D
DuA	Duane cos, 0-3% slopes	A & D
ElA	Eldridge fsl/sil, 0-3% slopes	B & D
HiA	Hinckley s, wdr, 0-3% slopes	A
HAHT	Human Altered Human Transported Materials	N/A

Map Legend

TP17e EXCAVATOR TEST PIT

ElA MAP UNIT SYMBOL

SOIL SURVEY SITE BOUNDARY

MAP UNIT BOUNDARY

GENERAL NOTES

1. BASE PLAN DATA PROVIDED TO FLYCATCHER LLC BY GORRILL PALMER.

2. SOIL SURVEY/STUDY AREA BOUNDARY PROVIDED TO FLYCATCHER LLC BY GORRILL PALMER.

3. WETLAND DELINEATION BY FLYCATCHER, LLC.

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)

1 inch = 100 ft.

FIGURE 3

CLASS A HIGH INTENSITY SOIL SURVEY MAP
CLIENT: GRAVIER HOMES
PROJECT: RESIDENTIAL DEVELOPMENT PROJECT
LOCATION: TANDBERG TRAIL: WINDHAM, ME

V1	RDK	2023-01-10	
V2	RDK	2023-01-11	

CREATION, REVIEW, & REVISION

LICENSED SOIL SCIENTIST ★ RODNEY D. KELSHAW SS552 ★ STATE OF MAINE

Rodney D. Kelshaw

Flycatcher LAND + SCIENCE + PEOPLE

FLYCATCHER, LLC
Lower Falls Landing
106 Lafayette St., Suite 2A
Yarmouth, ME 04096

APPENDIX B: FORMS

Form E: Soil Conditions Summary Table

Form(s) F: Soil Profile / Classification Information (Test Pit Logs)

FORM E Rev. 7/21

SOIL CONDITIONS SUMMARY TABLE

SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaw's Site Development	Gravier Homes	Windham

Lot No.	Exploration Symbol (TP 1, B 2, etc.)	✖ if at SSWD Field	Description of subsurface materials by: ● Soil profile/condition (if by S.E.), ● Soil series name (if by S.S.), or by ● Geologic unit (if by C.G.)	Depths to (inches): Redoximorphic Features	Bedrock	Hydraulically Restrictive Layer	Limit of Exploration	Ground Surface Slope (%)	Ground Surface Elevation
	TP01e	☒	Eldridge wdr, 7B	49	N.O.	N.O.	72	0-3	306
	TP02e	☒	Eldridge wdr, 7B	64	N.O.	31	90	0-3	306
	TP03e	☒	Eldridge, 7C	28	N.O.	28	90	0-3	306
	TP04e	☒	Eldridge wdr, 7B	48	N.O.	48	90	0-3	306
	TP05e	☒	Eldridge, 7D	18	N.O.	13	90	0-3	305
	TP06e	☒	Eldridge swpdr, 7D	13	N.O.	13	90	0-3	304
	TP07e	☒	Eldridge, 7C	26	N.O.	26	90	0-3	303
	TP08e	☒	Eldridge, 7C	30	N.O.	30	90	0-3	303
	TP09e	☒	Eldridge, 7C	29	N.O.	29	90	0-3	303
	TP10e	☒	Duane swpdr, 6C	16	N.O.	16	64	0-3	304
	TP11e	☒	Eldridge wdr, 7B	68	N.O.	68	90	0-3	305
	TP12e	☒	Eldridge, 7B	36	N.O.	36	90	0-3	305
	TP13e	☒	Eldridge, 7C	32	N.O.	32	90	0-3	305
	TP14e	☒	Eldridge wdr, 7C	74	N.O.	39	90	0-3	306
	TP15e	☒	Eldridge wdr, 7B	54	N.O.	54	90	0-3	306
	TP16e	☒	Eldridge wdr, 7B	63	N.O.	63	90	0-3	306
	TP17e	☒	Eldridge, 7C	18	N.O.	N.O.	90	0-3	307
	TP18e	☒	Eldridge, 7C	20	N.O.	N.O.	90	0-3	307
	TP19e	☒	Eldridge, 7C	72	N.O.	28	90	0-3	306
	TP20e	☒	Duane, 6C	18	N.O.	68	90	0-3	306
	TP21e	☒	Hinckley wdr, 6B	49	N.O.	N.O.	90	0-3	306
	TP22e	☒	Hinckley, 6B	N.O.	N.O.	N.O.	90	0-3	306
	TP23e	☒	Hinckley wdr, 6B	75*	N.O.	N.O.	90	0-3	306
	TP24e	☒	Hinckley, 6B	N.O.	N.O.	N.O.	90	0-3	306
	TP25e	☒	Hinckley wdr, 6B	72*	N.O.	N.O.	90	0-3	305
	TP26e	☒	Hinckley wdr, 6B	53*	N.O.	N.O.	90	0-3	305
	TP27e	☒	Hinckley wdr, 6B	80	N.O.	N.O.	90	0-3	306
	TP28e	☒	Hinckley wdr, 6B	50	N.O.	N.O.	90	0-3	305
	TP29e	☒	Hinckley wdr, 6B	52	N.O.	N.O.	90	0-3	304
	TP30e	☒	Hinckley wdr, 6C	41	N.O.	N.O.	90	0-3	304
		☐	N.O. = Not Observed						
		☐	* = Soil Moisture Observed						

STATE OF MAINE RODNEY D. LICENSED SITE EVALUATOR No. 371

LICENSED SOIL SCIENTIST RODNEY D. KELSHAW SS552 STATE OF MAINE

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INVESTIGATOR INFORMATION AND SIGNATURE

Signature

Rodney Kelshaw

Name Printed

☒ Site Evaluator
☒ Soil Scientist
☐ Geologist
☐ Professional Engineer

2022-08-24

Date

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FORM E Rev. 7/21

SOIL CONDITIONS SUMMARY TABLE

SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaw's Site Development	Gravier Homes	Windham

Lot No.	Exploration Symbol (TP 1, B 2, etc.)	✖ if at SSWD Field	Description of subsurface materials by: • Soil profile/condition (if by S.E.), • Soil series name (if by S.S.), or by • Geologic unit (if by C.G.)	Depths to (inches): Redoximorphic Features	Bedrock	Hydraulically Restrictive Layer	Limit of Exploration	Ground Surface Slope (%)	Ground Surface Elevation
	TP31e	☒	Duane, 6C	29	N.O.	N.O.	90	0-3	304
	TP32e	☒	Duane, 6C	22	N.O.	N.O.	90	0-3	304
	TP33e	☒	Duane, 6C	35	N.O.	N.O.	90	0-3	304
	TP34e	☒	Duane, 6C	34	N.O.	N.O.	90	0-3	306
	TP35e	☒	Eldridge wdr, 7C	40	N.O.	40	90	0-3	306
	TP36e	☒	Eldridge, 7C	35	N.O.	N.O.	90	0-3	304
	TP37e	☒	Duane, 6C	38	N.O.	N.O.	90	0-3	306
	TP38e	☒	Duane, 6C	24	N.O.	N.O.	90	0-3	306
	TP39e	☒	Duane, 6C	28	N.O.	N.O.	90	0-3	306
	TP40e	☒	Duane, 6C	34	N.O.	N.O.	90	0-3	306
	TP41e	☒	Hinckley wdr, 6B	48	N.O.	N.O.	90	0-3	304
	TP42e	☒	Duane, 6C	39	N.O.	N.O.	90	0-3	304
	TP43e	☒	Hinckley wdr, 6C	45	N.O.	N.O.	90	0-3	305
	TP44e	☒	Duane, 6C	35	N.O.	N.O.	90	0-3	306
	TP45e	☒	Duane, 6C	34	N.O.	N.O.	90	0-3	306
	TP46e	☒	Duane, 6C	33	N.O.	N.O.	90	0-3	305
	TP47e	☒	Eldridge, 7C	22	N.O.	22	90	0-3	307
	TP48e	☒	Eldridge, 7C	33	N.O.	33	90	0-3	307
	TP49e	☒	Duane, 6C	30	N.O.	30	90	0-3	306
	TP50e	☒	Duane, 6C	24	N.O.	N.O.	90	0-3	306
	TP51e	☒	Hinckley, 6B	N.O.	N.O.	N.O.	90	0-3	307
	TP52e	☒	Hinckley wdr, 6B	60	N.O.	N.O.	90	0-3	306
		☒							
		☒							
		☒							
		☒							
		☒							
		☒							
		☒							
		☒							
		☒	N.O. = Not Observed						
		☒	* = Soil Moisture Observed						

STATE OF MAINE RODNEY D. KELSHAW No. 371 LICENSED SITE EVALUATOR

LICENSED SOIL SCIENTIST RODNEY D. KELSHAW SS552 STATE OF MAINE

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

Rodney Kelshaw
Name Printed

☒ Site Evaluator
☒ Soil Scientist
☐ Geologist
☐ Professional Engineer

2022-08-24
Date

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PAGE 1 OF 26

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Shaw's Site Development | Applicant Name: Gravier Homes | Project Location (municipality): Windham

TP01e

Exploration Symbol # TP01e ☒ Test Pit ☐ Boring ☐ Probe

n/o " Organic horizon thickness Ground surface elev. 306

72 " Depth: ☒ of exploration, or ☐ to refusal

Depth below mineral soil horizon (inches)

Horizon	Color	Texture	Structure	Consistence	Redox
A	dkgy	sl	sbk	VFR	
Bw	br	lcos			
B/C	ltolv br		gr	L	none observed
C/B		fs			
C1	olv		m/gr	L/FIP	dkgy
C2		fs varvs VFS	m/sbk	FR	dkgy br 5% moist
		LOI 72"			

Soil Details

Soil Series/Phase Name: Eldridge wdr, 7B

Limiting Factor: 49 " Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 0-3 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic: A Soil Group

STATE OF MAINE RODNEY D. KELSHAW No. 371 LICENSED SITE EVALUATOR

TP02e

Exploration Symbol # TP02e ☒ Test Pit ☐ Boring ☐ Probe

n/o " Organic horizon thickness Ground surface elev. 306

70 " Depth: ☒ of exploration, or ☐ to refusal

Depth below mineral soil horizon (inches)

Horizon	Color	Texture	Structure	Consistence	Redox
Ap	dkgy	sl	sbk	VFR	
B3	br			FR/FIP	
Bw	olv br	gr cos	gr	L	none
B/C	ltolv br		pl	FI	observed
C/B			m		
C/B2	olv	VFS	gr	L	
C	ltolv br	vfsl	pl	FI	dkgy br 0%
		cos	gr	L	dkgy br 15%
C2	olv	sil vfsl varvs	m/pl	FI	dkbr 15%
		LOI 90"			

Soil Details

Soil Series/Phase Name: Eldridge wdr, 7B

Limiting Factor: 31 " Depth ☐ Groundwater ☒ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 0-3 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic: A Soil Group

LICENSED SOIL SCIENTIST RODNEY D. KELSHAW SS552 STATE OF MAINE

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature

Rodney Kelshaw

Name Printed

2022-08-24

Date

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Shaw's Site Development | Applicant Name: Gravier Homes | Project Location (municipality): Windham

Exploration Symbol # TP03e

☒ Test Pit ☐ Boring ☐ Probe

N/O " Organic horizon thickness | Ground surface elev. 306

90 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
Ap	dk br	sl	sbk	VFR	many observed
Bs1	dk yl br	ls			
Bw1	OV	cos	gr	L	
Bw2	OV	vfs			dk yl br 10%
C	OV	vfs	m/pl	Fl	
C	OV	vfs/sl			none observed
	br				

LOI 90"

Depth below mineral soil horizon (inches)

Soil Details

Soil Series/Phase Name: Eldridge 7C

Limiting Factor: 28" Depth — ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 0-3 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic Soil Group: A

STATE OF MAINE — RODNEY D. KELSHAW No. 371 — LICENSED SITE EVALUATOR

Exploration Symbol # TP04e

☒ Test Pit ☐ Boring ☐ Probe

N/O " Organic horizon thickness | Ground surface elev. 306

90 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
Ap	vr dk br	fsl	sbk	VFR	
Bw1	dk yl br				none observed
Bw2	OV	lfs	sbk/gr	FR/L	
C	br	cos	gr	L	
C	OV	vfs	pl/m	Fl	lf 5%

LOI 90"

Depth below mineral soil horizon (inches)

Soil Details

Soil Series/Phase Name: Eldridge wdr, 7B

Limiting Factor: 48" Depth — ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 0-3 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic Soil Group: A

LICENSED SOIL SCIENTIST — RODNEY D. KELSHAW — SS552 — STATE OF MAINE

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature

Rodney Kelshaw
Name Printed

2022-08-24
Date

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaw's Site Development	Graffer Homes	Windham

Exploration Symbol # TP05c

☒ Test Pit ☐ Boring ☐ Probe

N/O " Organic horizon thickness Ground surface elev. 305

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0–6	A	dk br	fsl	sbk	VFR	
6–13	Bw	dk yl br	cos	gr	L	None observed
13–19	Bb	vr dk gr br	fsl	m	FI	
19–22	Bb2	dk yl br	ls			st br 5%
22–30	B/C	lt olv	cos	gr		n/o
30–37	C/B	br			L	st br 15%
37–60	C1	pl olv	vfs	m/gr		st br 5%
60–90	C2	olv	vfs/sil	pl/m	FI	dk yl br 2%

LOI 90"

Soil Details: Soil Series/Phase Name: Eldridge 7D. Limiting Factor: 13" Depth ☐ Groundwater ☒ Restrictive Layer ☐ Bedrock. Drainage Class: ☐ ED ☐ SED ☐ WD ☐ MWD ☒ SPD ☐ PD ☐ VPD. Slope: 0-3 Percent. Hydric Soil: ☒ No ☐ Yes. Hydrologic Soil Group: D

Exploration Symbol # TP06e

☒ Test Pit ☐ Boring ☐ Probe

N/O " Organic horizon thickness Ground surface elev. 304

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0–5	Ap	vr dk gr br	fsl	sbk	VFR	
5–14	Bw	olv br	lcos	gr	L	N/O
14–19	Ab / Eb	dk br / pl gr	sl / ls	sbk/m	FI	st br 10% / st br 10%
19–24	Bwb	dk yl br	sl			st br 5%
24–30	B/C	lt	cos			N/O
30–47	C/B	olv br	grsl	gr	L	st br 10%
47–60	C1	pl olv	fs	m/sbk	FR	dk yl br 15%
60–90	C2	olv gr	vfs – same silt mixed in	m	FI	dk yl br 10%

LOI 90"

Soil Details: Soil Series/Phase Name: Eldridge swptr, 7D. Limiting Factor: 13" Depth ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock. Drainage Class: ☐ ED ☐ SED ☐ WD ☐ MWD ☒ SPD ☐ PD ☐ VPD. Slope: 0-3 Percent. Hydric Soil: ☒ No ☐ Yes. Hydrologic Soil Group: D

STATE OF MAINE — RODNEY D. KELSHAW — No. 371 — LICENSED SITE EVALUATOR

LICENSED SOIL SCIENTIST — RODNEY D. KELSHAW — SS552 — STATE OF MAINE

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature: [signature] Date: 2022-08-24

Name Printed: Rodney Kelshaw SS License No.: LSS 552 / LSE 371

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaw's Site Development	Gravier Homes	Windham

Exploration Symbol # TP07e ☒ Test Pit ☐ Boring ☐ Probe
n/o " Organic horizon thickness Ground surface elev. 303
90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0–11	Ap	dkbr	fsl	sbk	VFR	none observed
11–16	Bs	dk yl br	grls			
16–26	B/C	ol br	grlcos	gr	L	
26–30	C/B	lt ol br	vfs			lt yl br 10%
30–53	C/B2	ol br & pl ol lenses	↓	↓	↓	dk yl br 10%
53–90	C	dk gr br	vfs	m/pl	FI	st br 10%
90			LOI 90"			

Soil Details: Soil Series/Phase Name: Eldridge, 7C. Limiting Factor: 26" Depth ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock. Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD. Slope: 0-3 Percent. Hydric Soil: ☒ No ☐ Yes. Hydrologic Soil Group: A

Exploration Symbol # TP08e ☒ Test Pit ☐ Boring ☐ Probe
n/o " Organic horizon thickness Ground surface elev. 303
90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0–14	Ap	dk br	fsl	sbk	VFR	none observed
14–30	Bw	dk yl br	ls			
30	Bw2	dk yl-olbr	fs-fsl			
30–90	B/C	olv br	vfs	m/pl	FI	dk yl br 10%
90			LOI 90"			

Soil Details: Soil Series/Phase Name: Eldridge, 7C. Limiting Factor: 30" Depth ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock. Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD. Slope: 0-3 Percent. Hydric Soil: ☒ No ☐ Yes. Hydrologic Soil Group: A

STATE OF MAINE — RODNEY D. KELSHAW — No. 371 — LICENSED SITE EVALUATOR

LICENSED SOIL SCIENTIST — RODNEY D. KELSHAW — SS552 — STATE OF MAINE

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature: [signature] Date: 2022-08-24

Name Printed: RODNEY KELSHAW SS License No.: LSS552 / LSE371

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaw's Site Development	Gravier Homes	Windham

Exploration Symbol # TP09e ☒ Test Pit ☐ Boring ☐ Probe

n/a " Organic horizon thickness; Ground surface elev. 303

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0–10	Ap	dk br	fsl	sbk	VFR	none observed
10–20	Bw1	dk yl br	fsl	sbk	FR	none observed
20–30	Bw2	olv br	fsl	sbk	FR/FIP	none observed
30–50	B/C	olv	vfs	m	FI	dk yl br 5%
50–90	C	olv	vfs	m	FI	st br 10%

LOI 90"

Soil Details: Soil Series/Phase Name: Elmridge, 7C; Limiting Factor: 29" Depth, ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock; Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD; Slope: 0-3 Percent; Hydric Soil: ☒ No ☐ Yes; Hydrologic Soil Group: A

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Exploration Symbol # TP10e ☒ Test Pit ☐ Boring ☐ Probe

n/a " Organic horizon thickness; Ground surface elev. 304

64 " Depth: ☐ of exploration, or ☒ to refusal

Depth (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0–6	Ap	dk br	fsl	sbk	VFR	none observed
6–16	Bw	dk br	fsl	sbk	FR/FIP	none observed
16–64	B/C	olv br	fsl	m	FI	ncr: dk yl br 10%; lcr: Holv br 20%

LOI 64" stones

Soil Details: Soil Series/Phase Name: Duane dwyer, 6C; Limiting Factor: 16" Depth, ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock; Drainage Class: ☐ ED ☐ SED ☐ WD ☐ MWD ☒ SPD ☐ PD ☐ VPD; Slope: 0-3 Percent; Hydric Soil: ☒ No ☐ Yes; Hydrologic Soil Group: D

LICENSED SOIL SCIENTIST – RODNEY D. KELSHAW – SS552 – STATE OF MAINE

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature: [signature]

Date: 2022-08-24

Name Printed: RODNEY KELSHAW

SS License No.: LSS552 / LSE 371

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaws Site Development	Grauer Homes	Windham

Exploration Symbol # TP11e

☒ Test Pit ☐ Boring ☐ Probe

N/A " Organic horizon thickness Ground surface elev. 305

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–2	Ap	dk br	fsl	sbk	vfr	
2–10	Bw1	yl br	ls	↓	↓	↓
10–20	Bw2	lt olv br	S	↓	↓	none
20–56	B/C	olv br	sl, 5-10% gr	gr	L	observed
56–68	C/B	↓	cobs	↓	↓	↓
68–90	C	olv	vfs	m	FI	dk yl br 10%

LOI 90"

Soil Details

Soil Series/Phase Name:	Limiting Factor	Depth
Eldridge wdr, 7B	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock	68"

Drainage Class	Slope	Hydric Soil	Hydrologic Soil Group
☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD	0-3 Percent	☒ No ☐ Yes	A

STATE OF MAINE RODNEY D KELSHAW No. 371 LICENSED SITE EVALUATOR

Exploration Symbol # TP12e

☒ Test Pit ☐ Boring ☐ Probe

N/A " Organic horizon thickness Ground surface elev. 305

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–20	Ap	dk br	sl	sbk	FR	none
20–26	Bw1	yl br	S			observed
26–31	Bw2	lt olv br	cos	gr	L	↓
31–37	B/C	pl olv	S			
37–49	C1	lt olv gr	vfs	m/pl		dk yl br 10%
49–90	C2	olv	sil, some clay	m	FI	hcr: dk yl br 15%; lcr: lt olv gr 15%; moist

LOI 90"

Soil Details

Soil Series/Phase Name:	Limiting Factor	Depth
Eldridge, 7B	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock	36"

Drainage Class	Slope	Hydric Soil	Hydrologic Soil Group
☐ ED ☐ SED ☐ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD	0-3 Percent	☒ No ☐ Yes	A

LICENSED SOIL SCIENTIST RODNEY D. KELSHAW SS552 STATE OF MAINE

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature: [signature] Date: 2022-08-24

Name Printed: RODNEY KELSHAW SS License No.: LSS552 / LSE 371

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FORM F (SS2) Rev. 7/21

SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaw's Site Development	Gravier Homes	Windham

Exploration Symbol # TP13e

☒ Test Pit ☐ Boring ☐ Probe

N/O " Organic horizon thickness; Ground surface elev. 305

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–12	Ap	dkbr	sl	sbk	VFR	none observed
12–20	Bw1	ylbr	s			
20–26	Bw2		fs	gr	L	
26–35	B/C	lt	cos			
35–68	C	olv br	vfs	m/pl	Fl	dk yl br 52%
68–90	C2	olv	sil some clay	m	↓	lcr: dkylbr 15% lcr lt olv gr 5% moist

LOI 90"

Soil Series/Phase Name: Eldridge, 7C

Limiting Factor: ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock — 32 " Depth

Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 0-3 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic Soil Group: A

Exploration Symbol # TP14e

☒ Test Pit ☐ Boring ☐ Probe

N/O " Organic horizon thickness; Ground surface elev. 306

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–10	Ap	dkbr	sl	sbk	VFR	none observed
10–18	Bw1	ylbr	lcos	↑	↑	
18–27	Bw2	lt olv br	s	gr	L	
27–40	B/C	olv	gr cos	↓	↓	
40–75	C1	lt olv br gr	fs	m	Fl	
75–90	C2	olv	vfs w/ lenses of silt	↓	↓	lcr: dk yl br 15% lcr lt olv gr 5%

LOI 90"

Soil Series/Phase Name: Eldridge wdr, 7C

Limiting Factor: ☐ Groundwater ☒ Restrictive Layer ☐ Bedrock — 39 " Depth

Drainage Class: ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 0-5 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic Soil Group: A

STATE OF MAINE — RODNEY D. KELSHAW — No. 371 — LICENSED SITE EVALUATOR

LICENSED SOIL SCIENTIST — RODNEY D. KELSHAW — SS552 — STATE OF MAINE

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature: [signature] — Date: 2022-08-24

Name Printed: RODNEY KELSHAW — SS License No.: LSS 552 / LSE 371

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FORM F (SS2) Rev. 7/21

SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaw's Site Development	Gravelier Homes	Windham

Exploration Symbol # TP15e

☒ Test Pit ☐ Boring ☐ Probe

N/O " Organic horizon thickness Ground surface elev. 306

90 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
Ap	dk brn	sl			
B_s 1	dk yl br	fsl	sbk	VFR	
Bw	ltolv	cos			
B_{w2}	br	fs			none observed
B/C	pl	cos	gr	L	
C	olv				
C1	olv	vfs	w/pl	Fl	dk yl
					brs%
C2		fs	M		dk yl
					brs% moist
		LOI 90"			

Depth below mineral soil horizon (inches)

Soil Series/Phase Name: Eldridge wdr, 7B

Limiting Factor: 54" Depth — ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Details

Drainage Class	Slope	Hydric Soil	Hydrologic
☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD	0-3 Percent	☒ No ☐ Yes	A Soil Group

STATE OF MAINE — RODNEY D. KELSHAW — No. 371 — LICENSED SITE EVALUATOR

Exploration Symbol # TP16e

☒ Test Pit ☐ Boring ☐ Probe

N/O " Organic horizon thickness Ground surface elev. 306

90 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
Ap	dk brn	sl			
B_s 1	dk yl	ls	sbk	VFR	
B_{s2}	brn				
Bw	lt	cos			none observed
B/C	olv	fs	gr	L	6
C	brn				
C1	ltolv	s			dk yl
	gr				brs%
C2	ltgr	vfs	M	FR/Fl	
		si			
	pl olv				
		LOI 90"			

Depth below mineral soil horizon (inches)

Soil Series/Phase Name: Eldridge wdr, 7B

Limiting Factor: 63" Depth — ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Details

Drainage Class	Slope	Hydric Soil	Hydrologic
☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD	0-3 Percent	☒ No ☐ Yes	A Soil Group

LICENSED SOIL SCIENTIST — RODNEY D. KELSHAW — SS552 — STATE OF MAINE

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature

Rodney Kelshaw
Name Printed

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Date

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaw's Site Development	Gravier Homes	Windham

Exploration Symbol # TP17e ☒ Test Pit ☐ Boring ☐ Probe

W/O " Organic horizon thickness; Ground surface elev. 307

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0–7	Ap	dkbr	fsl	sbk	VFR	none
7–11	Bs	dkylbr	sl	gr/sbk	L/FIP	
11–20	Bw	ltolvbr	cos	gr	L	observed
20–70	C1	olv	fS	m/pl	FR/FIP	dkyl br 10% ped faces
70–90	C2	olv/ltolvbr	fs/clods vfs & si			moist

LOI 90"

Depth below mineral soil horizon (inches)

Soil Details	
Soil Series/Phase Name:	Eldridge, 7C
Limiting Factor	☒ Groundwater ☐ Restrictive Layer ☐ Bedrock; Depth 18"
Drainage Class	☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD
Slope	0-3 Percent
Hydric Soil	☒ No ☐ Yes
Hydrologic Soil Group	D

Exploration Symbol # TP18e ☒ Test Pit ☐ Boring ☐ Probe

W/O " Organic horizon thickness; Ground surface elev. 307

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0–6	Ap	dkbr	fsl	sbk	VFR	
6–11	Bs	dkylbr	sl	gr/sbk	L/FIP	none
11–20	Bw	ltolvbr	cos	gr	L	observed
20–53	B/C	plolv & ltolvbr	fs-vfs lenses & clods pl-vfs	m	FIP/FR	dkyl br 5%
53–65	C	ltgr	cos lenses & clods pl-vfs	gr	L	dkyl br 5%
65–90	C2	plolv & ltolvbr	fs-vfs pl-lenses & clods (vfs)	m	FIP/FR	dkyl br 5%

LOI 90"

Depth below mineral soil horizon (inches)

Soil Details	
Soil Series/Phase Name:	Eldridge, 7C
Limiting Factor	☒ Groundwater ☐ Restrictive Layer ☐ Bedrock; Depth 20"
Drainage Class	☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD
Slope	0-3 Percent
Hydric Soil	☒ No ☐ Yes
Hydrologic Soil Group	D

STATE OF MAINE RODNEY D. KELSHAW No. 371 LICENSED SITE EVALUATOR

LICENSED SOIL SCIENTIST RODNEY D. KELSHAW SS552 STATE OF MAINE

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature: [signature]

Date: 2022-08-24

Name Printed: RODNEY KELSHAW

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaws Site Development	Gravel Homes	Windham

Exploration Symbol # TP19e

☒ Test Pit ☐ Boring ☐ Probe

N/D " Organic horizon thickness

Ground surface elev. 306e

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth below mineral soil horizon (inches)

Horizon	Color	Texture	Structure	Consistence	Redox
Ap	dk brn	sl	sbk	VFR	
Bs	dk br	grls		L	
Bw	yl br	S	gr	L/FIP	
B/C	lt olv br & lt olv gr	fs-vfs lenses	gr-pl	VFR/FIP	none observed
C	olv	fs	gr	L	dk yl br 15% moist

Lol 90"

Soil Details

Soil Series/Phase Name: Eldridge, 7C

Limiting Factor: 28" Depth ☐ Groundwater ☒ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 0-3 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic Soil Group: A

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Exploration Symbol # TP20e

☒ Test Pit ☐ Boring ☐ Probe

N/D " Organic horizon thickness

Ground surface elev. 306e

96 " Depth: ☒ of exploration, or ☐ to refusal

Depth below mineral soil horizon (inches)

Horizon	Color	Texture	Structure	Consistence	Redox
Ap	dk brn	sl	sbk	VFR	
Bs	dk br	grls	gr	L	N/D
Bw1	dk yl br	fsl			
Bw2		grs			dk yl br 10%
B/C	olv	fs	m/pl	FR	yl br
C				FI	Salt

Lol 90"

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Soil Details

Soil Series/Phase Name: Duane, 6C

Limiting Factor: 18" Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 0-3 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic Soil Group: D

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Shaw's Site Development | Applicant Name: Gravier Homes | Project Location (municipality): Windham

Exploration Symbol # TP21e — ☒ Test Pit ☐ Boring ☐ Probe

n/a " Organic horizon thickness — Ground surface elev. 306e

90 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
Ap	dkbr	sl	sbk	VFR	
Bs	bs	sl	sbk	VFR	
Bw	H olv bc	lfs			
B/C	H olv bc	s			none observed
C/B	olv	grcos	gr	L	
C	H olv bc	fs			dkyl bc 10%
C2	olv	cgrs			SAT

LOI 90"

Depth below mineral soil horizon (inches)

Soil Details

Soil Series/Phase Name: Hinckley wdr, 16B

Limiting Factor: 49" Depth — ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 0-3 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic: A Soil Group

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Exploration Symbol # TP22e — ☒ Test Pit ☐ Boring ☐ Probe

n/a " Organic horizon thickness — Ground surface elev. 306e

90 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
Ap	dkbr	sl	sbk	VFR	
Bs	stbs	ls			
Bw	dkyl bc				
H					
C	olv bc	cos	gr	L	none observed

LOI 90"

Depth below mineral soil horizon (inches)

Soil Details

Soil Series/Phase Name: Hinckley, 16B

Limiting Factor: n/a" Depth — ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☒ ED ☐ SED ☐ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 0-3 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic: A Soil Group

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaw's Site Development	Brauer Homes	Windham

Exploration Symbol # TP23e ☒ Test Pit ☐ Boring ☐ Probe

W/O " Organic horizon thickness — Ground surface elev. 306

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth below mineral soil horizon (inches)

Depth	Horizon	Color	Texture	Structure	Consistence	Redox
0–12	Ap	vr dk br	sl	sbk	VFR	none observed
12–20	Bs	dk yl br	ls	sbk	VFR	none observed
20–75	B/C	H olv br	S w/ pockets of cob & cngrs	gr	L	none observed
75–90	C		S w/ pockets of cob & cngrs	gr	L	Moist

LOI 90"

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Soil Details

Soil Series/Phase Name:	Limiting Factor	Drainage Class	Slope	Hydric Soil	Hydrologic Soil Group
Hinckley wdr, 6B	75 " Depth; ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock	☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD	0-3 Percent	☒ No ☐ Yes	A

Exploration Symbol # TP24e ☒ Test Pit ☐ Boring ☐ Probe

W/O " Organic horizon thickness — Ground surface elev. 306

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth below mineral soil horizon (inches)

Depth	Horizon	Color	Texture	Structure	Consistence	Redox
0–12	Ap	vr dk br	fsl	sbk	VFR	none observed
12–20	Bs	dk yl br	ls	sbk	VFR	none observed
20–62	B/C	yl br	Cobles	gr	L	none observed
62–90	C	H yl br	S	gr	L	none observed

LOI 90"

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Soil Details

Soil Series/Phase Name:	Limiting Factor	Drainage Class	Slope	Hydric Soil	Hydrologic Soil Group
Hinckley, 6B	W/O " Depth; ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock	☒ ED ☐ SED ☐ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD	0-3 Percent	☒ No ☐ Yes	A

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature: [signature] — Date: 2022-08-24

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Shaw's Site Development | Applicant Name: Bravier Homes | Project Location (municipality): Windham

TP25e

Exploration Symbol # TP25e ☒ Test Pit ☐ Boring ☐ Probe

N/D " Organic horizon thickness Ground surface elev. 305

90 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
Ap	vrdkbr	sl	sbk	VFR	
Bs	dk yl br	ls		FR	
Bw	lt olv br	cos			
B/C		cobcos	gr	L	wmc observed
C1	olv	cos			
C2					moist

LOI 90"

Depth below mineral soil horizon (inches)

Soil Series/Phase Name: Hinckley wdr, 6B

Limiting Factor: 72" Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 0-3 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic: A Soil Group

Soil Details

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TP26e

Exploration Symbol # TP26e ☒ Test Pit ☐ Boring ☐ Probe

N/D " Organic horizon thickness Ground surface elev. 305

90 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
A	vrdk bc	sl	sbk	VFR	
Bs	dk yl br	ls		FR	
B/C	lt olv br	s			wmc observed
C1	olv	vcobs	gr	L	
C2		s			moist

LOI 90"

Depth below mineral soil horizon (inches)

Soil Series/Phase Name: Hinckley wdr, 6B

Limiting Factor: 53" Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 0-3 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic: A Soil Group

Soil Details

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Shaw's Site Development

Applicant Name: Grover Homes

Project Location (municipality): Windham

Exploration Symbol # TP27e ☒ Test Pit ☐ Boring ☐ Probe

W/O " Organic horizon thickness Ground surface elev. 306

90 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
A	dkbr	sl			
E	grbr	grsl	SBK	VFR	
A_b	dkbr	sl			
B_s	dkylbr	ls			
B/C	mdv bc	s			none observed
C/B		cobbs	gr	L	
C	olv	s	sg		dkyl bc 10%
C_2					

LO 90"

Depth below mineral soil horizon (inches)

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Soil Details

Soil Series/Phase Name: Hinckley wdr, 6B

Limiting Factor: 80" Depth; ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 0-3 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic Soil Group: A

Exploration Symbol # TP28 ☒ Test Pit ☐ Boring ☐ Probe

W/O " Organic horizon thickness Ground surface elev. 305

90 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
Ap	dkbr	sl	sbk	VFR	
B_w	dkyl bc	ls			none observed
B_w					
B/C	olv	grs	gr	L	
C/B	bc	vcobs	sg		dk yl bc 10% moist
C		s			

LO 90"

Depth below mineral soil horizon (inches)

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Soil Details

Soil Series/Phase Name: Hinckley wdr, 6B

Limiting Factor: 50" Depth; ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 0-3 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic Soil Group: A

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Shaw's Site Development
Applicant Name: Gravier Homes
Project Location (municipality): Windham

Exploration Symbol # TP27e

☒ Test Pit ☐ Boring ☐ Probe

W/O " Organic horizon thickness — Ground surface elev. 304

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0–10	Ap	dk br	fsl	sbk	VFR	none observed
10–20	Bs	dk yl br	ls	sbk	VFR	none observed
20–50	B/C	olv br	S	gr	L	none observed
50–60	C/B	olv br	cobs	gr	L	dk yl br 15%
60–90	C	olv br	S	gr	L	dk yl br 15% moist

LOI 90"

Depth below mineral soil horizon (inches)

Soil Details: Soil Series/Phase Name: Hinckley wdr, 6B — Limiting Factor: 52" Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD — Slope: 0-3 Percent — Hydric Soil: ☒ No ☐ Yes — Hydrologic Soil Group: A

Exploration Symbol # TP30e

☒ Test Pit ☐ Boring ☐ Probe

W/O " Organic horizon thickness — Ground surface elev. 304

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0–22	Fill Ap	dk br	sl	sbk	VFR	none observed
22–37	Bs	dk yl br	ls	sbk	VFR	none observed
37–42	Bw	lt olv br	lfs	sbk	VFR/FIP	none observed
42–52	Bw2	lt olv br	ls	m/sbk	FR/FIP	dk yl br 10%
52–90	C	olv	S	gr	L	n/o

LOI 90"

Depth below mineral soil horizon (inches)

Soil Details: Soil Series/Phase Name: Hinckley wdr, 6C — Limiting Factor: 41" Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD — Slope: 0-3 Percent — Hydric Soil: ☒ No ☐ Yes — Hydrologic Soil Group: A

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Stamp: LICENSED SOIL SCIENTIST — RODNEY D. KELSHAW — SS552 — STATE OF MAINE

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Shaw's Site Development | Applicant Name: Gravier Homes | Project Location (municipality): Windham

Exploration Symbol # TP31e — ☒ Test Pit ☐ Boring ☐ Probe

n/a " Organic horizon thickness — Ground surface elev. 304

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–10	Ap	dk br	sl	sbk	VFR	none observed
10–15	Bs	dk yl br	ls	↓	↓	
15–22	Bw	olv br	gr cos	↓	↓	
22–29	B/C	lt	↓	↓	↓	
29–60	C/B	olv br	cos	gr	L	dk yl br 10%
60–90	C	olv	↓	↓	↓	moist
90			LOL 90"			

Soil Details — Soil Series/Phase Name: Duane, LoC — Limiting Factor: 29" Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD — Slope: 0-3 Percent — Hydric Soil: ☒ No ☐ Yes — Hydrologic Soil Group: A

Exploration Symbol # TP32e — ☒ Test Pit ☐ Boring ☐ Probe

n/a " Organic horizon thickness — Ground surface elev. 304

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–10	Ap	dk br	sl	sbk	VFR	none observed
10–15	Bs	dk yl br	lfs	↓	↓	
15–22	Bw		lcos	↓	↓	
22–60	B/C	olv br	cos	gr	L	dk yl br 10%
60–80	C1	olv	S	↓	↓	moist
80–90	C2	lt olv gr	cos 10% cob	↓	↓	
90			LOL 90"			

Soil Details — Soil Series/Phase Name: Duane, LoC — Limiting Factor: 22" Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD — Slope: 0-3 Percent — Hydric Soil: ☒ No ☐ Yes — Hydrologic Soil Group: D

STATE OF MAINE — RODNEY D. KELSHAW — No. 371 — LICENSED SITE EVALUATOR

LICENSED SOIL SCIENTIST — RODNEY D. KELSHAW — SS552 — STATE OF MAINE

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature: [signature] — Date: 2022-08-24

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaw's Site Development	Gravier Homes	Windham

Exploration Symbol # TP33e

☒ Test Pit ☐ Boring ☐ Probe

N/O " Organic horizon thickness Ground surface elev. 304

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–14	Ap	dk bo	sl	sbk	VFR	None
14–16	Bs	dk yl br	ls			
16–20	Bw	lt olv br	↓	↓	↓	
20–37	B/C	lt br gr	↓	↓	↓	Observed
37–40	Cg	pl olv	↓	↓	↓	dk yl br 5%
40–90	C	lt gr	S	gr	L	moist

Lol 90"

Depth below mineral soil horizon (inches)

Soil Details

Soil Series/Phase Name	Limiting Factor	Drainage Class	Slope	Hydric Soil	Hydrologic
Duane GC	35" Depth; ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock	☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD	0-3 Percent	☒ No ☐ Yes	A Soil Group

Exploration Symbol # TP34e

☒ Test Pit ☐ Boring ☐ Probe

N/O " Organic horizon thickness Ground surface elev. 306

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–14	Ap	dk br	sl	sbk	VFR	3 compact
14–20	Bs	dk yl br	ls		FR	
20–34	Bw	olv br	gr cos	↓	↓	N/O
34–50	B/C	pl olv	S	g	L	dk yl br 15%
50–60	C1	olv br	cos	↓	↓	moist
60–90	C2	pl olv	S	↓	↓	dk yl br 10% moist

LOI 90"

Depth below mineral soil horizon (inches)

Soil Details

Soil Series/Phase Name	Limiting Factor	Drainage Class	Slope	Hydric Soil	Hydrologic
Duane, GC	34" Depth; ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock	☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD	0-3 Percent	☒ No ☐ Yes	A Soil Group

STATE OF MAINE RODNEY D. KELSHAW No. 371 LICENSED SITE EVALUATOR

LICENSED SOIL SCIENTIST RODNEY D. KELSHAW SS552 STATE OF MAINE

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature: [signature]

Date: 2022-08-24

Name Printed: RODNEY KELSHAW

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Shaw's Site Development | Applicant Name: Gravier Homes | Project Location (municipality): Windham

Exploration Symbol # TP35e — ☒ Test Pit ☐ Boring ☐ Probe

n/o " Organic horizon thickness — Ground surface elev. 306

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–5	Ap	dk br	sl			
5–10	Bs	dk yl br	ls	sbk	VFR	none
10–20	Bw	olv br				
20–40	B/C	lt olv	cos	gr	L	observed
40–55	C/B	bG	fs	m	Fl	dk yl br 15%
55–63	C1	olv	fs-si lenses	m/pl		n/o
63–90	C2	lt olv gr	S	gr	L	dk yl br 7% moist

LOI 90"

Soil Details: Soil Series/Phase Name: Eldridge wdr, 7C — Limiting Factor: 40" Depth ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD — Slope: 0-3 Percent — Hydric Soil: ☒ No ☐ Yes — Hydrologic Soil Group: A

Exploration Symbol # TP36e — ☒ Test Pit ☐ Boring ☐ Probe

n/o " Organic horizon thickness — Ground surface elev. 304

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–12	Ap	dk br	sl	sbk	VFR	
12–15	Bs	dk yl br	ls			none
15–36	Bw	yl br	S			observed
36–63	B/C	lt olv br	cos	gr	L	dk yl br 10%
63–90	C	lt olv gr	fs/vfs	m	VFR	dk yl br 5% moist

LOI 90"

Soil Details: Soil Series/Phase Name: Eldridge, 7C — Limiting Factor: 35" Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD — Slope: 0-3 Percent — Hydric Soil: ☒ No ☐ Yes — Hydrologic Soil Group: A

Stamp: STATE OF MAINE — RODNEY D. KELSHAW — No. 371 — LICENSED SITE EVALUATOR

Stamp: LICENSED SOIL SCIENTIST — RODNEY D. KELSHAW — SS552 — STATE OF MAINE

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature: [signature] — Date: 2022-08-24

Name Printed: RODNEY KELSHAW — SS License No.: LSS 552 / LSE 371

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SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaw's Site Development	Gravier Homes	Windham

Exploration Symbol # TP37e

☒ Test Pit ☐ Boring ☐ Probe

N/A " Organic horizon thickness — Ground surface elev. 306

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–10	Ap	vr dk br	fsl	sbk	VFR	none
10–15	Bw1	dk y br	fsl	sbk	VFR	none
15–22	Bw2	lt olv br	lfs			
22–38	B/C	pl olv	cos			observed
38–50	C/B	lt olv gr				dk yl br 10%
50–90	C	lt olv br	S	gr	L	moist

LOI 90"

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Soil Details

Soil Series/Phase Name: Duane LcC

Limiting Factor: 38" Depth — ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 0-3 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic Soil Group: A

Exploration Symbol # TP38e

☒ Test Pit ☐ Boring ☐ Probe

N/A " Organic horizon thickness — Ground surface elev. 306

90 " Depth: ☐ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–10	Ap	vr dk bc	fsl	sbk	VFR	none
10–15	Bw1	dk y br	fsl	sbk	VFR	
15–17	Bw2	lt olv br	lfs			Observed
17–24	B/C	pl	cos			
24–50	C/B	olv				dk yl br 15%
50–82	C1	lt olv gr	S	gr	L	dk yl br 15% moist
82–90	C2		fs			dk yl br 15% moist

LOI 90"

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Soil Details

Soil Series/Phase Name: Duane LcC

Limiting Factor: 24" Depth — ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 0-3 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic Soil Group: D

SOIL SCIENTIST INFORMATION AND SIGNATURE

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaw's Site Development	Gramer Homes	Windham

Exploration Symbol # TP39e ☒ Test Pit ☐ Boring ☐ Probe

N/D " Organic horizon thickness — Ground surface elev. 306

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–7	Ap1	vrdkbr	fsl			
7–13	Ap2	vrdkbr	fsl	sbk	VFR	none
13–22	Bs	dkyl br	sl			observed
22–33	B/C	ylbr	cos	↑	↑	
33–52	C/B	lt olv br	s/cos			dk yl br 15%
52–90	C	lt olv gr	fs	gr ↓	L ↓	dk yl br 10% moist

LOI 90"

Exploration Symbol # TP40e ☒ Test Pit ☐ Boring ☐ Probe

N/D " Organic horizon thickness — Ground surface elev. 306

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–12	Ap	vrdk br	fsl	sbk	VFR	none
12–14	Bs	dkylbr				
14–22	Bw	ylbr	sl/ls			observed
22–35	B/C	lt	grcos	↑	↑	
35–52	C/B	olv br	cos/s			dk yl br 15%
52–90	C1	pl olv	cos	gr ↓	L ↓	↑ moist ↓

LOI 90"

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Soil Details

	TP39e	TP40e
Soil Series/Phase Name	Duane, GC	Duane, GC
Limiting Factor	28" Depth — ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock	34" Depth — ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock
Drainage Class	☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD	☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD
Slope (Percent)	0-3	0-3
Hydric Soil	☒ No ☐ Yes	☒ No ☐ Yes
Hydrologic Soil Group	A	A

SOIL SCIENTIST INFORMATION AND SIGNATURE

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Date: 2022-08-24

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaws Site Development	Gravier Homes	Windham

Exploration Symbol # TP41e

☒ Test Pit ☐ Boring ☐ Probe

N/O " Organic horizon thickness — Ground surface elev. 304

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–10	Ap	vrdk br	fsl	sbk	VFR	
10–14	Bs	dk yl br	fsl			
14–19	Bw	yl br	lfs			none
19–27	B/C	lt	gr cos			observed
27–50	C/B	olv br	cos 10% cob	gr	L	
50–90	C	lt olv gr	S			dk yl br 15%
90			LOI	90"		

Soil Details:

Soil Series/Phase Name	Limiting Factor	Drainage Class	Slope	Hydric Soil	Hydrologic Soil Group
Hinckley, wdr 6B	48" Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock	☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD	0-3 Percent	☒ No ☐ Yes	A

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Exploration Symbol # TP42e

☒ Test Pit ☐ Boring ☐ Probe

N/O " Organic horizon thickness — Ground surface elev. 304

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–10	Ap	vrdk br	fsl	sbk	VFR	
10–14	Bs	dk yl br	lfs			
14–19	Bw	yl br	ls			none observed
19–33	B/C	lt	gr cos			
33–40	C/B	olv	cos	gr	L	
40–90	C	br	S			dk yl br 10% moist
90			LOI	90"		

Soil Details:

Soil Series/Phase Name	Limiting Factor	Drainage Class	Slope	Hydric Soil	Hydrologic Soil Group
Duane, 6C	39" Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock	☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD	0-3 Percent	☒ No ☐ Yes	A

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaw's Site Development	Gravier Homes	Windham

Exploration Symbol # TP43e

☒ Test Pit ☐ Boring ☐ Probe

N/O " Organic horizon thickness — Ground surface elev. 305

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0–10	Ap	vrdk br	fsl			
10–19	B_s	dkylbr		sbk	VFR	none
19–27	B_w	ylbr	lfs			
27–32	B/C	↓	S	↑	↑	observed
32–35	C/B		grcos			
35–49	C_1		S			
49–90	C_2	olv br	cos 10% gc	gr ↓	L ↓	dk yl br 10% moist
90			LOI	90"		

Soil Details

- Soil Series/Phase Name: Hinckley wdr, LC
- Limiting Factor: 45 " Depth — ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock
- Drainage Class: ☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD
- Slope: 0-3 Percent
- Hydric Soil: ☒ No ☐ Yes
- Hydrologic Soil Group: A

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Exploration Symbol # TP44e

☒ Test Pit ☐ Boring ☐ Probe

N/O " Organic horizon thickness — Ground surface elev. 306

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0–10	Ap	vrdk br	fsl	sbk	VFR	
10–21	B_s	dk yl br	S			none
21–27	Bw	ylbr	lfs	↑	↑	observed
27–35	B/C	↓	vgrcos			
35–90	C	olv br	cos	gr ↓	L ↓	dk yl br 5% moist
90			LOI	90"		

Soil Details

- Soil Series/Phase Name: Duane, LC
- Limiting Factor: 35 " Depth — ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock
- Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD
- Slope: 0-3 Percent
- Hydric Soil: ☒ No ☐ Yes
- Hydrologic Soil Group: A

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Shaw's Site Development
Applicant Name: Gravier Homes
Project Location (municipality): Windham

Exploration Symbol # TP45e

☒ Test Pit ☐ Boring ☐ Probe

w/o " Organic horizon thickness   Ground surface elev. 306

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0–13	Ap1 / Ap2	vrdkbr / vrdkbr	fsl	sbk	VFR	none observed
13–16	Bs	dkyibr				
16–20	Bw1	ybr	lfs			
20–28	Bw2	lt olv br	S	gr	L	
28–34	BC	[illegible]	cos			
34–38	9B		fs	m/pl	VFR	dk yl br 15%
38–50	C1	olv pl	S			w/ %
50–90	C2	olv	s/cos	gr	L	dk yl br 15% Moist

LOI 90"

Soil Series/Phase Name: Duane, LeC
Limiting Factor: 34" Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock
Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD
Slope: 0-3 Percent
Hydric Soil: ☒ No ☐ Yes
Hydrologic Soil Group: A

Exploration Symbol # TP46e

☒ Test Pit ☐ Boring ☐ Probe

w/o " Organic horizon thickness   Ground surface elev. 305

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0–17	Ap	vrdk br	fsl	sbk	VFR	none observed
17–21	Bs	dkyibr				
21–26	Bw	ybr	lfs			
26–35	BC	lt	grcos			
35–90	C	olv br	S	gr	L	dk yl br 10% Moist

LOI 90"

Soil Series/Phase Name: Duane, CoC
Limiting Factor: 33" Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock
Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD
Slope: 0-3 Percent
Hydric Soil: ☒ No ☐ Yes
Hydrologic Soil Group: A

STATE OF MAINE RODNEY D. KELSHAW No. 371 LICENSED SITE EVALUATOR

LICENSED SOIL SCIENTIST RODNEY D. KELSHAW SS552 STATE OF MAINE

SOIL SCIENTIST INFORMATION AND SIGNATURE

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaw's Site Development	Gravier Homes	Windham

Exploration Symbol # TP47e

☒ Test Pit ☐ Boring ☐ Probe

N/O " Organic horizon thickness — Ground surface elev. 307

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0–~10	Ap1	vr dk br	fsl	sbk	(↓ VFR)	N/O
~10–~15	Ap2					
~15–~21	Bs	dk yl br	lfs			
~21–90	B/C	pl olv	fs	m / pl	VFR	dk yl br 10% moist

LOI 90"

Soil Details: Soil Series/Phase Name: Eldridge, 7C — Limiting Factor: 22" Depth; ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock — Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD — Slope: 0-3 Percent — Hydric Soil: ☒ No ☐ Yes — Hydrologic Soil Group: D

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Exploration Symbol # TP48e

☒ Test Pit ☐ Boring ☐ Probe

3 " Organic horizon thickness — Ground surface elev. 307

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0–~12	Ap	vr dk br	fsl	sbk	VFR	none observed
~12–~18	Bs	dk yl br				
~18–~25	Bw	yl br	lfs			
~25–~33	Bw2	lt olv br	s	gr	L	
~33–90	C	lt olv gr	fs	m / pl	FI	dk yl br 5%

LOI 90"

Soil Details: Soil Series/Phase Name: Eldridge, 7C — Limiting Factor: 33" Depth; ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock — Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD — Slope: 0-3 Percent — Hydric Soil: ☒ No ☐ Yes — Hydrologic Soil Group: A

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Signature: [signature]

Date: 2022-08-24

Name Printed: Rodney Kelshaw

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaw's Site Development	Gravier Homes	Windham

Exploration Symbol # TPH9 — ☒ Test Pit ☐ Boring ☐ Probe

n/0 " Organic horizon thickness — Ground surface elev. 306 — 90 " Depth: ☒ of exploration, or ☐ to refusal

Depth	Horizon	Color	Texture	Structure	Consistence	Redox
0–~5	Ap1	dr				
~5–~15	Ap2	dkbr	fsl	sbk	VFR	none observed
~15–~18	Bs	dkylbr				
~18–~22	Bw	ylbr	ls			
~22–~30	B/C	lt olv br	cos	gr	L	
~30–~48	CB	lt olv gr	fs	m/pl	FI	dk yl br 5%
~48–90	C	pl olv	cos, deeper 5-10% cob	gr	L	moist

LOI 90"

Soil Details: Soil Series/Phase Name: Duane, lcC — Limiting Factor: 30" Depth — ☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD — Slope: 0-3 Percent — Hydric Soil: ☒ No ☐ Yes — Hydrologic Soil Group: A

Exploration Symbol # TP50 — ☒ Test Pit ☐ Boring ☐ Probe

n/a " Organic horizon thickness — Ground surface elev. 306 — 90 " Depth: ☒ of exploration, or ☐ to refusal

Depth	Horizon	Color	Texture	Structure	Consistence	Redox
0–~10	Ap	vrdkbr	fsl	sbk	VFR	none observed
~10–~13	Bs	ylbr	ls			
~13–~25	B/W	lt olv br	cos	gr	L	
~25–~48	Bk	lt olv gr	fs	m/sbk	VFR/L	dk yl br 5%
~48–90	C	pl olv	cos	gr	L	moist

LOI 90"

Soil Details: Soil Series/Phase Name: Duane, lcC — Limiting Factor: 24" Depth — ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD — Slope: 0-3 Percent — Hydric Soil: ☒ No ☐ Yes — Hydrologic Soil Group: D

STATE OF MAINE — RODNEY D KELSHAW — No. 371 — LICENSED SITE EVALUATOR

LICENSED SOIL SCIENTIST — RODNEY D. KELSHAW — SS552 — STATE OF MAINE

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature: [signature]

Name Printed: Rodney Kelshaw

Date: 2022-08-24

SS License No.: LSS 552 / LSE 371

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SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Shaw's Site Development	Graver Homes	Windham

Exploration Symbol # TP51e

☒ Test Pit ☐ Boring ☐ Probe

n/o " Organic horizon thickness — Ground surface elev. 307

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–12	Ap1	vr dk br	fsl			
12–22	Ap2			sbk	VFR	
22–26	Bs	dk yl br	ls			
26–38	Bw	yl		↓	↓	
38–68	B/C	br	grcos	gr	L	none observed
68–90	C	lt olv br	cos	↓	↓	
90			LOI 90"			

Depth below mineral soil horizon (inches): 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150

STATE OF MAINE RODNEY D. KELSHAW No 371 LICENSED SITE EVALUATOR

Soil Details

Soil Series/Phase Name:	Limiting Factor	
Hinckley, LeB	n/o " Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class	Slope	Hydric Soil	Hydrologic
☒ ED ☐ SED ☐ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD	0-3 Percent	☒ No ☐ Yes	A Soil Group

Exploration Symbol # TP52e

☒ Test Pit ☐ Boring ☐ Probe

n/o " Organic horizon thickness — Ground surface elev. 360

90 " Depth: ☒ of exploration, or ☐ to refusal

Depth (in)	Horizon	Color	Texture	Structure	Consistence	Redox
0–14	Ap	vr dk br	fsl	sbk	VFR	↓
14–20	Bs	dk yl br	ls			
20–30	Bw	lt				none
30–60	B/C	olv br	S	gr	L	observed ↓
60–70	C1	Pl olv	fs	m/pl	VFR	dk yl br 10% moist
70–90	C2	lt olv br	cos	gr	L	dk yl br 10% Moist
90			LOI 90"			

Depth below mineral soil horizon (inches): 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150

LICENSED SOIL SCIENTIST RODNEY D. KELSHAW SS552 STATE OF MAINE

Soil Details

Soil Series/Phase Name:	Limiting Factor	
Hinckley wdr, LeB	60" Depth	☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class	Slope	Hydric Soil	Hydrologic
☐ ED ☐ SED ☒ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD	0-3 Percent	☒ No ☐ Yes	A Soil Group

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature: [signature] — Date: 2022-08-24

Name Printed: RODNEY KELSHAW — SS License No.: LSS 552 / LSE 371

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APPENDIX C

Map Unit Descriptions

Table 1. Map Unit Descriptions											
Map Unit Symbol	Map Unit Name	HSG	Drainage Class	Bedrock	Frost Action	Lawns, Landscaping and Golf Fairways	Concrete Corrosion	Steel Corrosion	Local Roads & Streets	Infiltration Systems, Shallow	Dwellings With Basements
DsA	Duane, fsl, swpdr, 0-3% slopes	D	Somewhat Poorly Drained	>80"	Low	Very Limited	High	High	Very Limited	Severely Limited	Very Limited
DuA	Duane, cos, 0-3% slopes	A & D	Moderately Well Drained	>80"	Low	Very Limited	High	High	Somewhat Limited	Severely Limited	Very Limited
ElA	Eldridge fsl/sil, 0-3% slopes	B	Moderately Well Drained	>80"	High	Somewhat Limited	Moderate	High	Very Limited	Severely Limited	Very Limited
HiA	Hinckley s, wdr, 0-3% slopes	A	Well Drained	>80"	Low	Very Limited	High	Moderate	Not Limited	Somewhat Limited	Not Limited
HAHT	Human Altered Human Transported Materials	N/A	N/A	Very Deep	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Map Unit: **Duane fine sandy loam, somewhat poorly drained**
Classification: Sandy-skeletal, mixed frigid, ortstein Typic Haplorthods
Map Unit Symbol: DsA

SETTING
Parent Material: Glacial-fluvial
Landform: Outwash terraces
Position in Landscape: Nearly level and locally low areas
Slope Gradient Range: **(A)** 0-3%

COMPOSITION AND SOIL CHARACTERISTICS
Drainage Class: Somewhat poorly drained
Depth to Water Table: 7 to 16"

Typical Profile Description:
Surface Layers:
0 – 6" Dark brown, fine sandy loam, very friable
6 – 16" Olive brown, fine sandy loam, friable
Subsurface Layers:
16 –64" Olive brown, fine sandy loam, redox. brown 10% & light olive brown 20%, firm
64" Stony

Hydrologic Soil Group (HSG):	**See Table 1**
Drainage Class:	**See Table 1**
Depth to Bedrock:	**See Table 1**
Potential for Frost Action:	**See Table 1**
Lawns, Gardens and Golf Fairways:	**See Table 1**
Concrete Corrosion:	**See Table 1**
Steel Corrosion:	**See Table 1**
Local Roads & Streets:	**See Table 1**
Infiltration Systems, Shallow:	**See Table 1**
Dwellings with Basements:	**See Table 1**

INCLUSIONS (within mapping unit)
Similar: Duane
Dissimilar: Eldridge

USE AND MANAGEMENT
Mapped in the southwestern portion of the Survey Area along Tandberg Trail. Major management concerns are that cut banks and slopes are not stable, shallow depth to the water table, and it is a poor filter. The rating for this soil is very limited for dwellings with basements, local roads, and lawns; primarily due to shallow depth to the water table and lack of stability. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected. It also has a high rating for concrete corrosion and steel corrosion.

Map Unit: **Duane coarse sand**
Classification: Sandy-skeletal, mixed frigid, ortstein Typic Haplorthods
Map Unit Symbol: DuA

SETTING
Parent Material: Glacial-fluvial
Landform: Outwash terraces
Position in Landscape: Nearly level and locally low areas
Slope Gradient Range: **(A)** 0-3%

COMPOSITION AND SOIL CHARACTERISTICS
Drainage Class: Moderately well drained
Depth to Water Table: 16 to 40"

Typical Profile Description:
Surface Layers:
0 – 10" Dark brown, gravelly loamy sand
10 – 18" Dark yellowish brown, fine sandy loam
Subsurface Layers:
18 –68" Olive, fine sand, redox. brown 10%, friable
68 –90" Olive, fine sand, saturated, firm

Hydrologic Soil Group (HSG):	**See Table 1**
Drainage Class:	**See Table 1**
Depth to Bedrock:	**See Table 1**
Potential for Frost Action:	**See Table 1**
Lawns, Gardens and Golf Fairways:	**See Table 1**
Concrete Corrosion:	**See Table 1**
Steel Corrosion:	**See Table 1**
Local Roads & Streets:	**See Table 1**
Infiltration Systems, Shallow:	**See Table 1**
Dwellings with Basements:	**See Table 1**

INCLUSIONS (within mapping unit)
Similar: Hinckley, Duane somewhat poorly drained
Dissimilar: Eldridge

USE AND MANAGEMENT
Mapped in the northeastern and southeastern portions of the Survey Area. Major management concerns are that cut banks and slopes are not stable, droughtiness, it is a poor filter, and it has a hazard of seepage. The rating for this soil is very limited for dwellings with basements and lawns; primarily due to droughtiness and lack of stability. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected. It also has a high rating for concrete corrosion and steel corrosion.

Map Unit: **Eldridge fine sandy loam over silt loam**
Classification: Sandy over loamy, mixed active nonacid, mesic Aquic Udorthents
Map Unit Symbol: ElA

SETTING

Parent Material: Sandy glacial-fluvial or aeolian underlain by loamy estuarine or glaciolacustrine deposits
Landform: Glacial lake plains, terraces, and outwash areas
Position in Landscape: Nearly level and locally low areas
Slope Gradient Range: **(A)** 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Moderately well drained
Depth to Water Table: 16 to 40"

Typical Profile Description:

Surface Layers:

0 – 10" Dark brown sandy loam, very friable
10 – 18" Dark yellowish brown, loamy sand, loose
18 – 28" Olive brown, coarse sand, redox. dark yellowish brown 10%, firm

Subsurface Layers:

28 –53" Olive, very fine sand, redox. dark yellowish brown 10%, firm
53 –90" Light olive brown, very fine sand & silt loam varves, firm

Hydrologic Soil Group (HSG):	**See Table 1**
Drainage Class:	**See Table 1**
Depth to Bedrock:	**See Table 1**
Potential for Frost Action:	**See Table 1**
Lawns, Gardens and Golf Fairways:	**See Table 1**
Concrete Corrosion:	**See Table 1**
Steel Corrosion:	**See Table 1**
Local Roads & Streets:	**See Table 1**
Infiltration Systems, Shallow:	**See Table 1**
Dwellings with Basements:	**See Table 1**

INCLUSIONS (within mapping unit)

Similar: Eldridge well drained
Dissimilar: Hinckley

USE AND MANAGEMENT

Mapped across the western half of the Survey Area. The rating for this soil is very limited for dwellings with basements and local roads; primarily due to shallow depth to the water table, high frost action and firm subsurface horizons. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected. The rating for use as lawns and landscaping is somewhat limited. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. It also has a moderate rating for concrete corrosion and high for steel corrosion.

Map Unit: **Hinckley sand, well drained**
Classification: Sandy-skeletal, mixed, mesic Typic Udorthents
Map Unit Symbol: HiA

SETTING
Parent Material: **G**laciofluvial deposits
Landform: Outwash terraces and plains, kames and eskers
Position in Landscape: Nearly level and locally low areas
Slope Gradient Range: **(A)** 0-3%

COMPOSITION AND SOIL CHARACTERISTICS
Drainage Class: Well drained
Depth to Water Table: 40 to 60"

Typical Profile Description:
Surface Layers:
0 – 10" Dark brown, sandy loam, very friable
10 – 20" Dark yellowish brown, loamy sand, very friable
Subsurface Layers:
20 – 38" Olive brown, gravelly sand, loose
38 – 50" Olive brown, very cobbly sand, loose
50 – 90" Olive brown, very cobbly sand, redox. dark yellowish brown 10%, loose

Hydrologic Soil Group (HSG):	**See Table 1**
Drainage Class:	**See Table 1**
Depth to Bedrock:	**See Table 1**
Potential for Frost Action:	**See Table 1**
Lawns, Gardens and Golf Fairways:	**See Table 1**
Concrete Corrosion:	**See Table 1**
Steel Corrosion:	**See Table 1**
Local Roads & Streets:	**See Table 1**
Infiltration Systems, Shallow:	**See Table 1**
Dwellings with Basements:	**See Table 1**

INCLUSIONS (within mapping unit)
Similar: Hinckley, Duane
Dissimilar: Eldridge

USE AND MANAGEMENT
These soils are in the northeastern and southeastern portions of the Survey Area. The rating for this soil is not limited for dwellings with basements or local roads. They have a "very limited" rating for lawns and landscaping due to the low ion exchange capacity. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected. The rating for use as shallow infiltration systems is somewhat limited. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. It also has a high rating for concrete corrosion and moderate for steel corrosion.

Map Unit: **Human Altered/Human Transported Materials**
Classification: **N/A:** Variable Conditions
Map Unit Symbol: **HAHT**

SETTING
Parent Material: Imported loam over sandy materials
Landform: Shaw's subsurface wastewater disposal system
Position in Landscape: Along north Survey Area boundary
Slope Gradient Range: **(A)** 0-3%

COMPOSITION AND SOIL CHARACTERISTICS
Depth to Water Table: N/A

Hydrologic Soil Group (HSG):	**See Table 1**
Drainage Class:	**See Table 1**
Depth to Bedrock:	**See Table 1**
Potential for Frost Action:	**See Table 1**
Lawns, Gardens and Golf Fairways:	**See Table 1**
Concrete Corrosion:	**See Table 1**
Steel Corrosion:	**See Table 1**
Local Roads & Streets:	**See Table 1**
Infiltration Systems, Shallow:	**See Table 1**
Dwellings with Basements:	**See Table 1**

INCLUSIONS (within mapping unit)
Similar: N/A
Dissimilar: N/A

USE AND MANAGEMENT
This map unit is a small area along the northern Survey Area boundary. It includes the Shaw's subsurface wastewater disposal system.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms. The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Drainage Class

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

Excessively drained: Water is removed very rapidly. Internal free water occurrence commonly is very rare or very deep. The soils are commonly coarse textured and have very high saturated hydraulic conductivity or are very shallow.

Somewhat excessively drained: Water is removed from the soil rapidly. Internal free water occurrence commonly is very rare or very deep. The soils are commonly coarse textured and have high saturated hydraulic conductivity or are very shallow.

Well drained: Water is removed from the soil readily but not rapidly. Internal free water occurrence commonly is deep or very deep; annual duration is not specified. Water is available to plants throughout most of the growing season in humid regions. Wetness does not inhibit root growth for significant periods during most growing seasons. The soils are mainly free of, or are deep or very deep to, redoximorphic features related to wetness.

Moderately well drained: Water is removed from the soil somewhat slowly during some periods of the year. Internal free water occurrence is commonly moderately deep and transitory through permanent. The soils are wet for only a short time within the rooting depth during the growing season but long enough that most mesophytic crops are affected. They commonly have a moderately low or lower saturated hydraulic conductivity in a layer within the upper 1 meter, periodically receive high rainfall, or both.

Somewhat poorly drained: Water is removed slowly so that the soil is wet at a shallow depth for significant periods during the growing season. Internal free water occurrence is commonly shallow to moderately deep and transitory to permanent. Wetness markedly restricts the growth of mesophytic crops, unless artificial drainage is provided. The soils commonly have one or more of the following characteristics: low or very low saturated hydraulic conductivity, a high water table, additional water from seepage, or nearly continuous rainfall.

Poorly drained: Water is removed so slowly that the soil is wet at shallow depths periodically during the growing season or remains wet for long periods. Internal free water occurrence is shallow or very shallow and common or persistent. Free water is commonly at or near the surface long enough during the growing season that most mesophytic crops cannot be grown, unless the soil is artificially drained. The soil, however, is not continuously wet directly below plow depth. Free water at shallow depth is common. The water table is commonly the result of low or very low saturated hydraulic conductivity, nearly continuous rainfall, or a combination of these.

Very poorly drained: Water is removed from the soil so slowly that free water remains at or very near the surface during much of the growing season. Internal free water occurrence is very shallow and persistent or permanent. Unless the soil is artificially drained, most mesophytic crops cannot be grown. The soils are commonly level or depressed and frequently ponded. In areas where rainfall is high or nearly continuous, slope gradients may be greater.

Subaqueous: Free water is above the soil surface. Internal free water occurrence is permanent, and there is a positive water potential at the soil surface for more than 21 hours of each day. The soils have a peraquic soil moisture regime.

Depth to Bedrock

Very shallow (<10 inches of mineral soil above bedrock)

Shallow (10 to <20 inches of mineral soil above bedrock)

Moderately deep (20 to < 40 inches of mineral soil above bedrock

Deep (40 to < 60 inches of mineral soil above bedrock

All others are very deep (> 60 inches of mineral soil above bedrock)

Potential for Frost Action

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, saturated hydraulic conductivity (Ksat), content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Lawns, Landscaping and Golf Fairways

This interpretation rates soils for their use in establishing and maintaining turf for lawns and golf fairways and ornamental trees and shrubs for residential or commercial landscaping. Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required.

The ratings are based on the use of soil material at the site, which may have been altered by some land smoothing. Irrigation may or may not be needed and is not a criterion in rating. The ratings are based on

the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. Soils that are subject to flooding are limited by the duration and intensity of flooding and the season when flooding occurs. In planning for lawns, landscaping, or golf fairways, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Corrosion of Concrete

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the concrete in installations that are entirely within one kind of soil or within one soil layer. The risk of corrosion is expressed as "low," "moderate," or "high."

Corrosion of Steel

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel in installations that are entirely within one kind of soil or within one soil layer.

Local Roads and Streets

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding,

flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Infiltration Systems, Shallow

Shallow infiltration systems are stormwater management practices that are placed 1 to 3 feet in the ground, depending on the application. These systems include pervious pavement, buffer strips, filter strips, and vegetated swales. They slow the movement of stormwater to surface waters and also filter a significant portion of pollutants from the stormwater. The fundamental function of these systems is to hold the runoff generated by an area, such as a parking lot, from the first 1 inch of rainfall during a 24-hour storm preceded by 48 hours of no measurable precipitation. There should be little or no ponding at the surface. The water should infiltrate into the surrounding soil in 24 to 48 hours. Only that part of the soil between depths of 24 and 80 inches is evaluated.

The ratings are based on the soil properties that affect infiltration of the stormwater, construction and maintenance of the system, and public safety and health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect the transmission of rainwater. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the water in downslope areas. Some slopes may become unstable and move upon addition of water.

Soils underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the bottom of the system may adversely affect water quality and public health. In these soils the shallow infiltration system may not adequately filter the stormwater, particularly if the adsorptive capacity of the soil below the system is low. As a result, the ground water may become contaminated. In areas underlain by limestone, solution channels and subsequent subsidence may damage adjacent infrastructure. Also, areas underlain by limestone may be subject to ground-water contamination.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified infiltration system. "Not limited" indicates that the soil has features that are very favorable for the specified system. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified system. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified system. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified system (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings with Basements

Dwellings are single-family houses of three stories or less. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

APPENDIX D

MAPSS Class A Soil Survey Standards

Class A (High Intensity) Soil Survey Standards

1. Map units will not contain dissimilar limiting individual inclusions larger than one-eighth acre. Dissimilar limiting inclusions may total more than one-eighth acre per map unit delineation, in the aggregate, if not contiguous.

2. Scale is 1-inch equals 100 feet or larger (e.g. 1" = 50').

3. Ground Control— base line and test pits for which detailed data is recorded are accurately located under the direction of a registered land surveyor or qualified professional engineer.

4. Base map with 2-foot contour lines with ground survey, or aerial survey with ground control.

APPENDIX E

Glossary of Terms

Complex: Two or more dissimilar major components that occur in a regularly repeating pattern or in an unpredictable pattern.

Limiting Dissimilar Soil: Generally, map unit delineations contain soils other than those identified in the map unit name. These minor soil components reduce the purity of the soil map unit. Minor components that most detract from purity because they are the most dissimilar to the mapped name and are the most limiting for use.

Soil Drainage Class:

- Excessively Drained: Soil depth is less than 25 cm (10 inches) to bedrock; or has a sandy or sandy-skeletal particle-size class with a loamy cap less than 25 cm (10 inches) thick.
- Somewhat Excessively Drained: Soil depth is 25 to 50 cm (10 to 20 inches) to bedrock with a loamy or loamy-skeletal particle-size class; or soil depth is 50 cm (20 inches) or greater to bedrock with a sandy or sandy-skeletal particle-size class with a loamy cap 25 cm (10 inches) thick or greater.
- Well Drained: Soil depth is at least 50 cm (20 inches) to bedrock and has a texture of loamy very fine sand or finer and redoximorphic features, if present, are 100 cm (40 inches) or more below the mineral soil surface.
- Moderately Well Drained: Has redoximorphic features at a depth of 40 cm (16 inches) to less than 100 cm (40 inches) below the mineral soil surface.
- Somewhat Poorly Drained: Is not VERY POORLY or POORLY DRAINED and has redoximorphic features at a depth of less than 40 cm (16 inches) below the mineral soil surface.
- Poorly Drained: Has dominant textures in the upper 50 cm (20 inches) (below the A-horizon if present) of loamy fine sand or coarser and has redoximorphic features within 18 cm (7 inches) of the mineral soil surface; or has dominant textures in the upper 50 cm (20 inches) (below the A-horizon if present) of loamy fine sand or coarser and has a Bh- or Bhs-horizon with value/chroma of 3/3 or less that begins within 18 cm (7 inches) of the mineral soil surface and is directly underlain by a horizon that has redoximorphic features; or has an A-horizon that is 18 cm (7 inches) thick or greater with value/chroma of 3/2 or less and a textures in all sub-horizons within 50 cm (20 inches) of the mineral soil surface of loamy fine sand or coarser and has redoximorphic features directly below the A-horizon; or has a depleted or gleyed matrix within 50 cm (20 inches) of the mineral soil surface and redox depletions with value of 4 or more and chroma of 2 or less in ped interiors that are less than 18 cm (7 inches) below the mineral soil surface; or has an A-horizon that is 18 cm (7 inches) thick or greater with value/chroma of 3/2 or less and has a depleted or gleyed matrix within 50 cm (20 inches) of the mineral soils surface and has redox depletions with value of 4 or more and chroma of 2 or less in ped interiors or a depleted or gleyed matrix directly beneath the A-horizon.

Soil Map Unit: Designed to efficiently deliver soil information to meet user needs for management and land use decisions. They can appear on maps as individual areas (i.e., polygon), points, or lines. They are a collection of areas defined and named the same in terms of their major soil components, miscellaneous areas, or both.

Soil Phase: These terms are added to a map unit component name to covey important information about a map unit and differentiate it from other map units on the map unit legend.

Soil Series: Represents a three-dimensional soil body having a unique combination of properties that distinguish it from neighboring series.

ATTACHMENT 9

STORMWATER MANAGEMENT REPORT

STORMWATER MANAGEMENT REPORT

WINDHAM VILLAGE APARTMENTS
WINDHAM, MAINE

Prepared for
Windham Village Apartments, LLC

Windham, ME 04062

Prepared by

Gorrill Palmer
300 Southborough Drive – Suite 200
South Portland, Maine 04106
207.772.2515

1-17-24

October 2023
January 2024 (Revised)

STORMWATER MANAGEMENT REPORT

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MaineDEP SLDA Section 12

STORMWATER MANAGEMENT REPORT
WINDHAM VILLAGE APARTMENTS

12.1 Overview

Located between Tandberg Trail, Manchester Road, and a Private Drive in Windham, ME, Windham Village Apartments, LLC is acquiring +/-9 acres of the existing +/-24-acre parcel that currently contains retail/commercial development. This 9-acre portion is currently undeveloped with the exception of an existing disposal field that is currently in operation by the adjacent Shaw's Grocery store. The project is proposed to construct 14 buildings totaling 16 one-bedroom and 156 two-bedroom units, along with associated utility, drainage, and stormwater infrastructure. There will be additional outdoor amenity areas for residents' use. Connectivity with the existing surrounding community is a primary design element with a focus on accessibility for multimodal travel methods.

Under the Site Location of Development Law (SLODA) (38 M.R.S.A §481-490) instituted by the Maine Department of Environmental Protection, a project creating more than 3 acres of impervious area or 20 acres of more of developed area, will require a Site Law permit from the Department. In addition, the existing parcel has a Site Law Permit for development of the commercial buildings dating back to the 1990's. An independent Town review will also ensure compliance with stormwater and erosion control management required under the Town of Windham's Code of Ordinances.

As the proposed development will disturb greater than one acre of area and will result in more than 3 acres of new non-vegetated surface, the proposed development is required to meet the Basic Standard, General Standard, and Flooding Standard of the Stormwater Rules (Chapter 500). The development is required to meet the water quality standards set forth in Section 4.C.2(a) of Chapter 500.

12.2 Development Description

Gorrill Palmer has been retained by Windham Village Apartments, LLC to prepare a Stormwater Management Report for a proposed residential community development on a 9 ± acre parcel. The project includes one and two-bedroom unit housing, outdoor amenity areas, and infrastructure upgrades. The proposed development is in Windham, ME with access from an Existing Private Access Drive off Manchester Road and access from a Private Drive stemming from Tandberg Trail.

This development will create approximately 5.01 acres of new non-vegetated surface on site. The overall developed area is approximately 9 acres. The development of sidewalks and a through road will provide interconnectivity within the community.

The proposed development is located within the Presumpscot River watershed. There are no streams listed on the *March 2023 Maine Department of Environmental Protection – Nonpoint Source Priority Watersheds List* that encroach the property.

The above practices are described in depth under Section 12.9 Approach and Analysis for Water Quality.

As the proposed development will disturb greater than one acre of area and will result in more than 3 acres of new non-vegetated surface, the proposed development is required to meet the Basic Standard, General Standard, and Flooding Standard of the Stormwater Rules (Chapter 500).

The MaineDEP Basic Standard will be met as presented in the Erosion and Sedimentation Control report for this project.

Under the General Standard, the project is required to meet the BMP standards identified in Chapter 500 and described in Volume III of the Stormwater BMP manual. The design of this development will include a subsurface infiltration system.

12.3 Surface Water

The project location area drains to the Presumpscot River Watershed. The Presumpscot River flows from Sebago Lake to Casco Bay. Appropriate buffers and setbacks are provided from the natural resource. The site is located in an area with moderate to good potential ground-water yield, as shown on the North Windham Quadrangle, Maine, Significant Sand and Gravel Aquifers Map. Please refer to Section 15 for further information on this subject.

12.4 General Topography

The topography and terrain for the planned development area varies in elevation from approximately 303 to 310 feet. For drainage purposes, the property is proposing the utilization of a subsurface infiltration system. The infiltration system is proposed within the Southeast corner of the lot near Tandberg Trail. Most of the existing site contains slopes ranging from approximately 0.5% to 3.5%.

12.5 Flooding

The site is not located within a mapped FEMA 100-year floodplain.

12.6 Natural Drainage Ways

The project as currently proposed does not include alteration of any natural drainage ways.

12.7 Alterations to Land Cover

Changes in land cover will include the conversion of wooded and field area to a new private access drive, parking areas, residential buildings, and open space.

12.8 Stormwater Management Control

Based on the Stormwater Management Rules, Chapter 500, the proposed development is required to meet the Basic Standard, General Standard, and Flooding Standard, as the development results in greater than three acres of non-vegetated area. The project is not required to meet the urban impaired stream standard.

The Basic Standard is presented in the Erosion Control Report in MaineDEP SLDA Section 14. The General Standard and Flooding Standard are presented as follows.

The development will be required to meet the MDEP's water quality and quantity standards. To meet the water quality standard, the project will utilize a subsurface infiltration system. The facilities will be utilized to control the post development runoff for the larger 2, 10, 25-year storm events where applicable.

The Maine Department of Environmental Protection rules and regulations regarding stormwater concentrate on four stormwater management objectives:

- Effective Pollutant Removal
- Cooling
- Channel Protection
- Flood Control

These objectives may be met either directly by providing BMP's that manage and treat the runoff after it has been created, or indirectly by incorporating low impact development site planning concepts to minimize production and contamination of runoff by maximizing infiltration and evapotranspiration.

12.9 Approach and Analysis for Water Quality

The following narrative discusses the Basic Standard and General Standard of the MaineDEP Stormwater Law. The proposed development will be required to meet the Basic Standard, BMP Standard under the General Standard, and Flooding Standard for a MaineDEP Site Law. Based upon review of the five recommended and approved methods for mitigating the increased frequency and duration of channel erosive flows, as required by the BMP Standards, the applicant is proposing to construct a subsurface infiltration system.

The proposed development will treat no less than 95% of the impervious area and no less than 80% of the developed area of these lots in accordance with the MaineDEP Chapter 500 Section 4.C.2(a). Water quality calculations for this portion of the site are presented in Section 12.9.2 below.

12.9.1 New Developed Required Treatment

The proposed overall development will treat no less than 95% of the impervious threshold area and no less than 80% of the developed threshold area in accordance with the MDEP Chapter 500 Section 4.C.2(a). Table 1 below outlines the required treatments for this area.

Table 1 – Proposed Development Treatment Summary

Type	Total Area (sf)	Treatment Threshold	Area Required to be Treated (sf)
Impervious	218,195	95%	207,285
Developed	388,448	80%	310,758

12.9.2 Stormwater Quality Treatment

Attachment A contains the Water Quality maps for this project.

Subsurface Infiltration System

The proposed subsurface infiltration system on site was designed in accordance with *Maine DEP's Chapter 500 Stormwater Management Rules* and the *Maine Stormwater Best Management Practices Manual, Volume III. BMP Technical Design Manual, Chapter 6. Infiltration BMPs*. Some measures to be highlighted for an infiltration system include sizing, site suitability, siting, setbacks, pretreatment, design and construction, erosion control, groundwater monitoring, and maintenance. The following information does not include all the standards of Chapter 6 but are examples of some.

In terms of sizing, an "infiltration system must be designed to retain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped developed area and infiltrate this volume into the ground." The system must also completely drain between 24 to 48 hours after a runoff event.

Suitability includes a recommended soil permeability at the depth of the base of no less than 0.5 inches per hour and no greater than 2.41 inches per hour. The permeability should be determined by in-place well, permeameter testing, or soil gradation analyses.

Siting is necessary to determine the best fit location for an infiltration basin. On this site, two locations were studied for potential locations to utilize infiltration basins. Upon due diligence and Seasonal High Water Table testing, it was determined that the southeastern portion of the site is more suitable for an infiltration system. Chapter 6 requires a seasonal high water table separation of at least 3 feet between the bottom of the infiltration system. This separation includes any material underneath any manufactured components of the system and stone layers.

The following setbacks are required from an infiltration basin:

- Property Lines: At least 25 feet
- Flood Plains: 10 feet from a 10-year floodplain
- Steep Slopes: 50 feet from downhill slopes greater than 3:1
- Water Supply Lines: 10 feet
- Wastewater Disposal Systems: As far downgradient of any component of a subsurface wastewater disposal system as practical. Additional setback requirements may be required as well.
- Water Supplies: At least 300 feet from any private water supply well, outside delineated public water supply contribution areas, and as far downgradient as practical of any water supply well

Pretreatment measures are important to minimize the sediment discharge into an infiltration system. The sizing of pretreatment structures should be able to hold at least an amount calculated with the following assumptions:

- An annual sand application rate of 500 lbs/acre for sanding of roadways, parking areas, and access drives within the subcatchment area.
- The sand's density is 90 lbs/cubic foot.
- A storm frequency of 10 storms per year.

Design and Construction recommendations include clean and washed stone fill with a porosity value of 0.4 for stone reservoirs. Aggregates are to be between 1.5 to 3-inches. Emergency overflow drainage is also included for the system.

The infiltration basin will not be constructed until the upgradient drainage area is stabilized with vegetation and erosion control measures.

Groundwater Monitoring was done with Observation and Monitoring Wells. The seasonal high groundwater was monitored by GZA Geoenvironmental Inc in the Spring of 2023, and it was determined the elevation is +/- 296.8. Exact elevations are shown on the stormwater management plans.

Maintenance of the infiltration system is important for long-term effectiveness. Maintenance details of the system can be further viewed in Section 14, *Basic Standards Erosion and Sedimentation Control Report*.

Please refer to Chapter 6. *Infiltration BMPs* for a further detailed description of Infiltration Systems. The subsurface infiltration system on site is planned to utilize Cultec Recharger 902 HD chambers. Runoff will enter the subsurface chamber storage system through an Isolator Row. The Isolator Row is required to convey the peak runoff from the 1 year type III 24 hour storm, without overflowing, at a rate of 0.167 cfs per chamber. The chamber system will provide storage for the water quality volume and release the flow over a 24-48 hour period. The subsurface chambers will be installed within a stone bed assumed to have 40% porosity. The storage provided by a Cultec Recharger 902 HD is 17.31 CF/FT per design unit.

Runoff from storms producing the water quality volume will be conveyed to the subsurface chambers and infiltrated to the existing ground at a rate of 0.75 inches/hour. A choker course, with a maximum permeability of 0.75 inches per hour, is provided below the stone chamber system. Yearly maintenance of the Cultec Chamber system will include inspecting the system for accumulation of sediment within the Isolator Row.

The Water Quality Maps are included in Attachment A. The stage/storage tables for the subsurface infiltration system are included in Attachment B.

The storage tables and sizing calculations are included in Attachment B.

The following tables present information for the Subsurface Infiltration System in the proposed development.

Table 2		
Subsurface Infiltration System		
	REQUIRED	**PROVIDED**
Impervious Area (SF)	-	153,799
Vegetated Developed Area (SF)	-	98,213
Water Quality Treatment Volume (CF)	16,091	16,131
1-Year Storm Peak Flow (CFS)	-	8.29
Cultec Recharger 902HD Isolator Row Chambers required	50	75
Cultec Recharger 902HD required for Water Quality Volume	249	455
Total Cultec Recharger 902HD Chambers	-	455
Storage Base Elevation (FT)	-	301.0
Water Quality Volume Elevation (FT)	-	302.09
Channel Protection Outflow	0.5 – 2.41 in/hr	0.75 in/hr

Roof Dripline Filters

Roof dripline filtration will be utilized for a portion of the roof area of all buildings on site. For the multi-family apartment buildings, the dimensions for the reservoir layer of the drip edge filters vary. On the front and backs of the buildings, drip edges are 2.5 feet wide by 1.5 feet deep, providing 1.5 cubic feet of treatment per linear foot of roof. On the sides of the buildings, the dimensions are 5 feet wide by 1.5 feet deep, providing 3 cubic feet of treatment per linear foot of room. The community building has drip edges on the sides of the building, they are 3 feet wide by 1.5 foot deep.

This assumes a 40% void ratio in the reservoir area. Table 3 below shows the Drip Edge Filter Calculations (for each building) as described above.

Table 3		
Proposed Roof Drip Edge Filter System – Apartments (Sides)		
	Required	**Provided**
Impervious Roof Area	-	527 sq. ft
Landscaped Area (non-impervious)	-	0 sq. ft
Average Roof Width	-	8.3 ft
Treatment per linear foot of roof edge	0.69 sq. ft	1.5 sq. ft
Reservoir Layer Dimensions	-	-
• Depth	1 ft	1.5 ft
• Width	-	2.5 ft
Release Time	24-48 Hours	24 Hours
Proposed Roof Drip Edge Filter System – Apartments (Front and Back)		
	Required	**Provided**
Impervious Roof Area	-	853 sq. ft
Landscaped Area (non-impervious)	-	0 sq. ft
Average Roof Width	-	33.2 ft
Treatment per linear foot of roof edge	2.76 sq. ft	3 sq. ft
Reservoir Layer Dimensions	-	-
• Depth	1 ft	1.5 ft
• Width	-	5 ft
Release Time	24-48 Hours	24 Hours
Proposed Roof Drip Edge Filter System – Community Building (Long Side)		
	Required	**Provided**
Impervious Roof Area	-	448 sq. ft
Landscaped Area (non-impervious)	-	0 sq. ft
Average Roof Width	-	6.39 ft
Treatment per linear foot of roof edge	0.53 sq. ft	1.8 sq. ft
Reservoir Layer Dimensions	-	-
• Depth	1 ft	1.5 ft
• Width	-	3 ft
Release Time	24-48 Hours	24 Hours

12.9.3 Conclusion – Water Quality

Table 4 below summarizes the proposed total treatment for the proposed development, which does not include future development.

Table 4 – Overall Treatment for Development		
	IMPERVIOUS	**DEVELOPED** (Impervious + Landscaped)
Subsurface Infiltration System (sf)	153,799	252,012
Roof Edge Dripline Filters (sf)	58,969	58,969
Total Area Treated (sf)	212,768	310,981
Area Untreated (sf)	5,427	77,467
Total Area of Project (sf)	218,195	388,448
Percent Treated	97.5%	80.1%
Percent Required	95%	80%

Table 5 below summarizes the proposed total treatment for the project.

Table 5 – Total New Development Treatment Summary		
	Required Treatment (sf)	**Proposed Treatment (sf)**
Impervious	207,285	212,768
Developed	310,758	310,981

The project provides stormwater quality treatment to meet the General Standards for Chapter 500 and will not cause degradation of the receiving waters due to the stormwater runoff from the site.

12.10 Stormwater Quantity

The stormwater management study provides an analysis of predevelopment and post development stormwater runoff rates.

A Class A High Intensity Soil Survey was conducted by Flycatcher, LLC and used to identify onsite soils. A Soil Map and full report can be found in the HISS Report section of this application. The proposed developed area is comprised of Hydrologic Soil Type A, B, C and D.

The SCS TR-20 methodology, using the HydroCAD program, was employed by Gorrill Palmer to analyze predevelopment and post-development conditions. A 24-hour, SCS Type III storm distribution for the two-, ten-, and twenty-five-year storm frequencies was used. The corresponding rainfall amounts for these storms are 3.1", 4.6", and 5.8" respectively.

Land use cover, delineations of watershed hydraulic flow paths, and hydrologic soils data were obtained using the following data:

- Prouts Neck 7.5 Minute Quadrangle Maps prepared by the U.S.G.S.
- High Intensity Soil Survey, with 1' contour intervals, performed within the property lines by Flycatcher, LLC.
- Medium Intensity survey with 2' contour intervals from Maine Office of GIS.
- Aerial photography of the project site, obtained from the Maine Office of GIS.
- Field Reconnaissance

12.10.1 Predevelopment Conditions

The drainage study analyzes the watersheds in the predevelopment condition as depicted on the Predevelopment Watershed Map W1.

Subcatchment 1S consists of soil types A, B, and C. There are approximately 0.8 acres of brush with existing soil types A and C. In addition to this, there is runoff from approximately 1.1 acres of impervious area offsite, the majority of which results from pavement. Woods also makes up approximately 0.5 acres of this subcatchment in soil type B. This runoff is conveyed to POI 1, which is an existing detention basin located just south of the Shaw's Grocery Store.

Subcatchment 2S consists of soil types A and C. There are approximately 0.8 acres of impervious area, approximately 0.2 acres of woods, and approximately 0.1 acres of brush of existing soil types A and C. This subcatchment is tributary to POI 2, which is an infiltration manhole located just south of the existing commercial strip mall just north of the project area.

Subcatchment 3S consists of soil types A, B, and D. There are approximately 0.6 acres of impervious area, majority of which is roadway pavement, 0.5 acres of brush soil type A, and 3.3 acres of woods combined of soil types B and D. These total approximately 0.6 acres of impervious and 3.8 acres of pervious area. This subcatchment is tributary to POI 3 which is an existing storm drain inlet located at the corner of Manchester Drive and Tandberg Trail.

Subcatchment 4S consists of soil types A, B, and C. There are approximately 0.1 acres of impervious area and approximately 3.9 acres of woods pervious area with soil types A and Additionally, the subcatchment includes approximately 0.4 acres of brush with soil type C. This subcatchment is tributary to POI 4 which is a storm drain inlet at the southeastern corner of the site, at the corner of the Private Access Drive and Tandberg Trail.

A watershed map for the predevelopment conditions is attached to this section as drawing number W1 in Attachment A.

Table 6 presents the peak flow rates at the point of interest in the predevelopment condition.

Table 6 – Predevelopment Peak Flow Rates (Type III 24-hr)

Point of Interest	Peak Flow (CFS)		
	2 Year	10 Year	25 Year
POI 1	1.68	3.47	5.02
POI 2	1.34	2.51	3.50
POI 3	0.60	2.41	4.32
POI 4	0.00	0.03	0.16

Copies of the calculations for the predevelopment conditions are included in Attachment B.

12.10.2 Post development Conditions

Analysis for the post development condition consists of determining post development peak flows and limiting the post development flows to predevelopment levels.

The post development condition has been modeled as one subcatchment tributary to POI 1, one subcatchment tributary to POI 2, one subcatchments tributary to POI 3, and three subcatchments tributary to POI 4.

Subcatchment 1S consists of approximately 1.1 acres of impervious and approximately 0.5 acres of pervious area. Runoff from these areas are untreated and are tributary to POI 1.

Subcatchment 2S consists of approximately 0.8 acres of impervious and approximately 0.2 acres of pervious area. Runoff from these areas are untreated and tributary to POI 2.

Subcatchment 3S consists of approximately 0.7 acres of impervious and approximately 1.0 acres of pervious area. Runoff from these areas are untreated tributary to POI 3.

Subcatchment 4S consists of approximately 0.1 acres of impervious and approximately 0.9 acres of pervious area. Runoff from these areas are untreated and tributary to POI 4.

Subcatchment 5S consists of approximately 3.5 acres of impervious and approximately 2.3 acres of pervious area. Runoff from these areas are treated by a mix of drip edges and a subsurface infiltration system. This subcatchment is tributary to POI 4.

Subcatchment 6S consists of approximately 1.35 acres of impervious area from roofs on site. This is treated by drip edges and is tributary to POI 4.

A comparison of pre and post development flow without detention is presented in the following table.

Table 7 – Peak Flow Comparison without detention

Point of Interest	Peak Flow (CFS)		
	2 Year	10 Year	25 Year
POI 1			
Pre	1.68	3.47	5.02
Post	1.81	3.13	4.20
POI 2			
Pre	1.34	2.51	3.50
Post	1.51	2.62	3.51
POI 3			
Pre	0.60	2.41	4.32
Post	0.73	1.81	2.81
POI 4			
Pre	0.00	0.03	0.16
Post	15.45	26.65	35.78

The subcatchments tributary to POI 2 and 3 decreased in area from pre-development to post-development condition by 0.1 and 2.8 acres, respectively. The Curve Numbers for the two subcatchments increased in value as a result of the vegetated area on site being removed from the subcatchment. Given the decrease in land area, the increase in post development peak flow is considered insignificant and a result of the HydroCAD tolerance modeling.

As can be seen from Table 7 and the above paragraph, detention is required to reduce the peak flows at POI 4, to be at or below pre-development levels.

Pond 1P – Cultec Recharger 902HD Chambers

Pond 1P is a subsurface infiltration basin that utilizes Cultec Recharger 902HD Chambers located on the southeastern portion of the project site to detain the runoff. The stormwater runoff from Subcatchment 5S will enter the isolator rows through the storm drain system. The outflow has been modeled with a constant velocity of 0.75 in/hr for absorption exfiltration. For storm events that raise

water level to the channel protection volume elevation of 302.09 feet, the outflow is modeled at a constant velocity of 10.25 in/hr for absorption exfiltration. The 10.25 in/hr hydraulic conductivity was determined from test pits and a grain size analysis performed by GZA. A copy of their report and results is included in the Groundwater Section of this application (Section 15). These methods provide a 24–72-hour release time. The pond outflow is tributary to POI 4.

The subsurface infiltration basin has been analyzed to determine its performance for the 2-, 10-, and 25-year storms. Storms smaller than a two-year event will generate a runoff volume equal to or less than the channel protection volume provided at 16,131 cf.

Larger storms will be conveyed through an overflow pipe into a drainage manhole. The drainage manhole outlets to an existing pipe stub. Table 8 below presents the subsurface infiltration basin's performance.

Table 8 – Subsurface Infiltration Basin			
	Storm Event		
	2-Year	10-Year	25-Year
Peak Inflow (CFS)	11.24	20.35	30.73
Peak Outflow (CFS)	1.46	3.44	3.44
Stage (Max. Elevation)	302.10	303.18	304.98
Detention Storage (cf)	16,251	27,700	43,311
Depth above base (ft)	1.10	2.18	2.98

A watershed map for the post development conditions is attached to this section as drawing number W2 in Attachment A. Attachment B includes the TR-20 pond calculations.

As presented in Table 7 previously, detention of tributary runoff to POI 4 is required. The following table presents a comparison of peak flow with detention.

Table 9 – Peak Flow Comparison with detention			
Point of Interest	**Peak Flow (CFS)**		
	2 Year	**10 Year**	**25 Year**
POI 4			
Pre	0.00	0.03	0.16
Post	0.00	0.03	0.17

As can be seen from Table 9 above, the peak post development flow for POI 4 is at or below predevelopment levels for the 2 and 10-year storm events. The 25-year storm event is slightly higher in the post development condition (0.01 cfs). The majority of the peak flow runoff is generated from the existing 4S subcatchment. This subcatchment reduced in size significantly, but increased in CN value since the offsite impervious of the adjacent roadway network are now a larger portion of the existing subcatchment. Given the decrease in land area, the increase in post development peak flow is considered insignificant and a result of the HydroCAD tolerance modeling.

12.10.3 Conclusion – Water Quantity

The peak flow at the Point of Interests has been reduced to be at or below predevelopment peak levels or can be concluded as insignificant given the HydroCAD modeling software. The project is not likely to have an adverse impact on abutting or downstream properties due to stormwater runoff.

12.11 Construction BMPs

Additional water quality treatment will be provided during construction by best management practices (BMP). Standard BMPs to be employed include siltation fencing around the downslope construction perimeter, sedimentation basin, rip rap, pipe stabilized construction entrances and erosion control fabrics applied to slopes prior to revegetation.

12.12 Maintenance of Facilities, Recertification and Housekeeping

See Maintenance of Facilities, Recertification and Housekeeping sections of the Erosion and Sedimentation Control Report, which can be found in Section 14 of the Site Location of Development application for this project.

12.13 Conclusion

Gorrill Palmer has been retained by Windham Village Apartments, LLC to prepare plans and permit applications for the development of Windham Village Apartments on the proposed parcel in Windham, Maine. Based upon the attached calculations, the proposed project meets or exceeds the water quality and water quantity regulations of the Town of Windham and Chapter 500 of the MDEP and will not cause degradation of the receiving waters from the site or likely have an adverse impact on abutting or downstream properties due to the stormwater runoff.

Therefore, the proposed development meets the Site Law Application requirements under the MDEP.

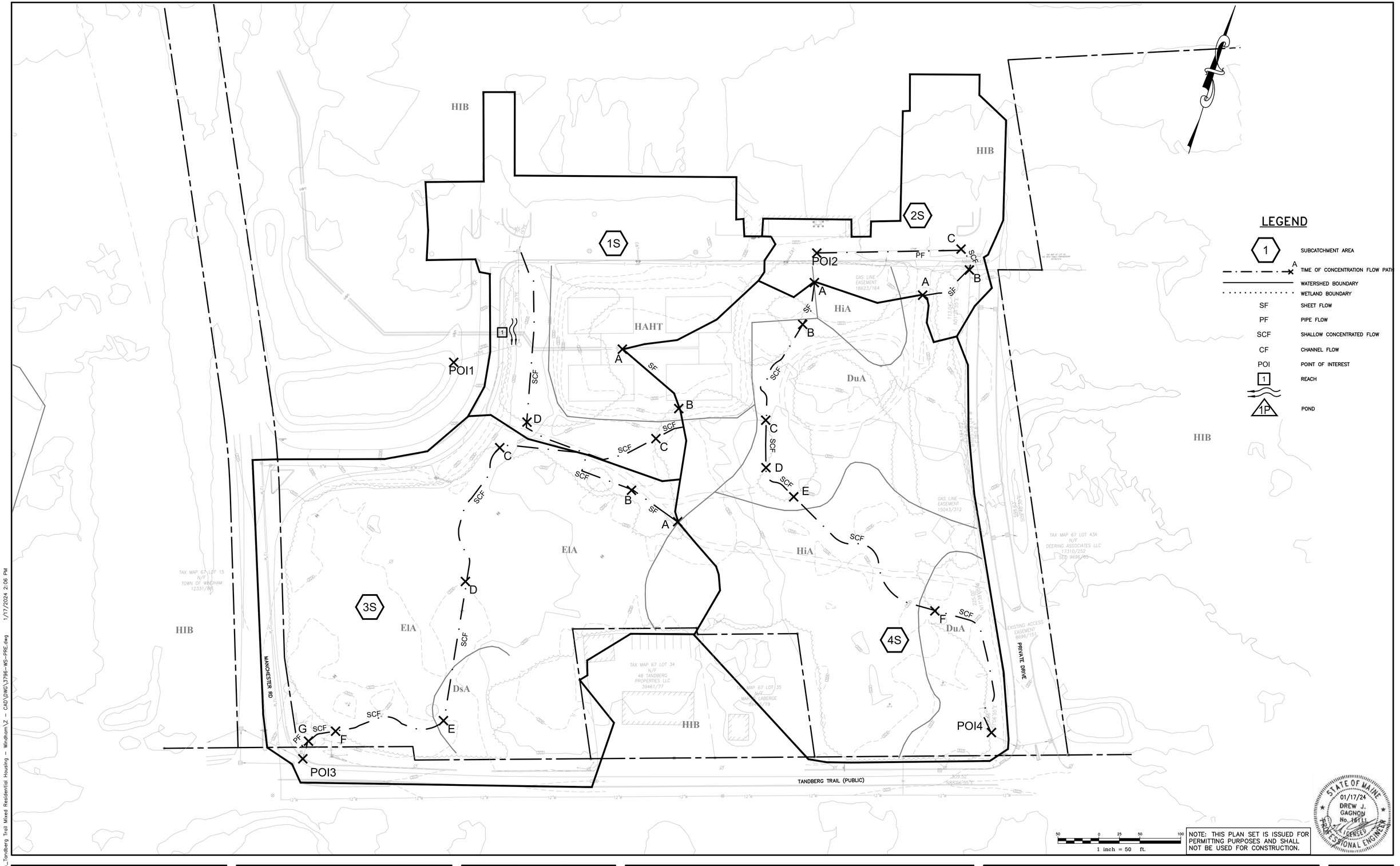
12.14 Attachments

Attached to this section are the following items:

Attachment A – Watershed Maps (Pre, Post, Water Quality)
Attachment B – TR-20 Calculations
Attachment C – Pipe Capacity Calculation

ATTACHMENT A

WATERSHED MAPS (PRE, POST, WATER QUALITY)



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Rev.	Date	Revision

Issued For	Date	By
SLDA RESPONSE TO COMMENTS	01/17/24	DJG
SLDA SUBMISSION	10/6/23	DJG
SKETCH PLAN SUBMISSION	4/17/23	DJG

Design: LEL	Draft: CEH	Date: DEC 2022
Checked: DJG	Scale: 1"=50'	Job No.: 3796
File Name: 3796-WS-PRE.dwg		

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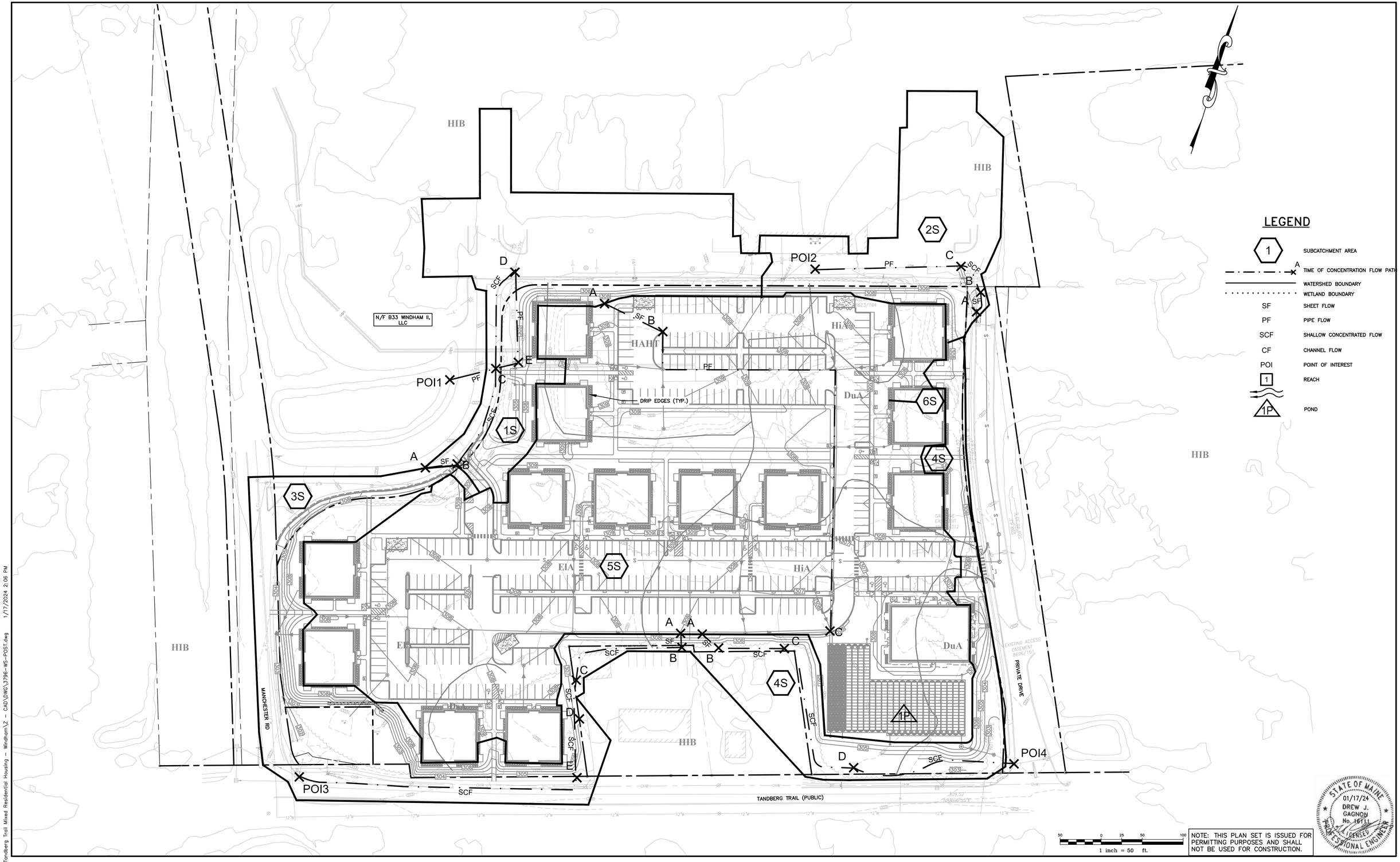
Drawing Name:	Pre Development Watershed Map
Project:	Windham Village Apartments 770 Roosevelt Trail, Windham, Maine 04062
Client:	Windham Village Apartments, LLC 40 Farm Gate Road, Falmouth, ME 04105

Drawing No.
W1



NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE 01/17/24 DREW J. GAGNON No. 16111 LICENSED PROFESSIONAL ENGINEER

Rev.	Date	Revision

Issued For	Date	By
SLDA RESPONSE TO COMMENTS	01/17/24	DJG
SLDA SUBMISSION	10/6/23	DJG
SKETCH PLAN SUBMISSION	4/17/23	DJG

Design: LEL	Draft: CEH	Date: DEC 2022
Checked: DJG	Scale: 1"=50'	Job No.: 3796
File Name: 3796-WS-POST.dwg		

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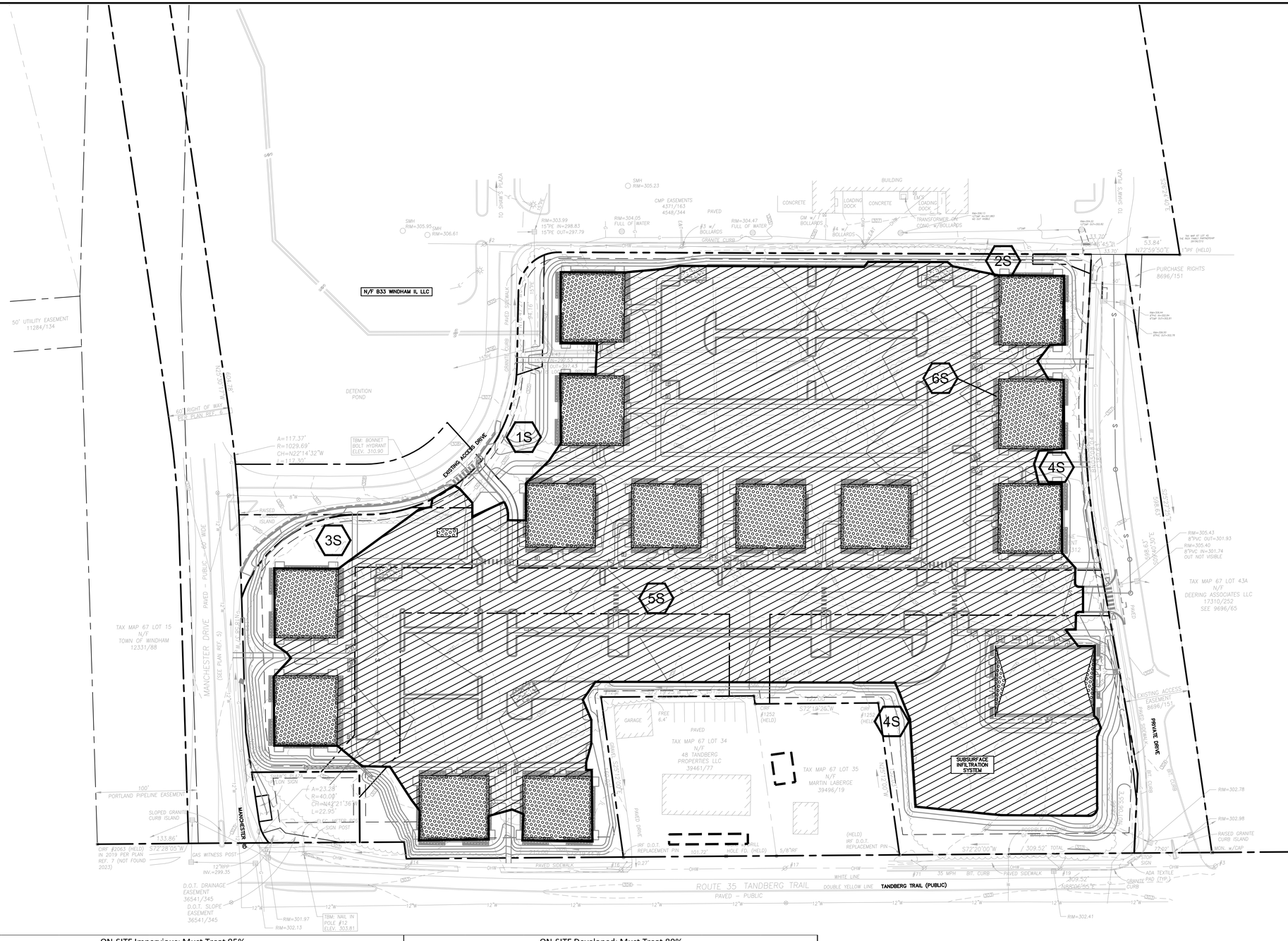
Drawing Name:	Post Watershed Map
Project:	Windham Village Apartments 770 Roosevelt Trail, Windham, Maine 04062
Client:	Windham Village Apartments, LLC 40 Farm Gate Road, Falmouth, ME 04105

Drawing No. W2

U:\3796_Grovier Homes_Tandberg Trail Mixed Residential Housing - Windham\Z - CAD\DWG\3796-WS-POST.dwg 1/17/2024 2:06 PM



ON-SITE Impervious: Must Treat 95%						ON-SITE Developed: Must Treat 80%					
Subcatchment	Cover Type	Area (SF)	Amount Treated (SF)	% Area	% Treated	Subcatchment	Cover Type	Area (SF)	Amount Treated (SF)	% Area	% Treated
1S	Paver/Roof	1,929	-	0.9%	0.0%	1S	Imp. & Veg.	16,417	-	4.2%	0.0%
2S	Paver/Roof	199	-	0.1%	0.0%	2S	Imp. & Veg.	4,949	-	1.3%	0.0%
3S	Paver/Roof	2,077	-	1.0%	0.0%	3S	Imp. & Veg.	26,230	-	6.8%	0.0%
4S	Paver/Roof	1,223	-	0.6%	0.0%	4S	Imp. & Veg.	29,871	-	7.7%	0.0%
5S	Paver/Roof	153,799	153,799	70.5%	70.5%	5S	Imp. & Veg.	252,012	252,012	64.9%	64.9%
6S	Paver/Roof	58,969	58,969	27.0%	27.0%	6S	Imp. & Veg.	58,969	58,969	15.2%	15.2%
Total Area		218,195	212,768	100.0%	97.5%	Total Area		388,448	310,981	100.0%	80.1%

50 0 25 50 100
1 inch = 50 ft.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE 01/17/24 DREW J. GAGNON No. 16111 LICENSED PROFESSIONAL ENGINEER

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SLDA RESPONSE TO COMMENTS	01/17/24	DJG
SLDA SUBMISSION	10/6/23	DJG
SKETCH PLAN SUBMISSION	4/17/23	DJG

Design: LEL	Draft: CEH	Date: DEC 2022
Checked: DJG	Scale: 1"=50'	Job No.: 3796
File Name: 3796-WS-WQ.dwg		

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Drawing Name: **Water Quality Plan**
Project: **Windham Village Apartments**
770 Roosevelt Trail, Windham, Maine 04062
Client: **Windham Village Apartments, LLC**
40 Farm Gate Road, Falmouth, ME 04105

Drawing No. WQ

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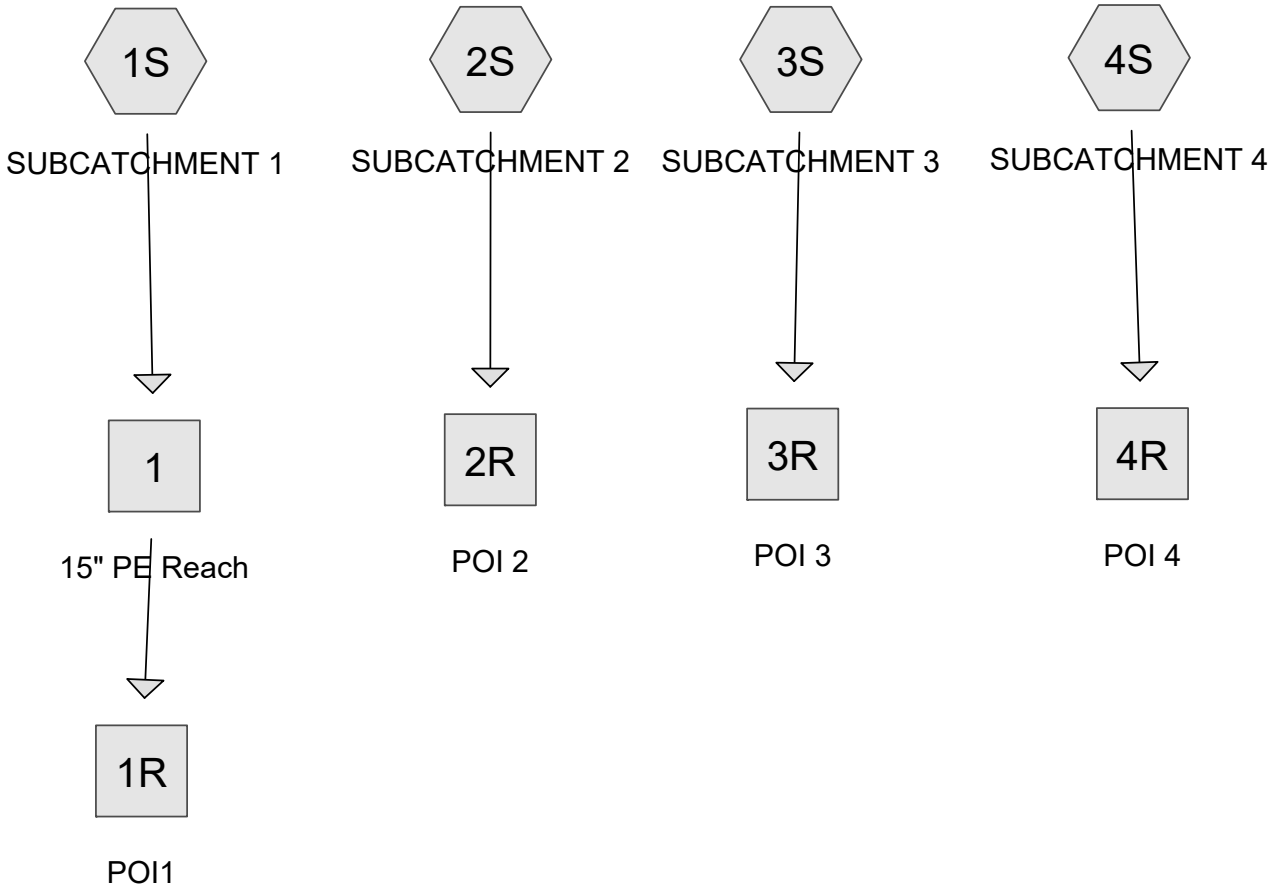
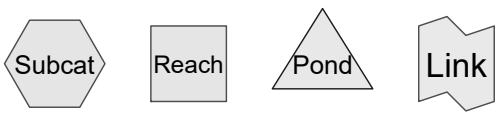
ATTACHMENT B

TR-20 CALCULATIONS

PRE-DEVELOPMENT

PRE-DEVELOPMENT





Routing Diagram for Pre Areas to Plot Report (09.18.2023) - Updated 1.8.2024

Prepared by Gorrill Palmer Consulting Engs, Printed 1/10/2024

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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: SUBCATCHMENT 1 Runoff Area=103,601 sf 44.13% Impervious Runoff Depth=1.14"
Flow Length=553' Tc=32.4 min CN=77 Runoff=1.68 cfs 0.226 af

Subcatchment 2S: SUBCATCHMENT 2 Runoff Area=49,301 sf 72.18% Impervious Runoff Depth=1.46"
Flow Length=316' Tc=18.5 min CN=82 Runoff=1.34 cfs 0.138 af

Subcatchment 3S: SUBCATCHMENT 3 Runoff Area=193,625 sf 13.81% Impervious Runoff Depth=0.37"
Flow Length=811' Tc=39.6 min CN=60 Runoff=0.60 cfs 0.137 af

Subcatchment 4S: SUBCATCHMENT 4 Runoff Area=191,327 sf 2.11% Impervious Runoff Depth=0.00"
Flow Length=773' Tc=50.8 min CN=36 Runoff=0.00 cfs 0.000 af

Reach 1: 15" PE Reach Avg. Flow Depth=0.49' Max Vel=3.71 fps Inflow=1.68 cfs 0.226 af
15.0" Round Pipe n=0.013 L=189.6' S=0.0062 '/' Capacity=5.07 cfs Outflow=1.68 cfs 0.226 af

Reach 1R: POI 1 Inflow=1.68 cfs 0.226 af
Outflow=1.68 cfs 0.226 af

Reach 2R: POI 2 Inflow=1.34 cfs 0.138 af
Outflow=1.34 cfs 0.138 af

Reach 3R: POI 3 Inflow=0.60 cfs 0.137 af
Outflow=0.60 cfs 0.137 af

Reach 4R: POI 4 Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 12.347 ac Runoff Volume = 0.501 af Average Runoff Depth = 0.49"
79.16% Pervious = 9.774 ac 20.84% Impervious = 2.573 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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: SUBCATCHMENT 1 Runoff Area=103,601 sf 44.13% Impervious Runoff Depth=2.29"
Flow Length=553' Tc=32.4 min CN=77 Runoff=3.47 cfs 0.454 af

Subcatchment 2S: SUBCATCHMENT 2 Runoff Area=49,301 sf 72.18% Impervious Runoff Depth=2.72"
Flow Length=316' Tc=18.5 min CN=82 Runoff=2.51 cfs 0.257 af

Subcatchment 3S: SUBCATCHMENT 3 Runoff Area=193,625 sf 13.81% Impervious Runoff Depth=1.07"
Flow Length=811' Tc=39.6 min CN=60 Runoff=2.41 cfs 0.398 af

Subcatchment 4S: SUBCATCHMENT 4 Runoff Area=191,327 sf 2.11% Impervious Runoff Depth=0.06"
Flow Length=773' Tc=50.8 min CN=36 Runoff=0.03 cfs 0.021 af

Reach 1: 15" PE Reach Avg. Flow Depth=0.76' Max Vel=4.45 fps Inflow=3.47 cfs 0.454 af
15.0" Round Pipe n=0.013 L=189.6' S=0.0062 '/' Capacity=5.07 cfs Outflow=3.47 cfs 0.454 af

Reach 1R: POI 1 Inflow=3.47 cfs 0.454 af
Outflow=3.47 cfs 0.454 af

Reach 2R: POI 2 Inflow=2.51 cfs 0.257 af
Outflow=2.51 cfs 0.257 af

Reach 3R: POI 3 Inflow=2.41 cfs 0.398 af
Outflow=2.41 cfs 0.398 af

Reach 4R: POI 4 Inflow=0.03 cfs 0.021 af
Outflow=0.03 cfs 0.021 af

Total Runoff Area = 12.347 ac Runoff Volume = 1.130 af Average Runoff Depth = 1.10"
79.16% Pervious = 9.774 ac 20.84% Impervious = 2.573 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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: SUBCATCHMENT 1 Runoff Area=103,601 sf 44.13% Impervious Runoff Depth=3.31"
Flow Length=553' Tc=32.4 min CN=77 Runoff=5.02 cfs 0.655 af

Subcatchment 2S: SUBCATCHMENT 2 Runoff Area=49,301 sf 72.18% Impervious Runoff Depth=3.80"
Flow Length=316' Tc=18.5 min CN=82 Runoff=3.50 cfs 0.359 af

Subcatchment 3S: SUBCATCHMENT 3 Runoff Area=193,625 sf 13.81% Impervious Runoff Depth=1.79"
Flow Length=811' Tc=39.6 min CN=60 Runoff=4.32 cfs 0.664 af

Subcatchment 4S: SUBCATCHMENT 4 Runoff Area=191,327 sf 2.11% Impervious Runoff Depth=0.25"
Flow Length=773' Tc=50.8 min CN=36 Runoff=0.16 cfs 0.092 af

Reach 1: 15" PE Reach Avg. Flow Depth=1.01' Max Vel=4.71 fps Inflow=5.02 cfs 0.655 af
15.0" Round Pipe n=0.013 L=189.6' S=0.0062 '/' Capacity=5.07 cfs Outflow=5.02 cfs 0.655 af

Reach 1R: POI 1 Inflow=5.02 cfs 0.655 af
Outflow=5.02 cfs 0.655 af

Reach 2R: POI 2 Inflow=3.50 cfs 0.359 af
Outflow=3.50 cfs 0.359 af

Reach 3R: POI 3 Inflow=4.32 cfs 0.664 af
Outflow=4.32 cfs 0.664 af

Reach 4R: POI 4 Inflow=0.16 cfs 0.092 af
Outflow=0.16 cfs 0.092 af

Total Runoff Area = 12.347 ac Runoff Volume = 1.770 af Average Runoff Depth = 1.72"
79.16% Pervious = 9.774 ac 20.84% Impervious = 2.573 ac

Summary for Subcatchment 1S: SUBCATCHMENT 1

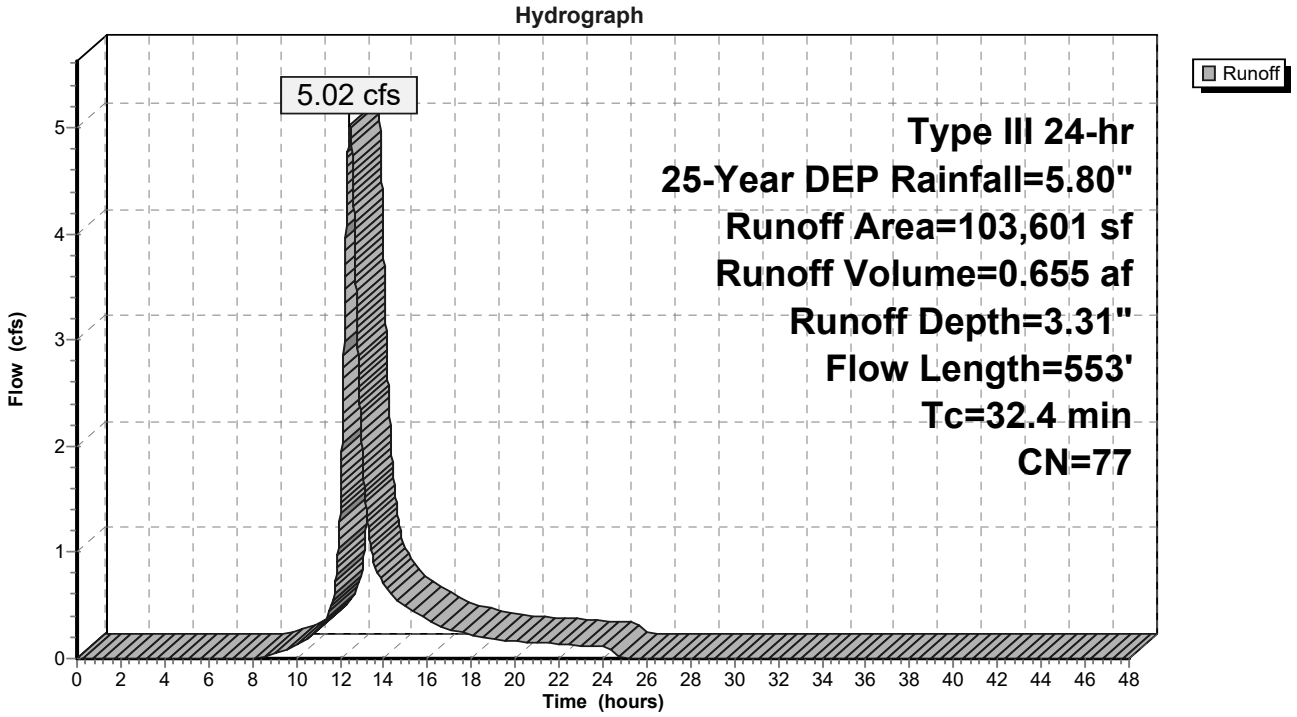
Runoff = 5.02 cfs @ 12.45 hrs, Volume= 0.655 af, Depth= 3.31"
Routed to Reach 1 : 15" PE Reach

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year DEP Rainfall=5.80"

Area (sf)	CN	Description
45,717	98	Paved parking, HSG A
1,818	30	Brush, Good, HSG A
22,040	55	Woods, Good, HSG B
34,026	65	Brush, Good, HSG C
103,601	77	Weighted Average
57,884		55.87% Pervious Area
45,717		44.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	101	0.0139	0.15		**Sheet Flow, A to B** Grass: Short n= 0.150 P2= 3.10"
1.0	61	0.0395	0.99		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
7.5	179	0.0064	0.40		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
12.3	212	0.0033	0.29		**Shallow Concentrated Flow, D to 1** Woodland Kv= 5.0 fps
32.4	553	Total			

Subcatchment 1S: SUBCATCHMENT 1



Summary for Subcatchment 2S: SUBCATCHMENT 2

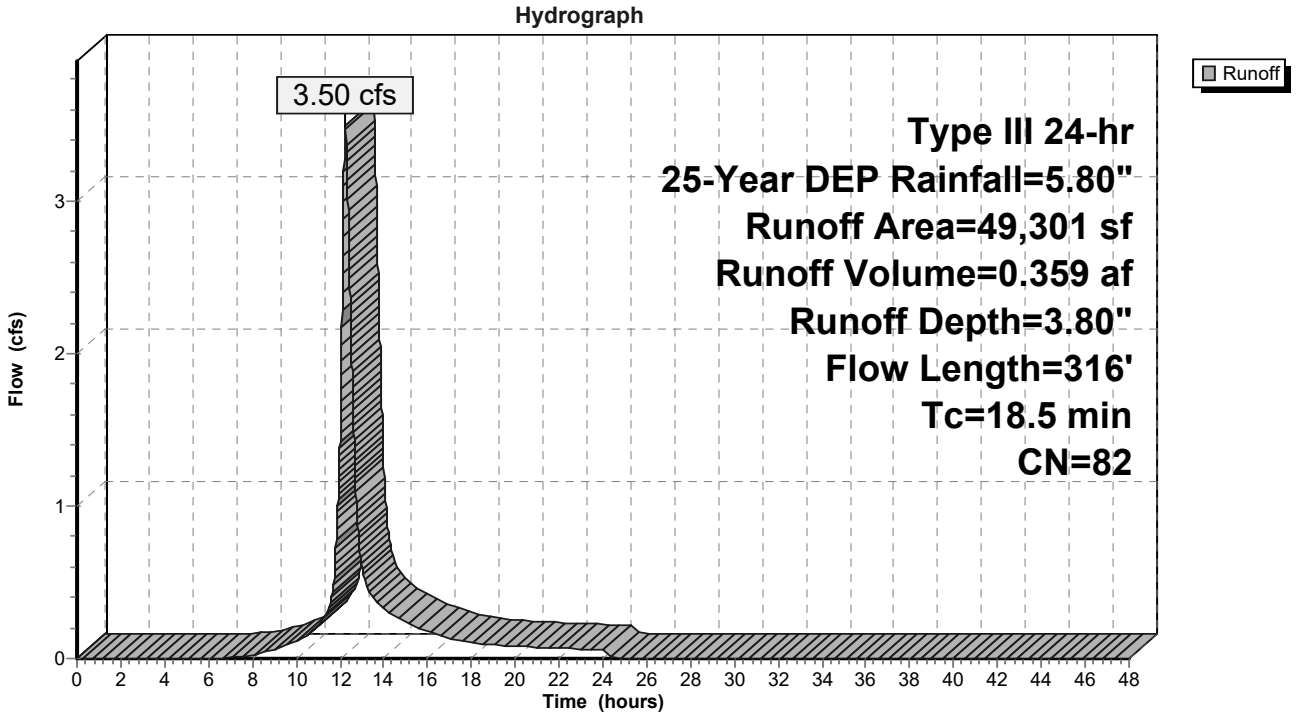
Runoff = 3.50 cfs @ 12.25 hrs, Volume= 0.359 af, Depth= 3.80"
Routed to Reach 2R : POI 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year DEP Rainfall=5.80"

Area (sf)	CN	Description
35,586	98	Paved parking, HSG A
1,260	30	Brush, Good, HSG A
9,492	30	Woods, Good, HSG A
829	96	Gravel surface, HSG A
2,134	65	Brush, Good, HSG C
49,301	82	Weighted Average
13,715		27.82% Pervious Area
35,586		72.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	66	0.0180	0.07		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.4	71	0.0250	3.21		**Shallow Concentrated Flow, B to C** Paved Kv= 20.3 fps
1.8	179	0.0052	1.70	1.34	**Pipe Channel, C to POI2** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.025 Corrugated metal
18.5	316	Total			

Subcatchment 2S: SUBCATCHMENT 2



Summary for Subcatchment 3S: SUBCATCHMENT 3

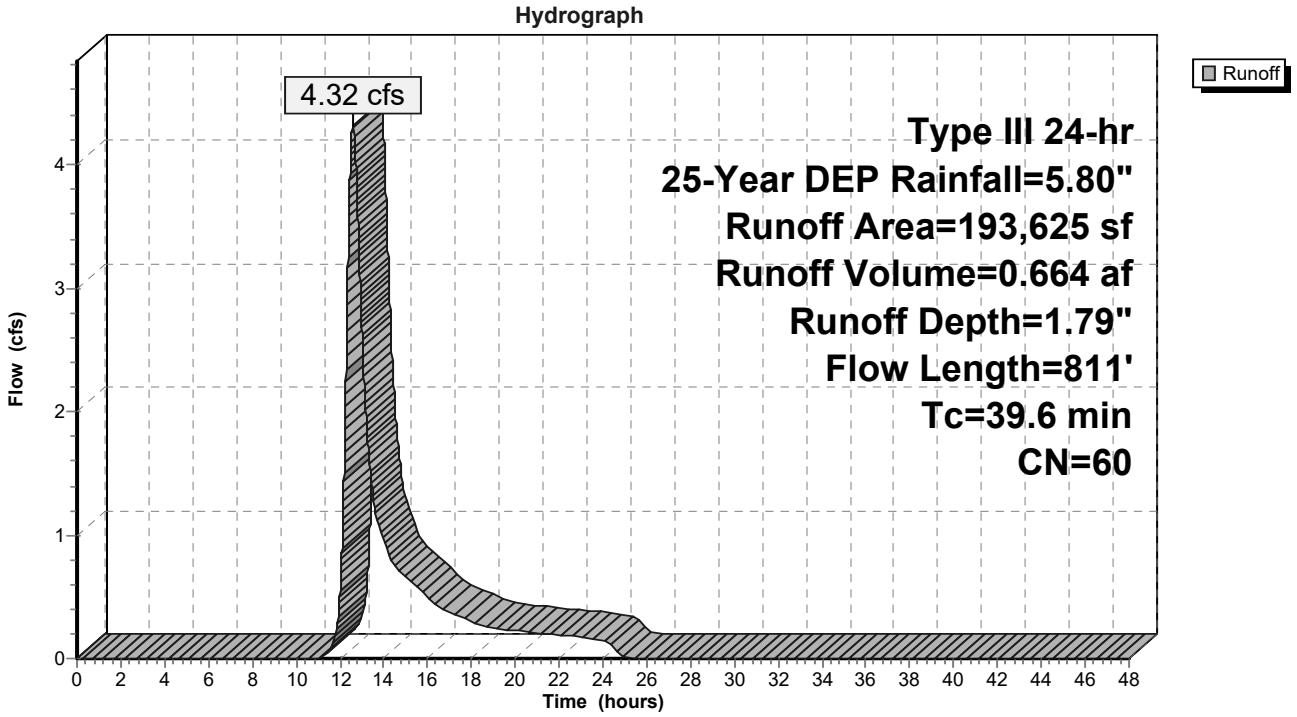
Runoff = 4.32 cfs @ 12.59 hrs, Volume= 0.664 af, Depth= 1.79"
Routed to Reach 3R : POI 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year DEP Rainfall=5.80"

Area (sf)	CN	Description
26,746	98	Paved parking, HSG A
23,305	30	Brush, Good, HSG A
129,025	55	Woods, Good, HSG B
14,549	77	Woods, Good, HSG D
193,625	60	Weighted Average
166,879		86.19% Pervious Area
26,746		13.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	71	0.0151	0.14		**Sheet Flow, A to B** Grass: Short n= 0.150 P2= 3.10"
7.5	188	0.0070	0.42		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
9.8	182	0.0038	0.31		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
7.5	171	0.0058	0.38		**Shallow Concentrated Flow, D to E** Woodland Kv= 5.0 fps
5.7	144	0.0070	0.42		**Shallow Concentrated Flow, E to F** Woodland Kv= 5.0 fps
0.5	36	0.0692	1.32		**Shallow Concentrated Flow, F to G** Woodland Kv= 5.0 fps
0.1	19	0.0537	5.47	4.29	**Pipe Channel, G to POI3** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.025 Corrugated metal
39.6	811	Total			

Subcatchment 3S: SUBCATCHMENT 3



Summary for Subcatchment 4S: SUBCATCHMENT 4

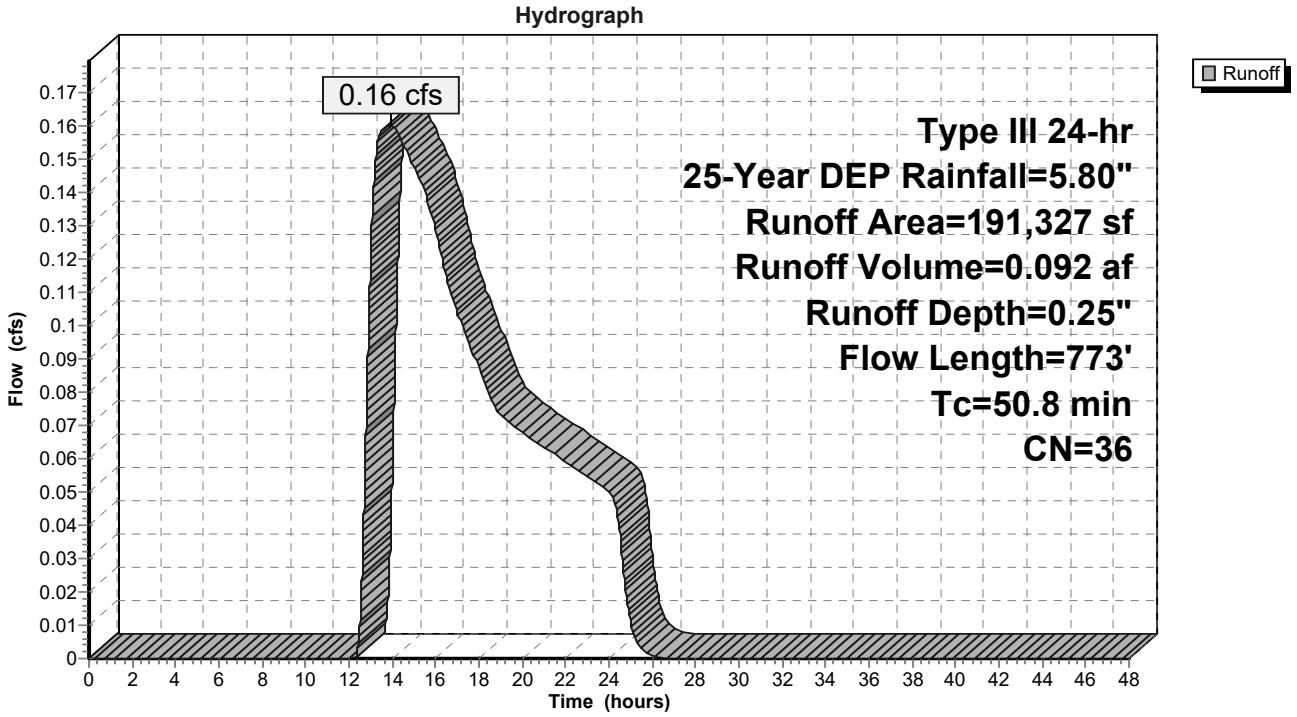
Runoff = 0.16 cfs @ 13.94 hrs, Volume= 0.092 af, Depth= 0.25"
Routed to Reach 4R : POI 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year DEP Rainfall=5.80"

Area (sf)	CN	Description
4,029	98	Paved parking, HSG A
161,888	30	Woods, Good, HSG A
1,094	96	Gravel surface, HSG A
7,791	55	Woods, Good, HSG B
16,525	65	Brush, Good, HSG C
191,327	36	Weighted Average
187,298		97.89% Pervious Area
4,029		2.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	57	0.0219	0.07		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
4.5	143	0.0114	0.53		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
2.0	49	0.0067	0.41		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
3.7	53	0.0023	0.24		**Shallow Concentrated Flow, D to E** Woodland Kv= 5.0 fps
14.1	239	0.0032	0.28		**Shallow Concentrated Flow, E to F** Woodland Kv= 5.0 fps
13.1	232	0.0035	0.30		**Shallow Concentrated Flow, F to POI4** Woodland Kv= 5.0 fps
50.8	773	Total			

Subcatchment 4S: SUBCATCHMENT 4



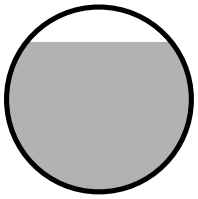
Summary for Reach 1: 15" PE Reach

Inflow Area = 2.378 ac, 44.13% Impervious, Inflow Depth = 3.31" for 25-Year DEP event
Inflow = 5.02 cfs @ 12.45 hrs, Volume= 0.655 af
Outflow = 5.02 cfs @ 12.47 hrs, Volume= 0.655 af, Atten= 0%, Lag= 1.2 min
Routed to Reach 1R : POI1

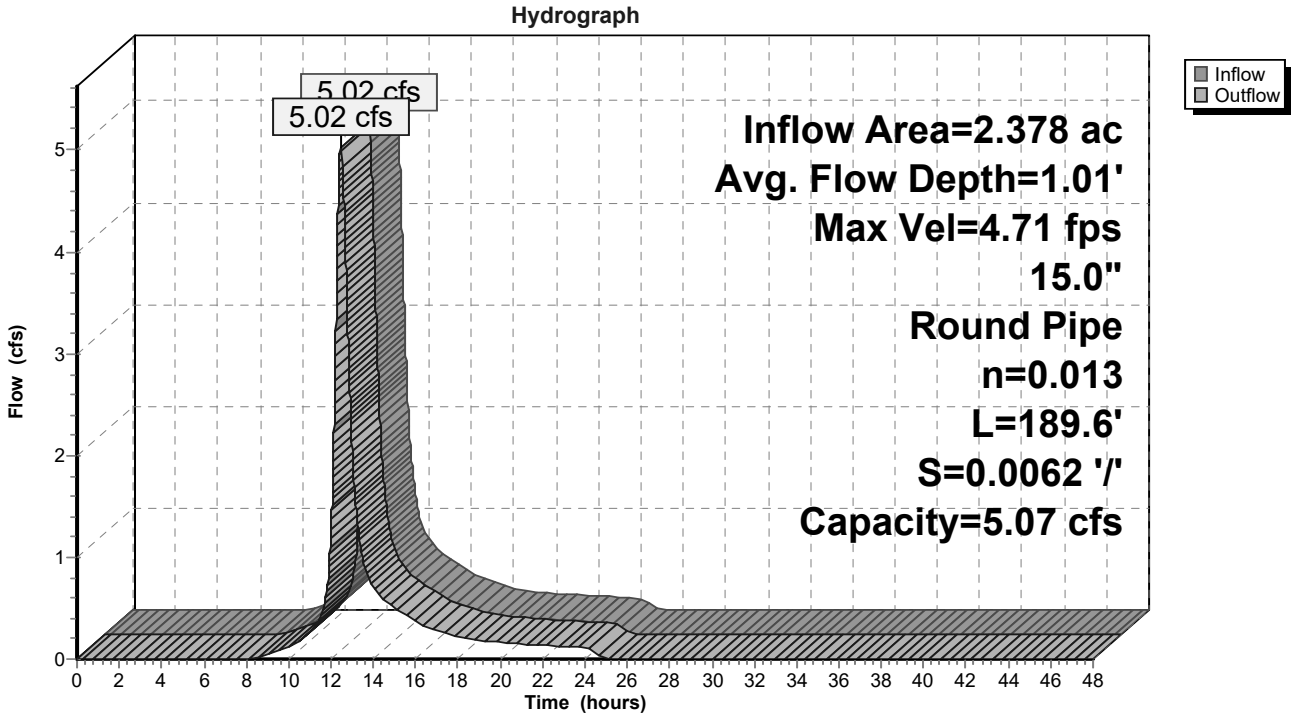
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.71 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.04 fps, Avg. Travel Time= 1.5 min

Peak Storage= 202 cf @ 12.46 hrs
Average Depth at Peak Storage= 1.01' , Surface Width= 0.98'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.07 cfs

15.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 189.6' Slope= 0.0062 '/'
Inlet Invert= 297.79', Outlet Invert= 296.62'



Reach 1: 15" PE Reach

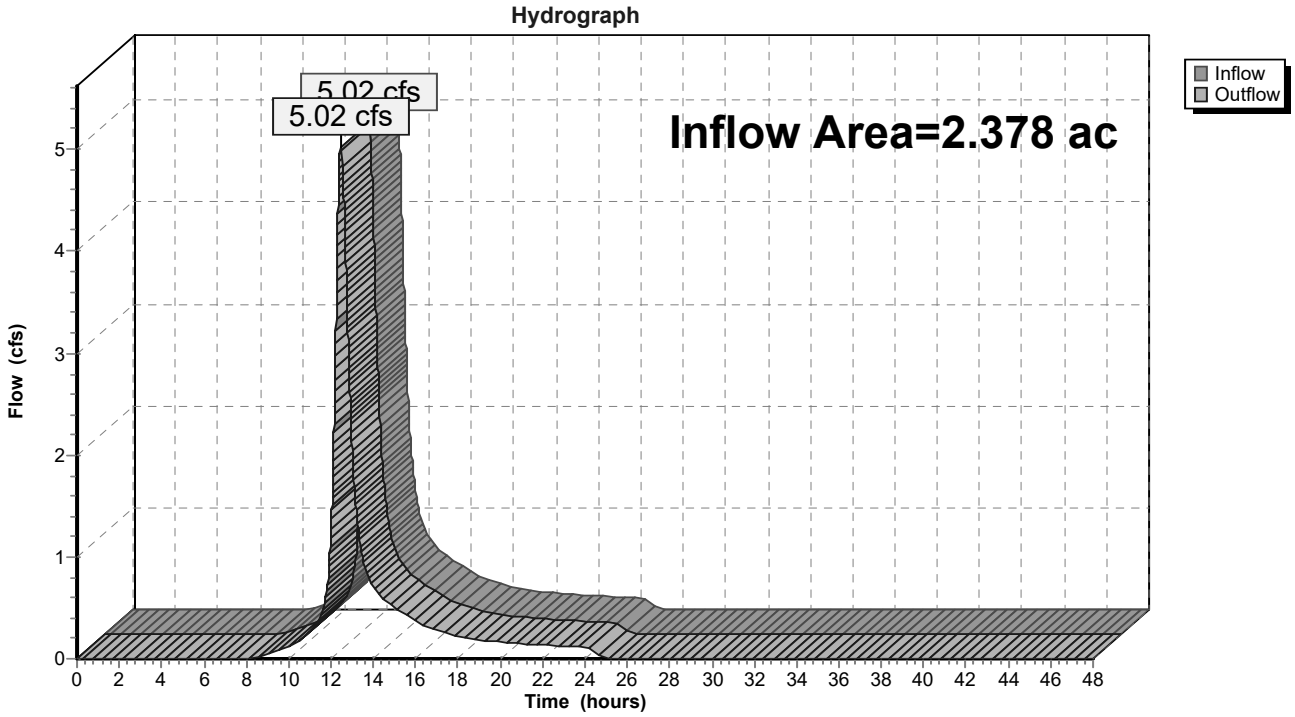


Summary for Reach 1R: POI1

Inflow Area = 2.378 ac, 44.13% Impervious, Inflow Depth = 3.31" for 25-Year DEP event
Inflow = 5.02 cfs @ 12.47 hrs, Volume= 0.655 af
Outflow = 5.02 cfs @ 12.47 hrs, Volume= 0.655 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 1R: POI1

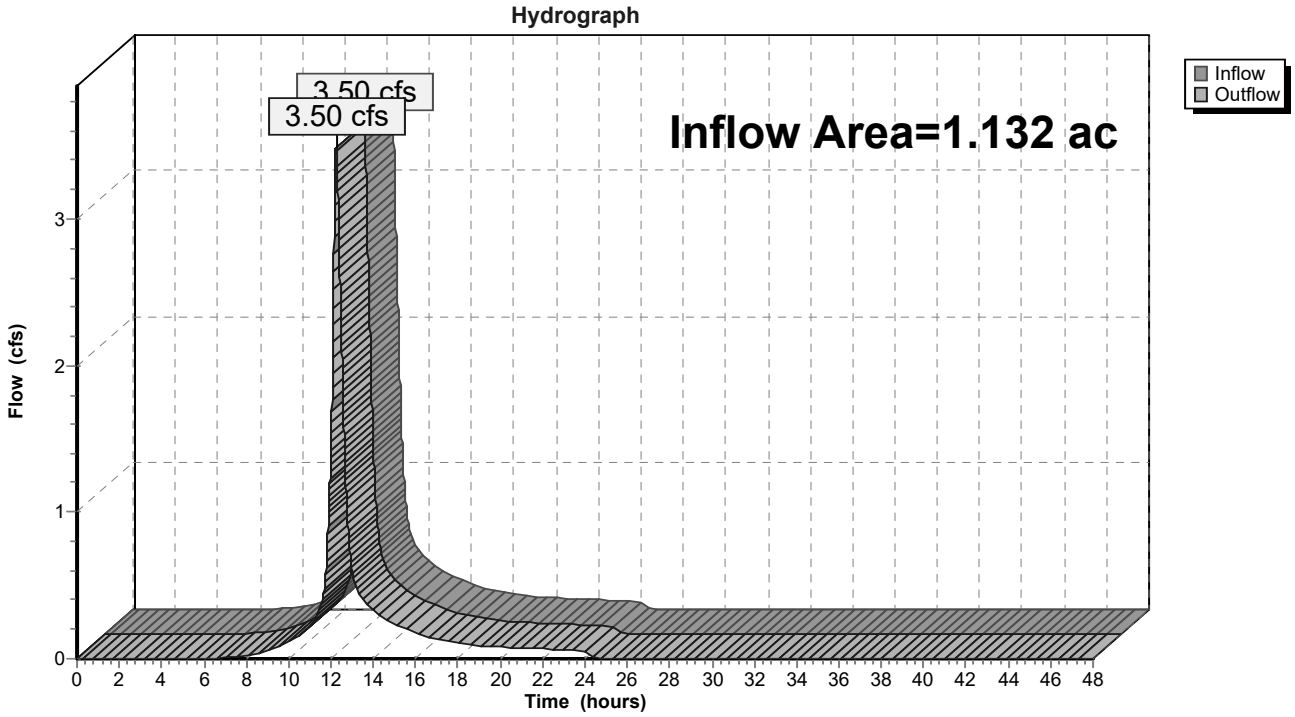


Summary for Reach 2R: POI 2

Inflow Area = 1.132 ac, 72.18% Impervious, Inflow Depth = 3.80" for 25-Year DEP event
Inflow = 3.50 cfs @ 12.25 hrs, Volume= 0.359 af
Outflow = 3.50 cfs @ 12.25 hrs, Volume= 0.359 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 2R: POI 2

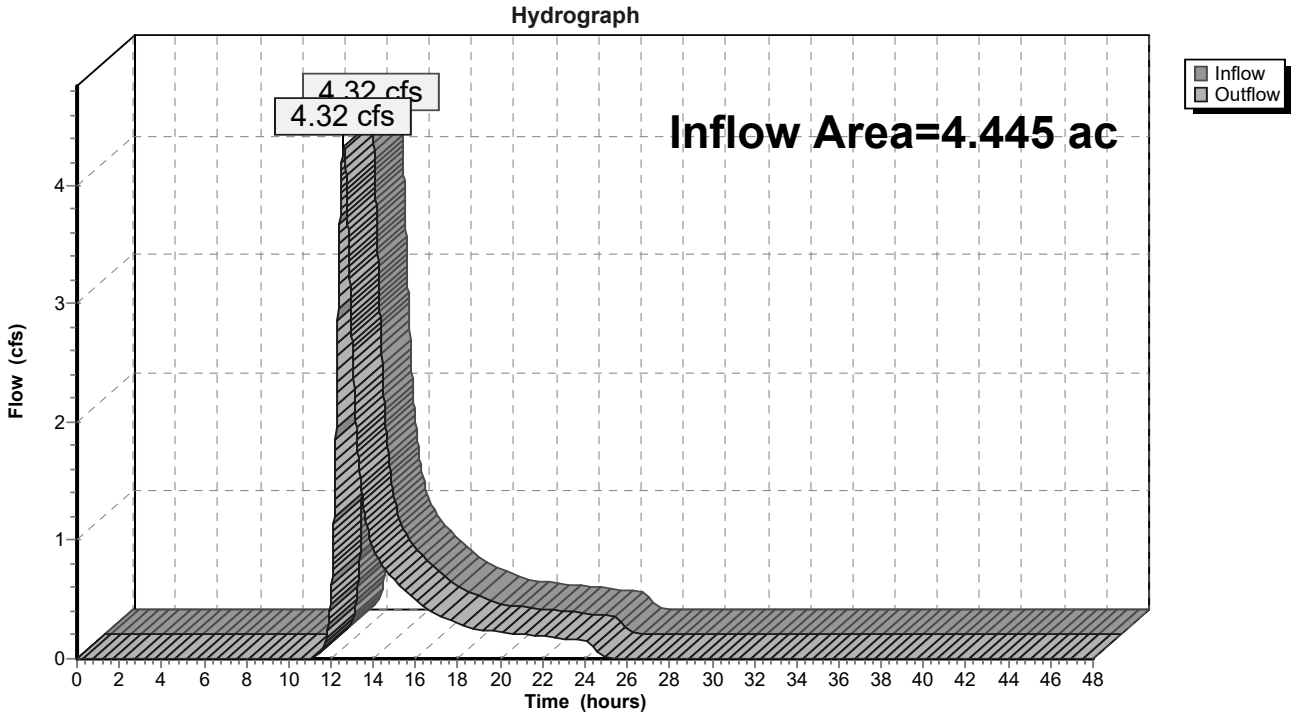


Summary for Reach 3R: POI 3

Inflow Area = 4.445 ac, 13.81% Impervious, Inflow Depth = 1.79" for 25-Year DEP event
Inflow = 4.32 cfs @ 12.59 hrs, Volume= 0.664 af
Outflow = 4.32 cfs @ 12.59 hrs, Volume= 0.664 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 3R: POI 3

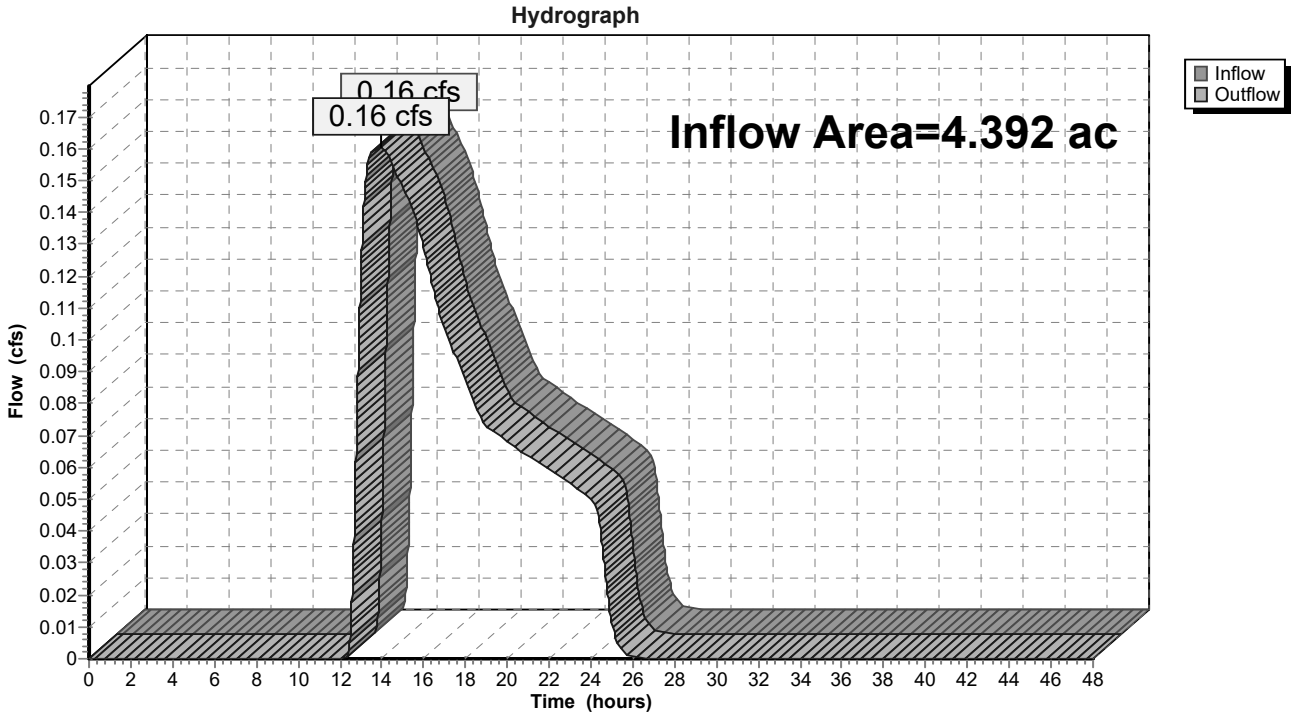


Summary for Reach 4R: POI 4

Inflow Area = 4.392 ac, 2.11% Impervious, Inflow Depth = 0.25" for 25-Year DEP event
Inflow = 0.16 cfs @ 13.94 hrs, Volume= 0.092 af
Outflow = 0.16 cfs @ 13.94 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min

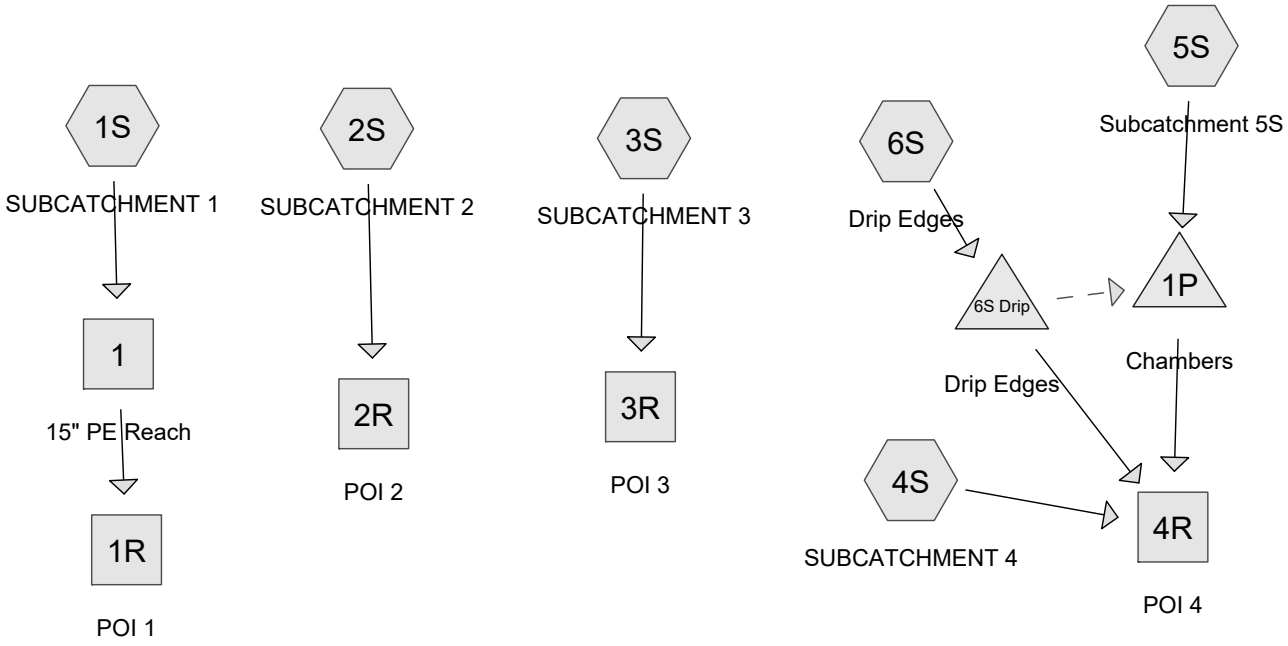
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 4R: POI 4



POST-DEVELOPMENT

POST-DEVELOPMENT



Subcat Reach Pond Link

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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: SUBCATCHMENT 1 Runoff Area=67,456 sf 70.63% Impervious Runoff Depth=1.83"
Flow Length=553' Tc=32.4 min CN=87 Runoff=1.81 cfs 0.236 af

Subcatchment 2S: SUBCATCHMENT 2 Runoff Area=44,252 sf 80.87% Impervious Runoff Depth=1.83"
Flow Length=316' Tc=18.5 min CN=87 Runoff=1.51 cfs 0.155 af

Subcatchment 3S: SUBCATCHMENT 3 Runoff Area=72,963 sf 39.58% Impervious Runoff Depth=0.77"
Flow Length=553' Tc=32.4 min CN=70 Runoff=0.73 cfs 0.108 af

Subcatchment 4S: SUBCATCHMENT 4 Runoff Area=42,557 sf 11.65% Impervious Runoff Depth=0.01"
Flow Length=811' Tc=39.6 min CN=42 Runoff=0.00 cfs 0.001 af

Subcatchment 5S: Subcatchment 5S Runoff Area=252,012 sf 61.03% Impervious Runoff Depth=1.60"
Tc=5.0 min CN=84 Runoff=11.24 cfs 0.771 af

Subcatchment 6S: Drip Edges Runoff Area=58,969 sf 100.00% Impervious Runoff Depth=2.87"
Tc=5.0 min CN=98 Runoff=4.22 cfs 0.324 af

Reach 1: 15" PE Reach Avg. Flow Depth=0.52' Max Vel=3.79 fps Inflow=1.81 cfs 0.236 af
15.0" Round Pipe n=0.013 L=189.6' S=0.0062 '/' Capacity=5.07 cfs Outflow=1.81 cfs 0.236 af

Reach 1R: POI 1 Inflow=1.81 cfs 0.236 af
Outflow=1.81 cfs 0.236 af

Reach 2R: POI 2 Inflow=1.51 cfs 0.155 af
Outflow=1.51 cfs 0.155 af

Reach 3R: POI 3 Inflow=0.73 cfs 0.108 af
Outflow=0.73 cfs 0.108 af

Reach 4R: POI 4 Inflow=0.00 cfs 0.001 af
Outflow=0.00 cfs 0.001 af

Pond 1P: Chambers Peak Elev=302.10' Storage=16,251 cf Inflow=11.24 cfs 0.771 af
Outflow=1.46 cfs 0.771 af

Pond 6S Drip: Drip Edges Peak Elev=307.61' Storage=0.089 af Inflow=4.22 cfs 0.324 af
Discarded=0.63 cfs 0.324 af Secondary=0.00 cfs 0.000 af Outflow=0.63 cfs 0.324 af

Total Runoff Area = 12.356 ac Runoff Volume = 1.593 af Average Runoff Depth = 1.55"
38.68% Pervious = 4.779 ac 61.32% Impervious = 7.577 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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: SUBCATCHMENT 1 Runoff Area=67,456 sf 70.63% Impervious Runoff Depth=3.19"
Flow Length=553' Tc=32.4 min CN=87 Runoff=3.13 cfs 0.412 af

Subcatchment 2S: SUBCATCHMENT 2 Runoff Area=44,252 sf 80.87% Impervious Runoff Depth=3.19"
Flow Length=316' Tc=18.5 min CN=87 Runoff=2.62 cfs 0.270 af

Subcatchment 3S: SUBCATCHMENT 3 Runoff Area=72,963 sf 39.58% Impervious Runoff Depth=1.74"
Flow Length=553' Tc=32.4 min CN=70 Runoff=1.81 cfs 0.244 af

Subcatchment 4S: SUBCATCHMENT 4 Runoff Area=42,557 sf 11.65% Impervious Runoff Depth=0.22"
Flow Length=811' Tc=39.6 min CN=42 Runoff=0.03 cfs 0.018 af

Subcatchment 5S: Subcatchment 5S Runoff Area=252,012 sf 61.03% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=84 Runoff=20.35 cfs 1.401 af

Subcatchment 6S: Drip Edges Runoff Area=58,969 sf 100.00% Impervious Runoff Depth=4.36"
Tc=5.0 min CN=98 Runoff=6.30 cfs 0.492 af

Reach 1: 15" PE Reach Avg. Flow Depth=0.71' Max Vel=4.35 fps Inflow=3.13 cfs 0.412 af
15.0" Round Pipe n=0.013 L=189.6' S=0.0062 '/' Capacity=5.07 cfs Outflow=3.13 cfs 0.412 af

Reach 1R: POI 1 Inflow=3.13 cfs 0.412 af
Outflow=3.13 cfs 0.412 af

Reach 2R: POI 2 Inflow=2.62 cfs 0.270 af
Outflow=2.62 cfs 0.270 af

Reach 3R: POI 3 Inflow=1.81 cfs 0.244 af
Outflow=1.81 cfs 0.244 af

Reach 4R: POI 4 Inflow=0.03 cfs 0.018 af
Outflow=0.03 cfs 0.018 af

Pond 1P: Chambers Peak Elev=303.18' Storage=27,700 cf Inflow=20.35 cfs 1.432 af
Outflow=3.44 cfs 1.432 af

Pond 6S Drip: Drip Edges Peak Elev=308.00' Storage=0.129 af Inflow=6.30 cfs 0.492 af
Discarded=0.63 cfs 0.462 af Secondary=3.01 cfs 0.031 af Outflow=3.64 cfs 0.492 af

Total Runoff Area = 12.356 ac Runoff Volume = 2.837 af Average Runoff Depth = 2.76"
38.68% Pervious = 4.779 ac 61.32% Impervious = 7.577 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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: SUBCATCHMENT 1 Runoff Area=67,456 sf 70.63% Impervious Runoff Depth=4.33"
Flow Length=553' Tc=32.4 min CN=87 Runoff=4.20 cfs 0.558 af

Subcatchment 2S: SUBCATCHMENT 2 Runoff Area=44,252 sf 80.87% Impervious Runoff Depth=4.33"
Flow Length=316' Tc=18.5 min CN=87 Runoff=3.51 cfs 0.366 af

Subcatchment 3S: SUBCATCHMENT 3 Runoff Area=72,963 sf 39.58% Impervious Runoff Depth=2.65"
Flow Length=553' Tc=32.4 min CN=70 Runoff=2.81 cfs 0.370 af

Subcatchment 4S: SUBCATCHMENT 4 Runoff Area=42,557 sf 11.65% Impervious Runoff Depth=0.55"
Flow Length=811' Tc=39.6 min CN=42 Runoff=0.17 cfs 0.045 af

Subcatchment 5S: Subcatchment 5S Runoff Area=252,012 sf 61.03% Impervious Runoff Depth=4.01"
Tc=5.0 min CN=84 Runoff=27.81 cfs 1.933 af

Subcatchment 6S: Drip Edges Runoff Area=58,969 sf 100.00% Impervious Runoff Depth=5.56"
Tc=5.0 min CN=98 Runoff=7.97 cfs 0.627 af

Reach 1: 15" PE Reach Avg. Flow Depth=0.87' Max Vel=4.62 fps Inflow=4.20 cfs 0.558 af
15.0" Round Pipe n=0.013 L=189.6' S=0.0062 '/' Capacity=5.07 cfs Outflow=4.20 cfs 0.558 af

Reach 1R: POI 1 Inflow=4.20 cfs 0.558 af
Outflow=4.20 cfs 0.558 af

Reach 2R: POI 2 Inflow=3.51 cfs 0.366 af
Outflow=3.51 cfs 0.366 af

Reach 3R: POI 3 Inflow=2.81 cfs 0.370 af
Outflow=2.81 cfs 0.370 af

Reach 4R: POI 4 Inflow=0.17 cfs 0.045 af
Outflow=0.17 cfs 0.045 af

Pond 1P: Chambers Peak Elev=304.98' Storage=43,311 cf Inflow=30.73 cfs 2.028 af
Outflow=3.44 cfs 2.028 af

Pond 6S Drip: Drip Edges Peak Elev=308.01' Storage=0.130 af Inflow=7.97 cfs 0.627 af
Discarded=0.63 cfs 0.533 af Secondary=6.65 cfs 0.095 af Outflow=7.28 cfs 0.627 af

Total Runoff Area = 12.356 ac Runoff Volume = 3.899 af Average Runoff Depth = 3.79"
38.68% Pervious = 4.779 ac 61.32% Impervious = 7.577 ac

Summary for Subcatchment 1S: SUBCATCHMENT 1

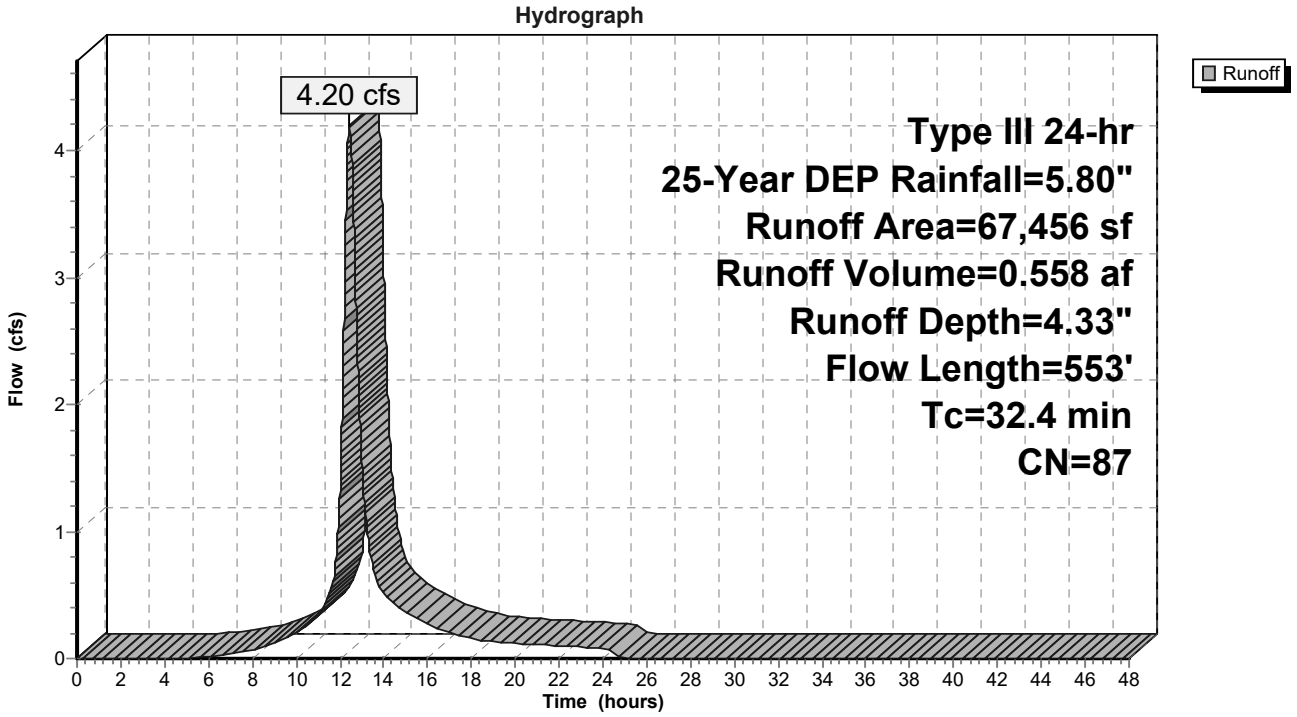
Runoff = 4.20 cfs @ 12.42 hrs, Volume= 0.558 af, Depth= 4.33"
Routed to Reach 1 : 15" PE Reach

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year DEP Rainfall=5.80"

Area (sf)	CN	Description
47,646	98	Paved parking, HSG A
1,818	30	Brush, Good, HSG A
1,139	55	Woods, Good, HSG B
10,191	61	>75% Grass cover, Good, HSG B
2,365	65	Brush, Good, HSG C
4,297	74	>75% Grass cover, Good, HSG C
67,456	87	Weighted Average
19,810		29.37% Pervious Area
47,646		70.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	101	0.0139	0.15		**Sheet Flow, A to B** Grass: Short n= 0.150 P2= 3.10"
1.0	61	0.0395	0.99		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
7.5	179	0.0064	0.40		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
12.3	212	0.0033	0.29		**Shallow Concentrated Flow, D to 1** Woodland Kv= 5.0 fps
32.4	553	Total			

Subcatchment 1S: SUBCATCHMENT 1



Summary for Subcatchment 2S: SUBCATCHMENT 2

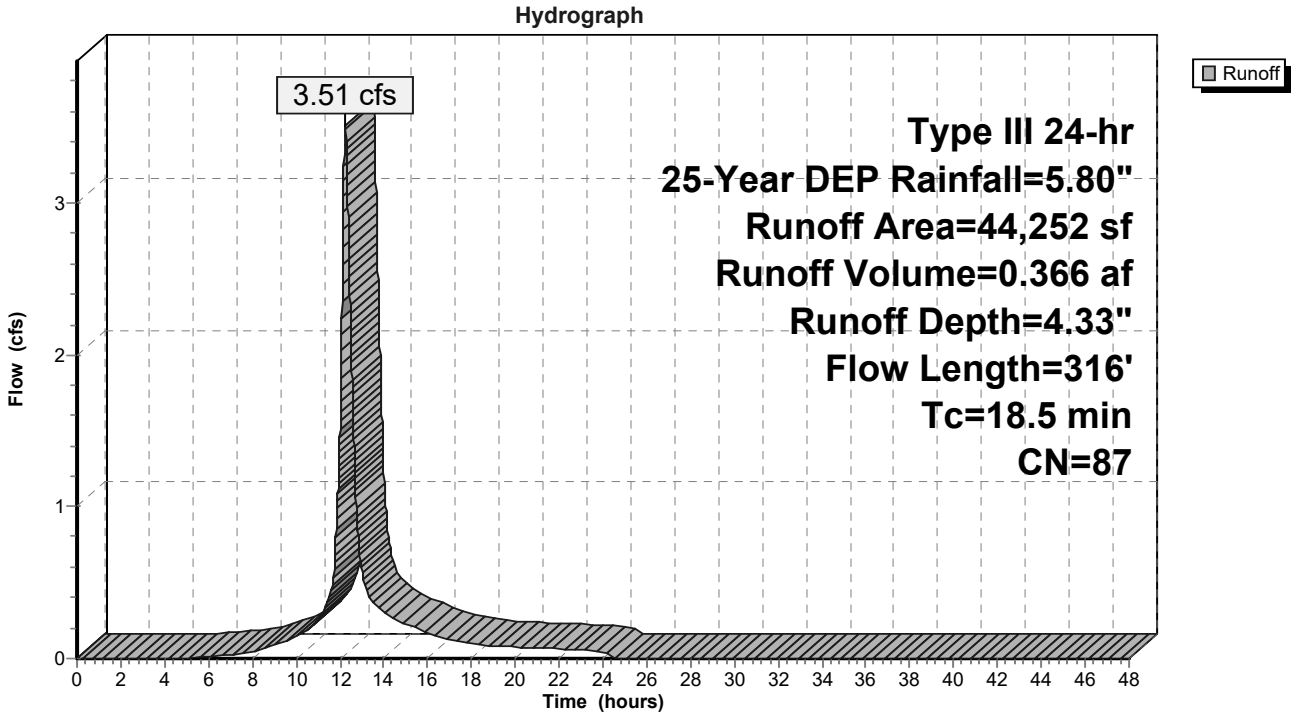
Runoff = 3.51 cfs @ 12.24 hrs, Volume= 0.366 af, Depth= 4.33"
Routed to Reach 2R : POI 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year DEP Rainfall=5.80"

Area (sf)	CN	Description
35,785	98	Paved parking, HSG A
1,260	30	Brush, Good, HSG A
1,632	30	Woods, Good, HSG A
289	96	Gravel surface, HSG A
4,148	39	>75% Grass cover, Good, HSG A
535	65	Brush, Good, HSG C
603	74	>75% Grass cover, Good, HSG C
44,252	87	Weighted Average
8,467		19.13% Pervious Area
35,785		80.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	66	0.0180	0.07		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.4	71	0.0250	3.21		**Shallow Concentrated Flow, B to C** Paved Kv= 20.3 fps
1.8	179	0.0052	1.70	1.34	**Pipe Channel, C to POI2** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.025 Corrugated metal
18.5	316	Total			

Subcatchment 2S: SUBCATCHMENT 2



Summary for Subcatchment 3S: SUBCATCHMENT 3

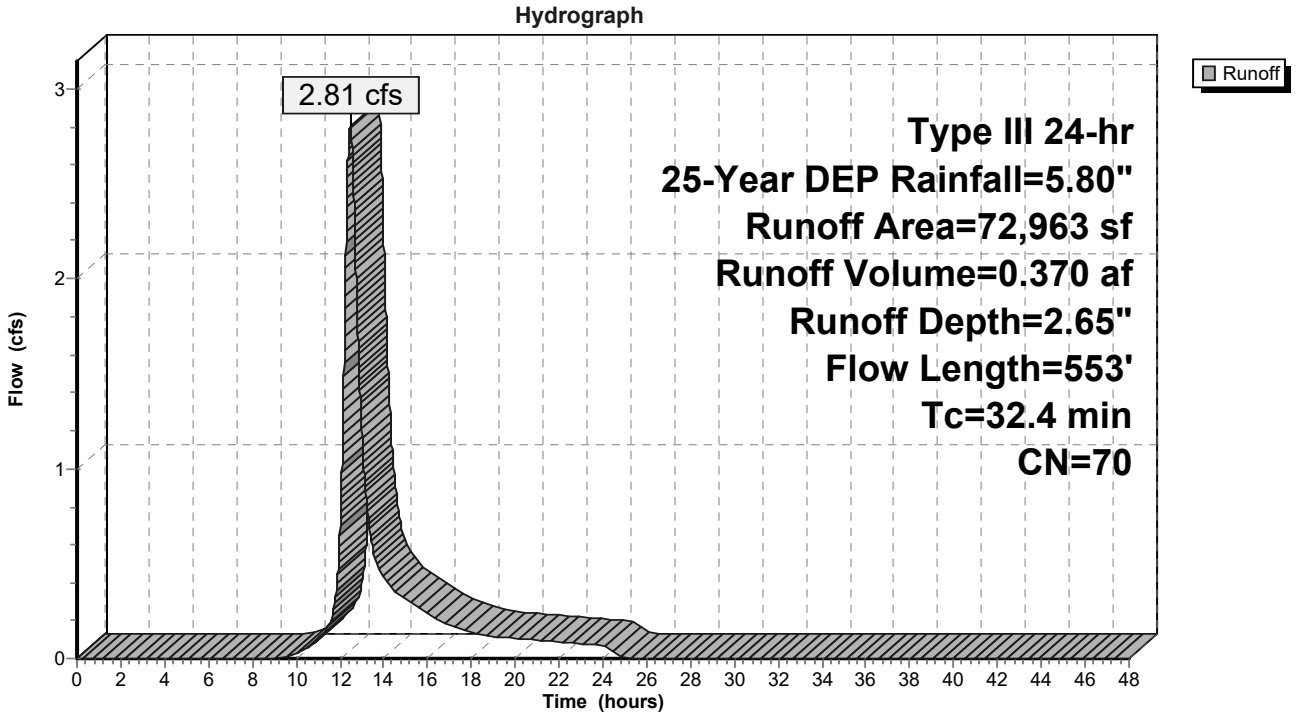
Runoff = 2.81 cfs @ 12.46 hrs, Volume= 0.370 af, Depth= 2.65"
Routed to Reach 3R : POI 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year DEP Rainfall=5.80"

Area (sf)	CN	Description
28,880	98	Paved parking, HSG A
9,845	30	Brush, Good, HSG A
4,138	39	>75% Grass cover, Good, HSG A
10,106	55	Woods, Good, HSG B
18,600	61	>75% Grass cover, Good, HSG B
1,394	80	>75% Grass cover, Good, HSG D
72,963	70	Weighted Average
44,083		60.42% Pervious Area
28,880		39.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	101	0.0139	0.15		**Sheet Flow, A to B** Grass: Short n= 0.150 P2= 3.10"
1.0	61	0.0395	0.99		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
7.5	179	0.0064	0.40		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
12.3	212	0.0033	0.29		**Shallow Concentrated Flow, D to 1** Woodland Kv= 5.0 fps
32.4	553	Total			

Subcatchment 3S: SUBCATCHMENT 3



Summary for Subcatchment 4S: SUBCATCHMENT 4

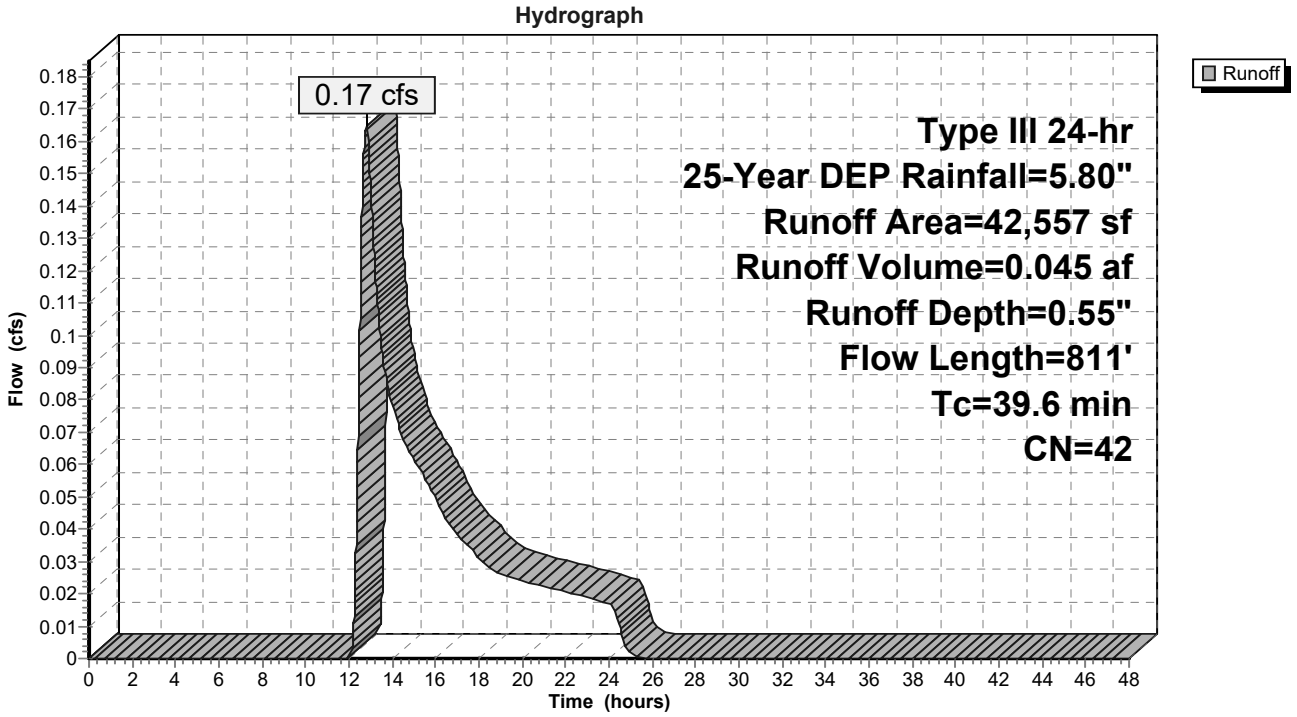
Runoff = 0.17 cfs @ 12.80 hrs, Volume= 0.045 af, Depth= 0.55"
Routed to Reach 4R : POI 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year DEP Rainfall=5.80"

Area (sf)	CN	Description
4,959	98	Paved parking, HSG A
17,071	30	Woods, Good, HSG A
20,527	39	>75% Grass cover, Good, HSG A
42,557	42	Weighted Average
37,598		88.35% Pervious Area
4,959		11.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	71	0.0151	0.14		**Sheet Flow, A to B** Grass: Short n= 0.150 P2= 3.10"
7.5	188	0.0070	0.42		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
9.8	182	0.0038	0.31		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
7.5	171	0.0058	0.38		**Shallow Concentrated Flow, D to E** Woodland Kv= 5.0 fps
5.7	144	0.0070	0.42		**Shallow Concentrated Flow, E to F** Woodland Kv= 5.0 fps
0.5	36	0.0692	1.32		**Shallow Concentrated Flow, F to G** Woodland Kv= 5.0 fps
0.1	19	0.0537	5.47	4.29	**Pipe Channel, G to POI3** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.025 Corrugated metal
39.6	811	Total			

Subcatchment 4S: SUBCATCHMENT 4



Summary for Subcatchment 5S: Subcatchment 5S

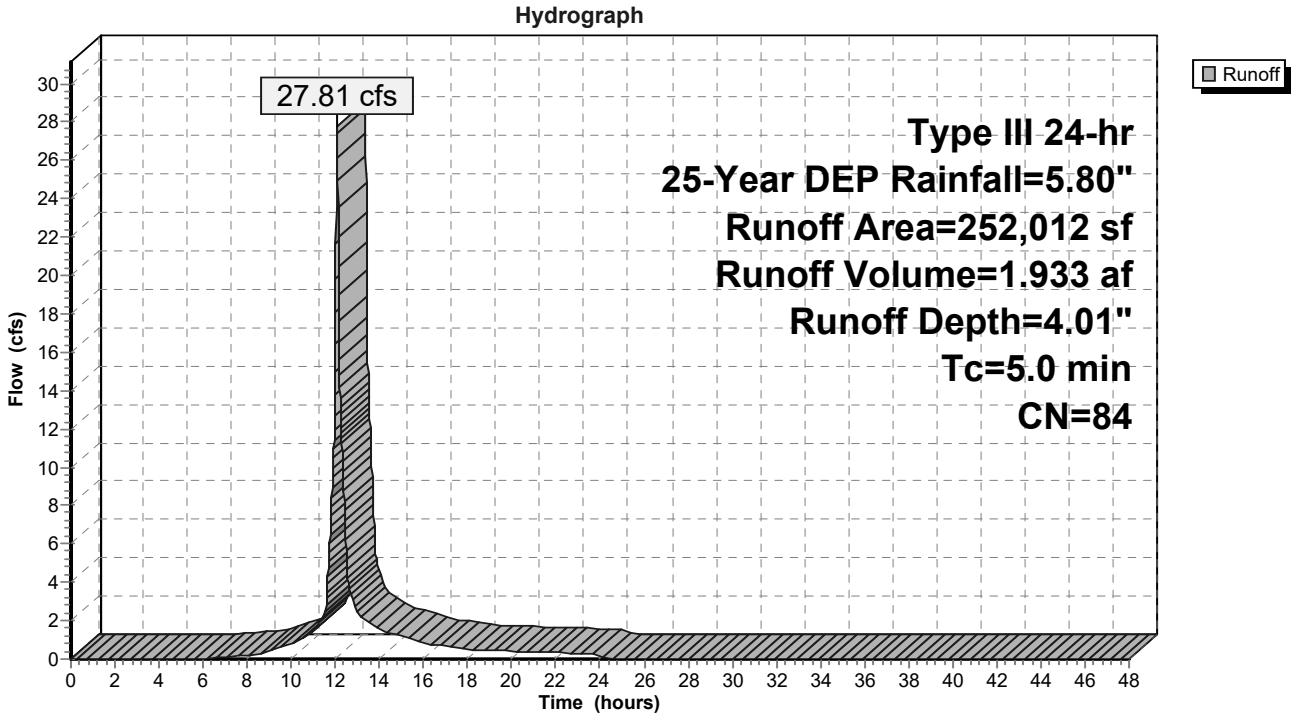
Runoff = 27.81 cfs @ 12.07 hrs, Volume= 1.933 af, Depth= 4.01"
Routed to Pond 1P : Chambers

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year DEP Rainfall=5.80"

Area (sf)	CN	Description
153,799	98	Paved parking, HSG D
98,213	61	>75% Grass cover, Good, HSG B
252,012	84	Weighted Average
98,213		38.97% Pervious Area
153,799		61.03% Impervious Area

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

Subcatchment 5S: Subcatchment 5S



Summary for Subcatchment 6S: Drip Edges

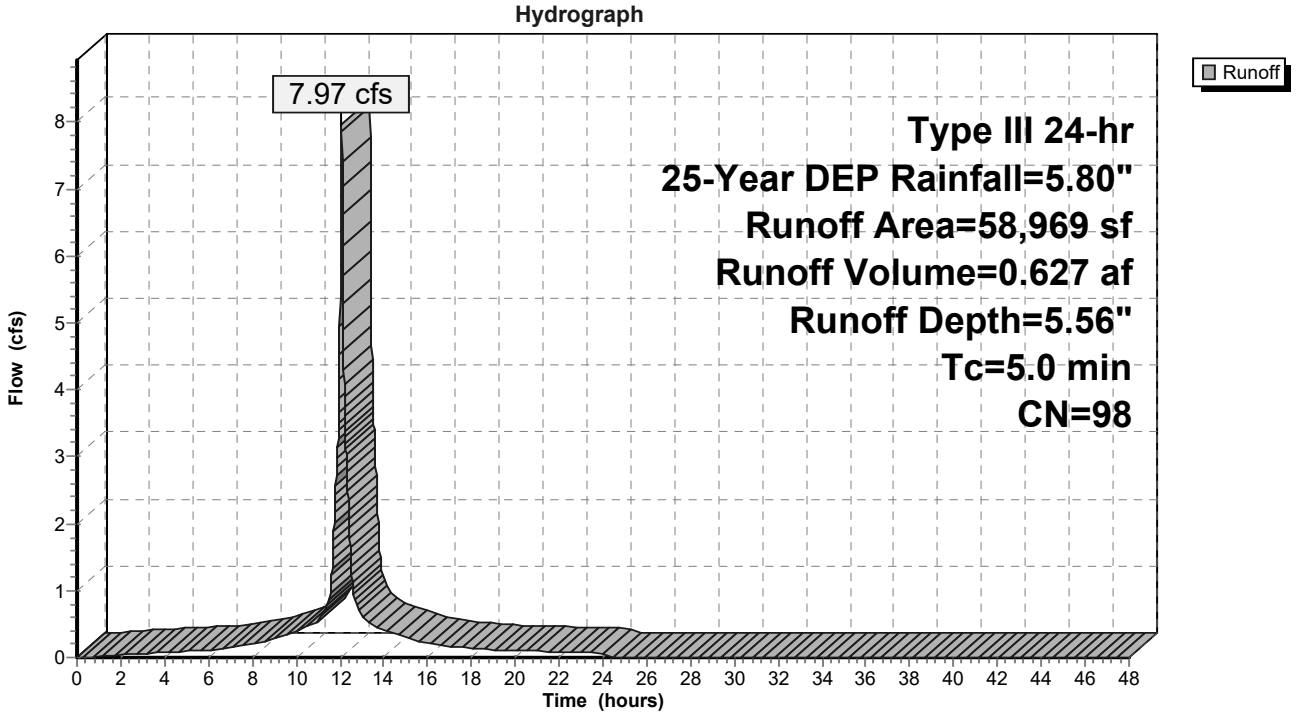
Runoff = 7.97 cfs @ 12.07 hrs, Volume= 0.627 af, Depth= 5.56"
Routed to Pond 6S Drip : Drip Edges

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year DEP Rainfall=5.80"

Area (sf)	CN	Description
58,969	98	Roofs, HSG A
58,969		100.00% Impervious Area

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

Subcatchment 6S: Drip Edges



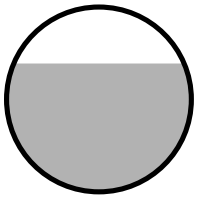
Summary for Reach 1: 15" PE Reach

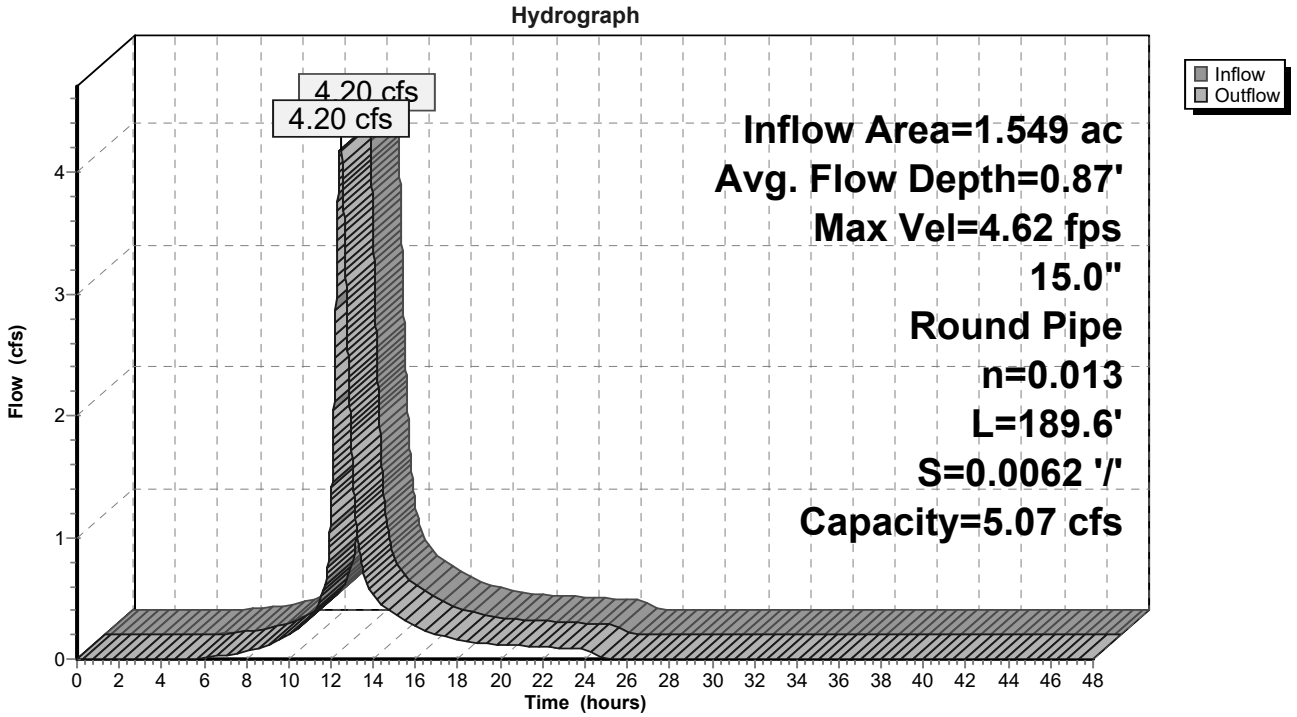
Inflow Area = 1.549 ac, 70.63% Impervious, Inflow Depth = 4.33" for 25-Year DEP event
Inflow = 4.20 cfs @ 12.42 hrs, Volume= 0.558 af
Outflow = 4.20 cfs @ 12.45 hrs, Volume= 0.558 af, Atten= 0%, Lag= 1.5 min
Routed to Reach 1R : POI 1

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.62 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.85 fps, Avg. Travel Time= 1.7 min

Peak Storage= 172 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.87' , Surface Width= 1.15'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.07 cfs

15.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 189.6' Slope= 0.0062 '/'
Inlet Invert= 297.79', Outlet Invert= 296.62'



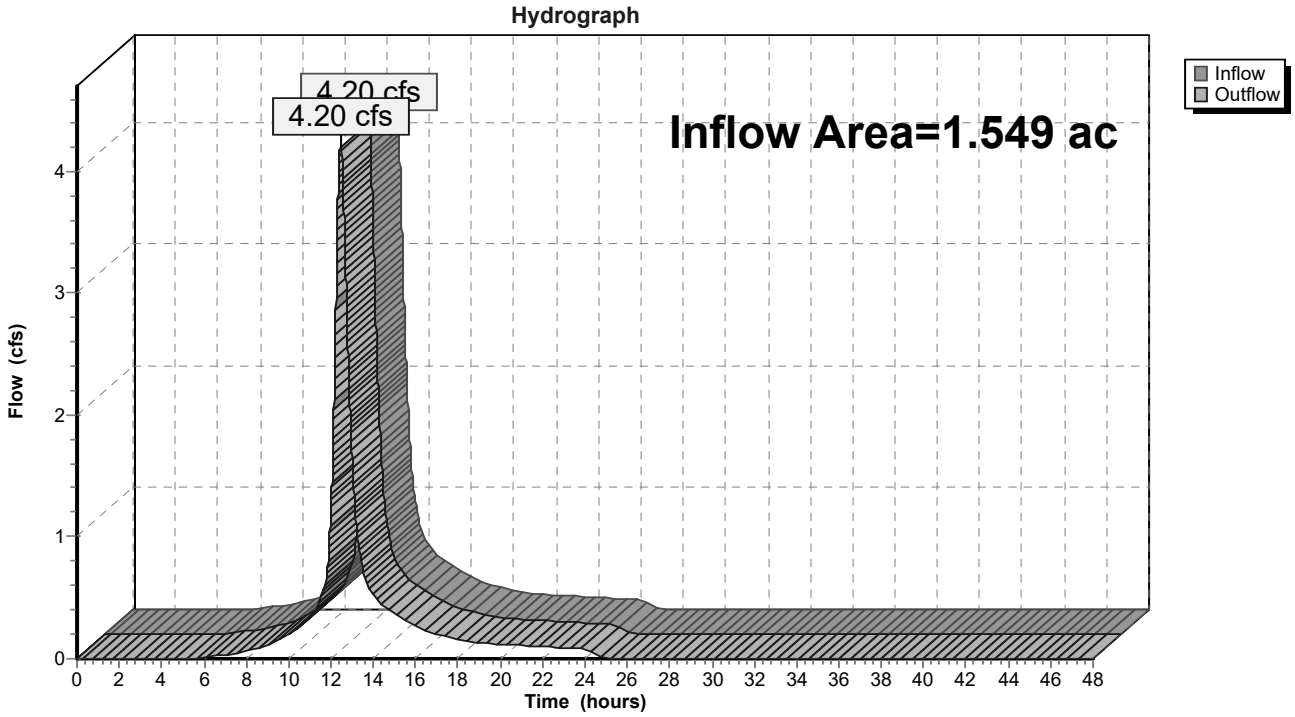


Summary for Reach 1R: POI 1

Inflow Area = 1.549 ac, 70.63% Impervious, Inflow Depth = 4.33" for 25-Year DEP event
Inflow = 4.20 cfs @ 12.45 hrs, Volume= 0.558 af
Outflow = 4.20 cfs @ 12.45 hrs, Volume= 0.558 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 1R: POI 1

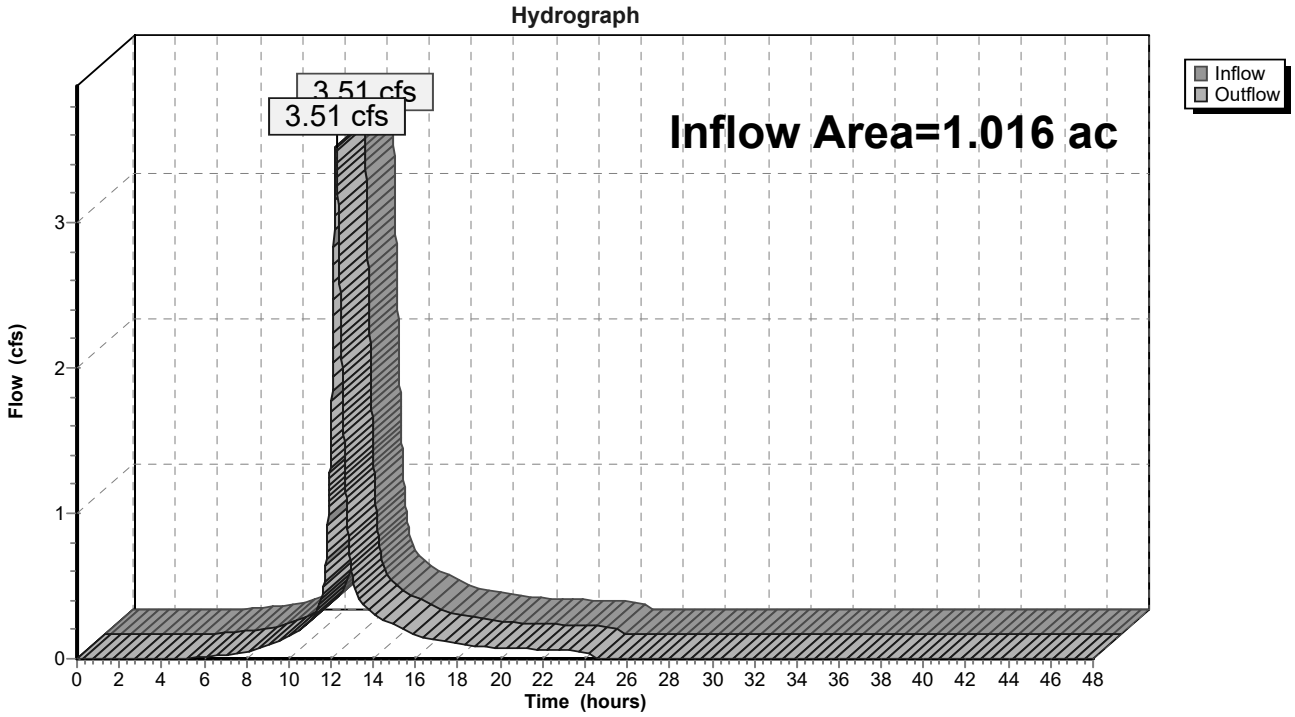


Summary for Reach 2R: POI 2

Inflow Area = 1.016 ac, 80.87% Impervious, Inflow Depth = 4.33" for 25-Year DEP event
Inflow = 3.51 cfs @ 12.24 hrs, Volume= 0.366 af
Outflow = 3.51 cfs @ 12.24 hrs, Volume= 0.366 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 2R: POI 2

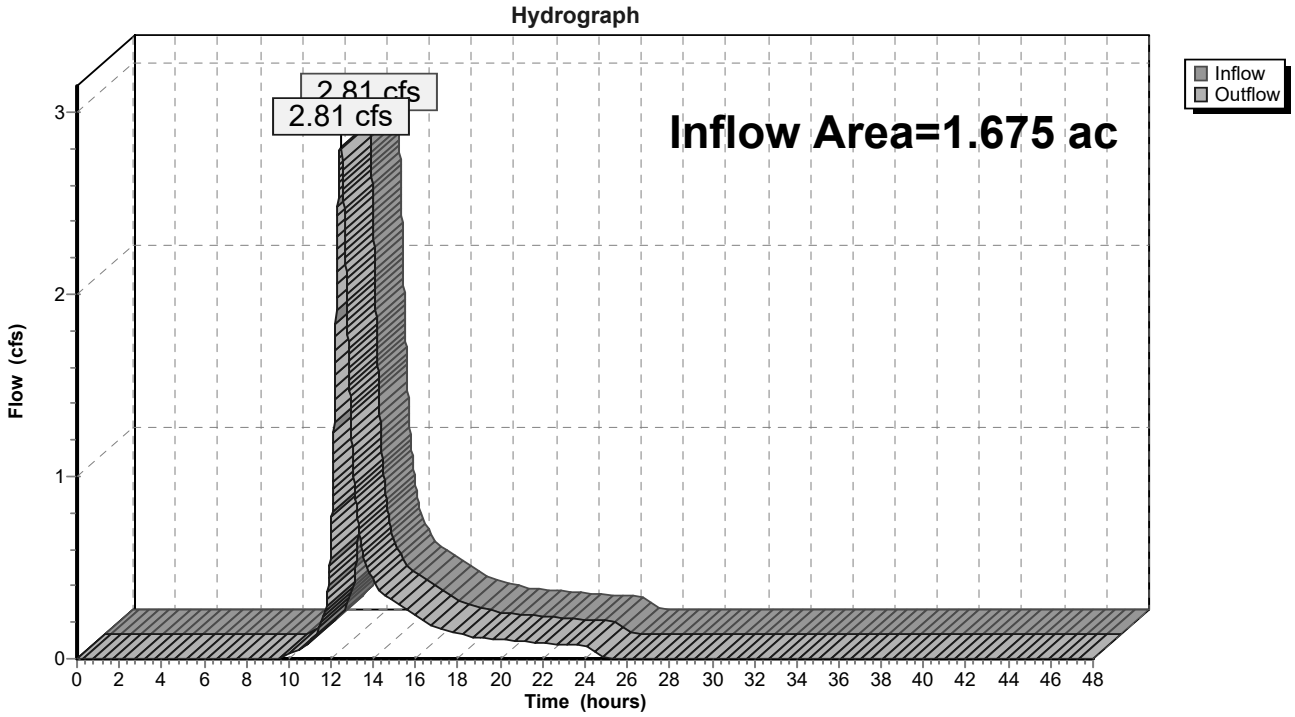


Summary for Reach 3R: POI 3

Inflow Area = 1.675 ac, 39.58% Impervious, Inflow Depth = 2.65" for 25-Year DEP event
Inflow = 2.81 cfs @ 12.46 hrs, Volume= 0.370 af
Outflow = 2.81 cfs @ 12.46 hrs, Volume= 0.370 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 3R: POI 3

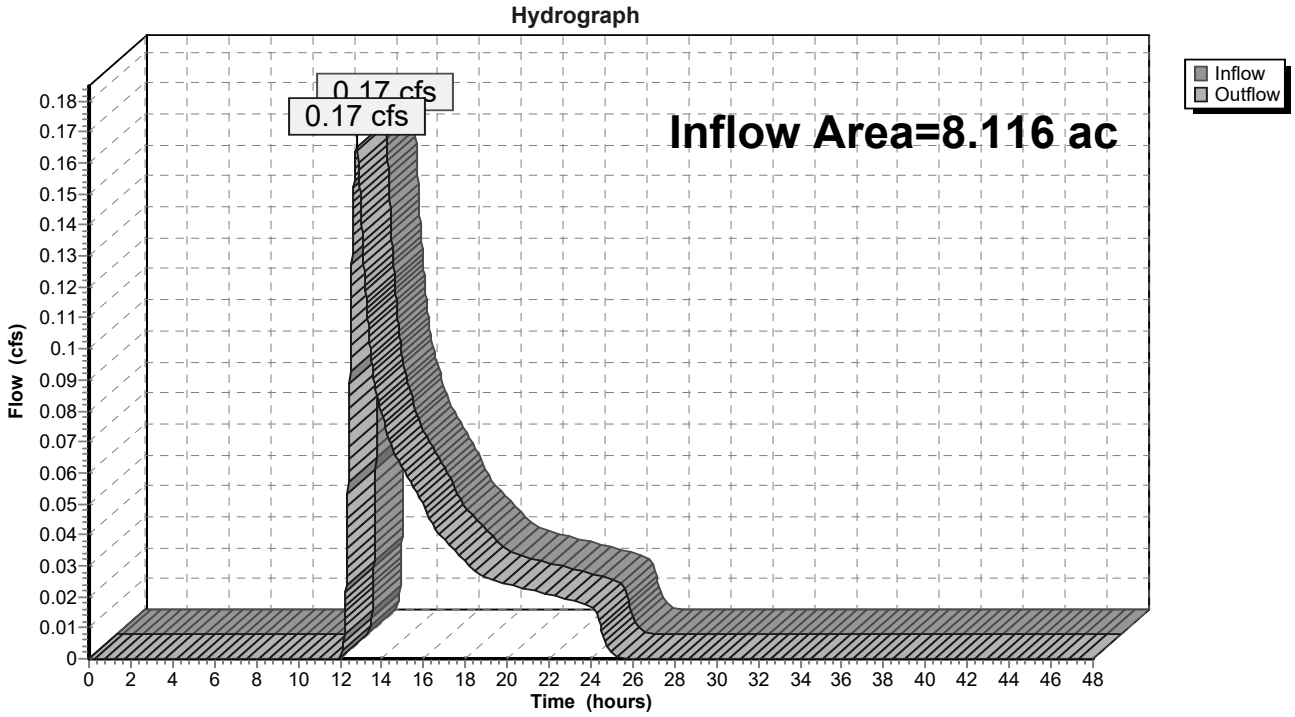


Summary for Reach 4R: POI 4

Inflow Area = 8.116 ac, 61.59% Impervious, Inflow Depth = 0.07" for 25-Year DEP event
Inflow = 0.17 cfs @ 12.80 hrs, Volume= 0.045 af
Outflow = 0.17 cfs @ 12.80 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 4R: POI 4



Summary for Pond 1P: Chambers

Inflow Area = 5.785 ac, 61.03% Impervious, Inflow Depth = 4.21" for 25-Year DEP event
Inflow = 30.73 cfs @ 12.11 hrs, Volume= 2.028 af
Outflow = 3.44 cfs @ 11.94 hrs, Volume= 2.028 af, Atten= 89%, Lag= 0.0 min
Discarded = 3.44 cfs @ 11.94 hrs, Volume= 2.028 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 304.98' @ 12.71 hrs Surf.Area= 13,525 sf Storage= 43,311 cf

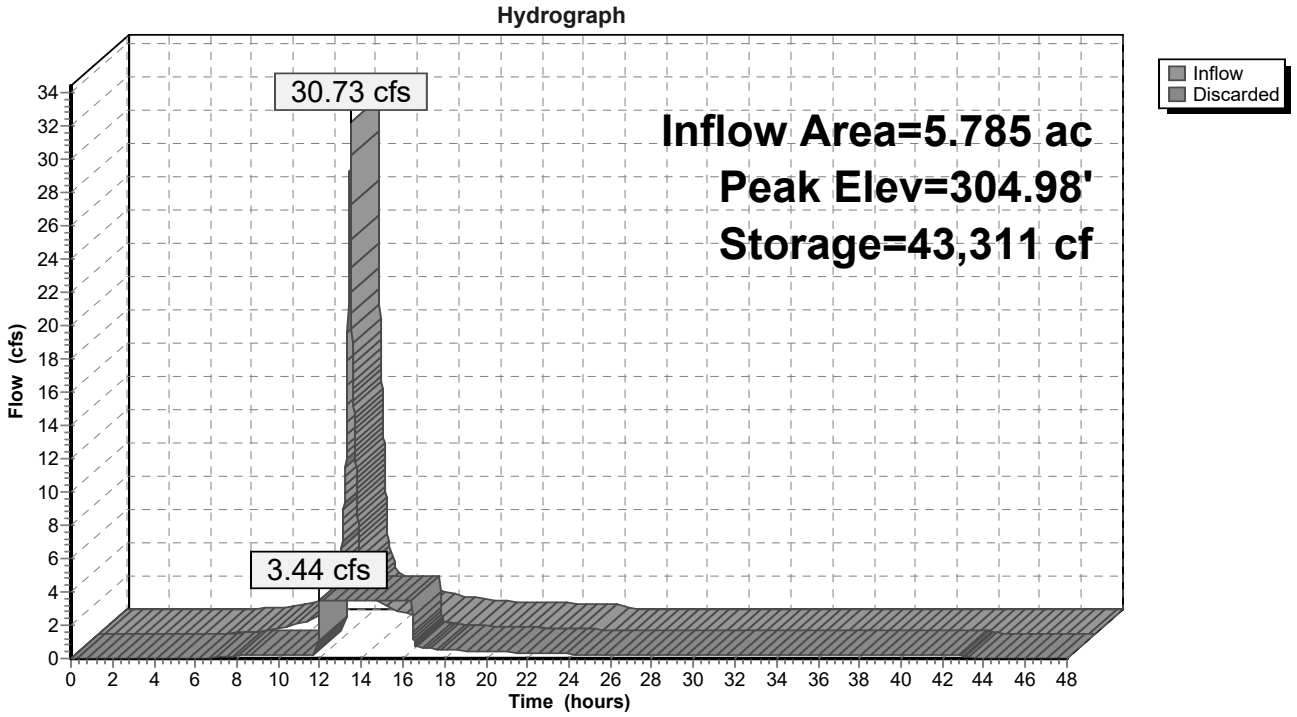
Plug-Flow detention time= 297.2 min calculated for 2.028 af (100% of inflow)
Center-of-Mass det. time= 297.2 min (1,097.9 - 800.7)

Volume	Invert	Avail.Storage	Storage Description
#1	300.25'	19,275 cf	**7.25'W x 4.10'L x 5.75'H Prismatoid** x 455 77,768 cf Overall - 29,581 cf Embedded = 48,187 cf x 40.0% Voids
#2	301.00'	29,581 cf	**Cultec R-902HD** x 455 Inside #1 Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap 455 Chambers in 23 Rows Cap Storage= 2.8 cf x 2 x 23 rows = 127.0 cf
		48,856 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	300.25'	**0.750 in/hr Exfiltration over Surface area**
#2	Discarded	300.25'	**10.250 in/hr Exfiltration over Surface area**
#3	Device 2	302.09'	**570.5' long x 4.00' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=3.44 cfs @ 11.94 hrs HW=302.14' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.23 cfs)
└**2=Exfiltration** (Exfiltration Controls 3.21 cfs)
└**3=Sharp-Crested Rectangular Weir** (Passes 3.21 cfs of 19.51 cfs potential flow)

Pond 1P: Chambers



Summary for Pond 6S Drip: Drip Edges

Inflow Area = 1.354 ac,100.00% Impervious, Inflow Depth = 5.56" for 25-Year DEP event
Inflow = 7.97 cfs @ 12.07 hrs, Volume= 0.627 af
Outflow = 7.28 cfs @ 12.12 hrs, Volume= 0.627 af, Atten= 9%, Lag= 3.0 min
Discarded = 0.63 cfs @ 11.19 hrs, Volume= 0.533 af
Secondary = 6.65 cfs @ 12.12 hrs, Volume= 0.095 af
Routed to Pond 1P : Chambers

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 308.01' @ 12.12 hrs Surf.Area= 0.258 ac Storage= 0.130 af

Plug-Flow detention time= 49.4 min calculated for 0.627 af (100% of inflow)
Center-of-Mass det. time= 49.4 min (794.2 - 744.7)

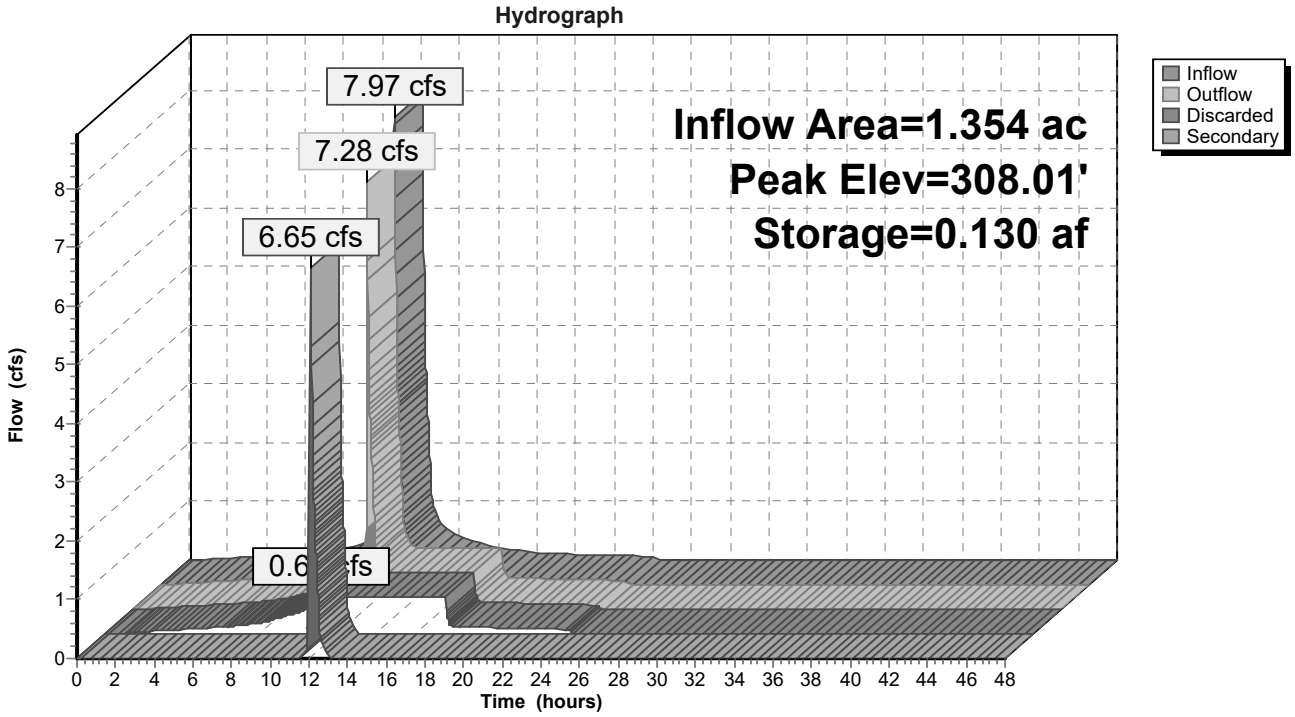
Volume	Invert	Avail.Storage	Storage Description
#1	306.75'	0.057 af	**2.50'W x 1,648.40'L x 1.50'H Prismatoid** 0.142 af Overall x 40.0% Voids
#2	306.75'	0.092 af	**5.00'W x 1,337.65'L x 1.50'H Prismatoid** 0.230 af Overall x 40.0% Voids
#3	306.75'	0.006 af	**3.00'W x 140.17'L x 1.50'H Prismatoid** 0.014 af Overall x 40.0% Voids
		0.155 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Secondary	308.00'	**1,648.4' long x 2.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 Coef. (English) 2.48 2.60 2.60 2.60 2.64 2.65 2.68 2.75 2.74 2.76 2.89 3.05 3.19 3.32
#2	Secondary	308.00'	**1,337.7' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Secondary	308.00'	**140.2' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#4	Discarded	306.75'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.63 cfs @ 11.19 hrs HW=306.77' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.63 cfs)

Secondary OutFlow Max=6.23 cfs @ 12.12 hrs HW=308.01' (Free Discharge)
├**1=Broad-Crested Rectangular Weir** (Weir Controls 3.37 cfs @ 0.23 fps)
├**2=Broad-Crested Rectangular Weir** (Weir Controls 2.58 cfs @ 0.22 fps)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 0.28 cfs @ 0.23 fps)

Pond 6S Drip: Drip Edges



STAGE STORAGE TABLES

Hydrograph for Pond 1P: Chambers

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	300.25	0.00
0.10	0.00	0	300.25	0.00
0.20	0.00	0	300.25	0.00
0.30	0.00	0	300.25	0.00
0.40	0.00	0	300.25	0.00
0.50	0.00	0	300.25	0.00
0.60	0.00	0	300.25	0.00
0.70	0.00	0	300.25	0.00
0.80	0.00	0	300.25	0.00
0.90	0.00	0	300.25	0.00
1.00	0.00	0	300.25	0.00
1.10	0.00	0	300.25	0.00
1.20	0.00	0	300.25	0.00
1.30	0.00	0	300.25	0.00
1.40	0.00	0	300.25	0.00
1.50	0.00	0	300.25	0.00
1.60	0.00	0	300.25	0.00
1.70	0.00	0	300.25	0.00
1.80	0.00	0	300.25	0.00
1.90	0.00	0	300.25	0.00
2.00	0.00	0	300.25	0.00
2.10	0.00	0	300.25	0.00
2.20	0.00	0	300.25	0.00
2.30	0.00	0	300.25	0.00
2.40	0.00	0	300.25	0.00
2.50	0.00	0	300.25	0.00
2.60	0.00	0	300.25	0.00
2.70	0.00	0	300.25	0.00
2.80	0.00	0	300.25	0.00
2.90	0.00	0	300.25	0.00
3.00	0.00	0	300.25	0.00
3.10	0.00	0	300.25	0.00
3.20	0.00	0	300.25	0.00
3.30	0.00	0	300.25	0.00
3.40	0.00	0	300.25	0.00
3.50	0.00	0	300.25	0.00
3.60	0.00	0	300.25	0.00
3.70	0.00	0	300.25	0.00
3.80	0.00	0	300.25	0.00
3.90	0.00	0	300.25	0.00
4.00	0.00	0	300.25	0.00
4.10	0.00	0	300.25	0.00
4.20	0.00	0	300.25	0.00
4.30	0.00	0	300.25	0.00
4.40	0.00	0	300.25	0.00
4.50	0.00	0	300.25	0.00
4.60	0.00	0	300.25	0.00
4.70	0.00	0	300.25	0.00
4.80	0.00	0	300.25	0.00
4.90	0.00	0	300.25	0.00
5.00	0.00	0	300.25	0.00
5.10	0.00	0	300.25	0.00
5.20	0.00	0	300.25	0.00

Hydrograph for Pond 1P: Chambers (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
5.30	0.00	0	300.25	0.00
5.40	0.00	0	300.25	0.00
5.50	0.00	0	300.25	0.00
5.60	0.00	0	300.25	0.00
5.70	0.00	0	300.25	0.00
5.80	0.01	1	300.25	0.00
5.90	0.01	4	300.25	0.00
6.00	0.02	7	300.25	0.01
6.10	0.02	12	300.25	0.01
6.20	0.03	17	300.25	0.01
6.30	0.03	22	300.25	0.02
6.40	0.04	29	300.26	0.02
6.50	0.05	36	300.26	0.03
6.60	0.06	44	300.26	0.03
6.70	0.06	52	300.26	0.04
6.80	0.07	61	300.26	0.05
6.90	0.08	71	300.26	0.05
7.00	0.09	81	300.26	0.06
7.10	0.10	92	300.27	0.07
7.20	0.11	103	300.27	0.08
7.30	0.12	115	300.27	0.09
7.40	0.13	127	300.27	0.09
7.50	0.14	140	300.28	0.10
7.60	0.15	153	300.28	0.11
7.70	0.16	167	300.28	0.12
7.80	0.18	182	300.28	0.13
7.90	0.19	196	300.29	0.15
8.00	0.20	212	300.29	0.16
8.10	0.22	228	300.29	0.17
8.20	0.23	246	300.30	0.18
8.30	0.26	266	300.30	0.20
8.40	0.28	287	300.30	0.21
8.50	0.30	311	300.31	0.23
8.60	0.32	338	300.31	0.23
8.70	0.35	374	300.32	0.23
8.80	0.37	419	300.33	0.23
8.90	0.40	474	300.34	0.23
9.00	0.43	538	300.35	0.23
9.10	0.46	612	300.36	0.23
9.20	0.48	697	300.38	0.23
9.30	0.52	792	300.40	0.23
9.40	0.55	899	300.42	0.23
9.50	0.58	1,017	300.44	0.23
9.60	0.61	1,147	300.46	0.23
9.70	0.65	1,289	300.49	0.23
9.80	0.68	1,443	300.52	0.23
9.90	0.72	1,610	300.55	0.23
10.00	0.75	1,790	300.58	0.23
10.10	0.80	1,984	300.62	0.23
10.20	0.85	2,196	300.66	0.23
10.30	0.91	2,430	300.70	0.23
10.40	0.98	2,686	300.75	0.23
10.50	1.04	2,965	300.80	0.23

Hydrograph for Pond 1P: Chambers (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
10.60	1.11	3,268	300.85	0.23
10.70	1.18	3,596	300.91	0.23
10.80	1.25	3,948	300.98	0.23
10.90	1.32	4,327	301.02	0.23
11.00	1.40	4,732	301.06	0.23
11.10	1.52	5,168	301.10	0.23
11.20	1.73	5,666	301.14	0.23
11.30	1.96	6,244	301.19	0.23
11.40	2.20	6,906	301.25	0.23
11.50	2.45	7,657	301.32	0.23
11.60	3.24	8,546	301.40	0.23
11.70	5.25	9,975	301.53	0.23
11.80	7.57	12,193	301.73	0.23
11.90	10.11	15,286	302.01	**0.23**
12.00	18.06	18,953	302.35	**3.44**
12.10	**26.17**	26,664	303.08	3.44
12.20	**17.48**	34,033	303.82	3.44
12.30	12.94	38,163	304.27	3.44
12.40	9.69	40,994	304.62	3.44
12.50	6.43	42,660	304.86	3.44
12.60	4.01	43,220	304.96	3.44
12.70	3.47	**43,310**	**304.98**	3.44
12.80	3.12	**43,255**	**304.97**	3.44
12.90	2.77	43,076	304.93	3.44
13.00	2.43	42,773	304.88	3.44
13.10	2.21	42,361	304.81	3.44
13.20	2.13	41,901	304.74	3.44
13.30	2.06	41,414	304.67	3.44
13.40	1.99	40,901	304.60	3.44
13.50	1.92	40,364	304.53	3.44
13.60	1.84	39,801	304.46	3.44
13.70	1.77	39,212	304.39	3.44
13.80	1.70	38,598	304.32	3.44
13.90	1.63	37,958	304.25	3.44
14.00	1.56	37,292	304.17	3.44
14.10	1.50	36,602	304.09	3.44
14.20	1.46	35,894	304.02	3.44
14.30	1.43	35,174	303.94	3.44
14.40	1.39	34,442	303.86	3.44
14.50	1.36	33,698	303.78	3.44
14.60	1.32	32,941	303.71	3.44
14.70	1.29	32,172	303.63	3.44
14.80	1.26	31,390	303.55	3.44
14.90	1.22	30,596	303.47	3.44
15.00	1.19	29,789	303.39	3.44
15.10	1.15	28,970	303.31	3.44
15.20	1.12	28,139	303.23	3.44
15.30	1.08	27,294	303.14	3.44
15.40	1.05	26,438	303.06	3.44
15.50	1.01	25,568	302.98	3.44
15.60	0.98	24,686	302.89	3.44
15.70	0.94	23,792	302.81	3.44
15.80	0.91	22,884	302.72	3.44

Hydrograph for Pond 1P: Chambers (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
15.90	0.87	21,964	302.63	3.44
16.00	0.84	21,031	302.55	3.44
16.10	0.81	20,087	302.46	3.44
16.20	0.79	19,134	302.37	3.44
16.30	0.77	18,175	302.28	3.44
16.40	0.76	17,211	302.19	3.44
16.50	0.74	16,303	302.11	1.99
16.60	0.73	16,182	302.09	0.76
16.70	0.71	16,178	302.09	0.72
16.80	0.70	16,176	302.09	0.70
16.90	0.68	16,175	302.09	0.69
17.00	0.67	16,173	302.09	0.67
17.10	0.65	16,172	302.09	0.66
17.20	0.64	16,170	302.09	0.64
17.30	0.62	16,169	302.09	0.62
17.40	0.60	16,167	302.09	0.61
17.50	0.59	16,166	302.09	0.59
17.60	0.57	16,164	302.09	0.58
17.70	0.56	16,163	302.09	0.56
17.80	0.54	16,161	302.09	0.55
17.90	0.53	16,160	302.09	0.53
18.00	0.51	16,158	302.09	0.52
18.10	0.50	16,157	302.09	0.50
18.20	0.49	16,156	302.09	0.50
18.30	0.49	16,156	302.09	0.49
18.40	0.49	16,155	302.09	0.49
18.50	0.48	16,155	302.09	0.48
18.60	0.48	16,155	302.09	0.48
18.70	0.47	16,154	302.09	0.47
18.80	0.47	16,154	302.09	0.47
18.90	0.46	16,153	302.09	0.46
19.00	0.46	16,153	302.09	0.46
19.10	0.45	16,152	302.09	0.45
19.20	0.45	16,152	302.09	0.45
19.30	0.44	16,151	302.09	0.45
19.40	0.44	16,151	302.09	0.44
19.50	0.43	16,150	302.09	0.44
19.60	0.43	16,150	302.09	0.43
19.70	0.43	16,150	302.09	0.43
19.80	0.42	16,149	302.09	0.42
19.90	0.42	16,149	302.09	0.42
20.00	0.41	16,148	302.09	0.41
20.10	0.41	16,148	302.09	0.41
20.20	0.40	16,147	302.09	0.40
20.30	0.40	16,147	302.09	0.40
20.40	0.40	16,147	302.09	0.40
20.50	0.39	16,146	302.09	0.39
20.60	0.39	16,146	302.09	0.39
20.70	0.39	16,146	302.09	0.39
20.80	0.38	16,145	302.09	0.38
20.90	0.38	16,145	302.09	0.38
21.00	0.38	16,145	302.09	0.38
21.10	0.37	16,144	302.09	0.37

Hydrograph for Pond 1P: Chambers (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
21.20	0.37	16,144	302.09	0.37
21.30	0.37	16,144	302.09	0.37
21.40	0.36	16,143	302.09	0.36
21.50	0.36	16,143	302.09	0.36
21.60	0.35	16,143	302.09	0.36
21.70	0.35	16,142	302.09	0.35
21.80	0.35	16,142	302.09	0.35
21.90	0.34	16,142	302.09	0.35
22.00	0.34	16,141	302.09	0.34
22.10	0.34	16,141	302.09	0.34
22.20	0.33	16,141	302.09	0.34
22.30	0.33	16,140	302.09	0.33
22.40	0.33	16,140	302.09	0.33
22.50	0.32	16,140	302.09	0.32
22.60	0.32	16,139	302.09	0.32
22.70	0.32	16,139	302.09	0.32
22.80	0.31	16,139	302.09	0.31
22.90	0.31	16,138	302.09	0.31
23.00	0.31	16,138	302.09	0.31
23.10	0.30	16,138	302.09	0.30
23.20	0.30	16,137	302.09	0.30
23.30	0.30	16,137	302.09	0.30
23.40	0.29	16,137	302.09	0.29
23.50	0.29	16,136	302.09	0.29
23.60	0.28	16,136	302.09	0.29
23.70	0.28	16,135	302.09	0.28
23.80	0.28	16,135	302.09	0.28
23.90	0.27	16,135	302.09	0.28
24.00	0.27	16,134	302.09	0.27
24.10	0.06	16,112	302.09	0.23
24.20	0.00	16,034	302.08	0.23
24.30	0.00	15,950	302.07	0.23
24.40	0.00	15,865	302.07	0.23
24.50	0.00	15,781	302.06	0.23
24.60	0.00	15,696	302.05	0.23
24.70	0.00	15,612	302.04	0.23
24.80	0.00	15,527	302.03	0.23
24.90	0.00	15,443	302.03	0.23
25.00	0.00	15,358	302.02	0.23
25.10	0.00	15,274	302.01	0.23
25.20	0.00	15,189	302.00	0.23
25.30	0.00	15,105	302.00	0.23
25.40	0.00	15,020	301.99	0.23
25.50	0.00	14,936	301.98	0.23
25.60	0.00	14,851	301.97	0.23
25.70	0.00	14,767	301.96	0.23
25.80	0.00	14,682	301.96	0.23
25.90	0.00	14,597	301.95	0.23
26.00	0.00	14,513	301.94	0.23
26.10	0.00	14,428	301.93	0.23
26.20	0.00	14,344	301.93	0.23
26.30	0.00	14,259	301.92	0.23
26.40	0.00	14,175	301.91	0.23

Hydrograph for Pond 1P: Chambers (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
26.50	0.00	14,090	301.90	0.23
26.60	0.00	14,006	301.90	0.23
26.70	0.00	13,921	301.89	0.23
26.80	0.00	13,837	301.88	0.23
26.90	0.00	13,752	301.87	0.23
27.00	0.00	13,668	301.86	0.23
27.10	0.00	13,583	301.86	0.23
27.20	0.00	13,499	301.85	0.23
27.30	0.00	13,414	301.84	0.23
27.40	0.00	13,330	301.83	0.23
27.50	0.00	13,245	301.83	0.23
27.60	0.00	13,160	301.82	0.23
27.70	0.00	13,076	301.81	0.23
27.80	0.00	12,991	301.80	0.23
27.90	0.00	12,907	301.79	0.23
28.00	0.00	12,822	301.79	0.23
28.10	0.00	12,738	301.78	0.23
28.20	0.00	12,653	301.77	0.23
28.30	0.00	12,569	301.76	0.23
28.40	0.00	12,484	301.76	0.23
28.50	0.00	12,400	301.75	0.23
28.60	0.00	12,315	301.74	0.23
28.70	0.00	12,231	301.73	0.23
28.80	0.00	12,146	301.73	0.23
28.90	0.00	12,062	301.72	0.23
29.00	0.00	11,977	301.71	0.23
29.10	0.00	11,892	301.70	0.23
29.20	0.00	11,808	301.70	0.23
29.30	0.00	11,723	301.69	0.23
29.40	0.00	11,639	301.68	0.23
29.50	0.00	11,554	301.67	0.23
29.60	0.00	11,470	301.66	0.23
29.70	0.00	11,385	301.66	0.23
29.80	0.00	11,301	301.65	0.23
29.90	0.00	11,216	301.64	0.23
30.00	0.00	11,132	301.63	0.23
30.10	0.00	11,047	301.63	0.23
30.20	0.00	10,963	301.62	0.23
30.30	0.00	10,878	301.61	0.23
30.40	0.00	10,794	301.60	0.23
30.50	0.00	10,709	301.60	0.23
30.60	0.00	10,625	301.59	0.23
30.70	0.00	10,540	301.58	0.23
30.80	0.00	10,455	301.57	0.23
30.90	0.00	10,371	301.57	0.23
31.00	0.00	10,286	301.56	0.23
31.10	0.00	10,202	301.55	0.23
31.20	0.00	10,117	301.54	0.23
31.30	0.00	10,033	301.53	0.23
31.40	0.00	9,948	301.53	0.23
31.50	0.00	9,864	301.52	0.23
31.60	0.00	9,779	301.51	0.23
31.70	0.00	9,695	301.50	0.23

Hydrograph for Pond 1P: Chambers (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
31.80	0.00	9,610	301.50	0.23
31.90	0.00	9,526	301.49	0.23
32.00	0.00	9,441	301.48	0.23
32.10	0.00	9,357	301.47	0.23
32.20	0.00	9,272	301.47	0.23
32.30	0.00	9,188	301.46	0.23
32.40	0.00	9,103	301.45	0.23
32.50	0.00	9,018	301.44	0.23
32.60	0.00	8,934	301.44	0.23
32.70	0.00	8,849	301.43	0.23
32.80	0.00	8,765	301.42	0.23
32.90	0.00	8,680	301.41	0.23
33.00	0.00	8,596	301.41	0.23
33.10	0.00	8,511	301.40	0.23
33.20	0.00	8,427	301.39	0.23
33.30	0.00	8,342	301.38	0.23
33.40	0.00	8,258	301.38	0.23
33.50	0.00	8,173	301.37	0.23
33.60	0.00	8,089	301.36	0.23
33.70	0.00	8,004	301.35	0.23
33.80	0.00	7,920	301.34	0.23
33.90	0.00	7,835	301.34	0.23
34.00	0.00	7,751	301.33	0.23
34.10	0.00	7,666	301.32	0.23
34.20	0.00	7,581	301.31	0.23
34.30	0.00	7,497	301.31	0.23
34.40	0.00	7,412	301.30	0.23
34.50	0.00	7,328	301.29	0.23
34.60	0.00	7,243	301.28	0.23
34.70	0.00	7,159	301.28	0.23
34.80	0.00	7,074	301.27	0.23
34.90	0.00	6,990	301.26	0.23
35.00	0.00	6,905	301.25	0.23
35.10	0.00	6,821	301.25	0.23
35.20	0.00	6,736	301.24	0.23
35.30	0.00	6,652	301.23	0.23
35.40	0.00	6,567	301.22	0.23
35.50	0.00	6,483	301.22	0.23
35.60	0.00	6,398	301.21	0.23
35.70	0.00	6,313	301.20	0.23
35.80	0.00	6,229	301.19	0.23
35.90	0.00	6,144	301.19	0.23
36.00	0.00	6,060	301.18	0.23
36.10	0.00	5,975	301.17	0.23
36.20	0.00	5,891	301.16	0.23
36.30	0.00	5,806	301.16	0.23
36.40	0.00	5,722	301.15	0.23
36.50	0.00	5,637	301.14	0.23
36.60	0.00	5,553	301.13	0.23
36.70	0.00	5,468	301.13	0.23
36.80	0.00	5,384	301.12	0.23
36.90	0.00	5,299	301.11	0.23
37.00	0.00	5,215	301.10	0.23

Hydrograph for Pond 1P: Chambers (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
37.10	0.00	5,130	301.10	0.23
37.20	0.00	5,046	301.09	0.23
37.30	0.00	4,961	301.08	0.23
37.40	0.00	4,876	301.07	0.23
37.50	0.00	4,792	301.07	0.23
37.60	0.00	4,707	301.06	0.23
37.70	0.00	4,623	301.05	0.23
37.80	0.00	4,538	301.04	0.23
37.90	0.00	4,454	301.04	0.23
38.00	0.00	4,369	301.03	0.23
38.10	0.00	4,285	301.02	0.23
38.20	0.00	4,200	301.01	0.23
38.30	0.00	4,116	301.01	0.23
38.40	0.00	4,031	301.00	0.23
38.50	0.00	3,947	300.98	0.23
38.60	0.00	3,862	300.96	0.23
38.70	0.00	3,778	300.95	0.23
38.80	0.00	3,693	300.93	0.23
38.90	0.00	3,609	300.92	0.23
39.00	0.00	3,524	300.90	0.23
39.10	0.00	3,439	300.89	0.23
39.20	0.00	3,355	300.87	0.23
39.30	0.00	3,270	300.85	0.23
39.40	0.00	3,186	300.84	0.23
39.50	0.00	3,101	300.82	0.23
39.60	0.00	3,017	300.81	0.23
39.70	0.00	2,932	300.79	0.23
39.80	0.00	2,848	300.78	0.23
39.90	0.00	2,763	300.76	0.23
40.00	0.00	2,679	300.75	0.23
40.10	0.00	2,594	300.73	0.23
40.20	0.00	2,510	300.71	0.23
40.30	0.00	2,425	300.70	0.23
40.40	0.00	2,341	300.68	0.23
40.50	0.00	2,256	300.67	0.23
40.60	0.00	2,171	300.65	0.23
40.70	0.00	2,087	300.64	0.23
40.80	0.00	2,002	300.62	0.23
40.90	0.00	1,918	300.60	0.23
41.00	0.00	1,833	300.59	0.23
41.10	0.00	1,749	300.57	0.23
41.20	0.00	1,664	300.56	0.23
41.30	0.00	1,580	300.54	0.23
41.40	0.00	1,495	300.53	0.23
41.50	0.00	1,411	300.51	0.23
41.60	0.00	1,326	300.50	0.23
41.70	0.00	1,242	300.48	0.23
41.80	0.00	1,157	300.46	0.23
41.90	0.00	1,073	300.45	0.23
42.00	0.00	988	300.43	0.23
42.10	0.00	904	300.42	0.23
42.20	0.00	819	300.40	0.23
42.30	0.00	734	300.39	0.23

Hydrograph for Pond 1P: Chambers (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
42.40	0.00	650	300.37	0.23
42.50	0.00	565	300.35	0.23
42.60	0.00	481	300.34	0.23
42.70	0.00	396	300.32	0.23
42.80	0.00	312	300.31	0.23
42.90	0.00	239	300.29	0.18
43.00	0.00	183	300.28	0.14
43.10	0.00	140	300.28	0.10
43.20	0.00	107	300.27	0.08
43.30	0.00	82	300.27	0.06
43.40	0.00	63	300.26	0.05
43.50	0.00	48	300.26	0.04
43.60	0.00	37	300.26	0.03
43.70	0.00	28	300.26	0.02
43.80	0.00	21	300.25	0.02
43.90	0.00	16	300.25	0.01
44.00	0.00	13	300.25	0.01
44.10	0.00	10	300.25	0.01
44.20	0.00	7	300.25	0.01
44.30	0.00	6	300.25	0.00
44.40	0.00	4	300.25	0.00
44.50	0.00	3	300.25	0.00
44.60	0.00	3	300.25	0.00
44.70	0.00	2	300.25	0.00
44.80	0.00	1	300.25	0.00
44.90	0.00	1	300.25	0.00
45.00	0.00	1	300.25	0.00
45.10	0.00	1	300.25	0.00
45.20	0.00	1	300.25	0.00
45.30	0.00	0	300.25	0.00
45.40	0.00	0	300.25	0.00
45.50	0.00	0	300.25	0.00
45.60	0.00	0	300.25	0.00
45.70	0.00	0	300.25	0.00
45.80	0.00	0	300.25	0.00
45.90	0.00	0	300.25	0.00
46.00	0.00	0	300.25	0.00
46.10	0.00	0	300.25	0.00
46.20	0.00	0	300.25	0.00
46.30	0.00	0	300.25	0.00
46.40	0.00	0	300.25	0.00
46.50	0.00	0	300.25	0.00
46.60	0.00	0	300.25	0.00
46.70	0.00	0	300.25	0.00
46.80	0.00	0	300.25	0.00
46.90	0.00	0	300.25	0.00
47.00	0.00	0	300.25	0.00
47.10	0.00	0	300.25	0.00
47.20	0.00	0	300.25	0.00
47.30	0.00	0	300.25	0.00
47.40	0.00	0	300.25	0.00
47.50	0.00	0	300.25	0.00
47.60	0.00	0	300.25	0.00

Hydrograph for Pond 1P: Chambers (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
47.70	0.00	0	300.25	0.00
47.80	0.00	0	300.25	0.00
47.90	0.00	0	300.25	0.00
48.00	0.00	0	300.25	0.00

ATTACHMENT C

PIPE CAPACITY CALCULATIONS

Project Description

File Name	Stormwater Pipe Sizing Analysis - Copy with Bldgs - (01.10.2024).SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	Sep 19, 2023	00:00:00
End Analysis On	Sep 20, 2023	00:00:00
Start Reporting On	Sep 19, 2023	00:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins	25
Nodes	30
Junctions	0
Outfalls	1
Flow Diversions	0
Inlets	29
Storage Nodes	0
Links	27
Channels	0
Pipes	27
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	25 year(s)

Subbasin Summary

SN	Subbasin ID	Area (ft²)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	Area-to-CB1	23805.93	0.6600	0.67	0.44	0.24	2.88	0 00:05:00
2	Area-to-CB10	7817.36	0.8300	0.67	0.55	0.10	1.19	0 00:05:00
3	Area-to-CB11	19248.99	0.5600	0.67	0.37	0.16	1.98	0 00:05:00
4	Area-to-CB12	10203.84	0.8100	0.67	0.54	0.13	1.52	0 00:05:00
5	Area-to-CB14	7544.50	0.7900	0.67	0.53	0.09	1.09	0 00:05:00
6	Area-to-CB15	14301.27	0.7400	0.67	0.49	0.16	1.94	0 00:05:00
7	Area-to-CB16	17729.18	0.7800	0.67	0.52	0.21	2.54	0 00:05:00
8	Area-to-CB17	10970.02	0.7900	0.67	0.53	0.13	1.59	0 00:05:00
9	Area-to-CB18	13651.36	0.7600	0.67	0.51	0.16	1.90	0 00:05:00
10	Area-to-CB19	28783.75	0.5100	0.67	0.34	0.22	2.69	0 00:05:00
11	Area-to-CB2	17082.32	0.7700	0.67	0.51	0.20	2.41	0 00:05:00
12	Area-to-CB20	7685.25	0.5800	0.67	0.39	0.07	0.82	0 00:05:00
13	Area-to-CB3	8450.12	0.7800	0.67	0.52	0.10	1.21	0 00:05:00
14	Area-to-CB4	20503.43	0.7800	0.67	0.52	0.24	2.93	0 00:05:00
15	Area-to-CB5	10302.24	0.7300	0.67	0.49	0.11	1.38	0 00:05:00
16	Area-to-CB6	9408.05	0.7900	0.67	0.53	0.11	1.36	0 00:05:00
17	Area-to-CB7	34917.70	0.4300	0.67	0.29	0.23	2.75	0 00:05:00
18	Area-to-CB8	7686.21	0.2500	0.67	0.17	0.03	0.35	0 00:05:00
19	Area-to-CB9	19543.85	0.7300	0.67	0.49	0.22	2.62	0 00:05:00
20	Area-to-FI#1	1107.47	0.3100	0.67	0.21	0.01	0.06	0 00:05:00
21	Area-to-FI#2	1012.86	0.3700	0.67	0.25	0.01	0.07	0 00:05:00
22	Area-to-FI#3	1065.65	0.3200	0.67	0.21	0.01	0.06	0 00:05:00
23	Area-to-FI#4	1893.34	0.3400	0.67	0.23	0.01	0.12	0 00:05:00
24	Area-to-FI#5	7620.39	0.6200	0.67	0.41	0.07	0.87	0 00:05:00
25	Area-to-FI#6	8668.57	0.6500	0.67	0.43	0.09	1.03	0 00:05:00

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	Chambers	Outfall	301.00					26.81	302.40					

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Reported Condition
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	(ft)		(min)	
1	CB10-to-CB9	Pipe	CB10	CB9	150.00	303.00	301.84	0.7700	15.000	0.0150	1.07	4.92	0.22	2.05	1.04	0.84	0.00	Calculated
2	CB11-to-CB9	Pipe	CB11	CB9	155.00	302.41	301.64	0.5000	24.000	0.0150	10.66	13.82	0.77	3.60	1.94	0.97	0.00	Calculated
3	CB12-to-CB11	Pipe	CB12	CB11	90.00	302.96	302.51	0.5000	24.000	0.0150	9.07	13.86	0.65	3.67	1.70	0.85	0.00	Calculated
4	CB14-to-DMH1	Pipe	CB14	DMH1	49.00	303.00	302.50	1.0200	12.000	0.0150	1.09	3.12	0.35	3.29	0.53	0.53	0.00	Calculated
5	CB15-to-CB12	Pipe	CB15	CB12	43.00	303.85	303.42	1.0000	15.000	0.0150	1.85	5.60	0.33	3.27	0.95	0.76	0.00	Calculated
6	CB16-to-CB5	Pipe	CB16	CB5	68.00	303.60	303.25	0.5100	15.000	0.0150	2.38	4.02	0.59	2.83	1.09	0.87	0.00	Calculated
7	CB17-to-CB12	Pipe	CB17	CB12	207.00	304.10	303.06	0.5000	18.000	0.0150	5.93	6.45	0.92	3.58	1.39	0.92	0.00	Calculated
8	CB18-to-CB17	Pipe	CB18	CB17	41.00	304.41	304.20	0.5100	15.000	0.0150	1.78	4.01	0.45	2.24	1.12	0.90	0.00	Calculated
9	CB19-to-CB17	Pipe	CB19	CB17	68.00	304.56	304.20	0.5300	15.000	0.0150	2.53	4.07	0.62	2.52	1.09	0.87	0.00	Calculated
10	CB1-to-CB2	Pipe	CB1	CB2	62.00	304.75	304.04	1.1500	12.000	0.0150	2.70	3.30	0.82	3.52	0.98	0.98	0.00	Calculated
11	CB20-to-CB17	Pipe	CB20	CB17	76.00	304.67	304.20	0.6200	12.000	0.0150	0.70	2.43	0.29	1.61	0.89	0.89	0.00	Calculated
12	CB2-to-CB5	Pipe	CB2	CB5	197.00	303.94	302.98	0.4900	18.000	0.0150	5.48	6.36	0.86	3.37	1.36	0.90	0.00	Calculated
13	CB3-to-CB2	Pipe	CB3	CB2	41.00	304.35	304.04	0.7600	12.000	0.0150	1.10	2.68	0.41	2.13	0.94	0.94	0.00	Calculated
14	CB4-to-CB5	Pipe	CB4	CB5	65.00	303.68	303.35	0.5100	15.000	0.0150	2.70	3.99	0.68	3.04	1.02	0.82	0.00	Calculated
15	CB5-to-CB7	Pipe	CB5	CB7	207.00	302.88	301.84	0.5000	24.000	0.0150	10.81	13.90	0.78	4.00	1.80	0.90	0.00	Calculated
16	CB6-to-CB7	Pipe	CB6	CB7	50.00	302.49	301.84	1.3000	18.000	0.0150	1.35	10.38	0.13	2.18	1.48	0.99	0.00	Calculated
17	CB7-to-DMH1	Pipe	CB7	DMH1	100.00	301.74	301.24	0.5000	24.000	0.0150	12.98	13.86	0.94	4.14	1.99	0.99	0.00	Calculated
18	CB8-to-EXIST	Pipe	CB8	EXIST	26.00	299.26	299.00	1.0000	12.000	0.0150	0.34	3.09	0.11	2.43	0.24	0.24	0.00	Calculated
19	CB9-to-DMH1	Pipe	CB9	DMH1	60.00	301.54	301.24	0.5000	24.000	0.0150	13.14	13.86	0.95	4.19	1.99	0.99	0.00	Calculated
20	DMH1-to-Chambers	Pipe	DMH1	Chambers	9.00	301.14	301.00	1.5600	30.000	0.0150	26.81	44.34	0.60	7.37	1.74	0.69	0.00	Calculated
21	DMH2-to-CB13	Pipe	DMH2	CB13	37.00	302.90	299.60	8.9200	12.000	0.0150	0.00	9.22	0.00	0.00	0.00	0.00	0.00	Calculated
22	FI#1-to-CB4	Pipe	FI#1	CB4	64.00	304.14	303.78	0.5600	12.000	0.0150	0.18	2.32	0.08	0.78	0.66	0.66	0.00	Calculated
23	FI#2-to-CB7	Pipe	FI#2	CB7	236.00	303.72	301.96	0.7500	12.000	0.0150	0.15	2.67	0.06	0.82	0.58	0.58	0.00	Calculated
24	FI#3-to-CB6	Pipe	FI#3	CB6	81.00	303.40	302.59	1.0000	12.000	0.0150	0.47	3.09	0.15	0.92	0.79	0.79	0.00	Calculated
25	FI#4-to-CB2	Pipe	FI#4	CB2	112.00	304.64	304.04	0.5400	15.000	0.0150	0.35	4.10	0.09	0.72	0.85	0.68	0.00	Calculated
26	FI#5-to-CB12	Pipe	FI#5	CB12	56.00	303.40	303.06	0.6100	15.000	0.0150	0.73	4.36	0.17	1.57	1.21	0.97	0.00	Calculated
27	FI6-to-CB11	Pipe	FI#6	CB11	56.00	303.23	302.67	1.0000	12.000	0.0150	0.86	3.09	0.28	2.42	1.00	1.00	2.00	SURCHARGED

Inlet Summary

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Ponded Area (ft²)	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)
1	CB1	NEENAH FOUNDRY	R-3405-A	On Sag	1	304.75	307.50	304.75	1.00	2.88	N/A	N/A	N/A	7.00	15.47	307.91
2	CB10	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.00	306.50	303.00	1.00	1.19	N/A	N/A	N/A	7.00	5.30	306.71
3	CB11	NEENAH FOUNDRY	R-3405-A	On Sag	1	302.41	307.00	302.41	1.00	1.98	N/A	N/A	N/A	7.00	5.82	307.22
4	CB12	NEENAH FOUNDRY	R-3405-A	On Sag	1	302.96	307.30	302.96	1.00	1.52	N/A	N/A	N/A	7.00	5.53	307.52
5	CB13	NEENAH FOUNDRY	R-3405-A	On Sag	1	299.50	303.87	299.50	1.00	0.00	N/A	N/A	N/A	7.00	5.16	304.08
6	CB14	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.00	306.70	303.00	1.00	1.09	N/A	N/A	N/A	7.00	5.23	306.91
7	CB15	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.85	307.60	303.85	1.00	1.94	N/A	N/A	N/A	7.00	5.80	307.82
8	CB16	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.60	307.32	303.60	1.00	2.54	N/A	N/A	N/A	7.00	14.87	307.72
9	CB17	NEENAH FOUNDRY	R-3405-A	On Sag	1	304.10	308.00	304.10	1.00	1.59	N/A	N/A	N/A	7.00	5.58	308.22
10	CB18	NEENAH FOUNDRY	R-3405-A	On Sag	1	304.41	308.00	304.41	1.00	1.90	N/A	N/A	N/A	7.00	5.78	308.22
11	CB19	NEENAH FOUNDRY	R-3405-A	On Sag	1	304.56	308.00	304.56	1.00	2.69	N/A	N/A	N/A	7.00	15.15	308.41
12	CB2	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.94	307.50	303.94	1.00	2.41	N/A	N/A	N/A	7.00	14.66	307.90
13	CB20	NEENAH FOUNDRY	R-3405-A	On Sag	1	304.67	308.20	304.67	1.00	0.82	N/A	N/A	N/A	7.00	5.01	308.41
14	CB3	NEENAH FOUNDRY	R-3405-A	On Sag	1	304.35	307.90	304.35	1.00	1.21	N/A	N/A	N/A	7.00	5.31	308.11
15	CB4	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.68	307.40	303.68	1.00	2.93	N/A	N/A	N/A	7.00	15.55	307.82
16	CB5	NEENAH FOUNDRY	R-3405-A	On Sag	1	302.88	307.45	302.88	1.00	1.38	N/A	N/A	N/A	7.00	5.43	307.66
17	CB6	NEENAH FOUNDRY	R-3405-A	On Sag	1	302.49	307.60	302.49	1.00	1.36	N/A	N/A	N/A	7.00	5.42	307.81
18	CB7	NEENAH FOUNDRY	R-3405-A	On Sag	1	301.74	307.20	301.74	1.00	2.75	N/A	N/A	N/A	7.00	15.25	307.61
19	CB8	NEENAH FOUNDRY	R-3405-A	On Sag	1	299.26	304.25	299.26	1.00	0.35	N/A	N/A	N/A	7.00	4.58	304.45
20	CB9	NEENAH FOUNDRY	R-3405-A	On Sag	1	301.54	306.55	301.54	1.00	2.62	N/A	N/A	N/A	7.00	15.02	306.96
21	DMH1	NEENAH FOUNDRY	R-3405-A	On Sag	1	301.14	307.75	301.14	1.00	0.00	N/A	N/A	N/A	7.00	5.16	307.96
22	DMH2	NEENAH FOUNDRY	R-3405-A	On Sag	1	302.90	307.77	302.90	1.00	0.00	N/A	N/A	N/A	7.00	5.16	307.98
23	EXIST	NEENAH FOUNDRY	R-3405-A	On Sag	1	0.00	305.00	0.00	1.00	0.00	N/A	N/A	N/A	7.00	5.16	305.21
24	FI#1	NEENAH FOUNDRY	R-3405-A	On Sag	1	304.14	308.75	304.14	1.00	0.06	N/A	N/A	N/A	7.00	4.18	308.94
25	FI#2	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.72	308.00	303.72	1.00	0.07	N/A	N/A	N/A	7.00	4.19	308.19
26	FI#3	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.40	307.75	303.40	1.00	0.06	N/A	N/A	N/A	7.00	4.18	307.94
27	FI#4	NEENAH FOUNDRY	R-3405-A	On Sag	1	304.64	307.55	304.64	1.00	0.12	N/A	N/A	N/A	7.00	4.28	307.74
28	FI#5	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.40	307.60	303.40	1.00	0.87	N/A	N/A	N/A	7.00	5.05	307.81
29	FI#6	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.23	307.25	303.23	1.00	1.03	N/A	N/A	N/A	7.00	5.18	307.46

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow (cfs)
1	CB10-to-CB9	150.00	303.00	0.00	301.84	0.30	1.16	0.7700	CIRCULAR	15.000	15.000	0.0150	0.5000	0.5000	0.0000	0.00
2	CB11-to-CB9	155.00	302.41	0.00	301.64	0.10	0.77	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	0.00
3	CB12-to-CB11	90.00	302.96	0.00	302.51	0.10	0.45	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	0.00
4	CB14-to-DMH1	49.00	303.00	0.00	302.50	1.36	0.50	1.0200	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00
5	CB15-to-CB12	43.00	303.85	0.00	303.42	0.46	0.43	1.0000	CIRCULAR	15.000	15.000	0.0150	0.5000	0.5000	0.0000	0.00
6	CB16-to-CB5	68.00	303.60	0.00	303.25	0.37	0.35	0.5100	CIRCULAR	15.000	15.000	0.0150	0.5000	0.5000	0.0000	0.00
7	CB17-to-CB12	207.00	304.10	0.00	303.06	0.10	1.04	0.5000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	0.00
8	CB18-to-CB17	41.00	304.41	0.00	304.20	0.10	0.21	0.5100	CIRCULAR	15.000	15.000	0.0150	0.5000	0.5000	0.0000	0.00
9	CB19-to-CB17	68.00	304.56	0.00	304.20	0.10	0.36	0.5300	CIRCULAR	15.000	15.000	0.0150	0.5000	0.5000	0.0000	0.00
10	CB1-to-CB2	62.00	304.75	0.00	304.04	0.10	0.71	1.1500	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00
11	CB20-to-CB17	76.00	304.67	0.00	304.20	0.10	0.47	0.6200	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00
12	CB2-to-CB5	197.00	303.94	0.00	302.98	0.10	0.96	0.4900	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	0.00
13	CB3-to-CB2	41.00	304.35	0.00	304.04	0.10	0.31	0.7600	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00
14	CB4-to-CB5	65.00	303.68	0.00	303.35	0.47	0.33	0.5100	CIRCULAR	15.000	15.000	0.0150	0.5000	0.5000	0.0000	0.00
15	CB5-to-CB7	207.00	302.88	0.00	301.84	0.10	1.04	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	0.00
16	CB6-to-CB7	50.00	302.49	0.00	301.84	0.10	0.65	1.3000	CIRCULAR	18.000	18.000	0.0150	0.5000	0.5000	0.0000	0.00
17	CB7-to-DMH1	100.00	301.74	0.00	301.24	0.10	0.50	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	0.00
18	CB8-to-EXIST	26.00	299.26	0.00	299.00	299.00	0.26	1.0000	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00
19	CB9-to-DMH1	60.00	301.54	0.00	301.24	0.10	0.30	0.5000	CIRCULAR	24.000	24.000	0.0150	0.5000	0.5000	0.0000	0.00
20	DMH1-to-Chambers	9.00	301.14	0.00	301.00	0.00	0.14	1.5600	CIRCULAR	30.000	30.000	0.0150	0.5000	0.5000	0.0000	0.00
21	DMH2-to-CB13	37.00	302.90	0.00	299.60	0.10	3.30	8.9200	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00
22	FI#1-to-CB4	64.00	304.14	0.00	303.78	0.10	0.36	0.5600	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00
23	FI#2-to-CB7	236.00	303.72	0.00	301.96	0.22	1.76	0.7500	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00
24	FI#3-to-CB6	81.00	303.40	0.00	302.59	0.10	0.81	1.0000	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00
25	FI#4-to-CB2	112.00	304.64	0.00	304.04	0.10	0.60	0.5400	CIRCULAR	15.000	15.000	0.0150	0.5000	0.5000	0.0000	0.00
26	FI#5-to-CB12	56.00	303.40	0.00	303.06	0.10	0.34	0.6100	CIRCULAR	15.000	15.000	0.0150	0.5000	0.5000	0.0000	0.00
27	FI6-to-CB11	56.00	303.23	0.00	302.67	0.26	0.56	1.0000	CIRCULAR	12.000	12.000	0.0150	0.5000	0.5000	0.0000	0.00

Flap Gate	No. of Barrels
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1
No	1

Pipe Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1	CB10-to-CB9	1.07	0 00:05	4.92	0.22	2.05	1.22	1.04	0.84	0.00		Calculated
2	CB11-to-CB9	10.66	0 00:06	13.82	0.77	3.60	0.72	1.94	0.97	0.00		Calculated
3	CB12-to-CB11	9.07	0 00:05	13.86	0.65	3.67	0.41	1.70	0.85	0.00		Calculated
4	CB14-to-DMH1	1.09	0 00:05	3.12	0.35	3.29	0.25	0.53	0.53	0.00		Calculated
5	CB15-to-CB12	1.85	0 00:05	5.60	0.33	3.27	0.22	0.95	0.76	0.00		Calculated
6	CB16-to-CB5	2.38	0 00:05	4.02	0.59	2.83	0.40	1.09	0.87	0.00		Calculated
7	CB17-to-CB12	5.93	0 00:05	6.45	0.92	3.58	0.96	1.39	0.92	0.00		Calculated
8	CB18-to-CB17	1.78	0 00:05	4.01	0.45	2.24	0.31	1.12	0.90	0.00		Calculated
9	CB19-to-CB17	2.53	0 00:05	4.07	0.62	2.52	0.45	1.09	0.87	0.00		Calculated
10	CB1-to-CB2	2.70	0 00:05	3.30	0.82	3.52	0.29	0.98	0.98	0.00		Calculated
11	CB20-to-CB17	0.70	0 00:06	2.43	0.29	1.61	0.79	0.89	0.89	0.00		Calculated
12	CB2-to-CB5	5.48	0 00:05	6.36	0.86	3.37	0.97	1.36	0.90	0.00		Calculated
13	CB3-to-CB2	1.10	0 00:05	2.68	0.41	2.13	0.32	0.94	0.94	0.00		Calculated
14	CB4-to-CB5	2.70	0 00:05	3.99	0.68	3.04	0.36	1.02	0.82	0.00		Calculated
15	CB5-to-CB7	10.81	0 00:05	13.90	0.78	4.00	0.86	1.80	0.90	0.00		Calculated
16	CB6-to-CB7	1.35	0 00:06	10.38	0.13	2.18	0.38	1.48	0.99	0.00		Calculated
17	CB7-to-DMH1	12.98	0 00:07	13.86	0.94	4.14	0.40	1.99	0.99	0.00		Calculated
18	CB8-to-EXIST	0.34	0 00:05	3.09	0.11	2.43	0.18	0.24	0.24	0.00		Calculated
19	CB9-to-DMH1	13.14	0 00:06	13.86	0.95	4.19	0.24	1.99	0.99	0.00		Calculated
20	DMH1-to-Chambers	26.81	0 00:07	44.34	0.60	7.37	0.02	1.74	0.69	0.00		Calculated
21	DMH2-to-CB13	0.00	0 00:00	9.22	0.00	0.00		0.00	0.00	0.00		Calculated
22	FI#1-to-CB4	0.18	0 00:08	2.32	0.08	0.78	1.37	0.66	0.66	0.00		Calculated
23	FI#2-to-CB7	0.15	0 00:08	2.67	0.06	0.82	4.80	0.58	0.58	0.00		Calculated
24	FI#3-to-CB6	0.47	0 00:06	3.09	0.15	0.92	1.47	0.79	0.79	0.00		Calculated
25	FI#4-to-CB2	0.35	0 00:08	4.10	0.09	0.72	2.59	0.85	0.68	0.00		Calculated
26	FI#5-to-CB12	0.73	0 00:05	4.36	0.17	1.57	0.59	1.21	0.97	0.00		Calculated
27	FI6-to-CB11	0.86	0 00:06	3.09	0.28	2.42	0.39	1.00	1.00	2.00		SURCHARGED

Inlet Input

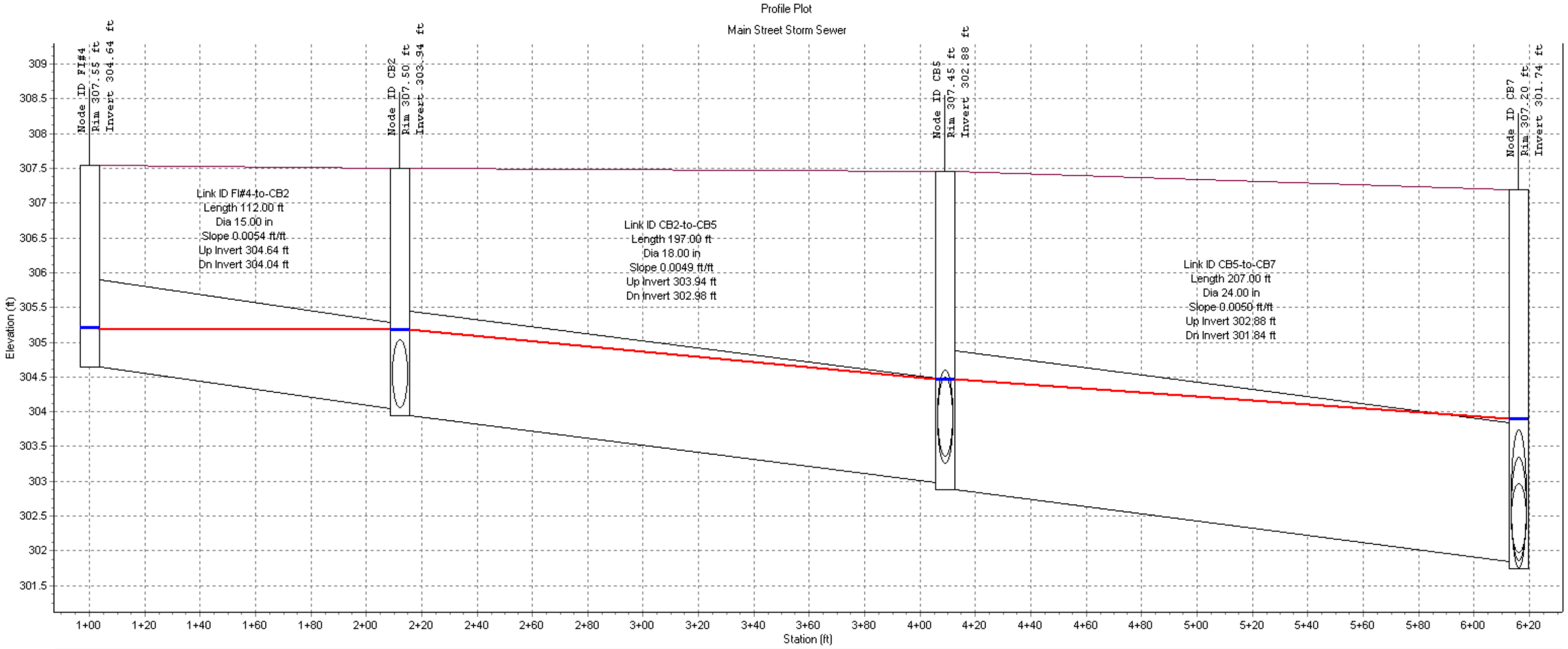
SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Ponded Area (ft^2)	Grate Clogging Factor (%)
1	CB1	NEENAH FOUNDRY	R-3405-A	On Sag	1	304.75	307.50	2.75	304.75	0.00	1.00	0.00
2	CB10	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.00	306.50	3.50	303.00	0.00	1.00	0.00
3	CB11	NEENAH FOUNDRY	R-3405-A	On Sag	1	302.41	307.00	4.59	302.41	0.00	1.00	0.00
4	CB12	NEENAH FOUNDRY	R-3405-A	On Sag	1	302.96	307.30	4.34	302.96	0.00	1.00	0.00
5	CB13	NEENAH FOUNDRY	R-3405-A	On Sag	1	299.50	303.87	4.37	299.50	0.00	1.00	0.00
6	CB14	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.00	306.70	3.70	303.00	0.00	1.00	0.00
7	CB15	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.85	307.60	3.75	303.85	0.00	1.00	0.00
8	CB16	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.60	307.32	3.72	303.60	0.00	1.00	0.00
9	CB17	NEENAH FOUNDRY	R-3405-A	On Sag	1	304.10	308.00	3.90	304.10	0.00	1.00	0.00
10	CB18	NEENAH FOUNDRY	R-3405-A	On Sag	1	304.41	308.00	3.59	304.41	0.00	1.00	0.00
11	CB19	NEENAH FOUNDRY	R-3405-A	On Sag	1	304.56	308.00	3.44	304.56	0.00	1.00	0.00
12	CB2	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.94	307.50	3.56	303.94	0.00	1.00	0.00
13	CB20	NEENAH FOUNDRY	R-3405-A	On Sag	1	304.67	308.20	3.53	304.67	0.00	1.00	0.00
14	CB3	NEENAH FOUNDRY	R-3405-A	On Sag	1	304.35	307.90	3.55	304.35	0.00	1.00	0.00
15	CB4	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.68	307.40	3.72	303.68	0.00	1.00	0.00
16	CB5	NEENAH FOUNDRY	R-3405-A	On Sag	1	302.88	307.45	4.57	302.88	0.00	1.00	0.00
17	CB6	NEENAH FOUNDRY	R-3405-A	On Sag	1	302.49	307.60	5.11	302.49	0.00	1.00	0.00
18	CB7	NEENAH FOUNDRY	R-3405-A	On Sag	1	301.74	307.20	5.46	301.74	0.00	1.00	0.00
19	CB8	NEENAH FOUNDRY	R-3405-A	On Sag	1	299.26	304.25	4.99	299.26	0.00	1.00	0.00
20	CB9	NEENAH FOUNDRY	R-3405-A	On Sag	1	301.54	306.55	5.01	301.54	0.00	1.00	0.00
21	DMH1	NEENAH FOUNDRY	R-3405-A	On Sag	1	301.14	307.75	6.61	301.14	0.00	1.00	0.00
22	DMH2	NEENAH FOUNDRY	R-3405-A	On Sag	1	302.90	307.77	4.87	302.90	0.00	1.00	0.00
23	EXIST	NEENAH FOUNDRY	R-3405-A	On Sag	1	0.00	305.00	305.00	0.00	0.00	1.00	0.00
24	FI#1	NEENAH FOUNDRY	R-3405-A	On Sag	1	304.14	308.75	4.61	304.14	0.00	1.00	0.00
25	FI#2	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.72	308.00	4.28	303.72	0.00	1.00	0.00
26	FI#3	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.40	307.75	4.35	303.40	0.00	1.00	0.00
27	FI#4	NEENAH FOUNDRY	R-3405-A	On Sag	1	304.64	307.55	2.91	304.64	0.00	1.00	0.00
28	FI#5	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.40	307.60	4.20	303.40	0.00	1.00	0.00
29	FI#6	NEENAH FOUNDRY	R-3405-A	On Sag	1	303.23	307.25	4.02	303.23	0.00	1.00	0.00

Roadway & Gutter Input

SN	Element ID	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (in)	Allowable Spread (ft)
1	CB1	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
2	CB10	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
3	CB11	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
4	CB12	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
5	CB13	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
6	CB14	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
7	CB15	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
8	CB16	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
9	CB17	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
10	CB18	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
11	CB19	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
12	CB2	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
13	CB20	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
14	CB3	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
15	CB4	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
16	CB5	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
17	CB6	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
18	CB7	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
19	CB8	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
20	CB9	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
21	DMH1	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
22	DMH2	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
23	EXIST	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
24	FI#1	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
25	FI#2	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
26	FI#3	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
27	FI#4	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
28	FI#5	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00
29	FI#6	N/A	0.0200	0.0160	0.0620	2.00	0.0656	7.00

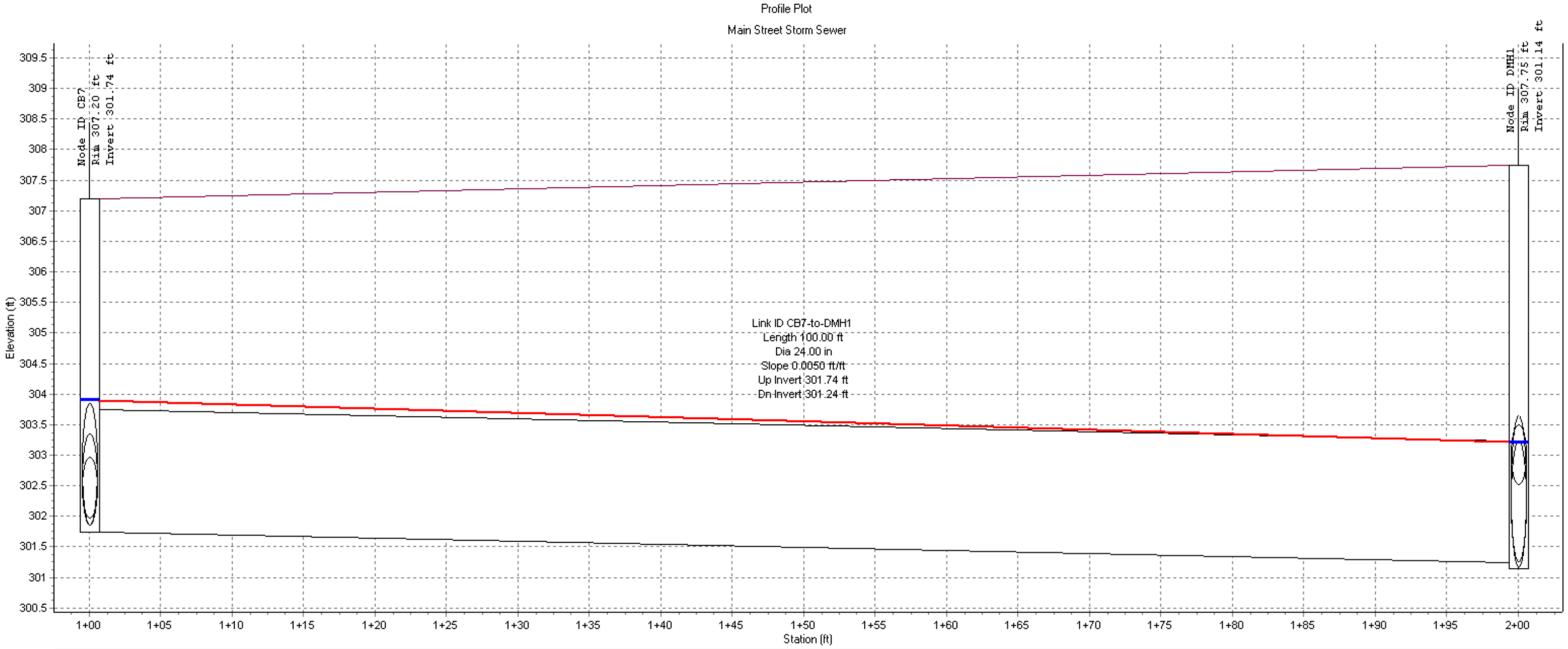
Inlet Results

SN	Element ID	Peak Flow (cfs)	Peak Lateral Inflow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	CB1	2.88	2.88	N/A	N/A	N/A	15.47	307.91	0.41	0 00:05	0.00	0.00
2	CB10	1.19	1.19	N/A	N/A	N/A	5.30	306.71	0.21	0 00:06	0.00	0.00
3	CB11	1.98	1.98	N/A	N/A	N/A	5.82	307.22	0.22	0 00:06	0.00	0.00
4	CB12	1.52	1.52	N/A	N/A	N/A	5.53	307.52	0.22	0 00:06	0.00	0.00
5	CB13	0.00	0.00	N/A	N/A	N/A	5.16	304.08	0.21	0 00:00	0.00	0.00
6	CB14	1.09	1.09	N/A	N/A	N/A	5.23	306.91	0.21	0 00:05	0.00	0.00
7	CB15	1.94	1.94	N/A	N/A	N/A	5.80	307.82	0.22	0 00:06	0.00	0.00
8	CB16	2.54	2.54	N/A	N/A	N/A	14.87	307.72	0.40	0 00:06	0.00	0.00
9	CB17	1.59	1.59	N/A	N/A	N/A	5.58	308.22	0.22	0 00:05	0.00	0.00
10	CB18	1.90	1.90	N/A	N/A	N/A	5.78	308.22	0.22	0 00:05	0.00	0.00
11	CB19	2.69	2.69	N/A	N/A	N/A	15.15	308.41	0.41	0 00:05	0.00	0.00
12	CB2	2.41	2.41	N/A	N/A	N/A	14.66	307.90	0.40	0 00:06	0.00	0.00
13	CB20	0.82	0.82	N/A	N/A	N/A	5.01	308.41	0.21	0 00:05	0.00	0.00
14	CB3	1.21	1.21	N/A	N/A	N/A	5.31	308.11	0.21	0 00:06	0.00	0.00
15	CB4	2.93	2.93	N/A	N/A	N/A	15.55	307.82	0.42	0 00:06	0.00	0.00
16	CB5	1.38	1.38	N/A	N/A	N/A	5.43	307.66	0.21	0 00:06	0.00	0.00
17	CB6	1.36	1.36	N/A	N/A	N/A	5.42	307.81	0.21	0 00:06	0.00	0.00
18	CB7	2.75	2.75	N/A	N/A	N/A	15.25	307.61	0.41	0 00:06	0.00	0.00
19	CB8	0.35	0.35	N/A	N/A	N/A	4.58	304.45	0.20	0 00:05	0.00	0.00
20	CB9	2.62	2.62	N/A	N/A	N/A	15.02	306.96	0.41	0 00:06	0.00	0.00
21	DMH1	0.00	0.00	N/A	N/A	N/A	5.16	307.96	0.21	0 00:07	0.00	0.00
22	DMH2	0.00	0.00	N/A	N/A	N/A	5.16	307.98	0.21	0 00:00	0.00	0.00
23	EXIST	0.00	0.00	N/A	N/A	N/A	5.16	305.21	0.21	0 00:41	0.00	0.00
24	FI#1	0.06	0.06	N/A	N/A	N/A	4.18	308.94	0.19	0 00:05	0.00	0.00
25	FI#2	0.07	0.07	N/A	N/A	N/A	4.19	308.19	0.19	0 00:07	0.00	0.00
26	FI#3	0.06	0.06	N/A	N/A	N/A	4.18	307.94	0.19	0 00:06	0.00	0.00
27	FI#4	0.12	0.12	N/A	N/A	N/A	4.28	307.74	0.19	0 00:06	0.00	0.00
28	FI#5	0.87	0.87	N/A	N/A	N/A	5.05	307.81	0.21	0 00:06	0.00	0.00
29	FI#6	1.03	1.03	N/A	N/A	N/A	5.18	307.46	0.21	0 00:06	0.00	0.00



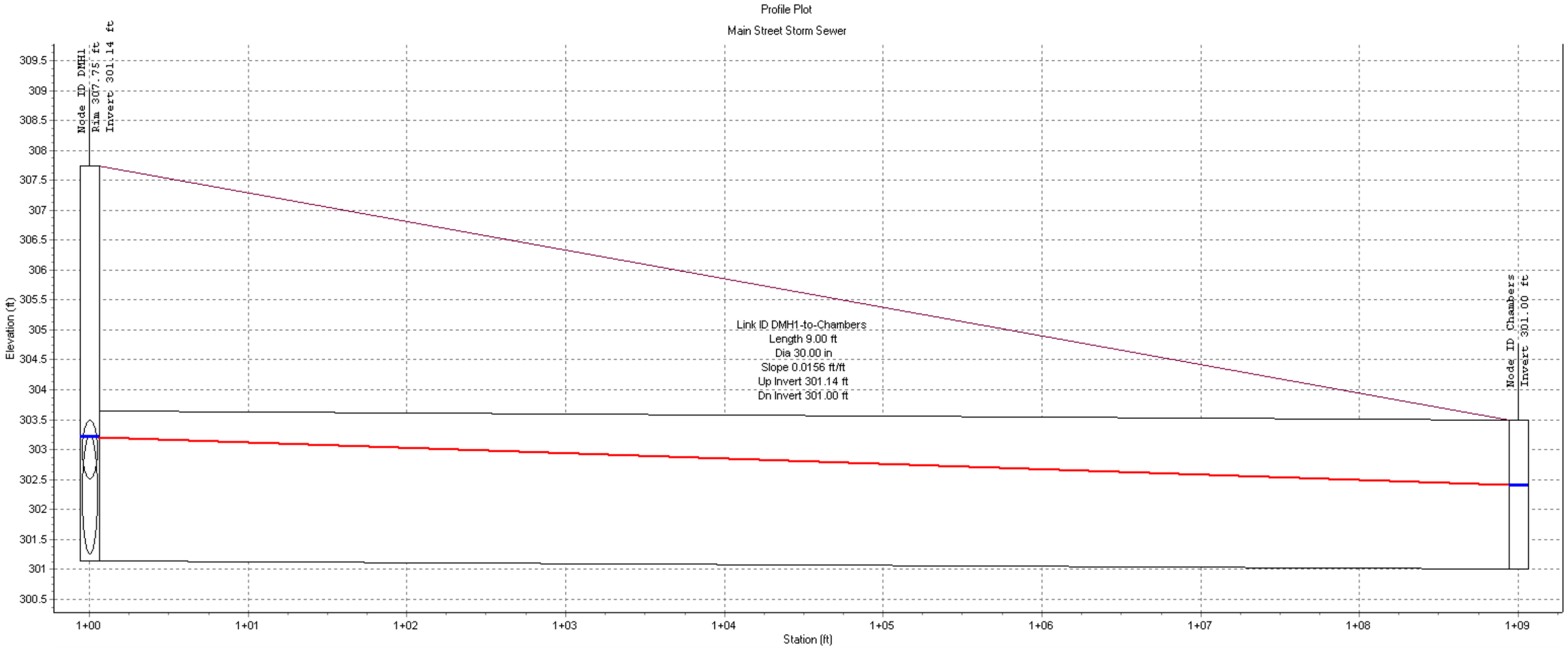
Node ID:	FI#4	CB2	CB5	CB7
Rim (ft):	307.55	307.50	307.45	307.20
Invert (ft):	304.64	303.94	302.88	301.74
Min Pipe Cover (ft):				
Max HGL (ft):	305.20	305.18	304.47	303.90

Link ID:	FI#4-to-CB2	CB2-to-CB5	CB5-to-CB7
Length (ft):	112.00	197.00	207.00
Dia (in):	15.00	18.00	24.00
Slope (ft/ft):	0.0054	0.0049	0.0050
Up Invert (ft):	304.64	303.94	302.88
Dn Invert (ft):	304.04	302.98	301.84
Max Q (cfs):	0.35	5.48	10.81
Max Vel (ft/s):	0.72	3.37	4.00
Max Depth (ft):	0.85	1.36	1.80



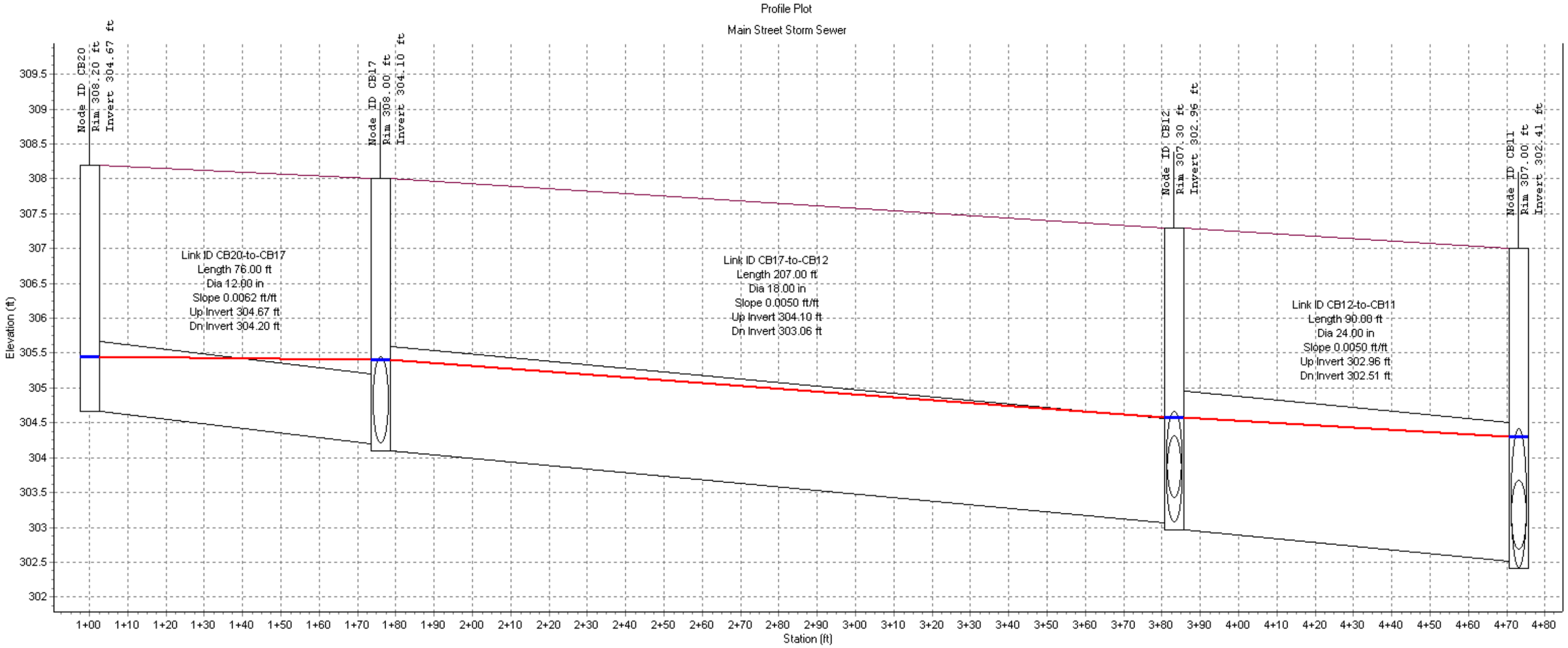
Node ID:	CB7		DMH1
Rim (ft):	307.20		307.75
Invert (ft):	301.74		301.14
Min Pipe Cover (ft):			
Max HGL (ft):	303.90		303.21

Link ID:	CB7-to-DMH1
Length (ft):	100.00
Dia (in):	24.00
Slope (ft/ft):	0.0050
Up Invert (ft):	301.74
Dn Invert (ft):	301.24
Max Q (cfs):	12.98
Max Vel (ft/s):	4.14
Max Depth (ft):	1.99



Node ID:	DMH1	Chambers
Rim (ft):	307.75	
Invert (ft):	301.14	301.00
Min Pipe Cover (ft):		
Max HGL (ft):	303.21	302.40

Link ID:	DMH1-to-Chambers
Length (ft):	9.00
Dia (in):	30.00
Slope (ft/ft):	0.0156
Up Invert (ft):	301.14
Dn Invert (ft):	301.00
Max Q (cfs):	26.81
Max Vel (ft/s):	7.37
Max Depth (ft):	1.74

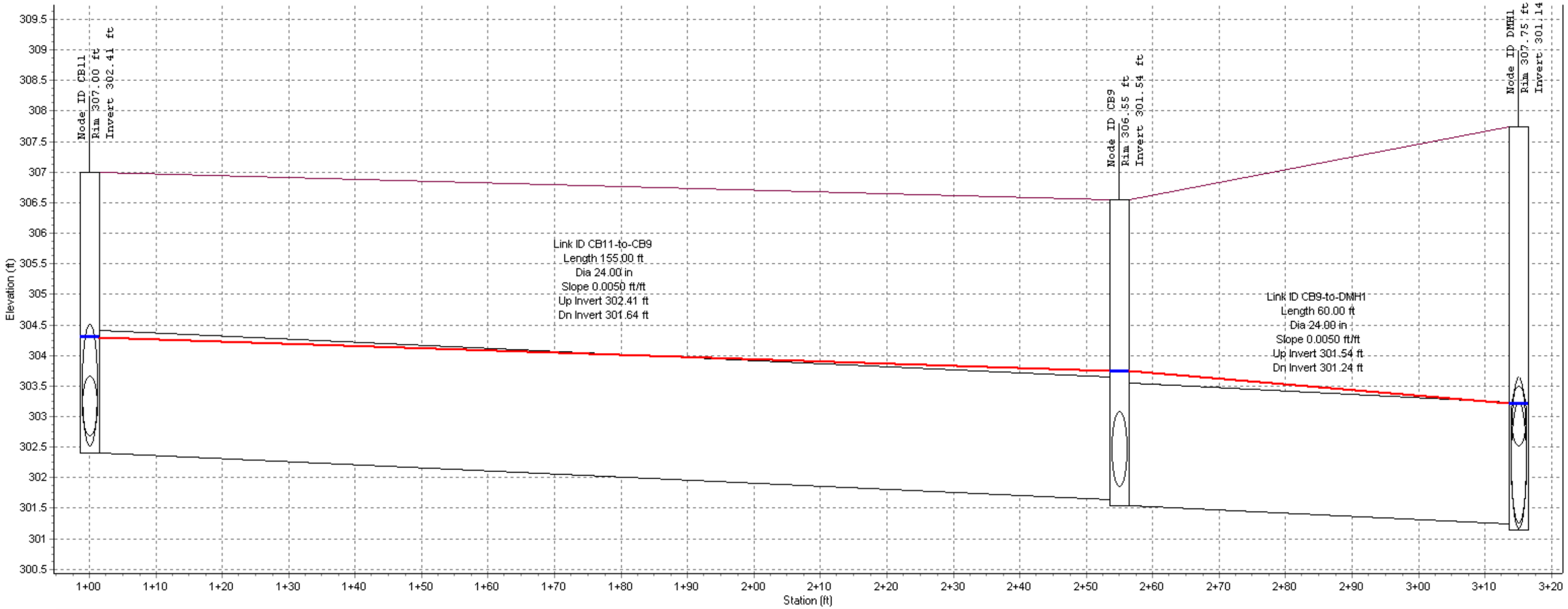


Node ID:	CB20	CB17	CB12	CB11
Rim (ft):	308.20	308.00	307.30	307.00
Invert (ft):	304.67	304.10	302.96	302.41
Min Pipe Cover (ft):				
Max HGL (ft):	305.45	305.40	304.57	304.30

Link ID:	CB20-to-CB17	CB17-to-CB12	CB12-to-CB11
Length (ft):	76.00	207.00	90.00
Dia (in):	12.00	18.00	24.00
Slope (ft/ft):	0.0062	0.0050	0.0050
Up Invert (ft):	304.67	304.10	302.96
Dn Invert (ft):	304.20	303.06	302.51
Max Q (cfs):	0.70	5.93	9.07
Max Vel (ft/s):	1.61	3.58	3.67
Max Depth (ft):	0.89	1.39	1.70

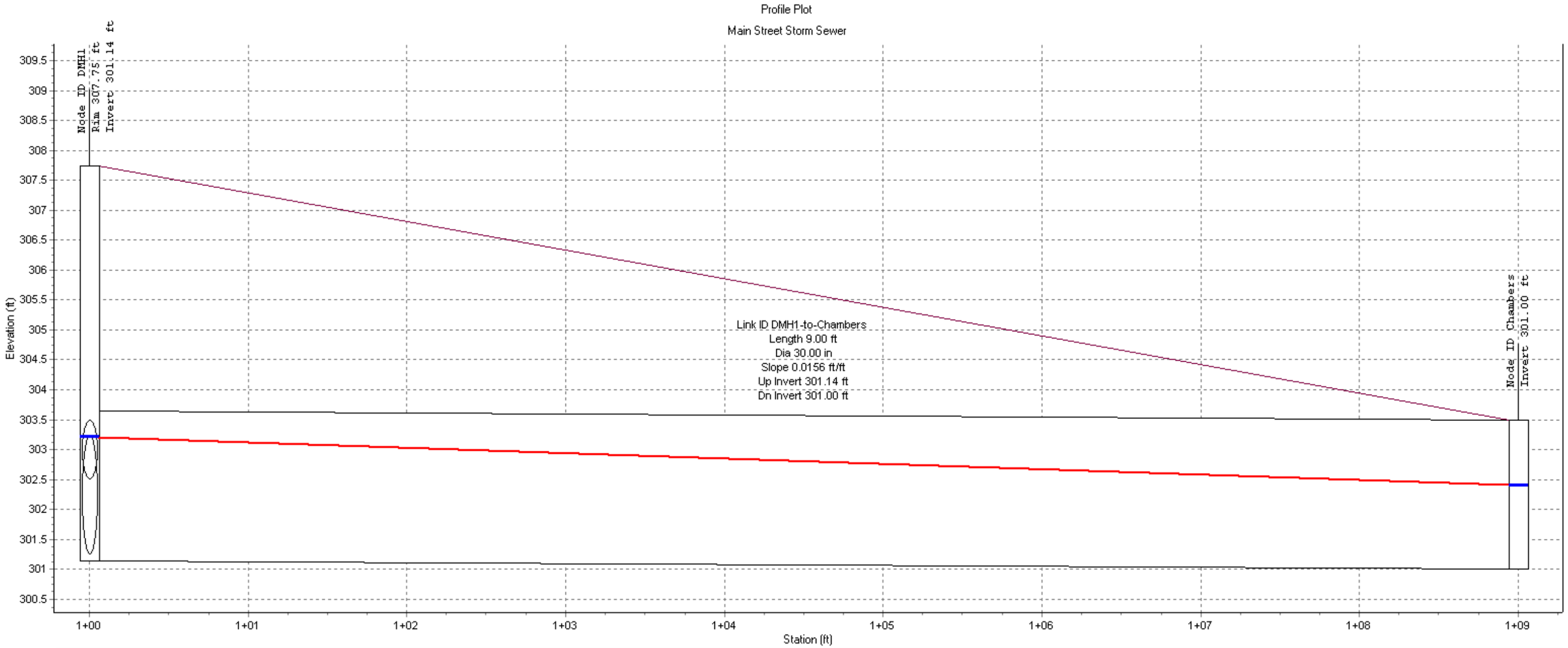
Profile Plot

Main Street Storm Sewer



Node ID:	CB11	CB9	DMH1
Rim (ft):	307.00	306.55	307.75
Invert (ft):	302.41	301.54	301.14
Min Pipe Cover (ft):			
Max HGL (ft):	304.30	303.74	303.21

Link ID:	CB11-to-CB9	CB9-to-DMH1
Length (ft):	155.00	60.00
Dia (in):	24.00	24.00
Slope (ft/ft):	0.0050	0.0050
Up Invert (ft):	302.41	301.54
Dn Invert (ft):	301.64	301.24
Max Q (cfs):	10.66	13.14
Max Vel (ft/s):	3.60	4.19
Max Depth (ft):	1.94	1.99



Node ID:	DMH1	Chambers
Rim (ft):	307.75	
Invert (ft):	301.14	301.00
Min Pipe Cover (ft):		
Max HGL (ft):	303.21	302.40

Link ID:	DMH1-to-Chambers
Length (ft):	9.00
Dia (in):	30.00
Slope (ft/ft):	0.0156
Up Invert (ft):	301.14
Dn Invert (ft):	301.00
Max Q (cfs):	26.81
Max Vel (ft/s):	7.37
Max Depth (ft):	1.74

ATTACHMENT 10

EROSION AND SEDIMENTATION CONTROL REPORT

BASIC STANDARDS
EROSION AND SEDIMENTATION CONTROL REPORT

WINDHAM VILLAGE APARTMENTS
WINDHAM, MAINE

Prepared for
WINDHAM VILLAGE APARTMENTS, LLC.

WINDHAM, ME 04062

Prepared by

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South Portland, Maine 04106
207.772.2515

OCTOBER 2023

10-5-23

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Attachments

MaineDEP SLDA SECTION 14

EROSION AND SEDIMENTATION CONTROL BASIC STANDARDS

14.0 Overview

This exhibit demonstrates the developer has made adequate provision for controlling erosion and sedimentation.

Gorrill Palmer has been retained by Windham Village Apartments, LLC to prepare an Erosion and Sedimentation Control Report for a proposed residential development on a 9 ± acre lot. Figure 1 is a map showing the project location.

The project is proposed to construct 14 buildings totaling 16 one-bedroom and 156 two-bedroom units. Utility and drainage infrastructure has been designed to meet or exceed requirements. There will be additional site outdoor amenity areas. Connectivity with the existing surrounding community is a primary design element with a focus on accessibility for multiple travel methods. This community can be accessed via two entrances - the Existing Private Access Drive that stems from Manchester Drive and the Private Drive on the western side of the property. Both the Private Access Drive and Manchester Drive connect to Tandberg Trail.

This narrative contains the general erosion and sedimentation control measures, which are appropriate for the construction of the project. Erosion and sedimentation control plans and details have also been prepared by Gorrill Palmer to accompany this report.

14.1 Existing Conditions and Soil Types

The existing development is in the Commercial 1 (C-1) Zoning District. It is approximately 9 acres of undeveloped land adjacent to the Shaw's strip mall. Currently, there is a wooded buffer separating the site from the shopping center. The site is bordered by a Private Drive, an existing Access Drive, Manchester Drive, and Tandberg Trail. The development on site will create approximately 5.01 acres of new non-vegetated surface. The overall disturbed area is approximately 8.76 acres.

The existing topography and terrain for the planned development area varies in elevation from approximately 303 to 309 feet. For drainage purposes, the property is proposing the utilization of a subsurface infiltration system . This system is located in the Southeast corner of the lot near Tandberg Trail. Most of the site contains slopes ranging from approximately 0.5% to 3.5%.

A Class A High Intensity Soil Survey (HISS) was conducted by Flycatcher, LLC and used to identify onsite soils. The proposed developed area is comprised of Hydrologic Soil Type A, B, C and D. A Medium Intensity Soil Survey (MISS) from the Web Soil Survey was used for the offsite locations surrounding the property to perform necessary runoff analysis calculations. For further details of the determined existing soils, a Soil Map and full report can be found in Attachment 12, included with this application.

The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.17 to 0.64. The higher values are indicative of the more erodible soils. Table 1 lists the soils identified in the HISS and their K values:

TABLE 1 – K VALUE (HISS) = WINDHAM TABLE		
Type	**Subsurface**	**Substratum**
Eldridge fsl/sil (EIA)	0.32/0.49	0.32/0.49
Hinckley s, wdr (HiA)	0.17	0.17

Based on Section 11's Soil Report, the on-site soils have a low to mid susceptibility to erosion. The following erosion and sedimentation control management plan will need to be closely followed by the Contractor to minimize erosion.

14.2 Existing Erosion Problems

Gorrill Palmer is not aware of any existing erosion problems at the project site.

14.3 Protected Natural Resources

There are no mapped wetlands or natural resources on site. Based upon the FEMA maps, the proposed development is located within a very low flood risk zone.

14.4 Critical Areas

No critical areas that would require special attention during construction are present on site.

14.5 Erosion Control Measures and Site Stabilization

The primary emphasis of the erosion/sedimentation control plan, which will be implemented for this project, is as follows:

- Development of a careful construction sequence.
- Rapid revegetation of denuded areas to minimize the period of soil exposure.
- Rapid stabilization of drainage paths to avoid rill and gully erosion.
- The use of on-site measures to capture sediment (sedimentation basins, hay bales/stone check dams/silt fence, etc.)

The following temporary and permanent erosion and sediment control devices will be implemented as part of the site development. These devices shall be installed as indicated on the plans or as described within this report. For further reference, see the latest edition of the Maine Erosion and Sediment Control Practices Field Guide for Contractors.

A. Dewatering

Water from construction trench dewatering shall pass first through a filter bag or secondary

containment structure (e.g. hay bale lined pool) prior to discharge. The discharge site shall be selected to avoid flooding, icing, and sediment discharges to a protected resource. In no case shall the filter bag or containment structure be located within 50 feet of a protected natural resource.

B. Inspection and Construction Monitoring

Maintenance measures shall be applied as needed during the entire construction season. Before and within 24 hours after each wet weather event that produces more than 0.5 inch of rainfall in a consecutive 24-hour period, snowstorm, or period of thawing and runoff, the qualified contractor knowledgeable of DEP standards shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuous function. Additionally, inspections shall be performed at least once a week. Following the temporary and/or final seeding and mulching, the contractor shall in the spring inspect and repair any damages and/or unestablished spots. Established vegetative cover means a minimum of 90% of areas vegetated with vigorous growth.

The following standards must be met during construction.

1. **Inspection and corrective action**. An Engineer or someone with knowledge of erosion and stormwater standards as described in the conditions of the permit shall inspect disturbed and impervious areas, erosion control measures (including catch basin inlet protection measures, sediment filter measures, and stabilization of slopes), materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. Inspect these areas at least once a week as well as before and within 24 hours after a storm event (wet weather event that produces more than 0.5 inch in a consecutive 24-hour period), and prior to completing permanent stabilization measures. Upon final subdivision plans, the inspection log will be updated to reflect all structures.

2. **Maintenance**. If best management practices (BMPs) need to be repaired, the repair work should be initiated upon discovery of the problem but no later than the end of the next workday. The contractor is responsible for all maintenance associated with these inspections. If additional BMPs or significant repair of BMPs are necessary, implementation must be completed within 7 calendar days and prior to any storm event (wet weather event that produces more than 0.5 inch in a consecutive 24-hour period). All measures must be maintained in effective operating condition until areas are permanently stabilized.

3. **Documentation**. Keep a log (report) summarizing the inspections and any corrective action taken. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicles access points to the parcel. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and location(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to Department staff and a copy must be provided

upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

C. Temporary Erosion Control Measures

Excavation and earthwork shall be completed such that any area left exposed can be controlled by the contractor. Limit the exposed area to one acre at a time or no larger area that can be mulched in one day.

Typical Slope Restoration:

- Erosion control blankets required between 2:1 and 3:1 slopes
- Slopes steeper than 8% require Erosion Control Mulch
- Slopes steeper than 2:1 shall not use solely vegetated stabilization methods
- 1.5:1 slopes are prohibited.

The following measures are planned as temporary erosion/sedimentation control measures during construction:

1. A crushed stone-stabilized construction entrance shall be placed at the approved access drive on the Existing Private Access Drive and Private Drive.
2. Siltation fence or wood waste compost berms shall be installed downstream of any disturbed areas to trap runoff- borne sediments until grass areas are revegetated. The silt fence and/or wood waste compost berms shall be installed per the details provided in this package and inspected at least once a week and before and immediately after a storm event of 0.5 inches or greater, and at least daily during prolonged rainfall. Repairs shall be made if there are any signs of erosion or sedimentation below the fence or berm line. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water behind the fence or berm, the barrier shall be replaced with a stone check dam.

3. One (1) sedimentation basin is proposed for the development to aid in preventing migration of sediments resulting from construction. The sedimentation basins are designed for a 24-hour delay time. A perforated riser shall be installed as the basin's outlet. The sediment basin shall remain in use until the tributary area has been stabilized.

4. Straw or hay mulch including hydroseeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulch placed between April 15th and October 15th on slopes of less than 15 percent shall be anchored by applying water; mulch placed on slopes of equal to or steeper than 15 percent shall be covered by a fabric netting and anchored with staples in accordance with manufacturer's recommendation. Fabric netting and staples shall be used on disturbed areas within 50' of lakes, streams, and wetlands regardless of the upstream slope. Mulch placed between October 15th and April 15th on slopes equal to or steeper than 8 percent shall be covered with a fabric netting and anchored with staples in accordance with the manufacturer's recommendations. Slopes steeper than 3:1 and equal to or flatter than 2:1, which are to be revegetated, shall receive Curlex blankets by American Excelsior or equal. Slopes steeper than 2:1 shall receive riprap as noted on the plans. The mulch application rate

for both temporary and permanent seeding is 75 lbs per 1000 sf as identified in Attachment A of this section. Mulch shall not be placed over snow.

5. Temporary stockpiles of stumps, grubbings, or common excavation will be protected as follows:

    a) Temporary stockpiles shall not be located within 50 feet of any wetlands which will not be disturbed and shall be located away from drainage swales.

    b) Stockpiles shall be stabilized within 7 days by either temporarily seeding the stockpile by a hydroseed method containing an emulsified mulch tackifier or by covering the stockpile with mulch, such as hay, straw, or erosion control mix.

    c) Stockpiles shall be surrounded by sedimentation barrier at the time of formation. Sediment barriers should be installed downgradient of stockpiles. Additionally, stormwater shall be prevented from running onto stockpiles.

6. All denuded areas that are within 50 feet of an undisturbed wetland, which have been rough graded and are not located within a building pad, parking area, or access drive subbase area, shall receive mulch or erosion control mesh fabric within 48 hours of initial disturbance of soil. All areas within 75 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window. In other areas, the time period may be extended to 7 days.

7. The Existing Private Access Drive, Private Drive, and Tandberg Trail (undisturbed portions entering the project site) shall be swept to control mud and dust as necessary. Additional stone shall be added to the stabilized construction entrance to minimize the tracking of material off the site and onto the surrounding roadways.

8. During grubbing operations stone check dams shall be installed at any evident concentrated flow discharge points and as directed on the Erosion Control Plans.

9. Silt fencing with a minimum stake spacing of 6 feet shall be used, unless the fence is supported by wire fence reinforcement of minimum 14 gauge and with a maximum mesh spacing of 6 inches, in which case stakes may be spaced a maximum of 10 feet apart. The bottom of the fence shall be anchored.

10. Wood waste compost/bark berms may be used in lieu of siltation fencing in areas not adjacent to wetlands but can be used inside of silt fence as a secondary row. Berms shall be removed and spread in a layer not to exceed 3" thick once upstream areas are completed and a 90% catch of vegetation is attained.

11. Water and/or calcium chloride shall be furnished and applied in accordance with MDOT specifications – Section 637 – Dust Control.

12. Loam and seed is intended to serve as the primary permanent revegetative measure for all denuded areas not provided with other erosion control measures, such as riprap. Application rates are provided in Attachment A of this section. Seeding shall not occur over snow.

13. All catch basins shall be protected during construction with a catch basin inlet filter and, in cases of heavy flows, a stone sediment barrier as shown on Sheet C404.

D. Permanent Erosion Control Measures

The following permanent erosion control measures have been designed as part of the Erosion/Sedimentation Control Plan:

1. All areas disturbed during construction, but not subject to other restoration (paving, riprap, gravel subbase, etc.) will be loamed, limed, fertilized, mulched, and seeded. Fabric netting, anchored with staples, shall be placed over the mulch in areas as noted in **Temporary Erosion Control Measures** paragraph 4 of this report. All areas within 50 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48-hour window. Native topsoil shall be stockpiled and reused for final restoration when it is of sufficient quality.

2. All storm drain pipe outlets shall have riprap aprons at their outlet to protect the outlet and receiving channel from scour and deterioration. Installation details are provided in the plan set. The aprons shall be installed and stabilized to the extent practicable prior to directing runoff to the tributary pipe or culvert.

3. Catch basins shall be provided with sediment sumps and inlet hoods (the Snout) for all outlet pipes that are 18" in diameter or less.

14.6 Implementation Schedule

The following construction sequence shall be required to ensure the effectiveness of the erosion and sedimentation control measures are optimized:

It is anticipated that construction will begin in 2024, with first occupancy anticipated by the end of 2025. The intent of construction is to follow a phased pattern, working from the Existing Private Access Drive and the Private Drive ends and into the center of the project.

Note: For all grading activities, the contractor shall exercise extreme caution not to overexpose the site, this shall be accomplished by limiting the disturbed area. Area shall be limited to no more than the contractor can mulch in one day.

1. Install stabilized construction entrances at the approved locations.
2. Install perimeter silt fence and/or wood waste berms.
3. Install sediment basins, diversion dikes, or check dams (clear only those areas necessary to install BMP's)
4. Clear and grub site. Install stone check dams at any evident concentrated flow discharge points.

5. Commence installation of drainage appurtenances.
6. Commence earthwork for stormwater facilities.
7. Commence earthwork and grading to subgrade.
8. Commence installation of retaining walls (if necessary).
9. Commence installation of water and sewer lines.
10. Continue earthwork and grading to subgrade as necessary for construction.
11. Complete installation of underground utilities to within 5' of future buildings.
12. Install light pole foundations and light poles.
13. Complete remaining earthwork operations.
14. Complete installation of drainage appurtenances.
15. Install sub-base and base gravel within parking areas, walkways, and all driveways.
16. Install curbing in parking areas as needed.
17. Install base course paving for drives and parking area as well as concrete surfaces.
18. Loam, lime, fertilize, seed and mulch disturbed areas and complete all landscaping.
19. Install surface course paving for drives and parking areas. Stripe per plan.
20. Once the site is stabilized and a 90% catch of vegetation has been obtained, remove all temporary erosion control measures.
21. Touch up loam and seed.

Prior to construction of the project, the contractor shall submit to the owner a schedule for the completion of the work, which will satisfy the following criteria:

1. The above construction sequence should generally be completed in the specified order; however, several separate items may be constructed simultaneously. Work must also be scheduled or phased to reduce the extent of the exposed areas as specified below. The intent of this sequence is to provide for erosion control and to have structural measures such as silt fence and construction entrances in place before large areas of land are denuded.

2. The work shall be conducted in sections which shall:

   (a) Limit the amount of exposed area to those areas in which work is expected to be undertaken during the proceeding 30 days.

   (b) Revegetate disturbed areas as rapidly as possible. All areas shall be permanently stabilized within 7 days of final grading or before a storm event; or temporarily stabilized within 48 hours of initial disturbance of soil for areas within 50 feet of an undisturbed wetland and 7 days for all other areas. Areas within 50 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window.

(c) Incorporate planned inlets and drainage system as early as possible into the construction phase. The ditches shall be immediately lined or revegetated as soon as their installation is complete.

14.7 Erosion, Sedimentation and Stabilization Control Plan

The Erosion Control information is included in the plan set.

14.8 Details and Specifications

The Erosion Control details and specifications are included in the plan set.

14.9 Winter Stabilization Plan

The winter construction period is from November 1 through April 15. If the construction site is not stabilized with pavement, a road gravel base, or riprap by November 15 then the site needs to be protected with over-winter stabilization. An area considered open is any area not stabilized with pavement; vegetation, mulching, erosion control mats, riprap or gravel base on a road.

Winter excavation and earthwork shall be completed such that any area left exposed can be controlled by the contractor. Limit the exposed area to one acre or an area that can be mulched in one day prior to any snow event.

All areas shall be considered to be denuded until the subbase gravel is installed in parking areas or the areas of future loam and seed have been loamed, seeded and mulched. Hay and straw mulch rate shall be a minimum of 150 lbs./1,000 s.f. (3 tons/acre) and shall be properly anchored.

For work, which is conducted between October 15th and April 15th of any calendar year, all denuded areas, shall be covered with hay mulch or erosion control mix, applied at twice the normal application rate and anchored with a fabric netting. The time period for applying mulch shall be limited to 2 days for all areas.

The contractor shall install any added measures which may be necessary to control erosion/sedimentation from the site dependent upon the actual site and weather conditions. Continuation of earthwork operations on additional areas shall not begin until the exposed soil surface on the area being worked has been stabilized, in order to minimize areas without erosion control protection.

1. Soil Stockpiles
   Stockpiles of soil or subsoil shall be mulched for over winter protection with hay or straw at twice the normal rate or at 150 lbs/1,000 s.f. (3 tons per acre) or with a four-inch layer of woodwaste erosion control mix. This shall be done within 24 hours of stocking and re-established prior to any rainfall or snowfall. Any soil stockpile shall not be placed (even covered with hay or straw) within 50 feet from any natural resources.

2. Natural Resource Protection
   Any areas within 75 feet from any natural resources, if not stabilized with a minimum of 90% mature vegetation catch, shall be mulched by December 1 and anchored with plastic netting or protected

with erosion control mats. During winter construction, a double line of sediment barriers (i.e. silt fence backed with hay bales or erosion control mix) shall be placed between any natural resource and the disturbed area. Projects crossing the natural resource shall be protected a minimum distance of 75 feet on either side from the resource. Existing projects not stabilized by December 1 shall be protected with the second line of sediment barrier to ensure functionality during the spring thaw and rains.

3. Sediment Barriers

   During frozen conditions, sediment barriers shall consist of wood waste filter berms as frozen soil prevents the proper installation of hay bales and sediment silt fences.

4. Mulching

   An area shall be considered denuded until areas of future loam and seed have been loamed, seeded and mulched. Hay and straw mulch shall be applied at a rate of 150 lb. per 1,000 square feet or 3 tons/acre (twice the normal accepted rate of 75-lbs./1,000 s.f. or 1.5 tons/acre) and shall be properly anchored. Mulch shall not be spread on top of snow. The snow shall be removed down to a one-inch depth or less prior to application. After each day of final grading, the area shall be properly stabilized with anchored hay or straw or erosion control matting. An area shall be considered to have been stabilized when exposed surfaces have been either mulched with straw or hay at a rate of 150 lb. per 1,000 square feet (3 tons/acre) and adequately anchored that ground surface is not visible through the mulch.

   Between the dates of November 1 and April 15, all mulch shall be anchored by peg line, mulch netting, asphalt emulsion chemical, or wood cellulose fiber. When ground surface is not visible through the mulch then cover is sufficient. After November 1st, mulch and anchoring of all bare soil shall occur at the end of each final grading workday.

5. Mulching on Slopes and Ditches

   Slopes shall not be left exposed for any extended time of work suspension unless fully mulched and anchored with peg and netting or with erosion control blankets. Mulching shall be applied at a rate of 230 lbs/1,000 s.f. on all slopes greater than 8%.

   Mulch netting shall be used to anchor mulch in all drainage ways with a slope greater than 3% for slopes exposed to direct winds and for all other slopes greater that 8%. Erosion control blankets shall be used in lieu of mulch in all drainage ways with slopes greater than 8%. Erosion control mix can be used to substitute erosion control blankets on all slopes except ditches.

6. Seeding

   Between the dates of October 15 and April 1st, loam or seed will not be required. During periods of above freezing temperatures finished areas shall be fine graded and either protected with mulch or temporarily seeded and mulched until such time as the final treatment can be applied. If the date is after November 1st and if the exposed area has been loamed, final graded with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched. Dormant seeding may be selected to be placed prior to the placement of mulch and fabric netting anchored with staples. If dormant seeding is used for the site, all disturbed areas shall receive 4" of loam and seed at an application rate of 5 lbs/1,000 s.f. All areas seeded during the

winter shall be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 90% catch) shall be revegetated by replacing loam, seed, and mulch. If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.

7. Winter Construction Inspection
   After each rainfall, snow storm or period of thawing and runoff, the qualified contractor knowledgeable of DEP standards shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuous function. Inspections shall be performed a minimum of once per week and shall be conducted in accordance with the Erosion Control Measures and Site Stabilization within the Erosion Control Report.

14.10 Standards for Timely Stabilization of Construction Sites During Winter

Standard for the timely stabilization of ditches and channels - The applicant shall construct and stabilize all stone-lined ditches and channels on the site by November 15. The applicant shall construct and stabilize all grass-lined ditches and channels on the site by September 1. If the applicant fails to stabilize a ditch or channel to be grass-lined by September 1, then the applicant will take one of the following actions to stabilize the ditch for late fall and winter.

Install a sod lining in the ditch -- The applicant shall line the ditch with properly installed sod by October 1. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, watering the sod to promote root growth into the disturbed soil, and anchoring the sod with jute or plastic mesh to prevent the sod strips from sloughing during flow conditions.

Install a stone lining in the ditch -- The applicant shall line the ditch with stone riprap by November 15. The applicant shall hire a registered professional engineer to determine the stone size and lining thickness needed to withstand the anticipated flow velocities and flow depths within the ditch. If necessary, the applicant shall regrade the ditch prior to placing the stone lining so to prevent the stone lining from reducing the ditch's cross-sectional area.

Standard for the timely stabilization of disturbed slopes -- The applicant shall construct and stabilize stone-covered slopes by November 15. The applicant shall seed and mulch all slopes to be vegetated by September 1. The department shall consider any area having a grade greater than 15% to be a slope. If the applicant fails to stabilize any slope to be vegetated by September 1, then the applicant shall take one of the following actions to stabilize the slope for late fall and winter.

Stabilize the soil with temporary vegetation and erosion control mats -- By September 1 the applicant shall seed the disturbed slope with winter rye at a seeding rate of 3 pounds per 1,000 square feet and apply erosion control mats over the mulched slope. The applicant shall monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or cover at least 75% of the disturbed slope by November 1, then the applicant shall cover the slope with a layer of woodwaste compost as described in item iii of this standard or with stone riprap as described in item iv of this standard.

Stabilize the slope with sod -- The applicant shall stabilize the disturbed slope with properly installed sod by September 1. Proper installation includes the applicant pinning the sod onto the slope with wire

pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The applicant shall not use late-season sod installation to stabilize slopes having a grade greater than 33% (3H:1V).

Stabilize the slope with woodwaste compost -- The applicant shall place a six-inch layer of woodwaste compost on the slope by November 15. Prior to placing the woodwaste compost, the applicant shall remove any snow accumulation on the disturbed slope. The applicant shall not use woodwaste compost to stabilize slopes having grades greater than 50% (2H:1V) or having groundwater seeps on the slope face.

Stabilize the slope with stone riprap -- The applicant shall place a layer of stone riprap on the slope by November 15. The applicant shall hire a registered professional engineer to determine the stone size needed for stability and to design a filter layer for underneath the riprap.

Standard for the timely stabilization of disturbed soils -- By September 15 the applicant shall seed and mulch all disturbed soils on areas having a slope less than 15%. If the applicant fails to stabilize these soils by this date, then the applicant shall take one of the following actions to stabilize the soil for late fall and winter.

Stabilize the soil with temporary vegetation -- By September 1 the applicant shall seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1000 square feet and anchor the mulch with plastic netting. The applicant shall monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or cover at least 90% of the disturbed soil before November 1, then the applicant shall mulch the area for over-winter protection as described below.

Stabilize the soil with sod -- The applicant shall stabilize the disturbed soil with properly installed sod by September 15. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

Stabilize the soil with mulch -- By November 15 the applicant shall mulch the disturbed soil by spreading hay or straw at a rate of at least 150 pounds per 1000 square feet on the area so that no soil is visible through the mulch. Prior to applying the mulch, the applicant shall remove any snow accumulation on the disturbed area. Immediately after applying the mulch, the applicant will anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

14.11 Chapter 500: Appendix C – Good Housekeeping

Authorized Non-stormwater discharges. Identify and prevent contamination by non-stormwater discharges. Where allowed non-stormwater discharges exist, they must be identified and steps should be taken to ensure the implementation of appropriate pollution prevention measures for the non-stormwater component(s) of the discharge. Authorized non-stormwater discharges are:

a) Discharges from firefighting activity;

b) Fire hydrant flushings;

c) Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);

d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);

e) Routine external building washdown, not including surface paint removal, that does not involve detergents;

f) Pavement washwater (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material had been removed) if detergents are not used;

g) Uncontaminated air conditioning or compressor condensate;

h) Uncontaminated groundwater or spring water;

i) Foundation or footer drain-water where flows are not contaminated;

j) Uncontaminated excavation dewatering (see requirements in Appendix C(5));

k) Potable water sources including waterline flushings; and

l) Landscape irrigation.

Unauthorized non-stormwater discharges. The Department's approval under this Chapter does not authorize a discharge that is mixed with a source of non stormwater, other than those discharges in compliance with Appendix C (6). Specifically, the Department's approval does not authorize discharges of the following:

a) Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;

b) Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;

c) Soaps, solvents, or detergents used in vehicle and equipment washing; and

d) Toxic or hazardous substances from a spill or other release.

14.12 Conclusion

The Applicant has provided temporary and permanent erosion control measures as well as specifying a sequence of construction as measures to minimize erosion and sedimentation.

14.13 Attachments

Attachment A Seeding Plan
Attachment B Operation and Maintenance Plan
Attachment C Inspection Report
Attachment D Stormwater Facility Inspection and Maintenance Forms

ATTACHMENT A

SEEDING PLAN

SEEDING PLAN

Project: Windham Village Apartments

Site Location: Windham, ME

☐ Permanent Seeding ☒ Temporary Seeding

1. Instruction on preparation of soil: Prepare a good seed bed for planting method used.
2. Apply lime as follows: _____# / acres, OR 138 # /M Sq. Ft.
3. Fertilize with _____ pounds of _____ N-P-K/ac. OR 13.8 pounds of 10-10-10 N-P-K/M Sq. Ft.
4. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
5. Seed with the following mixture:

   50% Winter Rye

   50% Annual Rye

6. Mulching instructions: Apply at the rate of _____per acre, OR 75 pounds per M. Sq. Ft.

	Amount	Unit # Tons. Etc.
7. TOTAL LIME	138	#/1000 sq. ft.
8. TOTAL FERTILIZER	13.8	#/1000 sq. ft.
9. TOTAL SEED	1.03	#/1000 sq. ft.
10. TOTAL MULCH	75	#/1000 sq. ft.
11. TOTAL other materials, seeds, etc.		
12. REMARKS		

Spring seeding is recommended; however, late summer (prior to September 1) seeding can be made. Permanent seeding should be made prior to August 5 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

SEEDING PLAN

Project: Windham Village Apartments

Site Location: Windham, ME

☒ Permanent Seeding ☐ Temporary Seeding

1. Instruction on preparation of soil: Prepare a good seed bed for planting method used.
2. Apply lime as follows: _____# / acres, OR 138 # /M Sq. Ft.
3. Fertilize with _____ pounds of _____ N-P-K/ac. OR 18.4 pounds of 10-20-20 N-P-K/M Sq. Ft.
4. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
5. Seed with the following mixture:

   40% Creeping Red Fescue

   30% Charger II Perennial Ryegrass

   20% KenBlue Kentucky Bluegrass

   10% Tiffany Chewings Fescue
6. Mulching instructions: Apply at the rate of _____per acre, OR 75 pounds per M. Sq. Ft.

	Amount	Unit # Tons. Etc.
7. TOTAL LIME	138	#/1000 sq. ft.
8. TOTAL FERTILIZER	18.4	#/1000 sq. ft.
9. TOTAL SEED	1.03	#/1000 sq. ft.
10. TOTAL MULCH	75	#/1000 sq. ft.
11. TOTAL other materials, seeds, etc.		
12. REMARKS		

Spring seeding is recommended, however, late summer (prior to September 1) seeding can be made. Permanent seeding should be made prior to August 5 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

ATTACHMENT B

OPERATION AND MAINTENACE PLAN

OPERATION AND MAINTENANCE PLAN

Prepared by:

- ❑ Professional Engineer:
  - Print Name: Drew Gagnon
  - Signature: 
  - License #: 16111
- ❑ Landscape Architect:
  - Print Name:
  - Signature:
  - License #:
- ❑ Certified ESC Professional:
  - Print Name:
  - Signature:
  - License #:

Company:

Stamp:

OPERATION AND MAINTENANCE PLAN

Maintenance of Facilities

The anticipated maintenance responsibilities for Windham Village Apartments infrastructure is as follows:

Maintained by Windham Village Apartments, LLC:

- Cultec Recharger 920 HD Chamber infiltration system

Long-term operation/maintenance recommended for the stormwater facilities are presented below.

Inspections shall be conducted by a person with knowledge of erosion and stormwater control, including the standards and conditions in the permit. The responsible party, which may be a contractor knowledgeable of standard stormwater and erosion control measures, may contract with such professionals as necessary in order to comply with this provision and may rely on the advice of such professionals in carrying out its duty hereunder, provided, that the following operation and maintenance procedures are hereby established as a minimum for compliance with this section. A maintenance log of the inspections shall be kept by the responsible party for a minimum of 5 years after construction. A rainfall event that produces more than a 1-inch storm in a consecutive 24-hour period shall prompt a post construction inspection.

Town of Windham Annual Certifications:

Per MaineDEP and the Town of Windham Post-Construction Stormwater Management Plan Compliance Code requirements, inspections of the stormwater and drainage infrastructure are due to the Municipal Enforcement Authority by June 1st of each year. Below is a summary of the forms and logs to be completed by the applicant and returned to the Office of Code Enforcement:

Inspection Form	Returned to Municipal Enforcement Authority (any given year)
• Annual Stormwater Management Facilities Certification • Inspection and Maintenance Log	June 1st

Forms due by **June 1st** can be found in **Attachment 1** included with this O&M plan.

Inspection and Maintenance Frequency and Corrective Measures:

The following areas, facilities, and measures will be inspected, and the identified deficiencies will be corrected. Clean-out must include the removal and legal disposal of any accumulated sediments and debris.

Catch Basins:

Inspect catch basins 2 times per year (preferably in Spring and Fall) to ensure that the catch basins are working in their intended fashion and that they are free of debris. Clean structures when sediment depths reach 12" from invert of outlet. If the basin outlet is designed with a hood to trap floatable materials (i.e. Snout), check to ensure watertight seal is working. At a minimum, remove floating debris and hydrocarbons at the time of the inspection.

OPERATION AND MAINTENANCE PLAN

Field Inlets:

Inspect field inlets 2 times per year (preferably in Spring and Fall) to ensure that the field inlets are working in their intended fashion and that they are free of debris. Clean structures when sediment depths reach 12" from invert of outlet.

Vegetated Areas:

Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. The facilities will be inspected after major storms and any identified deficiencies will be corrected.

Roadways and Parking Surfaces:

Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Repair potholes and other roadway obstructions and hazards. Plowing and sanding of paved areas shall be performed as necessary to maintain vehicular traffic safety.

Stormdrain Outlets:

Inspect outlets 2 times per year (preferably in Spring and Fall) to ensure that the outlets are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris at the outlet and within the conduit. Repair any erosion damage at the storm drain outlet.

Surface (Underdrain Filter, Swale or Bio-Filter):

The soil filters shall be inspected within the first three months after construction; thereafter the filters shall be inspected 2 times per year (preferably in Spring and Fall) to ensure that the filter is draining within 24 to 48 hours of a rain event equivalent to 1" or more. Adjustments shall be made to the outlet valve, by opening or closing valve, to ensure that the grassed underdrain soil filter drains within 24 to 48 hours. Failure to drain in 72 hours will require part or all of the soil filter media to be removed and replaced with new material meeting the soil filter gradation. The facilities shall be inspected after major storms and any identified deficiencies shall be corrected. Harvesting and weeding of excessive growth shall be performed as needed. Inspect for unwanted or invasive plants and remove as necessary.

Subsurface Detention Chamber:

Inspect chambers per manufacturer's recommendation. At a minimum inspect chambers 2 times per year (preferably in Spring and Fall) to ensure that the structures are working in their intended fashion and that they are free of debris. Remove sediment from the Isolator Row when depth of sediment reaches 3 inches.

Roofline Drip Edge Facilities:

The drip strip will be inspected within the first three months after construction; thereafter the filter will be inspected 2 times per year (preferably in Spring and Fall) to ensure that the filter is draining within 24 to 48 hours of a rain event equivalent to 1" or more. Adjustments will be made to the outlet valve to ensure that the drip strip drains within 24 to 48 hours. Failure to drain in 72 hours will require part or all of the soil filter media to be removed and replaced with new material meeting the soil filter gradation. The facilities will be inspected after major storms and any identified deficiencies will be

corrected. Inspect for unwanted or invasive plants and remove as necessary. Remove debris from the surface. Since the Roofline Drip edge is part of the approved stormwater management plan, it cannot be paved over or altered in any way. Gutters shall not be installed along the roofline.

Inlet/Outlet Control Structures:

Inspect structures and piping 2 times per year (preferably in Spring and Fall) to ensure that the structures are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris within the structure. Ensure drop down weirs are in working order and no flow is improperly bypassing the weirs.

Ditches, Swales, and other Open Stormwater Channels:

Inspect 2 times per year (preferably in Spring and Fall) to ensure they are working in their intended fashion and that they are free of sediment and debris. Remove any obstructions to flow, including accumulated sediments and debris and vegetated growth. Repair any erosion of the ditch lining. Vegetated ditches will be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. Correct any erosion of the channel's bottom or side slopes. The facilities shall be inspected after major storms and any identified deficiencies shall be corrected.

Sorbent Booms:

The Elimo-Pillow (or other brand) shall be inspected twice per year to ensure it is working as intended. The sorbent boom shall be removed from the manhole and the pillow checked for saturation of oil. If saturated, the pillow shall be replaced according to the manufacturer's recommendations and guidance.

Recertification

As part of the Stormwater Permit, the applicant is required to meet the standards in Appendix B of the Chapter 500 Rules. Appendix B states that a project must submit a certification of the following to the department within three months of the expiration of each five-year interval from the date of issuance of the permit.

(a) Identification and repair of erosion problems. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.

(b) Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.

(c) Maintenance. The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the department, and the maintenance log is being maintained.

(d) Proprietary Systems. All proprietary systems have been maintained according to the manufacturer's recommendations. Where required by the Department, the permittee shall execute a 5-year maintenance contract with a qualified professional for the coming 5-year interval. The maintenance contract must include provisions for routine inspections, cleaning, and general maintenance.

(e) Post-construction inspection and maintenance documents shall be retained for at least five (5) years.

Housekeeping

OPERATION AND MAINTENANCE PLAN

The following procedures are hereby established as a minimum for compliance with this section. For further information on the procedures listed below, refer to MDEP Chapter 500 rules – Appendix C.

Spill prevention. Controls must be used to prevent pollutants from construction and waste materials stored on site to enter stormwater, which includes storage practices to minimize exposure of the materials to stormwater. The site contractor or operator must develop, and implement as necessary, appropriate spill prevention, containment, and response planning measures.

NOTE: Any spill or release of toxic or hazardous substances must be reported to the Department. For oil spills, call 1-800-482-0777 which is available 24 hours a day. For spills of toxic or hazardous material, call 1-800-452-4664 which is available 24 hours a day. For more information, visit the Department's website at :http://www.maine.gov/dep/spills/emergspillresp/

Groundwater protection. During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials. Any project proposing infiltration of stormwater must provide adequate pre-treatment of stormwater prior to discharge of stormwater to the infiltration area, or provide for treatment within the infiltration area, in order to prevent the accumulation of fines, reduction in infiltration rate, and consequent flooding and destabilization. See Appendix D for license by rule standards for infiltration of stormwater.

NOTE: Lack of appropriate pollutant removal best management practices (BMPs) may result in violations of the groundwater quality standard established by 38 M.R.S.A. §465-C(1).

Fugitive sediment and dust. Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control, but other water additives may be considered as needed. A stabilized construction entrance (SCE) should be included to minimize tracking of mud and sediment. If off-site tracking occurs, public roads should be swept immediately and no less than once a week and prior to significant storm events. Operations during dry months, that experience fugitive dust problems, should wet down unpaved access roads once a week or more frequently as needed with a water additive to suppress fugitive sediment and dust.

NOTE: Dewatering a stream without a permit from the Department may violate state water quality standards and the Natural Resources Protection Act.

Debris and other materials. Minimize the exposure of construction debris, building and landscaping materials, trash, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials to precipitation and stormwater runoff. These materials must be prevented from becoming a pollutant source.

NOTE: To prevent these materials from becoming a source of pollutants, construction and post-construction activities related to a project may be required to comply with applicable provision of rules related to solid, universal, and hazardous waste, including, but not limited to, the Maine solid waste and hazardous waste management rules; Maine hazardous waste management rules; Maine oil conveyance and storage rules; and Maine pesticide requirements.

Excavation de-watering. Excavation de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water removed from the ponded area, either through gravity or pumping, must be spread

through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved by the Department.

NOTE: Dewatering controls are discussed in the "Maine Erosion and Sediment Control BMPs, Maine Department of Environmental Protection."

Authorized Non-stormwater discharges. Identify and prevent contamination by non-stormwater discharges. Where allowed non-stormwater discharges exist, they must be identified, and steps should be taken to ensure the implementation of appropriate pollution prevention measures for the non-stormwater component(s) of the discharge. Authorized non-stormwater discharges are:

a) Discharges from firefighting activity;

b) Fire hydrant flushings;

c) Vehicle wash water if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);

d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);

e) Routine external building washdown, not including surface paint removal, that does not involve detergents;

f) Pavement wash water (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material had been removed) if detergents are not used;

g) Uncontaminated air conditioning or compressor condensate;

h) Uncontaminated groundwater or spring water;

i) Foundation or footer drain-water where flows are not contaminated;

j) Uncontaminated excavation dewatering (see requirements in Appendix C(5));

k) Potable water sources including waterline flushings; and

l) Landscape irrigation.

Unauthorized non-stormwater discharges. The Department's approval under this Chapter does not authorize a discharge that is mixed with a source of non-stormwater, other than those discharges in compliance with Appendix C (6). Specifically, the Department's approval does not authorize discharges of the following:

a) Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;

b) Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;

c) Soaps, solvents, or detergents used in vehicle and equipment washing; and

d) Toxic or hazardous substances from a spill or other release.

OPERATION AND MAINTENANCE PLAN

Attachments

1 - Annual Stormwater Management Facilities Certification (*Stormwater Management, 201 Attachment 1, Town of Windham, Appendix 1)*

ATTACHMENT 1

ANNUAL STORMWATER MANAGEMENT FACILITIES CERTIFICATION

201 Attachment 1

Town of Windham

Appendix 1

Annual Stormwater Management Facilities Certification
(to be sent to Municipal Enforcement Authority)

I,_____ (print or type name), certify the following:

1. I am making this annual stormwater management facilities certification for the following property:_____ (print or type name of subdivision, condominium or other development) located at _____ (print or type address), (the "property");

2. The owner, operator, tenant, lessee or homeowners' association of the property is: _____ [name(s) of owner, operator, tenant, lessee, homeowners' association or other party having control over the property];

3. I am the owner, operator, tenant, lessee or president of the homeowners' association, or am a qualified third-party inspector hired by the same (circle one);

4. I have knowledge of erosion and stormwater control and have reviewed the approved post-construction stormwater management plan for the property;

5. On_____, 20_____, I inspected or had inspected by _____, a qualified third-party inspector, the stormwater management facilities, including but not limited to parking areas, catch basins, drainage swales, detention basins and ponds, pipes and related structures required by the approved post-construction stormwater management plan for the property;

6. At the time of my inspection of the stormwater management facilities on the property, I or the qualified third-party inspector identified the following need(s) for routine maintenance or deficiencies in the stormwater management facilities:
   _____
   _____
   _____
   _____
   _____

7. On_____, 20__, I took or had taken the following routine maintenance or the following corrective action(s) to address the deficiencies in the stormwater management facilities stated in 6 above:
   _____
   _____
   _____
   _____

8. As of the date of this certification, the stormwater management facilities are functioning as intended by the approved post-construction stormwater management plan for the property

Date:_____, 20_____ By:_____
Signature

_____
Print Name

STATE OF MAINE
_____, ss _____, 20_____

Personally appeared the above-named _____, the _____ of _____, and acknowledged the foregoing annual certification to be said person's free act and deed in said capacity.

Before me,

_____
Notary Public/Attorney at Law

Print Name: _____

Mail this certification to the Town of Windham at the following address:

Office of Code Enforcement
Town of Windham
8 School Road
Windham, ME 04062

ATTACHMENT C

INSPECTION REPORT

Windham Village Apartments

Maintenance Log

Personnel:

Date:

Structure	Condition	Depth of Sediment	Inspection Comments	Maintenance Required
CB 1				
CB 2				
CB 3				
CB 4				
CB 5				
CB 6				
CB 7				
CB 8				
CB 9				
CB 10				
CB 11				
CB 12				
CB 13				
CB 14				
CB 15				
CB 16				
CB 17				
CB 18				
CB 19				
CB 20				
DMH 1				
DMH 2				
DMH 3				
DMH 4				
DMH 5				
DMH 6				
DMH 7				
FI #1				
FI #2				
FI #3				
FI #4				
FI #5				
FI #6				

Roof Dripline Filter	Condition	Inspection Comments	Maintenance Required
Building 1			
Building 2			
Building 3			
Building 4			
Building 5			
Building 6			
Building 7			
Building 8			
Building 9			
Building 10 (Community Center)			
Building 11			
Building 12			
Building 13			
Building 14			

STORMWATER POLLUTION PREVENTION PLAN

INSPECTION REPORT

PROJECT INFORMATION

Project Name: Windham Village Apartments

Address: 770 Roosevelt Trail,
Windham, Maine
04062

CONTRACTOR/SUBCONTRACTOR INFORMATION

Inspector Name: _____

Firm: _____

Title: _____

Qualifications: _____

INSPECTION SUMMARY

Date of Inspection: _____

Major Observations: _____

_____

_____

_____

THE FACILITY IS IN COMPLIANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN WITH THE FOLLOWING EXCEPTIONS:

_____

_____

_____

_____

_____

ACTIONS NECESSARY TO BRING FACILITY INTO COMPLIANCE:

_____

_____

REQUIRED MODIFICATIONS TO STORMWATER POLLUTION PREVENTION PLAN

(MUST BE IMPLEMENTED WITHIN 7 DAYS OF INSPECTION):

_____

_____

_____

_____

CERTIFICATION STATEMENT:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the systems, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

_____
Signature

_____
Typed Name

_____
Title

_____
Date

ATTACHMENT D

STORMWATER FACILITY INSPECTION AND MAINTENACE FORMS

INSPECTION & MAINTENANCE FORM

Project: Windham Village Apartments
Client: Windham Village Apartments, LLC
Field Rep:
Time on-site:

Visit Date:
Report Date:
Weather:
Temperature Range:

Distribution:

INSPECTION & MAINTENANCE FORM

SUBSURFACE CHAMBER CHECKLIST:

Yes	No		Comments:
		Inlets and Outlets	
❑	❑	Inlets and Outlets are clear of debris/obstructions.	
❑	❑	Inspection Port clear of debris	
❑	❑	Surface clear of trash and debris.	
❑	❑	Clogging, or signs water is not draining freely through media filter.	
❑	❑	Check overflow structure and clear debris.	

Other Comments:

DRIPLINE FILTERS CHECKLIST:

Yes	No		Comments:
		Inlets and Outlets	
❑	❑	Inlets and Outlets are clear of debris/obstructions.	
❑	❑	No signs of erosion in rip rap inlet.	
❑	❑	Surface clear of trash and debris.	
❑	❑	Dripline is clear of invasive/unwanted plants.	
❑	❑	Dripline is not being used for snow storage.	

Other Comments:

ATTACHMENT 11

ESTIMATED DEMANDS FOR WATER AND SEWAGE DISPOSAL & UTILITY DISTRICT STATEMENTS

CORRESPONDENCE TO PORTLAND WATER DISTRICT

GORRILL PALMER

300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

March 20, 2024

Mr. Andrew Weaver
Portland Water District
225 Douglass Street
Portland, Maine 04104-3553

Subject: **Windham Village Apartments**
Windham, Maine
Sanitary Sewer Ability to Serve Request

Dear Mr. Weaver:

Windham Village Apartments, LLC has retained Gorrill Palmer to assist in the preparation of plans and permitting for a proposed residential development in Windham, ME. The property is identified as Map 70 and Lot 1A on the Town of Windham's tax maps. The development area is a portion of the ±24.9-acre Shaw's site that is being proposed to be subdivided as part of this project. The project site is approximately ±9-acre and is currently undeveloped land (with the exception of approximately 0.76 acres that serves as the subsurface wastewater disposal area for the Shaw's development) adjacent to the Shaw's commercial development.

The project is proposed to construct 29 one-bedroom and 143 two-bedroom multifamily units along with associated utility, drainage, and stormwater infrastructure. Additionally, there are walkways, landscaped areas, outdoor amenity areas, and a stormwater management facility. As required by the reviewing authorities, we are writing to request a letter indicating the ability of Portland Water District (PWD) to serve this project. Preliminary utility plans are enclosed for your review in Attachment 1.

PROJECT DESCRIPTION

The proposed development is located between Tandberg Trail, Manchester Drive, and a Private Drive in Windham, ME. Connectivity with the existing surrounding community is a primary design element with a focus on accessibility for multiple travel methods. The development includes a sidewalk network to promote interconnectivity.

EXISTING AND PROPOSED SERVICE

Windham Village Apartments, LLC are proposing to use a gravity system to convey sanitary flow to a future pump station that we understand the Town of Windham and it's subconsultants are currently in the process of designing. The Applicant, Town of Windham Staff, and PWD are working together on timelines for connection. We understand this phase of the public sewer project is anticipated to be active near the end of 2025.

The Applicant has worked closely with the Town of Windham and PWD to determine a pump station location within this project site. We understand the preferred location for all parties is in the southwestern corner of the property, adjacent to Tandberg Trail and Manchester Drive. An approved and recorded subdivision plan (Book 224, Page 52) shows an approximate 6,500 SF lot reserved for this public pump station (labeled as "Lot 2").

The Applicant proposes 14 multifamily buildings ranging from 12 units to 16 units each. These buildings are proposed to be serviced by a 6" sanitary lateral conveying flow to an 8" public gravity line (by PWD). This 8" gravity line will ultimately discharge near the proposed pump station location at the southwestern portion of the lot and is being coordinated with your office. In addition, a force main is proposed within this 45 ft utility easement and is shown on the plans. Please refer to the Preliminary Utility Plans provided in Attachment 1 for your review. Appropriate easements have been added to the recorded subdivision plans. We also understand future sewer main connections to adjacent properties are anticipated.

The proposed development encroaches on the existing disposal field for the adjacent Shaw's Supermarket building. The Applicant, PWD and the Town of Windham are working directly with the property owner to coordinate retirement of this system and Shaw's connecting to the public main.

ANTICIPATED FLOWS

The anticipated water usage for the development was computed using the *State of Maine Subsurface Wastewater Disposal Rules* design flows. Based on TR-16 and the average daily wastewater generation, a peaking factor of 600% is utilized for residential use. The table below is a summary of the Wastewater Generation Calculation that is anticipated for the development.

Table 2 – Estimated Water Usage

Type	Average Daily Wastewater Generation (gpd)	Peak Daily Wastewater Generation (gpm)
Residential	29,220	122

The Wastewater Generation Calculation sheet has been provided in Attachment 2.

ABILITY TO SERVE

In support of the applications to the reviewing authorities, we are writing to request a letter indicating the Portland Water District has the ability to serve the proposed project. In addition, we are interested in receiving:

- An estimate for any work the Water District would perform within the right-of-way.
- Information as to any easements that the District may require on-site.
- Any other information that you believe would be useful as this project proceeds.

CLOSURE

Please contact me if you have any questions relative to this matter at 772-2515 or at llabbay@gorrillpalmer.com

Sincerely,
Gorrill Palmer

Lauren Labbay, EI
Design Engineer
207-772-2515 x240
llabbay@gorrillpalmer.com

Attachments:
Attachment 1 – Preliminary Utility Plans
Attachment 2 – Wastewater Generation Calculations

c: Loni Graiver, Graiver Homes, Inc.
Angelo Coppola, Coppola Properties, Inc.

U:\3796_Gravier Homes_Tandberg Trail Mixed Residential Housing - Windham\H Utilities\PWD\3796 - PWD Capacity to Serve (SEWER) (03.08.2024).doc

GORRILL PALMER

JOB	Windham Village Apartments - Windham, ME			
SHEET NO.	1	OF	1	
CALCULATED BY	LEL	DATE	08-25-23	
CHECKED BY	DJG	DATE	3-19-24	
SCALE	None			

Task: Compute Proposed Waste Water Generation for Windham Village Apartments

Waste Water Generation Calculations

1 BEDROOM UNITS			
Dwelling Units		**29**	
Flow Rate		120	gpd/unit
	Subtotal	**3,480**	gallons/day
	Subtotal Design Flow	3,480	**gallons/day**
2 BEDROOM UNITS			
Dwelling Units		**143**	
Flow Rate		180	gpd/unit
	Subtotal	**25,740**	gallons/day
	Subtotal Design Flow	25,740	**gallons/day**
Total Average Daily Design Flow		29,220	**gallons/day**

PEAK FLOW CALCULATIONS		
Subtotal Average Daily Flow	29,220	gallons/day
Subtotal Average Flow	20	gallons/minute
Peak Daily Use*	600	%
Subtotal Design Flow	122	gallons/minute

Notes:

**Peaking Factor from TR-16 Guides for Design of Wastewater Treatment Works - 2011 edition and revised in 2016*

Residential Development = 600% Peaking Factor

Commercial, Industrial, and Institutional Development = 300% Peaking Factor

GORRILL PALMER

300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

March 20, 2024

Mr. Rob Bartels
Portland Water District
225 Douglass Street
Portland, Maine 04104-3553

Subject: **Windham Village Apartments**
Windham, Maine
Domestic and Fire Water Ability to Serve Request

Dear Mr. Bartels:

Windham Village Apartments, LLC has retained Gorrill Palmer to assist in the preparation of plans and permitting for a proposed residential development in Windham, ME. The property is identified as Map 70 and Lot 1A on the Town of Windham's tax maps. The development area is a portion of the ±24.9-acre Shaw's site that is being proposed to be subdivided as part of this project. The project site is approximately ±9-acre and is currently undeveloped land (with the exception of approximately 0.76 acres that serves as the subsurface wastewater disposal area for the Shaw's development) adjacent to the Shaw's commercial development.

The project is proposed to construct 29 one-bedroom and 143 two-bedroom multifamily units along with associated utility, drainage, and stormwater infrastructure. Additionally, there are walkways, landscaped areas, outdoor amenity areas, and a stormwater management facility. As required by the reviewing authorities, we are writing to request a letter indicating the ability of Portland Water District to serve this project. Preliminary utility plans are enclosed for your review.

PROJECT DESCRIPTION

The proposed development is located between Tandberg Trail, Manchester Drive, and a Private Drive in Windham, ME. Connectivity with the existing surrounding community is a primary design element with a focus on accessibility for multiple travel methods. The development includes a sidewalk network to promote interconnectivity.

EXISTING AND PROPOSED SERVICE

An existing 8" fire service stub is located on the Existing Private Access Drive to the west of the property. We understand this service stub is owned and maintained by PWD. This stub is proposed to be utilized as the connection point for the planned 8" watermain on site. The proposed 8" watermain is located within the main access drive within the development site. Each multifamily unit building is proposed to be serviced by a 6" fire and 2" domestic water service entering at the mechanical rooms. As discussed with PWD and by request, the proposed 8" watermain connecting to the hydrant location

and through the site is proposed to be maintained and operated by PWD subsequent to construction. Preliminary Utility Plans have been provided in Attachment 1 for your review.

As discussed previously with PWD, approval for this project will require an approximate 140' watermain upgrade from a 2" seasonal water service to 8" D.I. watermain with connection to Chamberlain Drive 8" watermain. This watermain upgrade is located within Basin Road on private property. We understand that PWD is coordinating with the property owner for access rights for construction. In addition, we understand PWD will participate in a cost sharing agreement for this upgrade with Windham Village Apartments, LLC.

ANTICIPATED FLOWS

The anticipated water usage for the development was computed using the *State of Maine Subsurface Wastewater Disposal Rules* design flows. Based on TR-16 and the average daily water generation, a peaking factor of 600% is utilized for residential use. The table below is a summary of the Water Usage Calculation that is anticipated for the development.

Table 2 – Estimated Water Usage

Type	Average Daily Water Usage (gpd)	Peak Daily Water Usage (gpm)
Residential	29,220	122

The Water Usage Calculation sheet has been provided in Attachment 2.

ABILITY TO SERVE

In support of the applications to the reviewing authorities, we are writing to request a letter indicating the Portland Water District has the ability to serve the proposed project. In addition, we are interested in receiving:

- An estimate for any work the Water District would perform within the right-of-way.
- Information as to any easements that the District may require on-site.
- Any results of hydrant tests in the vicinity of the site.
- Any other information that you believe would be useful as this project proceeds.

CLOSURE

Please contact me if you have any questions relative to this matter at 772-2515 or at llabbay@gorrillpalmer.com

Sincerely,

Gorrill Palmer

Lauren Labbay, EI
Design Engineer
207-772-2515 x240
llabbay@gorrillpalmer.com

Attachments:
Attachment 1 – Preliminary Utility Plans
Attachment 2 – Water Usage Calculations

c: Loni Graiver, Graiver Homes, Inc.
Angelo Coppola, Coppola Properties, Inc.

U:\3796_Gravier Homes_Tandberg Trail Mixed Residential Housing - Windham\H Utilities\PWD\3796 - PWD Capacity to Serve (water).doc

GORRILL PALMER

JOB	Windham Village Apartments - Windham, ME			
SHEET NO.	1	OF	1	
CALCULATED BY	LEL	DATE	08-25-23	
CHECKED BY	DJG	DATE	3-19-24	
SCALE	None			

Task: Compute Proposed Domestic Water Usage for Windham Village Apartments

Water Usage Calculations

1 BEDROOM UNITS			
Dwelling Units		**29**	
Flow Rate		120	gpd/unit
	Subtotal	**3,480**	gallons/day
	Subtotal Design Flow	3,480	**gallons/day**
2 BEDROOM UNITS			
Dwelling Units		**143**	
Flow Rate		180	gpd/unit
	Subtotal	**25,740**	gallons/day
	Subtotal Design Flow	25,740	**gallons/day**
Total Average Daily Design Flow		29,220	**gallons/day**

PEAK FLOW CALCULATIONS		
Subtotal Average Daily Flow	29,220	gallons/day
Subtotal Average Flow	20	gallons/minute
Peak Daily Use*	600	%
Subtotal Design Flow	122	gallons/minute

Notes:

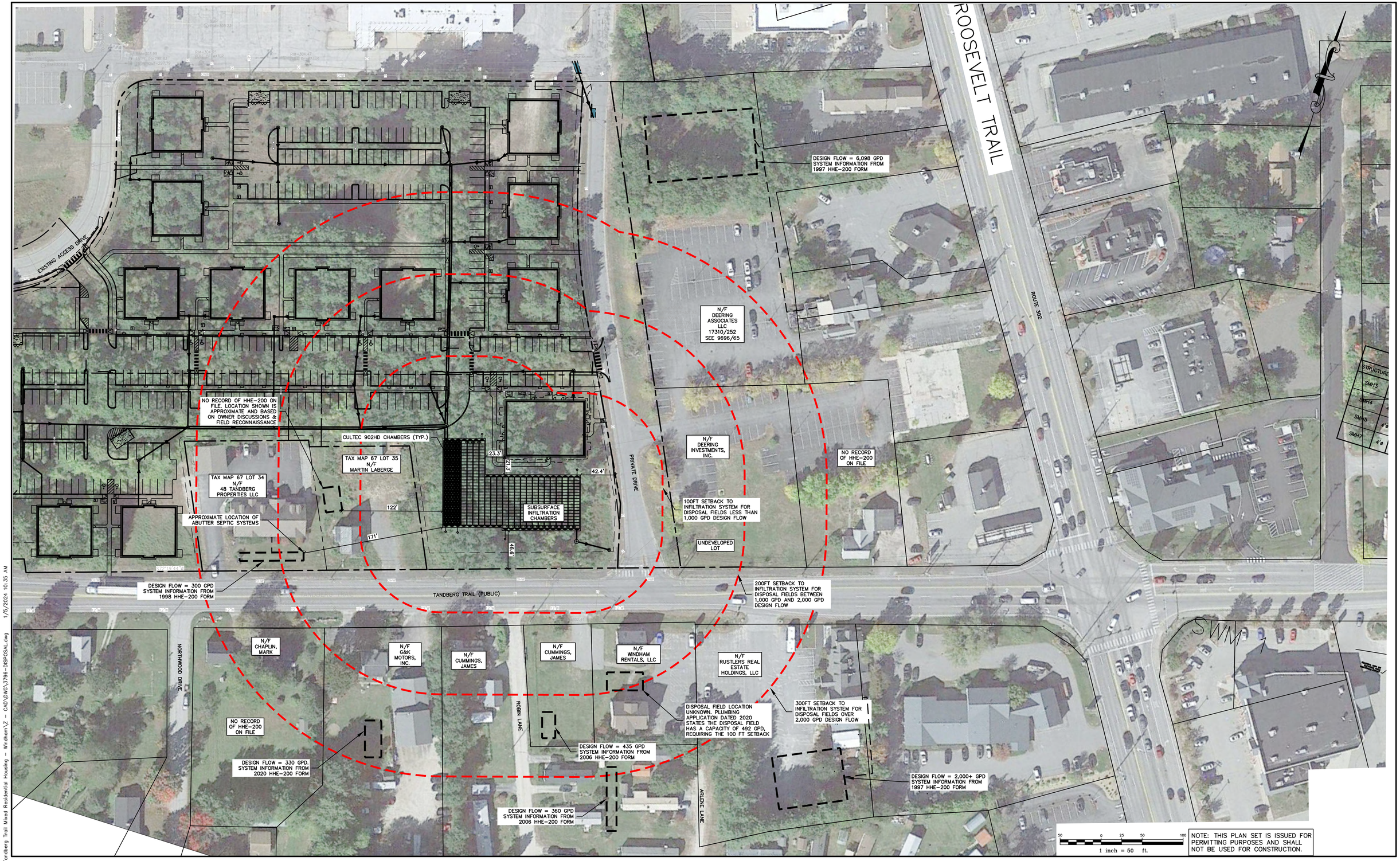
**Peaking Factor from TR-16 Guides for Design of Wastewater Treatment Works - 2011 edition and revised in 2016*

Residential Development = 600% Peaking Factor

Commercial, Industrial, and Institutional Development = 300% Peaking Factor

ATTACHMENT 12

SUBSURFACE DISPOSAL SETBACK FIGURE



NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

1/5/2024 10:35 AM

U:\3796_Gravier Homes_Tandberg Trail Mixed Residential Housing - Windham\Z - CAD\DWG\3796-DISPOSAL.dwg

Rev.	Date	Revision

Issued For	Date	By
SLDA SUBMISSION	10/6/23	DJG
SKETCH PLAN SUBMISSION	4/17/23	DJG

Design: LEL	Draft: CEH	Date: DEC 2022
Checked: DJG	Scale: 1"=50'	Job No.: 3796

File Name: 3796-DISPOSAL.dwg

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Relationships. Responsiveness. Results.
www.gorrillpalmer.com
207.772.2515

Drawing Name: **Infiltration Setback Figure**

Project: **Windham Village Apartments**
770 Roosevelt Trail, Windham, Maine 04062

Client: **Windham Village Apartments, LLC**
40 Farm Gate Road, Falmouth, ME 04105

Drawing No. *A*

ATTACHMENT 13

LANDSCAPING PLANTING LIST

PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	SIZE
TREES			
AF	ABIES FRASERI	FRASER FIR	7'-8' HGT.
AA	ACER X FREEMANII ARMSTRONG	ARMSTRONG RED MAPLE	2-1/2" CAL.
AL	AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY	7'-8' HGT.
AR	ACER X FREEMANII SIENNA GLEN	SIENNA GLEN MAPLE	2-1/2" CAL.
AS	ACER SACCHARUM 'GREEN MOUNTAIN'	SUGAR MAPLE	2-1/2" CAL.
GT	GLEDITISIA TRIANCANTHOS VAR. INERMIS 'STREET KEEPER'	STREET KEEPER HONEY LOCUST	2-1/2" CAL.
MA	MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	1-1/2" CAL.
MA	MALUS 'PROFUSION'	PROFUSION CRABAPPLE	1-1/2" CAL.
MS	MALUS 'SNOWDRIFT'	SNOWDRIFT CRABAPPLE	1-1/2" CAL.
PA	PRUNUS X 'ACCOLADE'	ACCOLADE FLOWERING CHERRY	2" CAL.
PG	PICEA GLAUCA	WHITE SPRUCE	6'-7' HGT.
PO	PICEA OMORIKA	SERBIAN SPRUCE	6'-7' HGT.
QB	QUERCUS BICOLOR	SWAMP WHITE OAK	2-1/2" CAL.
TA	TILLIA AMERICANA	AMERICAN BASSWOOD	2-1/2" CAL.
UA	ULMUS AMERICANA 'PRINCETON'	PRINCETON AMERICAN ELM	2-1/2" CAL.
SHRUBS			
RP	RHODODENDRON 'PJM COMPACTA'	COMPACT PJM RHODODENDRON	18"-24" HGT.
VC	VIBURNUM CASSINOIDES	WITHEROD VIBURNUM	24"-30" HGT.
PERENNIALS			
EPM	ECHINACEA PURPUREA 'MAGNUS'	MAGNUS PURPLE CONE FLOWER	NO. 1 CONT.
MSG	MISCANTHUS SINENSIS 'GRACILLIMUS'	MAIDEN GRASS	NO. 2 CONT.
MFS	MONARDA FISTULOSA	BERGAMOT	NO. 1 CONT.
PVR	PANICUM VIRGATUM 'RUBY RIBBONS'	RUBY RIBBONS SWITCH GRASS	NO. 1 CONT.
VBO	VERBENA BONARIENSIS	TALL VERBENA	NO. 1 CONT.
VVI	VERONICASTRUM VIRGINICUM	CULVER'S ROOT	NO. 1 CONT.

ATTACHMENT 14

ESTIMATED TRAFFIC GENERATION

GORRILL PALMER

300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

MEMORANDUM
TRAFFIC EVALUATION
WINDHAM RESIDENTIAL DEVELOPMENT
WINDHAM, ME
March 28, 2024

EXECUTIVE SUMMARY

The proposed residential development is to be located between Manchester Drive to the west and a private drive which accesses Shaw's and other businesses along 302/Tandberg Trail to the east in (North) Windham, Maine. The proposed project includes:

- 172 Residential Units in various 3 story buildings throughout the site

This traffic evaluation is intended to identify potential traffic items that may need to be addressed according to the Town of Windham. As part of this evaluation, we have reviewed/evaluated the following:

- Previous Traffic Evaluations
- Existing Traffic Volumes
- Trip Generation & Distribution
- Trip Composition and Assignment
- Capacity Analysis
- Lane Warrant Analysis
- Safety Considerations
- Driveway Locations & Sight Distance
- Potential Mitigation
- Town Impact Fee

PREVIOUS TRAFFIC EVALUATIONS

Gorrill-Palmer completed a traffic evaluation focusing on transportation improvements along the Route 302 corridor and immediate surrounding area titled "North Windham Moves: Regional Mobility, Local Access" that issued its final report January 10th, 2022. Roadway improvements recommended from this study relevant to this project include the future extension of Manchester Drive to White's Bridge Road, extending the length of the right turn lane on Manchester Drive to increase storage capacity, as well as adding a right turn lane on Tandberg Trail (ME 35) at its intersection with Manchester Drive. It should be noted that traffic counts from the "North Windham Moves" study were used for this traffic evaluation for the Manchester Drive / Tandberg Trail and Tandberg Trail / Roosevelt Trail intersections.

EXISTING TRAFFIC VOLUMES

The initial traffic volumes used for this evaluation are based on turning movement counts completed for the "North Windham Moves: Regional Mobility, Local Access" Transportation Planning and Feasibility Study dated January 10, 2022, as well as a traffic count conducted by Gorrill-Palmer on September 20th, 2022, for the intersection of the private Staples/Shaw's access drive and Tandberg Trail. The counts

were completed at the intersections within the study area at various times as identified in the table below. The initial AM and PM peak hour count volumes are presented in Figure 1 in the figure set, included as Attachment C. Raw count data is also provided in Attachment C.

Table 1 – Study Area Intersection Information

Study Area Intersection	Count Information
Tandberg Trail (ME 35/115) @ Roosevelt Trail (US 302) (signalized)	Collected by the Town of Windham August 13-14, 2015 for 24 continuous hours
Private Access Drive @ Tandberg Trail (ME 35) (unsignalized)	Collected by Gorrill-Palmer September 20, 2022 for both AM and PM peak hour periods
Manchester Drive @ Tandberg Trail (ME 35) @ Lamb Street (unsignalized)	Collected by PACTS on June 10, 2021 for both the AM and PM peak hour periods

The raw volumes described above are adjusted seasonally to represent peak summer traffic, and annually to bring the data up to present-day predevelopment conditions. The following is the information used to establish those adjustments:

- Tandberg Trail is classified a Group I + II road
- Route 302 is classified a Group II arterial road
- Manchester Drive is classified a Group I road
- Private drives are not classified and were considered Group I

The "2021 Adjusted Volumes" from the "North Windham Moves" study are shown on the "Existing Volumes" figure which is included as Figure 1 in the figure set. These "existing volumes" were used as the basis for the analysis in this evaluation.

Seasonal Adjustment

When counts are not completed during peak summer times, they are adjusted seasonally using MaineDOT weekly group mean factors. To calculate the seasonal adjustment, the factor for the week the count was completed is divided by the sixth highest factor for the year. This is done to "adjust" the data to represent peak traffic conditions. As mentioned above, Tandberg Trail and Roosevelt Trail are Group I + II and II roads, respectively, and therefore have different adjustment factors than the adjacent Group I roads. The seasonal adjustment factor calculation is provided in Figure 3 of the attached figure set.

Annual Adjustment

Since the initial volumes presented represent different years (2021, and 2022), and the project is anticipated to be completed in early 2026, the initial volumes needed to be adjusted by an annual growth to represent future traffic volumes. This growth adjustment represents background growth of the surrounding regional area. Based on the "North Windham Moves: Regional Mobility, Local Access" Transportation Planning and Feasibility Study dated January 10, 2022, a 0.5% per year growth rate is appropriate for this area. Therefore, a 0.5% annual growth rate was assumed to adjust the initial volumes to 2026. This resulted in yearly adjustment factors of 1.025, and 1.02 for the 2021 and 2022 volumes, respectively.

TRIP GENERATION & DISTRIBUTION

Trip generation & distribution for the site has been calculated using the Institute of Transportation Engineers' (ITE) publication, *Trip Generation,* 11th Edition, the most recent edition accepted by MaineDOT. Based on our understanding of the project, the development is anticipated to include:

- 172 Residential Units in various 3 story buildings throughout the site

After careful review of the Land Use Codes (LUC) provided in the 11th Edition of *Trip Generation,* the following was selected to calculate the trip generation for the proposed site:

- LUC 220 – Multi-Family Housing, Low Rise – 172 Units

The following tables summarize trip generation for the peak hour of adjacent street and peak hour of the generator for the proposed development for both the first and second configurations. A trip end is a trip into or out of the site, thus, a round trip is equal to two trip ends. The trip generation calculations for the proposed development are included in Attachment B.

Table 2 – Trip Generation (LUC 220)

Land Use	Time	Trip Ends		
		Enter	Exit	TOTAL
172 Units – LUC 220 – Multifamily Housing (low-rise)	AM Adjacent St	17	52	**69**
	PM Adjacent St	55	33	**88**
172 Units – LUC 220 – Multifamily Housing (low-rise)	AM Generator	19	62	**81**
	PM Generator	61	37	**98**
172 Units – LUC 220 – Multifamily Housing (low-rise)	Saturday Generator	35	35	**70**

As shown in the above tables, the peak trip generation of 81 AM and 98 PM trip ends occurs during the peak hour of the generator. However, for our purposes trip distribution will be based on AM & PM Adjacent Street volumes.

MaineDOT TMP:

There are two tiers to the MaineDOT Traffic Movement Permit (TMP), and the tiers are based on the number of trips generated by the development. The lower tier is for developments generating 100 to 200 trips and the upper tier is for developments generating greater than 200 trips. Developments generating fewer than 100 trips do not require a TMP. Since the project is forecast to generate less than the 100-trip threshold, the development is not anticipated to require a MaineDOT TMP.

MaineDOT Entrance Permit:

For projects that do not trigger the need for a MaineDOT TMP but have their driveway accessing onto a state or state-aid roadway and is outside the Urban Compact of the Municipality, the project is required to apply for and receive a MaineDOT Entrance Permit. Since this project is not accessing directly onto a state or state-aid road, this project will not require a MaineDOT Entrance Permit.

TRIP COMPOSITION AND ASSIGNMENT

Trip Composition:

Primary trips are made for the sole purpose of going to or from the site. Diverted trips are drivers that are already in the immediate area and take a minor detour out of their way to go to the site, and then travel back in the direction they were originally headed. Pass-By trips are drivers who would otherwise already be driving past the site and decide to stop at the site and then continue in the direction they were originally headed. Given the residential nature of the proposed development, all trips to and from the site were assumed to be primary trips.

Trip Assignment:

The trip assignment for this project has been based on the location of the site driveways, existing traffic volumes and patterns observed, and engineering judgement. Given there are two proposed access points to the site, the trips first needed to be assigned to each of the two entrances. The access point locations are discussed in the Driveway Locations and Sight Distances section of this memo evaluation. For the purposes of this analysis the following distribution between the access points was assumed:

- Trips entering the Site:
  - 68% via Staples Access Drive
  - 32% via Shaw's Access Drive & Manchester Drive
- Trips exiting the Site:
  - 73% via Staples Access Drive
  - 27% via Shaw's Access Drive & Manchester Drive

In leaving the site, the trips were assigned a direction – either north into the developments or south toward Route 35. Given the location of the site, and the fact that the access drives lead to adjacent shopping plazas and parking lots to the north, and toward Route 35 leads to Portland / South Portland / Westbrook metropolitan areas – as well as access to I-95 and I-295, it was assumed that 90% of traffic traveling to or from the site would be going to or from Route 35, and a nominal 10% of traffic would travel north on the access drives towards the shopping centers. Traffic leaving the site traveling toward Route 35 was then assigned a direction on Tandberg Trail (Route 35). Given that access to metropolitan areas would be to the east from the site, and rural residential areas exist to the west, another nominal 10% was assumed to travel to and from the west, and the remaining 80% was assumed to travel to the east. Of the 80% traveling east on Tandberg Trail towards Boody's Corner, 35% were assigned to travel south on Roosevelt Trail, 35% were assigned to travel east on Tandberg Trail, and the remaining 10% were assigned to travel north on Roosevelt Trail. These percentages were mirrored for trips entering the site, and it was assumed that of vehicles entering the site from the south, 75% would use the first access drive that they come to while 25% would continue onto the second access. All trip assignment figures, including the trip distribution figure, are included in Attachment B.

CAPACITY ANALYSIS

Computer modeling was completed for the study area intersections using the 2026 Predevelopment Volumes (Figure 3) for the predevelopment scenario and the 2026 Post Development Volumes (Figure 6) for the postdevelopment scenario. Hard copies of the computer modeling results are provided in Attachment D.

The computer modeling used the Synchro/SimTraffic computer analysis software (Version 11). Level of service (LOS) rankings are similar to the academic ranking system where an 'A' is good with little control delay and an 'F' represents poor traffic conditions. If the level of service falls below a 'D,' an evaluation should be made to determine if mitigation is warranted. The following table summarizes the relationship between control delay per vehicle and level of service for an unsignalized intersections:

Table 3 - Level of Service Criteria for Unsignalized Intersections

Level of Service	Control Delay per Vehicle (s)
A	Less than 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	Greater than 50.0

The capacity analysis results are based on an average of five SimTraffic simulations. The following table summarizes the results of the capacity analysis for the study area intersections.

Table 4 – Capacity Analysis Results

Intersection Movement	2026 Predevelopment LOS		2026 Postdevelopment LOS	
	AM	PM	AM	PM
Tandberg Trail / Manchester Dr / Lamb St	**Unsignalized**			
Tandberg Trail EB L	A / 3	A / 7	A / 4	A / 7
Tandberg Trail EB TR	A / 2	A / 2	A / 2	A / 2
Tandberg Trail WB LTR	A / 2	A / 3	A / 2	A / 3
Lamb St NB LTR	A / 6	B / 14	A / 5	C / 16
Manchester Dr SB L	B / 12	D / 33	B / 13	D / 32
Manchester Dr SB TR	A / 3	A / 6	A / 3	A / 6
Tandberg Trail / Shaw's Access	**Unsignalized**			
Tandberg Trail EB LT	A / 2	A / 2	A / 2	A / 2
Tandberg Trail WB TR	A / 1	A / 2	A / 1	A / 2
Shaw's Access LR	A / 8	B / 14	A / 9	C / 18

As can be seen from Table 6, there are no lanes or intersections where the LOS is below a "D". Therefore, no mitigation is anticipated based on capacity analysis results.

The Tandberg Trail / Roosevelt Trail intersection was not modeled because the existing computer model from the "North Windham Moves" study recently analyzed this intersection. That previous model found the intersection to have poor levels of service in its current condition, as well as future conditions. The proposed development is forecast to increase the total entering volume to this intersection by approximately 1.62% in the AM condition and approximately 1.63% increase in the PM condition, therefore, it will not have a significant impact on the performance of the intersection. We understand that the Town is currently pursuing improvements to this intersection in the form of updating the traffic controller to Adaptive Traffic Control (ATC).

Queue Analysis:

Similar to capacity analysis, a queue analysis was completed using the same computer modeling. Based on that modeling, the following queues are forecast. Queues have been rounded up to the nearest five-foot interval.

Table 5 – 95th Percentile Queue Results (feet)

Intersection Movement	Storage (feet)	2026 Predevelopment LOS		2026 Postdevelopment LOS	
		AM	PM	AM	PM
Tandberg Trail / Manchester Dr / Lamb St	**Unsignalized**				
Tandberg Trail EB L	200	60	90	60	90
Tandberg Trail WB LTR		20	25	15	25
Lamb St NB LTR		30	25	30	25
Manchester Dr SB L	110	45	80	50	75
Manchester Dr SB TR		45	105	50	100
Tandberg Trail / Shaw's Access	**Unsignalized**				
Tandberg Trail EB LT		30	40	35	50
Shaw's Access SB LR		55	90	65	115

As can be seen from the above results, there are no instances where the queue exceeds available auxiliary lane length. Therefore, no mitigation is anticipated to be required as a result of the proposed queues.

LANE WARRANT ANALYSIS

The lane warrant analysis for the proposed project focused on the two unsignalized intersections of Tandberg Trail (ME 35) / Manchester Drive and Tandberg Trail / Staples/Shaw's Private Access drive. Specifically, we evaluated the potential need for both left and right turn lanes onto the Staples/Shaw's access drive and the potential need for a right turn lane onto Manchester Drive. It should be noted that a left turn lane from Route 35 onto Manchester Drive currently exists, and the possibility of a right turn lane onto Manchester Drive was evaluated as a part of the Windham Moves study.

The NCHRP 457 spreadsheets accepted by MaineDOT were used to evaluate if additional lanes would be necessary based on forecast traffic conditions once the development is constructed and occupied in 2026. Based on this evaluation, no additional turning lanes were identified as warranted in the predevelopment or postdevelopment condition. However, it should be noted that a right turn lane from Tandberg Trail onto the Staples Access is marginal and could be warranted if the traffic volumes change.

The complete NCHRP 457 lane warrant sheets for each of the three turn lanes analyzed are included in Attachment E.

SAFETY REVIEW

Crash History:

To complete the safety review, information presented on the Maine Public Crash Query Tool and the MaineDOT Public Map Viewer as well as crash history from MaineDOT was reviewed for the three-year period of 2020-2022. To evaluate whether a location has a crash problem, MaineDOT uses two criteria to define a High Crash Location (HCL). Both criteria must be met to be classified as an HCL. The criteria are as follows:

1. A critical rate factor (CRF) of 1.00 or more for a three-year period. A CRF compares the actual crash rate to the rate for similar intersections in the state, A CRF of less than 1.00 indicates a rate of less than average **and:**
2. A minimum of eight crashes over the same three-year period.

For the purposes of this safety evaluation, the study area was considered to be Route 35 from Manchester Drive to Route 302 (not inclusive of intersection at Route 302). We also reviewed Manchester Drive. Based on a review of the crash history information, there is one HCL within the study area.

- Node 59528: Unsignalized intersection of Tandberg Trail (Route 35) / Manchester Drive (CRF 1.76, 8 crashes) – this is a "T" intersection with Manchester Drive being STOP controlled and the stem of the "T". Tandberg Trail is free flowing at this intersection and the speed limit is 35mph. The speed limit on Manchester Drive is also 35 mph on approach to the intersection. The Manchester Drive approach has 2 lanes at the intersection: a left turn lane and a right turn lane. Storage for queuing traffic on Manchester Drive begins approximately 100 feet back from the stop bar at the intersection. The Tandberg Trail (Route 35) eastbound approach has 2 lanes at the intersection: a left turn lane and a thru lane. The storage length of the left turn lane is approximately 100 feet. The Tandberg Trail (Route 35) westbound approach is currently a single thru-right lane. However, based on the previously mentioned "Windham Moves" study, a right turn lane is anticipated to be added at this intersection in the future if Manchester Drive is extended to Whites Bridge Road.

  There appear to be two crash patterns (typically considered as three similar crashes) as follows:

  - Manchester Drive rear-end (3 crashes)
  - Route 35 eastbound left turn angle crash with westbound through traffic (3 crashes)

  Based on a review of the crash patterns, there does not appear to be any obvious mitigation.

DRIVEWAY LOCATIONS & SIGHT DISTANCE EVALUATION

The proposed development is anticipated to have two accesses onto the surrounding existing roadway network. One proposed access is onto an existing unnamed access drive from Manchester Drive around the south side of Shaw's, and the other is onto an existing unnamed private drive on the east side of Staples. The exact locations are discussed in detail as a part of the sight distance analysis below. A preliminary site plan showing the proposed site accesses is included in Attachment A.

To evaluate sight distances for the proposed driveways, Gorrill Palmer completed a field review on September 16, 2022. Both the Town of Windham and MaineDOT standards for sight distances are the same. The table below presents those standards.

Table 6 – Standards for Sight Distance

Speed Limit (mph)	Town of Windham Required – Standard Vehicle (ft)	Town of Windham Required – Larger Vehicle (ft)	MaineDOT Required (ft)
25	200	300	200
30	250	375	250
35	305	455	305
40	360	540	360
45	495	740	425
50	570	855	495

The Town and MaineDOT also use similar evaluation methodology to measure sight distance. The Town of Windham and MaineDOT methods are as follows:

Driveway Observation Point:	10 feet from traveled way
Height of Eye at Driveway:	3.5 feet above the ground
Height of Approaching vehicle:	4.25 feet above the ground

The table below summarizes the measured sight distances at the proposed driveways.

Table 7 – Sight Distance Summary

Approach	Sight Distance (ft)		
	Required	Looking Left	Looking Right
Exiting onto Staples Access Drive – unposted (assumed 25 mph)	200	230	300+
Exiting onto Shaw's Access Drive – unposted (assumed 25 mph)	200	250	280

As shown in Table 9, the sight distances looking both left and right at the proposed site driveways exceed the requirements of the Town of Windham and MaineDOT. This is based on the assumption that the "larger vehicles" depicted in Table 9 will not be applicable given the residential nature of the development. It should be noted that when exiting the site onto the Shaw's Access Drive, the intersection with Manchester Drive is approximately 240' to the left along the roadway and when exiting the site onto the Target Access Drive, the intersection with Tandberg Trail is approximately 220' to the right. The following paragraphs describe the sight distance measurements and observations at each of the proposed site driveways in more detail.

Shaw's Access:

The site access from the Shaw's Access Drive is anticipated to be on the north-eastbound side of the road, in the middle of the 90-degree bend, immediately before the parking lots. The site's frontage along this access drive is approximately 500 feet. The site access drive is anticipated to be approximately 240

feet east of the existing intersection with Manchester Drive and 220 feet south of the intersection with the parking lots. There is no posted speed limit on the access drive; however, during field observations vehicles traveling towards Manchester Drive were generally traveling slowly (approximately less than 20 mph), but vehicles traveling toward Shaw's from Manchester Drive appeared to be going faster than 20 mph. From the anticipated driveway location, vehicles exiting the site have a clear line of sight through the intersection with Manchester Drive to the woods on the southbound side. Vehicles also have a clear line of sight through the intersection at the start of the Shaw's parking lot and beyond. It should be noted that there is a channelized right turn lane from Manchester Drive onto the Shaw's access drive which enables vehicles turning right onto the access drive to take the turn at a higher speed than vehicles turning left onto the Shaw's access. It should also be noted that existing vegetation at the corner of Manchester Drive and the Shaw's access has grown to within approximately 10 feet of the traveled way. This vegetation limits the sight distance for vehicles turning right from Manchester Drive into the access drive to approximately 180 feet in the existing condition. We recommend that this vegetation be cut back and maintained to ensure adequate sight distance at the proposed driveway.

Staples Access:

The site access from the Staples Access Drive is anticipated to be on the southbound side of the road, approximately 220 feet north of the intersection with Tandberg Trail, approximately 50 feet north of the curb cut for the parking lot behind TD Bank, and approximately 400 feet south of the intersection with the Staples parking lot. The site's frontage along this access drive is approximately 550 feet. There is no posted speed limit on the access drive, but vehicles were generally observed travelling slowly (less than 20 mph). A sidewalk exists along the near (southbound) side of the road in this area. No deficiencies related to sight distance were noted in this area. We recommend existing vegetation and any signage associated with the proposed development be evaluated to ensure it is outside the sight triangles.

PEDESTRIAN ACCOMMODATIONS

Given the residential nature of the proposed development in the neighborhood of businesses and other potential destinations, Gorrill Palmer reviewed the availability of pedestrian accommodations in the area. Currently there are sidewalks along the site side of both Tandberg Trail and the Staple's Access. The project is proposing to provide a sidewalk internally from the site to the Staple's Access sidewalk as well as providing an overlay on this sidewalk due to poor condition. There are currently no sidewalks along Manchester Drive or the Shaw's Access; however, the site is proposing an internal sidewalk that extends out to the Shaw's Access where it terminates.

TOWN IMPACT FEE

The Town does not have a Traffic Impact Fee described in the Ordinance. However, there is a "North Route 302 Road Improvements Impact Fee" described in section 120-1204 in the Town Ordinance (added on 4-8-2014). This impact fee focuses on the Roosevelt Trail (US302) / White's Bridge Road / Angler's Road intersection. The fee is calculated as follows:

- Fee $ = $382.65 per primary trip associated with the proposed development through the Roosevelt Trail (US302) / White's Bridge Road / Angler's Road intersection

Based on the calculated trip generation, and the anticipated trip assignment and distribution shown on Figures 4 and 5 in the Figure Set, included in Attachment C, a maximum of 20% of peak hour trips

associated with the proposed development would be anticipated to travel through this intersection. The trip generation presented in the prior section shows a maximum of 98 total peak hour trips during the PM peak hour of generator traffic. This implies a maximum of 20 vehicles (20% of 98) would be anticipated to travel through this intersection during any peak hour. Based on this calculation, the Impact Fee associated with the development is anticipated to be:

- Fee $ = $382.65 x 20 vehicle trips = $7,653.00

This fee is calculated based on the scenario in which all the proposed residential tenants of the vehicles anticipated to travel north when leaving the development – regardless of which entrance/exit they use – will eventually pass through the Roosevelt Trail / Whites Bridge Road / Anglers Road intersection. The aforementioned assumption is likely conservative as some of the vehicle trips would likely have nearer destinations within the North Windham area.

POTENTIAL MITIGATION

Based on this preliminary evaluation, the following are potential mitigation items.

- A right turn lane from Tandberg Trail onto the Staples Access is marginally not warranted. Minimal (2 vehicles or more) increase in right turn volume would trigger the warrant for a right turn lane.
- Select clearing near Manchester Drive / Shaw's Access to improve sight distances.
- North Route 302 Road Improvements Impact fee of approximately $7,653.00

CONCLUSIONS

1. Traffic counts from the "North Windham Moves" study were utilized in this traffic evaluation for the Manchester Drive / Tandberg Trail and Tandberg Trail / Roosevelt Trail intersections. That study also recommended roadway improvements in the form of extending the right turn lane for the Manchester Drive approach and a construction of a right turn lane on Tandberg Trail for vehicles turning onto Manchester Drive. This would be expected to be warranted if/when Manchester Drive is extended to intersect with the Whites Bridge Road.
2. Existing Traffic Volumes are taken from multiple traffic counts completed between 2015 and 2021 and then seasonally and annually adjusted in order to reflect expected 2026 traffic volumes under peak summer traffic conditions.
3. Trip generation for the proposed development is forecast to be 69 & 88 weekday AM & PM peak hour adjacent street trip ends respectively. This will not require MaineDOT Traffic Movement Permit.
4. Because the site driveway does not enter directly onto a state roadway, a MaineDOT Entrance permit is not required.
5. Trip composition is assumed to be all primary trips to and from the site due to the residential nature of the development. The majority of traffic was assigned to be traveling in the southbound and eastbound directions as these routes serve as arterials for the Portland / South Portland / Westbrook metropolitan area.
6. The Level of service for the study area intersections were all at acceptable levels.
7. Based on MaineDOT criteria, no turning lanes are required for the study area intersections. Potential additional lanes evaluated included right and left turn lanes to Staples Access Drive as well as adding a right turn lane onto Manchester Drive. The right turn onto Staples access is only

marginally not met and could trigger the need for a right turn in the future or if traffic is added to that movement.

8. The intersection of Manchester Drive / Tandberg Trail was identified as a high crash location. Based on a review of the collision diagram, there does not appear to be a correctable crash pattern.
9. Required sight distances at site driveways are expected to be exceeded. However, to improve sight distances even more, some vegetation around the site driveways is recommended.
10. An estimated impact fee of $7,653 is anticipated to satisfy the Town of Windham's North Route 302 Road Improvement Fee.

ATTACHMENTS

A – Site Plans

B – Trip Generation Spreadsheets
C – Traffic Figures
D – Computer Modeling Output
E – Lane Warrant Sheet
F – Safety Information

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Attachment A

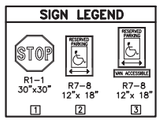
Site Plans

STRIPING LEGEND

SIGNAGE, STRIPING AND PAVEMENT MARKING SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) REGARDING SIZE, INSTALLATION, LOCATION & REFLECTIVITY.

12"SL – 12" WIDTH STOP LINE
4"SWLL – 4" WIDTH SOLID WHITE LANE LINE
CW – CROSSWALK

SIGN LEGEND



R1-1 30"x30" [1] | R7-8 12"x 18" [2] | R7-8 12"x 18" [3]

SITE DATA

ZONE: COMMERCIAL DISTRICT 1
SITE AREA 395,925 S.F.± 9.1 ACRES

BUILDING UNIT BREAKDOWN

1 BEDROOM	29 UNITS
2 BEDROOM	143 UNITS
TOTAL	172 UNITS

PARKING	REQUIRED	PROVIDED
MULTIFAMILY DWELLINGS		
TOTAL	–	342
SPACES/UNIT	–	1.99
OVERSIZED PARKING (20'X10' @ 30%)	103	73
ACCESSIBLE SPACES		14

SPACE AND BULK STANDARDS

ZONE: COMMERCIAL DISTRICT 1 (C1)	REQUIRED	PROVIDED
MIN. LOT SIZE	N/A	8.9 AC
BUILDING SETBACKS		
FRONT	0 – 20'	VARIES
SIDE	6'	>6'
REAR	6'	>6'
MINIMUM FRONTAGE	100'	672'
MAXIMUM BUILDING HEIGHT	N/A	3 STORIES BLDG 10 IS 4 STORIES

NOTES:

1. EXISTING CONDITIONS PROVIDED BY OWEN HASKELL, INC. DATED FEBRUARY 6, 2023.
2. SOIL INFORMATION PROVIDED BY FLYCATCHER, LLC DATED JANUARY 10, 2023.
3. ALL INTERNAL ACCESS ROADS AND DRIVEWAYS SHALL REMAIN PRIVATE AND SHALL BE MAINTAINED BY THE DEVELOPER, LOT OWNERS, HOMEOWNERS/CONDOMINIUM ASSOCIATION, OR ROAD ASSOCIATION AND SHALL NOT BE OFFERED FOR ACCEPTANCE, OR MAINTAINED BY THE TOWN OF WINDHAM UNLESS THEY MEET ALL MUNICIPAL STREET STANDARDS AND CONSTRUCTION STANDARDS AT THE TIME OF OFFERING.
4. SNOW STORAGE TO BE SUPPLEMENTED WITH REMOVAL OFF SITE.

LEGEND

OVERSIZED PARKING SPACE 10'X20' | MILL AND OVERLAY
BITUMINOUS SIDEWALK | REINFORCED TURF
COMMUNITY BUILDING | TRENCH REPAIR
HEAVY DUTY PAVEMENT

CURBING LEGEND

CONCRETE SLIPFORM CURB
GRANITE CURB
BITUMINOUS CURB
MOUNTABLE CURB

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE 04/01/24 DREW J. GAGNON No. 15711 LICENSED PROFESSIONAL ENGINEER

Rev.	Date	Revision

Issued For	Date	By
MAJOR SUBDIVISION PRELIMINARY APPLICATION	04/01/24	DJG
SLDA RESPONSE TO COMMENTS	01/17/24	DJG
SLDA SUBMISSION	10/6/23	DJG
SKETCH PLAN SUBMISSION	4/17/23	DJG

Design: LEL | Draft: CEH | Date: DEC 2022
Checked: DJG | Scale: 1"=30' | Job No.: 3796
File Name: 3796-SP.dwg

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Drawing Name: Site Layout Plan
Project: **Windham Village Apartments**
770 Roosevelt Trail, Windham, Maine 04062
Client: **Windham Village Apartments, LLC**
40 Farm Gate Road, Falmouth, ME 04105

Drawing No. C101

L:\3796_Gravler Homes_Tandberg Trail Mixed Residential Housing – Windham\2 – CAD\DWG\3796-SP.dwg 3/27/2024 11:01 AM

Attachment B

Trip Generation Spreadsheets

Land Use: 220
Multifamily Housing (Low-Rise)

Description

Low-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have two or three floors (levels). Various configurations fit this description, including walkup apartment, mansion apartment, and stacked townhouse.

- A walkup apartment typically is two or three floors in height with dwelling units that are accessed by a single or multiple entrances with stairways and hallways.
- A mansion apartment is a single structure that contains several apartments within what appears to be a single-family dwelling unit.
- A fourplex is a single two-story structure with two matching dwelling units on the ground and second floors. Access to the individual units is typically internal to the structure and provided through a central entry and stairway.
- A stacked townhouse is designed to match the external appearance of a townhouse. But, unlike a townhouse dwelling unit that only shares walls with an adjoining unit, the stacked townhouse units share both floors and walls. Access to the individual units is typically internal to the structure and provided through a central entry and stairway.

Multifamily housing (mid-rise) (Land Use 221), multifamily housing (high-rise) (Land Use 222), affordable housing (Land Use 223), and off-campus student apartment (low-rise) (Land Use 225) are related land uses.

Land Use Subcategory

Data are presented for two subcategories for this land use: (1) not close to rail transit and (2) close to rail transit. A site is considered close to rail transit if the walking distance between the residential site entrance and the closest rail transit station entrance is ½ mile or less.

Additional Data

For the three sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.72 residents per occupied dwelling unit.

For the two sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 96.2 percent of the total dwelling units were occupied.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip

generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

For the three sites for which data were provided for both occupied dwelling units and residents, there was an average of 2.72 residents per occupied dwelling unit.

It is expected that the number of bedrooms and number of residents are likely correlated to the trips generated by a residential site. To assist in future analysis, trip generation studies of all multifamily housing should attempt to obtain information on occupancy rate and on the mix of residential unit sizes (i.e., number of units by number of bedrooms at the site complex).

The sites were surveyed in the 1980s, the 1990s, the 2000s, the 2010s, and the 2020s in British Columbia (CAN), California, Delaware, Florida, Georgia, Illinois, Indiana, Maine, Maryland, Massachusetts, Minnesota, New Jersey, Ontario (CAN), Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, and Washington.

Source Numbers

188, 204, 237, 300, 305, 306, 320, 321, 357, 390, 412, 525, 530, 579, 583, 638, 864, 866, 896, 901, 903, 904, 936, 939, 944, 946, 947, 948, 963, 964, 966, 967, 1012, 1013, 1014, 1036, 1047, 1056, 1071, 1076

Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

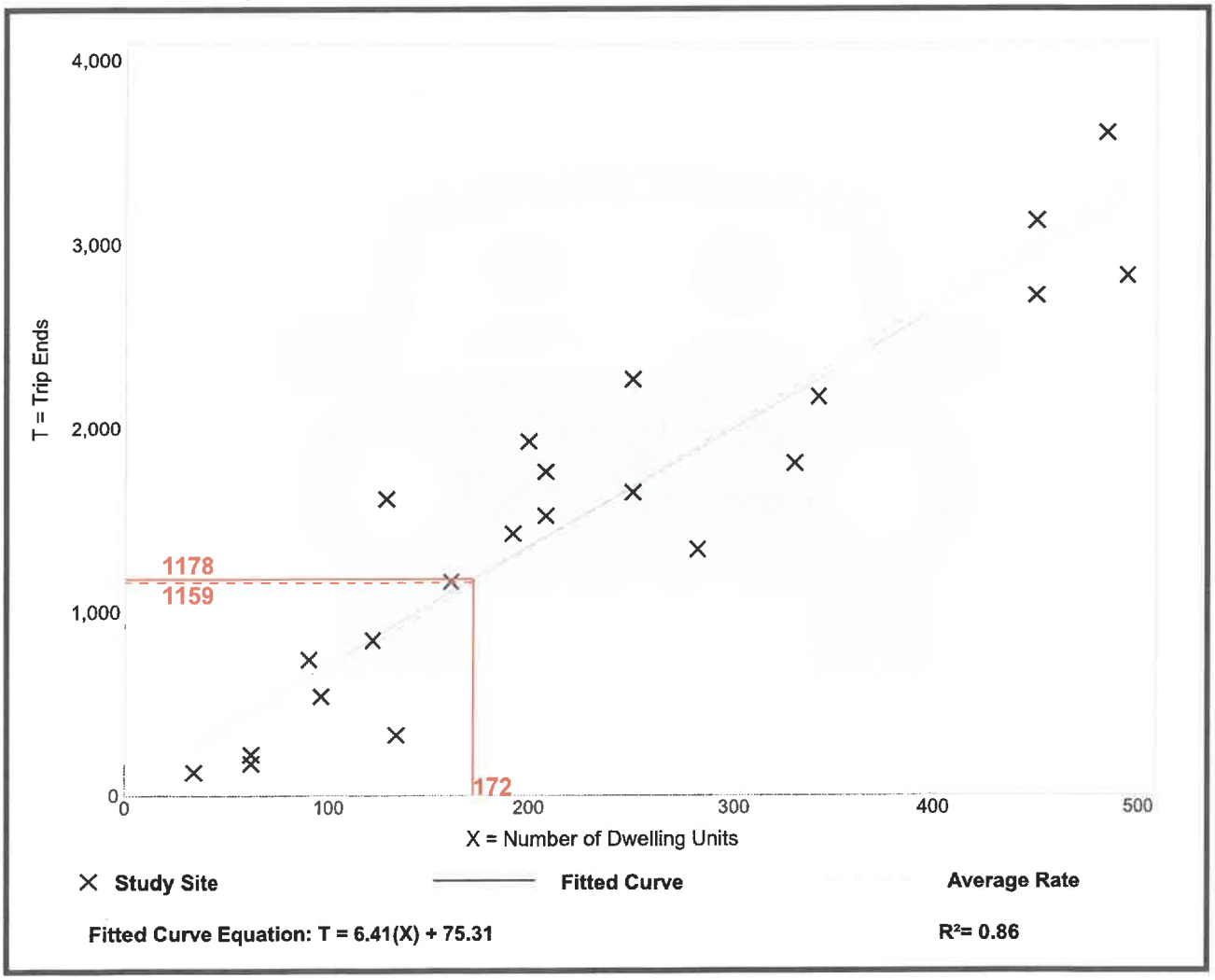
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 22
Avg. Num. of Dwelling Units: 229
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.74	2.46 - 12.50	1.79

Data Plot and Equation



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Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

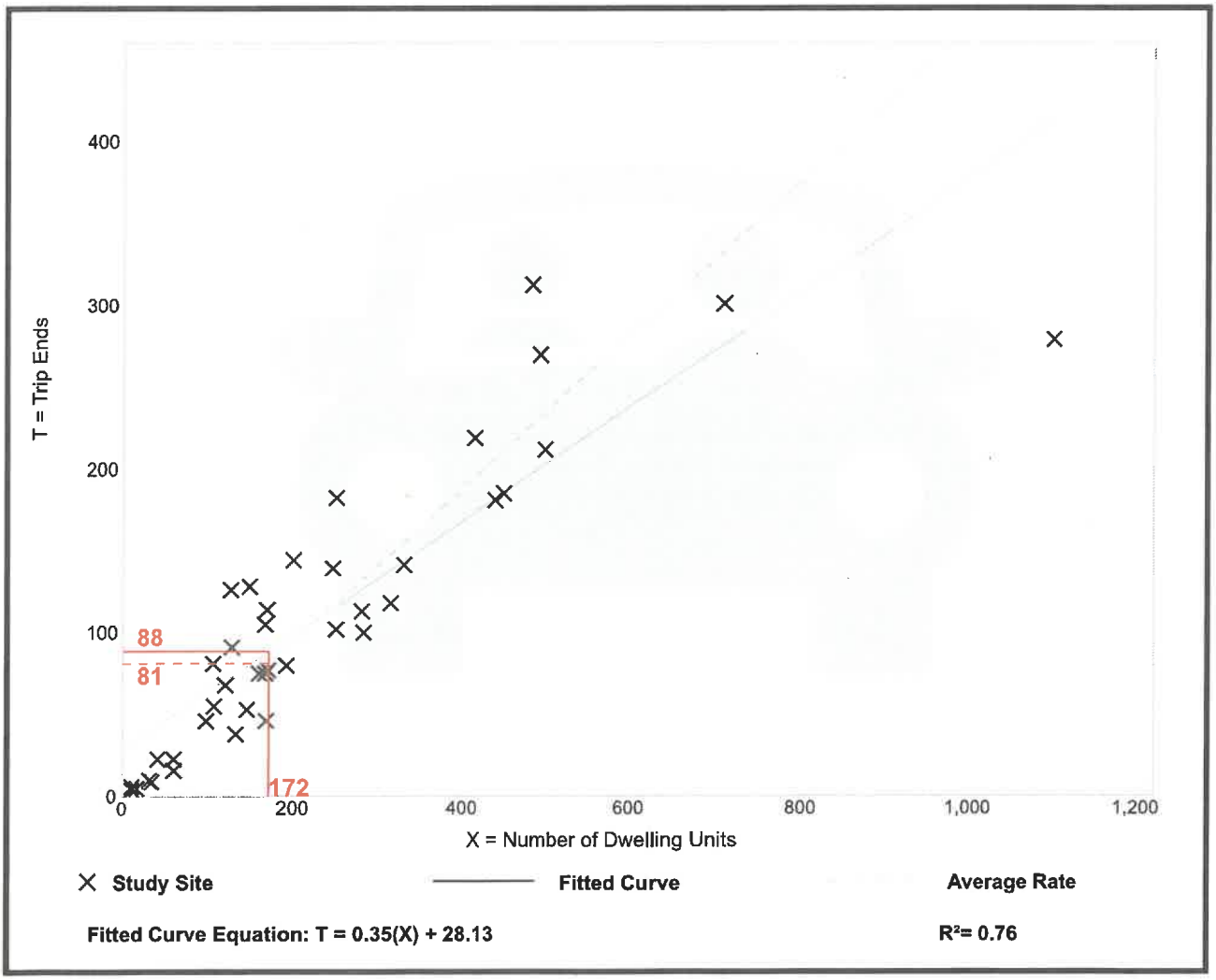
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
AM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 40
Avg. Num. of Dwelling Units: 234
Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.47	0.25 - 0.98	0.16

Data Plot and Equation



Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

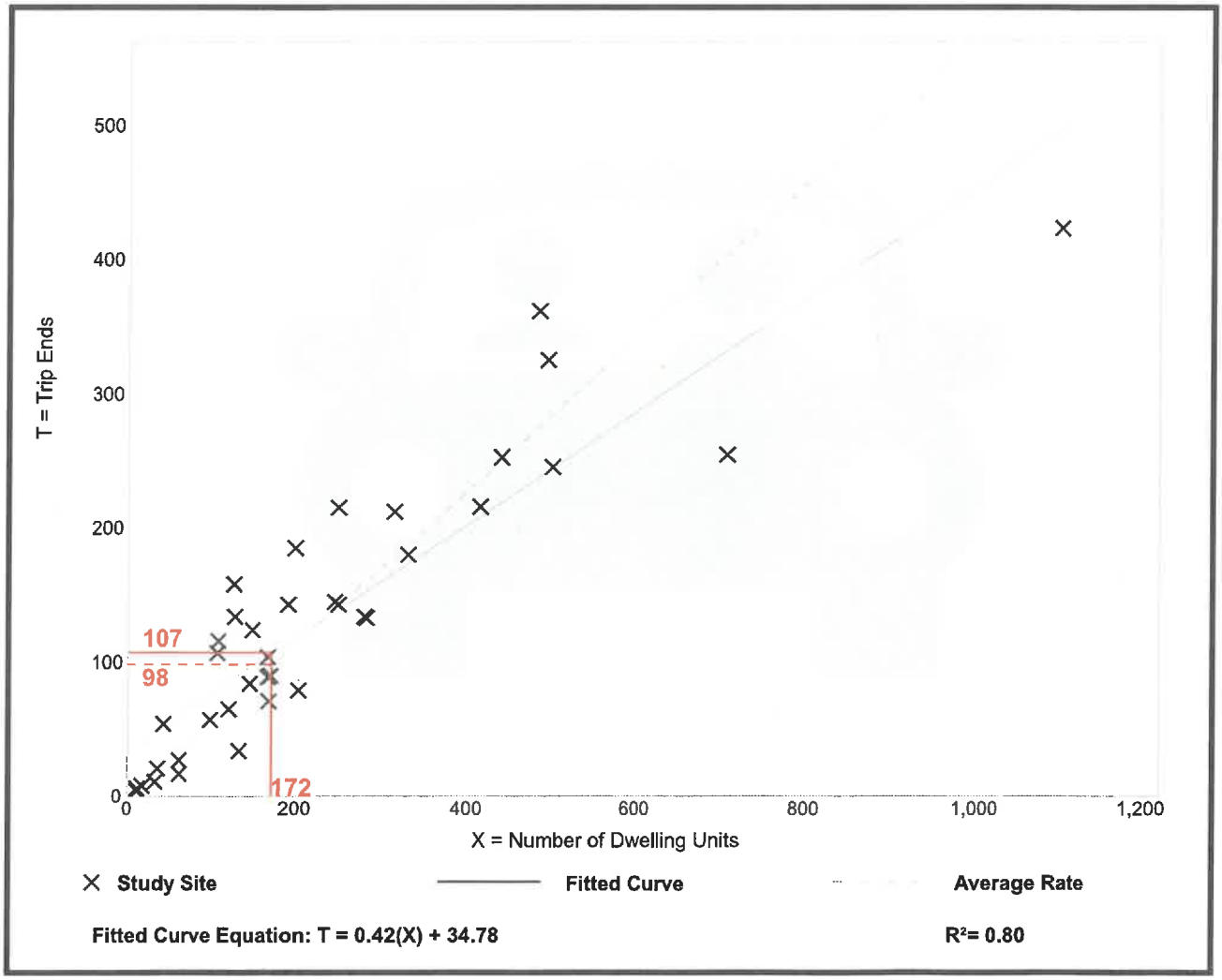
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
PM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 38
Avg. Num. of Dwelling Units: 231
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.25 - 1.26	0.20

Data Plot and Equation



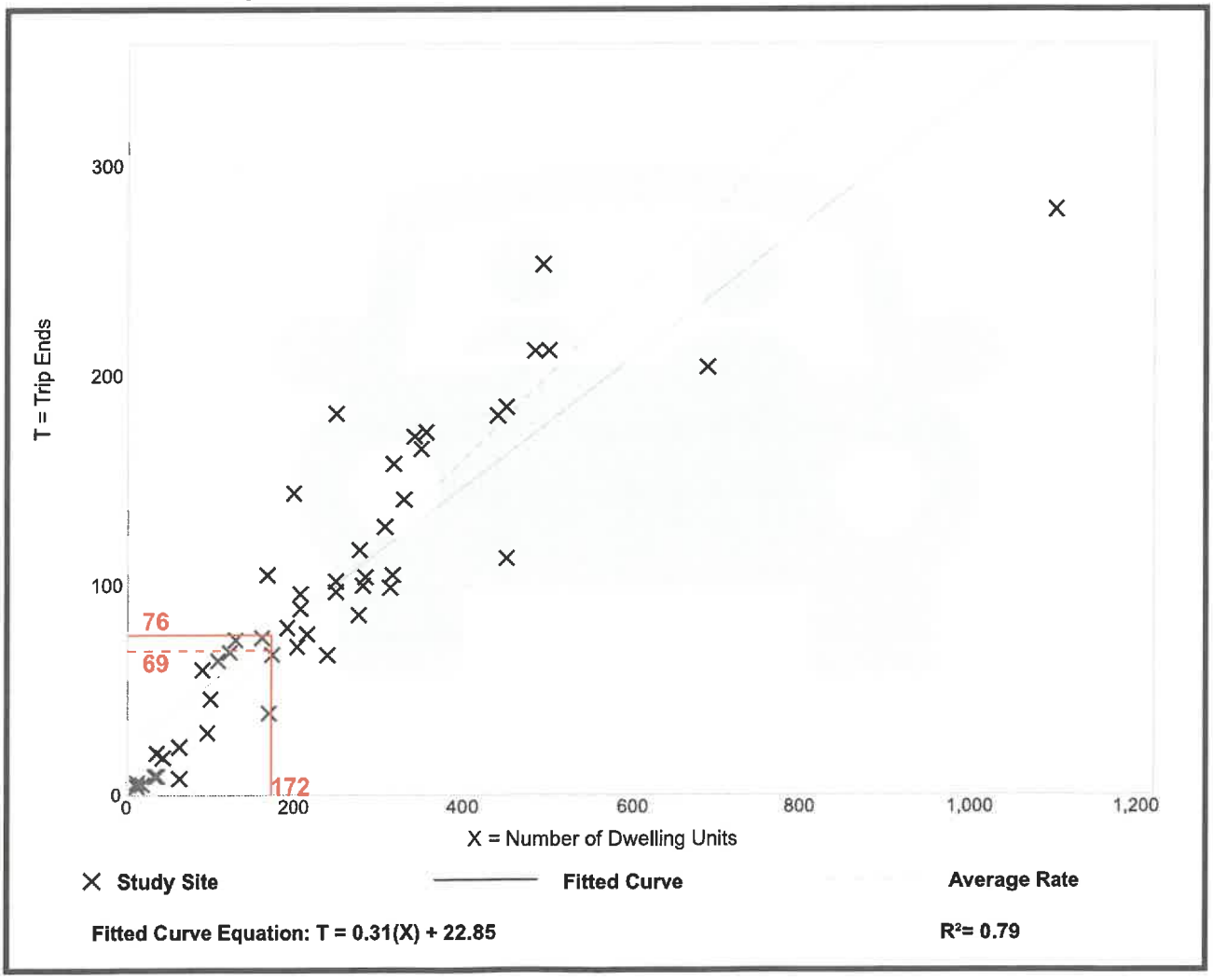
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 49
Avg. Num. of Dwelling Units: 249
Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

Data Plot and Equation



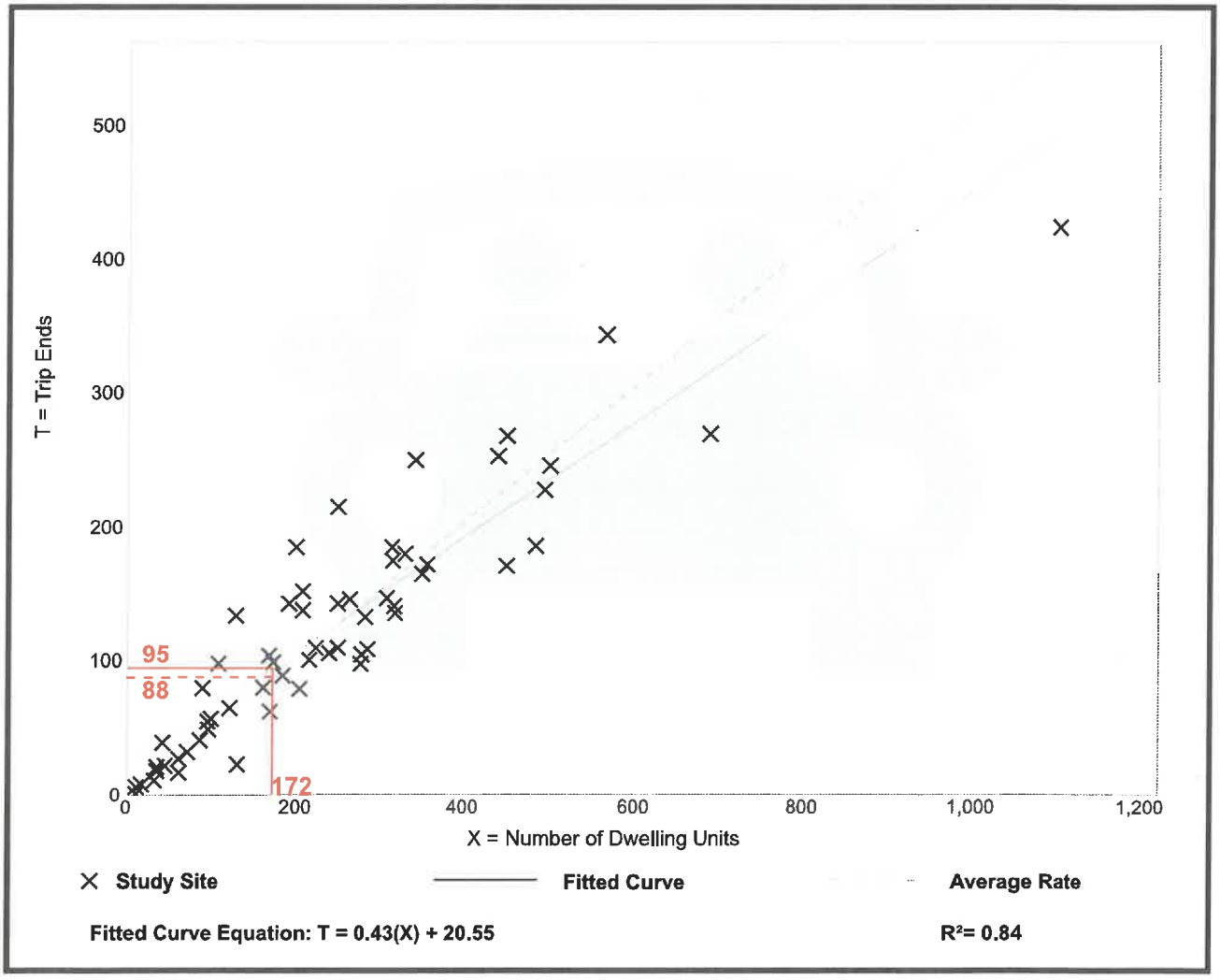
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	59
Avg. Num. of Dwelling Units:	241
Directional Distribution:	63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

Data Plot and Equation



Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Saturday, Peak Hour of Generator**

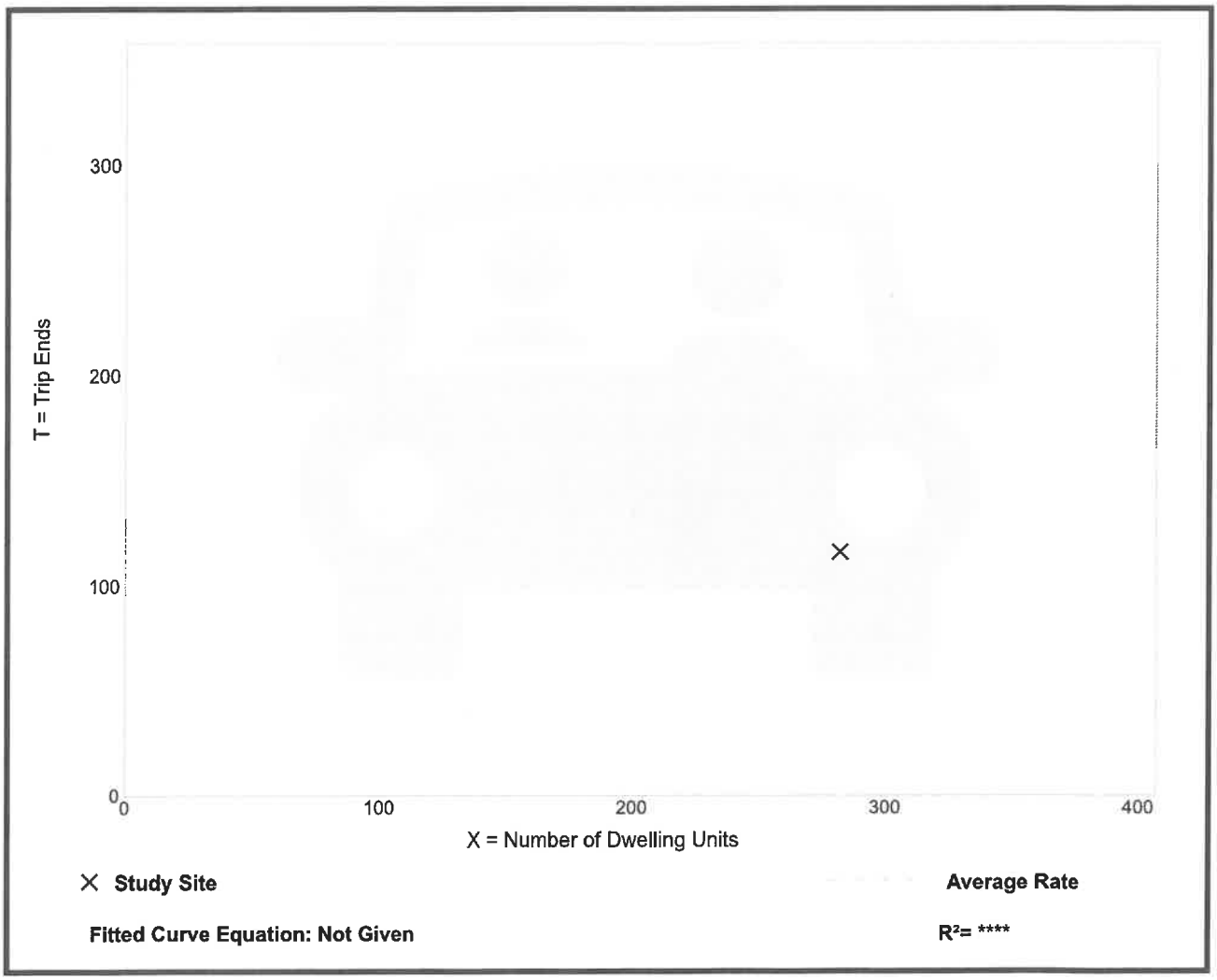
Setting/Location: **General Urban/Suburban**
Number of Studies: 1
Avg. Num. of Dwelling Units: 282
Directional Distribution: Not Available

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.41	0.41 - 0.41	*

Data Plot and Equation

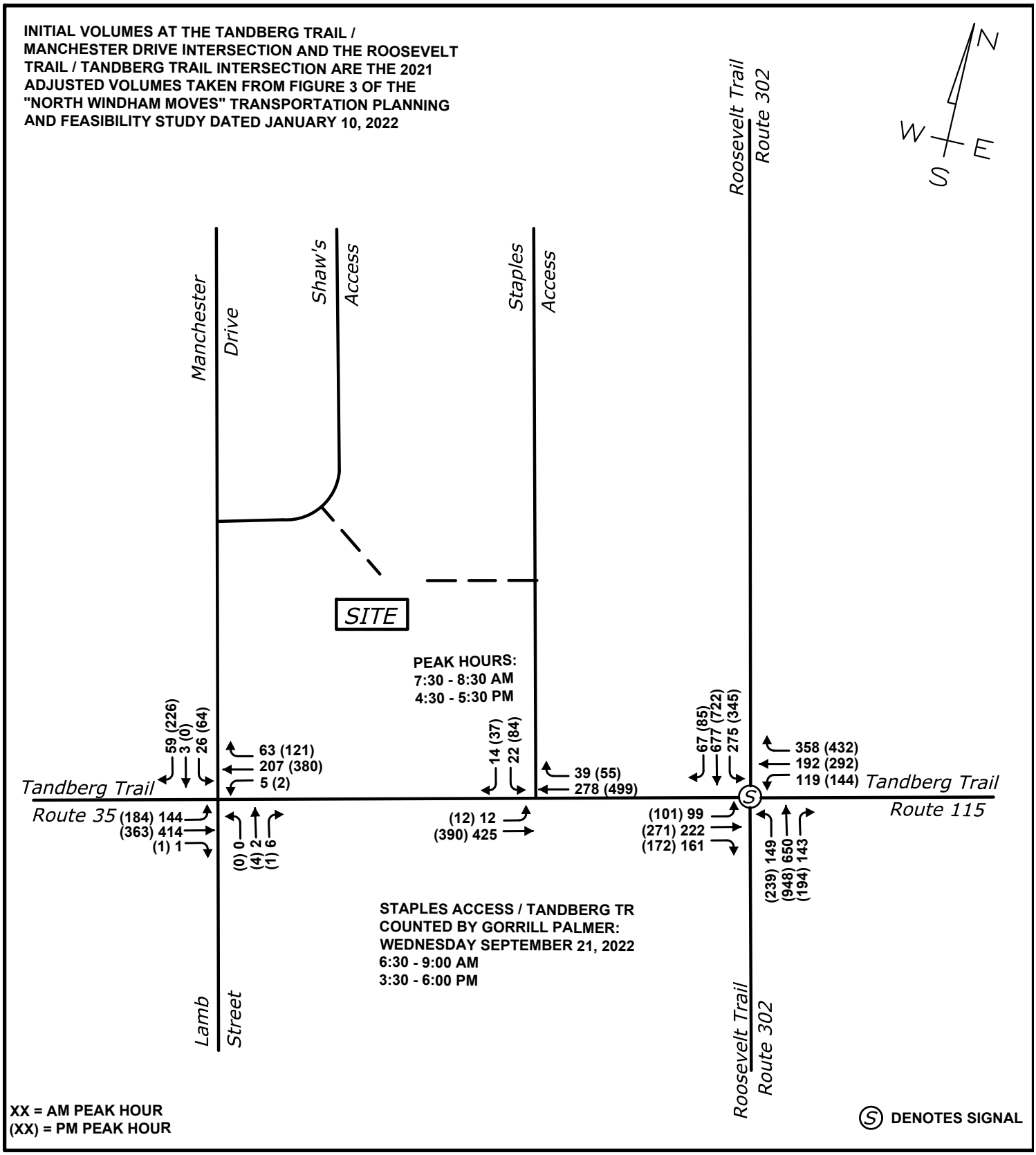
Caution – Small Sample Size



Attachment C
Traffic Figures

Initial Volumes

Figure No. 1



MULTIFAMILY DEVELOPMENT AT SHAW'S PLAZA
WINDHAM, MAINE

Design:	KJB	Scale:	NONE
Draft:	KJB	Date:	2/21/24
Checked:	RED	File Name:	Figure Set.dwg

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2026 Predevelopment Volumes

Figure No. 2

COUNTS TAKEN FROM THE WINDHAM STUDY WERE ALREADY ADJUSTED SEASONALLY AND ANNUALLY UP TO 2021. THEREFORE, THE DATA ONLY NEEDS TO BE ANNUALLY ADJUSTED OUT TO 2024. THE ADJUSTMENT FACTOR CALCULATION FOR THE TANDBERG TRAIL / MANCHESTER DRIVE INTERSECTION AND THE TANDBERG TRAIL / ROOSEVELT TRAIL INTERSECTION IS PRESENTED BELOW

ADJUSTMENTS (RT 302 / RT 115 + RT 35 / MANCHESTER DRIVE)

ANNUAL: $(1.005)^5 = 1.025$

TOTAL: 1.025

ADJUSTMENTS (STAPLES ACCESS)

SEASONAL: $\frac{0.89}{0.87} = 1.023$ (GROUP 1)

ANNUAL: $(1.005)^4 = 1.02$

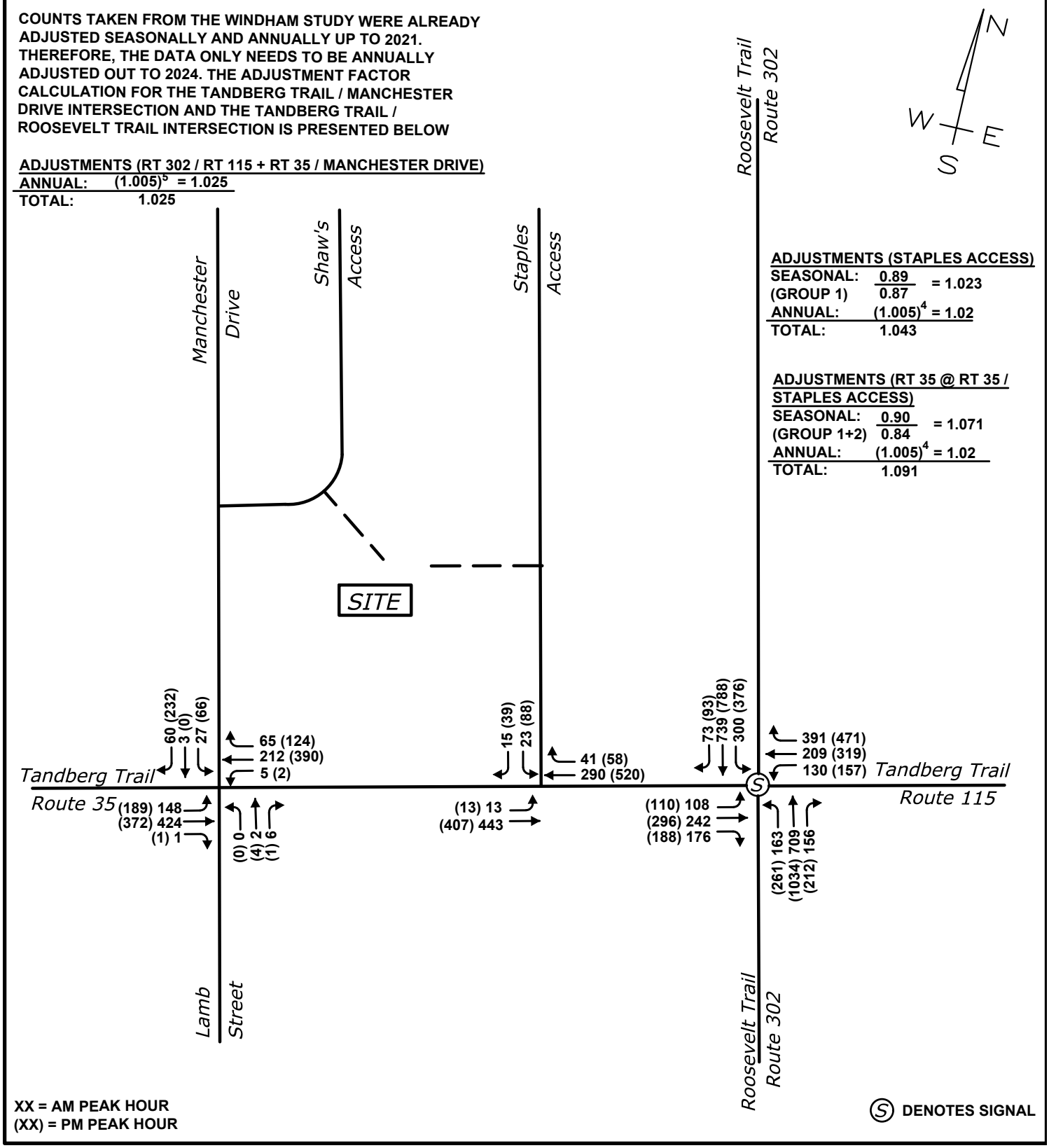
TOTAL: 1.043

ADJUSTMENTS (RT 35 @ RT 35 / STAPLES ACCESS)

SEASONAL: $\frac{0.90}{0.84} = 1.071$ (GROUP 1+2)

ANNUAL: $(1.005)^4 = 1.02$

TOTAL: 1.091



XX = AM PEAK HOUR
(XX) = PM PEAK HOUR

S DENOTES SIGNAL

MULTIFAMILY DEVELOPMENT AT SHAW'S PLAZA
WINDHAM, MAINE

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Draft: KJB Date: 2/21/24
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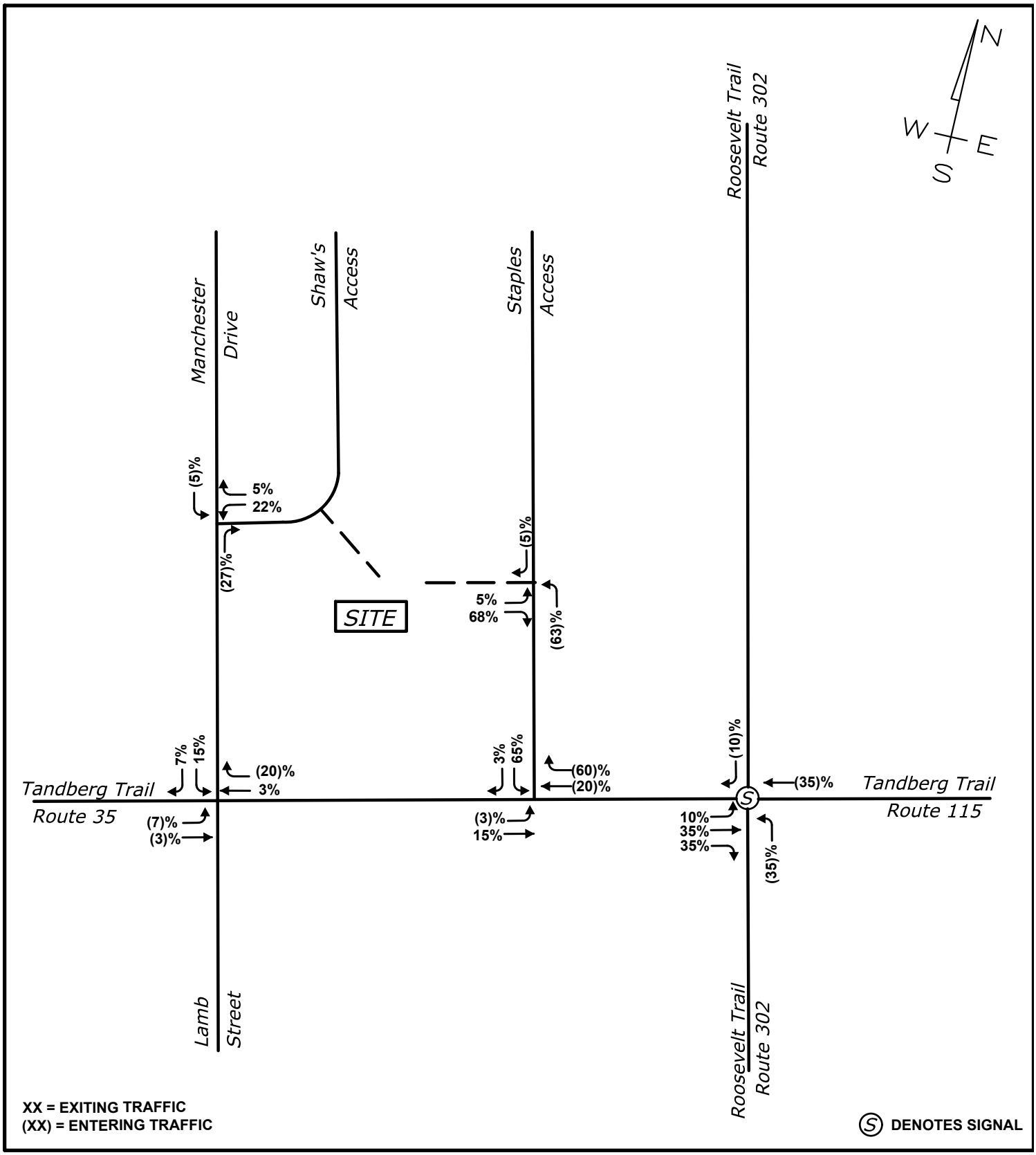
Trip Distribution

Figure No. 3



MULTIFAMILY DEVELOPMENT AT SHAW'S PLAZA
WINDHAM, MAINE

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Draft:	KJB	Date:	2/21/24
Checked:	RED	File Name:	Figure Set.dwg

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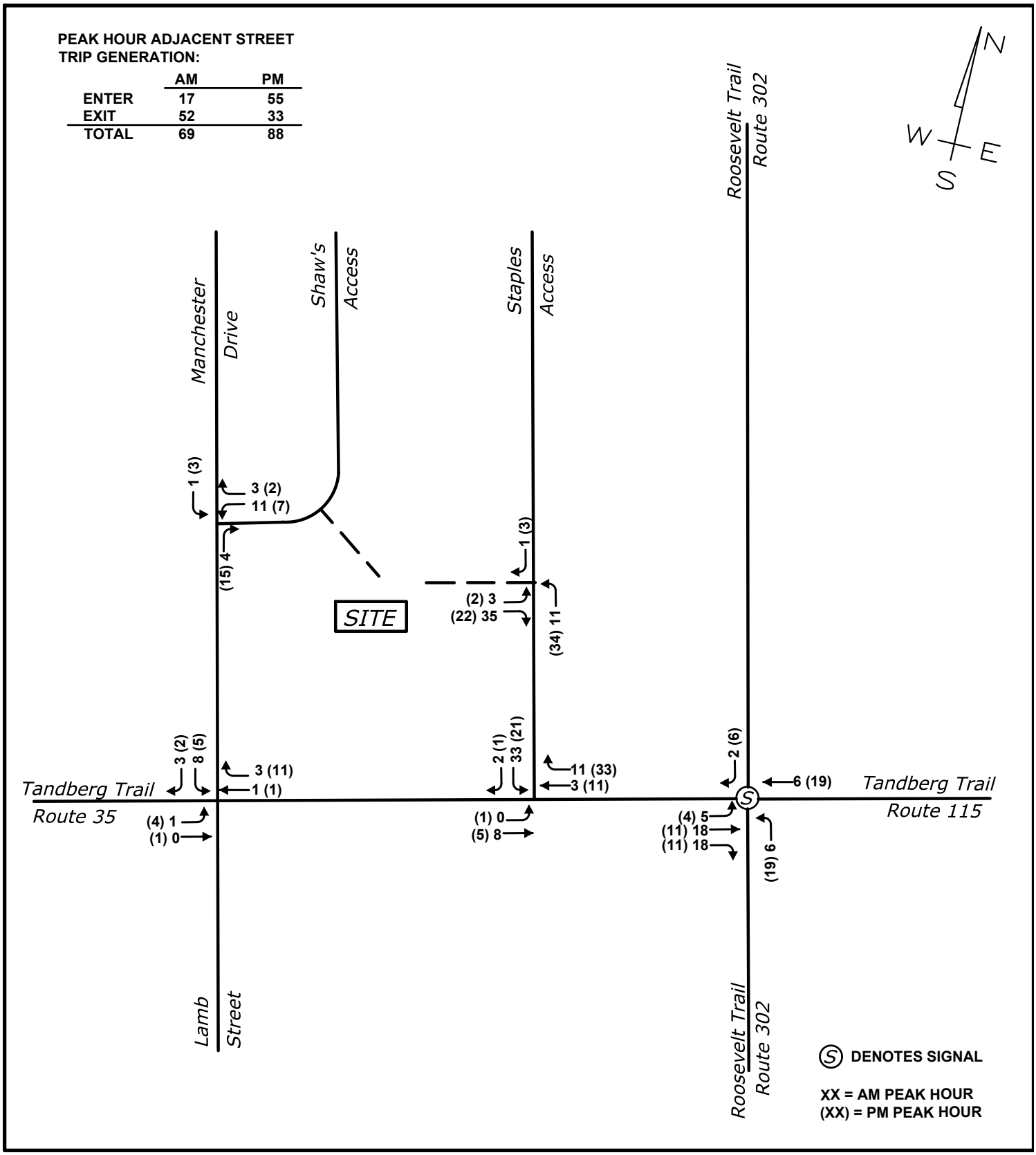
Trip Assignment

Figure No. 4

PEAK HOUR ADJACENT STREET TRIP GENERATION:

	AM	PM
ENTER	17	55
EXIT	52	33
TOTAL	69	88



MULTIFAMILY DEVELOPMENT AT SHAW'S PLAZA
WINDHAM, MAINE

Design: KJB Scale: NONE
Draft: KJB Date: 2/21/24
Checked: RED File Name: Figure Set.dwg

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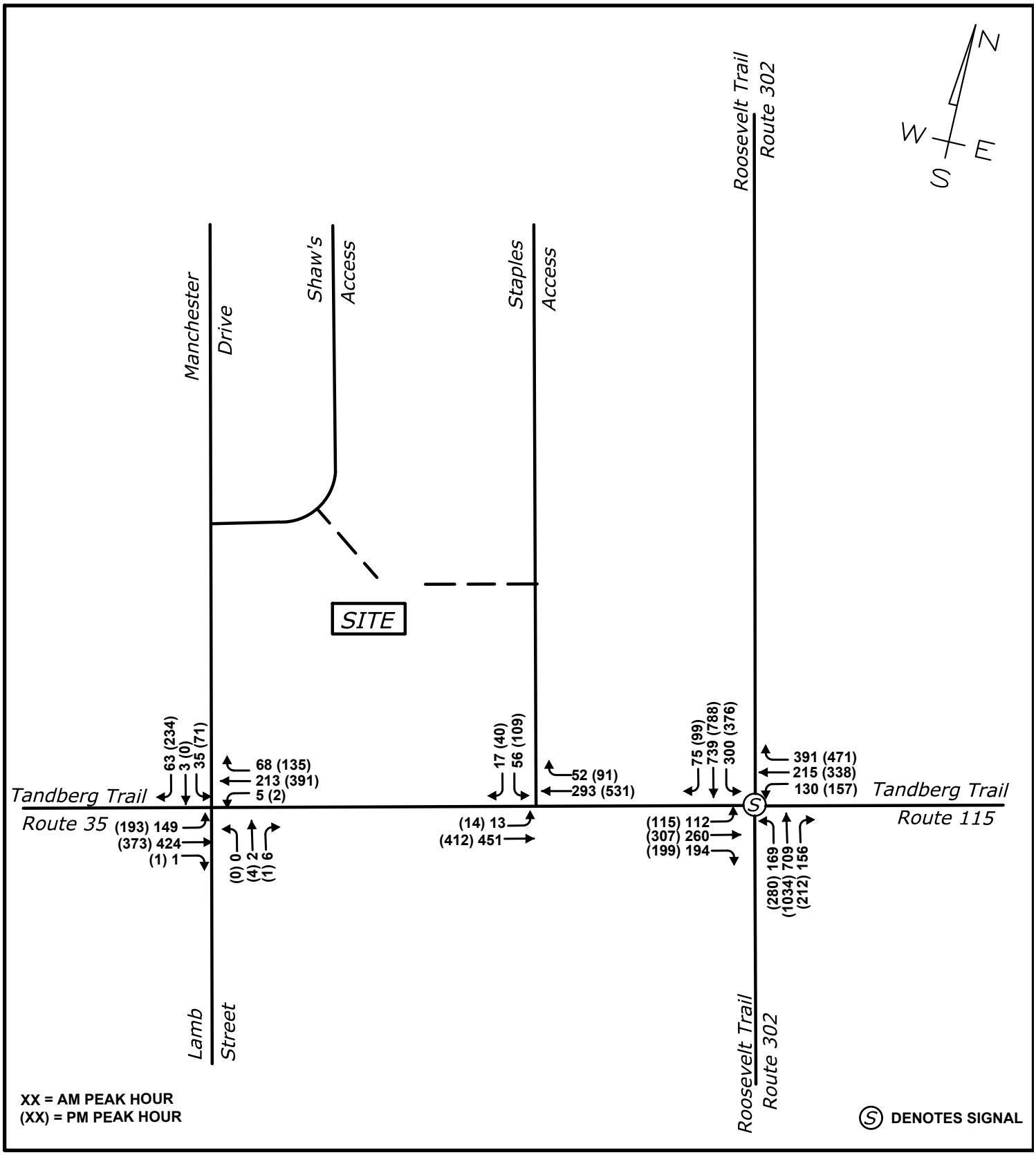
2026 Post-Development Volumes

Figure No. 5



MULTIFAMILY DEVELOPMENT AT SHAW'S PLAZA
WINDHAM, MAINE

Design:	KJB	Scale:	NONE
Draft:	KJB	Date:	2/21/24
Checked:	RED	File Name:	Figure Set.dwg

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207.772.2515

Attachment D
Computer Modeling Output

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	993	1070	1042	1052	965	1025
Vehs Exited	993	1076	1039	1050	974	1025
Starting Vehs	19	18	13	13	22	15
Ending Vehs	19	12	16	15	13	14
Travel Distance (mi)	447	479	474	473	436	462
Travel Time (hr)	15.5	16.8	16.3	16.6	15.2	16.1
Total Delay (hr)	1.2	1.4	1.3	1.3	1.1	1.3
Total Stops	178	212	186	188	184	189
Fuel Used (gal)	13.8	14.9	14.5	14.6	13.4	14.2

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	993	1070	1042	1052	965	1025
Vehs Exited	993	1076	1039	1050	974	1025
Starting Vehs	19	18	13	13	22	15
Ending Vehs	19	12	16	15	13	14
Travel Distance (mi)	447	479	474	473	436	462
Travel Time (hr)	15.5	16.8	16.3	16.6	15.2	16.1
Total Delay (hr)	1.2	1.4	1.3	1.3	1.1	1.3
Total Stops	178	212	186	188	184	189
Fuel Used (gal)	13.8	14.9	14.5	14.6	13.4	14.2

3: Lamb St/Manchester Dr & Tandberg Tr (ME35) Performance by lane

Lane	EB	EB	WB	NB	SB	SB	All
Movements Served	L	TR	LTR	LTR	L	TR	
Denied Del/Veh (s)							1.0
Total Del/Veh (s)	3.0	1.4	1.2	5.4	11.6	2.8	2.0

6: Tandberg Tr (ME35) & Staples/Shaw's Access Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.1
Total Del/Veh (s)	1.1	0.7	7.5	1.3

Total Network Performance

Denied Del/Veh (s)	1.0
Total Del/Veh (s)	3.4

Intersection: 3: Lamb St/Manchester Dr & Tandberg Tr (ME35)

Movement	EB	WB	NB	SB	SB
Directions Served	L	LTR	LTR	L	TR
Maximum Queue (ft)	72	35	31	46	53
Average Queue (ft)	27	2	7	19	28
95th Queue (ft)	58	16	28	45	45
Link Distance (ft)		893	329	922	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	200				110
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: Tandberg Tr (ME35) & Staples/Shaw's Access

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	52	68
Average Queue (ft)	4	25
95th Queue (ft)	26	54
Link Distance (ft)	893	848
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1099	1140	1091	1122	1051	1099
Vehs Exited	1100	1143	1088	1124	1063	1102
Starting Vehs	21	21	17	15	23	20
Ending Vehs	20	18	20	13	11	15
Travel Distance (mi)	491	509	483	498	467	490
Travel Time (hr)	17.4	18.2	16.9	17.5	16.5	17.3
Total Delay (hr)	1.5	1.8	1.5	1.5	1.4	1.5
Total Stops	252	260	250	222	230	244
Fuel Used (gal)	15.4	16.1	15.2	15.5	14.5	15.3

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	1099	1140	1091	1122	1051	1099
Vehs Exited	1100	1143	1088	1124	1063	1102
Starting Vehs	21	21	17	15	23	20
Ending Vehs	20	18	20	13	11	15
Travel Distance (mi)	491	509	483	498	467	490
Travel Time (hr)	17.4	18.2	16.9	17.5	16.5	17.3
Total Delay (hr)	1.5	1.8	1.5	1.5	1.4	1.5
Total Stops	252	260	250	222	230	244
Fuel Used (gal)	15.4	16.1	15.2	15.5	14.5	15.3

3: Lamb St/Manchester Dr & Tandberg Tr (ME35) Performance by lane

Lane	EB	EB	WB	NB	SB	SB	All
Movements Served	L	TR	LTR	LTR	L	TR	
Denied Del/Veh (s)							1.0
Total Del/Veh (s)	3.3	1.4	1.3	4.7	12.6	2.8	2.2

6: Tandberg Tr (ME35) & Staples/Shaw's Acess Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.1
Total Del/Veh (s)	1.3	0.9	8.6	1.7

Total Network Performance

Denied Del/Veh (s)	1.0
Total Del/Veh (s)	3.9

Intersection: 3: Lamb St/Manchester Dr & Tandberg Tr (ME35)

Movement	EB	WB	NB	SB	SB
Directions Served	L	LTR	LTR	L	TR
Maximum Queue (ft)	70	27	31	48	53
Average Queue (ft)	28	2	6	23	28
95th Queue (ft)	58	15	27	49	47
Link Distance (ft)		893	329	922	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	200				110
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: Tandberg Tr (ME35) & Staples/Shaw's Acess

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	63	75
Average Queue (ft)	6	34
95th Queue (ft)	33	65
Link Distance (ft)	893	848
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1622	1595	1547	1567	1538	1573
Vehs Exited	1623	1606	1560	1574	1540	1580
Starting Vehs	24	27	29	34	33	28
Ending Vehs	23	16	16	27	31	22
Travel Distance (mi)	708	695	677	683	669	686
Travel Time (hr)	27.1	27.0	25.5	26.3	25.6	26.3
Total Delay (hr)	3.9	4.1	3.3	3.8	3.5	3.7
Total Stops	584	584	531	593	552	567
Fuel Used (gal)	23.3	23.3	22.1	22.7	22.2	22.7

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	1622	1595	1547	1567	1538	1573
Vehs Exited	1623	1606	1560	1574	1540	1580
Starting Vehs	24	27	29	34	33	28
Ending Vehs	23	16	16	27	31	22
Travel Distance (mi)	708	695	677	683	669	686
Travel Time (hr)	27.1	27.0	25.5	26.3	25.6	26.3
Total Delay (hr)	3.9	4.1	3.3	3.8	3.5	3.7
Total Stops	584	584	531	593	552	567
Fuel Used (gal)	23.3	23.3	22.1	22.7	22.2	22.7

3: Lamb St/Manchester Dr & Tandberg Tr (ME35) Performance by lane

Lane	EB	EB	WB	NB	SB	SB	All
Movements Served	L	TR	LTR	LTR	L	TR	
Denied Del/Veh (s)							1.2
Total Del/Veh (s)	6.8	1.7	2.5	13.4	32.9	6.0	4.8

6: Tandberg Tr (ME35) & Staples/Shaw's Access Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.3
Total Del/Veh (s)	1.2	1.4	13.7	2.7

Total Network Performance

Denied Del/Veh (s)	1.3
Total Del/Veh (s)	7.1

Intersection: 3: Lamb St/Manchester Dr & Tandberg Tr (ME35)

Movement	EB	WB	NB	SB	SB
Directions Served	L	LTR	LTR	L	TR
Maximum Queue (ft)	97	40	31	120	116
Average Queue (ft)	50	5	6	37	61
95th Queue (ft)	86	25	25	78	103
Link Distance (ft)		893	329	922	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	200				110
Storage Blk Time (%)				1	1
Queuing Penalty (veh)				1	1

Intersection: 6: Tandberg Tr (ME35) & Staples/Shaw's Access

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	70	4	113
Average Queue (ft)	8	0	51
95th Queue (ft)	38	3	90
Link Distance (ft)	893	556	848
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 2

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1663	1677	1591	1628	1579	1628
Vehs Exited	1665	1686	1614	1634	1576	1636
Starting Vehs	26	28	39	32	29	28
Ending Vehs	24	19	16	26	32	23
Travel Distance (mi)	719	724	691	698	678	702
Travel Time (hr)	28.0	28.7	26.6	27.3	26.1	27.3
Total Delay (hr)	4.3	4.7	3.9	4.2	3.7	4.1
Total Stops	593	643	590	605	563	599
Fuel Used (gal)	24.1	24.7	23.1	23.4	22.7	23.6

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	1663	1677	1591	1628	1579	1628
Vehs Exited	1665	1686	1614	1634	1576	1636
Starting Vehs	26	28	39	32	29	28
Ending Vehs	24	19	16	26	32	23
Travel Distance (mi)	719	724	691	698	678	702
Travel Time (hr)	28.0	28.7	26.6	27.3	26.1	27.3
Total Delay (hr)	4.3	4.7	3.9	4.2	3.7	4.1
Total Stops	593	643	590	605	563	599
Fuel Used (gal)	24.1	24.7	23.1	23.4	22.7	23.6

3: Lamb St/Manchester Dr & Tandberg Tr (ME35) Performance by lane

Lane	EB	EB	WB	NB	SB	SB	All
Movements Served	L	TR	LTR	LTR	L	TR	
Denied Del/Veh (s)							1.2
Total Del/Veh (s)	6.9	1.8	2.6	15.8	31.6	5.7	4.9

6: Tandberg Tr (ME35) & Staples/Shaw's Access Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)			0.3	
Total Del/Veh (s)	1.5	1.8	17.8	3.6

Total Network Performance

Denied Del/Veh (s)	1.3
Total Del/Veh (s)	7.7

Intersection: 3: Lamb St/Manchester Dr & Tandberg Tr (ME35)

Movement	EB	WB	NB	SB	SB
Directions Served	L	LTR	LTR	L	TR
Maximum Queue (ft)	106	40	31	94	118
Average Queue (ft)	50	5	6	38	58
95th Queue (ft)	89	22	25	75	96
Link Distance (ft)		893	329	922	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	200				110
Storage Blk Time (%)				0	0
Queuing Penalty (veh)				0	0

Intersection: 6: Tandberg Tr (ME35) & Staples/Shaw's Access

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	78	134
Average Queue (ft)	13	62
95th Queue (ft)	50	111
Link Distance (ft)	893	848
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Attachment E
Lane Warrant Sheets

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.
Shaws Right AM

INPUT

Roadway geometry:	2-lane roadway

Variable	Value
Major-road speed, mph:	35
Major-road volume (one direction), veh/h:	286
Right-turn volume, veh/h:	68

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	1567
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	

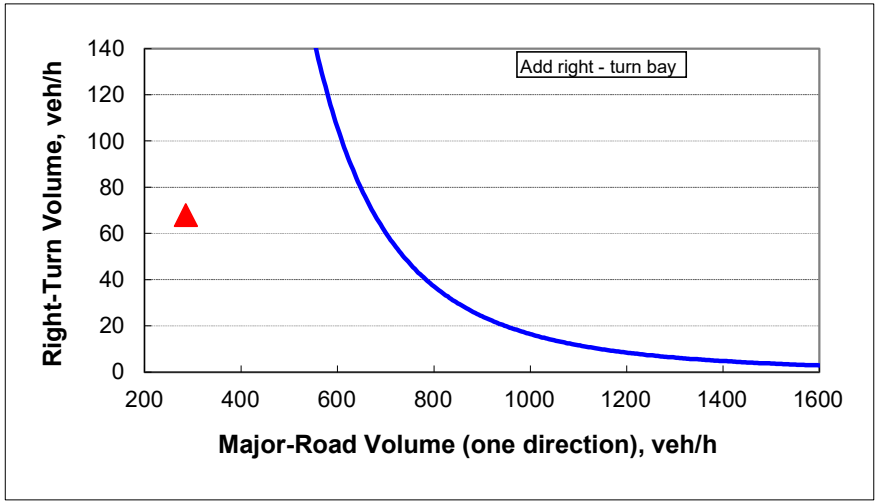


Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.
Shaws Right PM

INPUT

Roadway geometry:	2-lane roadway

Variable	Value
Major-road speed, mph:	35
Major-road volume (one direction), veh/h:	528
Right-turn volume, veh/h:	135

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	169
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	

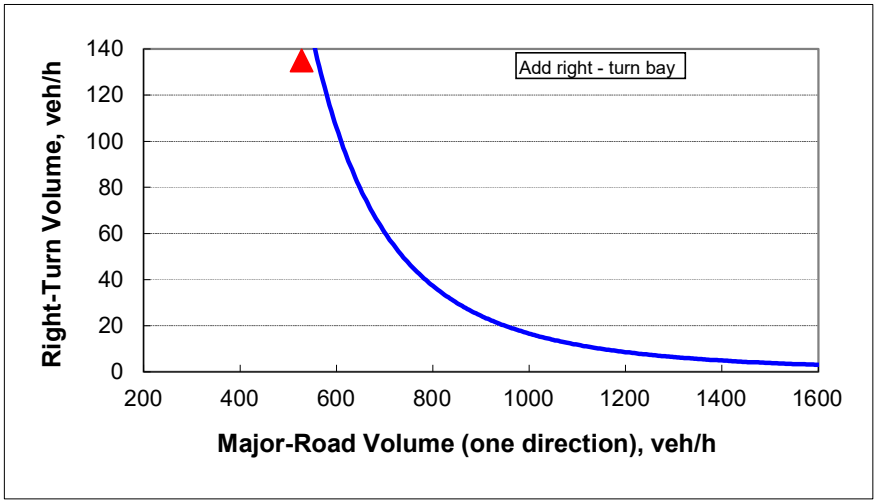


Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.
Staples Left AM

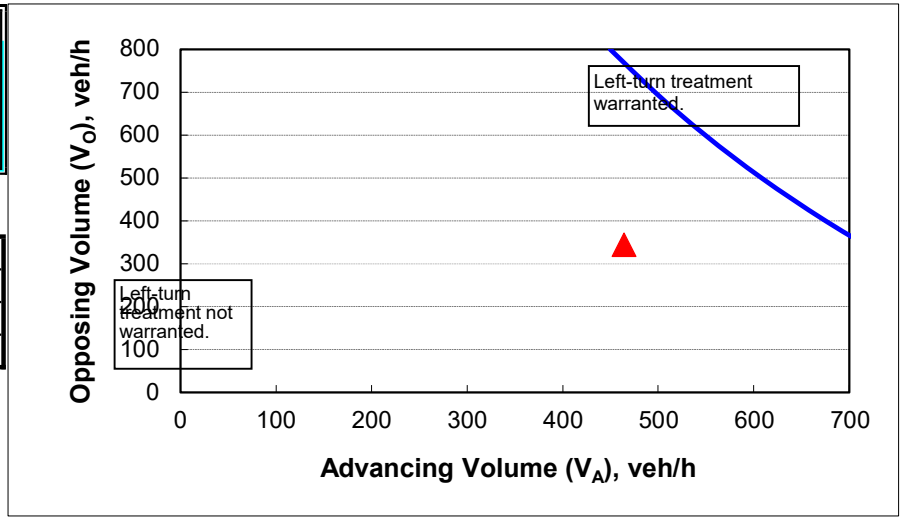
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	3%
Advancing volume (V_A), veh/h:	464
Opposing volume (V_O), veh/h:	345

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	716
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

Staples Left PM

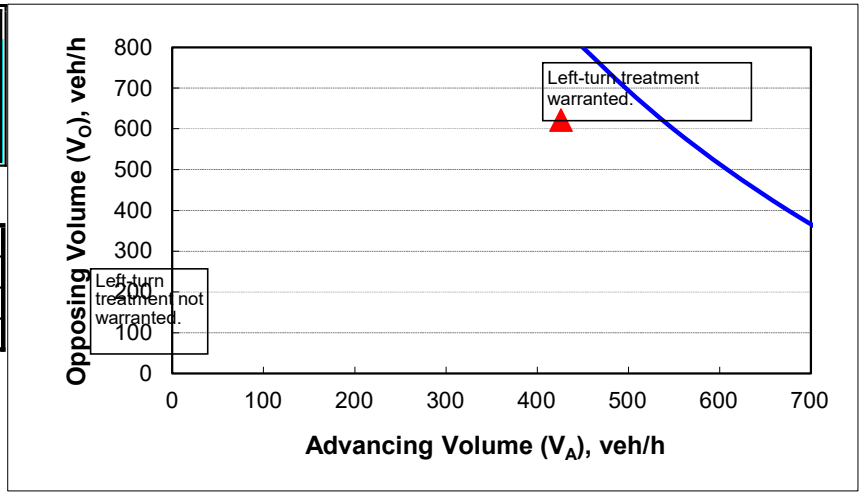
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	3%
Advancing volume (V_A), veh/h:	426
Opposing volume (V_O), veh/h:	622

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	537
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.
Staples Right AM

INPUT

Roadway geometry:	2-lane roadway

Variable	Value
Major-road speed, mph:	35
Major-road volume (one direction), veh/h:	345
Right-turn volume, veh/h:	52

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	792
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	

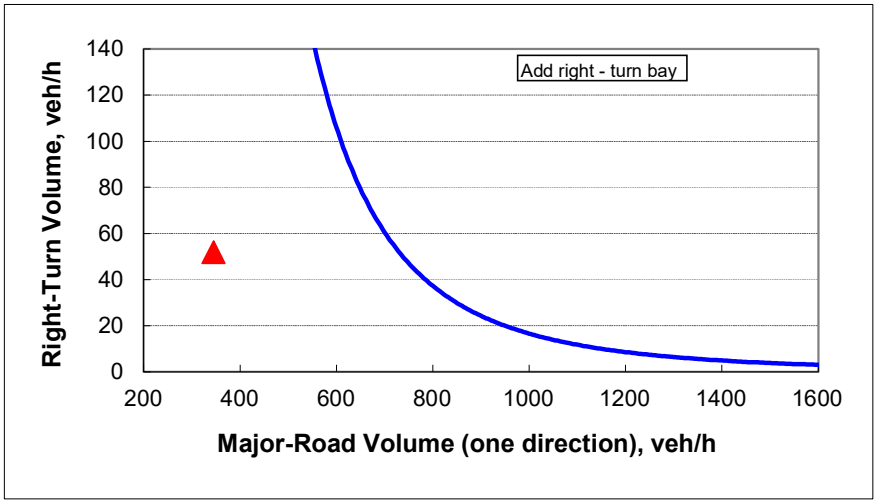


Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.
Staples Right PM

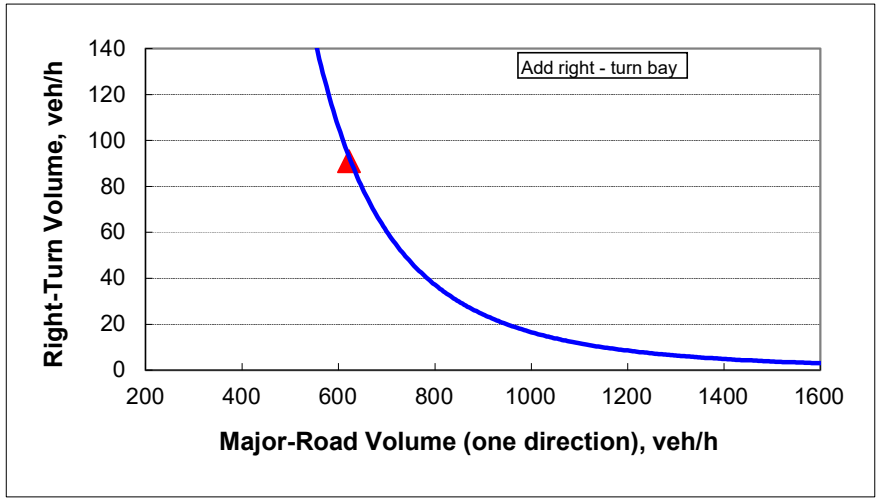
INPUT

Roadway geometry:	2-lane roadway

Variable	Value
Major-road speed, mph:	35
Major-road volume (one direction), veh/h:	622
Right-turn volume, veh/h:	91

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	93
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



Attachment F
Safety Information

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **WINDHAM**

LOW NODE: **16919** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

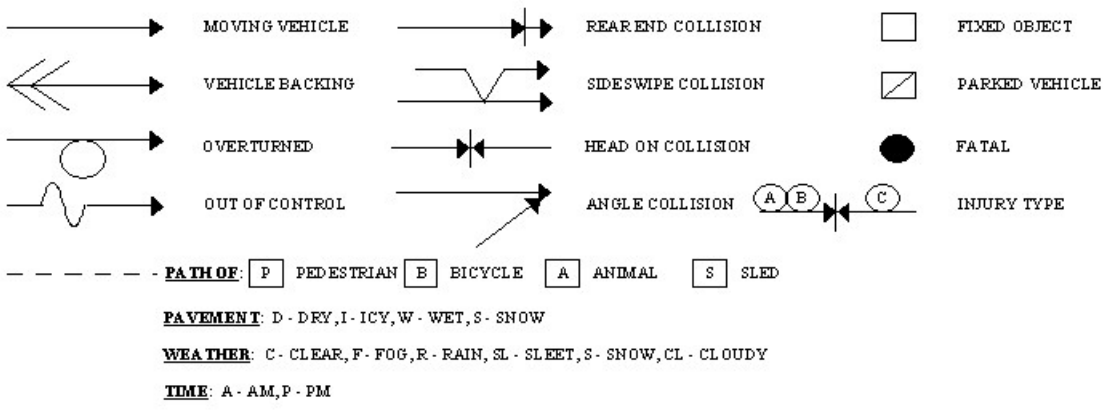
DESCRIPTION: **Int of Roosevelt Trl & Tandberg Trl**

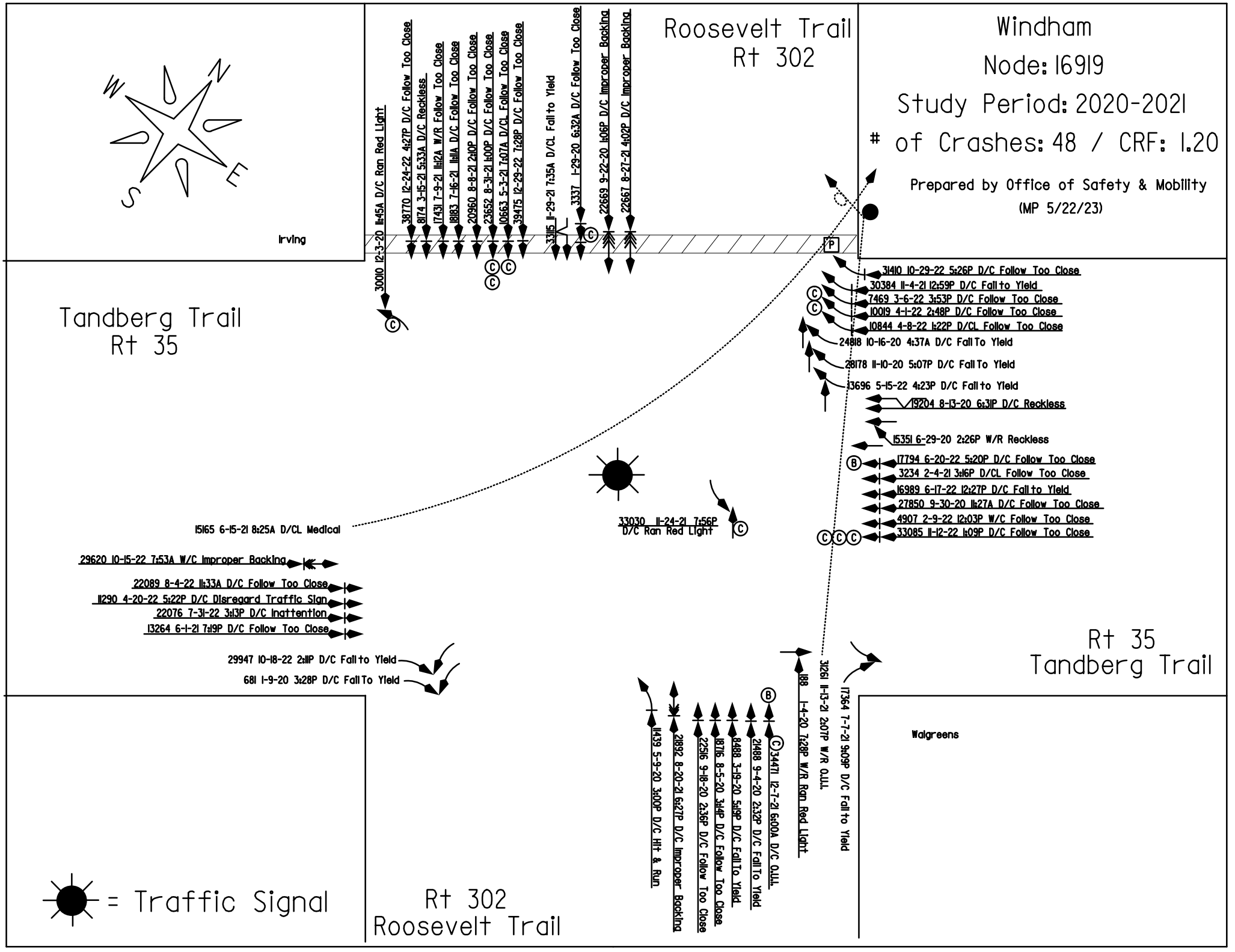
RTE # / RD #: **0035X** DATE DRAWN: **5/22/2023** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **1.13** CRF: **1.2** % INJURY: **20.8** TOTAL CRASHES: **48**

LEGEND




Windham
Node: 16919
Study Period: 2020-2021
# of Crashes: 48 / CRF: 1.20
Prepared by Office of Safety & Mobility
(MP 5/22/23)
Roosevelt Trail
Rt 302
Tandberg Trail
Rt 35
Irving
Walgreens
= Traffic Signal
11:45A D/C Ran Red Light
38770 12-24-22 4:27P D/C Follow Too Close
8174 3-15-21 5:33A D/C Reckless
17431 7-9-21 11:12A W/R Follow Too Close
18183 7-16-21 11:11A D/C Follow Too Close
20960 8-8-21 2:10P D/C Follow Too Close
23652 8-31-21 1:00P D/C Follow Too Close
10663 5-3-21 7:07A D/CL Follow Too Close
39475 12-29-22 7:28P D/C Follow Too Close
33115 11-29-21 7:35A D/CL Fail to Yield
3337 1-29-20 6:32A D/C Follow Too Close
22669 9-22-20 1:06P D/C Improper Backing
22667 8-27-21 4:02P D/C Improper Backing
30010 12-3-20
31410 10-29-22 5:26P D/C Follow Too Close
30384 11-4-21 12:59P D/C Fail to Yield
7469 3-6-22 3:53P D/C Follow Too Close
10019 4-1-22 2:48P D/C Follow Too Close
10844 4-8-22 1:22P D/CL Follow Too Close
24818 10-16-20 4:37A D/C Fail To Yield
28178 11-10-20 5:07P D/C Fail To Yield
13696 5-15-22 4:23P D/C Fail to Yield
19204 8-13-20 6:31P D/C Reckless
15351 6-29-20 2:26P W/R Reckless
17794 6-20-22 5:20P D/C Follow Too Close
3234 2-4-21 3:16P D/CL Follow Too Close
16989 6-17-22 12:27P D/C Fail to Yield
27850 9-30-20 11:27A D/C Follow Too Close
4907 2-9-22 12:03P W/C Follow Too Close
33085 11-12-22 1:09P D/C Follow Too Close
15165 6-15-21 8:25A D/CL Medical
33030 11-24-21 7:56P
D/C Ran Red Light
29620 10-15-22 7:53A W/C Improper Backing
22089 8-4-22 11:33A D/C Follow Too Close
11290 4-20-22 5:22P D/C Disregard Traffic Sign
22076 7-31-22 3:13P D/C Inattention
13264 6-1-21 7:19P D/C Follow Too Close
29947 10-18-22 2:11P D/C Fail to Yield
681 1-9-20 3:28P D/C Fail To Yield
11439 5-9-20 3:00P D/C Hit & Run
28892 8-20-21 6:27P D/C Improper Backing
22516 9-18-20 2:36P D/C Follow Too Close
18716 8-5-20 3:14P D/C Follow Too Close
8488 3-19-20 5:19P D/C Fail To Yield
21488 9-4-20 2:32P D/C Fail To Yield
34471 12-7-21 6:00A D/C O.U.I.
188 1-4-20 7:28P W/R Ran Red Light
31261 11-13-21 2:07P W/R O.U.I.
17364 7-7-21 9:09P D/C Fail to Yield
Rt 302
Roosevelt Trail
Rt 35
Tandberg Trail


Search...
ROOSEVELT TRL
ABBY RD
BADGER RUN
TANDBERG TRL
115
10923
16919
WINDHAM
35
302
71550
71549
10921
ARLENE LN
ROBIN LN
NORTHWOOD DR
Scale: 1:3809
200ft

Maine Department Of Transportation - Office of Safety, Crash Records Section

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I - Single Node	☐ Section Detail	☑ Crash Summary II	☐ 1320 Public	☐ 1320 Private	☐ 1320 Summary

REPORT DESCRIPTION

Windham
Jct Roosevelt Trl & Tandberg Trl

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: 0035X	Start Node: 16919	Start Offset: 0	☐ Exclude First Node
	End Node: 16919	End Offset: 0	☐ Exclude Last Node

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
16919	0035X - 42.40	Int of ROOSEVELT TRL TANDBERG TRL	9	48	0	0	2	8	38	20.8	14.147	1.13	0.94	1.20
												Statewide Crash Rate:	0.64	
Study Years:	3.00	NODE TOTALS:		48	0	0	2	8	38	20.8	14.147	1.13	0.94	1.20

Crash Summary II - Characteristics

Crashes by Day and Hour

	AM												PM												
	Hour of Day																								
Day Of Week	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	Un	Tot
SUNDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	4
MONDAY	0	0	0	0	0	1	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	5
TUESDAY	0	0	0	0	0	0	1	0	1	0	0	0	0	2	1	0	0	1	0	1	0	0	0	0	0	7
WEDNESDAY	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	1	0	1	0	1	0	0	0	6
THURSDAY	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	2	0	1	1	1	0	0	0	0	0	8
FRIDAY	0	0	0	0	1	0	0	0	0	0	0	3	1	1	3	0	1	0	1	0	0	0	0	0	0	11
SATURDAY	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	1	1	1	0	1	0	0	0	0	0	7
Totals	0	0	1	0	1	1	2	3	1	0	0	5	3	4	6	6	3	5	2	4	0	1	0	0	0	48

Vehicle Counts by Type

Unit Type	Total
1-Passenger Car	35
2-(Sport) Utility Vehicle	37
3-Passenger Van	1
4-Cargo Van (10K lbs or Less)	3
5-Pickup	15
6-Motor Home	0
7-School Bus	0
8-Transit Bus	0
9-Motor Coach	0
10-Other Bus	0
11-Motorcycle	0
12-Moped	0
13-Low Speed Vehicle	0
14-Autocycle	0
15-Experimental	0
16-Other Light Trucks (10,000 lbs or Less)	0
17-Medium/Heavy Trucks (More than 10,000 lbs)	3
18-ATV - (4 wheel)	0
20-ATV - (2 wheel)	0
21-Snowmobile	0
22-Pedestrian	0

Unit Type	Total
23-Bicyclist	0
24-Witness	5
25-Other	0
26-Construction	0
27-Farm Vehicle	0
28-Horse and Buggy	0
Total	99

Crash Summary II - Characteristics

Crashes by Driver Action at Time of Crash

Driver Action at Time of Crash	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
No Contributing Action	21	27	0	0	0	0	48
Ran Off Roadway	2	0	0	0	0	0	2
Failed to Yield Right-of-Way	7	4	0	0	0	0	11
Ran Red Light	2	1	0	0	0	0	3
Ran Stop Sign	0	0	0	0	0	0	0
Disregarded Other Traffic Sign	1	1	0	0	0	0	2
Disregarded Other Road Markings	0	0	0	0	0	0	0
Exceeded Posted Speed Limit	0	0	0	0	0	0	0
Drove Too Fast For Conditions	0	0	0	0	0	0	0
Improper Turn	0	0	0	0	0	0	0
Improper Backing	3	1	0	0	0	0	4
Improper Passing	0	0	0	0	0	0	0
Wrong Way	0	0	0	0	0	0	0
Followed Too Closely	11	9	1	0	0	0	21
Failed to Keep in Proper Lane	0	0	0	0	0	0	0
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	1	2	0	0	0	0	3
Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway	0	0	0	0	0	0	0
Over-Correcting/Over-Steering	0	0	0	0	0	0	0
Other Contributing Action	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0
Total	48	45	1	0	0	0	94

Crashes by Apparent Physical Condition And Driver

Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	46	44	1	0	0	0	91
Physically Impaired	0	0	0	0	0	0	0
Emotional(Depressed, Angry, Disturbed, etc.)	0	0	0	0	0	0	0
Ill (Sick)	1	0	0	0	0	0	1
Asleep or Fatigued	0	0	0	0	0	0	0
Under the Influence of Medications/Drugs/Alcohol	1	1	0	0	0	0	2
Other	0	0	0	0	0	0	0
Total	48	45	1	0	0	0	94

Driver Age by Unit Type

Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV	Total
09-Under	0	0	0	0	0	0
10-14	0	0	0	0	0	0
15-19	5	0	0	0	0	5
20-24	7	0	0	0	0	7
25-29	4	0	0	0	0	4
30-39	17	0	0	0	0	17
40-49	19	0	0	0	0	19
50-59	16	0	0	0	0	16
60-69	11	0	0	0	0	11
70-79	12	0	0	0	0	12
80-Over	3	0	0	0	0	3
Unknown	0	0	0	0	0	0
Total	94	0	0	0	0	94

Crash Summary II - Characteristics

Most Harmful Event

Most Harmful Event	Total	Most Harmful Event	Total
1-Overturn / Rollover	1	38-Other Fixed Object (wall, building, tunnel, etc.)	0
2-Fire / Explosion	0	39-Unknown	0
3-Immersion	0	40-Gate or Cable	0
4-Jackknife	0	41-Pressure Ridge	0
5-Cargo / Equipment Loss Or Shift	0	Total	94
6-Fell / Jumped from Motor Vehicle	0		
7-Thrown or Falling Object	0		
8-Other Non-Collision	0		
9-Pedestrian	0		
10-Pedalcycle	0		
11-Railway Vehicle - Train, Engine	0		
12-Animal	0		
13-Motor Vehicle in Transport	91		
14-Parked Motor Vehicle	1		
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	0		
16-Work Zone / Maintenance Equipment	0		
17-Other Non-Fixed Object	0		
18-Impact Attenuator / Crash Cushion	0		
19-Bridge Overhead Structure	0		
20-Bridge Pier or Support	0		
21-Bridge Rail	0		
22-Cable Barrier	0		
23-Culvert	0		
24-Curb	0		
25-Ditch	0		
26-Embankment	0		
27-Guardrail Face	0		
28-Guardrail End	0		
29-Concrete Traffic Barrier	0		
30-Other Traffic Barrier	0		
31-Tree (Standing)	1		
32-Utility Pole / Light Support	0		
33-Traffic Sign Support	0		
34-Traffic Signal Support	0		
35-Fence	0		
36-Mailbox	0		
37-Other Post, Pole, or Support	0		

Injury Data

Severity Code	Injury Crashes	Number Of Injuries
K	0	0
A	0	0
B	2	2
C	8	13
PD	38	0
Total	48	15

Road Character

Road Grade	Total
1-Level	48
2-On Grade	0
3-Top of Hill	0
4-Bottom of Hill	0
5-Other	0
Total	48

Traffic Control Devices

Traffic Control Device	Total
1-Traffic Signals (Stop & Go)	48
2-Traffic Signals (Flashing)	0
3-Advisory/Warning Sign	0
4-Stop Signs - All Approaches	0
5-Stop Signs - Other	0
6-Yield Sign	0
7-Curve Warning Sign	0
8-Officer, Flagman, School Patrol	0
9-School Bus Stop Arm	0
10-School Zone Sign	0
11-R.R. Crossing Device	0
12-No Passing Zone	0
13-None	0
14-Other	0
Total	48

Light

Light Condition	Total
1-Daylight	37
2-Dawn	3
3-Dusk	0
4-Dark - Lighted	8
5-Dark - Not Lighted	0
6-Dark - Unknown Lighting	0
7-Unknown	0
Total	48

Crash Summary II - Characteristics

Crashes by Year and Month

Month	2020	2021	2022	Total
JANUARY	3	0	0	3
FEBRUARY	0	1	1	2
MARCH	1	1	1	3
APRIL	0	0	3	3
MAY	1	1	1	3
JUNE	1	2	2	5
JULY	0	3	1	4
AUGUST	2	4	1	7
SEPTEMBER	3	0	1	4
OCTOBER	1	0	3	4
NOVEMBER	1	4	1	6
DECEMBER	1	1	2	4
Total	14	17	17	48

Report is limited to the last 10 years of data.

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five or More Leg Intersection	Driveways	Bridges	Interchanges	Other	Parking Lot	Private Way	Cross Over	Railroad Crossing	Traffic Circle-Roundabout	Total
Object in Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rear End - Sideswipe	0	0	0	37	0	0	0	0	0	0	0	0	0	0	37
Head-on - Sideswipe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection Movement	0	0	0	9	0	0	0	0	0	0	0	0	0	0	9
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
All Other Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jackknife	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thrown or Falling Object	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	48	0	0	0	0	0	0	0	0	0	0	48

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Blowing Sand, Soil, Dirt												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Blowing Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Clear												
Dark - Lighted	6	0	0	0	0	0	0	0	0	0	0	6
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	3	0	0	0	0	0	0	0	0	0	0	3
Daylight	28	0	0	0	0	0	0	0	0	0	2	30
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Cloudy												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	5	0	0	0	0	0	0	0	0	0	0	5
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Other												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Rain												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	2	2
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	2	2
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Severe Crosswinds												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Sleet, Hail (Freezing Rain or Drizzle)												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	42	0	0	0	0	0	0	0	0	0	6	48

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **WINDHAM**

LOW NODE: **16919** HIGH NODE: **17872** REGION: **1** U/R: **URBAN**

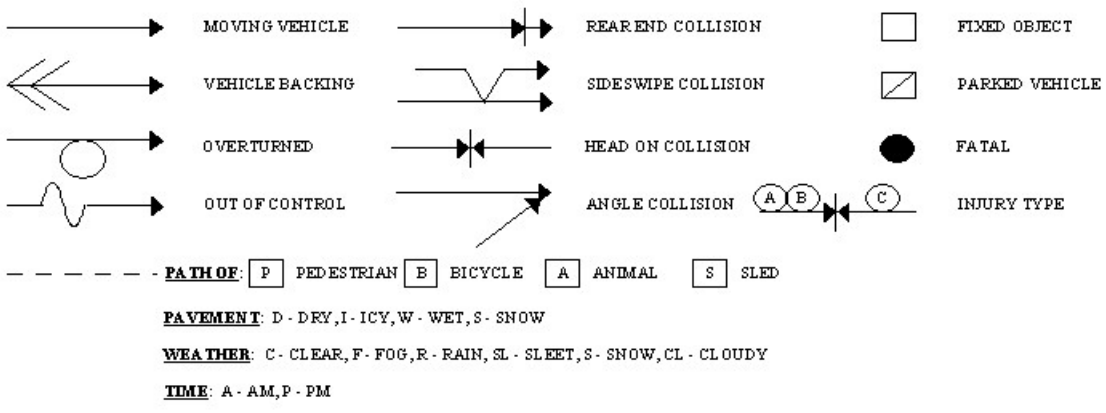
DESCRIPTION: **Roosevelt Trl from Tandberg Trl to Shaws**

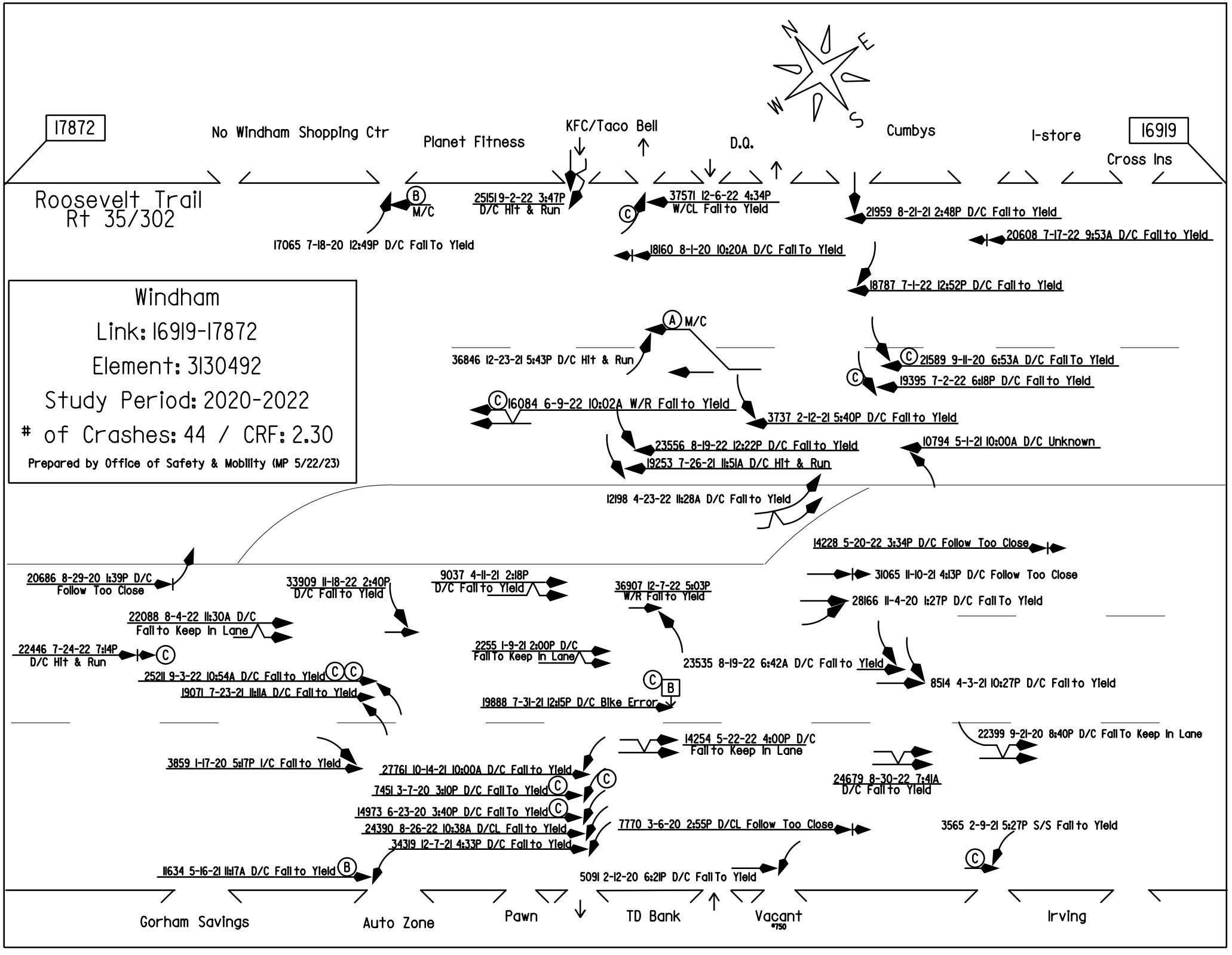
RTE # / RD #: **0035X** DATE DRAWN: **5/22/2023** DRAWN BY: **Michelle**

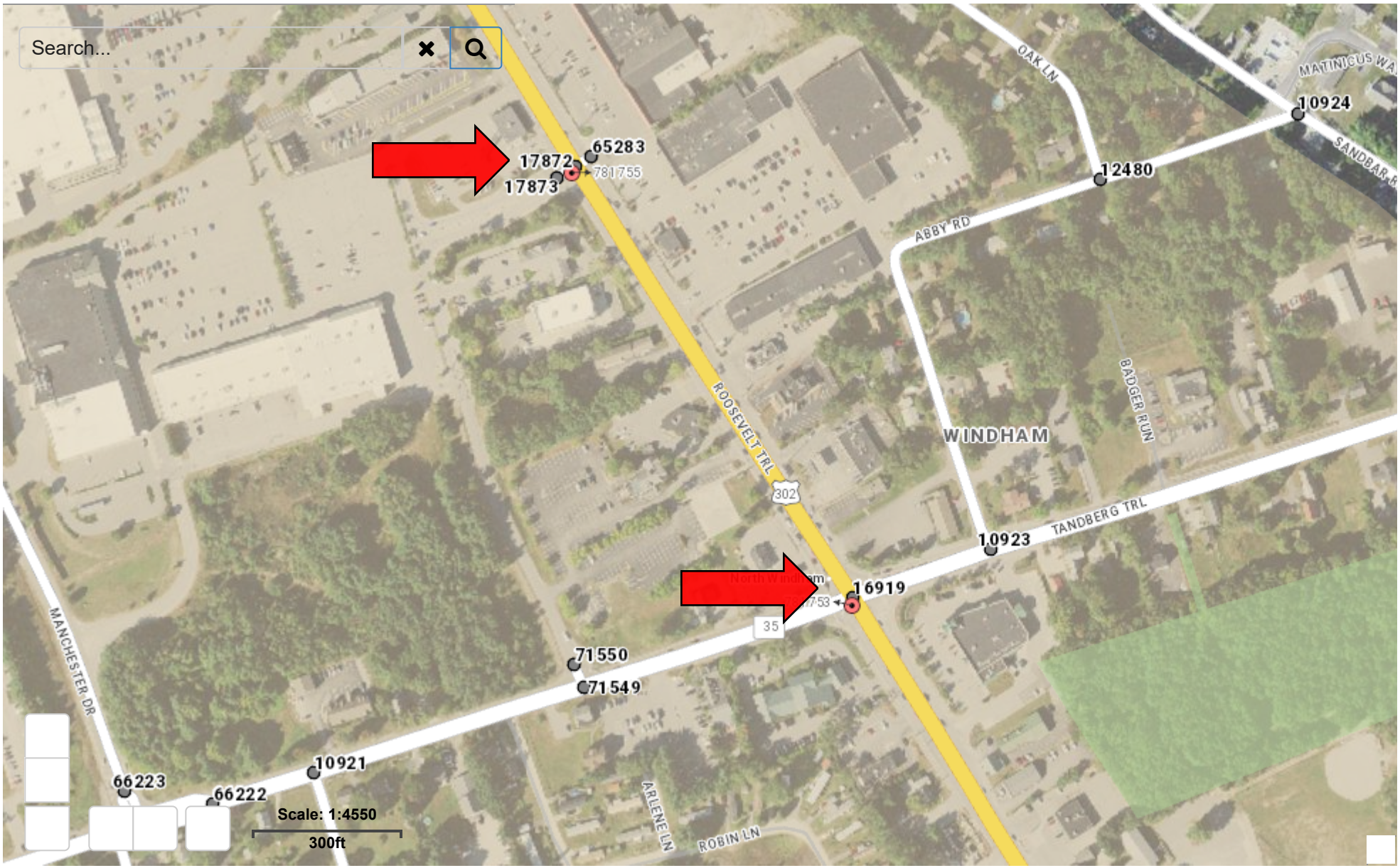
STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **744.67** CRF: **2.3** % INJURY: **29.5** TOTAL CRASHES: **44**

LEGEND




17872
No Windham Shopping Ctr
Planet Fitness
KFC/Taco Bell
D.Q.
Cumbys
I-store
16919
Cross Ins
Roosevelt Trail
Rt 35/302
Windham
Link: 16919-17872
Element: 3130492
Study Period: 2020-2022
# of Crashes: 44 / CRF: 2.30
Prepared by Office of Safety & Mobility (MP 5/22/23)
17065 7-18-20 12:49P D/C Fail To Yield
M/C
25151 9-2-22 3:47P D/C Hit & Run
37571 12-6-22 4:34P W/CL Fail to Yield
21959 8-21-21 2:48P D/C Fail to Yield
20608 7-17-22 9:53A D/C Fail to Yield
18160 8-1-20 10:20A D/C Fail To Yield
18787 7-1-22 12:52P D/C Fail to Yield
36846 12-23-21 5:43P D/C Hit & Run
21589 9-11-20 6:53A D/C Fail To Yield
19395 7-2-22 6:18P D/C Fail to Yield
16084 6-9-22 10:02A W/R Fail to Yield
3737 2-12-21 5:40P D/C Fail to Yield
23556 8-19-22 12:22P D/C Fail to Yield
19253 7-26-21 11:51A D/C Hit & Run
10794 5-1-21 10:00A D/C Unknown
12198 4-23-22 11:28A D/C Fail to Yield
14228 5-20-22 3:34P D/C Follow Too Close
31065 11-10-21 4:13P D/C Follow Too Close
28166 11-4-20 1:27P D/C Fail To Yield
20686 8-29-20 1:39P D/C Follow Too Close
33909 11-18-22 2:40P D/C Fail to Yield
9037 4-11-21 2:18P D/C Fail to Yield
36907 12-7-22 5:03P W/R Fail to Yield
22088 8-4-22 11:30A D/C Fail to Keep In Lane
22446 7-24-22 7:14P D/C Hit & Run
2255 1-9-21 2:00P D/C Fail To Keep In Lane
23535 8-19-22 6:42A D/C Fail to Yield
8514 4-3-21 10:27P D/C Fail to Yield
25211 9-3-22 10:54A D/C Fail to Yield
19071 7-23-21 11:11A D/C Fail to Yield
19888 7-31-21 12:15P D/C Bike Error
14254 5-22-22 4:00P D/C Fail to Keep In Lane
22399 9-21-20 8:40P D/C Fail To Keep In Lane
3859 1-17-20 5:17P I/C Fail to Yield
27761 10-14-21 10:00A D/C Fail to Yield
24679 8-30-22 7:41A D/C Fail to Yield
7451 3-7-20 3:10P D/C Fail To Yield
14973 6-23-20 3:40P D/C Fail To Yield
24390 8-26-22 10:38A D/CL Fail to Yield
34319 12-7-21 4:33P D/C Fail to Yield
7770 3-6-20 2:55P D/CL Follow Too Close
3565 2-9-21 5:27P S/S Fail to Yield
11634 5-16-21 11:17A D/C Fail to Yield
5091 2-12-20 6:21P D/C Fail To Yield
Gorham Savings
Auto Zone
Pawn
TD Bank
Vacant
Irving


Search...
17872
65283
781755
17873
12480
10924
OAK LN
ABBY RD
SANDBAR
ROOSEVELT TRL
302
WINDHAM
BADGER RUN
TANDBERG TRL
10923
16919
35
71550
71549
MANCHESTER DR
66223
66222
10921
ARLENE LN
ROBIN LN
Scale: 1:4550
300ft

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I - Single Element	☐ Section Detail	☑ Crash Summary II	☐ 1320 Public	☐ 1320 Private	☐ 1320 Summary

REPORT DESCRIPTION

Windham
Roosevelt Trl from Tandberg Trl to Shaws

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: 0035X	Start Node: 16919		Start Offset: 0	☑ Exclude First Node	
	End Node: 17872		End Offset: 0	☑ Exclude Last Node	

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
16919	17872	3130492	0 - 0.19	0035X - 42.40	0.19	2	44	0	1	2	10	31	29.5	0.01970	744.67	324.18	2.30
Int of ROOSEVELT TRL TANDBERG TRL				ST RTE 35											Statewide Crash Rate: 187.52		
Study Years: 3.00				Section Totals:	0.19		44	0	1	2	10	31	29.5	0.01970	744.67	324.18	2.30

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
16919	17872	3130492	0 - 0.19	0035X - 42.40	44	0	1	2	10	31	2022-14228	05/20/2022	42.43	PD
											2021-3565	02/09/2021	42.44	C
											2021-10794	05/01/2021	42.44	PD
											2020-22399	09/21/2020	42.44	PD
											2021-8514	04/03/2021	42.44	PD
											2022-20608	07/17/2022	42.44	PD
											2022-24679	08/30/2022	42.45	PD
											2022-19395	07/02/2022	42.46	C
											2020-21589	09/11/2020	42.46	C
											2022-23535	08/19/2022	42.46	PD
											2022-12198	04/23/2022	42.46	PD
											2022-18787	07/01/2022	42.46	PD
											2020-7770	03/06/2020	42.46	PD
											2021-21959	08/21/2021	42.46	PD
											2020-28166	11/04/2020	42.46	PD
											2021-31065	11/10/2021	42.46	PD
											2020-5091	02/12/2020	42.47	PD
											2021-3737	02/12/2021	42.48	PD
											2022-36907	12/07/2022	42.48	PD
											2020-18160	08/01/2020	42.49	A
											2022-37571	12/06/2022	42.49	C
											2021-19888	07/31/2021	42.49	C
											2022-14254	05/22/2022	42.49	PD
											2020-7451	03/07/2020	42.50	C
											2020-14973	06/23/2020	42.50	C
											2021-34319	12/07/2021	42.50	PD
											2021-27761	10/14/2021	42.50	PD
											2021-2255	01/09/2021	42.50	PD
											2022-23556	08/19/2022	42.50	PD
											2022-24390	08/26/2022	42.50	PD
											2022-25151	09/02/2022	42.50	PD
											2021-36846	12/23/2021	42.50	PD
											2021-19253	07/26/2021	42.50	PD
											2022-16084	06/09/2022	42.51	C

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
											2021-9037	04/11/2021	42.51	PD
											2020-17065	07/18/2020	42.52	B
											2022-33909	11/18/2022	42.52	PD
											2021-11634	05/16/2021	42.53	B
											2022-25211	09/03/2022	42.53	C
											2021-19071	07/23/2021	42.53	PD
											2020-3859	01/17/2020	42.53	PD
											2022-22088	08/04/2022	42.55	PD
											2020-20686	08/29/2020	42.56	PD
											2022-22446	07/24/2022	42.57	C
				Totals:	44	0	1	2	10	31				

Crash Summary II - Characteristics

Crashes by Day and Hour

	AM												PM												
	Hour of Day																								
Day Of Week	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	Un	Tot
SUNDAY	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	5
MONDAY	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	2
TUESDAY	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	1	0	0	0	0	0	0	0	5
WEDNESDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	4
THURSDAY	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	4
FRIDAY	0	0	0	0	0	0	2	0	0	0	1	1	2	0	2	2	0	2	0	0	0	0	0	0	0	12
SATURDAY	0	0	0	0	0	0	0	0	0	0	3	1	2	1	2	1	0	0	1	0	0	0	1	0	0	12
Totals	0	0	0	0	0	0	2	1	0	1	6	5	4	2	5	4	4	5	2	1	1	0	1	0	0	44

Vehicle Counts by Type

Unit Type	Total
1-Passenger Car	37
2-(Sport) Utility Vehicle	27
3-Passenger Van	2
4-Cargo Van (10K lbs or Less)	0
5-Pickup	17
6-Motor Home	0
7-School Bus	0
8-Transit Bus	0
9-Motor Coach	0
10-Other Bus	0
11-Motorcycle	2
12-Moped	0
13-Low Speed Vehicle	0
14-Autocycle	0
15-Experimental	0
16-Other Light Trucks (10,000 lbs or Less)	0
17-Medium/Heavy Trucks (More than 10,000 lbs)	0
18-ATV - (4 wheel)	0
20-ATV - (2 wheel)	0
21-Snowmobile	0
22-Pedestrian	0
23-Bicyclist	1
24-Witness	6
25-Other	2
26-Construction	0
27-Farm Vehicle	0
28-Horse and Buggy	0
Total	94

Crash Summary II - Characteristics

Crashes by Driver Action at Time of Crash

Driver Action at Time of Crash	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
No Contributing Action	16	27	1	0	0	0	44
Ran Off Roadway	0	0	0	0	0	0	0
Failed to Yield Right-of-Way	19	12	0	0	0	0	31
Ran Red Light	0	0	0	0	0	0	0
Ran Stop Sign	0	0	0	0	0	0	0
Disregarded Other Traffic Sign	0	0	0	0	0	0	0
Disregarded Other Road Markings	0	0	0	0	0	0	0
Exceeded Posted Speed Limit	0	0	0	0	0	0	0
Drove Too Fast For Conditions	0	1	0	0	0	0	1
Improper Turn	0	0	0	0	0	0	0
Improper Backing	0	0	0	0	0	0	0
Improper Passing	0	0	0	0	0	0	0
Wrong Way	0	0	0	0	0	0	0
Followed Too Closely	3	1	0	0	0	0	4
Failed to Keep in Proper Lane	4	0	0	0	0	0	4
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	0	0	0	0	0	0	0
Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway	0	0	0	0	0	0	0
Over-Correcting/Over-Steering	0	0	0	0	0	0	0
Other Contributing Action	1	0	0	0	0	0	1
Unknown	0	0	0	0	0	0	0
Total	43	41	1	0	0	0	85

Crashes by Apparent Physical Condition And Driver

Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	42	41	1	0	0	1	85
Physically Impaired	0	0	0	0	0	0	0
Emotional(Depressed, Angry, Disturbed, etc.)	0	0	0	0	0	0	0
Ill (Sick)	0	0	0	0	0	0	0
Asleep or Fatigued	0	0	0	0	0	0	0
Under the Influence of Medications/Drugs/Alcohol	0	0	0	0	0	0	0
Other	1	0	0	0	0	0	1
Total	43	41	1	0	0	1	86

Driver Age by Unit Type

Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV	Total
09-Under	0	0	0	0	0	0
10-14	0	0	0	0	0	0
15-19	9	0	0	0	0	9
20-24	11	0	0	0	0	11
25-29	8	0	0	0	0	8
30-39	12	0	0	0	0	12
40-49	13	0	0	0	0	13
50-59	12	0	0	0	0	12
60-69	11	0	0	0	0	11
70-79	7	0	0	0	0	7
80-Over	2	0	0	0	0	2
Unknown	2	1	0	0	0	3
Total	87	1	0	0	0	88

Crash Summary II - Characteristics

Most Harmful Event

Most Harmful Event	Total	Most Harmful Event	Total
1-Overturn / Rollover	0	38-Other Fixed Object (wall, building, tunnel, etc.)	0
2-Fire / Explosion	0	39-Unknown	0
3-Immersion	0	40-Gate or Cable	0
4-Jackknife	0	41-Pressure Ridge	0
5-Cargo / Equipment Loss Or Shift	0	Total	84
6-Fell / Jumped from Motor Vehicle	0		
7-Thrown or Falling Object	0		
8-Other Non-Collision	0		
9-Pedestrian	0		
10-Pedalcycle	0		
11-Railway Vehicle - Train, Engine	0		
12-Animal	0		
13-Motor Vehicle in Transport	84		
14-Parked Motor Vehicle	0		
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	0		
16-Work Zone / Maintenance Equipment	0		
17-Other Non-Fixed Object	0		
18-Impact Attenuator / Crash Cushion	0		
19-Bridge Overhead Structure	0		
20-Bridge Pier or Support	0		
21-Bridge Rail	0		
22-Cable Barrier	0		
23-Culvert	0		
24-Curb	0		
25-Ditch	0		
26-Embankment	0		
27-Guardrail Face	0		
28-Guardrail End	0		
29-Concrete Traffic Barrier	0		
30-Other Traffic Barrier	0		
31-Tree (Standing)	0		
32-Utility Pole / Light Support	0		
33-Traffic Sign Support	0		
34-Traffic Signal Support	0		
35-Fence	0		
36-Mailbox	0		
37-Other Post, Pole, or Support	0		

Injury Data

Severity Code	Injury Crashes	Number Of Injuries
K	0	0
A	1	1
B	2	2
C	10	12
PD	31	0
Total	44	15

Road Character

Road Grade	Total
1-Level	44
2-On Grade	0
3-Top of Hill	0
4-Bottom of Hill	0
5-Other	0
Total	44

Traffic Control Devices

Traffic Control Device	Total
1-Traffic Signals (Stop & Go)	9
2-Traffic Signals (Flashing)	0
3-Advisory/Warning Sign	0
4-Stop Signs - All Approaches	0
5-Stop Signs - Other	2
6-Yield Sign	0
7-Curve Warning Sign	0
8-Officer, Flagman, School Patrol	0
9-School Bus Stop Arm	0
10-School Zone Sign	0
11-R.R. Crossing Device	0
12-No Passing Zone	0
13-None	32
14-Other	1
Total	44

Light

Light Condition	Total
1-Daylight	33
2-Dawn	1
3-Dusk	0
4-Dark - Lighted	9
5-Dark - Not Lighted	1
6-Dark - Unknown Lighting	0
7-Unknown	0
Total	44

Crash Summary II - Characteristics

Crashes by Year and Month

Month	2020	2021	2022	Total
JANUARY	1	1	0	2
FEBRUARY	1	2	0	3
MARCH	2	0	0	2
APRIL	0	2	1	3
MAY	0	2	2	4
JUNE	1	0	1	2
JULY	1	3	4	8
AUGUST	2	1	5	8
SEPTEMBER	2	0	2	4
OCTOBER	0	1	0	1
NOVEMBER	1	1	1	3
DECEMBER	0	2	2	4
Total	11	15	18	44

Report is limited to the last 10 years of data.

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five or More Leg Intersection	Driveways	Bridges	Interchanges	Other	Parking Lot	Private Way	Cross Over	Railroad Crossing	Traffic Circle-Roundabout	Total
Object in Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rear End - Sideswipe	11	0	0	0	0	5	0	0	0	0	0	0	0	0	16
Head-on - Sideswipe	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Intersection Movement	1	0	0	0	0	25	0	0	0	0	0	0	0	0	26
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All Other Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jackknife	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thrown or Falling Object	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	14	0	0	0	0	30	0	0	0	0	0	0	0	0	44

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Blowing Sand, Soil, Dirt												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Blowing Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Clear												
Dark - Lighted	5	1	0	0	0	0	0	0	0	0	0	6
Dark - Not Lighted	1	0	0	0	0	0	0	0	0	0	0	1
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	1	0	0	0	0	0	0	0	0	0	0	1
Daylight	29	0	0	0	0	0	0	0	0	0	0	29
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Cloudy												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	1	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	3	0	0	0	0	0	0	0	0	0	0	3
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Other												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Rain												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	1	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	1	1
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Severe Crosswinds												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Sleet, Hail (Freezing Rain or Drizzle)												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Snow												
Dark - Lighted	0	0	0	0	0	0	0	1	0	0	0	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	39	1	0	0	0	0	0	1	0	0	3	44

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **WINDHAM**

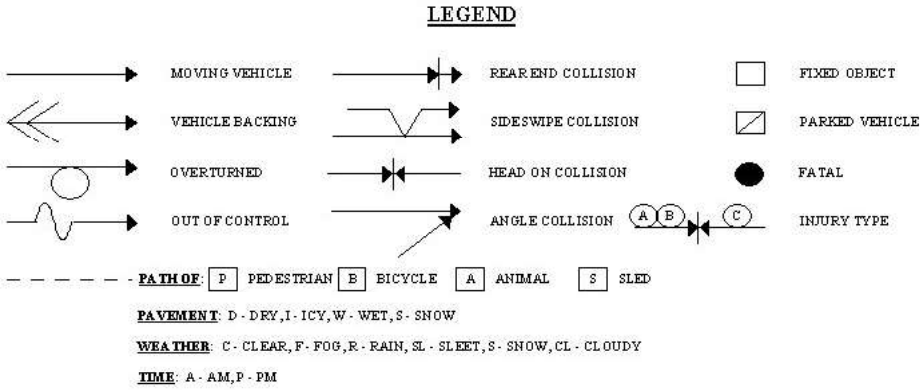
LOW NODE: **59528** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

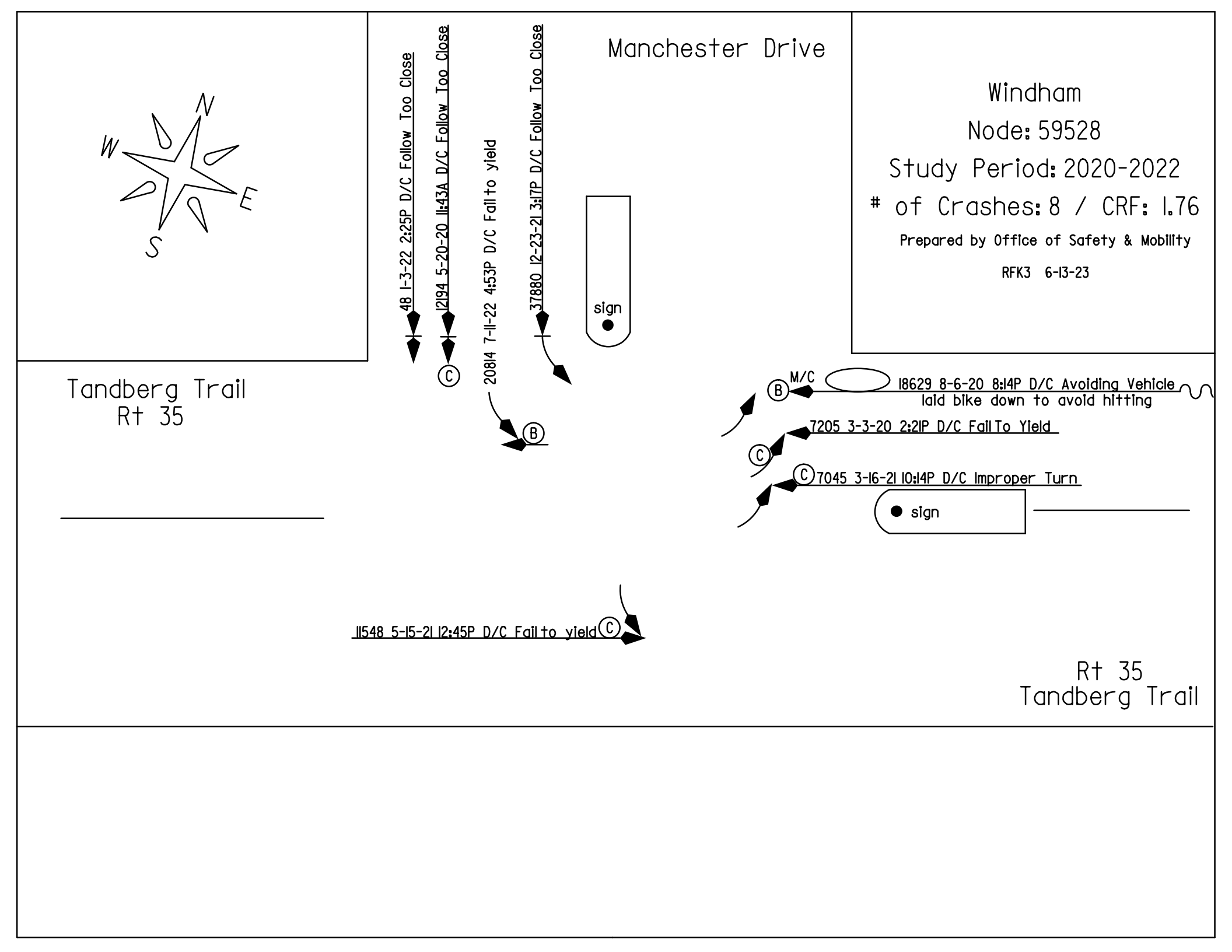
DESCRIPTION: **Int of Manchester Dr and Tandberg TRL**

RTE # / RD #: **0035S** DATE DRAWN: **6/13/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **0.57** CRF: **1.76** % INJURY: **75** TOTAL CRASHES: **8**




Manchester Drive
Windham
Node: 59528
Study Period: 2020-2022
# of Crashes: 8 / CRF: 1.76
Prepared by Office of Safety & Mobility
RFK3 6-13-23
N
W
E
S
48 1-3-22 2:25P D/C Follow Too Close
12194 5-20-20 11:43A D/C Follow Too Close
20814 7-11-22 4:53P D/C Fail to yield
37880 12-23-21 3:17P D/C Follow Too Close
sign
C
B
Tandberg Trail
Rt 35
M/C
18629 8-6-20 8:14P D/C Avoiding Vehicle
laid bike down to avoid hitting
7205 3-3-20 2:21P D/C Fail To Yield
7045 3-16-21 10:14P D/C Improper Turn
sign
11548 5-15-21 12:45P D/C Fail to yield
Rt 35
Tandberg Trail


Search...
BASIN RD
MANCHESTER DR
TANDBERG TRL
35
71550
71549
10921
66223
66222
19560
59528
WINDHAM
14818
LAMB ST
NORTHWOOD DR
LEISURE LN
19537
19561
DEER LN
Scale: 1:2620
200ft

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I - Single Node	☐ Section Detail	☑ Crash Summary II	☐ 1320 Public	☐ 1320 Private	☐ 1320 Summary

REPORT DESCRIPTION

Windham
Int of Tandberg Trl & Manchester Drive

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: 0035S	Start Node: 59528	Start Offset: 0	☐ Exclude First Node
	End Node: 59528	End Offset: 0	☐ Exclude Last Node

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
59528	0035S - 0.05	Int of MANCHESTER DR TANDBERG TRL	2	8	0	0	2	4	2	75.0	4.704	0.57	0.32	1.76
												Statewide Crash Rate:	0.12	
Study Years:	3.00	NODE TOTALS:		8	0	0	2	4	2	75.0	4.704	0.57	0.32	1.76

Crash Summary II - Characteristics

Crashes by Day and Hour

	AM												PM												
	Hour of Day																								
Day Of Week	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	Un	Tot
SUNDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MONDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	2
TUESDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
WEDNESDAY	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
THURSDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	2
FRIDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SATURDAY	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Totals	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	1	1	0	0	0	1	0	1	0	0	8

Vehicle Counts by Type

Unit Type	Total
1-Passenger Car	4
2-(Sport) Utility Vehicle	5
3-Passenger Van	0
4-Cargo Van (10K lbs or Less)	0
5-Pickup	3
6-Motor Home	0
7-School Bus	0
8-Transit Bus	0
9-Motor Coach	0
10-Other Bus	0
11-Motorcycle	2
12-Moped	0
13-Low Speed Vehicle	0
14-Autocycle	0
15-Experimental	0
16-Other Light Trucks (10,000 lbs or Less)	0
17-Medium/Heavy Trucks (More than 10,000 lbs)	1
18-ATV - (4 wheel)	0
20-ATV - (2 wheel)	0
21-Snowmobile	0
22-Pedestrian	0

Unit Type	Total
23-Bicyclist	0
24-Witness	3
25-Other	1
26-Construction	0
27-Farm Vehicle	0
28-Horse and Buggy	0
Total	19

Crash Summary II - Characteristics

Crashes by Driver Action at Time of Crash

Driver Action at Time of Crash	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
No Contributing Action	3	4	0	0	0	0	7
Ran Off Roadway	0	0	0	0	0	0	0
Failed to Yield Right-of-Way	1	2	0	0	0	0	3
Ran Red Light	0	0	0	0	0	0	0
Ran Stop Sign	0	0	0	0	0	0	0
Disregarded Other Traffic Sign	0	0	0	0	0	0	0
Disregarded Other Road Markings	0	0	0	0	0	0	0
Exceeded Posted Speed Limit	0	0	0	0	0	0	0
Drove Too Fast For Conditions	0	0	0	0	0	0	0
Improper Turn	1	0	0	0	0	0	1
Improper Backing	0	0	0	0	0	0	0
Improper Passing	0	0	0	0	0	0	0
Wrong Way	0	0	0	0	0	0	0
Followed Too Closely	2	1	0	0	0	0	3
Failed to Keep in Proper Lane	0	0	0	0	0	0	0
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	0	0	0	0	0	0	0
Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway	0	0	0	0	0	0	0
Over-Correcting/Over-Steering	1	0	0	0	0	0	1
Other Contributing Action	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0
Total	8	7	0	0	0	0	15

Crashes by Apparent Physical Condition And Driver

Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	7	7	0	0	0	0	14
Physically Impaired	0	0	0	0	0	0	0
Emotional(Depressed, Angry, Disturbed, etc.)	0	0	0	0	0	0	0
Ill (Sick)	0	0	0	0	0	0	0
Asleep or Fatigued	0	0	0	0	0	0	0
Under the Influence of Medications/Drugs/Alcohol	1	0	0	0	0	0	1
Other	0	0	0	0	0	0	0
Total	8	7	0	0	0	0	15

Driver Age by Unit Type

Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV	Total
09-Under	0	0	0	0	0	0
10-14	0	0	0	0	0	0
15-19	0	0	0	0	0	0
20-24	1	0	0	0	0	1
25-29	1	0	0	0	0	1
30-39	3	0	0	0	0	3
40-49	3	0	0	0	0	3
50-59	4	0	0	0	0	4
60-69	3	0	0	0	0	3
70-79	0	0	0	0	0	0
80-Over	0	0	0	0	0	0
Unknown	1	0	0	0	0	1
Total	16	0	0	0	0	16

Crash Summary II - Characteristics

Most Harmful Event

Most Harmful Event	Total	Most Harmful Event	Total
1-Overturn / Rollover	0	38-Other Fixed Object (wall, building, tunnel, etc.)	0
2-Fire / Explosion	0	39-Unknown	0
3-Immersion	0	40-Gate or Cable	0
4-Jackknife	0	41-Pressure Ridge	0
5-Cargo / Equipment Loss Or Shift	0	Total	15
6-Fell / Jumped from Motor Vehicle	0		
7-Thrown or Falling Object	0		
8-Other Non-Collision	0		
9-Pedestrian	0		
10-Pedalcycle	0		
11-Railway Vehicle - Train, Engine	0		
12-Animal	0		
13-Motor Vehicle in Transport	15		
14-Parked Motor Vehicle	0		
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	0		
16-Work Zone / Maintenance Equipment	0		
17-Other Non-Fixed Object	0		
18-Impact Attenuator / Crash Cushion	0		
19-Bridge Overhead Structure	0		
20-Bridge Pier or Support	0		
21-Bridge Rail	0		
22-Cable Barrier	0		
23-Culvert	0		
24-Curb	0		
25-Ditch	0		
26-Embankment	0		
27-Guardrail Face	0		
28-Guardrail End	0		
29-Concrete Traffic Barrier	0		
30-Other Traffic Barrier	0		
31-Tree (Standing)	0		
32-Utility Pole / Light Support	0		
33-Traffic Sign Support	0		
34-Traffic Signal Support	0		
35-Fence	0		
36-Mailbox	0		
37-Other Post, Pole, or Support	0		

Injury Data

Severity Code	Injury Crashes	Number Of Injuries
K	0	0
A	0	0
B	2	2
C	4	4
PD	2	0
Total	8	6

Road Character

Road Grade	Total
1-Level	8
2-On Grade	0
3-Top of Hill	0
4-Bottom of Hill	0
5-Other	0
Total	8

Traffic Control Devices

Traffic Control Device	Total
1-Traffic Signals (Stop & Go)	0
2-Traffic Signals (Flashing)	0
3-Advisory/Warning Sign	0
4-Stop Signs - All Approaches	0
5-Stop Signs - Other	7
6-Yield Sign	0
7-Curve Warning Sign	0
8-Officer, Flagman, School Patrol	0
9-School Bus Stop Arm	0
10-School Zone Sign	0
11-R.R. Crossing Device	0
12-No Passing Zone	0
13-None	1
14-Other	0
Total	8

Light

Light Condition	Total
1-Daylight	6
2-Dawn	0
3-Dusk	1
4-Dark - Lighted	1
5-Dark - Not Lighted	0
6-Dark - Unknown Lighting	0
7-Unknown	0
Total	8

Crash Summary II - Characteristics

Crashes by Year and Month

Month	2020	2021	2022	Total
JANUARY	0	0	1	1
FEBRUARY	0	0	0	0
MARCH	1	1	0	2
APRIL	0	0	0	0
MAY	1	1	0	2
JUNE	0	0	0	0
JULY	0	0	1	1
AUGUST	1	0	0	1
SEPTEMBER	0	0	0	0
OCTOBER	0	0	0	0
NOVEMBER	0	0	0	0
DECEMBER	0	1	0	1
Total	3	3	2	8

Report is limited to the last 10 years of data.

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five or More Leg Intersection	Driveways	Bridges	Interchanges	Other	Parking Lot	Private Way	Cross Over	Railroad Crossing	Traffic Circle-Roundabout	Total
Object in Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rear End - Sideswipe	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3
Head-on - Sideswipe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection Movement	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All Other Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Jackknife	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thrown or Falling Object	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	8	0	0	0	0	0	0	0	0	0	0	0	8

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Blowing Sand, Soil, Dirt												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Blowing Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Clear												
Dark - Lighted	1	0	0	0	0	0	0	0	0	0	0	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	6	0	0	0	0	0	0	0	0	0	0	6
Dusk	1	0	0	0	0	0	0	0	0	0	0	1
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Cloudy												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Other												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Rain												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Severe Crosswinds												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Sleet, Hail (Freezing Rain or Drizzle)												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	8	0	0	0	0	0	0	0	0	0	0	8

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☐ Section Detail ☑ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☐ 1320 Summary

REPORT DESCRIPTION

Windham
Roosevelt Trl (Rte 302) from 17872 to 16919 and Tandberg Trl (Rte 35) from 19560 to 16919

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: 05Z0002	Start Node: 17872	Start Offset: 0	☑ Exclude First Node
	End Node: 17873	End Offset: 0	☐ Exclude Last Node
Route: 3201945	Start Node: 17872	Start Offset: 0	☑ Exclude First Node
	End Node: 65283	End Offset: 0	☐ Exclude Last Node
Route: 0302X	Start Node: 16919	Start Offset: 0	☐ Exclude First Node
	End Node: 17872	End Offset: 0	☐ Exclude Last Node
Route: 0035X	Start Node: 66222	Start Offset: 0	☐ Exclude First Node
	End Node: 16919	End Offset: 0	☑ Exclude Last Node
Route: 0035S	Start Node: 66222	Start Offset: 0	☑ Exclude First Node
	End Node: 59528	End Offset: 0	☐ Exclude Last Node
Route: 0035X	Start Node: 59528	Start Offset: 0	☑ Exclude First Node
	End Node: 66222	End Offset: 0	☑ Exclude Last Node
Route: 0035X	Start Node: 19560	Start Offset: 0	☐ Exclude First Node
	End Node: 59528	End Offset: 0	☑ Exclude Last Node
Route: 3210300	Start Node: 71549	Start Offset: 0	☑ Exclude First Node
	End Node: 71550	End Offset: 0	☐ Exclude Last Node

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
17873	05Z0002 - 0.01	End of ENT TO SHAWS	2	0	0	0	0	0	0	0.0	0.752	0.00	0.49	0.00
												Statewide Crash Rate:	0.12	
65283	3201945 - 0.01	End of NORTH WINDHAM SHOPPING CNTR Z RD	2	0	0	0	0	0	0	0.0	0.442	0.00	0.52	0.00
												Statewide Crash Rate:	0.12	
16919	0302X - 15.16	Int of ROOSEVELT TRL TANDBERG TRL	9	48	0	0	2	8	38	20.8	14.147	1.13	0.94	1.20
												Statewide Crash Rate:	0.64	
17872	0302X - 15.35	Int of ENT TO SHAWS NORTH WINDHAM SHOPPING CNTF	9	14	0	1	1	2	10	28.6	11.289	0.41	0.98	0.42
												Statewide Crash Rate:	0.64	
66222	0035X - 42.14	Non Int TANDBERG TRL	2	0	0	0	0	0	0	0.0	3.466	0.00	0.35	0.00
												Statewide Crash Rate:	0.12	
10921	0035X - 42.18	Int of NORTHWOOD DR TANDBERG TRL	2	0	0	0	0	0	0	0.0	3.459	0.00	0.35	0.00
												Statewide Crash Rate:	0.12	
71549	0035X - 42.29	Int of ENT TO RUSTLERS TANDBERG TRL	2	0	0	0	0	0	0	0.0	4.433	0.00	0.33	0.00
												Statewide Crash Rate:	0.12	
59528	0035S - 0.05	Int of MANCHESTER DR TANDBERG TRL	2	8	0	0	2	4	2	75.0	4.704	0.57	0.32	1.76
												Statewide Crash Rate:	0.12	
19560	0035X - 42.10	Int of LAMB ST TANDBERG TRL	2	2	0	0	0	0	2	0.0	3.914	0.17	0.34	0.00
												Statewide Crash Rate:	0.12	
71550	3210300 - 0.01	End of ENT TO RUSTLERS	2	0	0	0	0	0	0	0.0	0.747	0.00	0.49	0.00
												Statewide Crash Rate:	0.12	
Study Years:	3.00	NODE TOTALS:		72	0	1	5	14	52	27.8	47.353	0.51	0.53	0.95

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
17872	17873	5095743	0 - 0.01	05Z0002 - 0	0.01	2	0	0	0	0	0	0	0.0	0.00015	0.00	1439.89	0.00
Int of ENT TO SHAWS NORTH WINDHAM SHOPPING CNTR Z RD ROOSEVELT TRL				RD INV 05 Z0002											Statewide Crash Rate: 333.47		
17872	65283	5095742	0 - 0.01	3201945 - 0	0.01	2	0	0	0	0	0	0	0.0	0.00009	0.00	1337.08	0.00
Int of ENT TO SHAWS NORTH WINDHAM SHOPPING CNTR Z RD ROOSEVELT TRL				RD INV 3201945											Statewide Crash Rate: 333.47		
16919	17872	3130492	0 - 0.19	0302X - 15.16	0.19	2	44	0	1	2	10	31	29.5	0.01970	744.67	323.94	2.30
Int of ROOSEVELT TRL TANDBERG TRL				US 302											Statewide Crash Rate: 187.35		
10921	66222	2964877	0 - 0.04	0035X - 42.14	0.04	2	0	0	0	0	0	0	0.0	0.00139	0.00	532.60	0.00
Int of NORTHWOOD DR TANDBERG TRL				ST RTE 35											Statewide Crash Rate: 155.20		
10921	71549	4047489	0 - 0.11	0035X - 42.18	0.11	2	3	0	0	0	0	3	0.0	0.00372	268.97	414.24	0.00
Int of NORTHWOOD DR TANDBERG TRL				ST RTE 35											Statewide Crash Rate: 155.20		
71549	16919	4047490	0 - 0.11	0035X - 42.29	0.11	2	5	0	0	0	1	4	20.0	0.00439	379.44	396.82	0.00
Int of ENT TO RUSTLERS TANDBERG TRL				ST RTE 35											Statewide Crash Rate: 155.20		
66222	59528	3140035	0 - 0.03	0035S - 0.02	0.03	2	0	0	0	0	0	0	0.0	0.00052	0.00	647.21	0.00
Non Int TANDBERG TRL				ST RTE 35S											Statewide Crash Rate: 155.20		
66222	59528	2964878	0 - 0.03	0035X - 42.11	0.03	2	0	0	0	0	0	0	0.0	0.00052	0.00	647.21	0.00
Non Int TANDBERG TRL				ST RTE 35											Statewide Crash Rate: 155.20		
59528	19560	3122879	0 - 0.01	0035X - 42.10	0.01	2	0	0	0	0	0	0	0.0	0.00039	0.00	665.77	0.00
Int of MANCHESTER DR TANDBERG TRL				ST RTE 35											Statewide Crash Rate: 155.20		
71549	71550	4047491	0 - 0.01	3210300 - 0	0.01	2	0	0	0	0	0	0	0.0	0.00015	0.00	1439.86	0.00
Int of ENT TO RUSTLERS TANDBERG TRL				RD INV 3210300											Statewide Crash Rate: 333.47		
Study Years: 3.00				Section Totals:	0.55		52	0	1	2	11	38	26.9	0.03101	558.91	285.10	1.96
				Grand Totals:	0.55		124	0	2	7	25	90	27.4	0.03101	1332.79	399.60	3.34

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
17872	17873	5095743	0 - 0.01	05Z0002 - 0	0	0	0	0	0	0				
17872	65283	5095742	0 - 0.01	3201945 - 0	0	0	0	0	0	0				

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
16919	17872	3130492	0 - 0.19	0302X - 15.16	44	0	1	2	10	31	2022-14228	05/20/2022	15.19	PD
											2021-3565	02/09/2021	15.20	C
											2021-10794	05/01/2021	15.20	PD
											2020-22399	09/21/2020	15.20	PD
											2021-8514	04/03/2021	15.20	PD
											2022-20608	07/17/2022	15.20	PD
											2022-24679	08/30/2022	15.21	PD
											2022-19395	07/02/2022	15.22	C
											2020-21589	09/11/2020	15.22	C
											2022-23535	08/19/2022	15.22	PD
											2022-12198	04/23/2022	15.22	PD
											2022-18787	07/01/2022	15.22	PD
											2020-7770	03/06/2020	15.22	PD
											2021-21959	08/21/2021	15.22	PD
											2020-28166	11/04/2020	15.22	PD
											2021-31065	11/10/2021	15.22	PD
											2020-5091	02/12/2020	15.23	PD
											2021-3737	02/12/2021	15.24	PD
											2022-36907	12/07/2022	15.24	PD
											2020-18160	08/01/2020	15.25	A
											2022-37571	12/06/2022	15.25	C
											2021-19888	07/31/2021	15.25	C
											2022-14254	05/22/2022	15.25	PD
											2020-7451	03/07/2020	15.26	C
											2020-14973	06/23/2020	15.26	C
											2021-34319	12/07/2021	15.26	PD
											2021-27761	10/14/2021	15.26	PD
											2021-2255	01/09/2021	15.26	PD
											2022-23556	08/19/2022	15.26	PD
											2022-24390	08/26/2022	15.26	PD
											2022-25151	09/02/2022	15.26	PD
											2021-36846	12/23/2021	15.26	PD
											2021-19253	07/26/2021	15.26	PD
											2022-16084	06/09/2022	15.27	C

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
											2021-9037	04/11/2021	15.27	PD
											2020-17065	07/18/2020	15.28	B
											2022-33909	11/18/2022	15.28	PD
											2021-11634	05/16/2021	15.29	B
											2022-25211	09/03/2022	15.29	C
											2021-19071	07/23/2021	15.29	PD
											2020-3859	01/17/2020	15.29	PD
											2022-22088	08/04/2022	15.31	PD
											2020-20686	08/29/2020	15.32	PD
											2022-22446	07/24/2022	15.33	C
10921	66222	2964877	0 - 0.04	0035X - 42.14	0	0	0	0	0	0				
10921	71549	4047489	0 - 0.11	0035X - 42.18	3	0	0	0	0	3	2021-32290	11/17/2021	42.19	PD
											2020-20251	08/25/2020	42.22	PD
											2020-21590	09/11/2020	42.25	PD
71549	16919	4047490	0 - 0.11	0035X - 42.29	5	0	0	0	1	4	2020-12311	05/22/2020	42.35	C
											2020-17488	07/23/2020	42.36	PD
											2020-14484	05/09/2020	42.37	PD
											2021-2109	01/27/2021	42.37	PD
											2020-1883	01/17/2020	42.37	PD
66222	59528	3140035	0 - 0.03	0035S - 0.02	0	0	0	0	0	0				
66222	59528	2964878	0 - 0.03	0035X - 42.11	0	0	0	0	0	0				
59528	19560	3122879	0 - 0.01	0035X - 42.10	0	0	0	0	0	0				
71549	71550	4047491	0 - 0.01	3210300 - 0	0	0	0	0	0	0				
				Totals:	52	0	1	2	11	38				

Crash Summary II - Characteristics

Crashes by Day and Hour

	AM												PM												
	Hour of Day																								
Day Of Week	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	Un	Tot
SUNDAY	0	0	0	0	0	0	0	0	0	1	0	1	0	0	2	2	2	0	0	1	0	0	0	0	0	9
MONDAY	0	0	0	0	0	1	0	2	0	0	1	1	0	0	2	0	1	1	0	0	1	0	0	0	0	10
TUESDAY	0	0	0	0	0	0	1	1	1	1	0	0	2	2	3	1	3	2	0	1	0	0	1	0	0	19
WEDNESDAY	0	0	0	0	0	0	1	0	1	0	0	1	2	2	0	1	2	3	2	1	0	1	0	0	0	17
THURSDAY	0	0	0	0	0	0	0	0	0	0	2	4	1	0	1	4	0	2	1	1	1	0	0	0	0	17
FRIDAY	0	0	0	0	1	0	2	0	1	0	1	5	3	3	5	2	2	2	1	0	0	0	0	0	0	28
SATURDAY	0	0	1	0	0	0	0	1	0	0	3	3	4	2	2	2	1	1	2	1	0	0	1	0	0	24
Totals	0	0	1	0	1	1	4	4	3	2	7	15	12	9	15	12	11	11	6	5	2	1	2	0	0	124

Vehicle Counts by Type

Unit Type	Total
1-Passenger Car	90
2-(Sport) Utility Vehicle	89
3-Passenger Van	3
4-Cargo Van (10K lbs or Less)	3
5-Pickup	45
6-Motor Home	0
7-School Bus	0
8-Transit Bus	0
9-Motor Coach	0
10-Other Bus	0
11-Motorcycle	4
12-Moped	0
13-Low Speed Vehicle	0
14-Autocycle	0
15-Experimental	0
16-Other Light Trucks (10,000 lbs or Less)	0
17-Medium/Heavy Trucks (More than 10,000 lbs)	6
18-ATV - (4 wheel)	0
20-ATV - (2 wheel)	0
21-Snowmobile	0
22-Pedestrian	1

Unit Type	Total
23-Bicyclist	1
24-Witness	16
25-Other	3
26-Construction	0
27-Farm Vehicle	0
28-Horse and Buggy	0
Total	261

Crash Summary II - Characteristics

Crashes by Driver Action at Time of Crash

Driver Action at Time of Crash	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
No Contributing Action	50	69	2	0	0	0	121
Ran Off Roadway	3	0	0	0	0	0	3
Failed to Yield Right-of-Way	32	22	0	0	0	0	54
Ran Red Light	3	1	0	0	0	0	4
Ran Stop Sign	0	0	0	0	0	0	0
Disregarded Other Traffic Sign	1	1	0	0	0	0	2
Disregarded Other Road Markings	0	0	0	0	0	0	0
Exceeded Posted Speed Limit	0	0	0	0	0	0	0
Drove Too Fast For Conditions	0	1	0	0	0	0	1
Improper Turn	1	0	0	0	0	0	1
Improper Backing	3	1	0	0	0	0	4
Improper Passing	0	0	0	0	0	0	0
Wrong Way	0	0	0	0	0	0	0
Followed Too Closely	21	16	1	0	0	0	38
Failed to Keep in Proper Lane	5	1	0	0	0	0	6
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	2	2	0	0	0	0	4
Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway	0	0	0	0	0	0	0
Over-Correcting/Over-Steering	1	0	0	0	0	0	1
Other Contributing Action	1	0	0	0	0	0	1
Unknown	0	0	0	0	0	0	0
Total	123	114	3	0	0	0	240

Crashes by Apparent Physical Condition And Driver

Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	119	112	3	0	0	2	236
Physically Impaired	0	1	0	0	0	0	1
Emotional(Depressed, Angry, Disturbed, etc.)	0	0	0	0	0	0	0
Ill (Sick)	1	0	0	0	0	0	1
Asleep or Fatigued	0	0	0	0	0	0	0
Under the Influence of Medications/Drugs/Alcohol	2	1	0	0	0	0	3
Other	1	0	0	0	0	0	1
Total	123	114	3	0	0	2	242

Driver Age by Unit Type

Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV	Total
09-Under	0	0	0	0	0	0
10-14	0	0	0	0	0	0
15-19	19	0	0	0	0	19
20-24	23	0	0	0	0	23
25-29	18	0	0	0	0	18
30-39	40	0	0	0	0	40
40-49	40	0	0	0	0	40
50-59	39	0	0	0	0	39
60-69	34	0	0	0	0	34
70-79	22	0	0	0	0	22
80-Over	5	0	0	0	0	5
Unknown	3	1	0	1	0	5
Total	243	1	0	1	0	245

Crash Summary II - Characteristics

Most Harmful Event

Most Harmful Event	Total	Most Harmful Event	Total
1-Overturn / Rollover	1	38-Other Fixed Object (wall, building, tunnel, etc.)	0
2-Fire / Explosion	0	39-Unknown	0
3-Immersion	0	40-Gate or Cable	0
4-Jackknife	0	41-Pressure Ridge	0
5-Cargo / Equipment Loss Or Shift	0	Total	239
6-Fell / Jumped from Motor Vehicle	0		
7-Thrown or Falling Object	0		
8-Other Non-Collision	0		
9-Pedestrian	0		
10-Pedalcycle	0		
11-Railway Vehicle - Train, Engine	0		
12-Animal	0		
13-Motor Vehicle in Transport	236		
14-Parked Motor Vehicle	1		
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	0		
16-Work Zone / Maintenance Equipment	0		
17-Other Non-Fixed Object	0		
18-Impact Attenuator / Crash Cushion	0		
19-Bridge Overhead Structure	0		
20-Bridge Pier or Support	0		
21-Bridge Rail	0		
22-Cable Barrier	0		
23-Culvert	0		
24-Curb	0		
25-Ditch	0		
26-Embankment	0		
27-Guardrail Face	0		
28-Guardrail End	0		
29-Concrete Traffic Barrier	0		
30-Other Traffic Barrier	0		
31-Tree (Standing)	1		
32-Utility Pole / Light Support	0		
33-Traffic Sign Support	0		
34-Traffic Signal Support	0		
35-Fence	0		
36-Mailbox	0		
37-Other Post, Pole, or Support	0		

Injury Data

Severity Code	Injury Crashes	Number Of Injuries
K	0	0
A	2	2
B	7	7
C	25	32
PD	90	0
Total	124	41

Road Character

Road Grade	Total
1-Level	124
2-On Grade	0
3-Top of Hill	0
4-Bottom of Hill	0
5-Other	0
Total	124

Traffic Control Devices

Traffic Control Device	Total
1-Traffic Signals (Stop & Go)	72
2-Traffic Signals (Flashing)	0
3-Advisory/Warning Sign	0
4-Stop Signs - All Approaches	0
5-Stop Signs - Other	10
6-Yield Sign	0
7-Curve Warning Sign	0
8-Officer, Flagman, School Patrol	0
9-School Bus Stop Arm	0
10-School Zone Sign	0
11-R.R. Crossing Device	0
12-No Passing Zone	0
13-None	41
14-Other	1
Total	124

Light

Light Condition	Total
1-Daylight	99
2-Dawn	4
3-Dusk	1
4-Dark - Lighted	19
5-Dark - Not Lighted	1
6-Dark - Unknown Lighting	0
7-Unknown	0
Total	124

Crash Summary II - Characteristics

Crashes by Year and Month

Month	2020	2021	2022	Total
JANUARY	6	2	1	9
FEBRUARY	1	3	2	6
MARCH	4	2	1	7
APRIL	0	2	4	6
MAY	4	5	3	12
JUNE	3	2	3	8
JULY	2	6	6	14
AUGUST	9	6	6	21
SEPTEMBER	7	0	4	11
OCTOBER	3	1	4	8
NOVEMBER	2	6	2	10
DECEMBER	2	5	5	12
Total	43	40	41	124

Report is limited to the last 10 years of data.

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five or More Leg Intersection	Driveways	Bridges	Interchanges	Other	Parking Lot	Private Way	Cross Over	Railroad Crossing	Traffic Circle-Roundabout	Total
Object in Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rear End - Sideswipe	14	0	3	46	0	6	0	0	0	0	0	0	0	0	69
Head-on - Sideswipe	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Intersection Movement	1	0	5	12	0	29	0	0	0	0	0	0	0	0	47
Pedestrians	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	1	0	1	2	0	0	0	0	0	0	0	0	0	0	4
All Other Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Other	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Jackknife	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thrown or Falling Object	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	17	0	10	62	0	35	0	0	0	0	0	0	0	0	124

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Blowing Sand, Soil, Dirt												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Blowing Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Clear												
Dark - Lighted	13	1	0	0	0	0	0	0	0	0	0	14
Dark - Not Lighted	1	0	0	0	0	0	0	0	0	0	0	1
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	4	0	0	0	0	0	0	0	0	0	0	4
Daylight	80	0	0	0	0	0	0	1	0	0	4	85
Dusk	1	0	0	0	0	0	0	0	0	0	0	1
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Cloudy												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	1	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	8	0	0	0	0	0	0	0	0	0	0	8
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Other												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Rain												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	3	3
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	5	5
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Severe Crosswinds												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Sleet, Hail (Freezing Rain or Drizzle)												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Snow												
Dark - Lighted	0	0	0	0	0	0	0	1	0	0	0	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	1	1
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	107	1	0	0	0	0	0	2	0	0	14	124

ATTACHMENT 15

FLOOD INSURANCE RATE MAP

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION IN FT. (NGVD)[1]	DESCRIPTION OF LOCATION
RM 8	252.40	A chiseled U on the northeast abutment of the State Route 35 bridge over the Presumpscot River.
RM 9	304.09	A railroad spike on the north face of a 14 inch oak tree, 40 feet southwest of the intersection of Whites Bridge Road and Sokosis Point Road, 0.5 mile east from Whites Bridge.
RM 10	281.80	A chiseled L on the northwest abutment of Whites Bridge over Sebago Lake - Sebago Lake Basin.
RM 11	313.86	A railroad spike on the east face of a 36 inch maple tree, 115 feet southwest of the south intersection of Mineral Spring Road and circular road, 0.4 mile southwest from the intersection of Mineral Spring Road and U.S. Route 302.
RM 12	318.99	A railroad spike on the northeast face of a two prong, 12 inch oak tree, 80 feet west of the intersection of U.S. Route 302 and Mineral Spring Road.
RM 13	278.72	A chiseled U on the east head wall of the U.S. Route 302 bridge over Hyde Brook 285 feet south of Brook Road.
RM 14	306.71	A railroad spike on the west face of Central Maine Power Company pole 32, 16 feet southeast of the intersection of a driveway and West Shore Drive of Little Sebago Lake.
RM 15	288.28	A railroad spike on east face of a Central Maine Power Company pole, at the Lower Narrows on Little Sebago Lake, 2.0 miles north along Sandbar Road from State Route 115, and 20 feet west of the centerline of the road.
RM 16	297.10	A railroad spike on north face of a 24 inch oak tree at the north end of Brown Cove Road, on the isthmus leading out to Hall Point, 30 feet southeast of the road's intersection with Smith Road and 1.6 miles north from State Route 115.
RM 17	289.77	A railroad spike on east side of 20 inch oak tree, 27 feet west of Sandbar Road centerline, 22 feet south of Mud Ponds outlet culvert and 1.1 miles north of State Route 115.
RM 18	291.61	A railroad spike on east face of Central Maine Power Company power 1-76-2-3, 20 feet west of the centerline of the Brown Cove Road, 0.4 mile north from State Route 115.
RM 19	305.02	A chiseled L on the southeast abutment of the State Route 115 bridge over Ditch Brook.
RM 20	271.91	A chiseled X on the west side of the Collins Pond Dam, 1 foot west from the spillway.
RM 21	303.50	Top of west flange nut (near D in Darling) on the fire hydrant at the intersection of Brookhaven Avenue and Sylvan Avenue.
RM 22	224.37	A railroad spike on the east face of a 24 inch oak tree, 75 feet southwest of the Varney's Mill Road bridge over Ditch Brook.

[1]National Geodetic Vertical Datum of 1929

APPROXIMATE PROJECT LOCATION

KEY TO MAP

500-Year Flood Boundary
100-Year Flood Boundary
Zone Designations*
100-Year Flood Boundary
500-Year Flood Boundary

ZONE B / ZONE A1 / ZONE A5 / ZONE B

Base Flood Elevation Line With Elevation In Feet** — 513

Base Flood Elevation in Feet Where Uniform Within Zone** — (EL 987)

Elevation Reference Mark — RM7 ×

River Mile — • M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

INITIAL IDENTIFICATION:
JANUARY 10, 1975

FLOOD HAZARD BOUNDARY MAP REVISIONS:
OCTOBER 22, 1976

FLOOD INSURANCE RATE MAP EFFFCTIVE:
SEPTEMBER 2, 1981

FLOOD INSURANCE RATE MAP REVISIONS:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE
800 0 800 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
WINDHAM, MAINE
CUMBERLAND COUNTY

PANEL 15 OF 35
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
230189 0015 B

EFFECTIVE DATE:
SEPTEMBER 2, 1981

federal emergency management agency
federal insurance administration

ATTACHMENT 16

EXISTING & PROPOSED EASEMENTS & RESTRICTIONS

Title:	EASEMENT AGREEMENT
Date:	May _____, 2024
WVA:	WINDHAM VILLAGE APARTMENTS LLC, a Maine limited liability company
WVA's Address:	40 Farm Gate Road Falmouth, Maine 04105
B33 Windham:	B33 WINDHAM II LLC, a Delaware limited liability company
B33 Windham's Address:	c/o Polsinelli PC Attn: Michael L. Fisher 900 West 48th Place, Suite 900 Kansas City, Missouri 64112
References:	None
Legal Description:	See Exhibit A and Exhibit B

Prepared By, and After Recording Return To:
Michael L. Fisher, Esq.
Polsinelli PC
900 West 48th Place, Suite 900
Kansas City, Missouri 64112

EASEMENT AGREEMENT

THIS EASEMENT AGREEMENT (this "**Agreement**") is made this ___ day of May, 2024 (the "**Effective Date**"), by and between **WINDHAM VILLAGE APARTMENTS LLC**, a Maine limited liability company ("**WVA**") and **B33 WINDHAM II LLC**, a Delaware limited liability company ("**B33 Windham**"). WVA and B33 Windham are sometimes each individually referred to herein as a "**Party**," and collectively as the "**Parties**").

WHEREAS, WVA is the owner of that certain real property legally described on Exhibit A attached hereto (the "**WVA Property**");

WHEREAS, B33 Windham is the owner of that certain real property legally described on Exhibit B attached hereto (the "**B33 Windham Property**");

WHEREAS, the WVA Property and B33 Property are shown and depicted on a plan titled "First Amended Subdivision Shaw's Commercial Subdivision: Windham Village Apartments, 770 Roosevelt Trail, Windham, Maine" made for Windham Village Apartments LLC by Owen Haskell, Inc., dated February 5, 2024 and recorded in the Cumberland County Registry of Deeds in Plan Book 224, Page 52 (the "**Subdivision Plan**"); and

WHEREAS, certain portions of the B33 Windham Property contain private access roads, which extend from Tandberg Trail (Route 35) and Manchester Drive (Route 115), respectively (collectively, the "**Access Roads**"); and

WHEREAS, subject to the terms of this Agreement, (i) B33 Windham has agreed to grant to WVA an easement for use of the Access Roads over those portion(s) of the B33 Windham Property as depicted on Exhibit C attached hereto; and (ii) WVA has agreed to grant to B33 Windham easements for use of a portion of the Access Roads, as well as drainage and utility easements, over those portion(s) of the WVA Property depicted as "Proposed Access Easement "A" to Benefit B33 Windham II, LLC," "Proposed Drainage Easement to Benefit B33 Windham II, LLC," and "Proposed Utility Easement," each as depicted on the Subdivision Plan (the "**Easement Areas**").

NOW, THEREFORE, for and in consideration of the sum of $10.00 and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. Grant of Permanent Easements by B33 Windham to WVA; Use. B33 Windham does hereby grant unto WVA, and each of WVA's agents, licensees, employees, tenants, consultants, contractors, subcontractors, and their successors and assigns, a perpetual, non-exclusive easement over, under, through, on and across the Easement Area, for the purposes of providing ingress and egress for pedestrian and vehicular traffic only to and from the WVA Property via the Access Roads (collectively, the "**Access Easement**"). The Access Easement is and shall be for the benefit of the WVA Property and shall burden the B33 Windham Property.

2. Indemnification; Interference.

a. B33 Windham reserves for itself all rights of ownership and use of the B33 Windham Property, and except as provided herein, agrees to use commercially reasonable efforts not to materially interfere with WVA's use of the Access Easement. Each Party (the "**Indemnifying Party**") shall indemnify, defend and hold harmless the other Party (the "**Indemnified Party**") from and against any and all losses, liabilities, claims, causes of action, damages, injuries, liens, expenses and costs, including without limitation, reasonable attorney's fees of any settlement, judgment or

claims of any and every kind whatsoever paid, incurred or suffered, in connection with any damage or liability to persons or property, to the extent caused by the Indemnifying Party's acts or omissions, the acts or omissions of any person acting on behalf of or with the permission of the Indemnifying Party, Indemnifying Party's ownership of its Property, or related to the Indemnifying Party's Property or its's use thereof.

b. WVA shall not materially interfere with the B33 Windham Property or any improvements thereon, including the Easement Area; provided WVA's use of the Access Easement, as contemplated herein, shall not constitute any such interference. Each Indemnifying Party shall indemnify, defend and hold harmless the Indemnified Party from and against any and all losses, liabilities, claims, causes of action, damages, injuries, liens, expenses and costs, including without limitation, reasonable attorney's fees of any settlement, judgment or claims of any and every kind whatsoever paid, incurred or suffered, in connection with any damage or liability to persons or property, to the extent caused by the Indemnifying Party's negligent acts or omissions.

c. Notwithstanding the foregoing or anything contained in this Agreement to the contrary, B33 Windham shall have the right to dedicate the Access Roads to the Town of Windham for use as a public way or public easement, or otherwise modify or relocate the Access Roads as B33 Windham deems reasonably necessary in connection with its ownership, operation, and/or redevelopment of the B33 Windham Property, at its sole cost and expense; provided, that such modification or relocation shall not materially restrict or prevent access to and from the WVA Property and Tandberg Trail. In the event that the Access Roads are dedicated for use as a public way or public easement, and such public way or easement is accepted by the Town of Windham, this Agreement shall automatically terminate and no longer be of any force or effect.

3. Grant of Permanent Easements by WVA to B33 Windham; Use.

a. Access Easement. WVA does hereby grant unto B33 Windham, and each of B33 Windham's agents, licensees, employees, tenants, consultants, contractors, subcontractors, and their successors and assigns, a perpetual, non-exclusive easement over, under, through, on and across the area depicted as "Proposed Access Easement "A" to Benefit B33 Windham II, LLC," for the purposes of providing ingress and egress for pedestrian and vehicular traffic only to and from the B33 Windham Property via the area depicted as "Proposed Access Easement "A" to Benefit B33 Windham II, LLC," (the "**Access Easement "A"**"). Access Easement "A" is and shall be for the benefit of the B33 Windham Property and shall burden the WVA Property.

b. Drainage Easement. WVA does hereby grant unto B33 Windham, and each of B33 Windham's agents, licensees, employees, tenants, consultants, contractors, subcontractors, and their successors and assigns, a perpetual, non-exclusive easement over, under, through, on and across the area depicted as "Proposed Drainage Easement to Benefit B33 Windham II, LLC," for the purposes of the collection, diversion and flow of storm and surface waters, and the maintenance, repair and replacement of any storm water infrastructure and drainage pipes, with all necessary fixtures and appurtenances, from the adjoining land of B33 Windham, together with a right of entry on foot or in vehicles, with all the equipment necessary or reasonably required to accomplish the purposes of this easement, over, on, across and under the area depicted as "Proposed Drainage Easement to Benefit B33 Windham II, LLC" (the "**Drainage Easement**"). The Drainage Easement is and shall be for the benefit of the B33 Windham Property and shall burden the WVA Property.

c. Utility Easement. WVA does hereby grant unto B33 Windham, and each of B33 Windham's agents, licensees, employees, tenants, consultants, contractors, subcontractors, and their successors and assigns, a perpetual, non-exclusive easement over, under, through, on and

across the area depicted as "Proposed Utility Easement," to install, construct, erect, lay, relay, repair, inspect, operate, maintain, rebuild, replace and remove utility conduits, pipes and mains, and poles and wires with all necessary fixtures and appurtenances upon, through, under or over the area depicted as "Proposed Utility Easement" for any and all utilities including but not limited to electric power, transmission and distribution lines, other energy, transmission and distribution lines, gas mains, cable-television, telephone and other communications or intelligence lines, together with suitable and sufficient lines, pipes, cables, mains, poles, together with wires strung upon and extending between the same, above or below ground, together with all necessary facilities, fixtures, anchors, guys, crossarms, and other equipment and appurtenances and also for conveying and transmitting water, sewerage, wastewater and other liquids and substances together with the right at all times to make connection with all of said facilities to the adjoining B33 Windham Property (the "**Utility Easement**"). The Utility Easement is and shall be for the benefit of the B33 Windham Property and shall burden the WVA Property.

4. Duration. Subject to the conditions and limitations set forth herein, the Access Easement, Access Easement "A," Drainage Easement, Utility Easement, covenants, conditions and restrictions herein contained shall be perpetual.

5. Maintenance. From the Effective Date, B33 Windham shall be responsible for the maintenance of the Access Roads from time to time and shall pay the costs of such maintenance associated with the Access Roads. Notwithstanding the foregoing and from and after the Effective Date, WVA (and its successors and assigns) shall be responsible for its pro-rata share of the costs reasonably incurred by B33 Windham in performing such maintenance, repair, and restoration obligations herein, including landscaping, management fees, and seasonal snow and ice removal (if any) (collectively, "**Maintenance Costs**"). WVA's pro-rata share of the Maintenance Costs [do we have an estimate?] shall be determined based on the acreage of the WVA Property, in relation to the total acreage of the B33 Windham Property and the WVA Property in the aggregate. WVA shall promptly pay or reimburse B33 Windham for its pro-rata share of the Maintenance Costs and in all events shall pay no later than thirty (30) days following receipt of an invoice therefore from B33 Windham. Notwithstanding the foregoing, in the event repair or replacement of the Access Roads is needed as a result of one Party, its owners', tenants', or other permittees' negligence or intentional misconduct, such Party shall be responsible for the full cost of such repair or replacement.

6. Compliance with Laws. With respect to the Access Easement and the use thereof, the Parties will comply with all present or future laws, statutes, codes, acts, ordinances, rules, regulations, orders, judgments, decrees, injunctions, rules, regulations, permits, licenses, authorizations, directions and requirements of and agreements with all governments, departments, commissions, boards, courts, authorities, agencies, officials and officers, foreseen or unforeseen, ordinary or extraordinary, including, without limitation, any building, zoning and land use laws.

7. Insurance. WVA, its successors and/or assigns, shall maintain or cause to be maintained general liability insurance insuring against claims on account of loss of life, bodily injury or property damage that may arise from or be occasioned by the condition, use or occupancy of the Access Easement. The insurance required hereunder shall be carried by a reputable insurance company or companies qualified to do business in the State of Maine, with limits of no less than $1,000,000 per occurrence, and $2,000,000 in the aggregate. WVA shall upon written request from B33 Windham furnish to B33 Windham certificates of insurance evidencing the existence of the insurance required to be carried hereunder. All such insurance shall include provisions denying to the insurer subrogation rights against the other parties to the extent such rights have been waived by the insured prior to the occurrence of damage or loss.

8. Estoppel Certificates. Within twenty (20) days following receipt of the written request of either Party, the other Party shall issue to any party designated by the requesting Party an appropriate certificate certifying whether the Party to whom the request is made knows of any default under this Agreement or of any assignment, modification or amendment to this Agreement (and the nature and extent of any such default or other known matter) and whether, to the best of that Party's knowledge and belief, this Agreement is in full force and effect. The certificate may be relied upon by a bona fide encumbrancer or purchaser for value without knowledge of facts to the contrary. The certificate shall not subject the Party furnishing the certificate to any liability for any inaccurate statement which such party in good faith believed was correct when made or any obligation to correct or disclose any change in the information certified.

9. Breach of Agreement. If any Party hereto shall fail to materially comply with, violate or breach any of the provisions of this Agreement, then the non-breaching Party may provide written notice of such breach to the breaching Party specifying the nature of the breach, and upon receipt of such notice, the breaching party shall have a period of thirty (30) days to cure such breach (or such longer period as is reasonably necessary with respect to any such breach the nature of which cannot reasonably be cured within such 30-day period, provided that the breaching party commences such cure within such 30-day period and thereafter diligently prosecutes such cure to completion); provided however, with respect to any monetary breaches the cure period shall be limited to ten (10) days following written notice thereof. If such breach remains uncured beyond the applicable cure period, the non-breaching Party may institute such actions or proceedings as may be available at law or in equity and are appropriate and permissible, including actions and proceedings to compel specific performance, resolve maintenance disputes, and compel payment of damages, expenses and costs after written demand for performance or compensation has been made to the alleged breaching Party. In case a lawsuit shall be brought because of the breach or alleged breach of any agreement or obligation contained in this Agreement on the part of either Party to be kept or performed, the prevailing Party shall be entitled to recover its reasonable attorneys' fees and expenses in connection with such lawsuit. The remedies provided herein shall be cumulative and not exclusive. It is expressly agreed that no breach of this Agreement shall entitle either Party to cancel, rescind, or otherwise terminate this Agreement, and such limitations shall not affect in any manner any of the rights or remedies which a Party may have by reason of any breach of this Agreement.

10. Easements Run With Land. The Access Easement, and other rights and benefits under this Agreement shall run with the land for the benefit of the WVA Property, and shall be binding upon the B33 Windham Property. The Access Easement "A," Drainage Easement, Utility Easement, and other rights and benefits under this Agreement shall run with the land for the benefit of the B33 Windham Property, and shall be binding upon the WVA Property. The parties will automatically be released from all liability thereafter arising under this Agreement upon conveyance of their entire interest in the B33 Windham Property or WVA Property, respectively, as applicable.

11. Non-Use. Unless otherwise canceled or terminated in accordance with the terms of this Agreement, non-use or limited use of the easement rights granted in this Agreement shall not prevent the holder of such easement rights from later use of the easement rights to the fullest extent authorized in this Agreement.

12. Further Assurances. The Parties shall execute and deliver to the other parties such other and further documents as said Parties might reasonably request to accomplish the purpose of this Agreement.

13. Applicable Law and Recording. This Agreement shall be construed and enforced in accordance with the laws of the State of Maine and this Agreement shall be recorded in the office of the Registry of Deeds of Cumberland County, Maine.

14. Written Amendment. This Agreement sets forth the entire understanding of the parties and may not be changed except by a written document executed and acknowledged by all parties to this Agreement and duly recorded in the office of the Registry of Deeds of Cumberland County, Maine.

15. No Rights in Public. Nothing contained in this Agreement shall be deemed to be a gift or dedication of any portion of the WVA Property, the B33 Windham Property, or of any improvements thereon, to the general public for any public use or purpose whatsoever; it being the intention of the Parties hereto that this Agreement is for the exclusive benefit of the Parties, their successors and assigns; and nothing in this Agreement, express or implied, shall confer upon any person other than the Parties, their successors and assigns any rights or remedies under or by reason of any provision herein.

16. Notice. Any notice required or permitted under this Agreement shall be deemed sufficiently given and served if sent by certified mail, return receipt requested, or by overnight delivery, to the party or Parties at the addresses set forth on the cover page and either Party may, by like written notice at any time and from time to time, designate a different address to which notice shall subsequently be sent. Notices given in accordance with the provisions of this paragraph shall be deemed received the following day after mailing if sent by overnight delivery or the date actually received as evidenced by the return receipt if sent by certified mail; provided, however, that any notice required to be provided pursuant to Section 3 above shall also be provided to B33 Windham's counsel at **Polsinelli PC, 900 West 48th Place, Suite 900, Kansas City, Missouri 64112, Attn.: Mike Fisher, mfisher@polsinelli.com**; and WVA's counsel at **Jensen Baird, Ten Free Street, 4th Floor, Portland, Maine 04101, Attn: Nicholas J. Morrill**, nmorrill@jensenbaird.com. Each party's contact information may be updated from time to time upon notice to the other party hereto.

17. Severability. If any term, covenant, or condition of this Agreement or the application thereof to any person or circumstance shall be deemed invalid or unenforceable, the remainder of this Agreement, or the application of such term, covenant or condition to persons or circumstances other than those to which it is held invalid or unenforceable shall not be affected thereby, and each term, covenant and condition shall be valid and enforceable to the fullest extent permitted by law.

18. Counterparts. This Agreement may be executed in several counterparts, each of which shall be deemed an original. The signatures to this Agreement may be executed and notarized on separate pages, and when attached to this Agreement shall constitute one complete document.

[REMAINDER OF PAGE INTENTIONALLY BLANK;
SIGNATURE PAGES AND EXHIBITS FOLLOW]

IN WITNESS WHEREOF, Windham Village Apartments LLC has executed this Agreement as of the Effective Date.

WINDHAM VILLAGE APARTMENTS LLC

By: _____
Loni Graiver, its Manager

STATE OF _____)
) ss.
COUNTY OF _____)

On this __ day of May, 2024, before me _____, a Notary Public in and for said state, personally appeared Loni Graiver, Manager of Windham Village Apartments LLC known to me to be the person who executed the within instrument and acknowledged to me that he executed the same in his said capacity, for the purposes therein stated.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my official seal the day and year last above written.

_____
Printed Name:
Notary Public

My Commission Expires: _____

IN WITNESS WHEREOF, B33 Windham has executed this instrument as of the Effective Date.

B33 WINDHAM II LLC,
a Delaware limited liability company

By: _____
Name: Genniveve Ramsey
Title: Authorized Person

STATE OF _____)
) ss.
COUNTY OF _____)

On this __ day of May, 2024, before me _____, a Notary Public in and for said state, personally appeared Genniveve Ramsey, Authorized Person of B33 WINDHAM II LLC, a Delaware limited liability company, known to me to be the person who executed the within instrument on behalf of said entity and acknowledged to me that he/she executed the same for the purposes therein stated.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my official seal the day and year last above written.

_____
Printed Name:
Notary Public

My Commission Expires: _____

EXHIBIT A

WVA Property

[INSERT LEGAL DESCRIPTION OF SALE PROPERTY]

EXHIBIT B

B33 Windham Property

[INSERT LEGAL DESCRIPTION OF SELLER'S RETAINED PROPERTY]

EXHIBIT C

Depiction of Access Easement Area

[INSERT DEPICTION OF ACCESS EASEMENT AREA]

EXHIBIT C (Continued)

Title:	SEPTIC FIELD AND NITRATE EASEMENT AGREEMENT
Date:	_____, 202__
Graiver:	[LLC to be created], a Maine limited liability company
Graiver's Address:	40 Farm Gate Road Falmouth, Maine 04105
B33 Windham:	B33 WINDHAM II LLC, a Delaware limited liability company
B33 Windham's Address:	c/o Polsinelli PC Attn: Michael L. Fisher 900 West 48th Place, Suite 900 Kansas City, Missouri 64112
References:	None
Legal Description:	See Exhibit A, Exhibit B, and Exhibit C

Prepared By, and After Recording Return To:
Michael L. Fisher, Esq.
Polsinelli PC
900 West 48th Place, Suite 900
Kansas City, Missouri 64112

SEPTIC FIELD AND NITRATE EASEMENT AGREEMENT

THIS SEPTIC FIELD AND NITRATE EASEMENT AGREEMENT (this "**Agreement**") is made this ___ day of _____, 202__ (the "**Effective Date**"), by and between **[LLC to be formed]**, a Maine limited liability company ("**Graiver**") and **B33 WINDHAM II LLC**, a Delaware limited liability company ("**B33 Windham**"). Graiver and B33 Windham are sometimes each individually referred to herein as a "**Party**," and collectively as the "**Parties**").

WHEREAS, Graiver is the owner of that certain real property legally described on Exhibit A attached hereto (the "**Graiver Property**");

WHEREAS, B33 Windham is the owner of that certain real property legally described on Exhibit B attached hereto (the "**B33 Windham Property**"). The Graiver Property and B33 Windham Property are sometimes each individually referred to herein as an "**Property**" and collectively as the "**Properties**".

WHEREAS, a portion of the Graiver Property contains an existing septic system, including pipes, mains, fixtures and appurtenances (the "**Septic System**"); and

WHEREAS, Graiver agrees to grant to B33 Windham a perpetual easement for B33 Windham's connection with and use of the Septic System as more particularly described below over a portion of the Graiver Property, as legally described and depicted on Exhibit C attached hereto (the "**Easement Area**"); and

WHEREAS, in connection with the development of the Graiver Property, Graiver anticipates constructing a new septic system (or systems) on the Graiver Property (the "**Graiver Septic System(s)**"), which may result in the migration of nitrates onto the B33 Windham Property; and

WHEREAS, B33 Windham agrees to grant to Graiver a perpetual easement to flow, disburse or otherwise dispose of nitrates that originate from the Graiver Septic System(s) under the surface of the B33 Windham Property.

NOW, THEREFORE, for and in consideration of the sum of $10.00 and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. Grant of Permanent Easements; Use.

a. Graiver does hereby grant unto B33 Windham and each of B33 Windham's agents, licensees, employees, tenants, consultants, contractors, subcontractors and their successors and assigns, a perpetual, irrevocable, non-exclusive easement over, under, through, on and across the Easement Area, together with the right of ingress and egress over and through Graiver Property as may be reasonably necessary to access the Easement Area for the purposes of the collection, flow, and/or disposal of sanitary sewage from the B33 Windham Property to the Septic System (collectively, the "**Septic Easement**").

b. B33 Windham shall have the right for itself and its agents, licensees, employees, consultants, contractors, subcontractors, and their successors and assigns, to install, improve, maintain, repair and replace, and to make connection with, use and enjoy the Septic System for purposes of conveying and transmitting sanitary sewage. B33 Windham, in its sole discretion, has the right to use the Septic System for any and all adjacent properties owned by B33 Windham. To the extent that Graiver's development of the Graiver Property requires modifications or improvements to the Septic System, the cost and expense of such modifications shall be borne

solely by Graiver. Any modification or improvement to the Septic System shall not interfere with B33 Windham's use of the Septic System.

c. The Septic Easement is and shall be for the benefit of the B33 Windham Property and shall burden the Graiver Property. Graiver binds Graiver and Graiver's heirs, successors, and assigns to warrant and forever defend the title to the Septic Easement, rights and appurtenances in B33 Windham and B33 Windham's successors and assigns against every person whomsoever lawfully claiming or to claim the Septic Easement, rights or appurtenances or any part thereof.

d. B33 Windham does hereby grant unto Graiver, and each of Graiver's agents, licensees, employees, tenants, consultants, contractors, subcontractors, and their successors and assigns, a perpetual, irrevocable, non-exclusive easement, over, under, through, on and across the B33 Windham Property to flow, disburse or otherwise dispose of nitrates that originate from the Graiver Septic System(s) under the surface of the B33 Windham Property, together with the right of ingress and egress over and through B33 Windham Property to the extent reasonably necessary to test for the presence of said nitrates, and to further test if the Graiver Septic System(s) are functioning properly (collectively, the "**Nitrate Easement**"); provided however, Graiver shall provide at least ten (10) days' prior written notice of any such testing, B33 Windham shall have the right to have a representative present at the time of any tests, and such testing shall not be invasive in any manner without the express written consent of B33 Windham, which consent may be withheld in its sole discretion. The Septic Easement and Nitrate Easement are sometimes each individually referred to herein as an "**Easement**" and collectively as the "**Easements**". Except to the extent B33 Windham (or its successors and assigns) is legally obligated to do so, B33 Windham agrees for itself, its successors and assigns, not to drill or otherwise place a well for drinking water upon the Easement Area, or to otherwise use any water or spring located over, under, through on and across the Easement Area for human consumption.

2. Indemnification; Interference.

a. Each Party (the "**Burdened Party**") covenants and agrees not to interfere with the other Party's use of the Easement and the Property of the Burdened Party as permitted herein. Each Burdened Party reserves for itself all rights of ownership and use of its Property, provided such use does not adversely affect the other Party's use of its Property as permitted herein. Each Party (the "**Indemnifying Party**") shall indemnify, defend and hold harmless the other Party (the "**Indemnified Party**") from and against any and all losses, liabilities, claims, causes of action, damages, injuries, liens, expenses and costs, including without limitation, reasonable attorney's fees of any settlement, judgment or claims of any and every kind whatsoever paid, incurred or suffered, in connection with any damage or liability to persons or property, to the extent caused by the Indemnifying Party's acts or omissions, the acts or omissions of any person acting on behalf of or with the permission of the Indemnifying Party, Indemnifying Party's ownership of its Property, or related to the Indemnifying Party's Property or its's use thereof.

b. Each Party agrees not to unreasonably and adversely interfere with the other Party's Property, any improvements thereon, or the other Party's use of its own Property; provided B33 Windham's use of the Septic Easement and Graiver's Property, and Graiver's use of the Nitrate Easement and B33 Windham's Property, as contemplated herein shall not constitute any such interference. Each Indemnifying Party shall indemnify, defend and hold harmless the Indemnified Party from and against any and all losses, liabilities, claims, causes of action, damages, injuries, liens, expenses and costs, including without limitation, reasonable attorney's fees of any settlement, judgment or claims of any and every kind whatsoever paid, incurred or suffered, in connection with

any damage or liability to persons or property, to the extent caused by the Indemnifying Party's negligent acts or omissions.

3. Conversion. The parties acknowledge that Graiver may, at Graiver's sole cost and expense, convert the Septic System into a sanitary sewer system (the "**Sewer Conversion**"), subject to compliance with applicable laws, regulations, and requirements, and the terms and conditions provided herein. Prior to commencing any work in relation to the Sewer Conversion, Graiver shall provide B33 Windham with plans and specifications for such conversion, which plans shall include a reasonable description of any period of time in which B33 Windham (and/or any occupants, tenants, and/or owners of the surrounding and adjacent properties of B33 Windham) will not have adequate access to and service from utility infrastructure(s) on the Graiver Property in a manner that is substantially similar to what is currently available via the Septic System and Graiver's plan to mitigate the effect of such period of unavailability and to continue to provide uninterrupted flowage of sewage regardless of conversion (collectively, the "**Plans**") for B33 Windham's review and approval, which approval shall not be unreasonably withheld. B33 Windham shall have thirty (30) days from receipt of the Plans to review and approve or disapprove of the same. If B33 Windham does not respond within such thirty (30) day period, Graiver may resend the Plans to B33 Windham (the "**Second Submission**"). If B33 Windham does not respond within fifteen (15) days from receipt of the Second Submission, then B33 Windham shall be deemed to have approved the Plans as proposed. If B33 Windham disapproves of the Plans within thirty (30) days from the receipt of the Plans (or within fifteen (15) days from the receipt of the Second Submission, if applicable), then Graiver and B33 Windham shall reasonably cooperate to revise the Plans to a mutually agreeable form as soon as reasonably possible following such disapproval. Following the approval (or deemed approval) of the Plans, Graiver shall give B33 Windham at least thirty (30) days prior written notice of commencement of any work in accordance with the approved Plans. For the avoidance of doubt, if Graiver commences the Sewer Conversion in accordance with the terms above, B33 Windham shall have the right to tie into the resulting sanitary sewer system (the "**New Sewer System**") (at B33 Windham's cost and expense); provided, that B33 Windham shall give Graiver at least thirty (30) days prior written notice of its intent to tie into the New Sewer System ("**Tie-In Notice**"). If the Tie-In Notice is sent prior to B33 Windham's approval of the Plans, then Graiver hereby agrees to, upon receipt of the Tie-in Notice, update the Plans and resubmit the Plans for B33 Windham's review, and thereafter the process set forth above with respect to the original submission and approval of the Plans shall apply. If the Tie-In Notice is sent following B33 Windham's approval of the Plans, then prior to the commencement of any work related thereto, B33 Windham shall provide Graiver with copies plans and specifications for such tie-in. In any event, B33 Windham's connection to the New Sewer System shall not unreasonably interfere with or unreasonably diminish the sewer service to Graiver or the Graiver Property. Following any such tie-in, B33 Windham's use of the New Sewer System, following connection to the same, shall thereafter be governed by the terms of this Agreement.

4. Duration. Subject to the conditions and limitations set forth herein, (a) the Septic Easement, covenants, conditions and restrictions herein contained shall be perpetual, and shall burden the Graiver Property and benefit the B33 Windham Property, and (b) the Nitrate Easement, covenants, conditions and restrictions herein contained shall be perpetual, and shall burden the B33 Windham Property and benefit the Graiver Property.

5. Maintenance.

a. From the Effective Date and continuing until Graiver commences the Sewer Conversion as described in Section 3 above, B33 Windham shall be responsible for all maintenance of the Septic System and shall pay the costs of such maintenance associated with the Septic System; provided, however, that such commencement of the Sewer Conversion shall not relieve any obligation of Grantor to ensure the Septic System and the service thereof remains available to Grantee (and/or any occupants, tenants, and/or owners of the surrounding and adjacent properties

of Grantee) until completion of the New Sewer System as provided herein. Should the B33 Windham Property be disturbed by Graiver or Graiver's agents, licensees, employees, consultants, contractors, or subcontractors in connection with the Sewer Conversion, Graiver shall restore and repair, in a timely manner, the B33 Windham Property to a substantially similar condition that existed prior to such disturbance, at Graiver's sole cost and expense.

b. If Graiver validly commences the Sewer Conversion pursuant to Section 3 above, Graiver shall be responsible for all installation and maintenance of the New Sewer System and shall pay the costs of such installation and maintenance associated therewith. Should the B33 Windham Property be disturbed by Graiver or Graiver's agents, licensees, employees, consultants, contractors, or subcontractors during the installation of the New Sewer System, Graiver shall restore and repair, in a timely manner, the B33 Windham Property to a substantially similar condition that existed prior to such disturbance, at Graiver's sole cost and expense.

6. Compliance with Laws. In performing any work within the Easement Area, and with respect to the Nitrate Easement, on B33 Windham's Property, the parties will comply with all present or future laws, statutes, codes, acts, ordinances, rules, regulations, orders, judgments, decrees, injunctions, rules, regulations, permits, licenses, authorizations, directions and requirements of and agreements with all governments, departments, commissions, boards, courts, authorities, agencies, officials and officers, foreseen or unforeseen, ordinary or extraordinary, including, without limitation, any building, zoning and land use laws.

7. Real Estate Taxes. Graiver is responsible for and must pay all real estate taxes and assessments imposed upon the Graiver Property so as to prevent the forfeiture or loss of any of the use of any portion of the Graiver Property, including, but not limited to, the Easement Area.

8. Barriers. Graiver shall not cause or allow the construction or placement of any buildings, structures, improvements, fixtures, trees, bushes, plants or other property on the Easement Area that would in any manner interfere with the Septic System. In the event Graiver violates this provision, B33 Windham shall have the right, but not the obligation, to remove any such property or improvements at Graiver's sole cost and expense.

9. Insurance. Each of the parties hereto shall maintain or cause to be maintained general liability insurance insuring against claims on account of loss of life, bodily injury or property damage that may arise from or be occasioned by the condition, use or occupancy of the Septic Easement and Nitrate Easement. The insurance required hereunder shall be carried by a reputable insurance company or companies qualified to do business in the State of Maine, with limits of no less than $1,000,000 per occurrence, and $2,000,000 in the aggregate. Each party shall upon written request from the other party furnish to the party making such request certificates of insurance evidencing the existence of the insurance required to be carried hereunder. All such insurance shall include provisions denying to the insurer subrogation rights against the other parties to the extent such rights have been waived by the insured prior to the occurrence of damage or loss.

10. Estoppel Certificates. Within twenty (20) days following receipt of the written request of either Party, the other Party shall issue to any party designated by the requesting Party an appropriate certificate certifying whether the Party to whom the request is made knows of any default under this Agreement or of any assignment, modification or amendment to this Agreement (and the nature and extent of any such default or other known matter) and whether, to the best of that Party's knowledge, this Agreement is in full force and effect. The certificate may be relied upon by a bona fide encumbrancer or purchaser for value without knowledge of facts to the contrary. The certificate shall not subject the Party

furnishing the certificate to any liability for any inaccurate statement which such party in good faith believed was correct when made or any obligation to correct or disclose any change in the information certified.

11. Breach of Agreement. If a Party shall fail to comply with, violate or breach any of the provisions of this Agreement, then the non-breaching Party may institute such actions or proceedings as may be available at law or in equity and are appropriate and permissible, including actions and proceedings to compel specific performance, resolve maintenance disputes, and compel payment of damages, expenses and costs. In case a lawsuit shall be brought because of the breach or alleged breach of any agreement or obligation contained in this Agreement on the part of either Party to be kept or performed, the prevailing Party shall be entitled to recover its reasonable attorneys' fees and expenses in connection with such lawsuit. The remedies provided herein shall be cumulative and not exclusive. It is expressly agreed that no breach of this Agreement shall entitle either Party to cancel, rescind, or otherwise terminate this Agreement, and such limitations shall not affect in any manner any of the rights or remedies which a Party may have by reason of any breach of this Agreement.

12. Easements Run With Land. Subject to the conditions and limitations set forth herein, the Septic Easement and other rights and benefits under this Agreement shall run with the land for the benefit of B33 Windham and B33 Windham's successors and assigns, and shall be binding upon Graiver and Graiver's heirs, personal representatives, distributes, executors, administrators, successors, and assigns. Subject to the conditions and limitations set forth herein, the Nitrate Easement and other rights and benefits under this Agreement shall run with the land for the benefit of Graiver, and Graiver's successors and assigns, and shall be binding upon B33 Windham and B33 Windham's heirs, personal representatives, distributes, executors, administrators, successors, and assigns. The parties will automatically be released from all liability thereafter arising under this Agreement upon conveyance of their entire interest in the B33 Windham Property or Graiver Property, respectively, as applicable.

13. Non-Use. Unless otherwise canceled or terminated in accordance with the terms of this Agreement, non-use or limited use of the easement rights granted in this Agreement shall not prevent the holder of such easement rights from later use of the easement rights to the fullest extent authorized in this Agreement.

14. Further Assurances. The Parties shall execute and deliver to the other Parties such other and further documents as said Parties might reasonably request to accomplish the purpose of this Agreement.

15. Applicable Law and Recording. This Agreement shall be construed and enforced in accordance with the laws of the State of Maine and this Agreement shall be recorded in the office of the Registry of Deeds of Cumberland County, Maine.

16. Written Amendment. This Agreement sets forth the entire understanding of the parties and may not be changed except by a written document executed and acknowledged by all parties to this Agreement and duly recorded in the office of the Registry of Deeds of Cumberland County, Maine.

17. No Rights in Public. Nothing contained in this Agreement shall be deemed to be a gift or dedication of any portion of the Graiver Property, the B33 Windham Property, or of any improvements thereon, to the general public for any public use or purpose whatsoever; it being the intention of the Parties hereto that this Agreement is for the exclusive benefit of the Parties, their successors and assigns; and nothing in this Agreement, express or implied, shall confer upon any person other than the Parties, their successors and assigns any rights or remedies under or by reason of any provision herein.

18. Notice. Any notice required or permitted under this Agreement shall be deemed sufficiently given and served if sent by certified mail, return receipt requested, or by overnight delivery, to the Party or Parties at the addresses set forth on the cover page and either party may, by like written notice at any time and from time to time, designate a different address to which notice shall subsequently be sent. Notices given in accordance with the provisions of this paragraph shall be deemed received the following day after mailing if sent by overnight delivery or the date actually received as evidenced by the return receipt if sent by certified mail; provided, however, that any notice required to be provided pursuant to Section 3 above shall also be provided to B33 Windham's counsel at **Polsinelli PC, 900 West 48th Place, Suite 900, Kansas City, Missouri 64112, Attn.: Mike Fisher, mfisher@polsinelli.com; and Graiver's counsel at Jensen Baird, Ten Free Street, 4th Floor, Portland, Maine 04101, Attn: Nicholas J. Morrill, nmorrill@jensenbaird.com**, which contact information may be updated from time to time upon notice to Graiver from B33 Windham.

19. Severability. If any term, covenant, or condition of this Agreement or the application thereof to any person or circumstance shall be deemed invalid or unenforceable, the remainder of this Agreement, or the application of such term, covenant or condition to persons or circumstances other than those to which it is held invalid or unenforceable shall not be affected thereby, and each term, covenant and condition shall be valid and enforceable to the fullest extent permitted by law.

20. Counterparts. This Agreement may be executed in several counterparts, each of which shall be deemed an original. The signatures to this Agreement may be executed and notarized on separate pages, and when attached to this Agreement shall constitute one complete document.

[REMAINDER OF PAGE INTENTIONALLY BLANK;
SIGNATURE PAGES AND EXHIBITS FOLLOW]

IN WITNESS WHEREOF, Graiver has executed this Agreement as of the Effective Date.

[LLC to be created]

By: _____
Loni Graiver, its Manager

STATE OF _____)
) ss.
COUNTY OF _____)

On this __ day of _____, 202__, before me _____, a Notary Public in and for said state, personally appeared LONI GRAIVER, Manager of [LLC to be created] known to me to be the person who executed the within instrument and acknowledged to me that he executed the same in his said capacity, for the purposes therein stated.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my official seal the day and year last above written.

_____
Printed Name:
Notary Public

My Commission Expires: _____

IN WITNESS WHEREOF, B33 Windham has executed this instrument as of the Effective Date.

B33 WINDHAM II LLC,
a Delaware limited liability company

By: _____
Name: Genniveve Ramsey
Title: Authorized Person

STATE OF _____)
) ss.
COUNTY OF _____)

On this __ day of _____, 202__, before me _____, a Notary Public in and for said state, personally appeared Genniveve Ramsey, Authorized Person of B33 WINDHAM II LLC, a Delaware limited liability company, known to me to be the person who executed the within instrument on behalf of said entity and acknowledged to me that he/she executed the same for the purposes therein stated.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my official seal the day and year last above written.

_____
Printed Name:
Notary Public

My Commission Expires: _____

EXHIBIT A

Graiver Property

[INSERT LEGAL DESCRIPTION OF SALE PROPERTY]

EXHIBIT B

B33 Windham Property

[INSERT LEGAL DESCRIPTION OF SELLER'S RETAINED PROPERTY]

EXHIBIT C

Legal Description and Depiction of Easement Area

[INSERT LEGAL DESCRIPTION & DEPICTION OF EASEMENT AREA]

EXHIBIT C (Continued)

EASEMENT DEED

B33 WINDHAM II LLC, a Delaware limited liability company with a principal place of business in _____ ("OWNER") for consideration paid, hereby grants to the **PORTLAND WATER DISTRICT**, a public quasi-municipal Maine corporation of Portland, Maine ("DISTRICT"), with QUITCLAIM COVENANT, an easement on property located in the Town of Windham, Cumberland County, Maine, bounded and described as follows:

[insert legal description of Water Main Easement] (the "Easement Area").

The DISTRICT shall have the following permanent easement rights in the Easement Area described above:

1. the right to install, maintain, replace, operate and remove conduits or pipelines for conveying water and wastewater, with all necessary fixtures and appurtenances, including electric or other energized control lines; and

2. the right to make connections with the conduits or pipelines on land adjacent to the Easement Area; and

3. the right to install, maintain, replace and remove hydrants, with all necessary fixtures and appurtenances; and

4. the right to trim, cut down, and/or remove bushes, grass, crops, trees or any other vegetation, to such extent as is necessary for any of these purposes in the sole judgment of the DISTRICT; and

5. the right to change the existing surface grade of the Easement Area as is reasonably necessary for any of these purposes; and

6. the right to enter on the Easement Area at any and all times for any of these purposes.

OWNER reserves the use and enjoyment of the Easement Area for any purpose that does not interfere with the use of the Easement Area by the DISTRICT for its own purposes; provided that none of the following improvements may be made by OWNER in the Easement Area, without the written permission of the DISTRICT:

1. No buildings or any other permanent structures are allowed in the Easement Area, with the exception of pavement and utilities.

2. No earth shall be removed, no fill may be added, and no other change shall be made to the surface grade of the Easement Area.

3. All underground utility lines in the Easement Area shall be located and installed in accordance with the approved design plans on file at the offices of the DISTRICT and OWNER.

All underground power, telephone and cable services will be installed in conduit when crossing over any water conduits or pipelines.

4. The DISTRICT and its contractors will make efforts to avoid any damage to any underground power, telephone, cable services and other utilities in the Easement Area, and will repair any damage to such utilities should it occur.

This Easement Deed is signed as a document under seal.

Dated: , 2024

B33 WINDHAM II LLC,
a Delaware limited liability company

_____
By *(print name)*:
Its:

State of _____
County of _____ _____, 2024

Then personally appeared, the above-named _____, as _____of B33 Windham II LLC, and acknowledged that his/her signature on this document was his free act and deed in his said capacity, on behalf of B33 Windham II LLC.

_____

_____
Notary Public
Print Name
My Commission Expires:_____

EASEMENT DEED

WINDHAM VILLAGE APARTMENTS LLC, a Maine limited liability company with a principal place of business in Windham, Maine ("OWNER") for consideration paid, hereby grants to the **PORTLAND WATER DISTRICT**, a public quasi-municipal Maine corporation of Portland, Maine ("DISTRICT"), with QUITCLAIM COVENANT, an easement on property located in the Town of Windham, Cumberland County, Maine, bounded and described as follows:

> The area depicted as "45' Utility Easement to Benefit PWD" as shown and depicted on a plan titled "First Amended Subdivision Shaw's Commercial Subdivision: Windham Village Apartments, 770 Roosevelt Trail, Windham, Maine" made for Windham Village Apartments LLC by Owen Haskell, Inc., dated February 5, 2024 and recorded in the Cumberland County Registry of Deeds in Plan Book 224, Page 52 (the "Easement Area").

The DISTRICT shall have the following permanent easement rights in the Easement Area described above:

1. the right to install, maintain, replace, operate and remove conduits or pipelines for conveying water and wastewater, with all necessary fixtures and appurtenances, including electric or other energized control lines; and

2. the right to make connections with the conduits or pipelines on land adjacent to the Easement Area; and

3. the right to install, maintain, replace and remove hydrants, with all necessary fixtures and appurtenances; and

4. the right to trim, cut down, and/or remove bushes, grass, crops, trees or any other vegetation, to such extent as is necessary for any of these purposes in the sole judgment of the DISTRICT; and

5. the right to change the existing surface grade of the Easement Area as is reasonably necessary for any of these purposes; and

6. the right to enter on the Easement Area at any and all times for any of these purposes.

OWNER reserves the use and enjoyment of the Easement Area for any purpose that does not interfere with the use of the Easement Area by the DISTRICT for its own purposes; provided that none of the following improvements may be made by OWNER in the Easement Area, without the written permission of the DISTRICT:

1. No buildings or any other permanent structures are allowed in the Easement Area, with the exception of pavement and utilities.

2. No earth shall be removed, no fill may be added, and no other change shall be made to the surface grade of the Easement Area.

3. All underground utility lines in the Easement Area shall be located and installed in accordance with the approved design plans on file at the offices of the DISTRICT and OWNER. All underground power, telephone and cable services will be installed in conduit when crossing over any water conduits or pipelines.

4. The DISTRICT and its contractors will make efforts to avoid any damage to any underground power, telephone, cable services and other utilities in the Easement Area, and will repair any damage to such utilities should it occur.

This Easement Deed is signed as a document under seal.

Dated: , 2024 WINDHAM VILLAGE APARTMENTS LLC

_____
By *(print name)*:
Its: Manager

State of Maine
County of Cumberland , 2024

Then personally appeared, the above-named _____, as Manager of Windham Village Apartments LLC, and acknowledged that his/her signature on this document was his free act and deed in his said capacity, on behalf of Windham Village Apartments LLC.

_____

_____
Notary Public/Attorney at Law
Print Name
My Commission Expires:_____

LICENSE AGREEMENT

THIS LICENSE AGREEMENT made by and between the **PORTLAND WATER DISTRICT**, a quasi-municipal corporation organized and existing under the laws of the State of Maine, and located at P.O. Box 3553, 225 Douglass Street, Portland, Maine 04104-3553 (hereinafter the "**DISTRICT**") and **WINDHAM VILLAGE APARTMENTS LLC,** a Maine limited liability company with a principal place of business in Windham, Maine (hereinafter the "OWNER").

WHEREAS, **OWNER** owns certain real property located at Roosevelt Trail, Windham, Maine, which is more particularly described in a Quitclaim Deed with Covenant from B33 Windham II LLC, dated May ____, 2024 and recorded in the Cumberland County Registry of Deeds in Book _____, Page ___ (hereinafter the "Property"); and

WHEREAS, the **DISTRICT** seeks to access the Property to construct sanitary sewer infrastructure;

WHEREAS, in order to perform said work, the **DISTRICT** and its agents must work with people and machines within the bounds of the Property owned by the **OWNER**; and

NOW, THEREFORE, in consideration of the foregoing and the covenants herein contained, the **OWNER** hereby grants to **DISTRICT** the following rights in and to the Property:

1. A license to enter in, over and under the Property at reasonable times for the purposes and on the terms and conditions set forth herein;

    a. Purpose The purpose shall be a right of access by people and machinery for the purpose of constructing a sewer main in a location as shown on Exhibit A attached hereto, adjacent to and upon the property owned by the **OWNER.**

        i. The **DISTRICT** and its contractor shall be allowed to enter the Property to perform the above-described work for a period beginning _____, 2024 and ending no later than _____, 202__.

        ii. The **OWNER** reserves all other rights not inconsistent or incompatible with the rights granted herein to the **DISTRICT**.

        iii. The **DISTRICT** acquires no other rights in and to the Property.

    b. The **DISTRICT** will obtain any and all necessary Federal, State or Local permits required in connection with the repairs and modifications being conducted.

2. All work shall be done by the **DISTRICT** at its sole cost and expense in such manner as will not unreasonably interfere with use of the Property. Upon completion of the water repair work, all disturbed areas shall be restored to the condition that existed prior to the entry.

3. The **DISTRICT** shall require any contractors or subcontractors performing work for **DISTRICT** under the terms of this License to obtain general liability insurance with a minimum amount of $1,000,000 coverage.

4. The District and its contractors will make efforts to avoid any damage to the drain line in the area and will repair any damage to the drain line should it occur.

5. This License shall expire upon the completion of the restoration and repair of the Property or _____, 202___, whichever occurs first.

6. This instrument is a License and no provision hereof shall be construed as conveying an easement or any other estate in land.

IN WITNESS WHEREOF, the **DISTRICT** and **OWNER** have set their hands and seals on this _____ day of _____, 2024.

PORTLAND WATER DISTRICT

_____
Witness

_____
Seth Garrison
Its General Manager

WINDHAM VILLAGE APARTMENTS LLC

_____
Witness

_____
By:
Its: Manager