



TOWN OF KILLINGLY, CT  
PLANNING AND ZONING COMMISSION

2024 FEB 16 11 08:11  
Killingly, CT

**TUESDAY – FEBRUARY 20, 2024**

**Regular Meeting – HYDBRID MEETING**

**7:00 PM**

**TOWN MEETING ROOM – 2<sup>ND</sup> FLOOR**

**Killingly Town Hall**

**172 Main Street**

**Killingly, CT**

THE PUBLIC IS ALLOWED TO ATTEND THE MEETING IN PERSON  
OR THE PUBLIC MAY VIEW THIS MEETING AS DESCRIBED BELOW

**AGENDA**

THE PUBLIC CAN VIEW THIS MEETING ON FACEBOOK LIVE.

GO TO [WWW.KILLINGLY.ORG](http://WWW.KILLINGLY.ORG) AND CLICK ON FACEBOOK LIVE AT THE BOTTOM OF THE PAGE.

I. CALL TO ORDER/ROLL CALL

II. SEATING OF ALTERNATES

III. AGENDA ADDENDUM

IV. **CITIZENS' COMMENTS ON ITEMS NOT SUBJECT TO PUBLIC HEARING** (Individual presentations not to exceed 3 minutes; limited to an aggregate of 21 minutes unless otherwise indicated by a majority vote of the Commission)

**NOTE:** Public comments can be emailed to [publiccomment@killinglyct.gov](mailto:publiccomment@killinglyct.gov) or mailed to the Town of Killingly, 172 Main Street, Killingly, CT 06239. All public comment must be received prior to 2:00 PM, the day of the meeting. Public comment received will be posted on the Town's website [www.killingly.org](http://www.killingly.org).

**NOTE:** To participate in the CITIZENS' COMMENTS– the public may join the meeting via telephone while viewing the meeting on Facebook live.

To join by phone please dial 1-415-655-0001; and use the access code **2630-925-0424** when prompted.

V. COMMISSION/STAFF RESPONSES TO CITIZENS' COMMENTS

VI. **PUBLIC HEARINGS – (review / discussion / action)**

**NOTE:** PUBLIC HEARING comments can be emailed to [publiccomment@killinglyct.gov](mailto:publiccomment@killinglyct.gov) or mailed to the Town of Killingly, 172 Main Street, Killingly, CT 06239. All public comment must be received prior to 2:00 PM, the day of the meeting. Public Hearing comments received will be posted on the Town's website [www.killingly.org](http://www.killingly.org)

**NOTE:** To participate in THE PUBLIC HEARINGS – the public may join the meeting via telephone while viewing the meeting on Facebook live.

To join by phone please dial 1-415-655-0001; and use the access code **2630-925-0424** prompted.

(Continued on next page)

**PUBLIC HEARINGS CONT:**

- 1) **Special Permit Appl #23-1322** – JPF Rentals LLC (JPF Rentals, LLC & C. Chenette/ Landowners ); 18 Ware Road (GIS MAP 40, LOT 27) and 21 Pineville Road (GIS MAP 40, LOT 33); Medium Density; approximately 4 acres; to construct 14 new residential rental units, w/community bldg., parking, drainage and appurtenant utility services; under TOK Zoning Regulations; Medium Density, Section 410.3.2(j) Special Permitted Uses, (j) Multi-family Development; Section 555, Multi-Family Development; Article VII, Special Permits; Section 470 Site Plan Review. **CONT FROM 11/20/2023 & 12/18/2023 & 01/16/2024**
- 2) **Special Permit Appl: 24-1328**; Austin Noel (Fred Schramm/Landowner); 427 Chestnut Hill Rd, GIS MAP 66, LOT 14, Rural Development; (home occupation) welding and fabrication business out of the garage, RD Sect. 410.1.2(l), (Spec Perm, Home Occupation) and Sect 595 (Home Occupation).
- 3) **Zone TEXT Change Appl: 24-1329**; Lake Apartments, LLC; Zone TEXT Change – revision to multi-family zoning requirements for clarification purposes for density.  
(NOTE: Edits, if any, may be suggested, and made, to the proposed text up to the close of the hearing. There will be no further advertisement of those edits until the decision of the PZC is published.)

Hearings' segment closes.  
Meeting Business will continue.

**VII. UNFINISHED BUSINESS – (review / discussion / action)**

- 1) **Special Permit Appl #23-1322** – JPF Rentals LLC (JPF Rentals, LLC & C. Chenette/ Landowners ); 18 Ware Road (GIS MAP 40, LOT 27) and 21 Pineville Road (GIS MAP 40, LOT 33); Medium Density; approximately 4 acres; to construct 14 new residential rental units, w/community bldg., parking, drainage and appurtenant utility services; under TOK Zoning Regulations; Medium Density, Section 410.3.2(j) Special Permitted Uses, (j) Multi-family Development; Section 555, Multi-Family Development; Article VII, Special Permits; Section 470 Site Plan Review. **CONT FROM 11/20/2023 & 12/18/2023 & 01/16/2024**
- 2) **Special Permit Appl: 24-1328**; Austin Noel (Fred Schramm/Landowner); 427 Chestnut Hill Rd, GIS MAP 66, LOT 14, Rural Development; (home occupation) welding and fabrication business out of the garage, RD Sect. 410.1.2(l), (Spec Perm, Home Occupation) and Sect 595 (Home Occupation).
- 3) **Zone TEXT Change Appl: 24-1329**; Lake Apartments, LLC; Zone TEXT Change – revision to multi-family zoning requirements for clarification purposes for density.  
(NOTE: Edits, if any, may be suggested, and made, to the proposed text up to the close of the hearing. There will be no further advertisement of those edits until the decision of the PZC is published.)

**VIII. NEW BUSINESS – (review/discussion/action)**

- 1) **Site Plan Review Appl #24-1330** – Samantha & William Menghi (Samantha Menghi / Landowner); 476 Bailey Hill Road; GIS MAP 170; LOT 12.2; ~2.8 acres; Rural Development; construction of a one-bedroom accessory dwelling w/garage.  
**Receive, and consider allowing staff to conduct the site plan review.**

(\*) Applications submitted prior to 5:00 PM on TUESDAY, FEBRUARY 13, 2024 - will be on the agenda as New Business, with a "date of receipt" of TUESDAY, FEBRUARY 20, 2024, and may be scheduled for action during the next regularly scheduled meeting of **MONDAY, MARCH 18, 2024**.

(\*) Applications submitted by 11:30 AM on FRIDAY, FEBRUARY 16, 2024 - will be received by the Commission ("date of receipt") on TUESDAY, FEBRUARY 20, 2024. However, these applications may not be scheduled for action on **MONDAY, MARCH 18, 2024**, as they were submitted after the Commission's deadline. This is in accordance with Commission policy to administer Public Act 03-177, effective October 1, 2003.

**IX. ADOPTION OF MINUTES – (review/discussion/action)**

- 1) Regular Meeting Minutes – JANUARY 16, 2024

**X. OTHER / MISCELLANEOUS – (review / discussion / action)**

1) Workshop Schedule – Schedule another workshop for Monday, March 18, 2024 @ 6:00 pm to start/continue the discussion of the proposed revisions to the Planned Residential Development Regulations and proposed (General) Design Standards.

**XI. CORRESPONDENCE**

- 1) Zoning Practice – February 2024 Edition
- 2) Letter from Crown Castle, dated January 11, 2024 – Notice of Exempt Modification for 280 Ross Road Complete application in Planning and Development Office for Review.

**XII. DEPARTMENTAL REPORTS – (review/discussion/action)**

- A. Zoning Enforcement Officer’s & Zoning Board of Appeal’s Report(s)
- B. Inland Wetlands and Watercourses Agent’s Report

**XIII. ECONOMIC DEVELOPMENT DIRECTOR REPORT**

**XIV. TOWN COUNCIL LIAISON REPORT**

**XV. ADJOURNMENT**

**VI. PUBLIC HEARINGS – (review / discussion / action)**

1) **Special Permit Appl #23-1322** – JPF Rentals LLC (JPF Rentals, LLC & Chirstopher Chenette/ Landowners); 18 Ware Road (GIS MAP 40, LOT 27) and 21 Pineville Road (GIS MAP 40, LOT 33); Medium Density; approximately 4 acres; to construct 14 new residential rental units, w/community bldg., parking, drainage and appurtenant utility services; under TOK Zoning Regulations; Medium Density, Section 410.3.2(j) Special Permitted Uses, (j) Multi-family Development; Section 555, Multi-Family Development; Article VII, Special Permits; Section 470 Site Plan Review.

<b>APPLICANT(S):</b>	JPF RENTALS LLC	
<b>LANDOWNERS:</b>	JPF RENTALS LLC	CHRISTOPHER CHENETTE
<b>SUBJECT PROPERTY:</b>	18 Ware Road	21 Pineville Road
<b>TAX ASSESSOR INFO:</b>	GIS MAP 40, LOT 27	GIS MAP 40, LOT 33
<b>ACREAGE:</b>	~3.7 ACRES	~0.69 ACRES
<b>ZONING DISTRICT:</b>	Medium Density	Medium Density
<b>REQUEST:</b>	Additional 14 Multi-Family Residences	
<b>REGULATIONS:</b>	TOK Zoning Sect. 410.3.2(j) – Medium Density/Multi-Family	
	Section 555 – Multi-Family Development	
	Section 700 – Special Permitted Uses	
	Section 470 – Site Plan Review	

**TUESDAY, FEBRUARY 20, 2024**

**SPECIAL NOTE:**

- 1) Decision Letter dated January 23, 2024, by Inland Wetlands and Watercourses Commission is enclosed in this packet.
- 2) Email dated January 16, 2024, from the Town’s Engineer David Capacchione has comment regarding the paving detail – {staff has spoken to developer’s surveyor and those changes will appear on the mylars} – staff suggests that those changes become part of the conditions if this plan is approved. Appears all other concerns were met.
- 3) Memorandum dated January 11, 2024, from the Town’s Engineer David Capacchione gives a list of his comments / concerns regarding the prior plans dated January 4, 2024 – the revised plans dated January 12, 2024, were done to comply with those concerns.
- 4) Letter from Office of the Fire Marshal – received December 15, 2023 – providing his comments regarding the plans. Again, staff suggests any requests from the Fire Marshal become conditions if this plan is approved.
- 5) Drainage and Stormwater Management Report – Revised to December 2023 – this is the most recent report.
- 6) Site Plans dated January 12, 2024 – these are the most recent plans submitted to the P&D Office.
- 7) Colored landscaping plan, and on the opposite side are the most recent plans submitted for the driveway profiles (both Ware Road and Pineville Road) and building layouts (see #8 below).
- 8) Separate set of building architectural plans for the community building, ranch houses, and town house style houses.

**TUESDAY, JANUARY 16, 2024**

**SPECIAL NOTE:**

The applicant went before the IWWC on January 8, 2024, at which time the IWWC approved the proposed changes to their site plan. Copies of this new (IWWC approved) site plan are enclosed herewith. Jonathan Blake, Agent for the IWWA will be in attendance to answer any questions the commission may have.



**SOME CHANGES MADE TO THE SITE PLANS:** (NEW PLANS AS OF JANUARY 4, 2024)

- 1) The main entrance was moved from Pineville Road to Ware Road – there were some concerns by a resident on Pineville Road that the lights would flash into his living room window.
- 2) The emergency access now goes out to Pineville Road.
- 3) There are several evergreens being planted around the boundary areas – again this was done in response to concerns voiced by residents.
- 4) An existing mobile home (near the Ware Road entrance) will be removed, and a single residence will be constructed in its place. The total number of units on the parcel will remain the same – (Old plans had 14 new residences, with 3 pre-existing residences. New plans show 15 new residences with 2 pre-existing residences.)
- 5) There was some re-configuration of parking, and the units themselves.

**DECEMBER 18, 2023**

**SPECIAL NOTE:** After hearing the concerns of the abutters, the applicant did some re-design work on the site plan; and due to this re-design, the applicant went before the Inland Wetlands and Watercourses Commission on December 4, 2023. During their December 4, 2023, meeting the IWWC scheduled a site walk for Saturday, December 16, 2023. The IWWC's next meeting to discuss this matter is Monday, January 8, 2024.

**THEREFORE,** due to the above, and following the CT State Statutes (to wit: PZC cannot make a final decision until the IWWC makes their final decision), staff suggests the following protocol.

- 1) That the applicant be allowed to present their redesigned plans to the PZC, and that the PZC allow public comment regarding same at tonight's meeting,
- 2) After that is done the PZC CONTINUE the hearing to their TUESDAY, JANUARY 16, 2024, meeting so the PZC can have the IWWC decision in hand before making their decision (CT General Statute)
- 3) The applicant is willing to sign an agreement to the continuance during the 12/18/2023 meeting.

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**Documents received for TUESDAY, FEBRUARY 20, 2024**

- 1) See the special notes listed above.

**Documents received for TUESDAY, JANUARY 16, 2024**

- 1) Revised site plans as of January 4, 2024.
- 2) Storm Drainage Report revised to December 2023.

**Documents received for Monday, December 18, 2023.**

- 1) Redesigned site plans,
- 2) Architectural Drawings of the style of housing (and community building) being proposed

**Documents received for Monday, NOVEMBER 20, 2023**

- 1) Completed Application with copy of P&S for 21 Pineville (not included in packet)
- 2) Section 555 (Multi-Family Development) with applicant's answer on how they meet the requirements
- 3) Correspondence – CT Water, dated 8/14/23; regarding providing water to development
- 4) Correspondence – TOK WPCA, dated Sept. 19, 2023; regarding capacity to service the development
- 5) Memorandum – David Capacchione, TOK Engineer, dated Nov. 15, 2023 – comments, etc.
- 6) Drainage & Stormwater Management Report – dated August 2023 – prepared by KEA
- 7) Drainage Plans – Existing and Proposed
- 8) Site Plan Development – dated September 2023

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**Continued next page.**

**Legal Notices for FEBRUARY 20, 2024**

- 1) Legal Notice Decisions (of January 16, 2024) – posted in Town Clerk’s Office on 1/17/2024 & P&D Office
- 2) Legal Notice Decisions (of January 16, 2024) – published on 01/22/2024 in the Norwich Bulletin
- 3) Legal Notice Decisions (of January 16, 2024 ) – posted outside of TMR
- 4) Legal Notice Hearings (on February 20, 2024) – posted in Town Clerk’s Office on 1/31/2024 & P&D Office
- 5) Legal Notice Hearings (on February 20, 2024) – published on 02/06/24 & 02/13/24 in Norwich Bulletin
- 6) Legal Notice Hearings (on February 20, 2024) – posted outside of TMR

**Legal Notices for TUESDAY, JANUARY 16, 2024**

- 1) Legal Notice posted in the Town Clerk’s Office on January 2, 2024 @ 9:49 am
- 2) Legal Notice posted in the Norwich Bulletin on TUESDAY, JAN.2, 2024 & TUESDAY, JAN. 9, 2024.
- 3) Legal Notice posted outside of the Town Meeting Room on Friday, January 12, 2024.

**Legal Notices for DECEMBER 18, 2023**

- 1) Legal Notice posted in the Town Clerk’s Office on November 29, 2023 @4:45 pm
- 2) Legal Notice published in the Norwich Bulletin on Monday, Dec. 4, 2023 & Monday, Dec. 11, 2023.
- 3) Legal Notice posted outside of Town Meeting Room on Friday, December 15, 2023.

**Legal Notices for NOVEMBER 20, 2023**

- 1) Legal Notice posted in Town Clerk’s Office on October 31, 2023, at 12:03 pm
- 2) Legal Notice published in Norwich Bulletin on Monday, Nov. 6, 2023 & Monday, Nov. 13, 2023
- 3) Public Hearing Placards were posted at the location as required under the TOK Zoning Regulations per Zoning Enforcement Officer, J. Blake per his inspection on Thursday, November 9, 2023

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**STAFF COMMENTS AND SUGGESTIONS**

- 1) Staff suggests that commission members read the application, documents, and the appropriate regulations,
- 2) Staff will be in attendance to answer any questions the commission may have



# TOWN OF KILLINGLY

## PLANNING & DEVELOPMENT OFFICE

172 Main Street, Danielson, CT 06239  
Tel: 860-779-5311 Fax: 860-779-5381

### For Recording Purposes Only

Party 1: JPF Rentals LLC

Party 2: Town of Killingly / IWWC

Type Doc: Decision

Add'l Description: 18 Ware Road, Map 40, Lot 27; 21 Pineville Road, Map 40, Lot 33.

### Decision Letter

January 23, 2024

JPF Rentals, LLC  
32 Railroad Street  
Pomfret, CT 06259

**RE: APPROVAL - IWWC APPLICATION #23-1581  
18 WARE ROAD & 21 PINEVILLE ROAD, KILLINGLY, CT 06241  
MAP 40, LOTS 27 & 33 - MEDIUM DENSITY ZONE**

On January 8, 2024, the Killingly Inland Wetlands and Watercourses Commission approved application 23-1581 of JPF Rentals LLC (JPF Rentals, LLC & Christopher Chenette / landowners) for the removal and reconstruction of a two bedroom rental unit, reconfiguration of existing parking and driveway within the 200' upland review area; this is part of a multi-family development (17 rental units in total (2 existing to remain), w/community building, parking, private road, drainage basin, public water and sewer); 18 Ware Road; Map ID 3176, Alt ID 40-27, MD Zone & 21 Pineville Road; Map 1008, Alt ID 40-33, MD Zone.

**NOTE: This letter constitutes a report to the Town of Killingly Planning and Zoning Commission under Connecticut General Statutes 8-3(g); 8-3c (b), and 8-26(e).**

### Conditions of this approval are as follows:

As for all approvals, the standard requirements of wetlands approvals apply to this application:

1. The site must be developed according to the approved plans.
2. The erosion and sediment controls, i.e.: silt fences and/or straw bales, need to be installed according to the approved plan and then the applicant must contact the Wetlands Agent for an inspection, the E&S must be found to be satisfactory before any zoning permit is issued or any work is to begin.
3. The erosion and sediment controls must be maintained throughout construction and remain in place until all disturbed slopes have been stabilized, seeded and the vegetation has either been mowed twice or grown to at least 6 inches in height.
4. All disturbed slopes must be stabilized within one season (spring or fall) of the completion of the project before a Certificate of Compliance (COC) will be issued.
5. A "Conservation Mix" is recommended, for the seeding of all disturbed areas that are not to be established as formal lawn areas.
  - a. This seed mix can be found in home and garden centers, it will have "Conservation Mix" on the label.
  - b. It does not contain seed that would introduce invasive plants that spread into the natural vegetation beyond the limits of disturbance.

6. Any change from the plan approved by the commission within 200' of the wetlands or watercourses must be resubmitted to the Killingly Inland Wetlands and Watercourses Commission for its approval.
7. Onsite wetlands/watercourses must be permanently marked. The wetlands/watercourse disks are available from the Killingly Planning and Development Office. Please follow the requirements below for posting the disks.
  - a. Disks must be posted with:
    - i. One disk must be posed at each boundary corner, facing outward from the wetlands.
    - ii. And every 75 feet in between, along the boundary of the delineated wetlands, facing outward from the wetlands. If there are no suitable trees at approximately 75' you may use a permanent post that has not been treated with arsenic.
    - iii. Using aluminum nails only, at a 4' height on each tree or post.
  - b. You need to leave about ¼ inch space between the disk and the tree to allow the tree to grow.

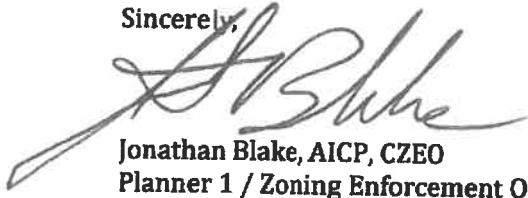
The decision legal notice was posted in the Norwich Bulletin on Monday, January 15, 2024; the 15-day appeal period commences on that date. **This approval does not become official until an original signed copy of this letter is filed with the Town Clerk.** The decision letter must be filed at the completion of the 15-day appeal period (**Tuesday, January 30, 2024**). If you wish, upon receipt of a \$65.00 check (made payable to the Town of Killingly), this office will file the decision letter for you.

This approval will be valid for a five-year period ending on Monday, January 15, 2029. Extension of this permit will be allowed by the IWWC in accordance with state statutes.

Issuance of the IWWC permit does not abrogate the responsibility of the applicant to obtain permits that may be necessary from other agencies at the local, state, or federal level prior to commencing your project.

If you have any questions regarding this matter, please contact me at 860-779-5311, Monday, Wednesday & Thursday 8:00 AM to 5:00 PM; Tuesday 8:00 AM to 6:00 PM and Friday, 8:00 AM to Noon. Voice mail is available after normal business hours.

Sincerely,



Jonathan Blake, AICP, CZEO  
Planner 1 / Zoning Enforcement Officer

cc: Ann-Marie Aubrey, Director of Planning and Development (via email)  
Allison Brady, Assistant Planner / Natural Resources Officer (via email)  
Paul Terwilliger, LS – PC Survey Associates (via email)  
File

**Ann-Marie Aubrey**

**From:** David Capacchione  
**Sent:** Tuesday, January 16, 2024 1:26 PM  
**To:** pc survey associates, llc; Ann-Marie Aubrey; Jonathan Blake; nthibeault@killinglyea.com; Alec Ethier; Gary Martin  
**Subject:** RE: Pineville Villas Plan Revisions

Hello all,

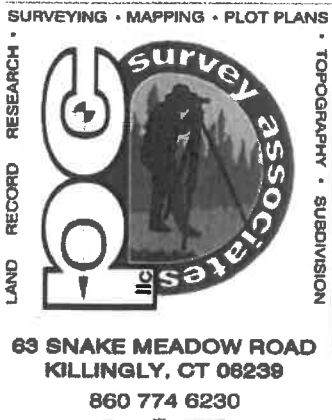
Thank you for the revised plans.  
In looking at them briefly it seems the paving detail needs to be modified to reflect 12” of bank run gravel instead of 8” and 6” of process instead of 4” all meeting CDOT specs.  
3 inches of asphalt is correct.

Thank you and please call with any questions.  
D. Cap.

**From:** pc survey associates, llc <pcsurvey@snet.net>  
**Sent:** Monday, January 15, 2024 8:35 AM  
**To:** David Capacchione <dcapacchione@killinglyct.gov>; Ann-Marie Aubrey <aaubrey@killinglyct.gov>; Jonathan Blake <jblake@killinglyct.gov>; nthibeault@killinglyea.com  
**Subject:** Pineville Villas Plan Revisions

Attached is the latest set of plans for the Pineville Villas project. This revision addresses the comments of the town engineer dated 1/11/2024.

**Paul A. Terwilliger, L.S.**





# *Town of Killingly*

Engineering Department  
172 Main Street, Killingly, CT 06239  
Phone 860-779-5360 Fax 860-779-5326

## **MEMORANDUM**

**TO:** Paul Terwilliger, L.S., PC Survey Associates LLC & Normand Thibeault, Jr.  
P.E. Killingly Engineering Associates (via email)

**FROM:** David Capacchione, Town Engineer; Gary Martin, Assistant Town Engineer

**DATE:** January 11, 2024

**RE:** JPF Rentals, LLC Ware Road & Pineville Road - Killingly, Ct

**CC:** Ann Marie Aubrey Director of Planning and Development, Jill St Clair,  
Director Economic Development, Jonathan Blake, Planner I, & Zoning  
Enforcement Officer; file

The Town Engineering department has received the following information for the subject project at our office through January 11, 2024:

**Item 1:**

Set of nine (9) drawing(s) entitled "PINEVILLE VILLAS PROPOSED MULTI-FAMILY DEVELOPMENT PINEVILLE ROAD & WARE ROAD KILLINGLY, CONNECTICUT SEPTEMBER 2023": prepared for JPF Rentals LLC 32 Railroad Street Pomfret, CT 06259 and dated September 2023 revised to 01/04/24; prepared by PC Survey 63 Snake Meadow Road Killingly, Ct 06239, Engineer Normand Thibeault PE Killingly Engineering Associates Danielson CT 06239.

**Item 2:** Drainage & Stormwater Management Report Prepared for Proposed Multi- Family Development Ware Road & Pineville Road Killingly, CT JPF Rentals, LLC, prepared by Killingly Engineering Associates and dated August 2023 and revised to December 2023.

We have reviewed the item(s) listed above and have the following comments pursuant to the Inland Wetland & Planning and Zoning Commissions:

**Comments:**

1. Please provide a copy of the executed grading easement shown on sheet 1.

2. Please provide a detail of the load bearing H-20 Walk shown on sheet 1.
3. Please provide a detail for the privacy fence shown on sheet 1.
4. Please provide the details for the perforated infiltration pipe in the bottom of the detention basin.
5. Sheet 2 depicts an 18-inch CMP with an unknown origin. If this is encountered during your project please contact the Town of Killingly Engineering Office to assess the situation.
6. Please provide a separate sanitary sewer connection for each unit.
7. Please add stationing to the utility plan so it can be easily aligned with the profiles.

Please contact the Town of Killingly Engineering Office at (860) 779-5360 if you have any questions or need additional information. We will be happy to meet with you to discuss the above-mentioned project.



**Office of the Fire Marshal**  
172 Main Street, Killingly, CT 06239  
Tel: 860-779-5318 Fax: 860-779-5381

**RECEIVED**

**DEC 15 2023**

**PLANNING & ZONING DEPT.  
TOWN OF KILLINGLY**

To: Paul Terwilliger  
Re: Pineville Villas  
Location: Ware Rd Killingly

Mr. Terwilliger;

The revised site plan submittals for the Pineville Villas project have been reviewed and at this time meets the requirements for fire suppression and apparatus standards of this office. Please see below for the following review of protection systems. A fire department keyed access box or lock for the proposed gate located at Pineville Rd, and at the proposed water cistern will be needed. If you have any questions, please feel free to contact me at any time.

1. Proposed Fire department access within the project meets Chapter 5 of the IFC. Section 503.2.1
  - A) An unobstructed width of 20ft is provided.
  - B) Fire Apparatus turn around is provided to accommodate the town's largest fire apparatus. (46ft radius provided)
2. Water supply in lieu of a 10,000-gallon underground water Cistern is installed within the grounds of the proposed project. Largest dwelling size shows a fire flow of 533 gallon per minute at a 100% involvement. (Duplex Model selected)
3. Construction of the fire department access road Meets the requirements of Chapter 5 of the state fire code. (Road will support the imposed load of fire apparatus and will provide all weather driving capabilities.
4. Property owner shall provide a KNOX type device for the proposed gate and hydrant that conforms with the fire department standard.
5. Water Cistern hydrant access appears to be compliant with the proposed plan. Field verification during the project will be required.

Respectfully submitted,  
Randy Burchard  
Fire Marshal  
Town of Killingly



# **DRAINAGE & STORMWATER MANAGEMENT REPORT**

*Prepared for*

**PROPOSED MULTI-FAMILY DEVELOPMENT  
WARE ROAD & PINEVILLE ROAD  
KILLINGLY, CT**

**August 2023**

*Revised to December 2023*

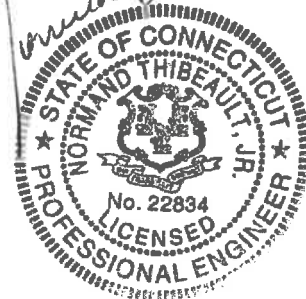
*Prepared for*

JPF Rentals, LLC

*Prepared by*

**Killingly Engineering Associates**  
Civil Engineering & Surveying

Normand Thibeault Jr., P.E.  
CT License #22834



**DRAINAGE & STORMWATER  
MANAGEMENT REPORT**

*Prepared for*

**PROPOSED MULTI-FAMILY DEVELOPMENT  
WARE ROAD & PINEVILLE ROAD  
KILLINGLY, CT**

**August 2023**

*Revised to December 2023*

*Prepared for*

JPF Rentals, LLC

*Prepared by*

**Killingly Engineering Associates**  
Civil Engineering & Surveying 

Normand Thibeault Jr., P.E.  
CT License #22834

**Introduction**

JPF Rentals, LLC. has submitted a proposal to the Town of Killingly to develop 4 acres of land with frontage on Ware Road and Pineville Road to permit construction of a multi-family residential development. The portion of the property to be developed is currently wooded and undeveloped and drainage from the site currently flows in 3 directions and rate of discharge has been compared in each direction. The design utilizes a combination of sheet flow, grassed swales, a closed drainage system of catch basins and piping and a stormwater detention/infiltration basin.

**Summary**

According to the USDA-SCS Soil Survey, approximately half of the soils on site consist of excessively drained Hinckley sands and gravels which are associated with hydrologic soil group “A”. The remainder of the site consists of Sudbury and Canton/Charlton fine sandy loams which are “B”. The project strives to maintain the existing radial drainage patterns for post development conditions but curbing and catch basins will be utilized to collect roadway stormwater and convey it to the proposed stormwater basin where it will be treated, infiltrated and discharged by an engineered outlet structure.

The calculations utilized HydroCAD® Stormwater Modeling System, a computer model, to analyze pre-and post-development drainage conditions, and to aid in the design of the stormwater detention system. The model used the Soil Conservation Service TR-20 method with a Type III 24-hour rainfall to calculate the runoff. The 2 through 100-year frequency storms were analyzed to evaluate peak runoff for pre-and post-construction conditions. Tables 1-5 summarize our findings for pre and post construction flows toward the adjacent properties and stormwater basin:

**Table 1. Existing & Proposed Peak Flows from Drainage Area 1 (East)**

Design Storm	Depth (in)	Existing peak	Proposed peak	Difference
2-Year	3.37	0.32 CFS	0.11 CFS	-0.21 CFS
5-Year	4.28	0.78 CFS	0.27 CFS	-0.51 CFS
10-Year	5.04	1.24 CFS	0.42 CFS	-0.82 CFS
25-Year	6.09	1.94 CFS	0.65 CFS	-1.29 CFS
50-Year	6.87	2.50 CFS	0.84 CFS	-1.66 CFS
100-Year	7.70	3.13 CFS	1.05 CFS	-2.08 CFS

As shown by the computations, the post development peak runoff rates are lower than pre-construction rates. This is a result of the design capturing roof discharge from proposed buildings via yard drains and redirecting it south to the proposed stormwater collection system and stormwater basin. The post-development drainage area is significantly reduced as a result.

**Table 2. Existing & Proposed Peak Flows from Drainage Area 2 (Southwest)**

Design Storm	Depth (in)	Existing peak	Proposed peak	Difference
2-Year	3.37	0.00 CFS	0.00 CFS	0.00 CFS
5-Year	4.28	0.01 CFS	0.00 CFS	-0.01 CFS
10-Year	5.04	0.04 CFS	0.00 CFS	-0.04 CFS
25-Year	6.09	0.16 CFS	0.00 CFS	-0.16 CFS
50-Year	6.87	0.39 CFS	0.00 CFS	-0.39 CFS
100-Year	7.70	0.73 CFS	0.00 CFS	-0.73 CFS

As shown by the summary, runoff to the southwest is essentially eliminated due to re-routing of runoff to the proposed stormwater basin. Approximately 3,500 square feet of wooded terrain sloped to the southwest will continue to drain in the southwest direction and is immeasurable.

Table 3 summarize peak discharge rates to the existing town stormwater system along Pineville Road;

**Table 3. Existing & Proposed Peak Flows from Drainage Area 3 (Southwest)**

Design Storm	Depth (in)	Existing peak	Proposed peak	Difference
2-Year	3.37	0.16 CFS	0.19 CFS	+0.03 CFS
5-Year	4.28	0.37 CFS	0.31 CFS	-0.06 CFS
10-Year	5.04	0.62 CFS	0.42 CFS	-0.20 CFS
25-Year	6.09	0.97 CFS	0.57 CFS	-0.40 CFS
50-Year	6.87	1.26 CFS	0.69 CFS	-0.57 CFS
100-Year	7.70	1.58 CFS	0.82 CFS	-0.76 CFS

As shown, peak runoff rates are slightly higher for the 2-year storm and are reduced for all other storms. The design proposes to install a pair of catch basins at the driveway/Pineville Road intersection which will be connected to an existing catch basin located approximately in Pineville Road that ultimately discharges to the 5-Mile River. The entrance at Pineville Road will be for emergency access only and it will be a gravel drive. The bulk of stormwater runoff from the remainder of the site will be contained and infiltrated into the excessively drained soils in the area of the stormwater basin. Based upon test holes conducted on site, we have assumed the ability to infiltrate in only the southernmost portion of the basin, up to elevation 329.0. Although there will likely be some degree of infiltration at higher elevations within the basin, we have not accounted for that in the computations. The excessively drained Hinckley soils are rated to infiltrate at 105 micrometers per second which converts to 14 inches per hour. The computations assume a conservative rate of 5 inches per hour.

Drainage Area 4 is essentially sheet flow from toward Ware Road. The existing conditions in this area consist of broken pavement and two residences; the existing groundcover is sparse. By slightly reducing the drainage area that discharges to Ware Road, routing some stormwater to the proposed stormwater basin, and improving the quality of the vegetated surfaces, we can demonstrate reductions in peak runoff rates in the direction of Ware Road. Table 4 below summarizes the reductions.

**Table 4. Existing & Proposed Peak Flows from Drainage Area 4 (Ware Road)**

Design Storm	Depth (in)	Existing peak	Proposed peak	Difference
2-Year	3.37	1.26 CFS	0.79 CFS	-0.47 CFS
5-Year	4.28	1.78 CFS	1.19 CFS	-0.59 CFS
10-Year	5.04	2.21 CFS	1.53 CFS	-0.68 CFS
25-Year	6.09	2.81 CFS	2.02 CFS	-0.79 CFS
50-Year	6.87	3.25 CFS	2.38 CFS	-0.87 CFS
100-Year	7.70	3.72 CFS	2.77 CFS	-0.95 CFS

**Per Chapter 7 of the Connecticut DEEP Stormwater Quality Manual**

#### **Section 7.4.1 Water Quality Volume**

##### **Basin 1 Water Quality Volume (WQV)**

$$WQV = (1'')(R)(A)/12$$

$$R = 0.05 + 0.009(I) \quad I = \% \text{ Impervious} = 27.2\%$$

$$R = 0.05 + 0.009(27.2) = 0.2948$$

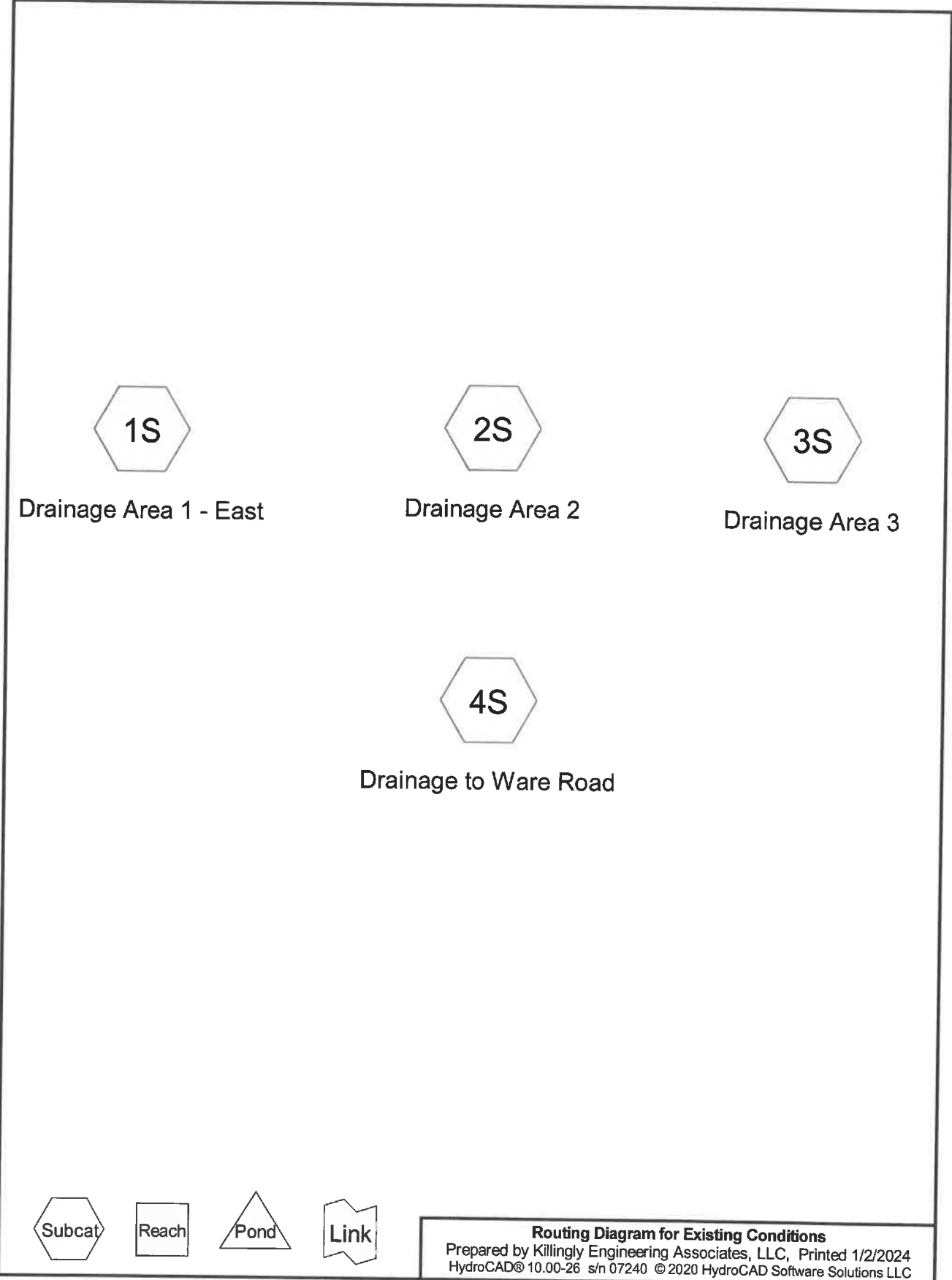
$$A = 3.34 \text{ acres (developed area)}$$

$$WQV = (1'')(0.2948)(3.34) / 12 = 0.082 \text{ ac-ft} = 3,574 \text{ c.f.}$$

20,983 c.f. total WQV provided to basin elevation 332.0

## HYDROCAD CALCULATIONS

**EXISTING CONDITIONS**





Existing Conditions

Summary for Subcatchment 1S: Drainage Area 1 - East

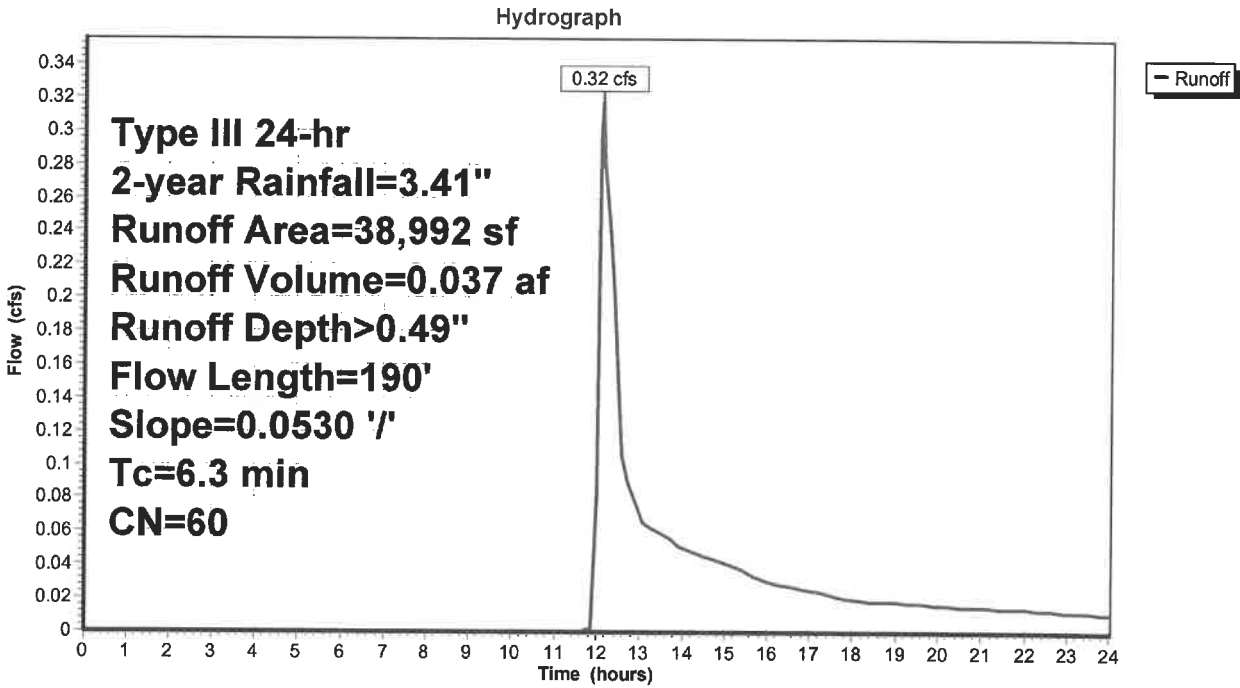
Runoff = 0.32 cfs @ 12.14 hrs, Volume= 0.037 af, Depth> 0.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 2-year Rainfall=3.41"

Area (sf)	CN	Description
38,992	60	Woods, Fair, HSG B
38,992		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	190	0.0530	0.50		Lag/CN Method, Tc-1

Subcatchment 1S: Drainage Area 1 - East



Existing Conditions

Summary for Subcatchment 2S: Drainage Area 2

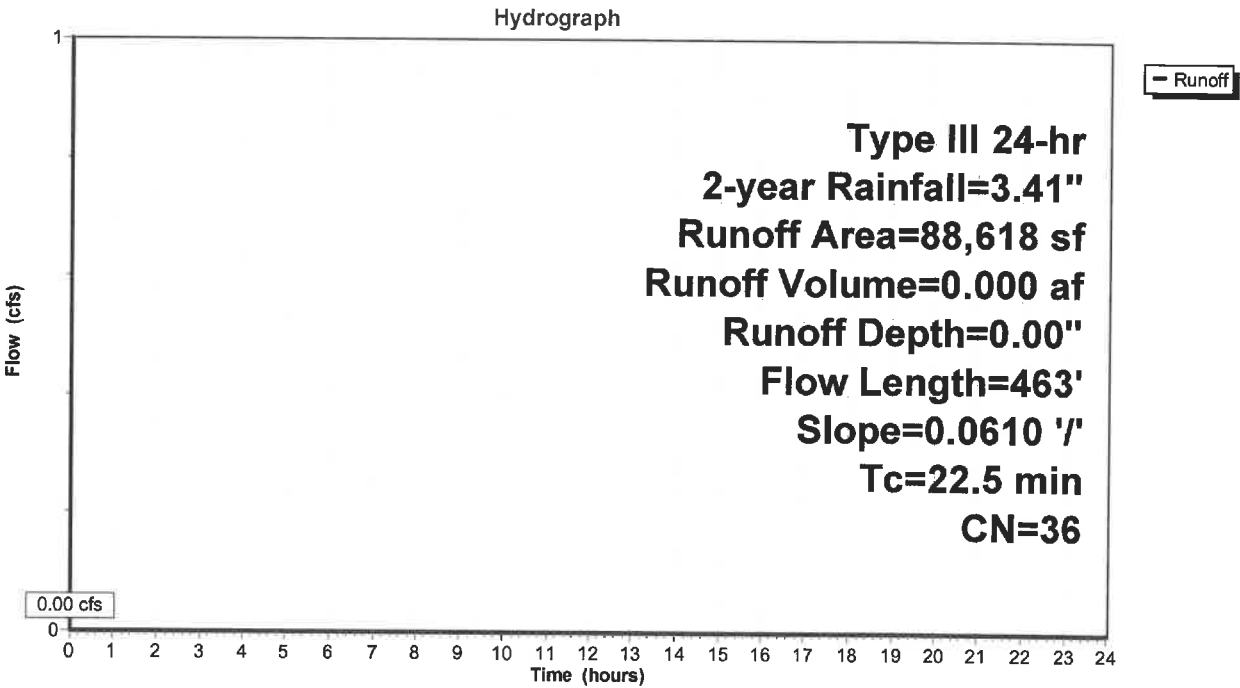
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 2-year Rainfall=3.41"

Area (sf)	CN	Description
88,618	36	Woods, Fair, HSG A
88,618		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.5	463	0.0610	0.34		Lag/CN Method, Tc-2

Subcatchment 2S: Drainage Area 2



Existing Conditions

Summary for Subcatchment 3S: Drainage Area 3

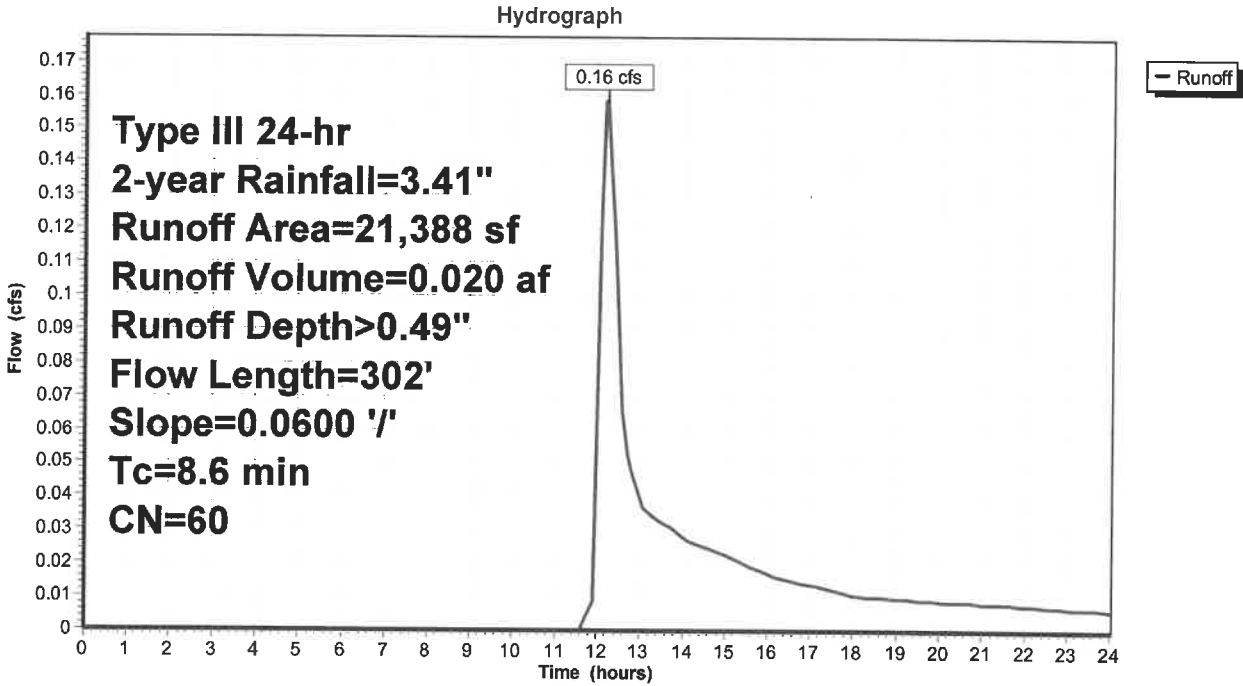
Runoff = 0.16 cfs @ 12.21 hrs, Volume= 0.020 af, Depth> 0.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 2-year Rainfall=3.41"

Area (sf)	CN	Description
21,388	60	Woods, Fair, HSG B
21,388		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	302	0.0600	0.58		Lag/CN Method, Tc-3

Subcatchment 3S: Drainage Area 3



Existing Conditions

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Ware Road  
Type III 24-hr 2-year Rainfall=3.41"  
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Page 5

Summary for Subcatchment 4S: Drainage to Ware Road

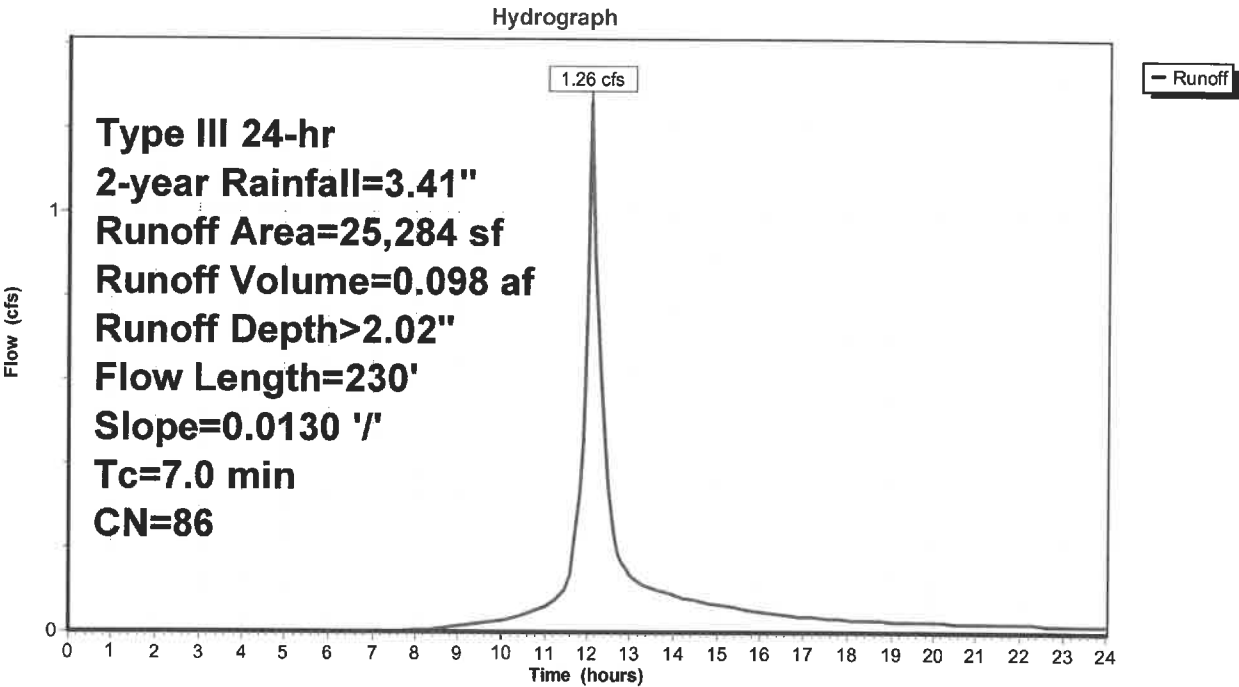
Runoff = 1.26 cfs @ 12.11 hrs, Volume= 0.098 af, Depth> 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 2-year Rainfall=3.41"

	Area (sf)	CN	Description
*	9,827	98	Pavement & roof, HSG B
	15,457	79	<50% Grass cover, Poor, HSG B
	25,284	86	Weighted Average
	15,457		61.13% Pervious Area
	9,827		38.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	230	0.0130	0.54		Lag/CN Method, Tc-4

Subcatchment 4S: Drainage to Ware Road



Existing Conditions

Summary for Subcatchment 1S: Drainage Area 1 - East

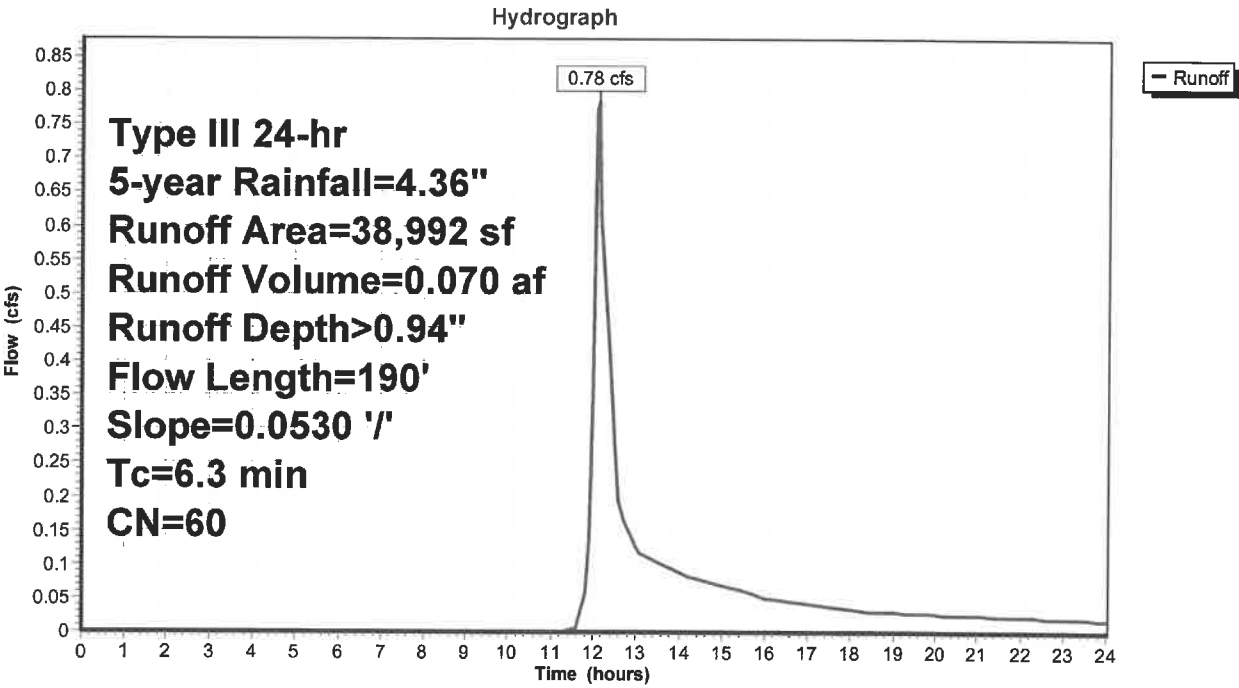
Runoff = 0.78 cfs @ 12.12 hrs, Volume= 0.070 af, Depth> 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 5-year Rainfall=4.36"

Area (sf)	CN	Description
38,992	60	Woods, Fair, HSG B
38,992		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	190	0.0530	0.50		Lag/CN Method, Tc-1

Subcatchment 1S: Drainage Area 1 - East



Existing Conditions

Summary for Subcatchment 2S: Drainage Area 2

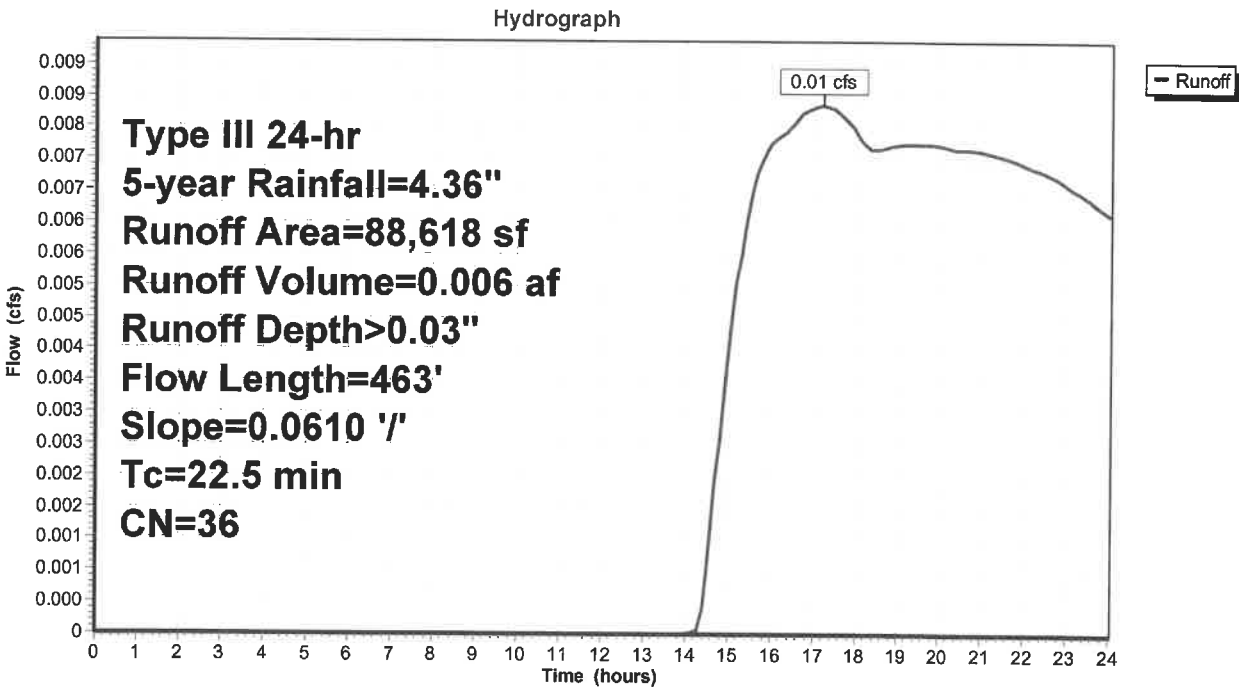
Runoff = 0.01 cfs @ 17.21 hrs, Volume= 0.006 af, Depth> 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 5-year Rainfall=4.36"

Area (sf)	CN	Description
88,618	36	Woods, Fair, HSG A
88,618		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.5	463	0.0610	0.34		Lag/CN Method, Tc-2

Subcatchment 2S: Drainage Area 2



Existing Conditions

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Ware Road  
Type III 24-hr 5-year Rainfall=4.36"  
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Page 8

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 0.37 cfs @ 12.16 hrs, Volume= 0.039 af, Depth> 0.94"

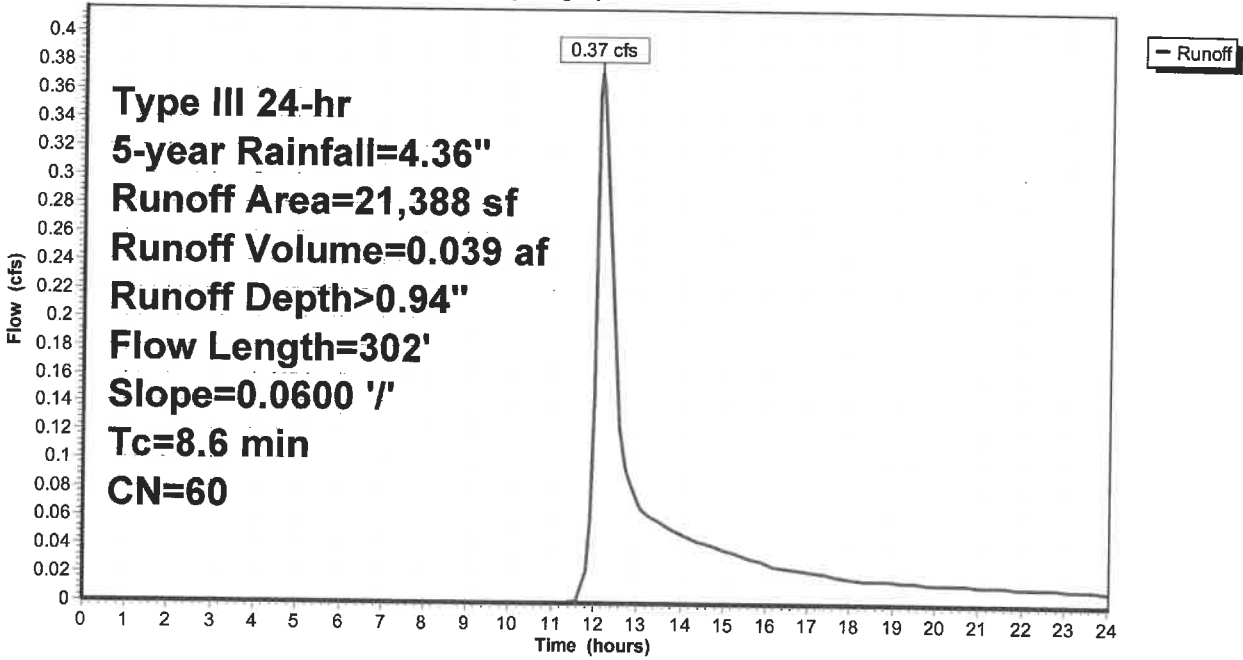
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 5-year Rainfall=4.36"

Area (sf)	CN	Description
21,388	60	Woods, Fair, HSG B
21,388		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	302	0.0600	0.58		Lag/CN Method, Tc-3

Subcatchment 3S: Drainage Area 3

Hydrograph



Existing Conditions

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Ware Road  
Type III 24-hr 5-year Rainfall=4.36"  
Printed 1/2/2024  
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Summary for Subcatchment 4S: Drainage to Ware Road

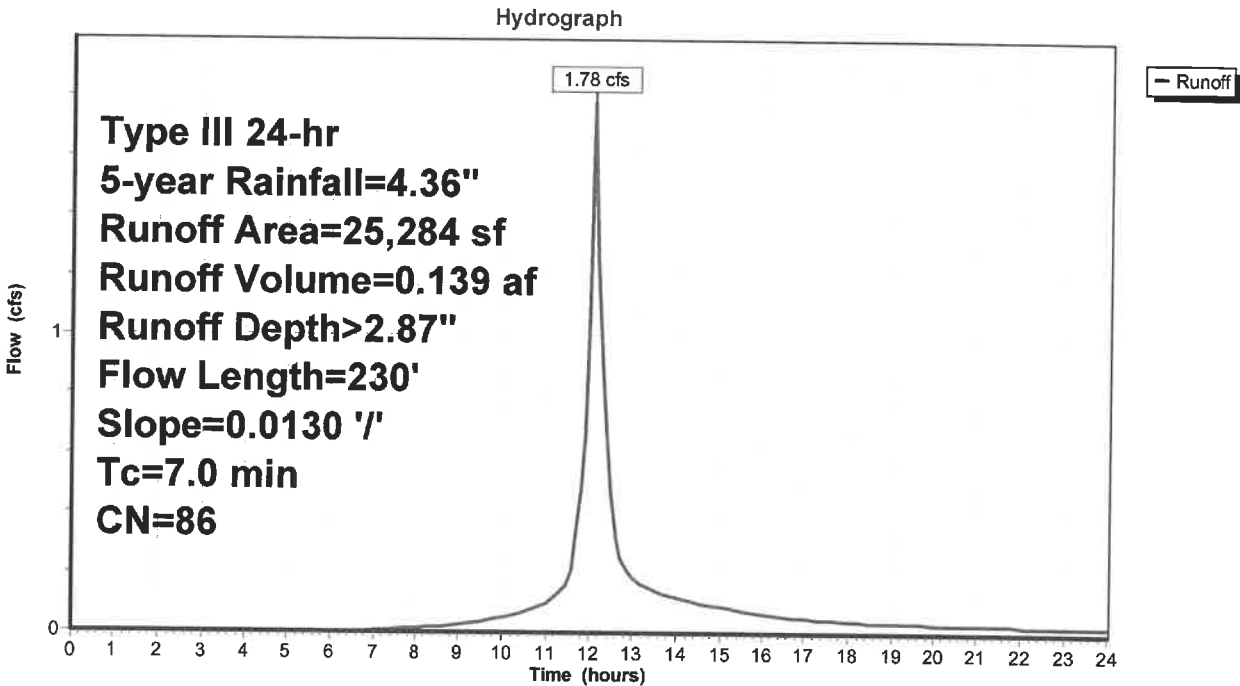
Runoff = 1.78 cfs @ 12.11 hrs, Volume= 0.139 af, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 5-year Rainfall=4.36"

Area (sf)	CN	Description
* 9,827	98	Pavement & roof, HSG B
15,457	79	<50% Grass cover, Poor, HSG B
25,284	86	Weighted Average
15,457		61.13% Pervious Area
9,827		38.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	230	0.0130	0.54		Lag/CN Method, Tc-4

Subcatchment 4S: Drainage to Ware Road





Existing Conditions

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Ware Road  
Type III 24-hr 10-year Rainfall=5.14"  
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Summary for Subcatchment 1S: Drainage Area 1 - East

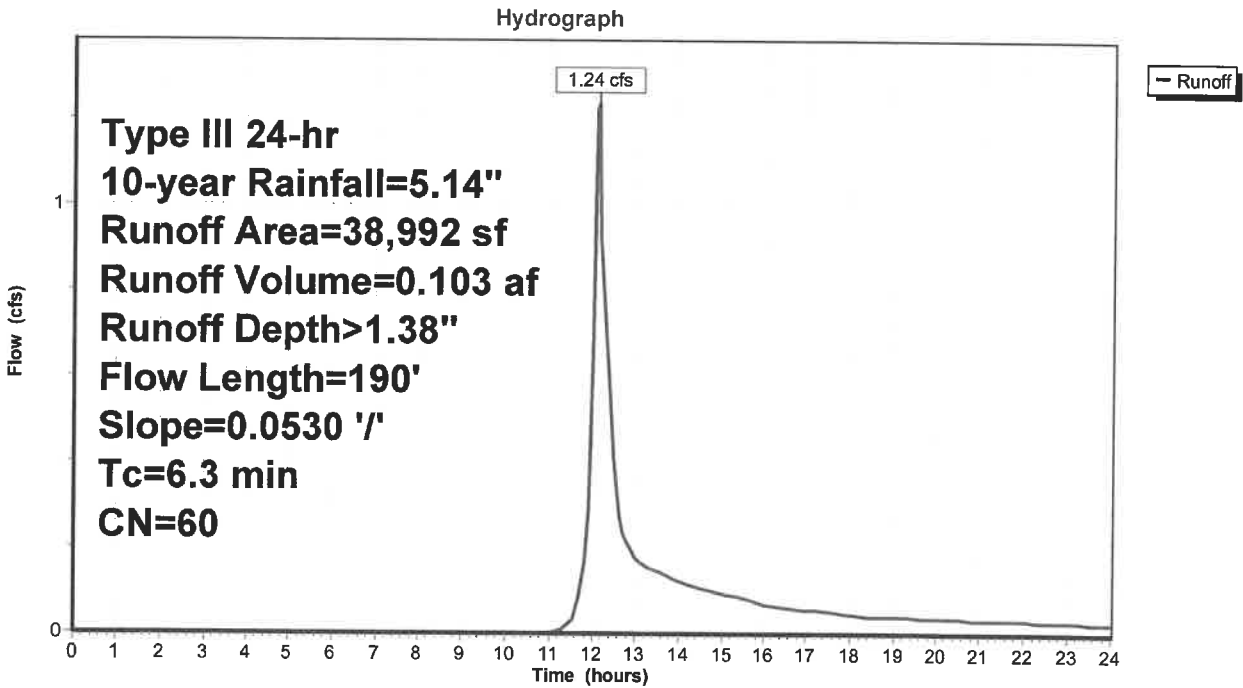
Runoff = 1.24 cfs @ 12.12 hrs, Volume= 0.103 af, Depth> 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 10-year Rainfall=5.14"

Area (sf)	CN	Description
38,992	60	Woods, Fair, HSG B
38,992		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	190	0.0530	0.50		Lag/CN Method, Tc-1

Subcatchment 1S: Drainage Area 1 - East



Existing Conditions

Summary for Subcatchment 2S: Drainage Area 2

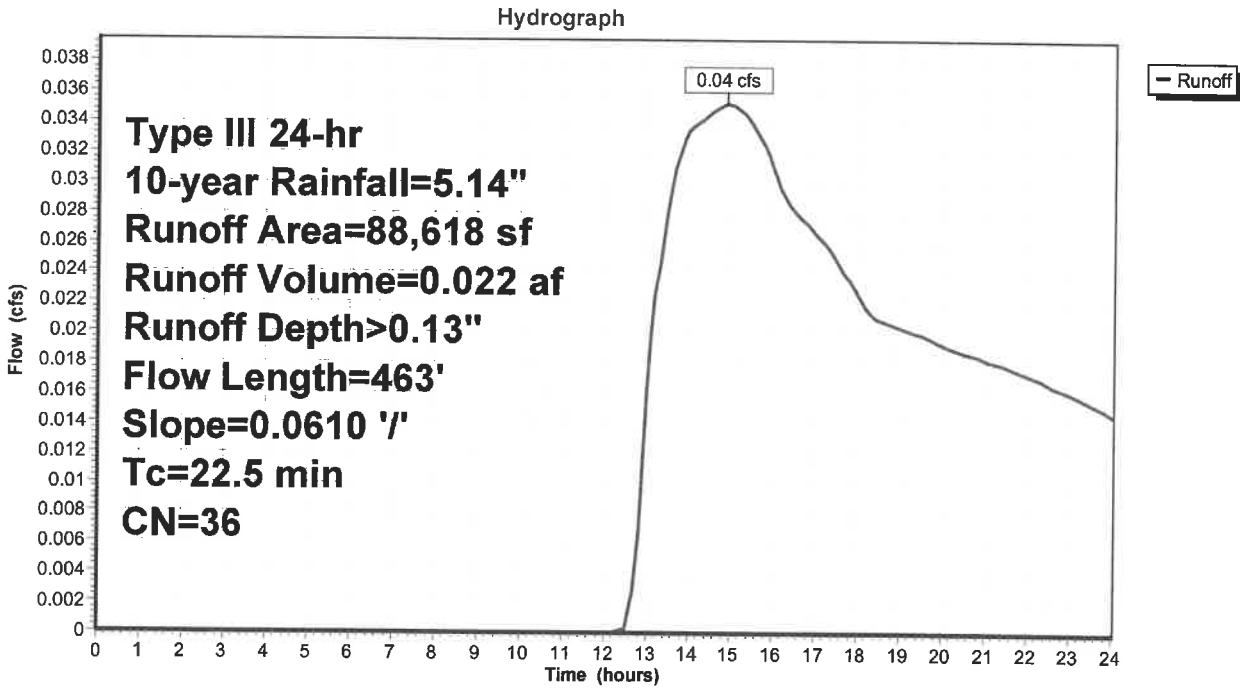
Runoff = 0.04 cfs @ 14.93 hrs, Volume= 0.022 af, Depth> 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 10-year Rainfall=5.14"

Area (sf)	CN	Description
88,618	36	Woods, Fair, HSG A
88,618		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.5	463	0.0610	0.34		Lag/CN Method, Tc-2

Subcatchment 2S: Drainage Area 2



Existing Conditions

Summary for Subcatchment 3S: Drainage Area 3

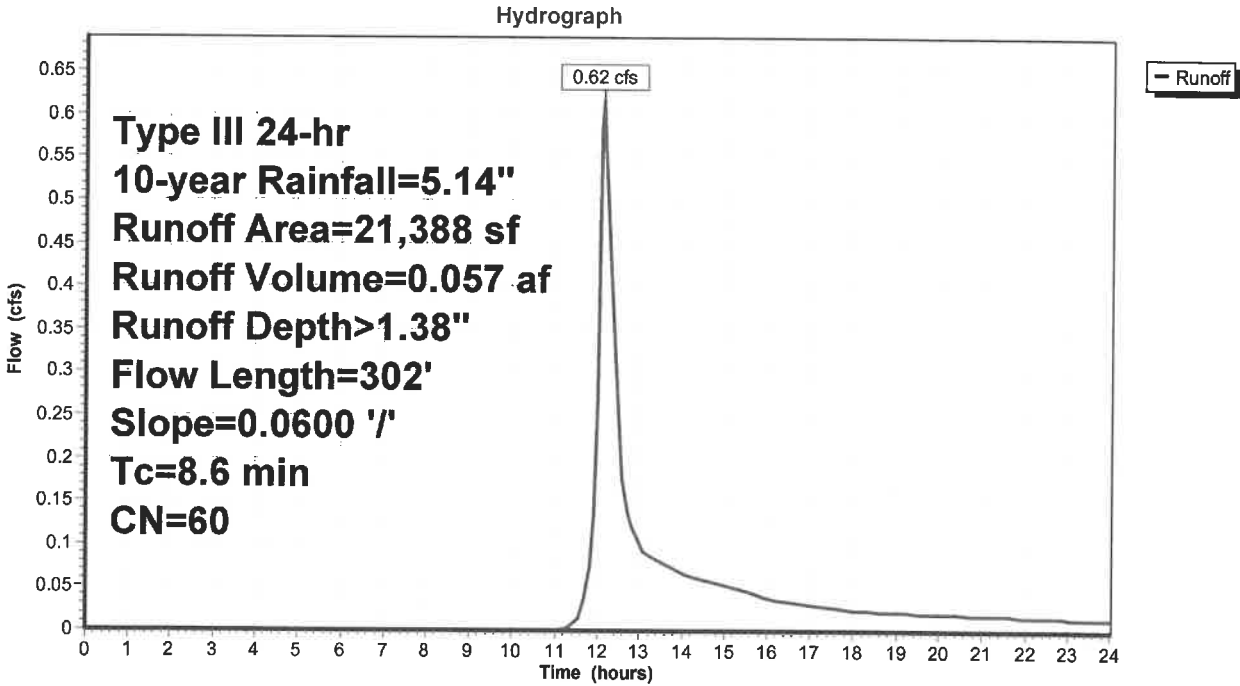
Runoff = 0.62 cfs @ 12.14 hrs, Volume= 0.057 af, Depth> 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 10-year Rainfall=5.14"

Area (sf)	CN	Description
21,388	60	Woods, Fair, HSG B
21,388		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	302	0.0600	0.58		Lag/CN Method, Tc-3

Subcatchment 3S: Drainage Area 3



Existing Conditions

Summary for Subcatchment 4S: Drainage to Ware Road

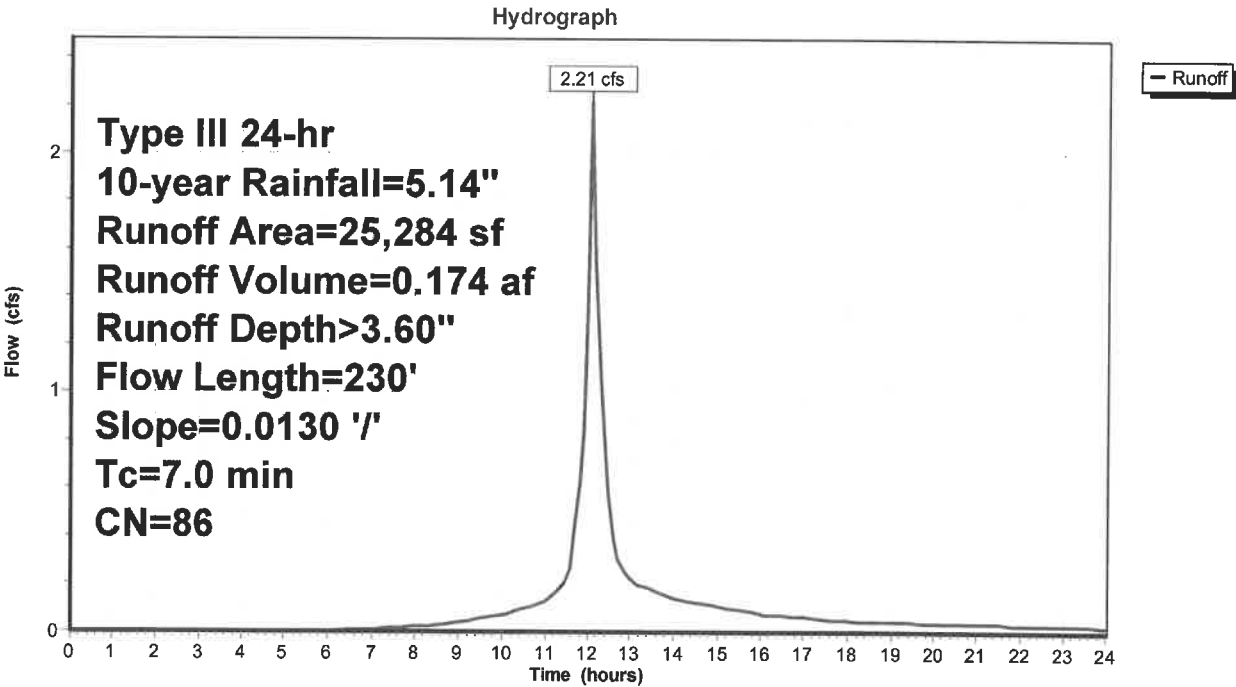
Runoff = 2.21 cfs @ 12.11 hrs, Volume= 0.174 af, Depth> 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 10-year Rainfall=5.14"

Area (sf)	CN	Description
* 9,827	98	Pavement & roof, HSG B
15,457	79	<50% Grass cover, Poor, HSG B
25,284	86	Weighted Average
15,457		61.13% Pervious Area
9,827		38.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	230	0.0130	0.54		Lag/CN Method, Tc-4

Subcatchment 4S: Drainage to Ware Road



Existing Conditions

Summary for Subcatchment 1S: Drainage Area 1 - East

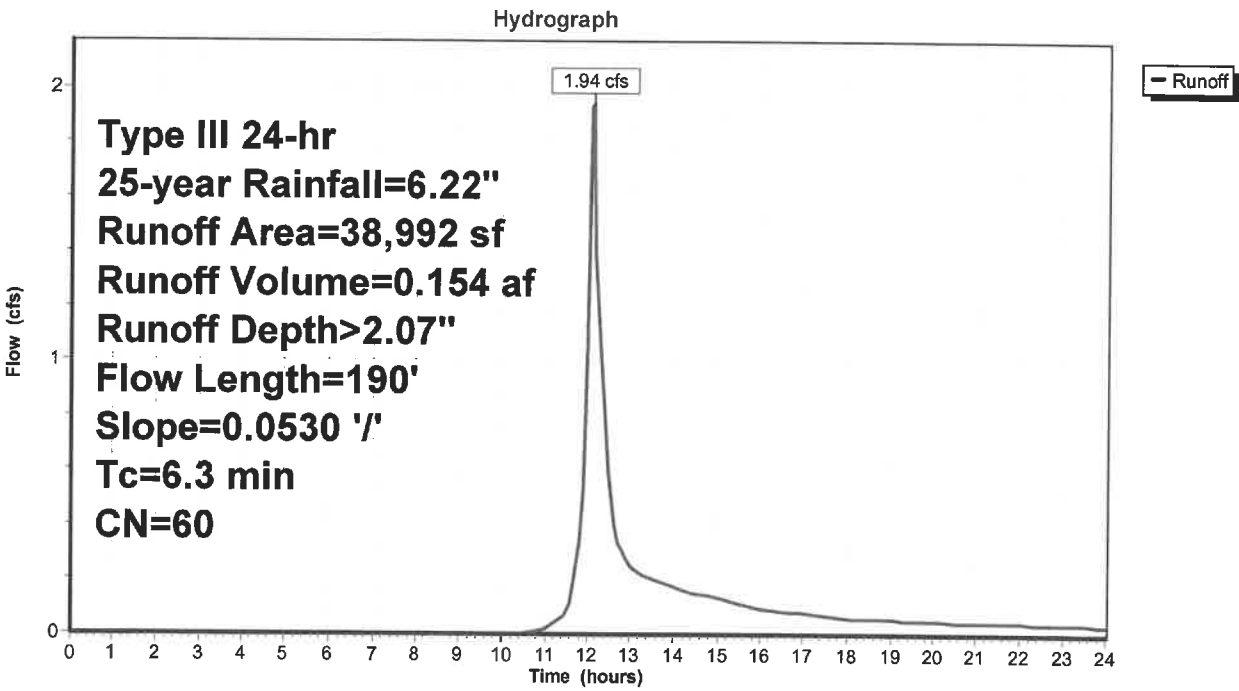
Runoff = 1.94 cfs @ 12.11 hrs, Volume= 0.154 af, Depth> 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 25-year Rainfall=6.22"

Area (sf)	CN	Description
38,992	60	Woods, Fair, HSG B
38,992		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	190	0.0530	0.50		Lag/CN Method, Tc-1

Subcatchment 1S: Drainage Area 1 - East



Existing Conditions

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Ware Road  
Type III 24-hr 25-year Rainfall=6.22"  
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Summary for Subcatchment 2S: Drainage Area 2

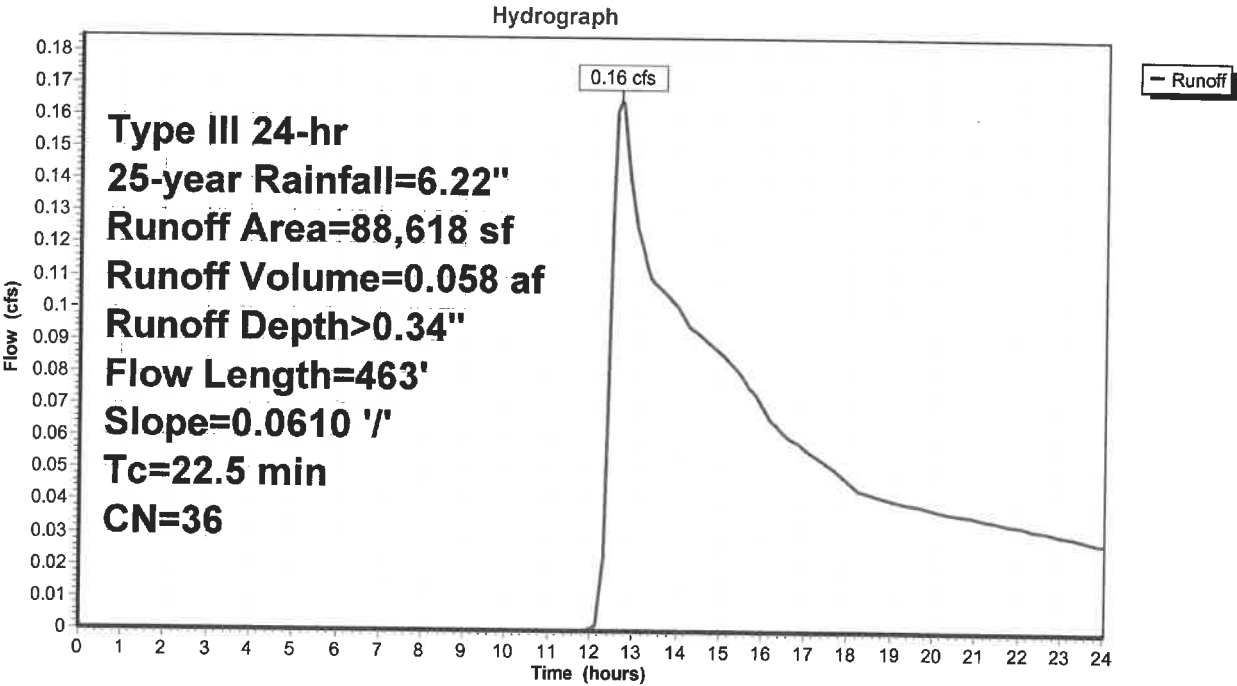
Runoff = 0.16 cfs @ 12.67 hrs, Volume= 0.058 af, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 25-year Rainfall=6.22"

Area (sf)	CN	Description
88,618	36	Woods, Fair, HSG A
88,618		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.5	463	0.0610	0.34		Lag/CN Method, Tc-2

Subcatchment 2S: Drainage Area 2



Summary for Subcatchment 3S: Drainage Area 3

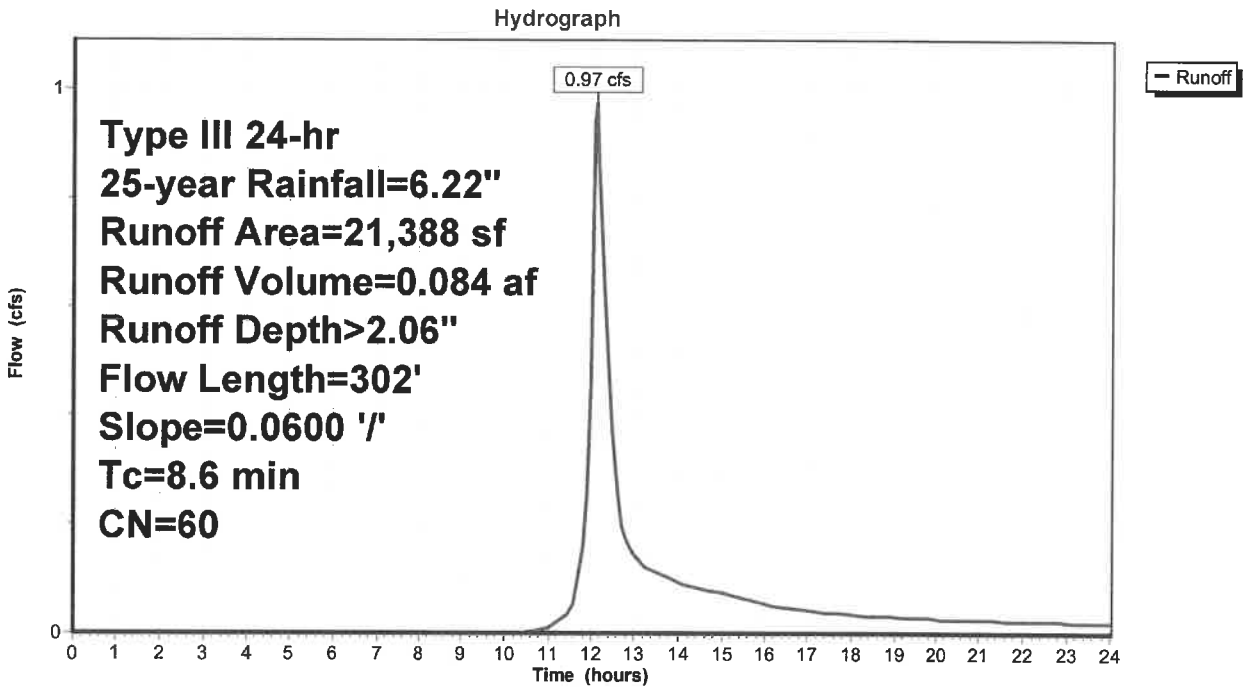
Runoff = 0.97 cfs @ 12.14 hrs, Volume= 0.084 af, Depth> 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 25-year Rainfall=6.22"

Area (sf)	CN	Description
21,388	60	Woods, Fair, HSG B
21,388		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	302	0.0600	0.58		Lag/CN Method, Tc-3

Subcatchment 3S: Drainage Area 3



Summary for Subcatchment 4S: Drainage to Ware Road

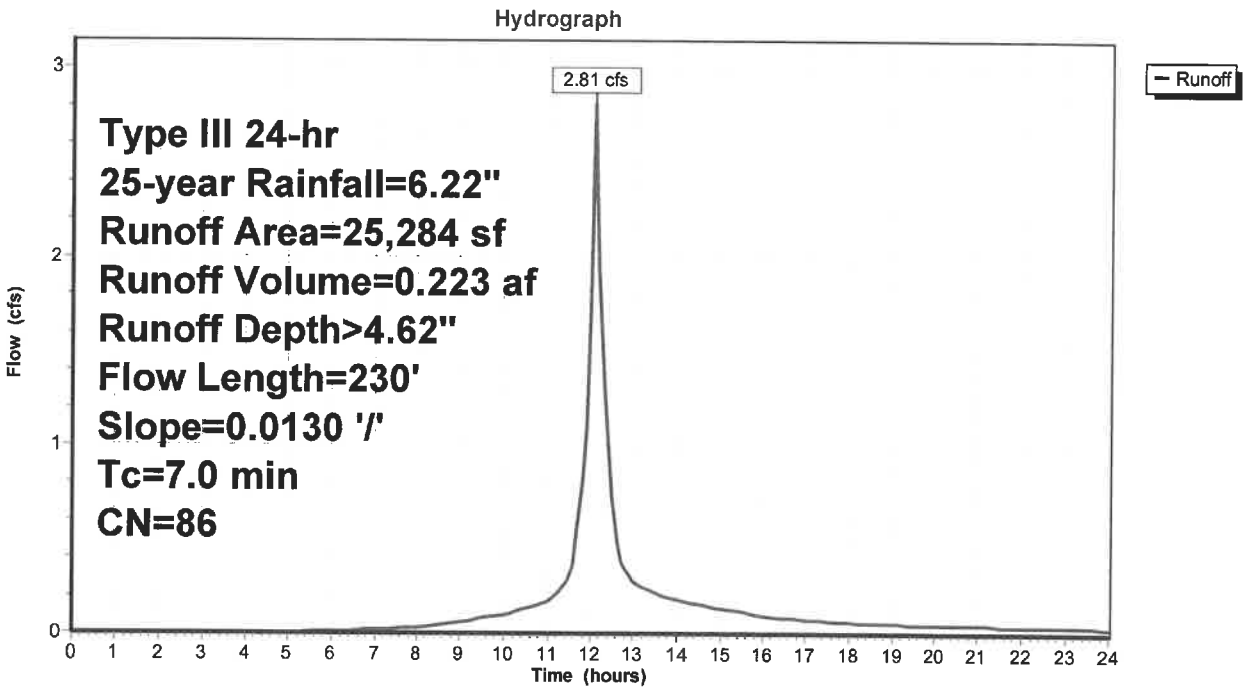
Runoff = 2.81 cfs @ 12.10 hrs, Volume= 0.223 af, Depth> 4.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 25-year Rainfall=6.22"

Area (sf)	CN	Description
* 9,827	98	Pavement & roof, HSG B
15,457	79	<50% Grass cover, Poor, HSG B
25,284	86	Weighted Average
15,457		61.13% Pervious Area
9,827		38.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	230	0.0130	0.54		Lag/CN Method, Tc=4

Subcatchment 4S: Drainage to Ware Road





Summary for Subcatchment 1S: Drainage Area 1 - East

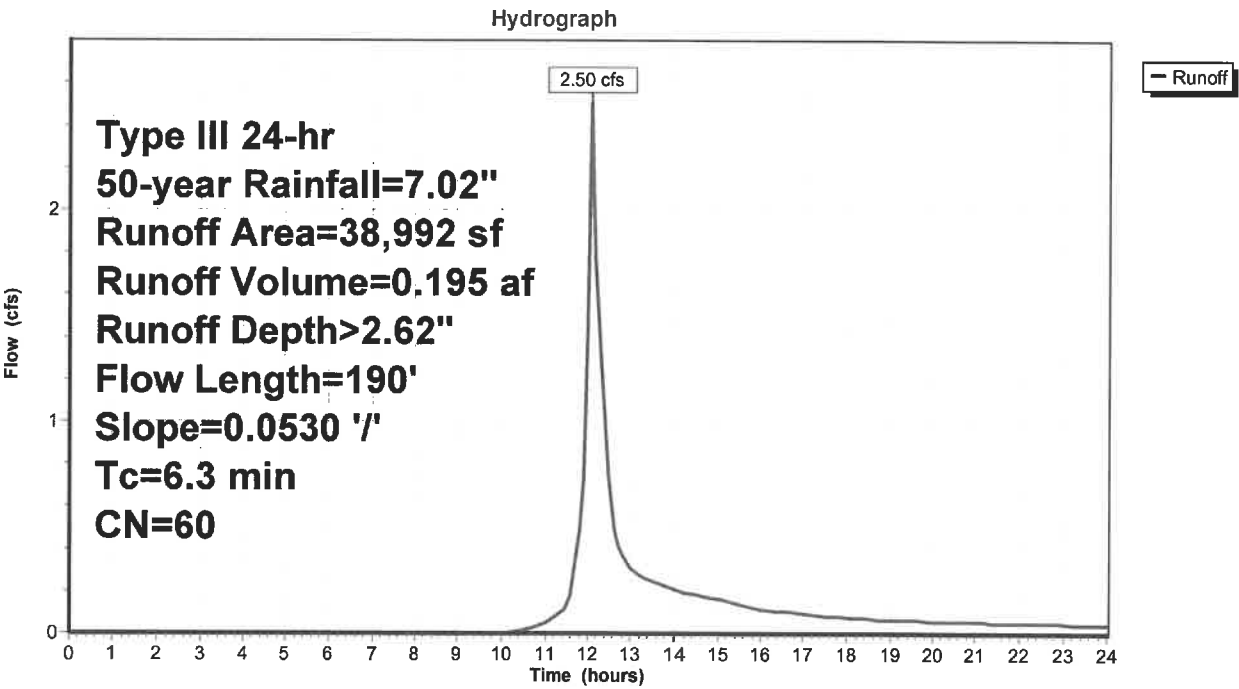
Runoff = 2.50 cfs @ 12.11 hrs, Volume= 0.195 af, Depth> 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 50-year Rainfall=7.02"

Area (sf)	CN	Description
38,992	60	Woods, Fair, HSG B
38,992		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	190	0.0530	0.50		Lag/CN Method, Tc-1

Subcatchment 1S: Drainage Area 1 - East



Summary for Subcatchment 2S: Drainage Area 2

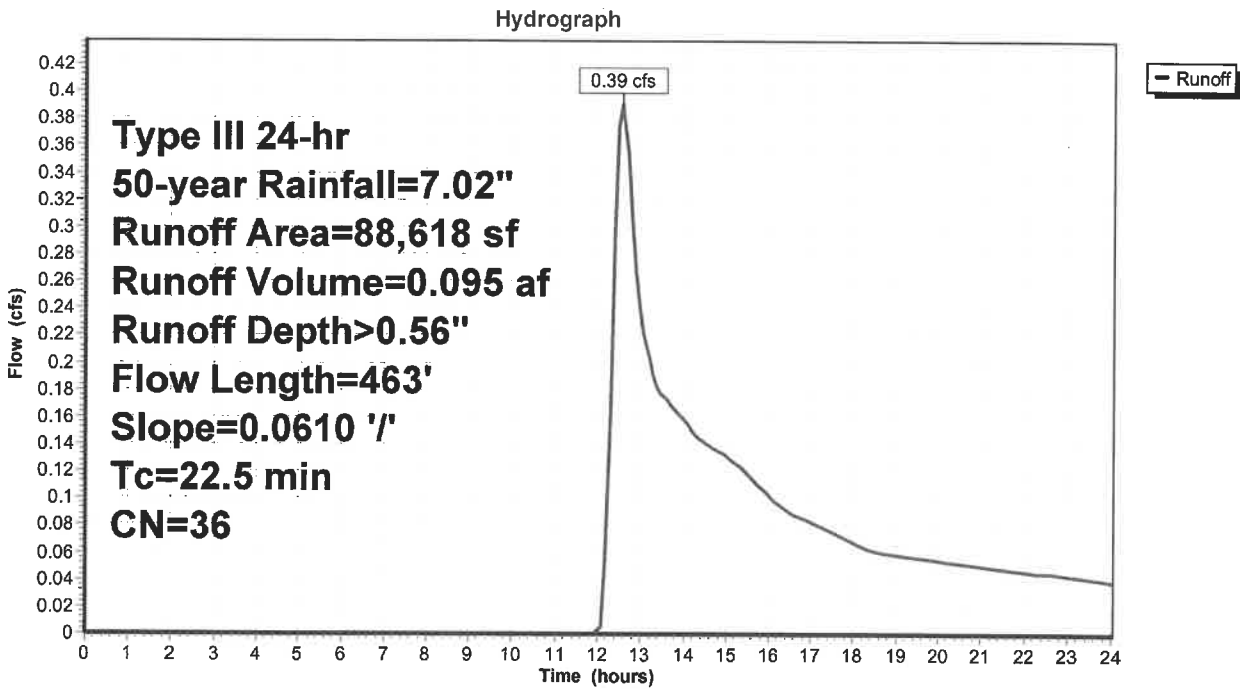
Runoff = 0.39 cfs @ 12.58 hrs, Volume= 0.095 af, Depth> 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 50-year Rainfall=7.02"

Area (sf)	CN	Description
88,618	36	Woods, Fair, HSG A
88,618		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.5	463	0.0610	0.34		Lag/CN Method, Tc-2

Subcatchment 2S: Drainage Area 2



Summary for Subcatchment 3S: Drainage Area 3

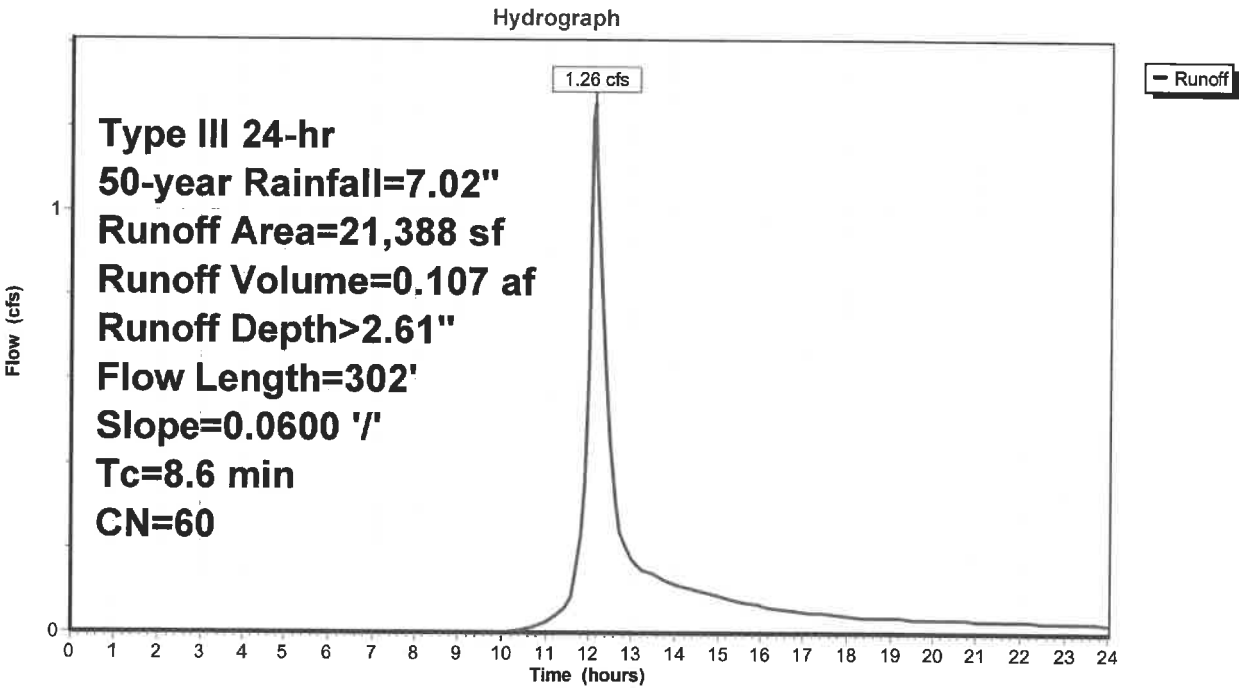
Runoff = 1.26 cfs @ 12.13 hrs, Volume= 0.107 af, Depth> 2.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 50-year Rainfall=7.02"

Area (sf)	CN	Description
21,388	60	Woods, Fair, HSG B
21,388		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	302	0.0600	0.58		Lag/CN Method, Tc-3

Subcatchment 3S: Drainage Area 3



### Existing Conditions

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Ware Road  
Type III 24-hr 50-year Rainfall=7.02"

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### Summary for Subcatchment 4S: Drainage to Ware Road

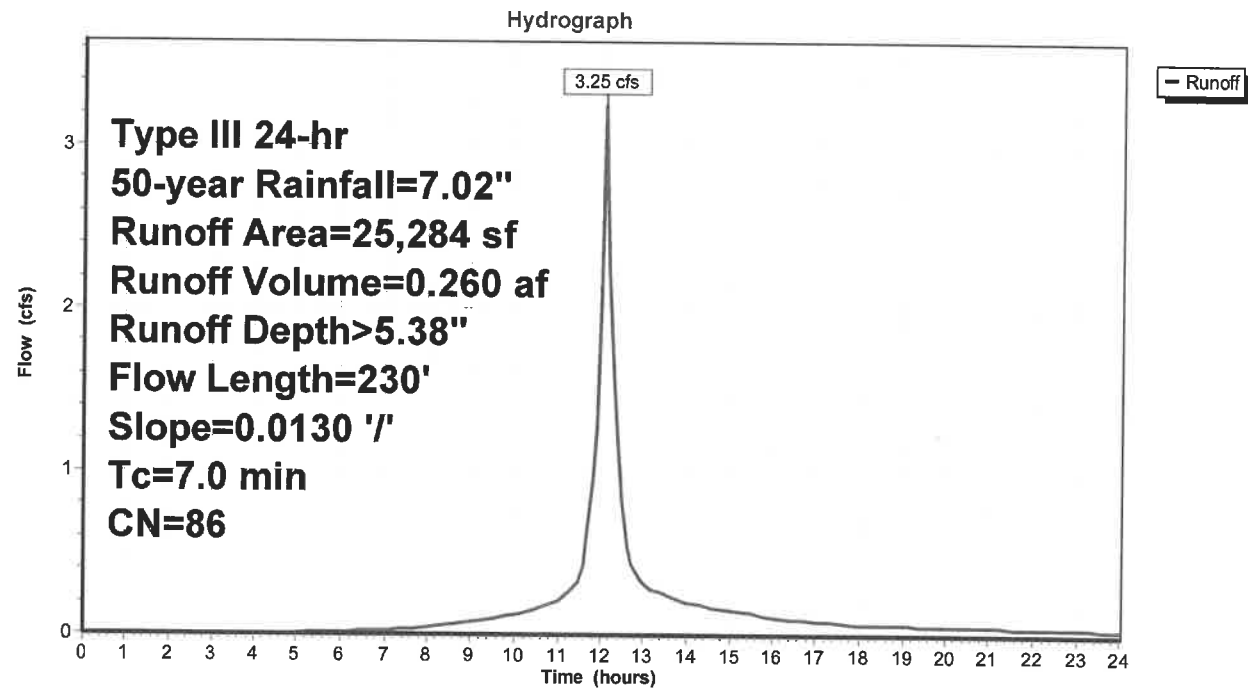
Runoff = 3.25 cfs @ 12.10 hrs, Volume= 0.260 af, Depth> 5.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 50-year Rainfall=7.02"

Area (sf)	CN	Description
* 9,827	98	Pavement & roof, HSG B
15,457	79	<50% Grass cover, Poor, HSG B
25,284	86	Weighted Average
15,457		61.13% Pervious Area
9,827		38.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	230	0.0130	0.54		Lag/CN Method, Tc-4

### Subcatchment 4S: Drainage to Ware Road



Summary for Subcatchment 1S: Drainage Area 1 - East

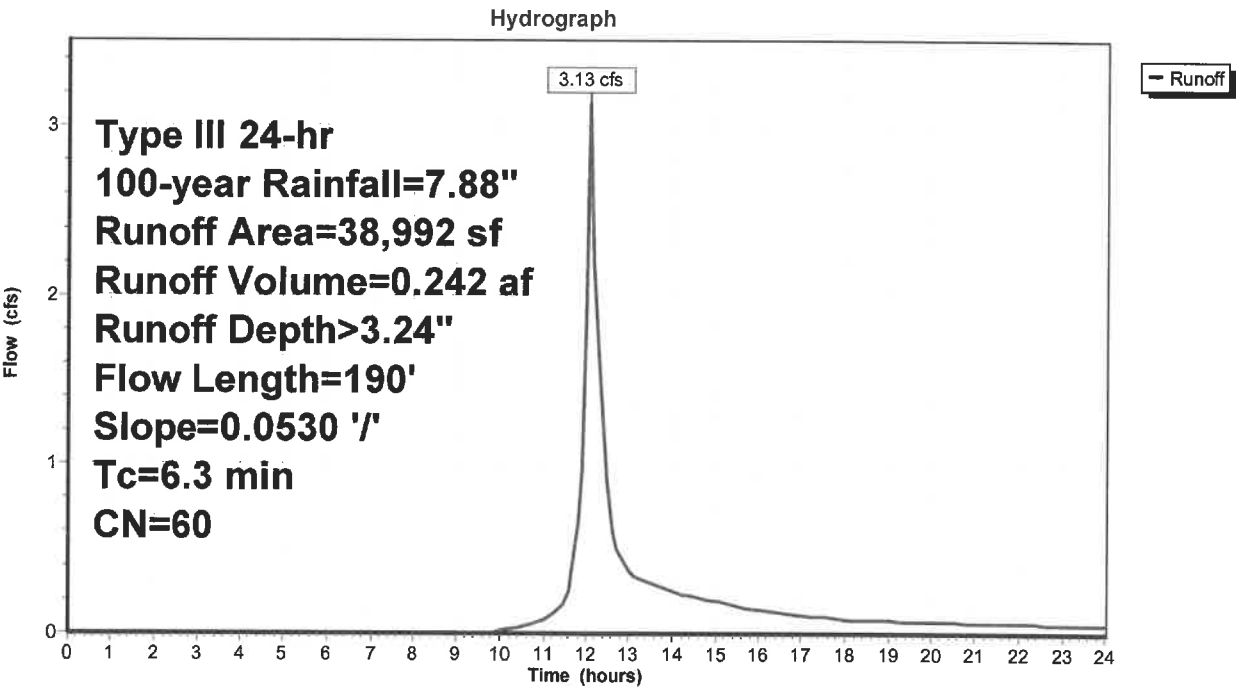
Runoff = 3.13 cfs @ 12.11 hrs, Volume= 0.242 af, Depth> 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
38,992	60	Woods, Fair, HSG B
38,992		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	190	0.0530	0.50		Lag/CN Method, Tc-1

Subcatchment 1S: Drainage Area 1 - East



Summary for Subcatchment 2S: Drainage Area 2

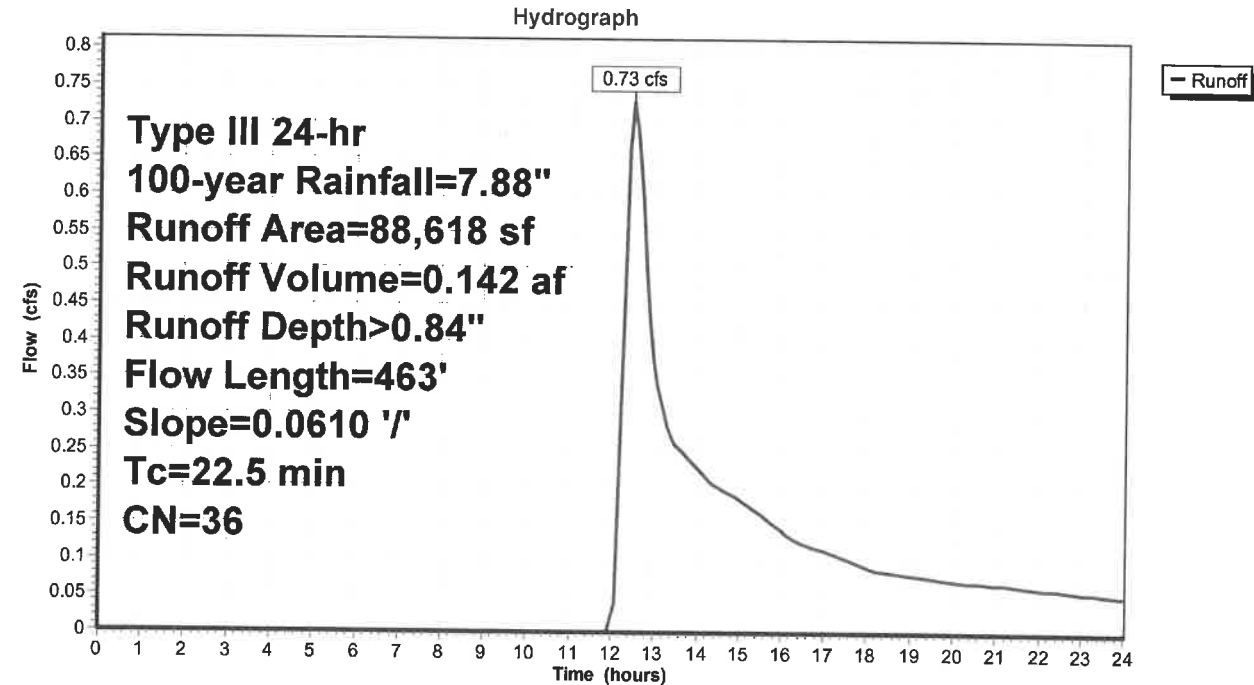
Runoff = 0.73 cfs @ 12.52 hrs, Volume= 0.142 af, Depth> 0.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
88,618	36	Woods, Fair, HSG A
88,618		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.5	463	0.0610	0.34		Lag/CN Method, Tc-2

Subcatchment 2S: Drainage Area 2



Summary for Subcatchment 3S: Drainage Area 3

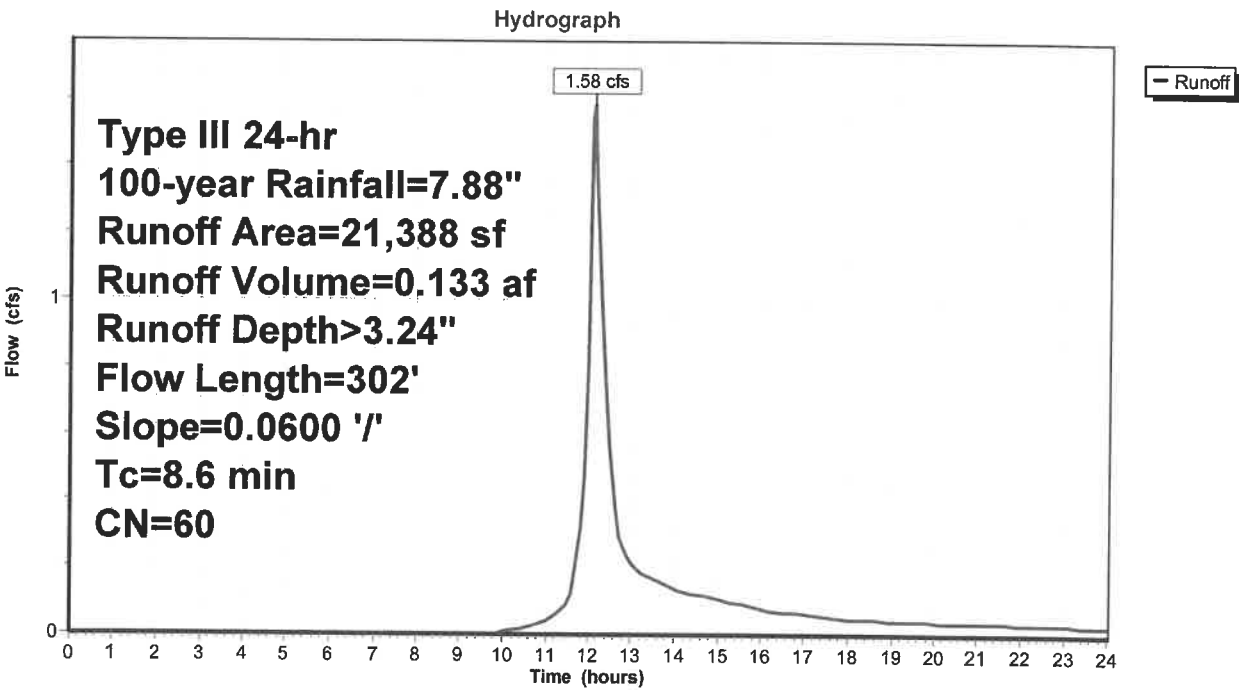
Runoff = 1.58 cfs @ 12.13 hrs, Volume= 0.133 af, Depth> 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
21,388	60	Woods, Fair, HSG B
21,388		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	302	0.0600	0.58		Lag/CN Method, Tc-3

Subcatchment 3S: Drainage Area 3



Summary for Subcatchment 4S: Drainage to Ware Road

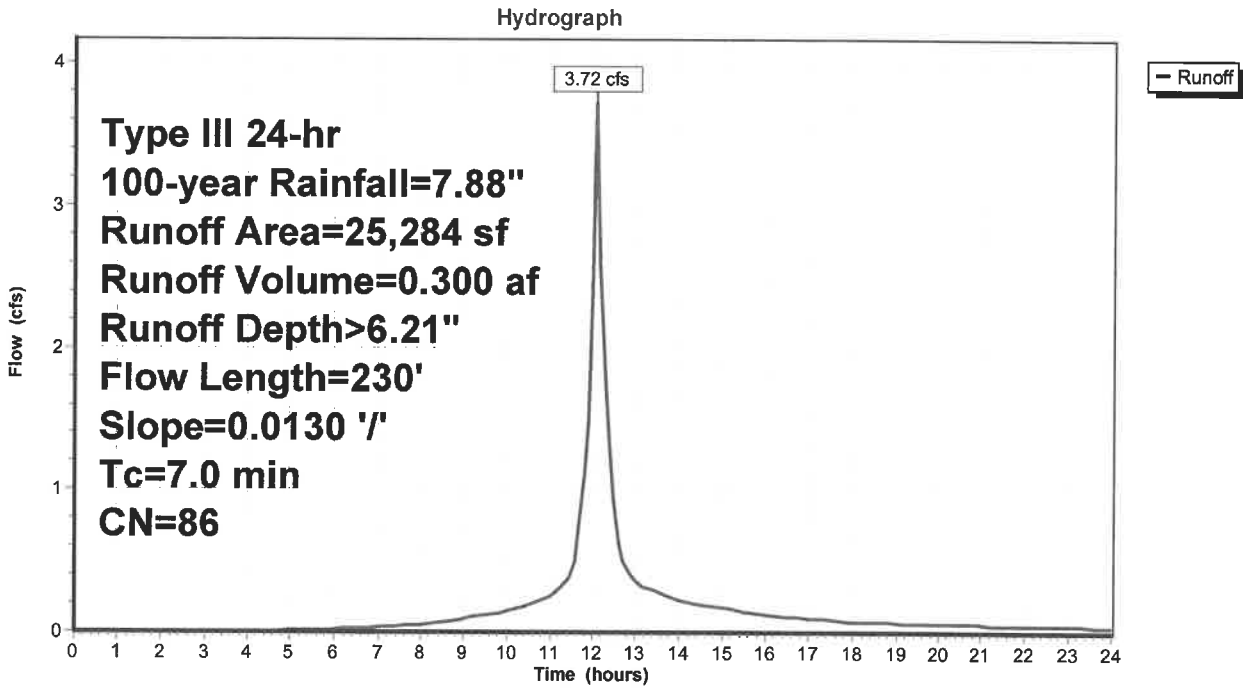
Runoff = 3.72 cfs @ 12.10 hrs, Volume= 0.300 af, Depth> 6.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
* 9,827	98	Pavement & roof, HSG B
15,457	79	<50% Grass cover, Poor, HSG B
25,284	86	Weighted Average
15,457		61.13% Pervious Area
9,827		38.87% Impervious Area

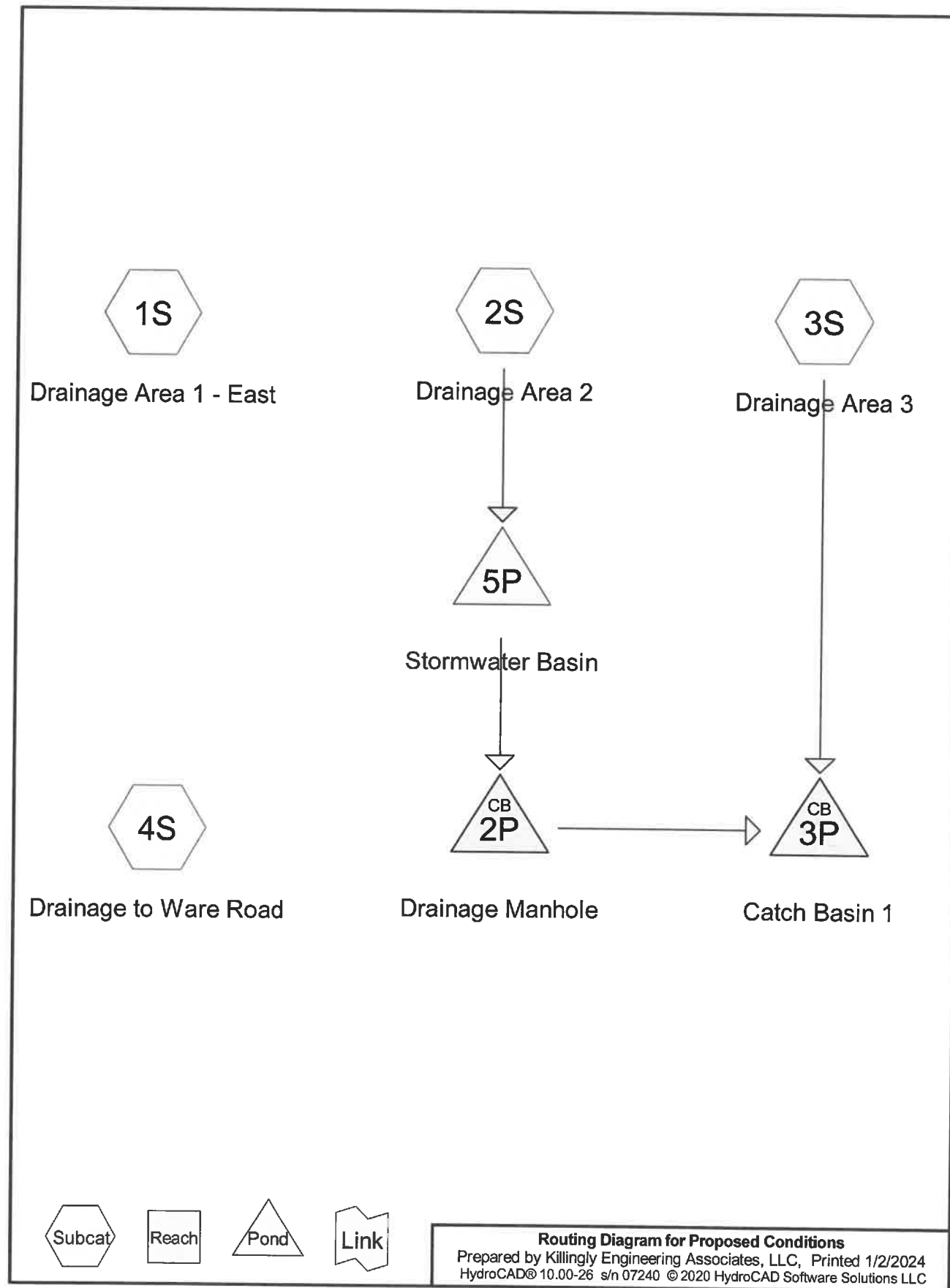
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	230	0.0130	0.54		Lag/CN Method, Tc-4

Subcatchment 4S: Drainage to Ware Road





**PROPOSED CONDITIONS**



Summary for Subcatchment 1S: Drainage Area 1 - East

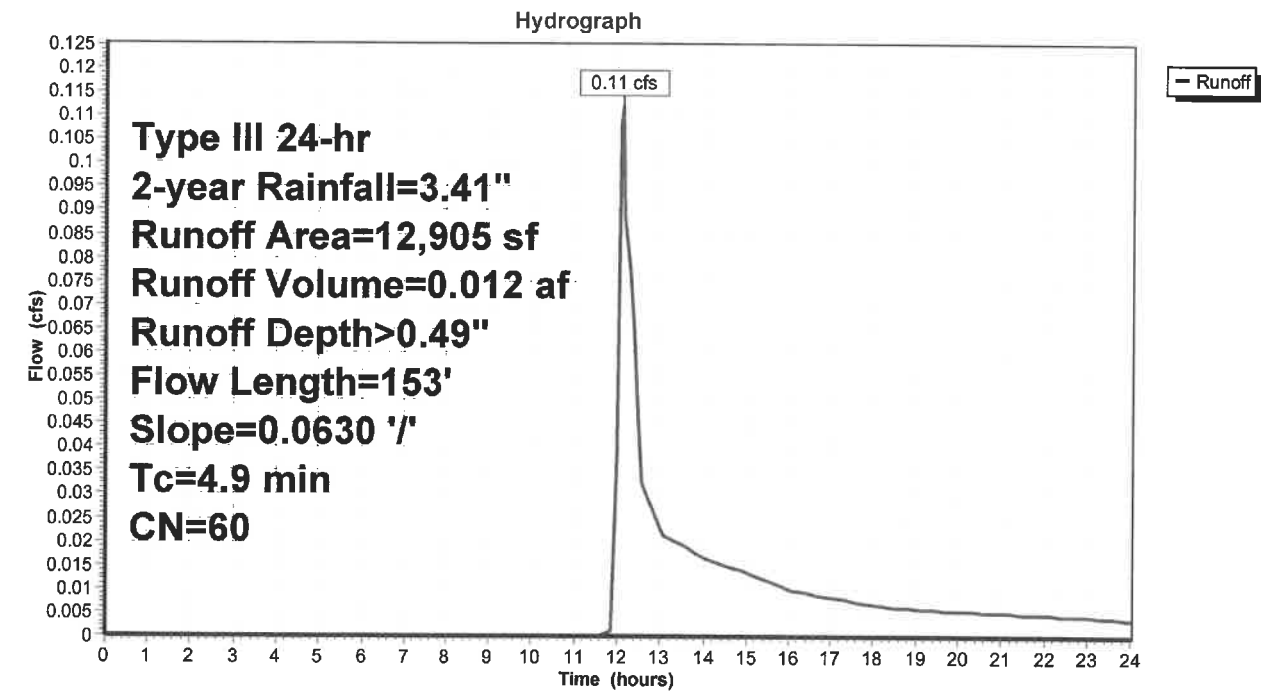
Runoff = 0.11 cfs @ 12.13 hrs, Volume= 0.012 af, Depth> 0.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 2-year Rainfall=3.41"

Area (sf)	CN	Description
11,105	60	Woods, Fair, HSG B
1,800	61	>75% Grass cover, Good, HSG B
12,905	60	Weighted Average
12,905		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	153	0.0630	0.52		Lag/CN Method, Tc-1

Subcatchment 1S: Drainage Area 1 - East



Summary for Subcatchment 2S: Drainage Area 2

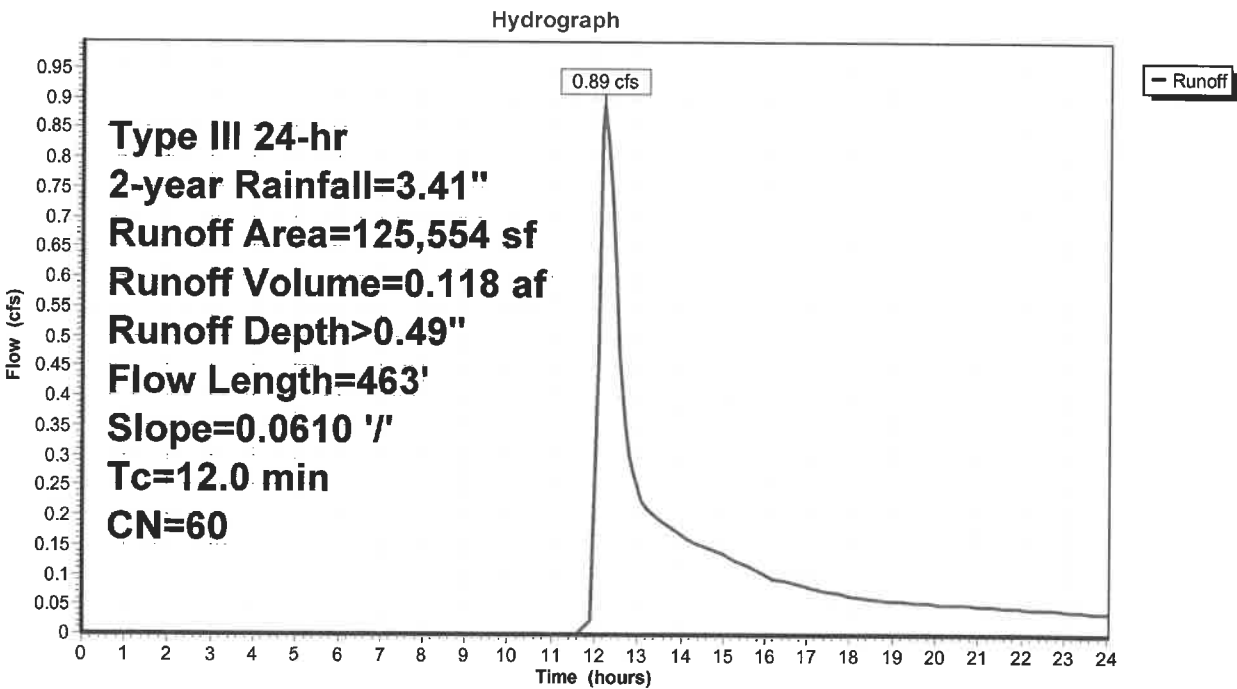
Runoff = 0.89 cfs @ 12.25 hrs, Volume= 0.118 af, Depth> 0.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 2-year Rainfall=3.41"

Area (sf)	CN	Description
13,400	36	Woods, Fair, HSG A
* 35,880	98	Paved / Roof
25,170	61	>75% Grass cover, Good, HSG B
51,104	39	>75% Grass cover, Good, HSG A
125,554	60	Weighted Average
89,674		71.42% Pervious Area
35,880		28.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	463	0.0610	0.64		Lag/CN Method, Tc-2

Subcatchment 2S: Drainage Area 2



Summary for Subcatchment 3S: Drainage Area 3

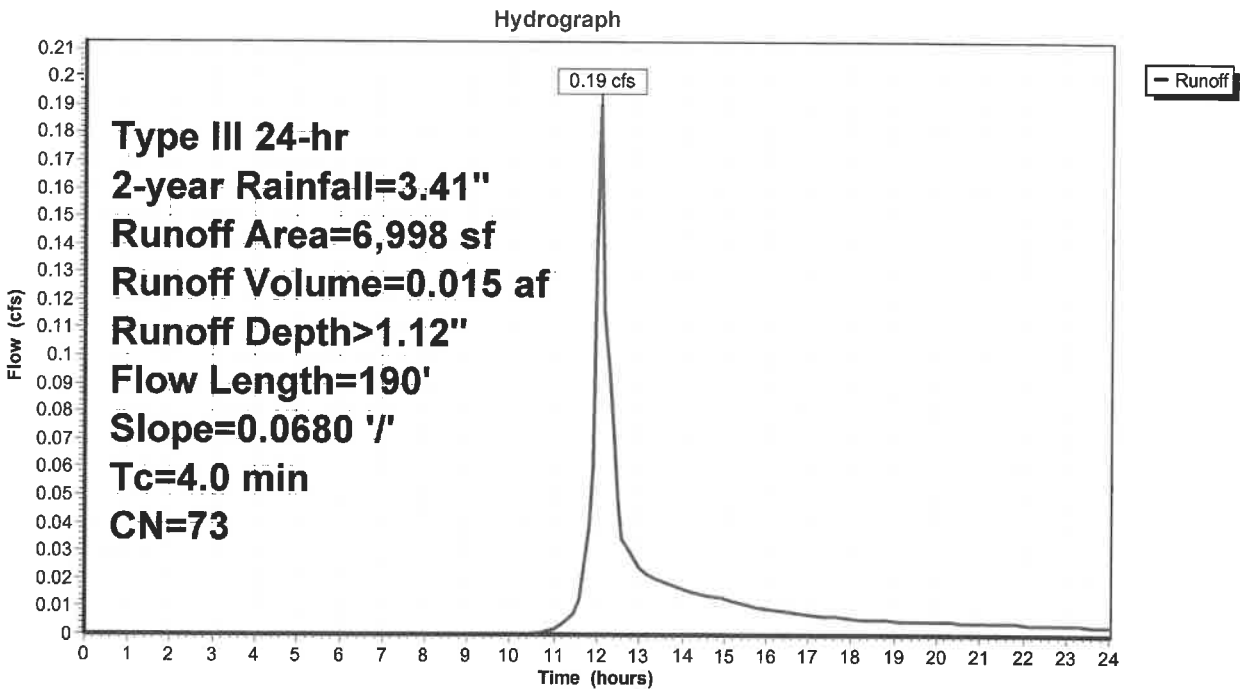
Runoff = 0.19 cfs @ 12.09 hrs, Volume= 0.015 af, Depth> 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 2-year Rainfall=3.41"

Area (sf)	CN	Description
3,318	60	Woods, Fair, HSG B
3,680	85	Gravel roads, HSG B
6,998	73	Weighted Average
6,998		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	190	0.0680	0.80		Lag/CN Method, Tc-3

Subcatchment 3S: Drainage Area 3



Summary for Subcatchment 4S: Drainage to Ware Road

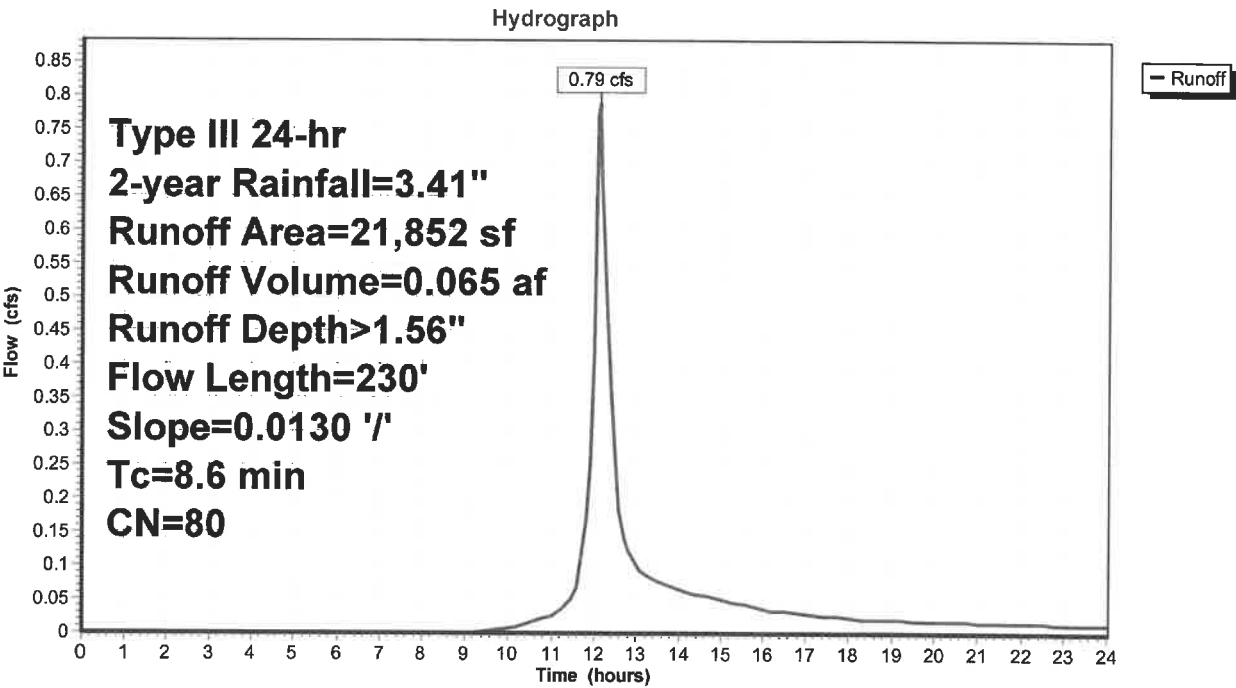
Runoff = 0.79 cfs @ 12.13 hrs, Volume= 0.065 af, Depth> 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 2-year Rainfall=3.41"

Area (sf)	CN	Description
* 8,550	98	Pavement & roof, HSG B
13,302	69	50-75% Grass cover, Fair, HSG B
21,852	80	Weighted Average
13,302		60.87% Pervious Area
8,550		39.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	230	0.0130	0.45		Lag/CN Method, Tc-4

Subcatchment 4S: Drainage to Ware Road



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Ware Road  
Type III 24-hr 2-year Rainfall=3.41"  
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Summary for Pond 2P: Drainage Manhole

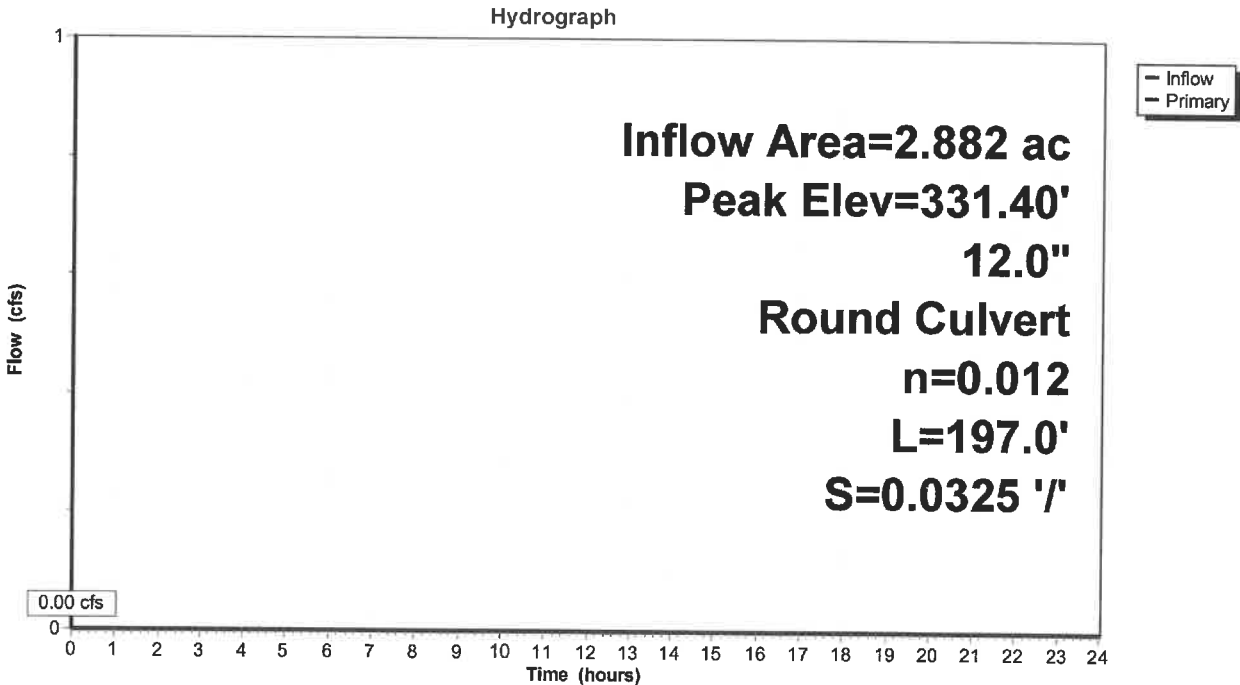
Inflow Area = 2.882 ac, 28.58% Impervious, Inflow Depth = 0.00" for 2-year event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Peak Elev= 331.40' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	331.40'	<b>12.0" Round Culvert</b> L= 197.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 331.40' / 325.00' S= 0.0325 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=331.40' (Free Discharge)  
↑1=Culvert ( Controls 0.00 cfs)

Pond 2P: Drainage Manhole



### Proposed Conditions

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Ware Road  
Type III 24-hr 2-year Rainfall=3.41"

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### Summary for Pond 3P: Catch Basin 1

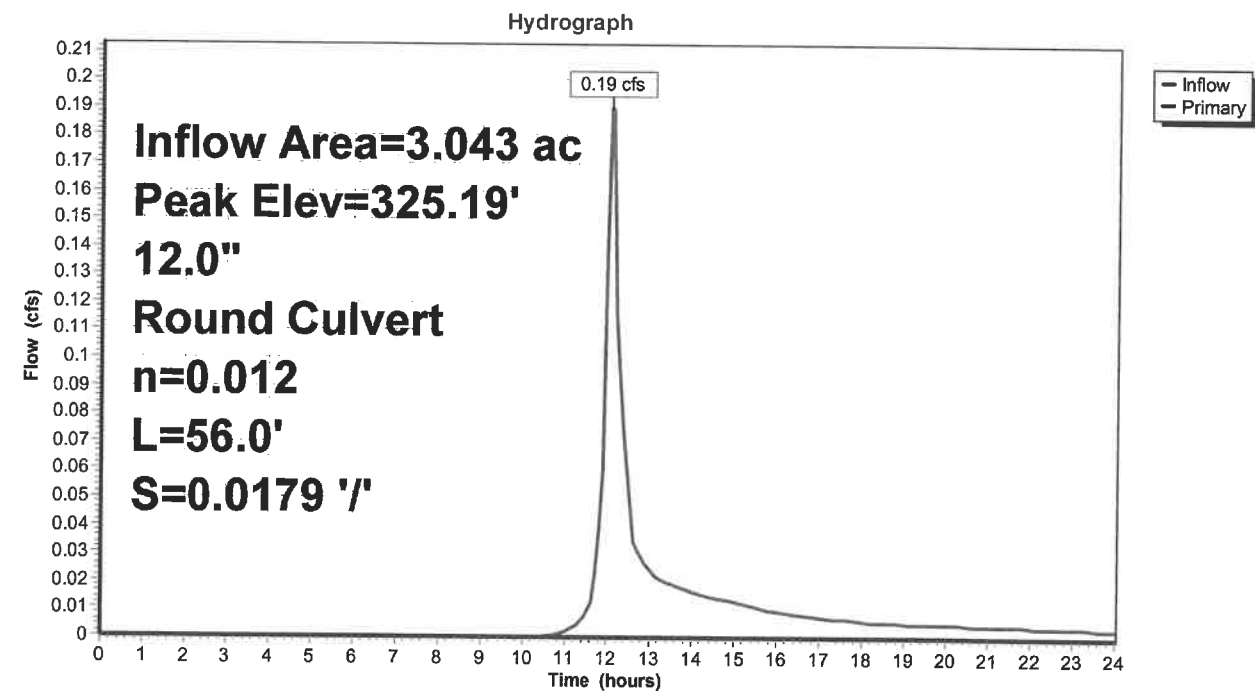
Inflow Area = 3.043 ac, 27.07% Impervious, Inflow Depth > 0.06" for 2-year event  
Inflow = 0.19 cfs @ 12.09 hrs, Volume= 0.015 af  
Outflow = 0.19 cfs @ 12.09 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.19 cfs @ 12.09 hrs, Volume= 0.015 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Peak Elev= 325.19' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	325.00'	<b>12.0" Round Culvert</b> L= 56.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 325.00' / 324.00' S= 0.0179 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.18 cfs @ 12.09 hrs HW=325.19' (Free Discharge)  
1=Culvert (Inlet Controls 0.18 cfs @ 1.83 fps)

### Pond 3P: Catch Basin 1





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Ware Road  
Type III 24-hr 2-year Rainfall=3.41"

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**Summary for Pond 5P: Stormwater Basin**

Inflow Area = 2.882 ac, 28.58% Impervious, Inflow Depth > 0.49" for 2-year event  
Inflow = 0.89 cfs @ 12.25 hrs, Volume= 0.118 af  
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Peak Elev= 329.46' @ 24.00 hrs Surf.Area= 3,943 sf Storage= 5,135 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	326.00'	37,412 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
326.00	420	0	0
328.00	1,390	1,810	1,810
329.00	2,350	1,870	3,680
330.00	5,795	4,073	7,753
332.00	7,435	13,230	20,983
333.00	8,207	7,821	28,804
334.00	9,010	8,609	37,412

Device	Routing	Invert	Outlet Devices
#1	Discarded	329.00'	<b>5.000 in/hr Exfiltration over Surface area from 329.00' - 329.00'</b> Excluded Surface area = 2,350 sf
#2	Primary	332.00'	<b>12.0" Round Culvert</b> L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 332.00' / 331.50' S= 0.0278 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Device 1	332.00'	<b>4.0" Vert. Orifice/Grate</b> C= 0.600
#4	Device 1	333.00'	<b>6.0" Vert. Orifice/Grate</b> C= 0.600
#5	Secondary	334.00'	<b>12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#6	Tertiary	334.00'	<b>5.0' long x 15.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

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Ware Road  
Type III 24-hr 2-year Rainfall=3.41"

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Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)

- 1=Exfiltration ( Controls 0.00 cfs)
- 3=Orifice/Grate ( Controls 0.00 cfs)
- 4=Orifice/Grate ( Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)

- 2=Culvert ( Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)

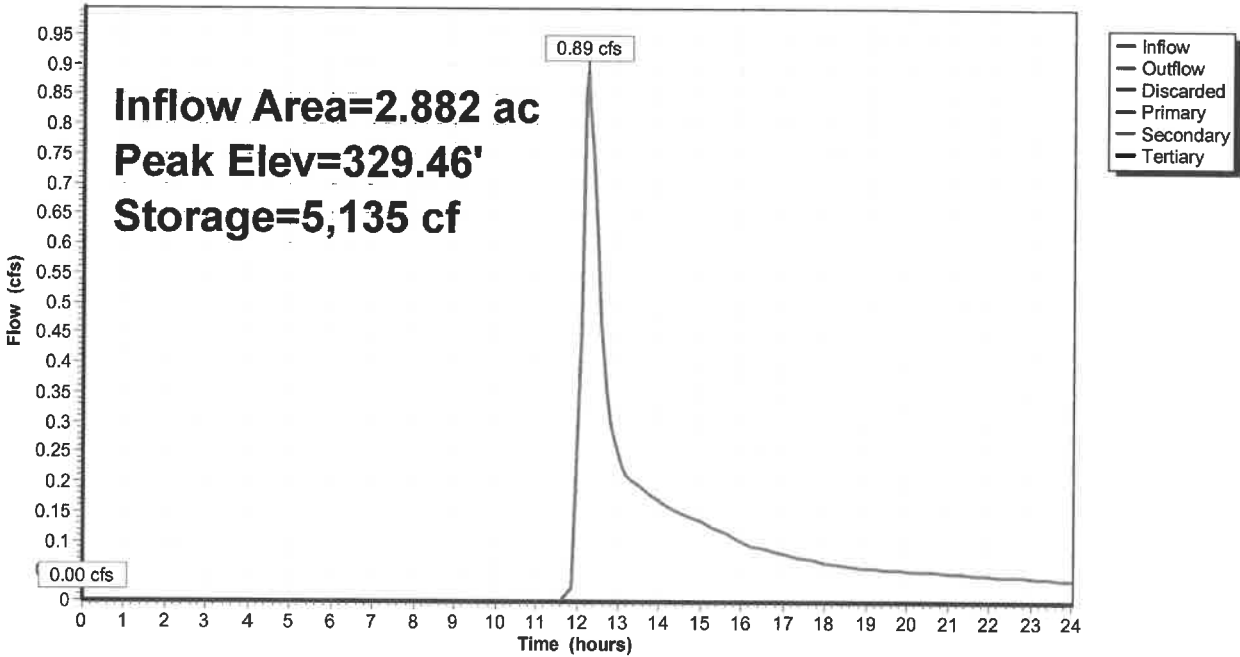
- 5=Orifice/Grate ( Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)

- 6=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond 5P: Stormwater Basin**

Hydrograph



Summary for Subcatchment 1S: Drainage Area 1 - East

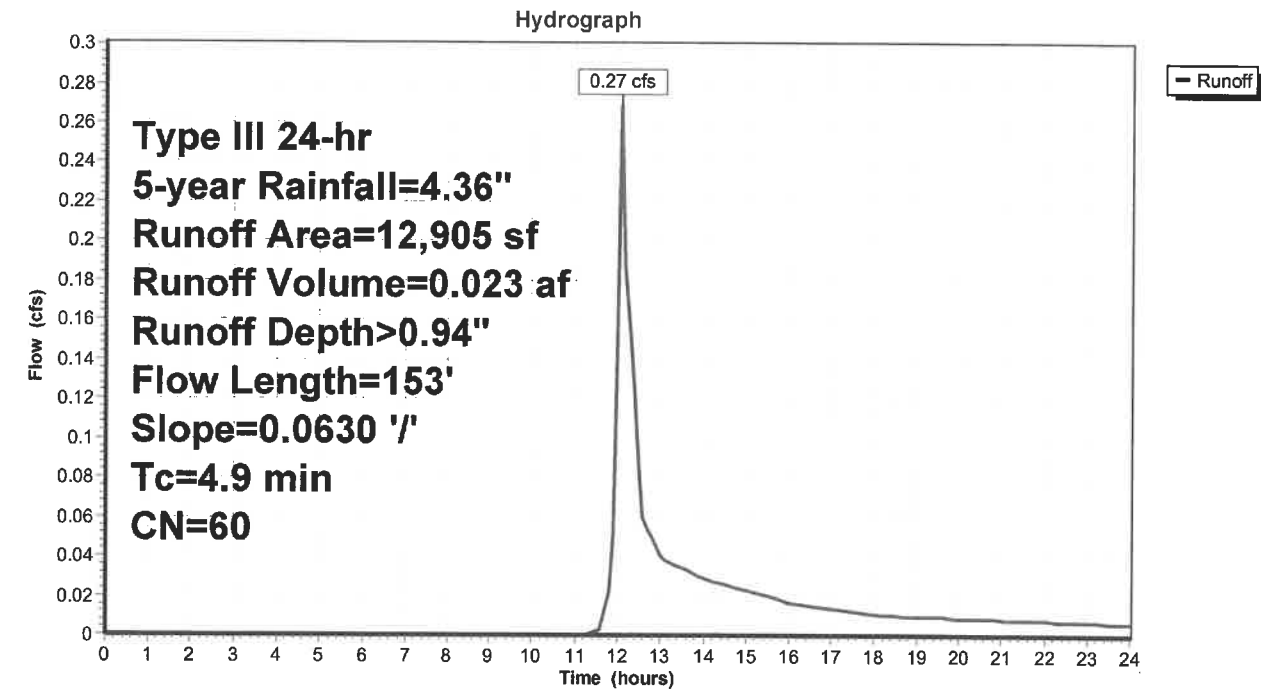
Runoff = 0.27 cfs @ 12.11 hrs, Volume= 0.023 af, Depth> 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 5-year Rainfall=4.36"

Area (sf)	CN	Description			
11,105	60	Woods, Fair, HSG B			
1,800	61	>75% Grass cover, Good, HSG B			
12,905	60	Weighted Average			
12,905		100.00% Pervious Area			

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	153	0.0630	0.52		Lag/CN Method, Tc-1

Subcatchment 1S: Drainage Area 1 - East



Summary for Subcatchment 2S: Drainage Area 2

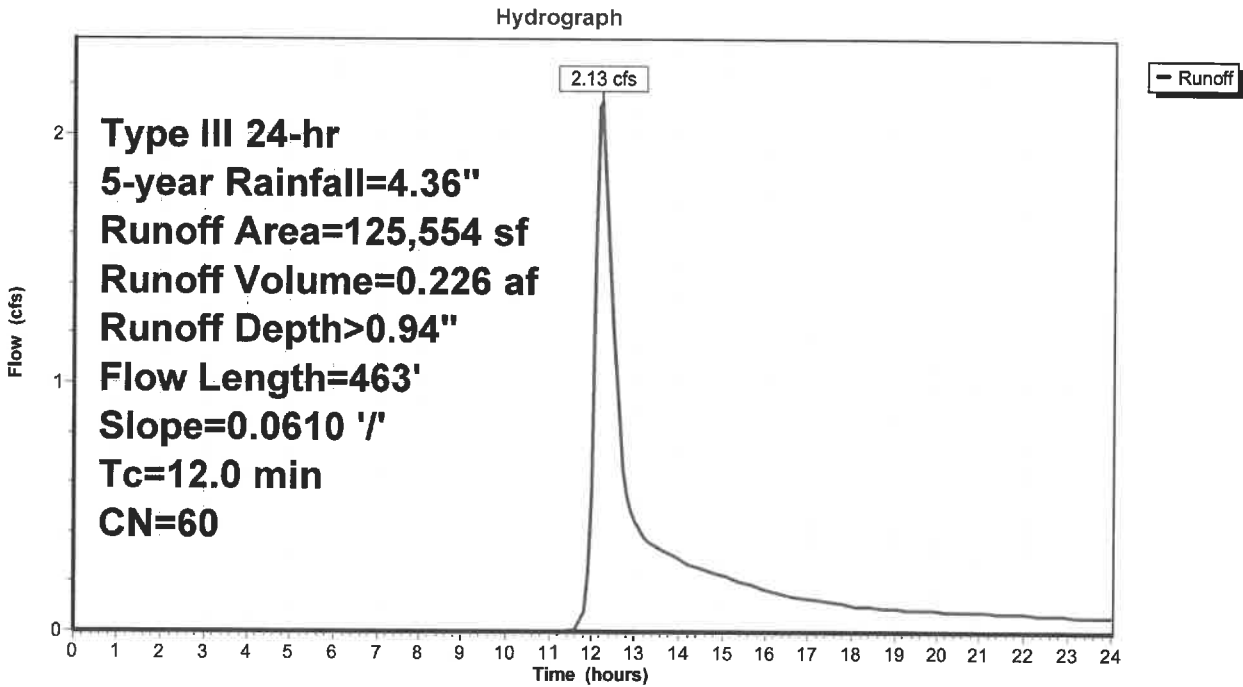
Runoff = 2.13 cfs @ 12.22 hrs, Volume= 0.226 af, Depth> 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 5-year Rainfall=4.36"

	Area (sf)	CN	Description
*	13,400	36	Woods, Fair, HSG A
	35,880	98	Paved / Roof
	25,170	61	>75% Grass cover, Good, HSG B
	51,104	39	>75% Grass cover, Good, HSG A
	125,554	60	Weighted Average
	89,674		71.42% Pervious Area
	35,880		28.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	463	0.0610	0.64		Lag/CN Method, Tc-2

Subcatchment 2S: Drainage Area 2



Summary for Subcatchment 3S: Drainage Area 3

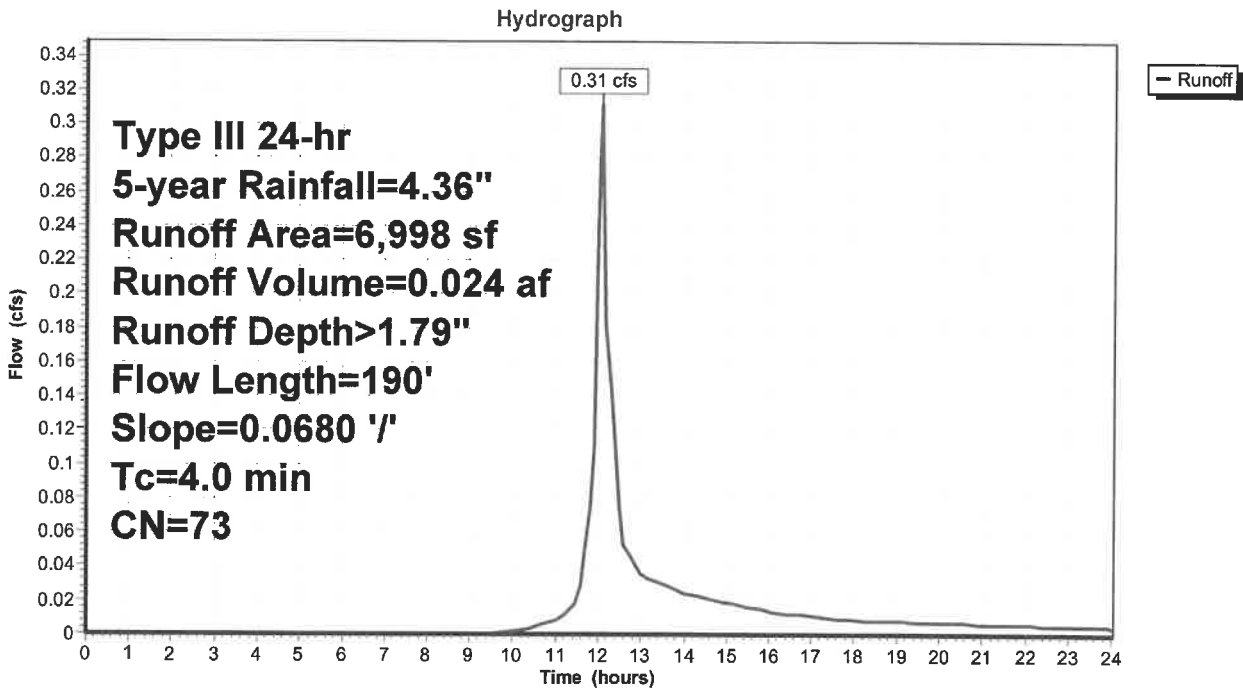
Runoff = 0.31 cfs @ 12.09 hrs, Volume= 0.024 af, Depth> 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 5-year Rainfall=4.36"

Area (sf)	CN	Description
3,318	60	Woods, Fair, HSG B
3,680	85	Gravel roads, HSG B
6,998	73	Weighted Average
6,998		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	190	0.0680	0.80		Lag/CN Method, Tc-3

Subcatchment 3S: Drainage Area 3



Summary for Subcatchment 4S: Drainage to Ware Road

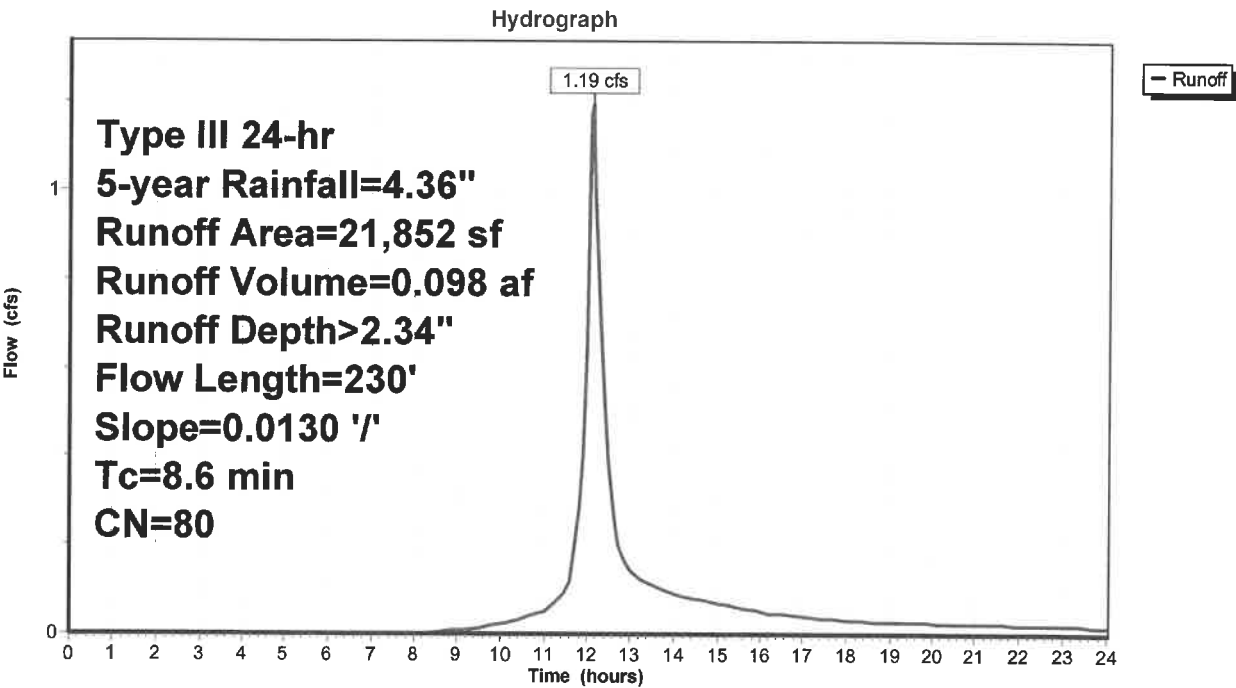
Runoff = 1.19 cfs @ 12.13 hrs, Volume= 0.098 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 5-year Rainfall=4.36"

Area (sf)	CN	Description
* 8,550	98	Pavement & roof, HSG B
13,302	69	50-75% Grass cover, Fair, HSG B
21,852	80	Weighted Average
13,302		60.87% Pervious Area
8,550		39.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	230	0.0130	0.45		Lag/CN Method, Tc-4

Subcatchment 4S: Drainage to Ware Road



Summary for Pond 2P: Drainage Manhole

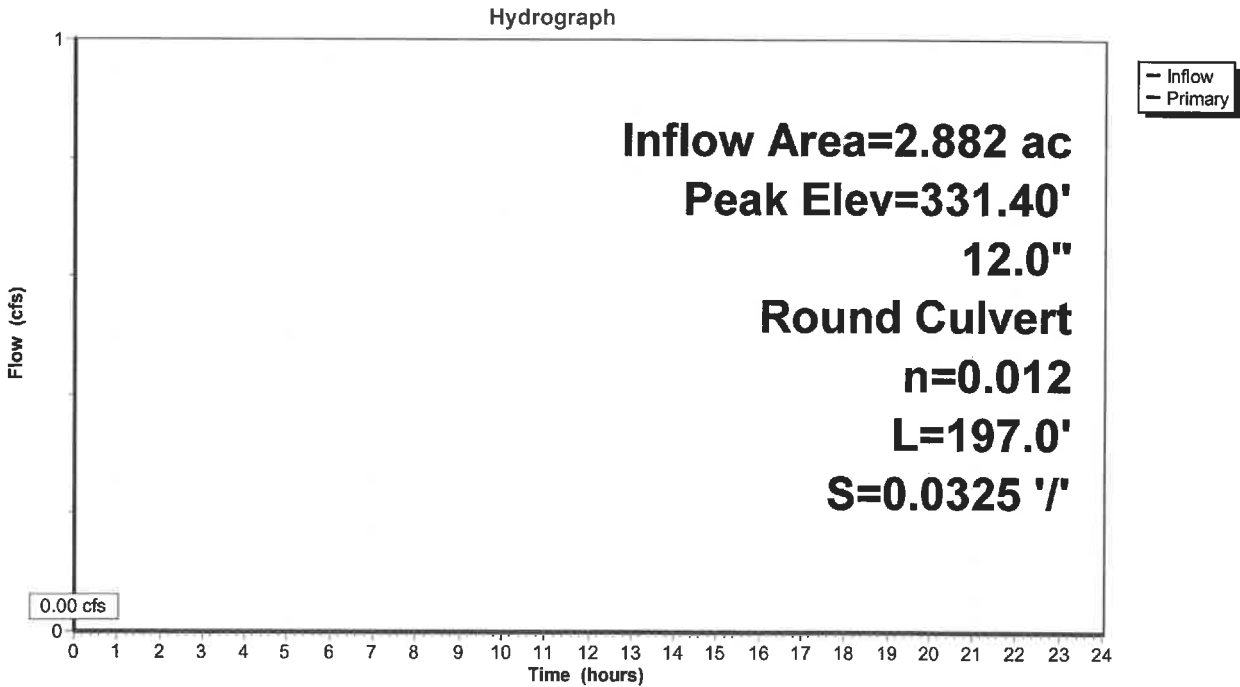
Inflow Area = 2.882 ac, 28.58% Impervious, Inflow Depth = 0.00" for 5-year event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Peak Elev= 331.40' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	331.40'	<b>12.0" Round Culvert</b> L= 197.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 331.40' / 325.00' S= 0.0325 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=331.40' (Free Discharge)  
1=Culvert ( Controls 0.00 cfs)

Pond 2P: Drainage Manhole



Summary for Pond 3P: Catch Basin 1

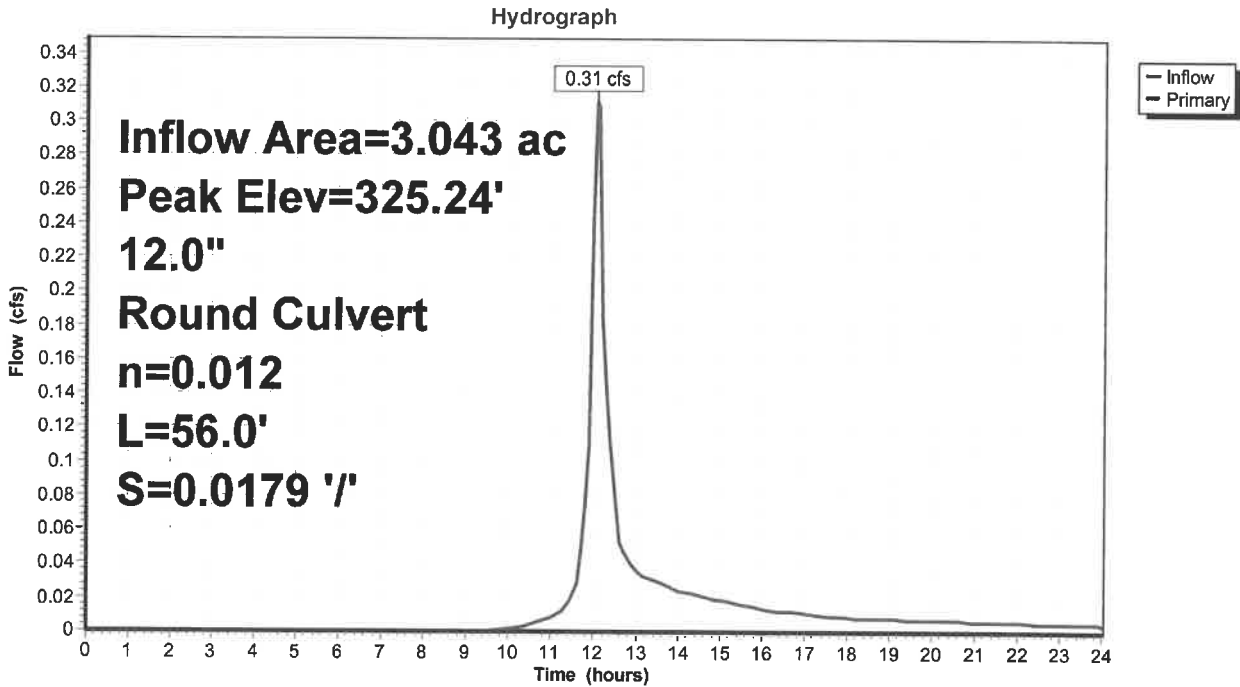
Inflow Area = 3.043 ac, 27.07% Impervious, Inflow Depth > 0.09" for 5-year event  
Inflow = 0.31 cfs @ 12.09 hrs, Volume= 0.024 af  
Outflow = 0.31 cfs @ 12.09 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.31 cfs @ 12.09 hrs, Volume= 0.024 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Peak Elev= 325.24' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	325.00'	<b>12.0" Round Culvert</b> L= 56.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 325.00' / 324.00' S= 0.0179 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.30 cfs @ 12.09 hrs HW=325.24' (Free Discharge)  
1=Culvert (Inlet Controls 0.30 cfs @ 2.08 fps)

Pond 3P: Catch Basin 1





**Proposed Conditions**

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Ware Road  
Type III 24-hr 5-year Rainfall=4.36"

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**Summary for Pond 5P: Stormwater Basin**

Inflow Area = 2.882 ac, 28.58% Impervious, Inflow Depth > 0.94" for 5-year event  
Inflow = 2.13 cfs @ 12.22 hrs, Volume= 0.226 af  
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Peak Elev= 330.35' @ 24.00 hrs Surf.Area= 6,084 sf Storage= 9,849 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	326.00'	37,412 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
326.00	420	0	0
328.00	1,390	1,810	1,810
329.00	2,350	1,870	3,680
330.00	5,795	4,073	7,753
332.00	7,435	13,230	20,983
333.00	8,207	7,821	28,804
334.00	9,010	8,609	37,412

Device	Routing	Invert	Outlet Devices
#1	Discarded	329.00'	<b>5.000 in/hr Exfiltration over Surface area from 329.00' - 329.00'</b> Excluded Surface area = 2,350 sf
#2	Primary	332.00'	<b>12.0" Round Culvert</b> L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 332.00' / 331.50' S= 0.0278 ' / ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Device 1	332.00'	<b>4.0" Vert. Orifice/Grate</b> C= 0.600
#4	Device 1	333.00'	<b>6.0" Vert. Orifice/Grate</b> C= 0.600
#5	Secondary	334.00'	<b>12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#6	Tertiary	334.00'	<b>5.0' long x 15.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Proposed Conditions

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Ware Road  
Type III 24-hr 5-year Rainfall=4.36"  
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Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)  
1=Exfiltration ( Controls 0.00 cfs)  
3=Orifice/Grate ( Controls 0.00 cfs)  
4=Orifice/Grate ( Controls 0.00 cfs)

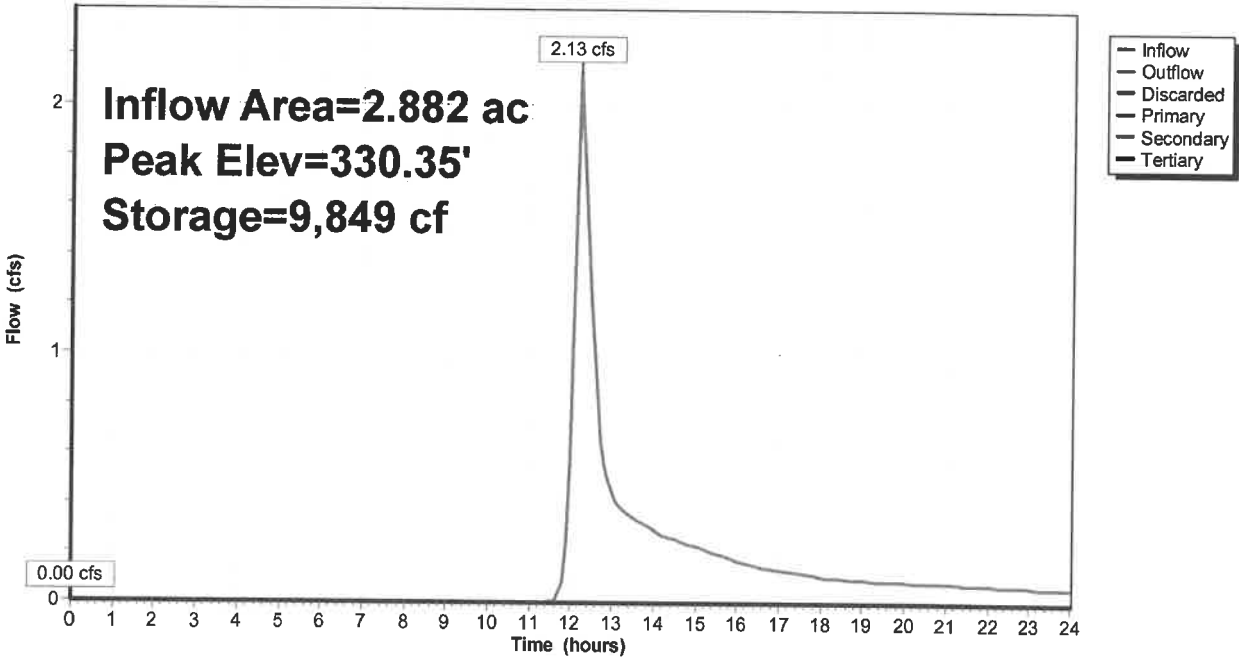
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)  
2=Culvert ( Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)  
5=Orifice/Grate ( Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)  
6=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

Pond 5P: Stormwater Basin

Hydrograph



Proposed Conditions

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Ware Road  
Type III 24-hr 10-year Rainfall=5.14"  
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Summary for Subcatchment 1S: Drainage Area 1 - East

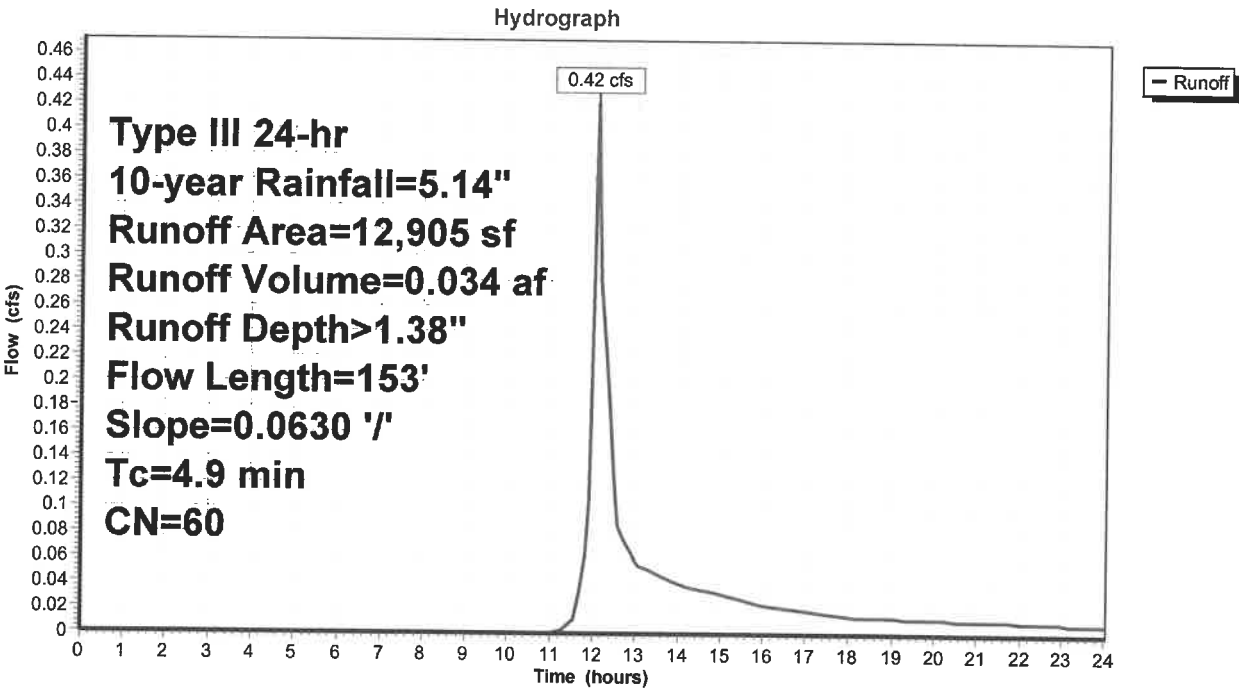
Runoff = 0.42 cfs @ 12.10 hrs, Volume= 0.034 af, Depth> 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 10-year Rainfall=5.14"

Area (sf)	CN	Description
11,105	60	Woods, Fair, HSG B
1,800	61	>75% Grass cover, Good, HSG B
12,905	60	Weighted Average
12,905		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	153	0.0630	0.52		Lag/CN Method, Tc-1

Subcatchment 1S: Drainage Area 1 - East



Summary for Subcatchment 2S: Drainage Area 2

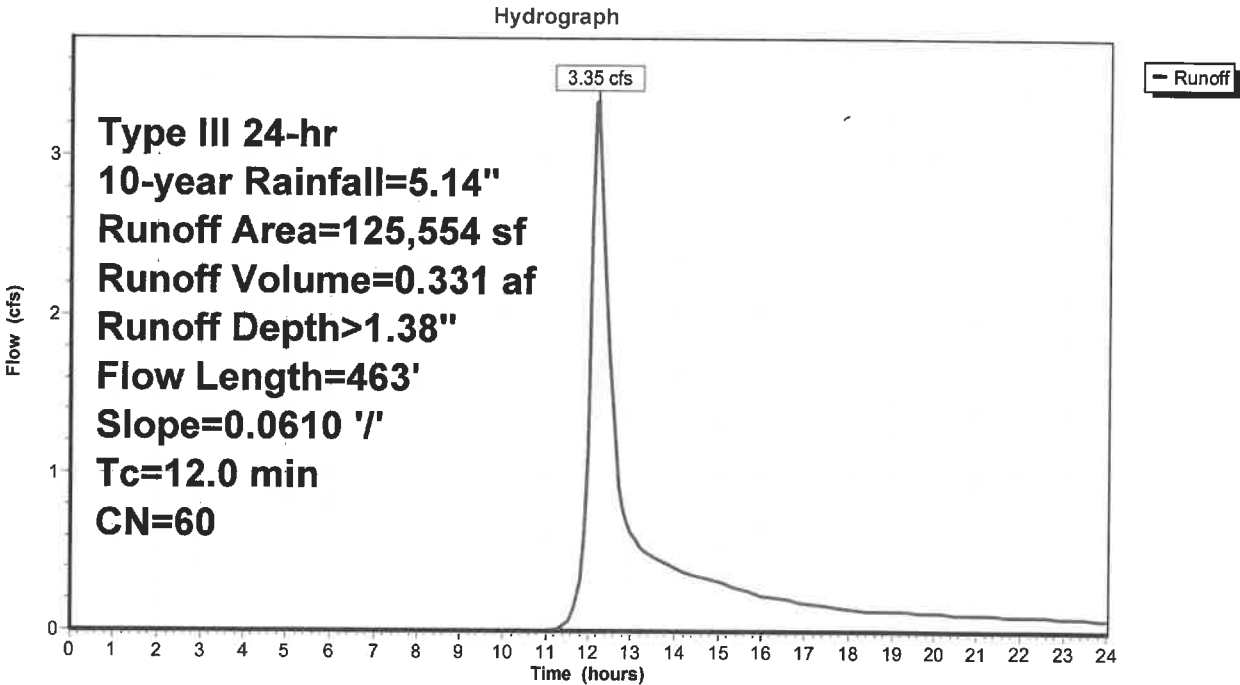
Runoff = 3.35 cfs @ 12.21 hrs, Volume= 0.331 af, Depth> 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 10-year Rainfall=5.14"

Area (sf)	CN	Description
13,400	36	Woods, Fair, HSG A
35,880	98	Paved / Roof
25,170	61	>75% Grass cover, Good, HSG B
51,104	39	>75% Grass cover, Good, HSG A
125,554	60	Weighted Average
89,674		71.42% Pervious Area
35,880		28.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	463	0.0610	0.64		Lag/CN Method, Tc-2

Subcatchment 2S: Drainage Area 2



Summary for Subcatchment 3S: Drainage Area 3

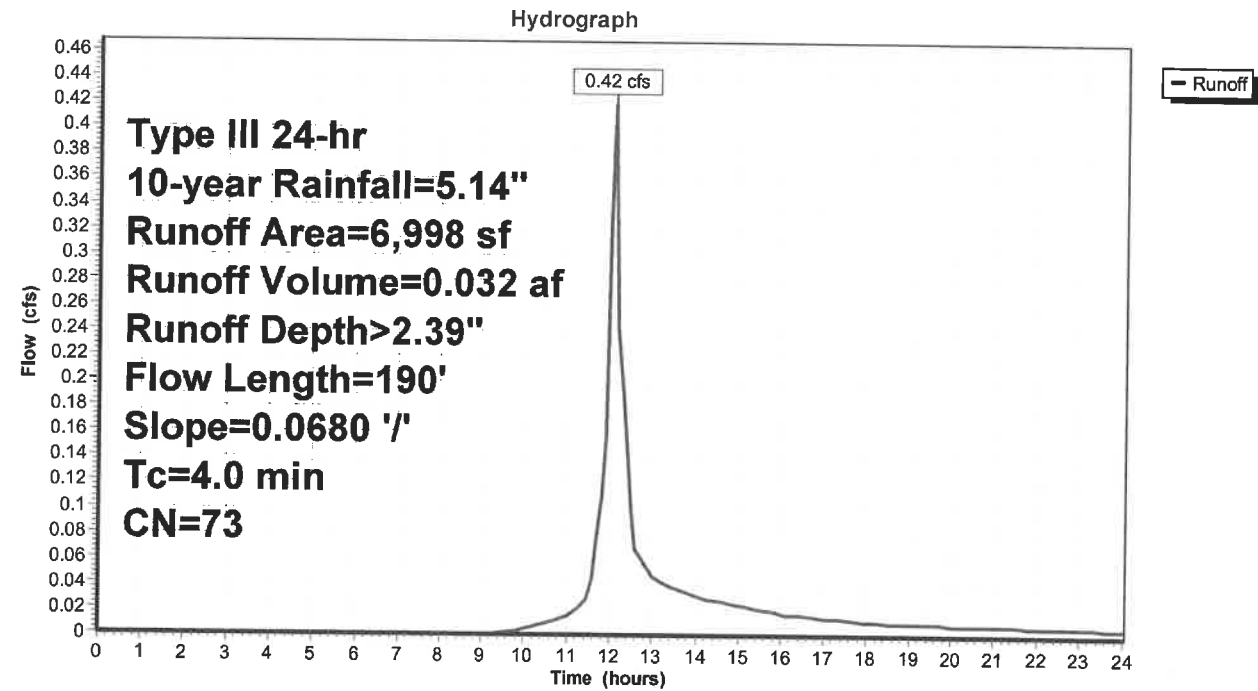
Runoff = 0.42 cfs @ 12.08 hrs, Volume= 0.032 af, Depth> 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 10-year Rainfall=5.14"

Area (sf)	CN	Description
3,318	60	Woods, Fair, HSG B
3,680	85	Gravel roads, HSG B
6,998	73	Weighted Average
6,998		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	190	0.0680	0.80		Lag/CN Method, Tc-3

Subcatchment 3S: Drainage Area 3



Summary for Subcatchment 4S: Drainage to Ware Road

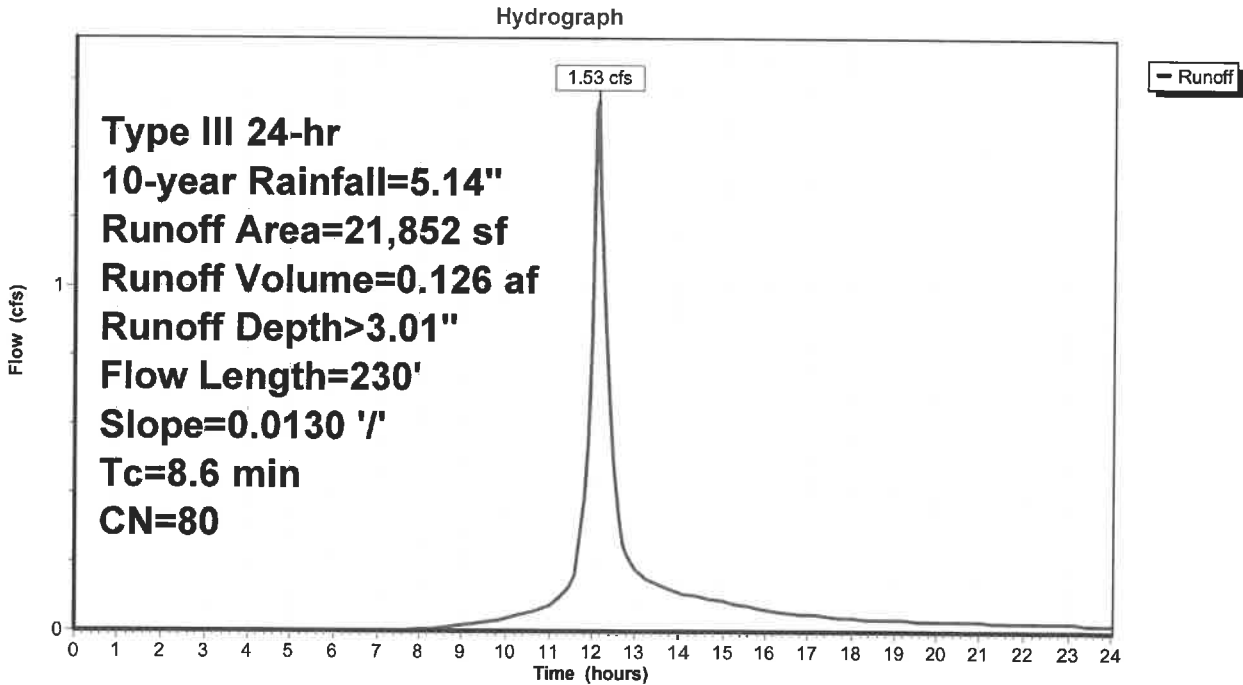
Runoff = 1.53 cfs @ 12.12 hrs, Volume= 0.126 af, Depth> 3.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 10-year Rainfall=5.14"

Area (sf)	CN	Description
* 8,550	98	Pavement & roof, HSG B
13,302	69	50-75% Grass cover, Fair, HSG B
21,852	80	Weighted Average
13,302		60.87% Pervious Area
8,550		39.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	230	0.0130	0.45		Lag/CN Method, Tc-4

Subcatchment 4S: Drainage to Ware Road



Summary for Pond 2P: Drainage Manhole

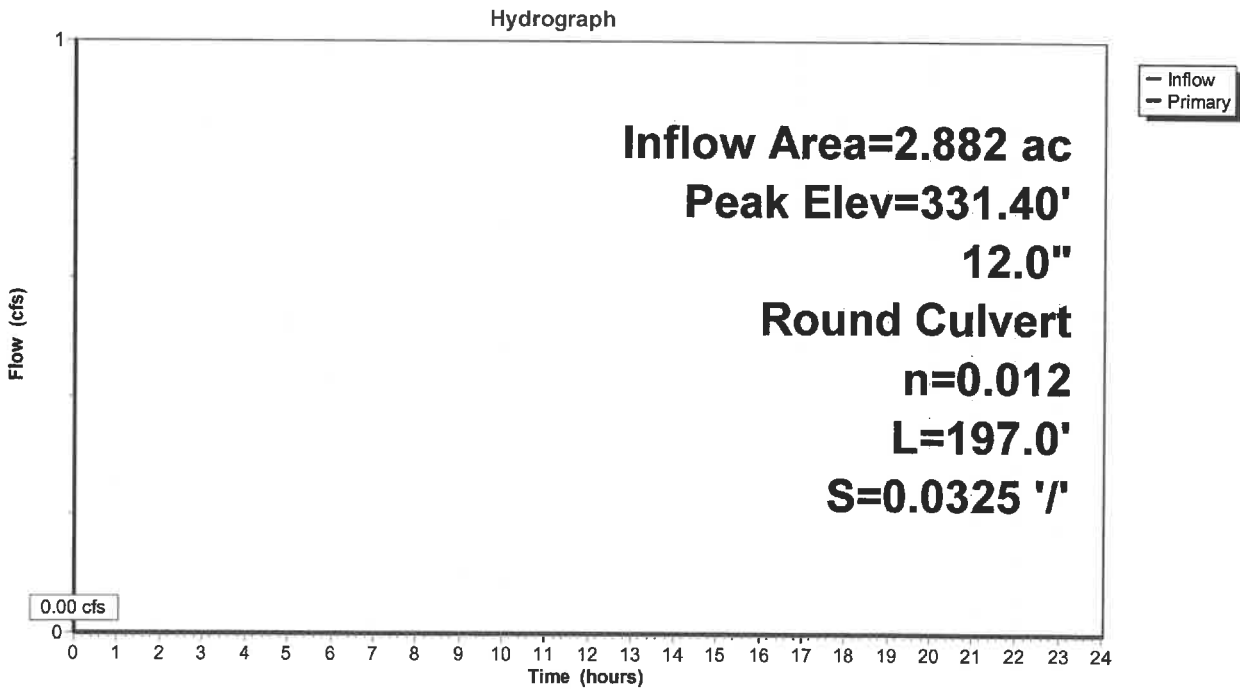
Inflow Area = 2.882 ac, 28.58% Impervious, Inflow Depth = 0.00" for 10-year event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Peak Elev= 331.40' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	331.40'	<b>12.0" Round Culvert</b> L= 197.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 331.40' / 325.00' S= 0.0325 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=331.40' (Free Discharge)  
1=Culvert ( Controls 0.00 cfs)

Pond 2P: Drainage Manhole



Summary for Pond 3P: Catch Basin 1

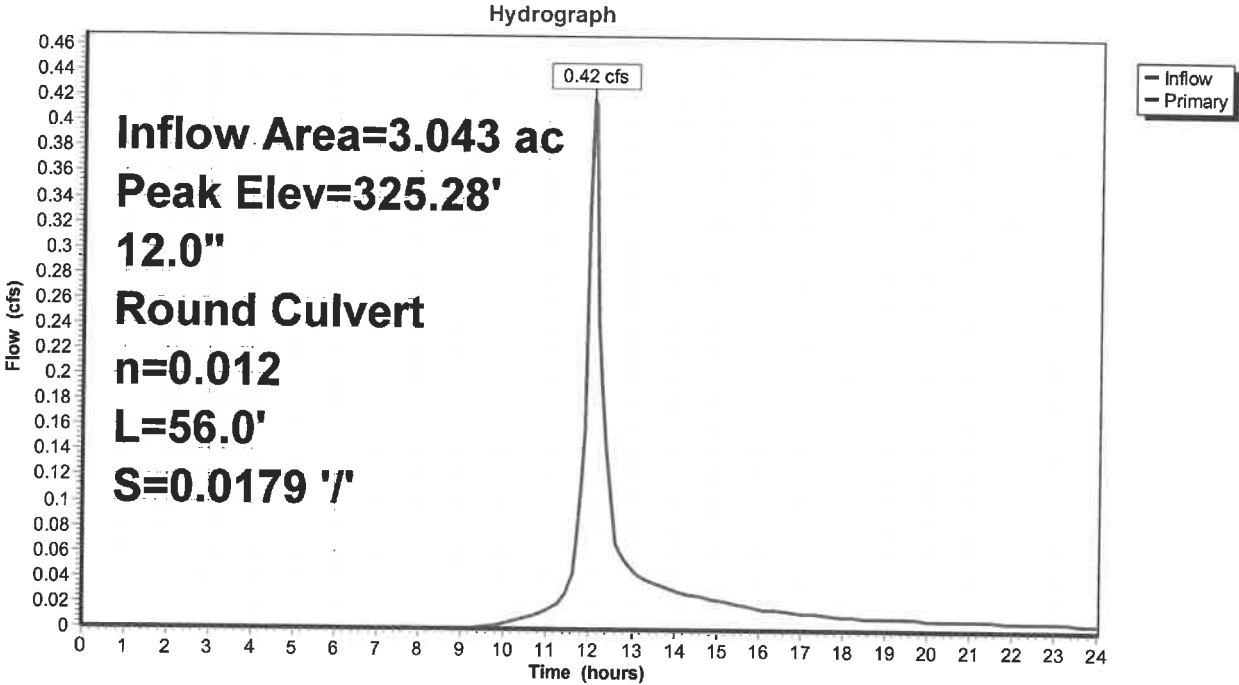
Inflow Area = 3.043 ac, 27.07% Impervious, Inflow Depth > 0.13" for 10-year event  
Inflow = 0.42 cfs @ 12.08 hrs, Volume= 0.032 af  
Outflow = 0.42 cfs @ 12.08 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.42 cfs @ 12.08 hrs, Volume= 0.032 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Peak Elev= 325.28' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	325.00'	12.0" Round Culvert L= 56.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 325.00' / 324.00' S= 0.0179 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.40 cfs @ 12.08 hrs HW=325.28' (Free Discharge)  
1=Culvert (Inlet Controls 0.40 cfs @ 2.24 fps)

Pond 3P: Catch Basin 1





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Ware Road  
Type III 24-hr 10-year Rainfall=5.14"

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**Summary for Pond 5P: Stormwater Basin**

Inflow Area = 2.882 ac, 28.58% Impervious, Inflow Depth > 1.38" for 10-year event  
Inflow = 3.35 cfs @ 12.21 hrs, Volume= 0.331 af  
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Peak Elev= 331.07' @ 24.00 hrs Surf.Area= 6,673 sf Storage= 14,424 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	326.00'	37,412 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
326.00	420	0	0
328.00	1,390	1,810	1,810
329.00	2,350	1,870	3,680
330.00	5,795	4,073	7,753
332.00	7,435	13,230	20,983
333.00	8,207	7,821	28,804
334.00	9,010	8,609	37,412

Device	Routing	Invert	Outlet Devices
#1	Discarded	329.00'	<b>5.000 in/hr Exfiltration over Surface area from 329.00' - 329.00'</b> Excluded Surface area = 2,350 sf
#2	Primary	332.00'	<b>12.0" Round Culvert</b> L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 332.00' / 331.50' S= 0.0278 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Device 1	332.00'	<b>4.0" Vert. Orifice/Grate</b> C= 0.600
#4	Device 1	333.00'	<b>6.0" Vert. Orifice/Grate</b> C= 0.600
#5	Secondary	334.00'	<b>12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#6	Tertiary	334.00'	<b>5.0' long x 15.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Proposed Conditions

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Ware Road  
Type III 24-hr 10-year Rainfall=5.14"  
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Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)  
1=Exfiltration ( Controls 0.00 cfs)  
3=Orifice/Grate ( Controls 0.00 cfs)  
4=Orifice/Grate ( Controls 0.00 cfs)

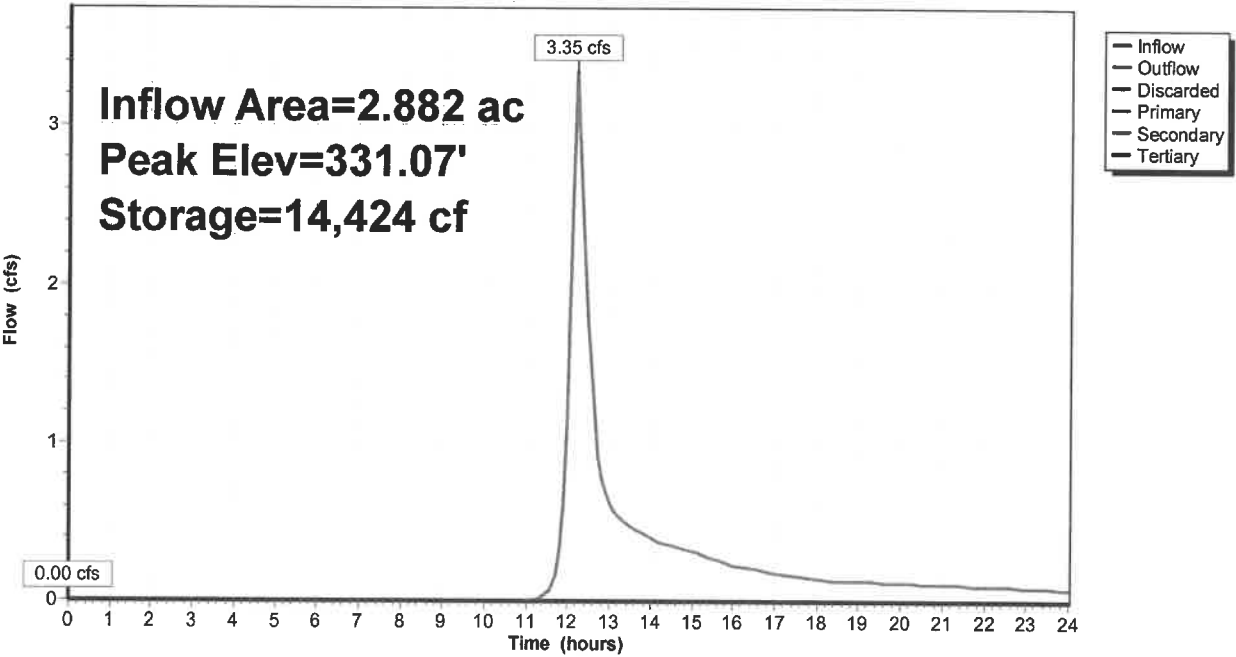
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)  
2=Culvert ( Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)  
5=Orifice/Grate ( Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)  
6=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

Pond 5P: Stormwater Basin

Hydrograph



Summary for Subcatchment 1S: Drainage Area 1 - East

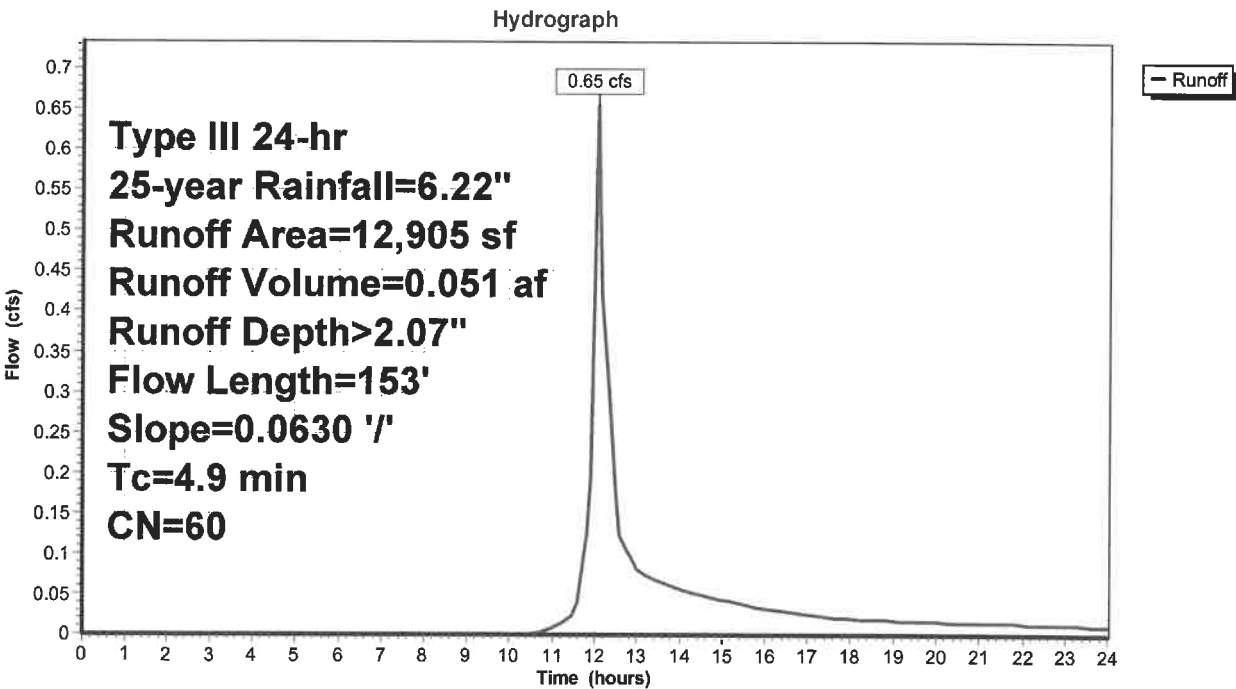
Runoff = 0.65 cfs @ 12.10 hrs, Volume= 0.051 af, Depth> 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 25-year Rainfall=6.22"

Area (sf)	CN	Description
11,105	60	Woods, Fair, HSG B
1,800	61	>75% Grass cover, Good, HSG B
12,905	60	Weighted Average
12,905		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	153	0.0630	0.52		Lag/CN Method, Tc-1

Subcatchment 1S: Drainage Area 1 - East



Summary for Subcatchment 2S: Drainage Area 2

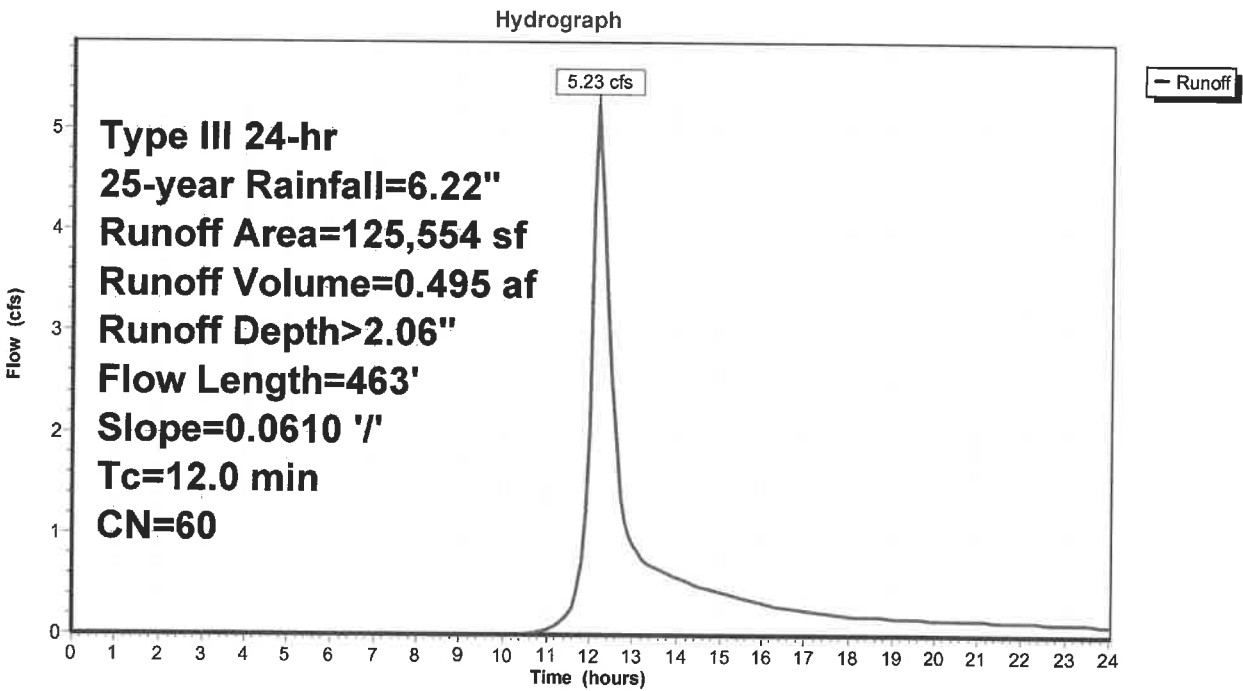
Runoff = 5.23 cfs @ 12.20 hrs, Volume= 0.495 af, Depth> 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 25-year Rainfall=6.22"

	Area (sf)	CN	Description
*	13,400	36	Woods, Fair, HSG A
	35,880	98	Paved / Roof
	25,170	61	>75% Grass cover, Good, HSG B
	51,104	39	>75% Grass cover, Good, HSG A
	125,554	60	Weighted Average
	89,674		71.42% Pervious Area
	35,880		28.58% Impervious Area

Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
12.0	463	0.0610	0.64		Lag/CN Method, Tc-2

Subcatchment 2S: Drainage Area 2



Summary for Subcatchment 3S: Drainage Area 3

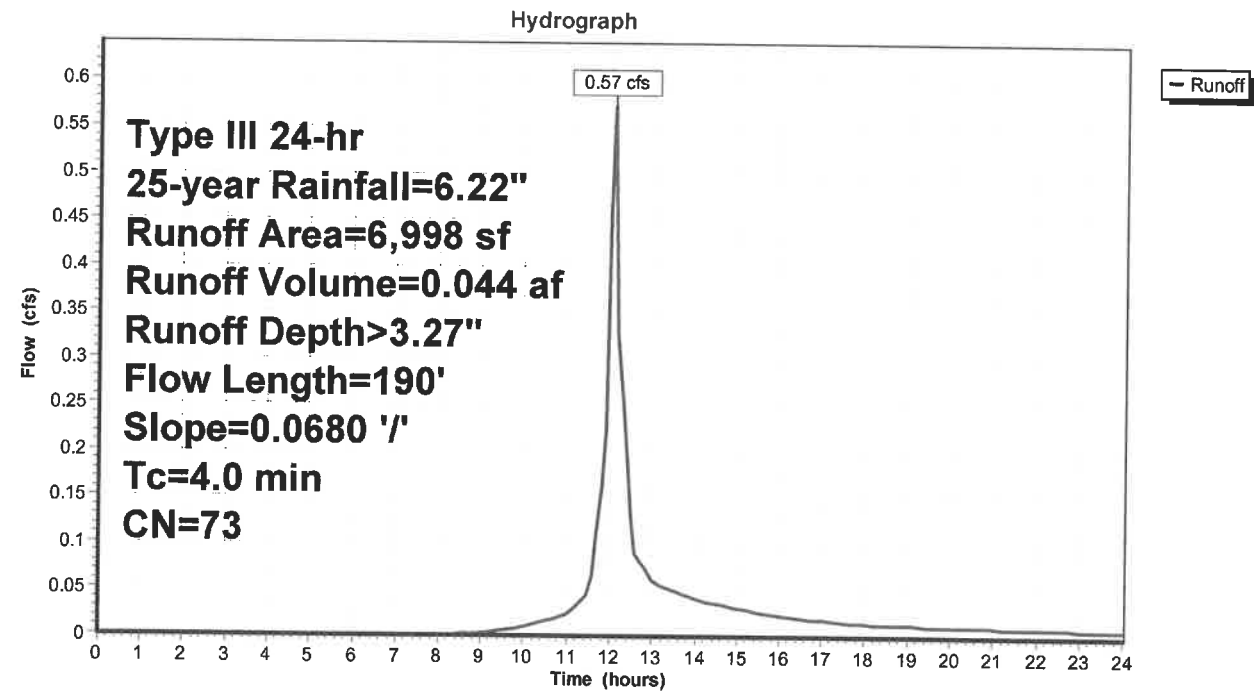
Runoff = 0.57 cfs @ 12.08 hrs, Volume= 0.044 af, Depth> 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 25-year Rainfall=6.22"

Area (sf)	CN	Description
3,318	60	Woods, Fair, HSG B
3,680	85	Gravel roads, HSG B
6,998	73	Weighted Average
6,998		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	190	0.0680	0.80		Lag/CN Method, Tc-3

Subcatchment 3S: Drainage Area 3



Summary for Subcatchment 4S: Drainage to Ware Road

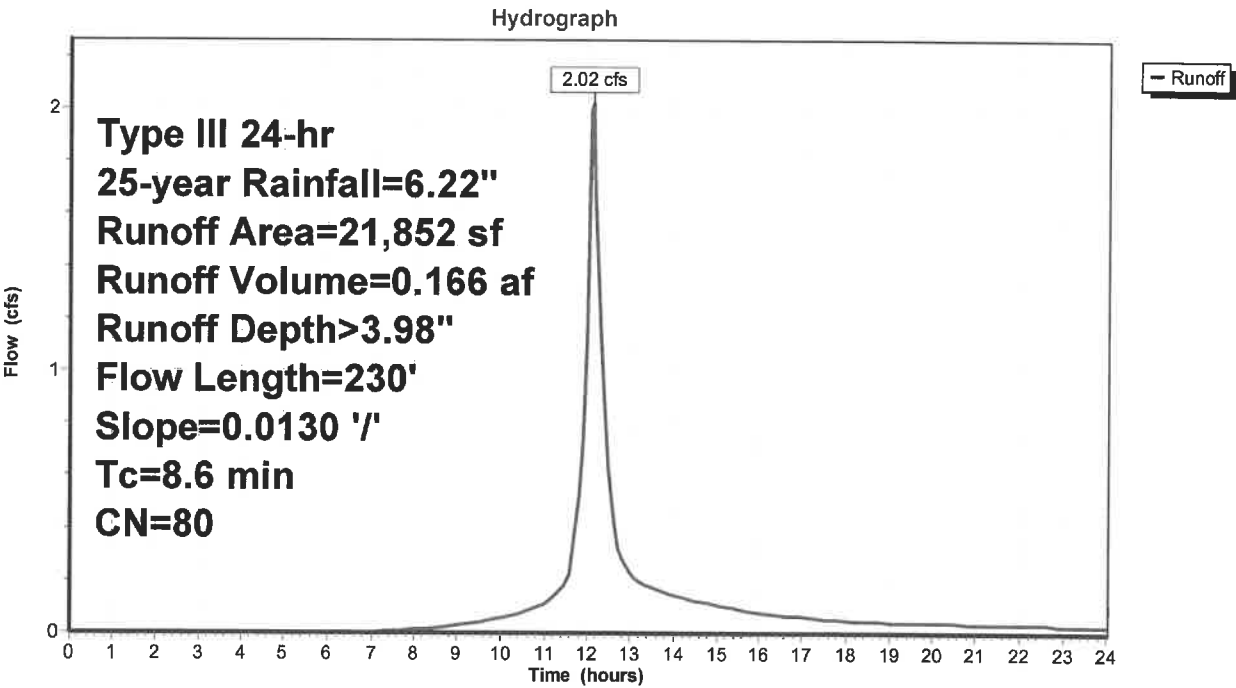
Runoff = 2.02 cfs @ 12.12 hrs, Volume= 0.166 af, Depth> 3.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 25-year Rainfall=6.22"

Area (sf)	CN	Description
* 8,550	98	Pavement & roof, HSG B
13,302	69	50-75% Grass cover, Fair, HSG B
21,852	80	Weighted Average
13,302		60.87% Pervious Area
8,550		39.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	230	0.0130	0.45		Lag/CN Method, Tc-4

Subcatchment 4S: Drainage to Ware Road



Summary for Pond 2P: Drainage Manhole

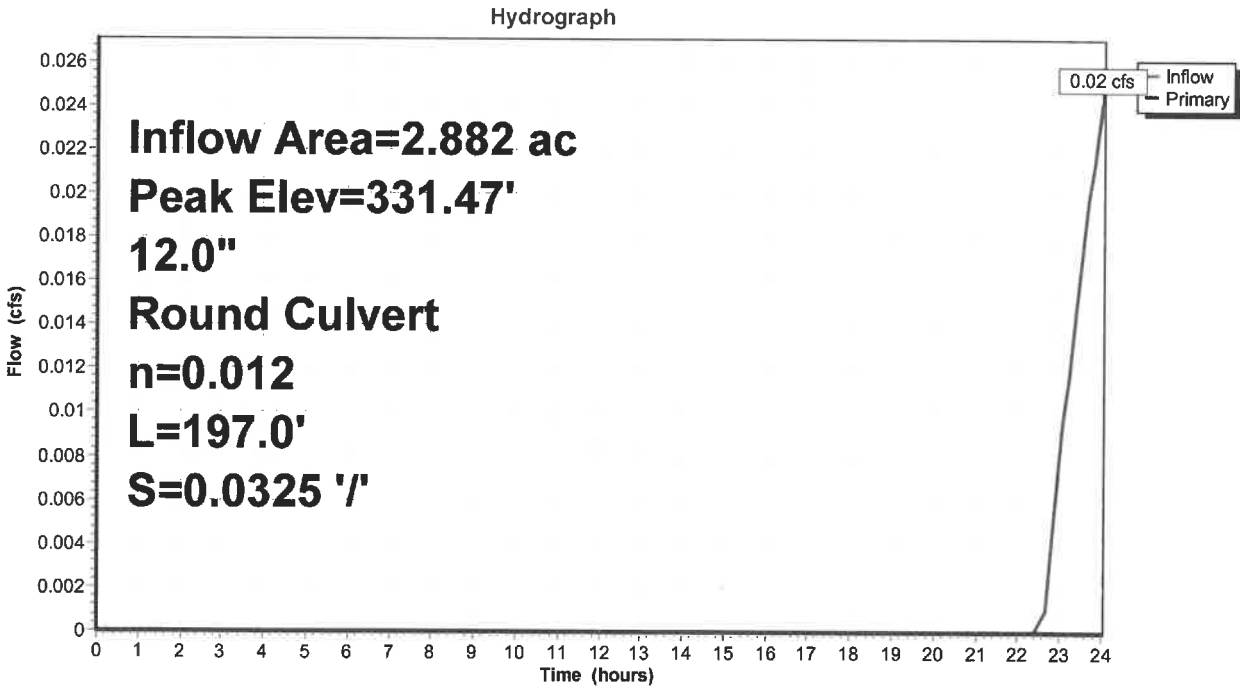
Inflow Area = 2.882 ac, 28.58% Impervious, Inflow Depth > 0.01" for 25-year event  
Inflow = 0.02 cfs @ 24.00 hrs, Volume= 0.002 af  
Outflow = 0.02 cfs @ 24.00 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.02 cfs @ 24.00 hrs, Volume= 0.002 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Peak Elev= 331.47' @ 24.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	331.40'	<b>12.0" Round Culvert</b> L= 197.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 331.40' / 325.00' S= 0.0325 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.02 cfs @ 24.00 hrs HW=331.47' (Free Discharge)  
1=Culvert (Inlet Controls 0.02 cfs @ 0.92 fps)

Pond 2P: Drainage Manhole



Summary for Pond 3P: Catch Basin 1

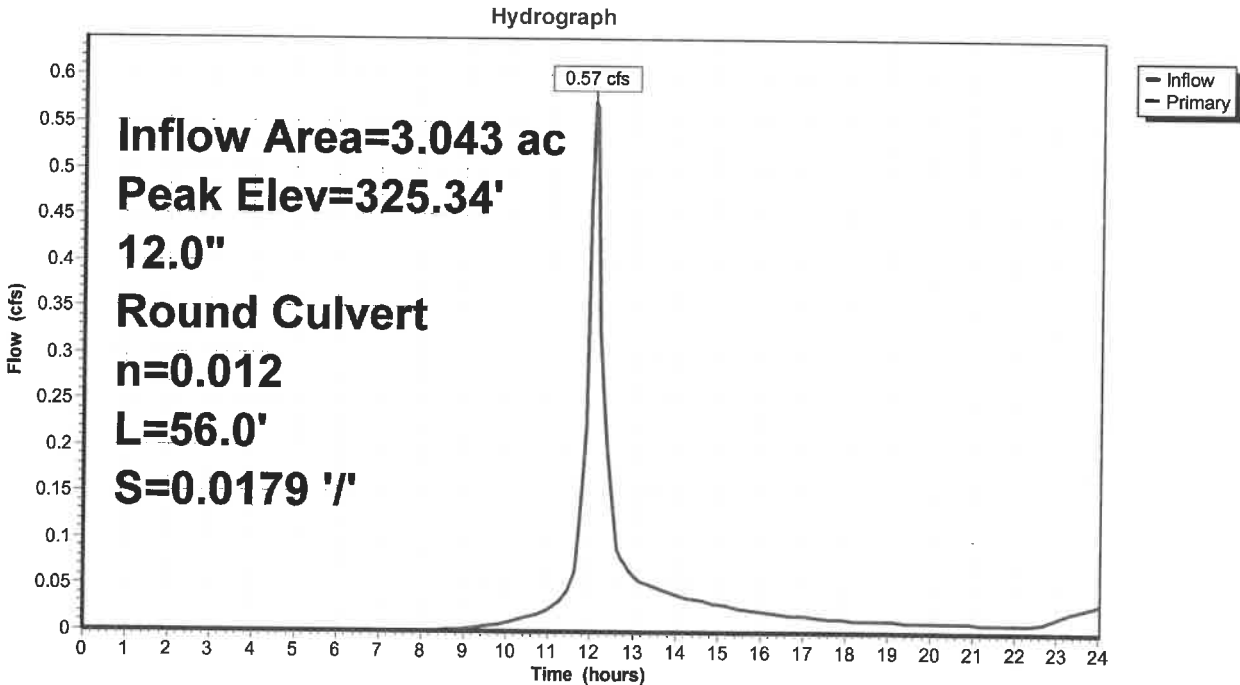
Inflow Area = 3.043 ac, 27.07% Impervious, Inflow Depth > 0.18" for 25-year event  
Inflow = 0.57 cfs @ 12.08 hrs, Volume= 0.045 af  
Outflow = 0.57 cfs @ 12.08 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.57 cfs @ 12.08 hrs, Volume= 0.045 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Peak Elev= 325.34' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	325.00'	<b>12.0" Round Culvert</b> L= 56.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 325.00' / 324.00' S= 0.0179 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.54 cfs @ 12.08 hrs HW=325.33' (Free Discharge)  
1=Culvert (Inlet Controls 0.54 cfs @ 2.43 fps)

Pond 3P: Catch Basin 1





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Ware Road  
Type III 24-hr 25-year Rainfall=6.22"

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**Summary for Pond 5P: Stormwater Basin**

Inflow Area = 2.882 ac, 28.58% Impervious, Inflow Depth > 2.06" for 25-year event  
 Inflow = 5.23 cfs @ 12.20 hrs, Volume= 0.495 af  
 Outflow = 0.02 cfs @ 24.00 hrs, Volume= 0.002 af, Atten= 100%, Lag= 708.0 min  
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Primary = 0.02 cfs @ 24.00 hrs, Volume= 0.002 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
 Peak Elev= 332.07' @ 24.00 hrs Surf.Area= 7,488 sf Storage= 21,491 cf

Plug-Flow detention time= 752.6 min calculated for 0.002 af (0% of inflow)  
 Center-of-Mass det. time= 548.3 min ( 1,413.0 - 864.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	326.00'	37,412 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
326.00	420	0	0
328.00	1,390	1,810	1,810
329.00	2,350	1,870	3,680
330.00	5,795	4,073	7,753
332.00	7,435	13,230	20,983
333.00	8,207	7,821	28,804
334.00	9,010	8,609	37,412

Device	Routing	Invert	Outlet Devices
#1	Discarded	329.00'	<b>5.000 in/hr Exfiltration over Surface area from 329.00' - 329.00'</b> Excluded Surface area = 2,350 sf
#2	Primary	332.00'	<b>12.0" Round Culvert</b> L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 332.00' / 331.50' S= 0.0278 ' / ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Device 1	332.00'	<b>4.0" Vert. Orifice/Grate</b> C= 0.600
#4	Device 1	333.00'	<b>6.0" Vert. Orifice/Grate</b> C= 0.600
#5	Secondary	334.00'	<b>12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#6	Tertiary	334.00'	<b>5.0' long x 15.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## Proposed Conditions

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Ware Road  
Type III 24-hr 25-year Rainfall=6.22"

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**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)

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

↳ **3=Orifice/Grate** ( Controls 0.00 cfs)

↳ **4=Orifice/Grate** ( Controls 0.00 cfs)

**Primary OutFlow** Max=0.02 cfs @ 24.00 hrs HW=332.07' (Free Discharge)

↳ **2=Culvert** (Inlet Controls 0.02 cfs @ 0.89 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)

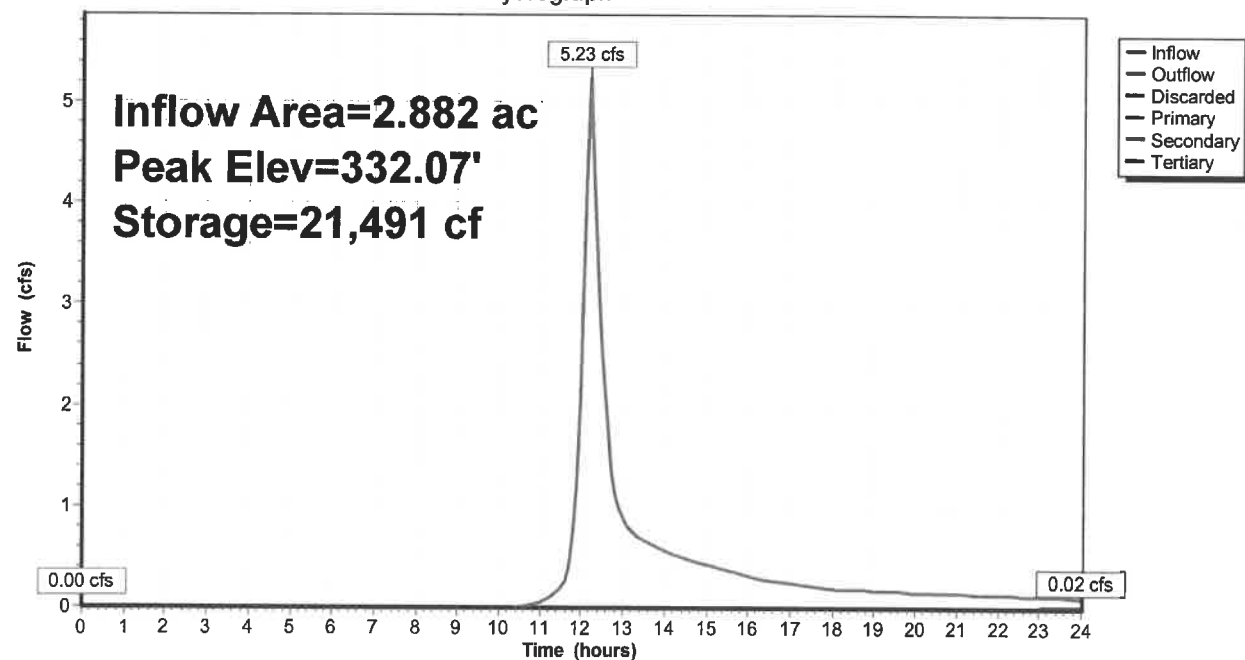
↳ **5=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)

↳ **6=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Pond 5P: Stormwater Basin

Hydrograph



Summary for Subcatchment 1S: Drainage Area 1 - East

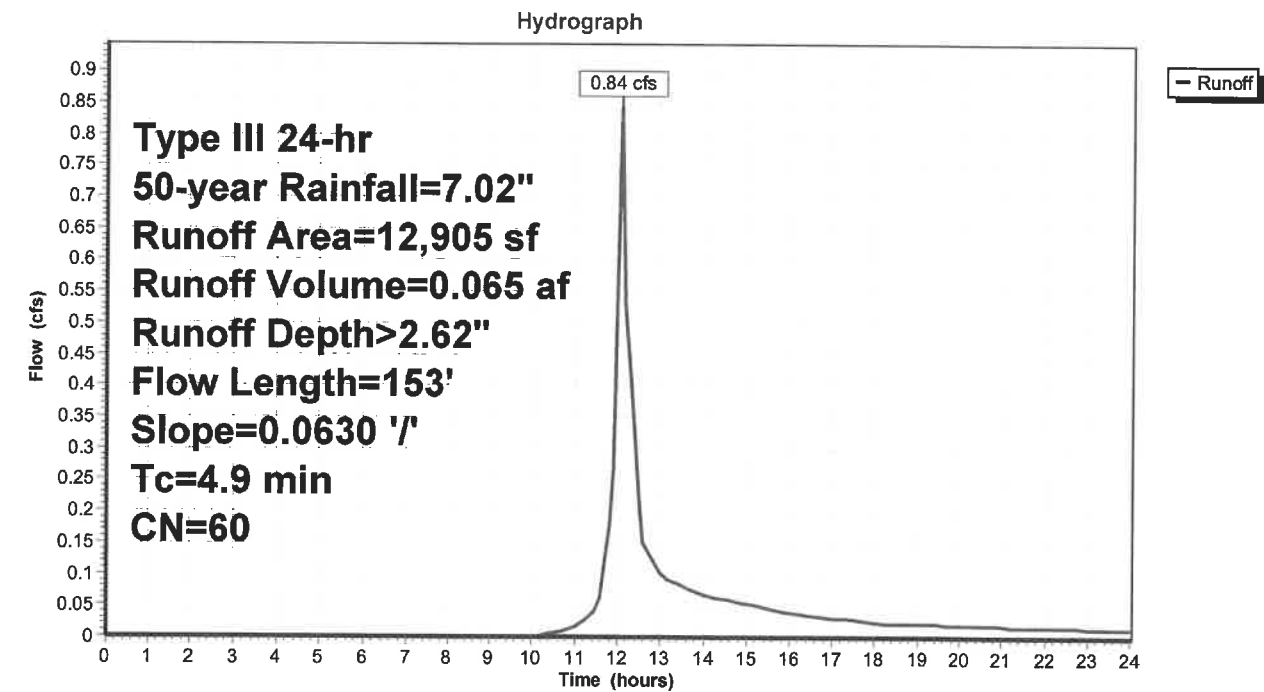
Runoff = 0.84 cfs @ 12.10 hrs, Volume= 0.065 af, Depth> 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 50-year Rainfall=7.02"

Area (sf)	CN	Description
11,105	60	Woods, Fair, HSG B
1,800	61	>75% Grass cover, Good, HSG B
12,905	60	Weighted Average
12,905		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	153	0.0630	0.52		Lag/CN Method, Tc-1

Subcatchment 1S: Drainage Area 1 - East



Summary for Subcatchment 2S: Drainage Area 2

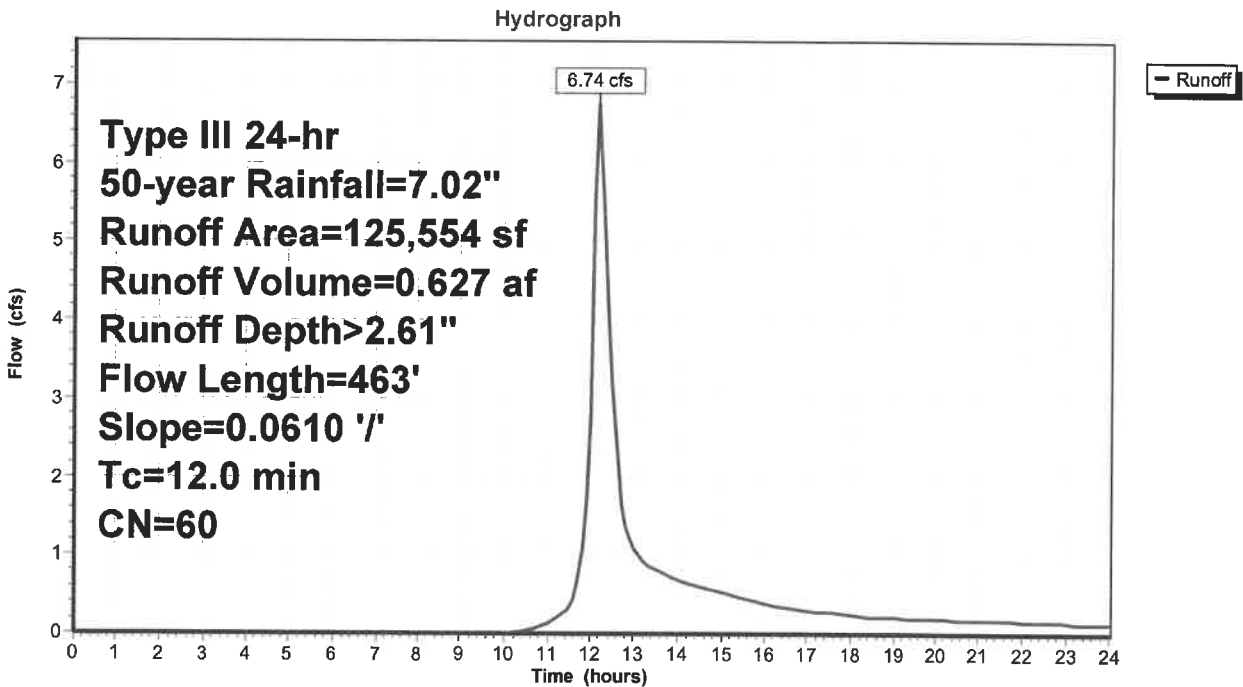
Runoff = 6.74 cfs @ 12.20 hrs, Volume= 0.627 af, Depth> 2.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 50-year Rainfall=7.02"

	Area (sf)	CN	Description
*	13,400	36	Woods, Fair, HSG A
	35,880	98	Paved / Roof
	25,170	61	>75% Grass cover, Good, HSG B
	51,104	39	>75% Grass cover, Good, HSG A
	125,554	60	Weighted Average
	89,674		71.42% Pervious Area
	35,880		28.58% Impervious Area

Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
12.0	463	0.0610	0.64		Lag/CN Method, Tc-2

Subcatchment 2S: Drainage Area 2



Summary for Subcatchment 3S: Drainage Area 3

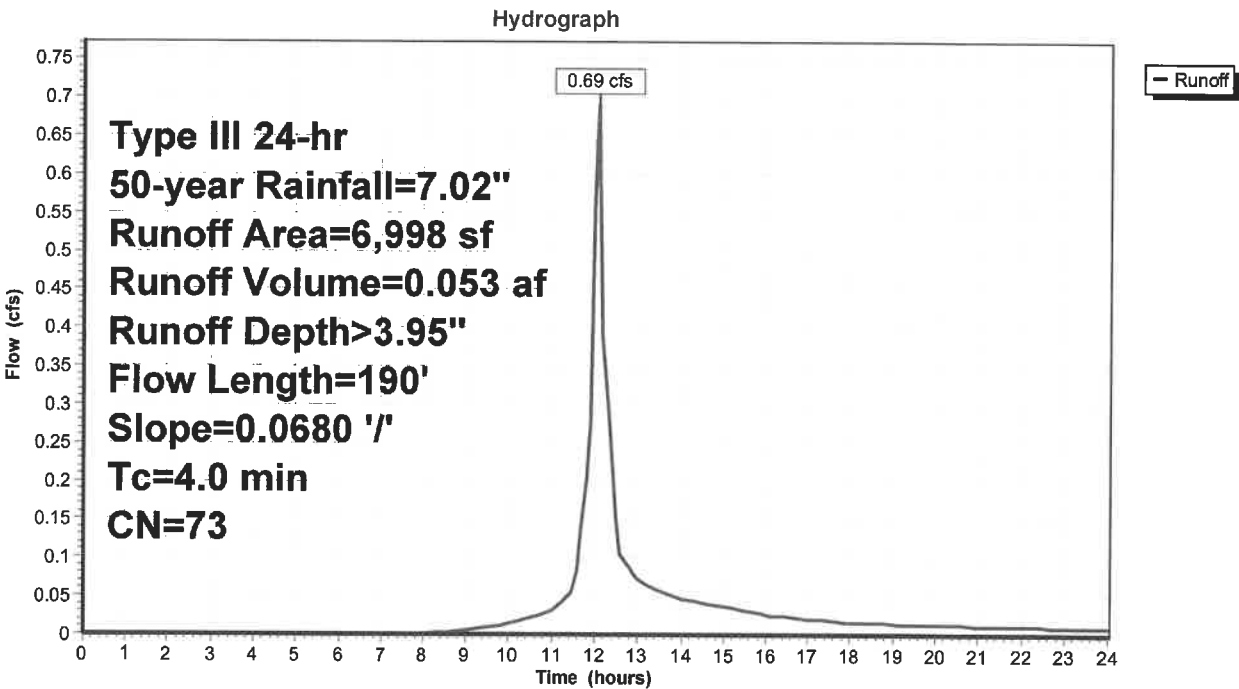
Runoff = 0.69 cfs @ 12.08 hrs, Volume= 0.053 af, Depth> 3.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 50-year Rainfall=7.02"

Area (sf)	CN	Description
3,318	60	Woods, Fair, HSG B
3,680	85	Gravel roads, HSG B
6,998	73	Weighted Average
6,998		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	190	0.0680	0.80		Lag/CN Method, Tc-3

Subcatchment 3S: Drainage Area 3



Summary for Subcatchment 4S: Drainage to Ware Road

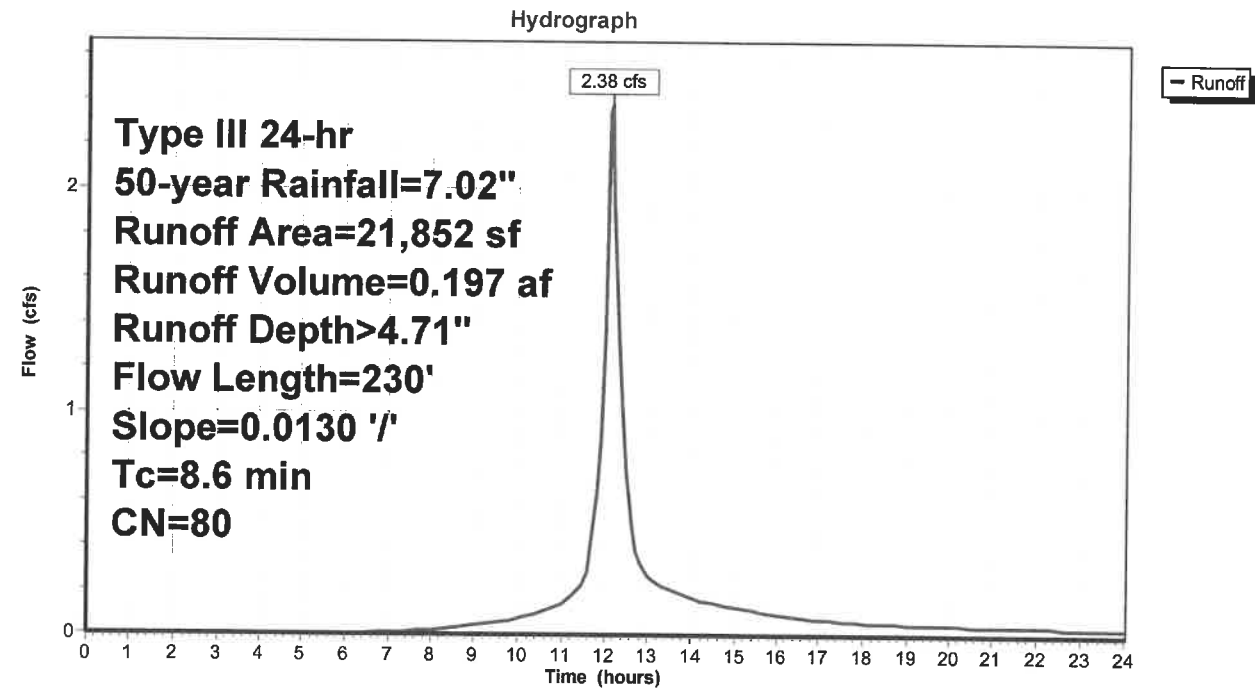
Runoff = 2.38 cfs @ 12.12 hrs, Volume= 0.197 af, Depth> 4.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 50-year Rainfall=7.02"

Area (sf)	CN	Description
* 8,550	98	Pavement & roof, HSG B
13,302	69	50-75% Grass cover, Fair, HSG B
21,852	80	Weighted Average
13,302		60.87% Pervious Area
8,550		39.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	230	0.0130	0.45		Lag/CN Method, Tc-4

Subcatchment 4S: Drainage to Ware Road



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Ware Road  
Type III 24-hr 50-year Rainfall=7.02"  
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Summary for Pond 2P: Drainage Manhole

Inflow Area = 2.882 ac, 28.58% Impervious, Inflow Depth > 0.48" for 50-year event  
Inflow = 0.21 cfs @ 18.74 hrs, Volume= 0.115 af  
Outflow = 0.21 cfs @ 18.74 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.21 cfs @ 18.74 hrs, Volume= 0.115 af

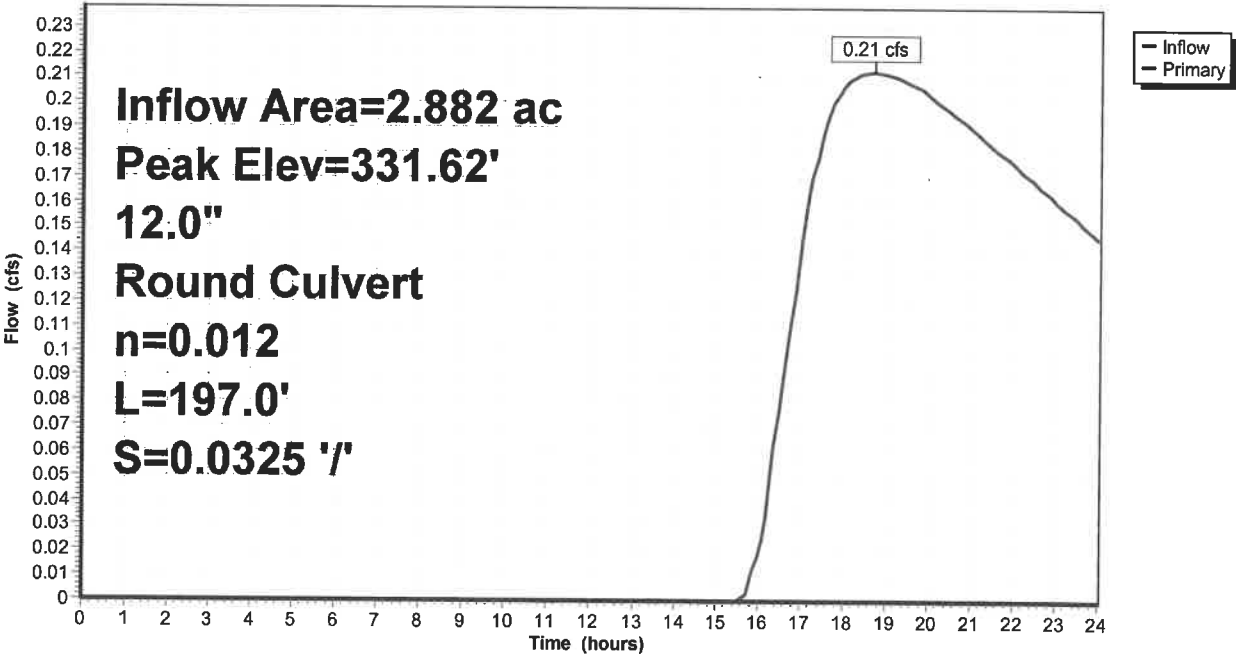
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Peak Elev= 331.62' @ 18.74 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	331.40'	<b>12.0" Round Culvert</b> L= 197.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 331.40' / 325.00' S= 0.0325 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 18.74 hrs HW=331.62' (Free Discharge)  
1=Culvert (Inlet Controls 0.21 cfs @ 1.61 fps)

Pond 2P: Drainage Manhole

Hydrograph



Summary for Pond 3P: Catch Basin 1

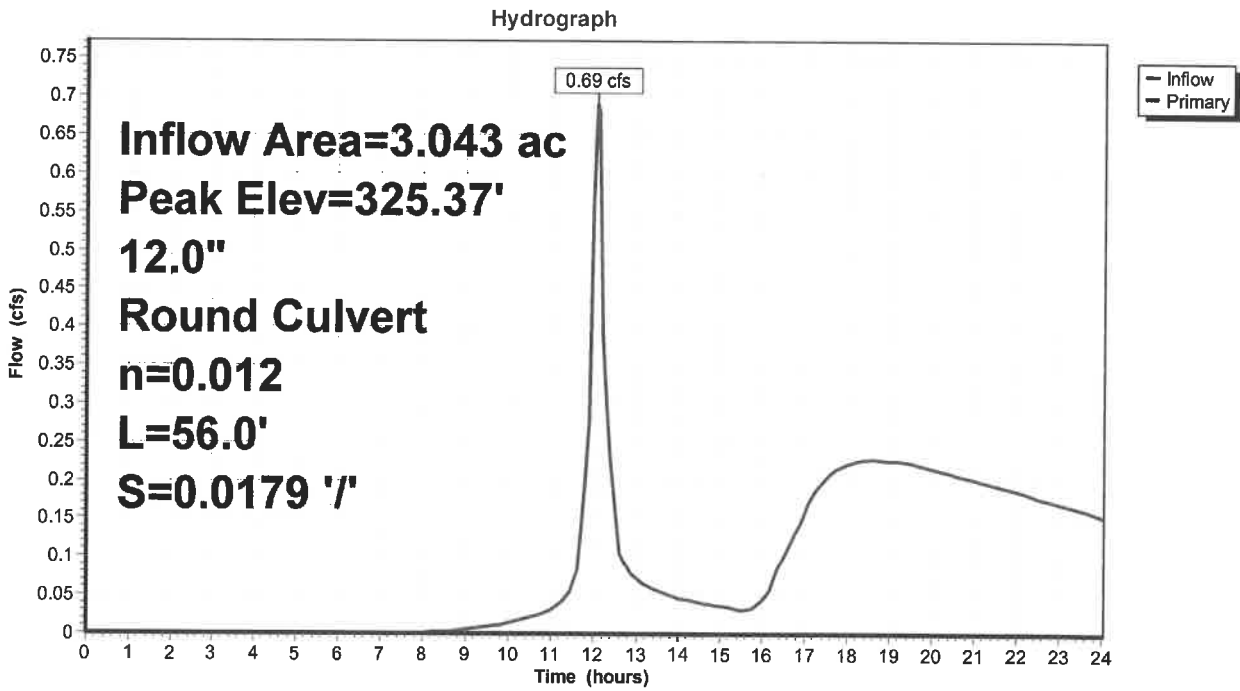
Inflow Area = 3.043 ac, 27.07% Impervious, Inflow Depth > 0.66" for 50-year event  
Inflow = 0.69 cfs @ 12.08 hrs, Volume= 0.167 af  
Outflow = 0.69 cfs @ 12.08 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.69 cfs @ 12.08 hrs, Volume= 0.167 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Peak Elev= 325.37' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	325.00'	<b>12.0" Round Culvert</b> L= 56.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 325.00' / 324.00' S= 0.0179 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.65 cfs @ 12.08 hrs HW=325.36' (Free Discharge)  
1=Culvert (Inlet Controls 0.65 cfs @ 2.56 fps)

Pond 3P: Catch Basin 1





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Ware Road  
Type III 24-hr 50-year Rainfall=7.02"

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**Summary for Pond 5P: Stormwater Basin**

Inflow Area = 2.882 ac, 28.58% Impervious, Inflow Depth > 2.61" for 50-year event  
Inflow = 6.74 cfs @ 12.20 hrs, Volume= 0.627 af  
Outflow = 0.21 cfs @ 18.74 hrs, Volume= 0.115 af, Atten= 97%, Lag= 392.9 min  
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.21 cfs @ 18.74 hrs, Volume= 0.115 af  
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Peak Elev= 332.22' @ 18.74 hrs Surf.Area= 7,606 sf Storage= 22,653 cf

Plug-Flow detention time= 496.2 min calculated for 0.115 af (18% of inflow)  
Center-of-Mass det. time= 352.2 min ( 1,209.8 - 857.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	326.00'	37,412 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
326.00	420	0	0
328.00	1,390	1,810	1,810
329.00	2,350	1,870	3,680
330.00	5,795	4,073	7,753
332.00	7,435	13,230	20,983
333.00	8,207	7,821	28,804
334.00	9,010	8,609	37,412

Device	Routing	Invert	Outlet Devices
#1	Discarded	329.00'	<b>5.000 in/hr Exfiltration over Surface area from 329.00' - 329.00'</b> Excluded Surface area = 2,350 sf
#2	Primary	332.00'	<b>12.0" Round Culvert</b> L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 332.00' / 331.50' S= 0.0278 ' / ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Device 1	332.00'	<b>4.0" Vert. Orifice/Grate</b> C= 0.600
#4	Device 1	333.00'	<b>6.0" Vert. Orifice/Grate</b> C= 0.600
#5	Secondary	334.00'	<b>12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#6	Tertiary	334.00'	<b>5.0' long x 15.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Proposed Conditions**

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Ware Road  
Type III 24-hr 50-year Rainfall=7.02"  
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**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)

- 1=Exfiltration ( Controls 0.00 cfs)
- 3=Orifice/Grate ( Controls 0.00 cfs)
- 4=Orifice/Grate ( Controls 0.00 cfs)

**Primary OutFlow** Max=0.21 cfs @ 18.74 hrs HW=332.22' (Free Discharge)

- 2=Culvert (Inlet Controls 0.21 cfs @ 1.60 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)

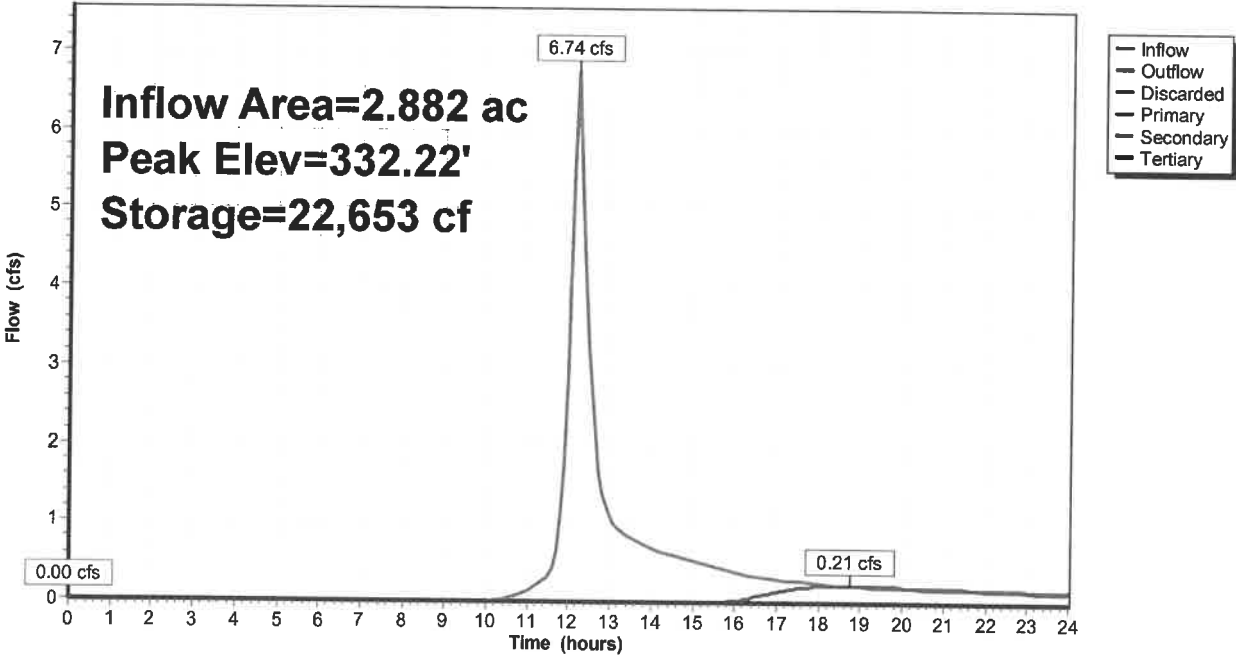
- 5=Orifice/Grate ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)

- 6=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond 5P: Stormwater Basin**

Hydrograph



Summary for Subcatchment 1S: Drainage Area 1 - East

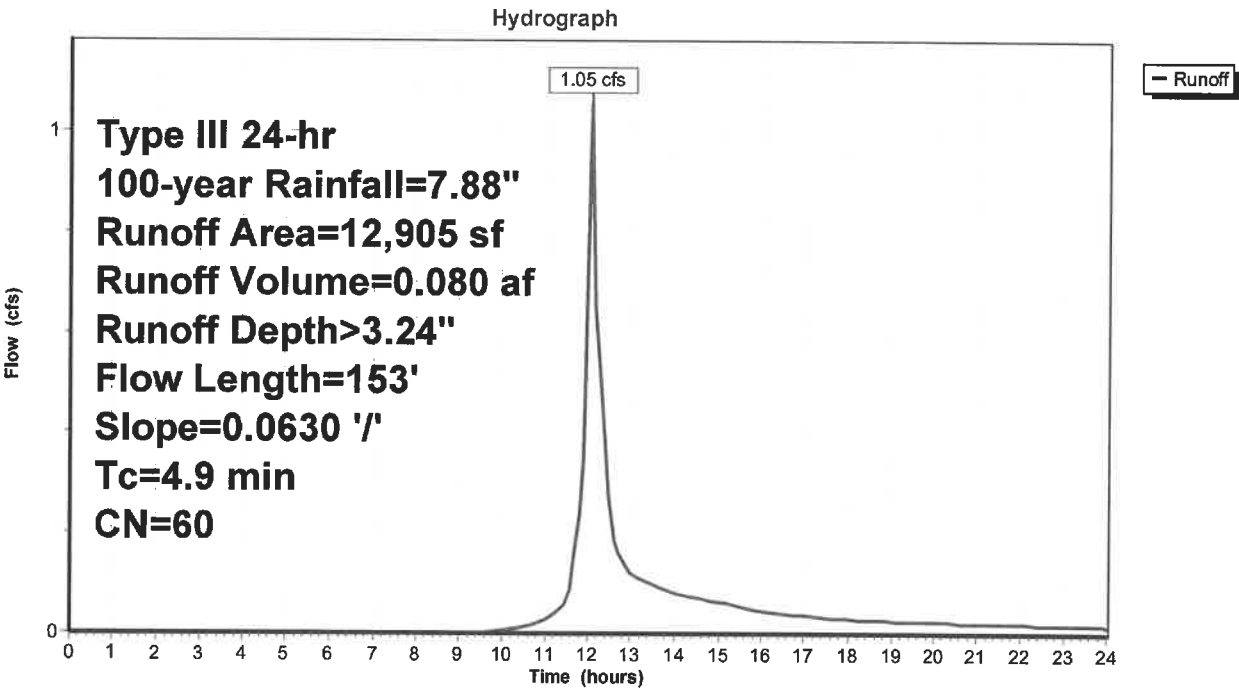
Runoff = 1.05 cfs @ 12.10 hrs, Volume= 0.080 af, Depth> 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
11,105	60	Woods, Fair, HSG B
1,800	61	>75% Grass cover, Good, HSG B
12,905	60	Weighted Average
12,905		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	153	0.0630	0.52		Lag/CN Method, Tc-1

Subcatchment 1S: Drainage Area 1 - East



Summary for Subcatchment 2S: Drainage Area 2

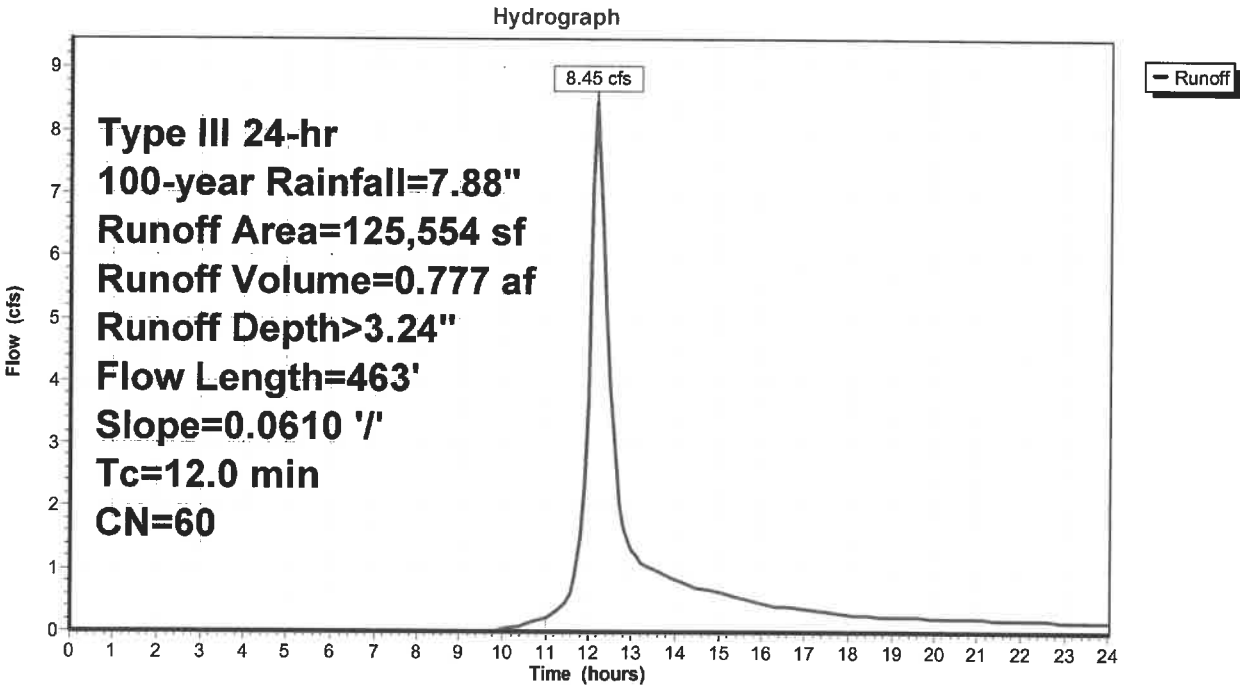
Runoff = 8.45 cfs @ 12.19 hrs, Volume= 0.777 af, Depth> 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 100-year Rainfall=7.88"

	Area (sf)	CN	Description
*	13,400	36	Woods, Fair, HSG A
	35,880	98	Paved / Roof
	25,170	61	>75% Grass cover, Good, HSG B
	51,104	39	>75% Grass cover, Good, HSG A
	125,554	60	Weighted Average
	89,674		71.42% Pervious Area
	35,880		28.58% Impervious Area

Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
12.0	463	0.0610	0.64		Lag/CN Method, Tc-2

Subcatchment 2S: Drainage Area 2



Summary for Subcatchment 3S: Drainage Area 3

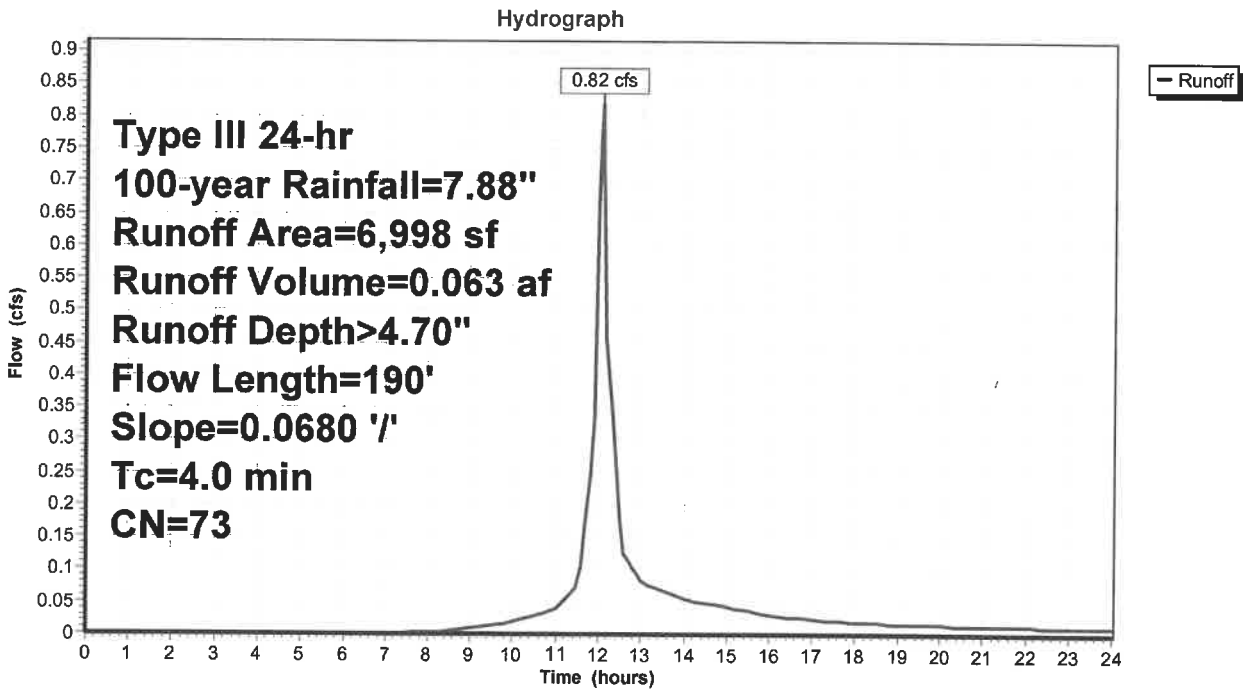
Runoff = 0.82 cfs @ 12.08 hrs, Volume= 0.063 af, Depth> 4.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
3,318	60	Woods, Fair, HSG B
3,680	85	Gravel roads, HSG B
6,998	73	Weighted Average
6,998		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	190	0.0680	0.80		Lag/CN Method, Tc-3

Subcatchment 3S: Drainage Area 3



Summary for Subcatchment 4S: Drainage to Ware Road

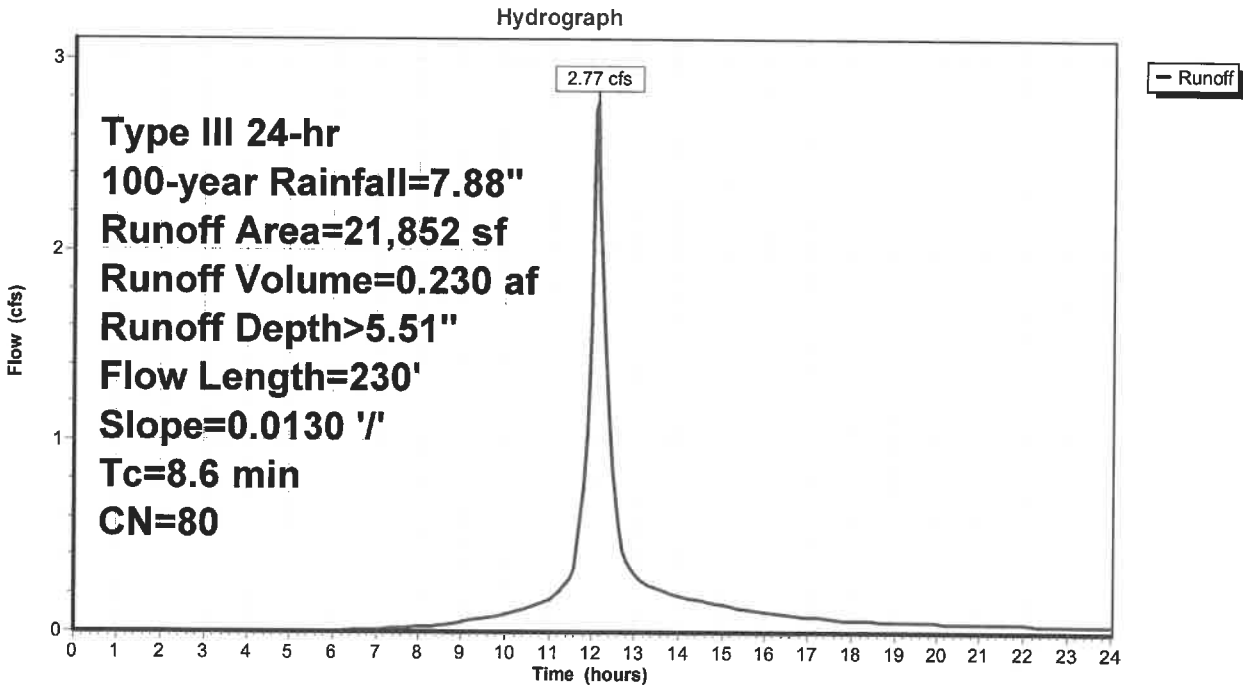
Runoff = 2.77 cfs @ 12.12 hrs, Volume= 0.230 af, Depth> 5.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
* 8,550	98	Pavement & roof, HSG B
13,302	69	50-75% Grass cover, Fair, HSG B
21,852	80	Weighted Average
13,302		60.87% Pervious Area
8,550		39.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	230	0.0130	0.45		Lag/CN Method, Tc=4

Subcatchment 4S: Drainage to Ware Road



Summary for Pond 2P: Drainage Manhole

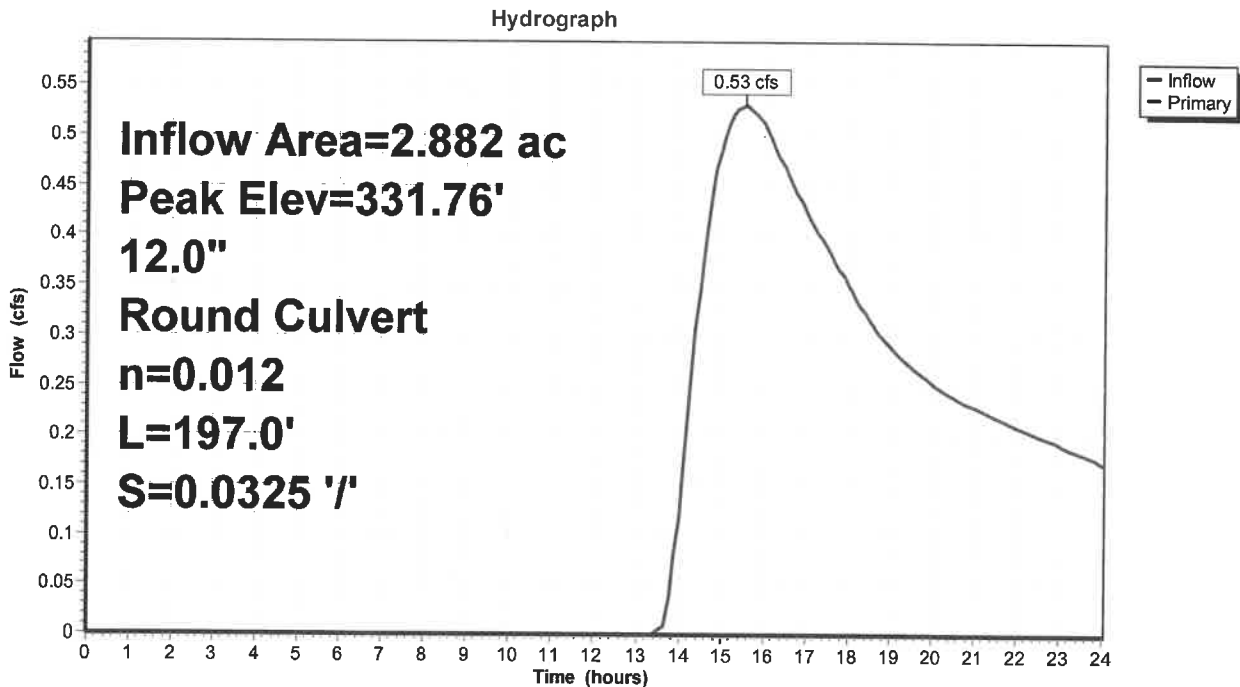
Inflow Area = 2.882 ac, 28.58% Impervious, Inflow Depth > 1.09" for 100-year event  
Inflow = 0.53 cfs @ 15.57 hrs, Volume= 0.262 af  
Outflow = 0.53 cfs @ 15.57 hrs, Volume= 0.262 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.53 cfs @ 15.57 hrs, Volume= 0.262 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Peak Elev= 331.76' @ 15.57 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	331.40'	<b>12.0" Round Culvert</b> L= 197.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 331.40' / 325.00' S= 0.0325 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.53 cfs @ 15.57 hrs HW=331.76' (Free Discharge)  
1=Culvert (Inlet Controls 0.53 cfs @ 2.05 fps)

Pond 2P: Drainage Manhole



Summary for Pond 3P: Catch Basin 1

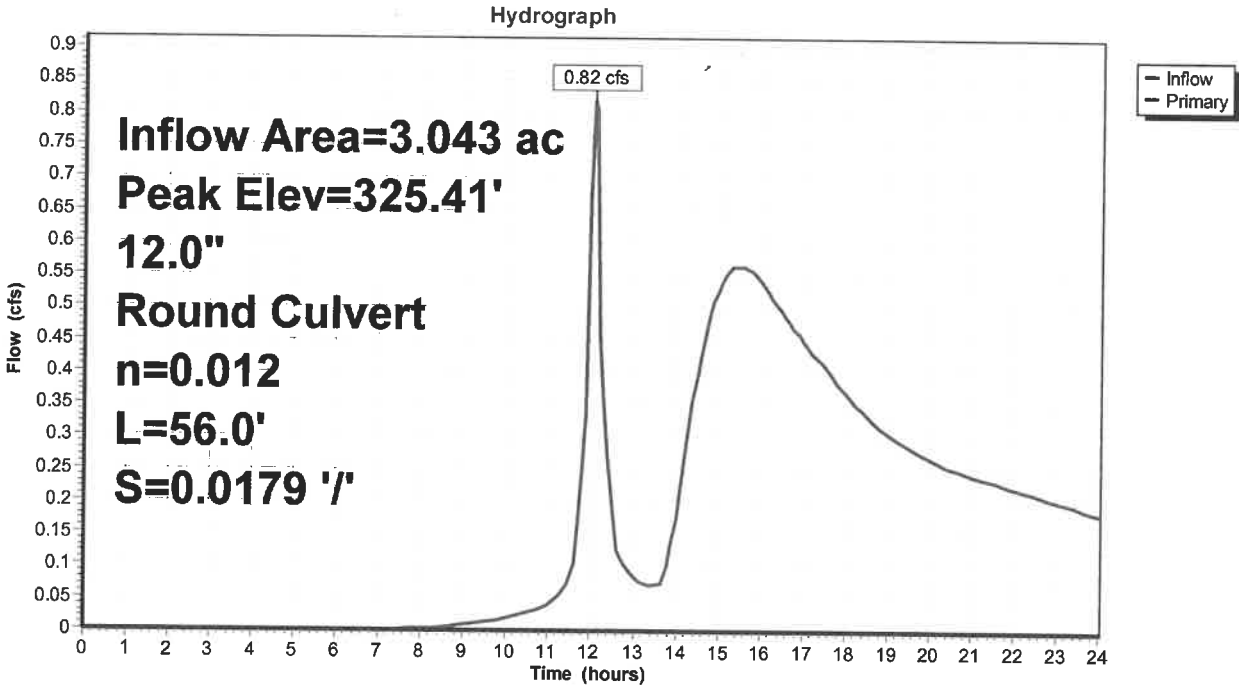
Inflow Area = 3.043 ac, 27.07% Impervious, Inflow Depth > 1.28" for 100-year event  
Inflow = 0.82 cfs @ 12.08 hrs, Volume= 0.325 af  
Outflow = 0.82 cfs @ 12.08 hrs, Volume= 0.325 af, Atten= 0%, Lag= 0.0 min  
Primary = 0.82 cfs @ 12.08 hrs, Volume= 0.325 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs  
Peak Elev= 325.41' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	325.00'	12.0" Round Culvert L= 56.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 325.00' / 324.00' S= 0.0179 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.78 cfs @ 12.08 hrs HW=325.40' (Free Discharge)  
1=Culvert (Inlet Controls 0.78 cfs @ 2.68 fps)

Pond 3P: Catch Basin 1





**Proposed Conditions**

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Ware Road  
Type III 24-hr 100-year Rainfall=7.88"

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**Summary for Pond 5P: Stormwater Basin**

Inflow Area = 2.882 ac, 28.58% Impervious, Inflow Depth > 3.24" for 100-year event  
Inflow = 8.45 cfs @ 12.19 hrs, Volume= 0.777 af  
Outflow = 0.53 cfs @ 15.57 hrs, Volume= 0.262 af, Atten= 94%, Lag= 202.6 min  
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.53 cfs @ 15.57 hrs, Volume= 0.262 af  
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Peak Elev= 332.36' @ 15.57 hrs Surf.Area= 7,715 sf Storage= 23,727 cf

Plug-Flow detention time= 369.0 min calculated for 0.262 af (34% of inflow)

Center-of-Mass det. time= 237.3 min ( 1,088.6 - 851.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	326.00'	37,412 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
326.00	420	0	0
328.00	1,390	1,810	1,810
329.00	2,350	1,870	3,680
330.00	5,795	4,073	7,753
332.00	7,435	13,230	20,983
333.00	8,207	7,821	28,804
334.00	9,010	8,609	37,412

Device	Routing	Invert	Outlet Devices
#1	Discarded	329.00'	<b>5.000 in/hr Exfiltration over Surface area from 329.00' - 329.00'</b> Excluded Surface area = 2,350 sf
#2	Primary	332.00'	<b>12.0" Round Culvert</b> L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 332.00' / 331.50' S= 0.0278 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#3	Device 1	332.00'	<b>4.0" Vert. Orifice/Grate</b> C= 0.600
#4	Device 1	333.00'	<b>6.0" Vert. Orifice/Grate</b> C= 0.600
#5	Secondary	334.00'	<b>12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#6	Tertiary	334.00'	<b>5.0' long x 15.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)

- 1=Exfiltration ( Controls 0.00 cfs)
- 3=Orifice/Grate ( Controls 0.00 cfs)
- 4=Orifice/Grate ( Controls 0.00 cfs)

Primary OutFlow Max=0.53 cfs @ 15.57 hrs HW=332.36' (Free Discharge)

- 2=Culvert (Inlet Controls 0.53 cfs @ 2.05 fps)

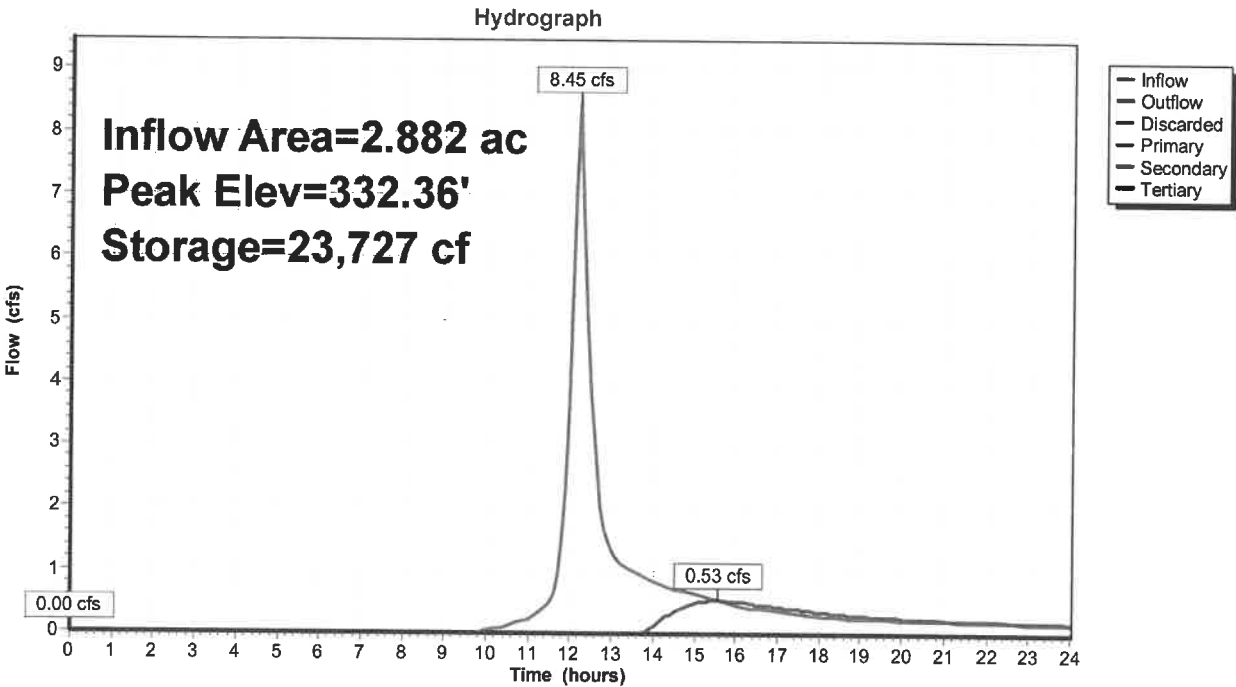
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)

- 5=Orifice/Grate ( Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.00' (Free Discharge)

- 6=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

Pond 5P: Stormwater Basin



**SUPPORTING DOCUMENTATION**

**NOAA Point Precipitation Estimates  
Web Soil Survey**



NOAA Atlas 14, Volume 10, Version 3  
Location name: Dayville, Connecticut, USA\*  
Latitude: 41.8768°, Longitude: -71.8643°  
Elevation: 326 ft\*\*  
\* source: ESRI Maps  
\*\* source: USGS



### POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF\_tabular | PF\_graphical | Maps\_&\_aerials

### PF tabular

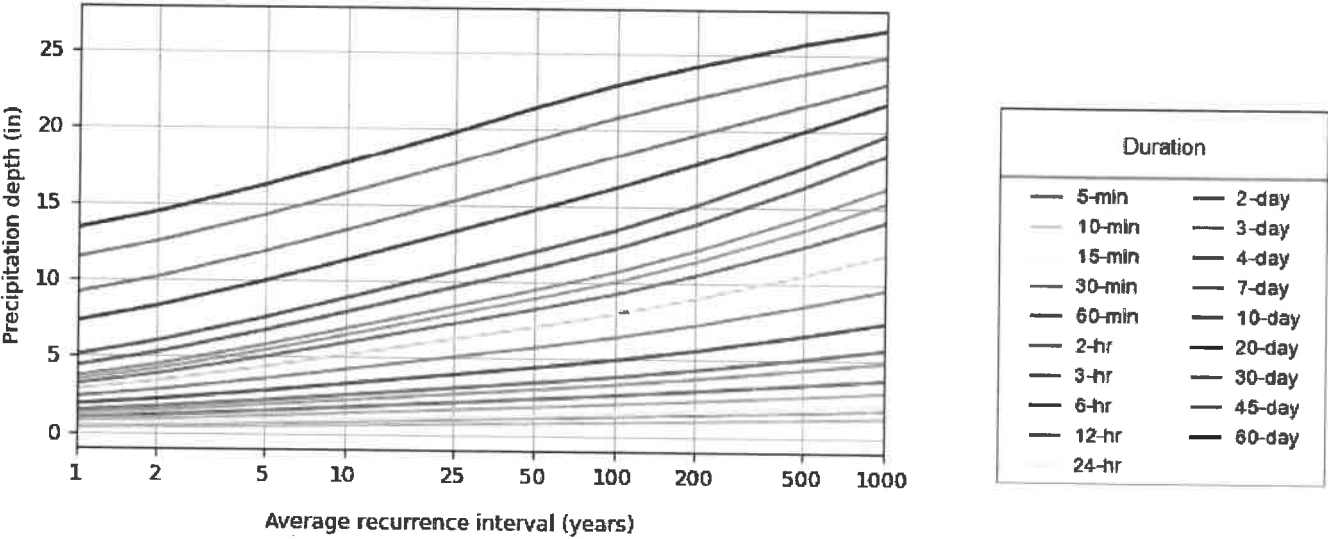
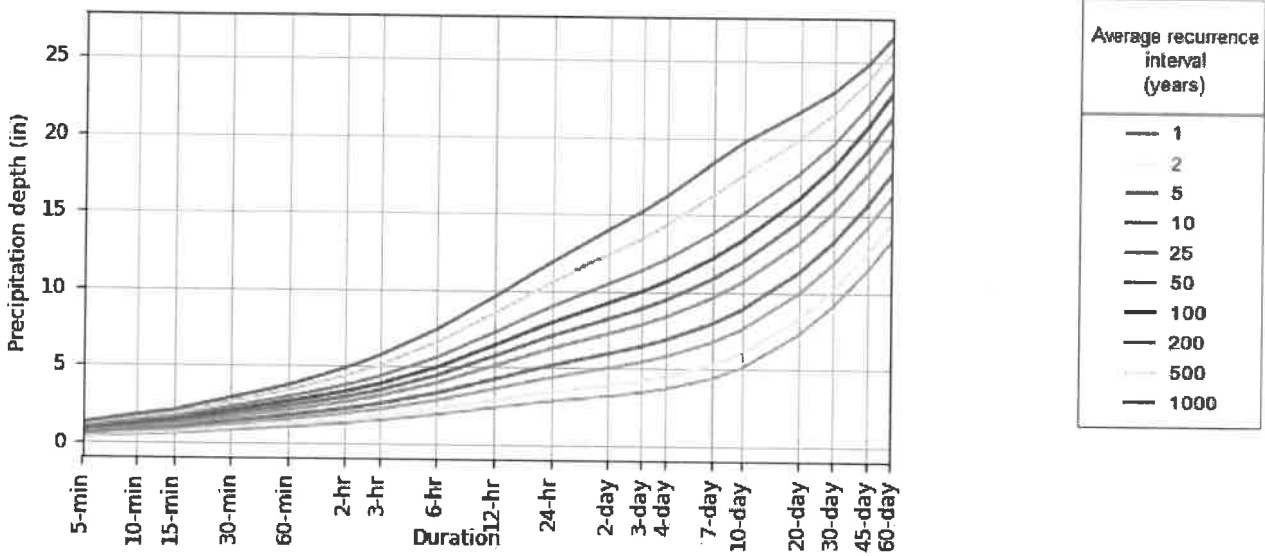
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) <sup>1</sup>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.331 (0.259-0.420)	0.395 (0.308-0.500)	0.499 (0.388-0.635)	0.585 (0.452-0.748)	0.703 (0.525-0.936)	0.793 (0.580-1.08)	0.885 (0.628-1.24)	0.986 (0.665-1.42)	1.13 (0.731-1.68)	1.24 (0.785-1.88)
10-min	0.469 (0.366-0.594)	0.559 (0.436-0.709)	0.706 (0.548-0.898)	0.828 (0.639-1.06)	0.996 (0.744-1.32)	1.12 (0.821-1.52)	1.25 (0.889-1.76)	1.40 (0.942-2.01)	1.60 (1.04-2.38)	1.76 (1.11-2.67)
15-min	0.552 (0.431-0.699)	0.658 (0.513-0.834)	0.831 (0.645-1.06)	0.974 (0.752-1.25)	1.17 (0.875-1.56)	1.32 (0.966-1.79)	1.48 (1.05-2.07)	1.64 (1.11-2.37)	1.88 (1.22-2.80)	2.07 (1.31-3.14)
30-min	0.776 (0.605-0.983)	0.924 (0.720-1.17)	1.17 (0.905-1.48)	1.37 (1.06-1.75)	1.64 (1.23-2.19)	1.85 (1.36-2.51)	2.07 (1.47-2.90)	2.30 (1.55-3.32)	2.63 (1.71-3.92)	2.89 (1.83-4.39)
60-min	0.999 (0.780-1.27)	1.19 (0.927-1.51)	1.50 (1.17-1.91)	1.76 (1.36-2.25)	2.11 (1.58-2.81)	2.38 (1.74-3.23)	2.66 (1.89-3.74)	2.96 (2.00-4.26)	3.38 (2.20-5.04)	3.72 (2.36-5.65)
2-hr	1.28 (1.00-1.61)	1.51 (1.19-1.91)	1.90 (1.48-2.40)	2.22 (1.73-2.82)	2.66 (2.00-3.54)	2.99 (2.21-4.06)	3.34 (2.40-4.71)	3.76 (2.54-5.37)	4.36 (2.83-6.45)	4.87 (3.09-7.34)
3-hr	1.47 (1.16-1.85)	1.74 (1.37-2.19)	2.19 (1.71-2.76)	2.56 (1.99-3.24)	3.06 (2.32-4.06)	3.44 (2.55-4.66)	3.84 (2.78-5.41)	4.33 (2.93-6.17)	5.06 (3.30-7.46)	5.69 (3.62-8.54)
6-hr	1.88 (1.49-2.34)	2.23 (1.76-2.78)	2.80 (2.21-3.51)	3.28 (2.57-4.13)	3.94 (3.00-5.19)	4.43 (3.30-5.97)	4.95 (3.60-6.95)	5.60 (3.80-7.93)	6.58 (4.30-9.63)	7.42 (4.73-11.1)
12-hr	2.37 (1.89-2.94)	2.83 (2.25-3.51)	3.59 (2.85-4.47)	4.22 (3.32-5.28)	5.08 (3.88-6.65)	5.72 (4.29-7.66)	6.42 (4.67-8.93)	7.24 (4.94-10.2)	8.50 (5.57-12.4)	9.56 (6.12-14.2)
24-hr	2.82 (2.26-3.48)	3.41 (2.73-4.20)	4.36 (3.48-5.40)	5.15 (4.09-6.41)	6.24 (4.80-8.12)	7.05 (5.31-9.38)	7.92 (5.80-11.0)	8.96 (6.14-12.5)	10.5 (6.92-15.2)	11.8 (7.60-17.4)
2-day	3.18 (2.56-3.89)	3.87 (3.12-4.74)	5.00 (4.02-6.15)	5.94 (4.74-7.35)	7.24 (5.59-9.37)	8.20 (6.20-10.8)	9.23 (6.79-12.7)	10.5 (7.20-14.6)	12.4 (8.16-17.8)	14.0 (9.00-20.4)
3-day	3.44 (2.79-4.20)	4.20 (3.39-5.12)	5.43 (4.37-6.65)	6.45 (5.16-7.94)	7.85 (6.08-10.1)	8.89 (6.75-11.7)	10.0 (7.39-13.7)	11.4 (7.84-15.7)	13.4 (8.88-19.2)	15.2 (9.81-22.1)
4-day	3.69 (2.99-4.49)	4.49 (3.64-5.46)	5.79 (4.67-7.07)	6.87 (5.51-8.44)	8.36 (6.49-10.7)	9.46 (7.20-12.4)	10.6 (7.88-14.6)	12.1 (8.35-16.7)	14.3 (9.46-20.4)	16.2 (10.4-23.5)
7-day	4.37 (3.57-5.30)	5.27 (4.29-6.38)	6.73 (5.46-8.18)	7.94 (6.40-9.71)	9.61 (7.50-12.3)	10.8 (8.28-14.2)	12.2 (9.04-16.6)	13.8 (9.56-19.0)	16.3 (10.8-23.1)	18.4 (11.9-26.5)
10-day	5.07 (4.15-6.12)	6.02 (4.92-7.27)	7.57 (6.16-9.18)	8.86 (7.16-10.8)	10.6 (8.31-13.5)	11.9 (9.14-15.5)	13.4 (9.91-18.0)	15.0 (10.4-20.6)	17.6 (11.7-24.8)	19.7 (12.8-28.3)
20-day	7.28 (5.99-8.72)	8.29 (6.82-9.95)	9.95 (8.15-12.0)	11.3 (9.22-13.7)	13.2 (10.4-16.6)	14.7 (11.2-18.8)	16.1 (11.9-21.3)	17.7 (12.4-24.1)	20.0 (13.4-28.0)	21.7 (14.1-31.1)
30-day	9.13 (7.54-10.9)	10.2 (8.39-12.2)	11.9 (9.75-14.2)	13.3 (10.8-16.0)	15.2 (11.9-19.0)	16.7 (12.8-21.2)	18.2 (13.4-23.7)	19.7 (13.8-26.6)	21.6 (14.5-30.1)	23.0 (15.0-32.8)
45-day	11.4 (9.47-13.6)	12.5 (10.3-14.9)	14.2 (11.7-17.0)	15.7 (12.8-18.8)	17.7 (13.9-21.9)	19.2 (14.7-24.2)	20.7 (15.2-26.7)	22.1 (15.6-29.6)	23.7 (16.0-32.9)	24.8 (16.2-35.2)
60-day	13.3 (11.1-15.8)	14.4 (12.0-17.1)	16.2 (13.4-19.3)	17.7 (14.5-21.2)	19.7 (15.6-24.3)	21.4 (16.4-26.7)	22.9 (16.8-29.3)	24.1 (17.0-32.3)	25.6 (17.3-35.4)	26.5 (17.4-37.5)

<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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### PF graphical

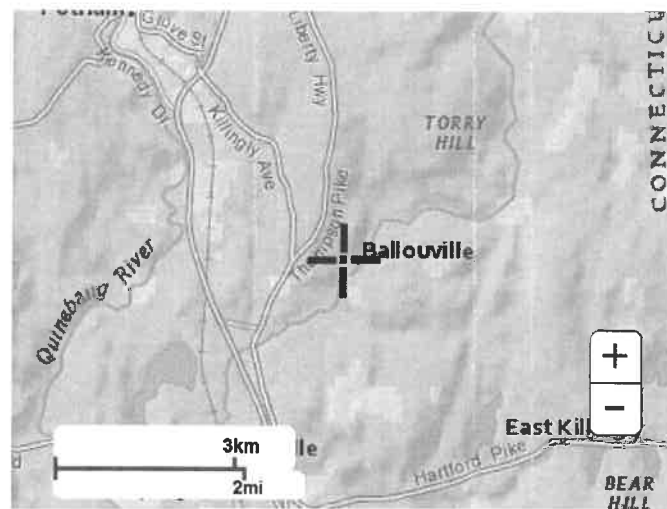
PDS-based depth-duration-frequency (DDF) curves  
Latitude: 41.8768°, Longitude: -71.8643°



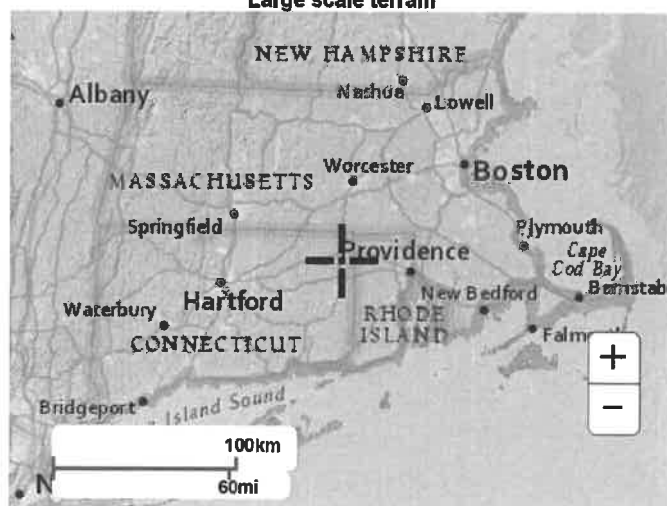
[Back to Top](#)

Maps & aerals

Small scale terrain



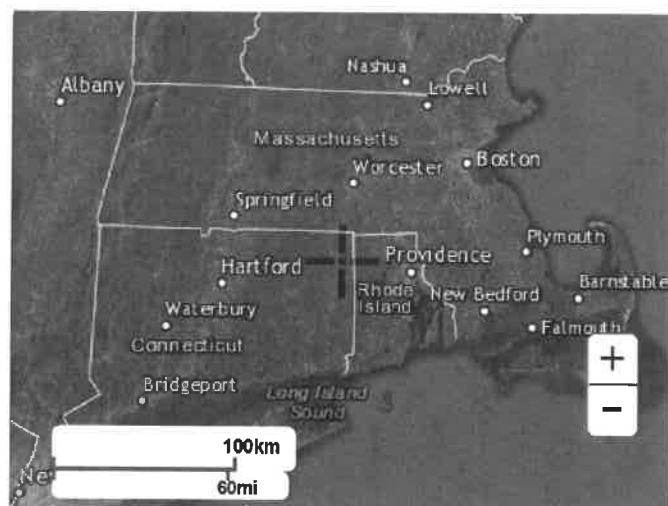
Large scale terrain



Large scale map



Large scale aerial



[Back to Top](#)

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US Department of Commerce  
National Oceanic and Atmospheric Administration  
National Weather Service  
National Water Center  
1325 East West Highway  
Silver Spring, MD 20910  
Questions?: [HDSC.Questions@noaa.gov](mailto:HDSC.Questions@noaa.gov)

[Disclaimer](#)





MAP LEGEND

- Area of Interest (AOI)

Area of Interest (AOI)
- Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points
- Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot
- Water Features

Streams and Canals
- Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads
- Background

Aerial Photography
- Special Line Features

Spill Area

Stony Spot

Very Stony Spot

Wet Spot

Other

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

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

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

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

Soil Survey Area: State of Connecticut  
Survey Area Data: Version 22, Sep 12, 2022

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

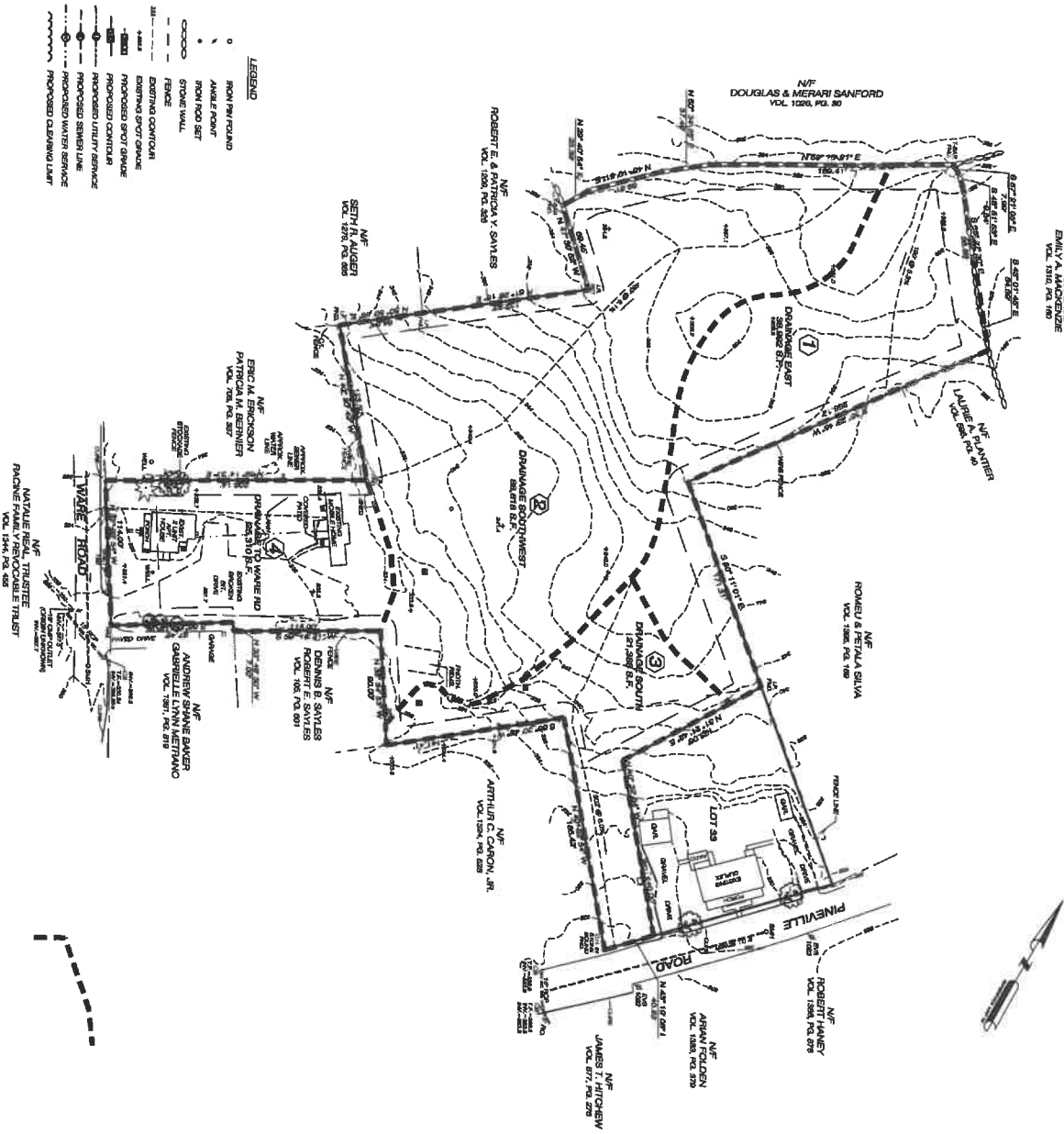
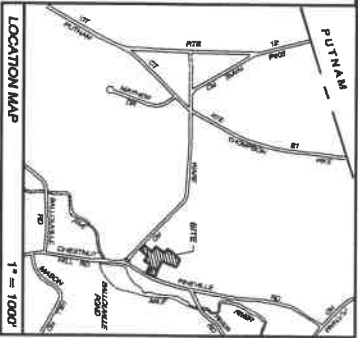
Date(s) aerial images were photographed: Jun 14, 2022—Jul 1, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
23A	Sudbury sandy loam, 0 to 5 percent slopes	0.7	17.1%
38C	Hinckley loamy sand, 3 to 15 percent slopes	2.2	56.5%
62C	Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony	1.0	26.4%
Totals for Area of Interest		3.9	100.0%

## **DRAINAGE AREA PLANS**



EXISTING CONDITIONS  
DRAINAGE AREA PLAN  
PREPARED FOR  
**JPF RENTALS, LLC**

DATE: JULY 2023

PROJECT: WARE ROAD & PINEVILLE ROAD  
KOLINGA, CONNECTICUT

DESIGNED BY: JPF RENTALS, LLC  
DRAWN BY: JPF RENTALS, LLC

SCALE: 1" = 40'

SHEET NO. 1 OF 2

CONTRACT NO. 2023-01

DATE: JULY 2023

PROJECT: WARE ROAD & PINEVILLE ROAD  
KOLINGA, CONNECTICUT

DESIGNED BY: JPF RENTALS, LLC  
DRAWN BY: JPF RENTALS, LLC

SCALE: 1" = 40'

SHEET NO. 1 OF 2

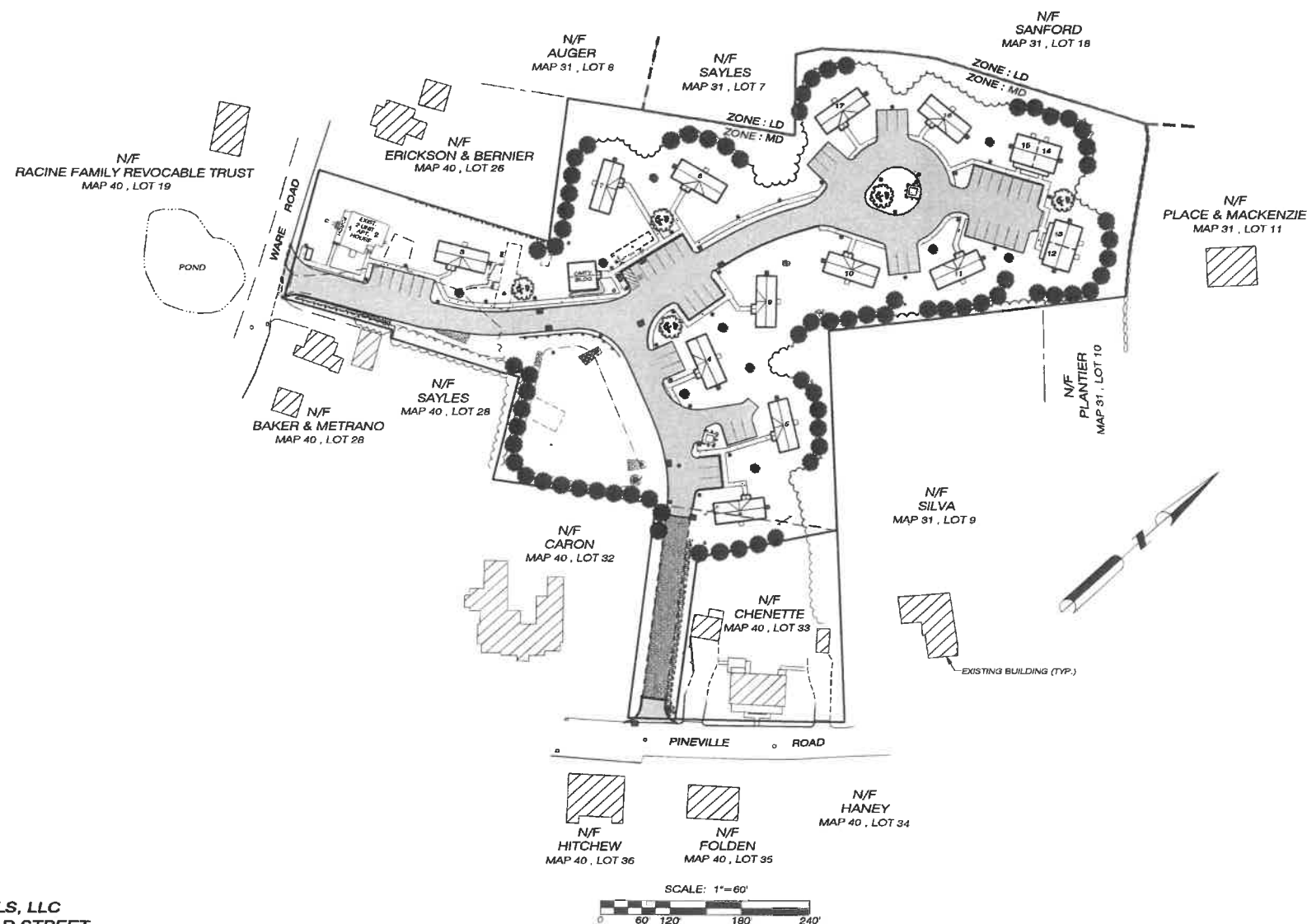
CONTRACT NO. 2023-01



# PINEVILLE VILLAS

## PROPOSED MULTI-FAMILY DEVELOPMENT WARE ROAD & PINEVILLE ROAD KILLINGLY, CONNECTICUT SEPTEMBER 2023

REVISED 1/12/24

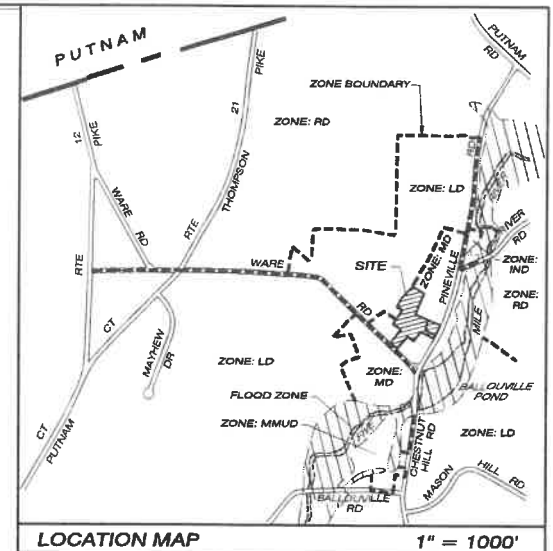


MAP 40, LOT 27  
MEDIUM DENSITY ZONING DISTRICT  
TOTAL LOT AREA = 4.00± ACRES  
TOTAL DWELLING UNITS = 17

OWNER/APPLICANT: JPF RENTALS, LLC  
32 RAILROAD STREET  
POMFRET, CT 06259

SURVEYOR: PC SURVEY ASSOCIATES, LLC  
63 SNAKE MEADOW ROAD  
KILLINGLY, CT 06239

ENGINEER: NORMAND THIBEAULT, P.E.  
KILLINGLY ENGINEERING ASSOCIATES  
DANIELSON, CT 06239



SHEET INDEX	
SHEET 1	SITE PLAN
SHEET 2	DRAINAGE PLAN
SHEET 3	UTILITY PLAN
SHEET 4	LANDSCAPING PLAN
SHEET 5	E&S PLAN
SHEET 6	E&S DETAILS
SHEET 7	CONSTRUCTION DETAILS
SHEET 8	DRIVEWAY PROFILE / UNITS
SHEET 9	VEHICLE AND SIGNAGE

# RECEIVED

JAN 16 2024

PLANNING & ZONING DEPT.  
TOWN OF KILLINGLY

SPECIAL PERMIT NO.  
APPROVED BY THE KILLINGLY  
PLANNING & ZONING COMMISSION  
ON \_\_\_\_\_  
CHAIRMAN \_\_\_\_\_ DATE \_\_\_\_\_

NOTE:  
1. THIS MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE  
REGULATIONS OF CONNECTICUT STATE AGENCIES - "STANDARDS FOR SURVEYS AND MAPS IN THE STATE  
OF CONNECTICUT". AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A  
COMPILED MAP CONFORMING TO HORIZONTAL ACCURACY CLASS 10".  
THIS MAP WAS COMPILED FROM OTHER MAPS, RECORD RESEARCH OR OTHER SOURCES OF  
INFORMATION. IT IS NOT TO BE CONSTRUED AS HAVING BEEN OBTAINED AS THE RESULT OF A FIELD  
SURVEY AND IS SUBJECT TO SUCH CHANGE AS AN ACCURATE FIELD SURVEY MAY DISCLOSE.  
TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

PAUL A. TERWILLIGER, L.S. NO. 70155

1/12/2024  
DATE

**Killingly Engineering Associates**  
114 Westcott Road  
P.O. Box 421  
Dayville, Connecticut 06241  
860 770 7299

SURVEYING • MAPPING • PLOT PLANS  
LAND RECORD RESEARCH • SURVEY ASSOCIATES • PHOTOGRAPHY

63 SNAKE MEADOW RD  
KILLINGLY, CT 06239  
860 774 6230



NO CERTIFICATION IS EXPRESSED OR IMPLIED UNLESS THIS MAP BEARS THE EMBOSSED SEAL OF THE LAND SURVEYOR WHOSE SIGNATURE APPEARS HEREON.



N/F  
PETER C. PLACE  
EMILY A. MACKENZIE  
VOL. 1310, PG. 160

N/F  
LAURIE A. PLANTIER  
VOL. 598, PG. 40

N/F  
ROMEU & PETALA SILVA  
VOL. 1395, PG. 169

N/F  
ROBERT HANEY  
VOL. 1386, PG. 876

STORMWATER BASIN  
PIPE IN TRENCH DETAIL  
NOT TO SCALE

#### NOTES:

1. THIS MAP AND SURVEY HAVE BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THROUGH 20-300b-30 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A GENERAL LOCATION SURVEY BASED ON A RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS C. TOPOGRAPHIC FEATURES CONFORM TO TOPOGRAPHIC ACCURACY CLASS T-2. CONTOUR INTERVAL = 2 FEET. VERTICAL DATUM = NAVD83. THIS MAP WAS PREPARED FROM RECORD RESEARCH, OTHER MAPS, LIMITED FIELD MEASUREMENTS AND OTHER SOURCES. IT IS NOT TO BE CONSTRUED AS A PROPERTY/BOUNDARY OR LIMITED PROPERTY/BOUNDARY SURVEY AND IS SUBJECT TO SUCH FACTS AS SAID SURVEYS MAY DISCLOSE.

2. SEE SHEET 1 FOR ADDITIONAL NOTES.

#### DRAINAGE STRUCTURES

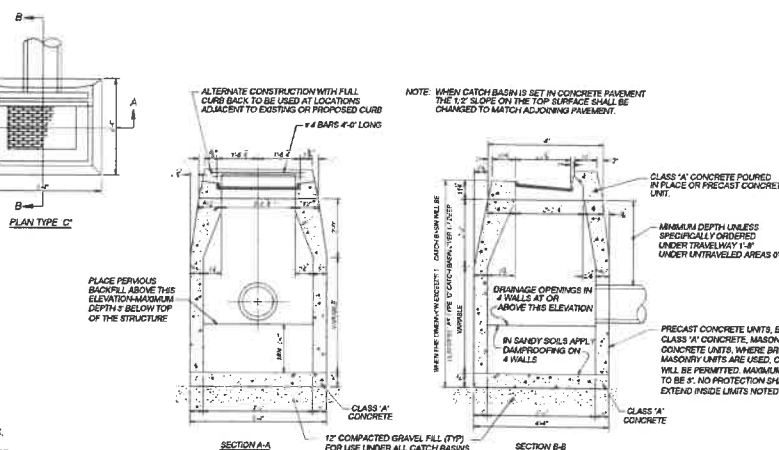
CB1A	TYPE 'C-L' CATCH BASIN	T.F. = 327.9	INV. 15" HDPE IN = 324.75	INV. 15" RCP OUT = 324.75
CB1	TYPE 'C-L' CATCH BASIN	T.F. = 327.5	INV. 15" HDPE IN = 324.75	INV. 15" RCP OUT = 324.5
DMH1	DRAINAGE MANHOLE	T.F. = 340.5	INV. 12" HDPE IN = 331.5	INV. 15" HDPE OUT = 331.4
DMH1	DRAINAGE MANHOLE	T.F. = 334.0	INV. 6" ORIFICE IN = 332.0	INV. 15" HDPE OUT = 332.0
CB2	TYPE 'C-L' CATCH BASIN	T.F. = 339.5	INV. 15" HDPE IN = 336.6	INV. 15" HDPE OUT = 336.5
CB3	TYPE 'C-L' CATCH BASIN	T.F. = 341.8	INV. 15" HDPE IN = 335.5	INV. 15" HDPE OUT = 334.8
CB4	TYPE 'C-L' CATCH BASIN	T.F. = 341.8	INV. 15" HDPE IN = 337.5	INV. 15" HDPE OUT = 337.3
CB5	TYPE 'C-L' CATCH BASIN	T.F. = 342.5	INV. 15" HDPE IN = 340.2	INV. 15" HDPE OUT = 338.5
CB6	TYPE 'C-L' CATCH BASIN	T.F. = 344.3	INV. 15" HDPE IN = 340.2	INV. 15" HDPE OUT = 340.0
CB7	TYPE 'C-L' CATCH BASIN	T.F. = 344.3	INV. 15" HDPE IN = 334.2	INV. 15" HDPE OUT = 340.5
CB8	TYPE 'C-L' CATCH BASIN	T.F. = 337.8	INV. 15" HDPE IN = 333.8	INV. 15" HDPE OUT = 333.6
CB9	TYPE 'C-L' CATCH BASIN	T.F. = 338.0	INV. 15" HDPE IN = 348.2	INV. 8" PVC OUT = 348.5
YD1	YARD DRAIN	T.F. = 351.5	INV. 8" PVC IN = 347.0	INV. 8" PVC OUT = 348.2
YD2	YARD DRAIN	T.F. = 353.5	INV. 8" PVC IN = 347.0	INV. 8" PVC OUT = 348.2
YD3	YARD DRAIN	T.F. = 349.8	INV. 8" PVC IN = 347.0	INV. 8" PVC OUT = 347.0

#### STORMWATER BASIN OPERATION AND MAINTENANCE NOTES:

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE AND INSPECTIONS PRIOR TO COMPLETION OF THE PROJECT.
- DURING THE FIRST YEAR OF OPERATION, THE BASIN SHALL BE INSPECTED ON A WEEKLY BASIS OR WITHIN 24 HOURS AFTER A RAINFALL EVENT OF 0.5" OR GREATER. ANY EROSION OF EMBANKMENTS OR OUTLET AREAS SHALL BE REPAIRED PROMPTLY. ANY DEBRIS SHALL BE REMOVED AND DISPOSED OF. SEDIMENTATION THAT WOULD INTERFERE WITH PROPER OPERATION OF THE BASIN SHALL BE REMOVED AND DISPOSED OF AND THE AREA RESTORED AND STABILIZED AS REQUIRED.
- AFTER THE BASIN HAS BEEN IN OPERATION FOR ONE YEAR, INSPECTIONS SHALL BE PERFORMED QUARTERLY OR WITHIN 24 HOURS AFTER A STORM EVENT OF 2.0" OR GREATER. QUARTERLY INSPECTIONS SHALL INCLUDE THE FOLLOWING ITEMS:
  - NOMINOUS WEEDS SHALL BE REMOVED. PERFORM ANY MOWING OPERATIONS REQUIRED. ALL TREES, VINES AND OTHER WOODY PLANTS SHALL BE REMOVED AND VOIDS LEFT FROM THEIR REMOVAL SHALL BE REPAIRED.
  - INSPECT EMBANKMENTS FOR ANIMAL BURROWS. ALL BURROWS AND VOIDS SHALL BE REPAIRED IMMEDIATELY.
  - ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE BASIN FOREBAY AND OTHER AREAS TO RESTORE ORIGINAL DESIGN GRADES. DISTURBED AREAS SHALL BE RESTABILIZED AS REQUIRED AFTER REMOVAL OF SEDIMENT.
  - INLETS AND OUTLETS SHALL BE INSPECTED FOR SCOUR DAMAGE AND EROSION AND REPAIRED AS REQUIRED.
  - OUTLET STRUCTURES SHALL BE CLEANED OF ACCUMULATED SEDIMENT.
  - ANY EVIDENCE OF PIPING OR SEEPAGE AT THE TOE OF EMBANKMENTS OR AROUND INLET/OUTLET STRUCTURES SHALL BE INVESTIGATED BY A QUALIFIED PROFESSIONAL ENGINEER AND REPORTED TO THE TOWN. REQUIRED REPAIRS TO MAINTAIN THE PROPER FUNCTION OR REPAIR POTENTIAL STRUCTURAL DEFICIENCIES IN THE BASIN SHALL BE IMPLEMENTED WITHIN ONE MONTH OF THE DISCOVERY OF THE PROBLEM OR AT THE DISCRETION OF THE RESPONSIBLE PROFESSIONAL ENGINEER PERFORMING THE INVESTIGATION OR DESIGNING SUCH REPAIRS. THE ENGINEER SHALL CERTIFY THAT ALL REPAIRS ARE PERFORMED TO HIS/HER SATISFACTION AND SHALL PROVIDE SUCH CERTIFICATION TO THE TOWN.

#### STORMWATER SYSTEM OPERATION AND MAINTENANCE NOTES:

PROVIDE ANNUAL LOT SWEEPING, PREFERABLY AFTER FINAL SNOW MELT TO ALLEVIATE SEDIMENT BUILDUP IN BASIN AND TO INSURE EFFICIENT TSS REMOVAL FROM STORMWATER. INSPECT BASIN FOR TRASH AND DEBRIS BI-ANNUALLY. REMOVE ACCUMULATED SEDIMENT AND DEBRIS FROM PIPE INLETS AND OUTLETS TO PREVENT CLOGGING. REMOVE ACCUMULATED TRASH AND LEAVES FROM BASIN SEASONALLY.



TYPE 'C' CATCH BASIN DETAIL  
NOT TO SCALE

## PINEVILLE VILLAS

### GENERAL LOCATION SURVEY

#### DRAINAGE PLAN

PROPOSED MULTI-FAMILY DEVELOPMENT  
PREPARED FOR  
**JPF RENTALS, LLC**

WARE ROAD & PINEVILLE ROAD  
KILLINGLY, CONNECTICUT

DATE: SEPTEMBER 2023  
SCALE: 1" = 40'

SHEET NO: 2 OF 9  
REVISED: 10/20/23  
11/20/23 - TOWN COMMENTS  
12/14/23 - TOWN SUBMISSION  
12/14/23 - 1/3/24

JOB NO: 29004 F.B. NO: 231 DRAWN BY: P.A.T. MAP NO:

SPECIAL PERMIT NO.  
APPROVED BY THE KILLINGLY  
PLANNING & ZONING COMMISSION  
ON

CHAIRMAN DATE

Killingly Engineering  
Associates  
114 Watcott Road  
P.O. Box 421  
Deyville, Connecticut 06241  
860 779 7299

NORMAND THIBEAULT, JR., P.E. No. 22834 DATE

RECEIVED

JAN 16 2024

PLANNING & ZONING DEPT.  
TOWN OF KILLINGLY

1/12/2024  
DATE

TO THE BEST OF MY KNOWLEDGE AND BELIEF, I HAVE PREPARED THIS MAP AND SURVEY IN ACCORDANCE WITH THE STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. I AM NOT PROVIDING ANY GUARANTEE OR WARRANTY, EXPRESS OR IMPLIED, FOR THE ACCURACY OR COMPLETENESS OF THIS MAP AND SURVEY. NO CERTIFICATION IS EXPRESSED OR IMPLIED UNLESS THIS MAP BEARS THE EMBOSSED SEAL OF THE LAND SURVEYOR WHOSE SIGNATURE APPEARS HEREON.

PAUL A. TERWILLIGER, L.S. NO. 70155

N/F  
DOUGLAS & MERARI SANFORD  
VOL. 1226, PG. 30

N/F  
ROBERT E. & PATRICIA Y. SAYLES  
VOL. 1209, PG. 326

N/F  
SETH R. AUGER  
VOL. 1279, PG. 685

N/F  
ERIC M. ERICKSON  
PATRICIA M. BERNIER  
VOL. 708, PG. 337

N/F  
DENNIS B. SAYLES  
ROBERT E. SAYLES  
VOL. 105, PG. 601

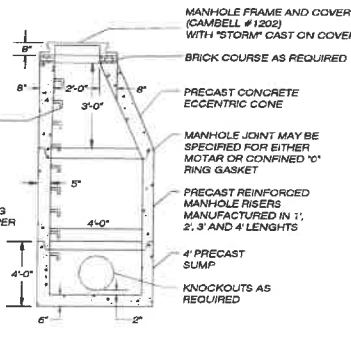
N/F  
ANDREW SHANE BAKER  
GABRIELLE LYNN METRANO  
VOL. 1381, PG. 819

N/F  
NATALIE REAL, TRUSTEE  
RACINE FAMILY REVOCABLE TRUST  
VOL. 1344, PG. 455

#### LEGEND

- IRON PIN FOUND
- ANGLE POINT
- IRON ROD SET
- STONE WALL
- FENCE
- EXISTING CONTOUR
- EXISTING SPOT GRADE
- PROPOSED SPOT GRADE
- PROPOSED CONTOUR
- PROPOSED UTILITY SERVICE
- PROPOSED SEWER LINE
- PROPOSED WATER SERVICE
- PROPOSED CLEARING LIMIT

RIP-RAP OUTLET PROTECTION  
NOT TO SCALE

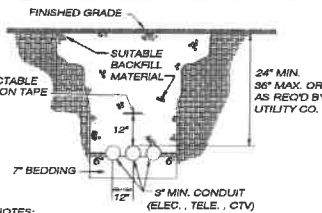


PRECAST STORM MANHOLE  
N.T.S.



N/F  
PETER C. PLACE  
EMILY A. MACKENZIE  
VOL. 1310, PG. 160

N/F  
LAURIE A. PLANTIER  
VOL. 598, PG. 40



- NOTES:
1. OSHA STANDARDS REQUIRE THAT SPOILS BE PLACED 24" MIN. FROM EDGE OF TRENCH.
  2. SUITABLE BACKFILL SHALL NOT CONTAIN ASH, CINDER, SHELL, FROZEN MATERIAL, LOOSE DEBRIS OR STONES LARGER THAN 2" MAX. DIMENSION.
  3. FUEL OR WATER LINES SHALL BE NO CLOSER THAN 18" IN ANY DIRECTION.

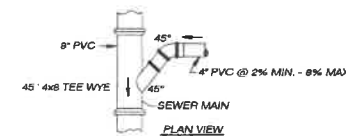
UTILITY TRENCH DETAIL  
NOT TO SCALE

UNDERGROUND UTILITY LOCATIONS ARE TO BE  
MARKED IN THE FIELD PRIOR TO ANY EXCAVATION  
"CALL BEFORE YOU DIG" 1 800 922 4455 OR 811

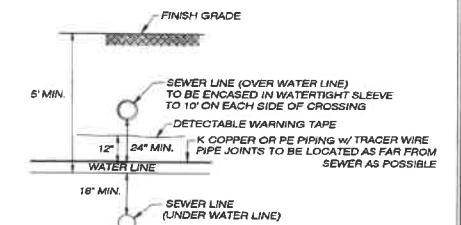
N/F  
ROMEO & PETALA SILVA  
VOL. 1395, PG. 169

N/F  
ROBERT HANEY  
VOL. 1386, PG. 876

SEWER MANHOLE	I.F.	F.I.
SMH1	356.8	350.5
SMH2	342.3	275 L.F. @ 5.5% 335.6
SMH3	342.0	160 L.F. @ 1.5% 333.2
SMH5	327.5 (EXIST.)	240 L.F. @ 6.5% 317.55 (MATCH EXIST.)



SEWER SERVICE CONNECTION  
NOT TO SCALE



WATER/SEWER SERVICE CROSSINGS  
NOT TO SCALE

N/F  
DOUGLAS & MERARI SANFORD  
VOL. 1026, PG. 30

N/F  
ROBERT E. & PATRICIA Y. SAYLES  
VOL. 1209, PG. 326

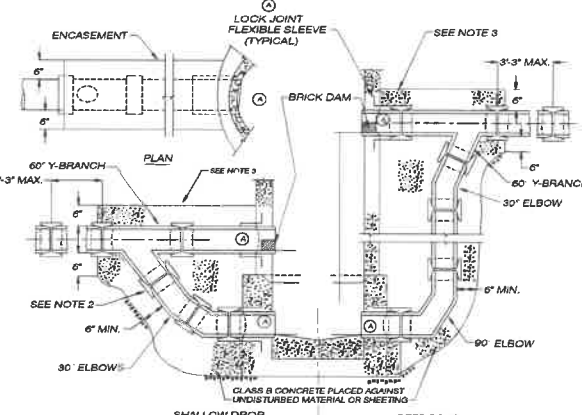
N/F  
SETH R. AUGER  
VOL. 1279, PG. 685

N/F  
ERIC M. ERICKSON  
PATRICIA M. BERNIER  
VOL. 708, PG. 337

N/F  
DENNIS B. SAYLES  
ROBERT E. SAYLES  
VOL. 105, PG. 601

N/F  
ARTHUR C. CARON, JR.  
VOL. 1324, PG. 528

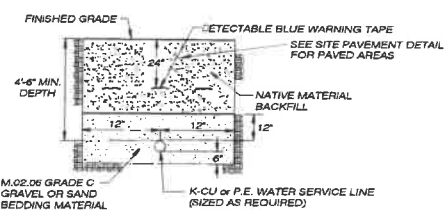
N/F  
JAMES T. HITCHCOCK  
VOL. 877, PG. 276



TYPICAL PRECAST SAN. SEWER MANHOLE  
NOT TO SCALE

NOTE: ALL COMPONENTS TO MEET WATER COMPANY SPECIFICATIONS

WATER SERVICE CONNECTION DETAIL  
NOT TO SCALE



WATER SERVICE TRENCH  
NOT TO SCALE

LEGEND

- IRON PIN FOUND
- ANGLE POINT
- IRON ROD SET
- STONE WALL
- FENCE
- EXISTING CONTOUR
- EXISTING SPOT GRADE
- PROPOSED SPOT GRADE
- PROPOSED CONTOUR
- PROPOSED UTILITY SERVICE
- PROPOSED SEWER LINE
- PROPOSED WATER SERVICE
- PROPOSED CLEARING LIMIT

TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT  
AS NOTED HEREON.

RECEIVED  
JAN 16 2024

PLANNING & ZONING DEPT.  
TOWN OF KILLINGLY

PAUL A. TERWILLIGER, L.S. NO. 70155

NO CERTIFICATION IS EXPRESSED OR IMPLIED UNLESS THIS MAP BEARS THE EMBOSSED  
SEAL OF THE LAND SURVEYOR WHOSE SIGNATURE APPEARS HEREON.

SPECIAL PERMIT NO.  
APPROVED BY THE KILLINGLY  
PLANNING & ZONING COMMISSION  
ON

Killingly Engineering  
Associates

114 Westcott Road  
P.O. Box 421  
Dayville, Connecticut 06241  
860 779 7299

NORMAND THIBEAULT, JR., P.E. No. 22634 DATE

PINEVILLE VILLAS

GENERAL LOCATION SURVEY  
UTILITY PLAN

PROPOSED MULTI-FAMILY  
DEVELOPMENT  
PREPARED FOR  
JPF RENTALS, LLC

WARE ROAD & PINEVILLE ROAD  
KILLINGLY, CONNECTICUT

DATE: SEPTEMBER 2023  
SCALE: 1" = 40'

SHEET NO: 3 OF 9  
REVISED: 10/20/23  
11/20/23 - TOWN COMMENTS  
1/12/24 - ENG. COMMENTS

JOB NO: 23004 F.B. NO: 231 DRAWN BY: P.A.T. MAP NO:

N/F  
PETER C. PLACE  
EMILY A. MACKENZIE  
VOL. 1310, PG. 160

N/F  
DOUGLAS & MERARI SANFORD  
VOL. 1026, PG. 30

N/F  
LAURIE A. PLANTIER  
VOL. 598, PG. 40

N/F  
ROMEU & PETALA SILVA  
VOL. 1395, PG. 169

N/F  
ROBERT HANEY  
VOL. 1986, PG. 876

N/F  
ARIAN FOLDEN  
VOL. 1389, PG. 379

N/F  
JAMES T. HITCHCOCK  
VOL. 877, PG. 276

N/F  
ROBERT E. & PATRICIA Y. SAYLES  
VOL. 1209, PG. 326

N/F  
SETH R. AUGER  
VOL. 1279, PG. 685

N/F  
DENNIS B. SAYLES  
ROBERT E. SAYLES  
VOL. 105, PG. 601

N/F  
ERIC M. ERICKSON  
PATRICIA M. BERNIER  
VOL. 708, PG. 337

N/F  
ANDREW SHANE BAKER  
GABRIELLE LYNN METRANO  
VOL. 1381, PG. 819

N/F  
NATALIE REAL, TRUSTEE  
RACINE FAMILY REVOCABLE TRUST  
VOL. 1344, PG. 455

NOTE:

1. THIS MAP AND SURVEY HAVE BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A GENERAL LOCATION SURVEY BASED ON A RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS C. TOPOGRAPHIC FEATURES CONFORM TO TOPOGRAPHIC ACCURACY CLASS T-2. CONTOUR INTERVAL - 2 FEET. VERTICAL DATUM - NAVD83. THIS MAP WAS PREPARED FROM RECORD RESEARCH, OTHER MAPS, LIMITED FIELD MEASUREMENTS AND OTHER SOURCES. IT IS NOT TO BE CONSTRUED AS A PROPERTY/BOUNDARY OR LIMITED PROPERTY/BOUNDARY SURVEY AND IS SUBJECT TO SUCH FACTS AS SAID SURVEYS MAY DISCLOSE.

2. SEE SHEET 1 FOR ADDITIONAL NOTES.

LANDSCAPING NOTES

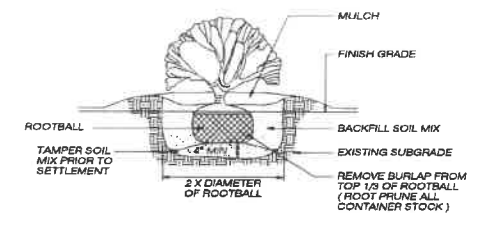
ALL AREAS NOT PAVED OR OTHERWISE LANDSCAPED SHALL BE COVERED WITH 4" OF SCREENED LOAM AND PREPARED AND PLANTED AS FOLLOWS:  
APPLY AGRICULTURAL GROUND LIME AT THE RATE 100 LBS. PER 1000 S.F.  
APPLY 10-10-10 FERTILIZER OR EQUIVALENT AT A RATE OF 7.5 LBS. PER S.F.  
WORK INTO THE SOIL TO A DEPTH OF 4 INCHES.  
INSPECT SEEDS AND LOOSEN ANY COMPACTED AREAS TO A DEPTH OF 4".  
APPLY THE FOLLOWING GRASS SEED MIX:

SEED	RATE
KENTUCKY BLUEGRASS	0.45 LB/1000 SF
CREeping RED FESCUE	0.45 LB/1000 SF
PERENNIAL RYEGRASS	0.10 LB/1000 SF

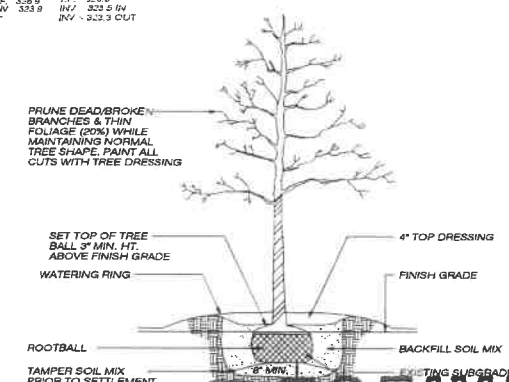
EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES

THE NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES CONTAINS A SELECTION OF NATIVE GRASSES AND WILDFLOWERS DESIGNED TO COLONIZE GENERALLY MOIST, RECENTLY DISTURBED SITES WHERE QUICK GROWTH OF VEGETATION IS DESIRED TO STABILIZE THE SOIL SURFACE. IT IS AN APPROPRIATE SEED MIX FOR ECOLOGICALLY SENSITIVE RESTORATIONS THAT REQUIRE STABILIZATION AS WELL AS LONG-TERM ESTABLISHMENT OF NATIVE VEGETATION. THIS MIX IS PARTICULARLY APPROPRIATE FOR DETENTION BASINS THAT DO NOT HOLD STANDING WATER FOR EXTENDED PERIODS. MANY OF THE PLANTS IN THIS MIX CAN TOLERATE INFREQUENT INUNDATION, BUT NOT CONSTANT FLOODING. THE MIX MAY BE APPLIED BY HAND, BY MECHANICAL SPREADER, OR BY HYDRO-SEEDER. AFTER SOWING, LIGHTLY RAKE, ROLL OR CULTIPACK TO INSURE GOOD SEED TO SOIL CONTACT. BEST RESULTS ARE OBTAINED WITH A SPRING OR LATE SUMMER SEEDING. LATE FALL AND WINTER DORMANT SEEDING REQUIRES AN INCREASE IN THE APPLICATION RATE. A LIGHT MULCHING OF CLEAN, WEED-FREE STRAW IS RECOMMENDED.

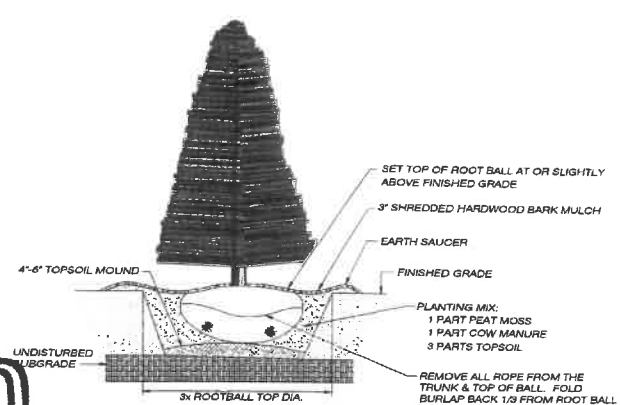
SPECIES: RIVERBANK WILD RYE (ELYMUS RIPARIUS), CREEPING RED FESCUE (FESTUCA RUBRA), LITTLE BLUESTEM (SCHIZACHYRIUM SCOPARIUM), BIG BLUESTEM (ANDROPOGON GERARDII), SWITCH GRASS (Panicum VIRGATUM), UPLAND BENTGRASS (AGROSTIS PERENNANS), NODDING BUR MARIGOLD (BIDENS CERNUA), HOLLOW-STEM JOE PYE WEEED (EUPATORIUM FISTULOSUM/EUTROCHUM FISTULOSUM), NEW ENGLAND ASTER (ASTER NOVAE-ANGLIAE), BONESSET (EUPATORIUM PERFORIATUM), BLUE VERVAIN (VERBENA HASTATA), SOFT RUSH (Juncus EFFRUSUS), WOOL GRASS (SCIRPUS CYPERINUS).



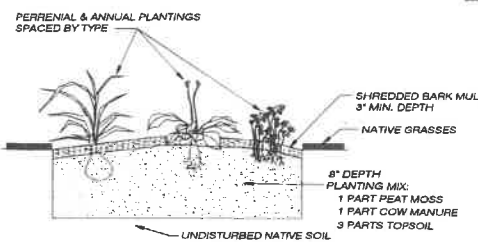
SHRUB PLANTING DETAIL  
NOT TO SCALE



TREE PLANTING DETAIL  
NOT TO SCALE



EVERGREEN TREE PLANTING DETAIL  
NOT TO SCALE



TYPICAL PLANTING BED  
NOT TO SCALE

JAN 16 2024

PLANNING & ZONING DEPT.  
TOWN OF KILLINGLY

LEGEND

- IRON PIN FOUND
- ▲ ANGLE POINT
- IRON ROD SET
- x—x— STONE WALL
- x—x— FENCE
- x—x— EXISTING CONTOUR
- +332.5 EXISTING SPOT GRADE
- +332.5 PROPOSED SPOT GRADE
- x—x— PROPOSED CONTOUR
- x—x— PROPOSED UTILITY SERVICE
- x—x— PROPOSED SEWER LINE
- x—x— PROPOSED WATER SERVICE
- x—x— PROPOSED CLEARING LIMIT

TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

PAUL A. TERWILLIGER, L.S. NO. 70155

1/12/2024  
DATE

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SPECIAL PERMIT NO.  
APPROVED BY THE KILLINGLY  
PLANNING & ZONING COMMISSION  
ON \_\_\_\_\_

CHAIRMAN \_\_\_\_\_ DATE \_\_\_\_\_

Killingly Engineering  
Associates

114 Westcott Road  
P.O. Box 421  
Dayville, Connecticut 06241  
860 779 7299



NORMAND THIBEAULT, JR., P.E. No. 22834 DATE \_\_\_\_\_

GENERAL LOCATION SURVEY

LANDSCAPING PLAN

PROPOSED MULTI-FAMILY  
DEVELOPMENT  
PREPARED FOR  
**JPF RENTALS, LLC**

WARE ROAD & PINEVILLE ROAD  
KILLINGLY, CONNECTICUT

DATE: SEPTEMBER 2023  
SCALE: 1" = 40'

JOB NO: 23004 F.B. NO: 231 DRAWN BY: P.A.T. MAP NO: \_\_\_\_\_

SURVEYING • MAPPING • PLAT PLANS



63 SNAKE MEADOW RD  
KILLINGLY, CT 06239  
860 774 6230

SHEET NO: 4 OF 9  
REVISED: 10/20/23  
11/20/23 - TOWN COMMENTS  
12/14/23 - 1/4/24

N/F  
DOUGLAS & MERARI SANFORD  
VOL. 1026, PG. 30

N/F  
PETER C. PLACE  
EMILY A. MACKENZIE  
VOL. 1310, PG. 160

N/F  
LAURIE A. PLANTIER  
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VOL. 1386, PG. 676

N/F  
ARIAN FOLDEN  
VOL. 1383, PG. 379

N/F  
JAMES T. HITCHCOCK  
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VOL. 1324, PG. 528

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2. SEE SHEET 1 FOR ADDITIONAL NOTES.

EROSION & SEDIMENT CONTROL PLAN

REFERENCE IS MADE TO:

- CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, MAY 2002.
- SOIL SURVEY OF WINDHAM COUNTY CONNECTICUT, U.S.D.A. SOIL CONSERVATION SERVICE 1983.

DEVELOPMENT

PROPOSED DEVELOPMENT CONSISTS OF THE REMOVAL OF ONE SINGLE UNIT DWELLING AND THE CONSTRUCTION OF 11 SINGLE UNIT DWELLINGS AND 2 DUPLEX DWELLINGS, ACCESS DRIVEWAY, PARKING AREAS, STORMWATER BASIN, DRAINAGE STRUCTURES, AND APPURTENANT UTILITY INSTALLATIONS.

CONSTRUCTION SEQUENCE:

- CLEAR TREES AND BRUSH WITHIN AREA OF ACTIVITY. LEAVE SELECT TREES WITHIN AREAS THAT WILL NOT REQUIRE GRADING OR DO NOT POSE A HINDRANCE TO NEW CONSTRUCTION IF POSSIBLE.
- INSTALL CONSTRUCTION ENTRANCE.
- INSTALL PERIMETER EROSION CONTROL MEASURES & BERM WOODCHIPS FROM TREE CLEARING ALONG EDGE OF CLEARING IN AREAS INDICATED.
- REMOVE STUMPS AND STRIP TOPSOIL WITHIN ROADWAY AREA.
- EXCAVATE AND GRADE STORMWATER POND AREA.
- WORK WILL PROCEED IN A MANNER THAT ALLOWS DRAINAGE TO FLOW TO STORMWATER POND SO AS TO ACT AS A SEDIMENT BASIN DURING CONSTRUCTION.
- ROUGH GRADE AND INSTALL DRAINAGE BASE.
- INSTALL DRAINAGE STRUCTURES.
- INSTALL UTILITIES (SEWER, WATER, ELEC., ETC.).
- INSTALL CISTERNS.
- UNIT CONSTRUCTION AND UTILITY AND SERVICES TIE IN.
- FINAL GRADING AND LANDSCAPING.
- PAVE DRIVEWAY AND STRIPE PARKING.
- REMOVE EROSION AND SEDIMENT CONTROL UPON ESTABLISHMENT OF VEGETATIVE COVER.

GENERAL DEVELOPMENT PLAN

PRIOR TO THE COMMENCEMENT OF OPERATIONS IN ACCORDANCE WITH ANY PERMIT ISSUED BY THE TOWN, THE CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENT CONTROL DEVICES.

THE CONTRACTOR SHALL OBTAIN A SITE INSPECTION FROM THE TOWN ZONING ENFORCEMENT OFFICER TO ENSURE THAT ALL EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED IN ACCORDANCE WITH THIS NARRATIVE. UPON APPROVAL OF THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES, THE CONTRACTOR MAY COMMENCE OPERATIONS PURSUANT TO THE PERMIT. EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE "SILT FENCE INSTALLATION & MAINTENANCE" & "HAY BALE INSTALLATION & MAINTENANCE" SECTIONS OF THIS NARRATIVE.

ALL STRIPPING IS TO BE CONFINED TO THE IMMEDIATE CONSTRUCTION AREA. TOPSOIL SHALL BE STOCKPILED SO THAT SLOPES DO NOT EXCEED 2 TO 1. THERE SHALL BE NO BURIAL OF STUMPS. A HAY BALE SEDIMENT BARRIER IS TO SURROUND EACH STOCKPILE AND A TEMPORARY VEGETATIVE COVER PROVIDED IF NECESSARY.

DUST CONTROL WILL BE ACCOMPLISHED BY SPRAYING WITH WATER.

FINAL STABILIZATION OF THE SITE IS TO FOLLOW THE PROCEDURES OUTLINED IN PERMANENT VEGETATIVE COVER. IF NECESSARY A TEMPORARY VEGETATIVE COVER IS TO BE PROVIDED UNTIL A PERMANENT COVER CAN BE APPLIED.

DURING THE STABILIZATION PERIOD, ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN PROPER WORKING ORDER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ALL EROSION AND SEDIMENT CONTROL ON A TWICE-WEEKLY BASIS DURING THE STABILIZATION PERIOD AND AFTER EACH STORM EVENT. DURING THE STABILIZATION PERIOD WITH RESPECT TO THE SITE, ANY EROSION WHICH OCCURS WITHIN DISTURBED AREAS SHALL BE IMMEDIATELY REPAIRED, RESEEDED AND RE-ESTABLISHED.

ALL DISTURBED SLOPES SHALL BE STABILIZED WITHIN ONE SEASON (SPRING OR FALL) OF THE COMPLETION OF THE PROJECT.

ONCE STABILIZATION HAS BEEN COMPLETED AND APPROVED BY THE TOWN ZONING ENFORCEMENT OFFICER, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED BY THE CONTRACTOR.

ALL WORK SHALL CONFORM TO THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.

RECEIVED  
JAN 16 2024

PLANNING & ZONING DEPT.  
TOWN OF KILLINGLY

LEGEND

- IRON PIN FOUND
- ANGLE POINT
- IRON ROD SET
- STONE WALL
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SPECIAL PERMIT NO.  
APPROVED BY THE KILLINGLY  
PLANNING & ZONING COMMISSION  
ON \_\_\_\_\_  
CHAIRMAN \_\_\_\_\_ DATE \_\_\_\_\_

Killingly Engineering  
Associates  
114 Westcott Road  
P.O. Box 421  
Dayville, Connecticut 06241  
860 779 7299

GENERAL LOCATION SURVEY

E&S CONTROL PLAN

PROPOSED MULTI-FAMILY DEVELOPMENT

PREPARED FOR

JPF RENTALS, LLC

WARE ROAD & PINEVILLE ROAD

KILLINGLY, CONNECTICUT

DATE: SEPTEMBER 2023

SCALE: 1" = 40'

JOB NO: 23004 F.B. NO: 231

DRAWN BY: P.A.T. MAP NO:

SURVEYING • MAPPING • PLAT PLANS

TOPOGRAPHY • SUBDIVISION



63 SNAKE MEADOW RD  
KILLINGLY, CT 06239  
860 774 6230

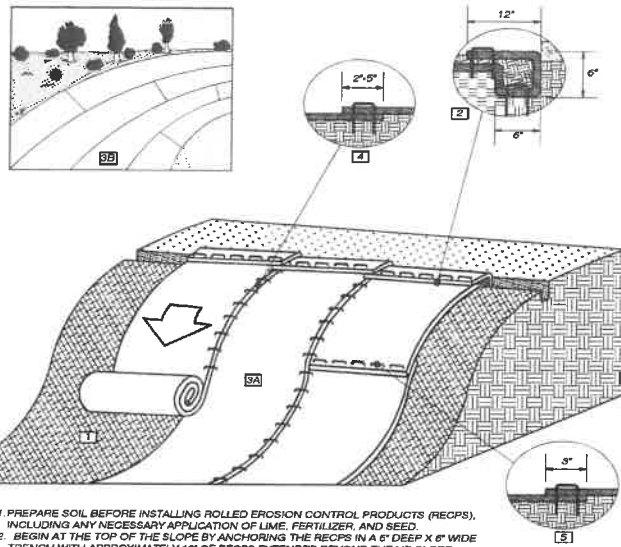
SHEET NO: 5 OF 9

REVISED: 10/2023

11/2023 - TOWN COMMENTS

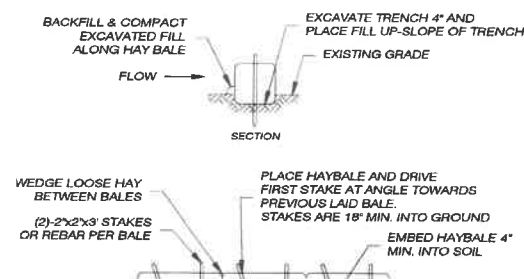


# BIODEGRADABLE EROSION CONTROL BLANKET INSTALLATION



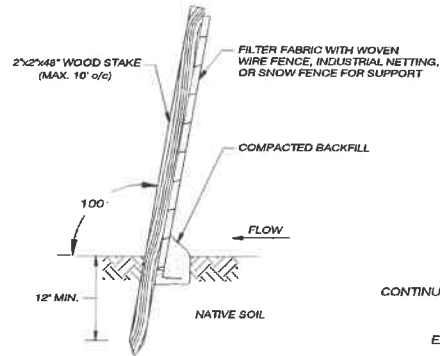
1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECPs), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECPs IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECPs EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECPs WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO THE COMPACTED SOIL AND FOLD THE REMAINING 12" PORTION OF RECPs BACK OVER THE SEED AND COMPACTED SOIL. SECURE RECPs OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECPs.
3. ROLL THE RECPs (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. RECPs WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECPs MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
4. THE EDGES OF PARALLEL RECPs MUST BE STAPLED WITH APPROXIMATELY 2" - 5" OVERLAP DEPENDING ON THE RECPs TYPE.
5. CONSECUTIVE RECPs SPICED DOWN THE SLOPE MUST BE END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECPs WIDTH.

\*NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECPs.



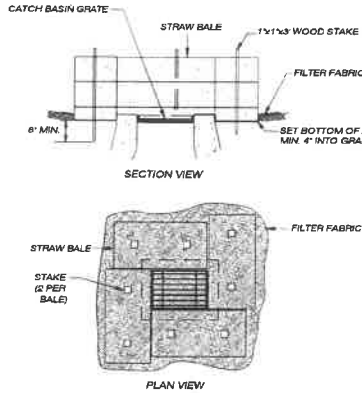
## HAY BALE BARRIER DETAIL

NOT TO SCALE



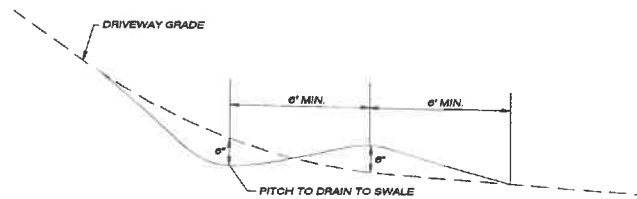
## SILT FENCE DETAIL

NOT TO SCALE



## CATCH BASIN SEDIMENT TRAP DETAIL

NOT TO SCALE



## TEMPORARY DRIVEWAY CONSTRUCTION BERM DETAIL

NOT TO SCALE

### SILT FENCE INSTALLATION AND MAINTENANCE

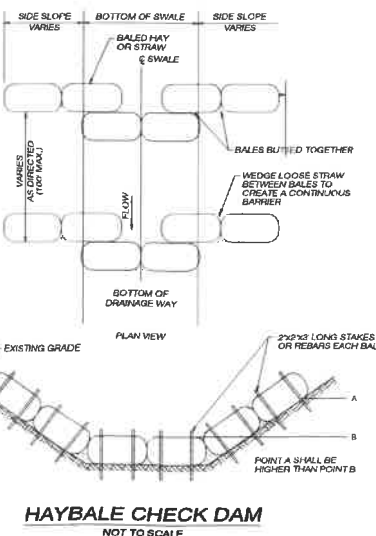
1. DIG A 6" DEEP TRENCH ON THE UPHILL SIDE OF THE BARRIER LOCATION.
2. POSITION THE POSTS ON THE DOWNHILL SIDE OF THE BARRIER AND DRIVE THE POSTS 1 FOOT INTO THE GROUND.
3. LAY THE BOTTOM 6" OF THE FABRIC IN THE TRENCH TO PREVENT UNDERMINING AND BACKFILL.
4. INSPECT AND REPAIR BARRIER AFTER HEAVY RAINFALL.
5. INSPECTIONS WILL BE MADE AT LEAST ONCE PER WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL AMOUNT OF 0.5 INCH OR GREATER TO DETERMINE MAINTENANCE NEEDS.
6. SEDIMENT DEPOSITS ARE TO BE REMOVED WHEN THEY REACH A HEIGHT OF 1 FOOT BEHIND THE BARRIER OR HALF THE HEIGHT OF THE BARRIER AND ARE TO BE DEPOSITED IN AN AREA WHICH IS NOT REGULATED BY THE INLAND WETLANDS COMMISSION.
7. REPLACE OR REPAIR THE FENCE WITHIN 24 HOURS OF OBSERVED FAILURE. FAILURE OF THE FENCE HAS OCCURRED WHEN SEDIMENT FAILS TO BE RETAINED BY THE FENCE BECAUSE:
  - THE FENCE HAS BEEN OVERTOPPED, UNDERCUT OR BYPASSED BY RUNOFF WATER.
  - THE FENCE HAS BEEN MOVED OUT OF POSITION, OR
  - THE GEOTEXTILE HAS DECOMPOSED OR BEEN DAMAGED.

### HAY BALE INSTALLATION AND MAINTENANCE

1. BALES SHALL BE PLACED AS SHOWN ON THE PLANS WITH THE ENDS OF THE BALES TIGHTLY ABUTTING EACH OTHER.
2. EACH BALE SHALL BE SECURELY ANCHORED WITH AT LEAST 2 STAKES AND GAPS BETWEEN BALES SHALL BE WEDGED WITH STRAW TO PREVENT WATER FROM PASSING BETWEEN THE BALES.
3. INSPECT BALES AT LEAST ONCE PER WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL AMOUNT OF 0.5 INCHES OR GREATER TO DETERMINE MAINTENANCE NEEDS.
4. REMOVE SEDIMENT BEHIND THE BALES WHEN IT REACHES HALF THE HEIGHT OF THE BALE AND DEPOSIT IN AN AREA WHICH IS NOT REGULATED BY THE INLAND WETLANDS COMMISSION.
5. REPLACE OR REPAIR THE BARRIER WITHIN 24 HOURS OF OBSERVED FAILURE. FAILURE OF THE BARRIER HAS OCCURRED WHEN SEDIMENT FAILS TO BE RETAINED BY THE BARRIER BECAUSE:
  - THE BARRIER HAS BEEN OVERTOPPED, UNDERCUT OR BYPASSED BY RUNOFF WATER.
  - THE BARRIER HAS BEEN MOVED OUT OF POSITION, OR
  - THE HAY BALES HAVE DETERIORATED OR BEEN DAMAGED.

## HAY BALE BACKED SILT FENCE DETAIL

NOT TO SCALE



## HAYBALE CHECK DAM

NOT TO SCALE

### TEMPORARY VEGETATIVE COVER

A TEMPORARY SEEDING OF RYE GRASS WILL BE COMPLETED WITHIN 15 DAYS OF THE FORMATION OF STOCKPILES. IF THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS IT SHALL BE LOOSENED TO A DEPTH OF 2 INCHES BEFORE THE FERTILIZER, LIME AND SEED IS APPLIED. 10-10-10 FERTILIZER AT A RATE OF 7.5 POUNDS PER 1000 S.F. LIMESTONE AT A RATE OF 90 LBS. PER 1000 S.F. SHALL BE USED. RYE GRASS APPLIED AT A RATE OF 1 LB. PER 1000 S.F. SHALL PROVIDE THE TEMPORARY VEGETATIVE COVER. STRAW FREE FROM WEEDS AND COARSE MATTER SHALL BE USED AT A RATE OF 70-90 LBS. PER 1000 S.F. AS A TEMPORARY MULCH. APPLY A JUTE NETTING COVER TO SLOPES OF 3:1 OR GREATER SLOPE.

### PERMANENT VEGETATIVE COVER

TOPSOIL WILL BE REPLACED ONCE THE EXCAVATION AND FILL PLACEMENT HAS BEEN COMPLETED AND THE SLOPES ARE GRADED TO A SLOPE NO GREATER THAN 2 TO 1. PROVIDE SLOPE PROTECTION ON ALL CUT SLOPES. TOPSOIL WILL BE SPREAD AT A MINIMUM COMPACTED DEPTH OF 4 INCHES. ONCE THE TOPSOIL HAS BEEN SPREAD, ALL STONES TWO INCHES OR LARGER IN ANY DIMENSION WILL BE REMOVED AS WELL AS DEBRIS. APPLY AGRICULTURAL GROUND LIMESTONE AT THE RATE OF TWO TONS PER ACRE OR 100 LBS. PER 1000 S.F. APPLY 10-10-10 FERTILIZER OR EQUIVALENT AT A RATE OF 300 LBS. PER ACRE OR 7.5 LBS. PER 1000 S.F. WORK INTO THE SOIL TO A DEPTH OF 4 INCHES. INSPECT SEEDBED BEFORE SEEDING. IF TRAFFIC HAS COMPACTED THE SOIL, RETILL COMPACTED AREAS. APPLY THE FOLLOWING GRASS SEED MIX:

SEED MIXTURE	LBS./ACRE	LBS./1000 S.F.
KENTUCKY BLUEGRASS	20	0.45
CREeping RED FESCUE	20	0.45
PERENNIAL RYEGRASS	5	0.10
	45	1.00

THE RECOMMENDED SEEDING DATES ARE: APRIL 1 - JUNE 15 AND AUGUST 30 - OCTOBER 1 FOLLOWING SEEDING MULCH WITH WEED FREE STRAW AND APPLY A JUTE NETTING COVER TO AREAS OF 3:1 OR GREATER SLOPE

UPON COMPLETION OF SITE WORK SETTLING BASIN IS TO BE CLEANED OF BUILT UP SILTATION AND PREPARED AND SEEDED WITH THE FOLLOWING SEED MIX AT A RATE OF 0.8 LBS/1000 S.F.:

### GENERAL CONSTRUCTION SEQUENCE

1. CLEAR TREES AND BRUSH WITHIN AREA OF ACTIVITY. LEAVE SELECT TREES WITHIN AREAS THAT WILL NOT REQUIRE GRADING OR DO NOT POSE A HINDRANCE TO NEW CONSTRUCTION IF POSSIBLE.
2. INSTALL EROSION CONTROL MEASURES.
3. REMOVE STUMPS AND STRIP & STOCKPILE TOPSOIL.
4. EXCAVATE AND GRADE STORMWATER POND AREA.
5. WORK WILL PROCEED IN A MANNER THAT ALLOWS DRAINAGE TO FLOW TO STORMWATER POND SO AS TO ACT AS A SEDIMENT BASIN DURING CONSTRUCTION.
6. ROUGH GRADE AND INSTALL DRIVEWAY BASE.
7. INSTALL DRAINAGE STRUCTURES.
8. INSTALL UTILITIES (SEWER, WATER, ELEC., ETC.)
9. INSTALL CISTERN.
10. UNIT CONSTRUCTION AND UTILITY TIE IN.
11. FINAL GRADING AND LANDSCAPING.
12. PAVE DRIVEWAY AND STRIPE PARKING.



## ANTI-TRACKING PAD

NOT TO SCALE

RECEIVED  
JAN 16 2024

PLANNING & ZONING DEPT.  
TOWN OF KILLINGLY

SPECIAL PERMIT NO. \_\_\_\_\_  
APPROVED BY THE KILLINGLY  
PLANNING & ZONING COMMISSION  
ON \_\_\_\_\_  
CHAIRMAN \_\_\_\_\_ DATE \_\_\_\_\_

Killingly Engineering  
Associates  
114 Westcott Road  
P.O. Box 421  
Dayville, Connecticut 06241  
860 779 7299

NORMAND THIBEAULT, JR., P.E. No. 22834 DATE \_\_\_\_\_

## PINEVILLE VILLAS

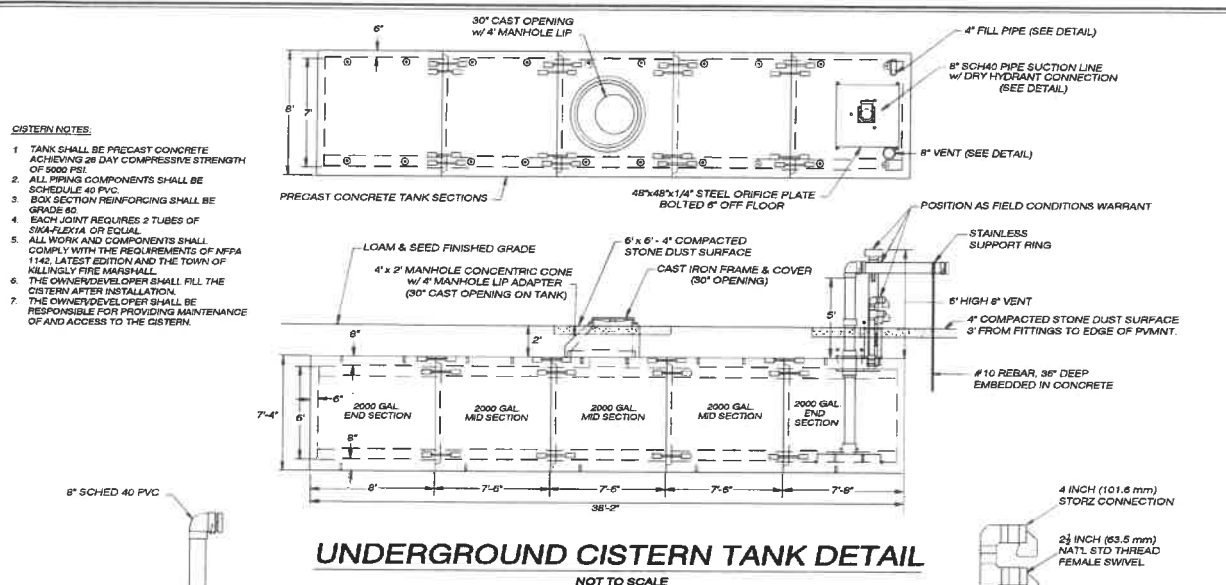
E&S CONTROL DETAILS  
PLAN OF  
PROPOSED MULTI-FAMILY  
DEVELOPMENT  
PREPARED FOR  
**JPF RENTALS, LLC**

WARE ROAD & PINEVILLE ROAD  
KILLINGLY, CONNECTICUT  
DATE: SEPTEMBER 2023  
SCALE: 1" = AS SHOWN

83 SNAKE MEADOW RD  
KILLINGLY, CT 06249  
860 774 6290

SHEET NO: 8 OF 9  
REVISED: 10/20/23  
11/20/23 - TOWN COMMENTS  
12/14/23 - 1/4/24

JOB NO: 23004 F.B. NO: N/A DRAWN BY: P.A.T. MAP NO: \_\_\_\_\_



UNDERGROUND CISTERN TANK DETAIL

NOT TO SCALE

CISTERN DRY HYDRANT HEAD ASSEMBLY DETAIL

NOT TO SCALE

CISTERN VENT ASSEMBLY DETAIL

NOTE: PROVIDE SIGHT GLASS PER MANUFACTURER'S RECOMMENDATION IF AVAILABLE

CISTERN FILL ASSEMBLY DETAIL

NOT TO SCALE

DUMPSTER PAD DETAIL

N.T.S.

CONCRETE SIDEWALK

NOT TO SCALE

LOAD BEARING CONCRETE SIDEWALK

NOT TO SCALE

GRAVEL DRIVE SECTION

NOT TO SCALE

PAVEMENT SECTION

NOT TO SCALE

PRIVACY FENCE

NOT TO SCALE

BOLLARD DETAIL

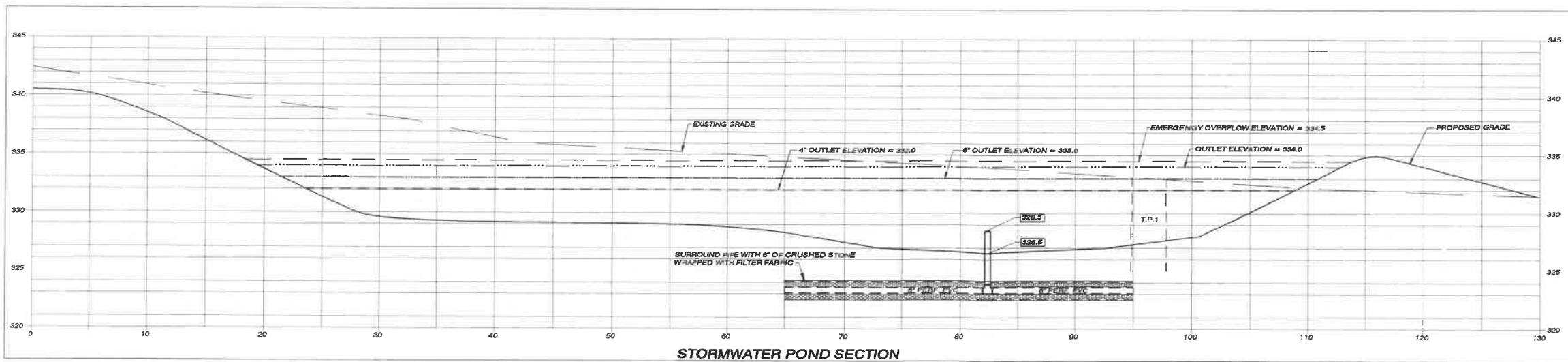
NOT TO SCALE

GUIDE RAIL DETAIL

NOT TO SCALE

LIGHT & BASE DETAIL

NOT TO SCALE



STORMWATER POND SECTION

SCALE: 1" = 5'

GATE DETAIL

NOT TO SCALE

TEST PIT READINGS

JUNE 22, 2023  
NORMAND THIBEAULT, JR., P.E.  
KILLINGLY ENGINEERING ASSOCIATES, LLC.

TP-1  
0-15" TOPSOIL  
15'-36" ORANGE-BROWN FINE SANDY LOAM  
36'-96" COARSE SAND & GRAVEL W/COBBLES

TP-2  
0-6" TOPSOIL  
6-28" ORANGE-BROWN FINE SANDY LOAM  
28'-65" COARSE SAND & GRAVEL W/COBBLES  
65'-96" COMPACT SILTY SAND & GRAVEL - RESTRICTIVE

TP-3  
0-12" TOPSOIL  
12'-32" ORANGE-BROWN FINE SANDY LOAM  
32'-68" COARSE SAND & GRAVEL W/COBBLES  
68'-120" COMPACT SILTY SAND & GRAVEL - RESTRICTIVE  
NO MOTTLING OR WATER IN ANY OF THE TEST PITS

RECEIVED

JAN 16 2024

PLANNING & ZONING DEPT.  
TOWN OF KILLINGLY

SPECIAL PERMIT NO.  
APPROVED BY THE KILLINGLY  
PLANNING & ZONING COMMISSION  
ON \_\_\_\_\_  
CHAIRMAN \_\_\_\_\_ DATE \_\_\_\_\_

Killingly Engineering  
Associates  
114 Westcott Road  
P.O. Box 421  
Dayville, Connecticut 06241  
860 779 1299

NORMAND THIBEAULT, JR., P.E. No. 22934 DATE \_\_\_\_\_

PINEVILLE VILLAS

CONSTRUCTION DETAILS

PLAN OF  
PROPOSED MULTI-FAMILY  
DEVELOPMENT  
PREPARED FOR  
**JPF RENTALS, LLC**

WARE ROAD & PINEVILLE ROAD  
KILLINGLY, CONNECTICUT

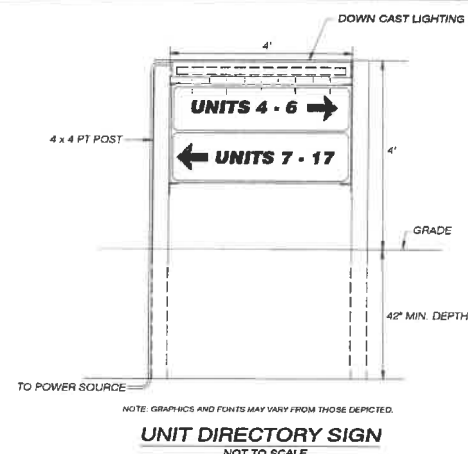
DATE: SEPTEMBER 2023  
SCALE: 1" = AS SHOWN

REVISIONS: 10/20/23  
11/20/23 - TOWN COMMENTS  
12/14/23 - 1/2/24  
1/12/24 - ENG. COMMENTS

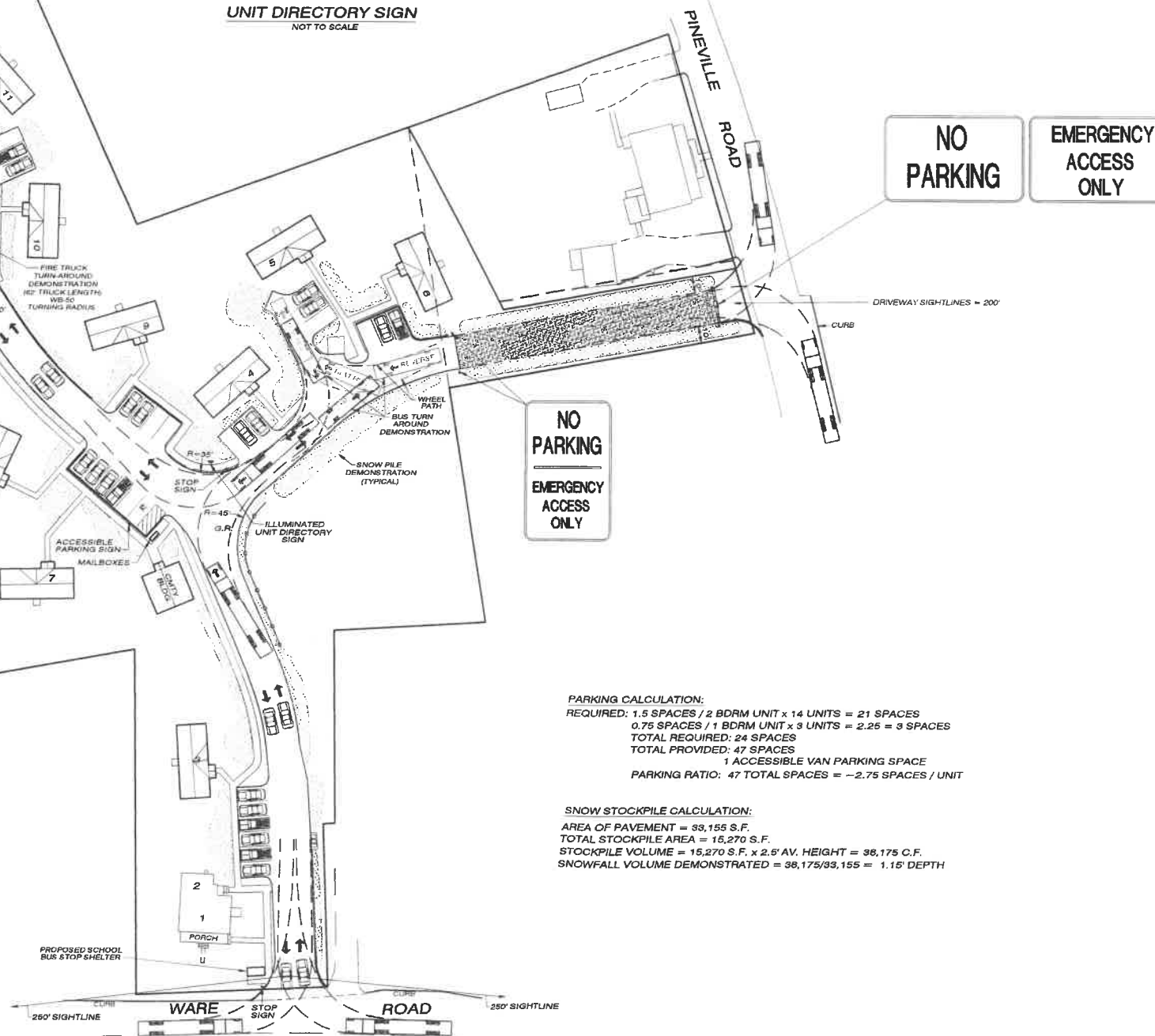
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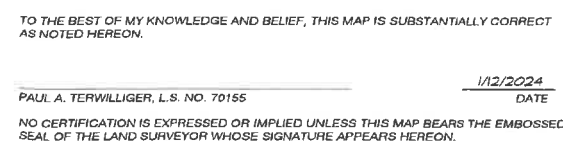
83 SNAKE MEADOW RD  
KILLINGLY, CT 06239  
860 774 6230  
SHEET NO: 7 OF 9  
REVISIONS: 10/20/23  
11/20/23 - TOWN COMMENTS  
12/14/23 - 1/2/24  
1/12/24 - ENG. COMMENTS




1. THIS MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-10 OF THE REGULATIONS OF THE CONNECTICUT STATE AGENCIES "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT," AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A COMPILATION MAP CONFORMING TO HORIZONTAL ACCURACY CLASS "D". THIS MAP WAS COMPILED FROM OTHER MAPS, RECORD RESEARCH OR OTHER SOURCES OF INFORMATION. IT IS NOT TO BE CONSTRUED AS HAVING BEEN OBTAINED AS THE RESULT OF A FIELD SURVEY. THIS FIELD SURVEY IS SUBJECT TO SUCH CHANGE AS AN ACCURATE FIELD SURVEY MAY INDICATE.

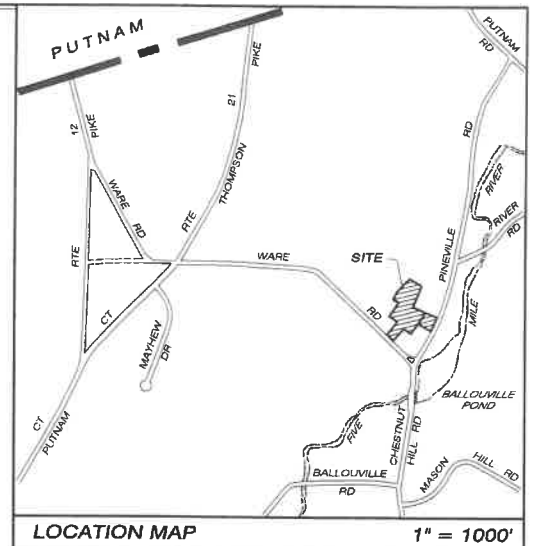
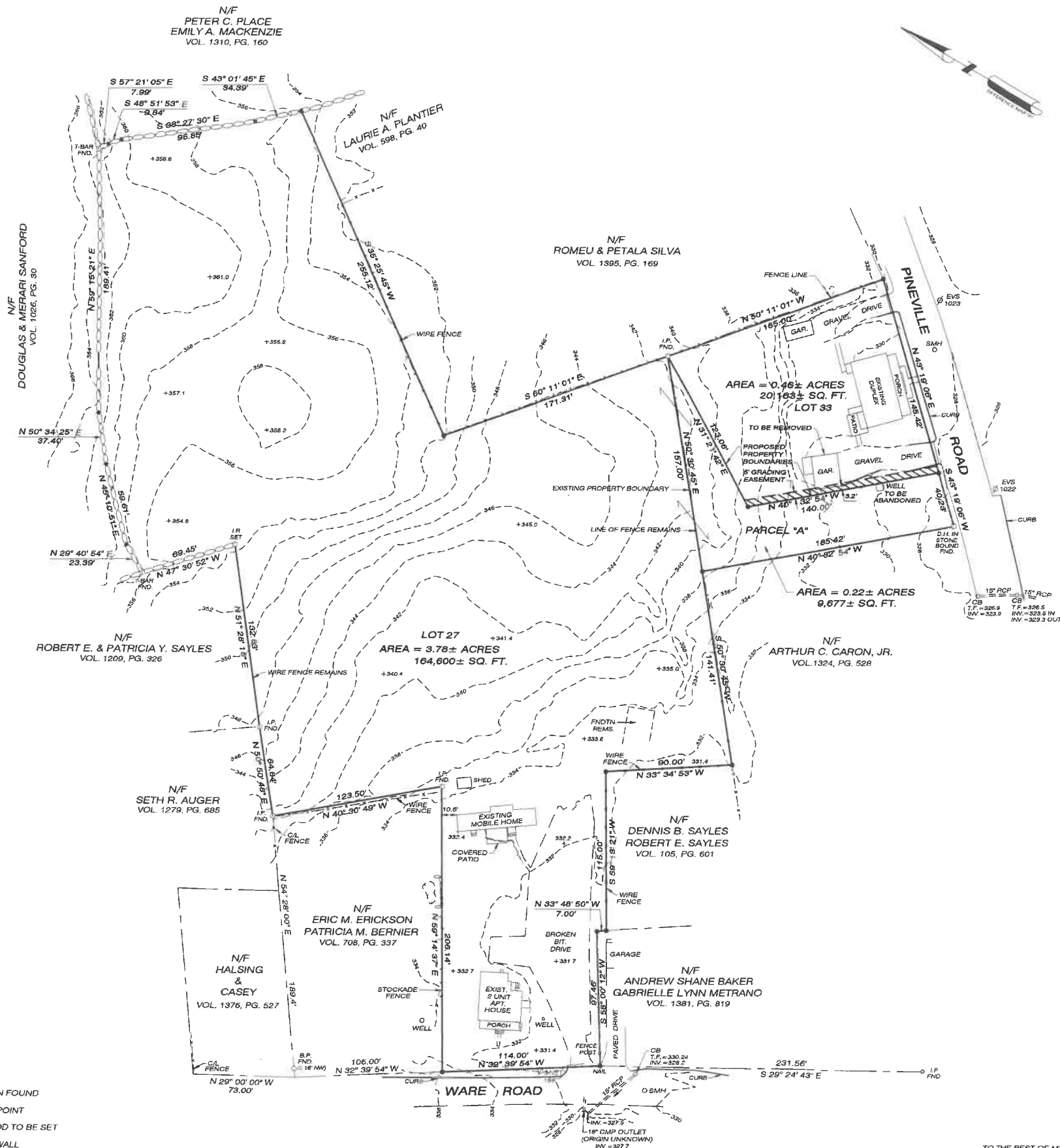


**SNOW STOCKPILE CALCULATION:**  
**AREA OF PAVEMENT = 33,155 S.F.**  
**TOTAL STOCKPILE AREA = 15,270 S.F.**  
**STOCKPILE VOLUME = 15,270 S.F. x 2.5' AV. HEIGHT = 38,175 C.F.**  
**SNOWFALL VOLUME DEMONSTRATED = 38,175/33,155 = 1.15' DEPTH**



PLANNING & ZONING DEPT.  
TOWN OF KILLINGLY

<b>Killingly Engineering Associates</b> 114 Westcott Road P.O. Box 421 Dayville, Connecticut 06241 860 779 7259	<b>WARE ROAD &amp; PINEVILLE ROAD</b> <b>KILLINGLY, CONNECTICUT</b> <b>DATE: DECEMBER 2023</b> <b>SCALE: 1" = 40'</b> 		sheets: 25A, 25B, 25C, 25D, 25E, 25F, 25G, 25H, 25I, 25J, 25K, 25L, 25M, 25N, 25O, 25P, 25Q, 25R, 25S, 25T, 25U, 25V, 25W, 25X, 25Y, 25Z, 26A, 26B, 26C, 26D, 26E, 26F, 26G, 26H, 26I, 26J, 26K, 26L, 26M, 26N, 26O, 26P, 26Q, 26R, 26S, 26T, 26U, 26V, 26W, 26X, 26Y, 26Z, 27A, 27B, 27C, 27D, 27E, 27F, 27G, 27H, 27I, 27J, 27K, 27L, 27M, 27N, 27O, 27P, 27Q, 27R, 27S, 27T, 27U, 27V, 27W, 27X, 27Y, 27Z, 28A, 28B, 28C, 28D, 28E, 28F, 28G, 28H, 28I, 28J, 28K, 28L, 28M, 28N, 28O, 28P, 28Q, 28R, 28S, 28T, 28U, 28V, 28W, 28X, 28Y, 28Z, 29A, 29B, 29C, 29D, 29E, 29F, 29G, 29H, 29I, 29J, 29K, 29L, 29M, 29N, 29O, 29P, 29Q, 29R, 29S, 29T, 29U, 29V, 29W, 29X, 29Y, 29Z, 30A, 30B, 30C, 30D, 30E, 30F, 30G, 30H, 30I, 30J, 30K, 30L, 30M, 30N, 30O, 30P, 30Q, 30R, 30S, 30T, 30U, 30V, 30W, 30X, 30Y, 30Z, 31A, 31B, 31C, 31D, 31E, 31F, 31G, 31H, 31I, 31J, 31K, 31L, 31M, 31N, 31O, 31P, 31Q, 31R, 31S, 31T, 31U, 31V, 31W, 31X, 31Y, 31Z, 32A, 32B, 32C, 32D, 32E, 32F, 32G, 32H, 32I, 32J, 32K, 32L, 32M, 32N, 32O, 32P, 32Q, 32R, 32S, 32T, 32U, 32V, 32W, 32X, 32Y, 32Z, 33A, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 33I, 33J, 33K, 33L, 33M, 33N, 33O, 33P, 33Q, 33R, 33S, 33T, 33U, 33V, 33W, 33X, 33Y, 33Z, 34A, 34B, 34C, 34D, 34E, 34F, 34G, 34H, 34I, 34J, 34K, 34L, 34M, 34N, 34O, 34P, 34Q, 34R, 34S, 34T, 34U, 34V, 34W, 34X, 34Y, 34Z, 35A, 35B, 35C, 35D, 35E, 35F, 35G, 35H, 35I, 35J, 35K, 35L, 35M, 35N, 35O, 35P, 35Q, 35R, 35S, 35T, 35U, 35V, 35W, 35X, 35Y, 35Z, 36A, 36B, 36C, 36D, 36E, 36F, 36G, 36H, 36I, 36J, 36K, 36L, 36M, 36N, 36O, 36P, 36Q, 36R, 36S, 36T, 36U, 36V, 36W, 36X, 36Y, 36Z, 37A, 37B, 37C, 37D, 37E, 37F, 37G, 37H, 37I, 37J, 37K, 37L, 37M, 37N, 37O, 37P, 37Q, 37R, 37S, 37T, 37U, 37V, 37W, 37X, 37Y, 37Z, 38A, 38B, 38C, 38D, 38E, 38F, 38G, 38H, 38I, 38J, 38K, 38L, 38M, 38N, 38O, 38P, 38Q, 38R, 38S, 38T, 38U, 38V, 38W, 38X, 38Y, 38Z, 39A, 39B, 39C, 39D, 39E, 39F, 39G, 39H, 39I, 39J, 39K, 39L, 39M, 39N, 39O, 39P, 39Q, 39R, 39S, 39T, 39U, 39V, 39W, 39X, 39Y, 39Z, 40A, 40B, 40C, 40D, 40E, 40F, 40G, 40H, 40I, 40J, 40K, 40L, 40M, 40N, 40O, 40P, 40Q, 40R, 40S, 40T, 40U, 40V, 40W, 40X, 40Y, 40Z, 41A, 41B, 41C, 41D, 41E, 41F, 41G, 41H, 41I, 41J, 41K, 41L, 41M, 41N, 41O, 41P, 41Q, 41R, 41S, 41T, 41U, 41V, 41W, 41X, 41Y, 41Z, 42A, 42B, 42C, 42D, 42E, 42F, 42G, 42H, 42I, 42J, 42K, 42L, 42M, 42N, 42O, 42P, 42Q, 42R, 42S, 42T, 42U, 42V, 42W, 42X, 42Y, 42Z, 43A, 43B, 43C, 43D, 43E, 43F, 43G, 43H, 43I, 43J, 43K, 43L, 43M, 43N, 43O, 43P, 43Q, 43R, 43S, 43T, 43U, 43V, 43W, 43X, 43Y, 43Z, 44A, 44B, 44C, 44D, 44E, 44F, 44G, 44H, 44I, 44J, 44K, 44L, 44M, 44N, 44O, 44P, 44Q, 44R, 44S, 44T, 44U, 44V, 44W, 44X, 44Y, 44Z, 45A, 45B, 45C, 45D, 45E, 45F, 45G, 45H, 45I, 45J, 45K, 45L, 45M, 45N, 45O, 45P, 45Q, 45R, 45S, 45T, 45U, 45V, 45W, 45X, 45Y, 45Z, 46A, 46B, 46C, 46D, 46E, 46F, 46G, 46H, 46I, 46J, 46K, 46L, 46M, 46N, 46O, 46P, 46Q, 46R, 46S, 46T, 46U, 46V, 46W, 46X, 46Y, 46Z, 47A, 47B, 47C, 47D, 47E, 47F, 47G, 47H, 47I, 47J, 47K, 47L, 47M, 47N, 47O, 47P, 47Q, 47R, 47S, 47T, 47U, 47V, 47W, 47X, 47Y, 47Z, 48A, 48B, 48C, 48D, 48E, 48F, 48G, 48H, 48I, 48J, 48K, 48L, 48M, 48N, 48O, 48P, 48Q, 48R, 48S, 48T, 48U, 48V, 48W, 48X, 48Y, 48Z, 49A, 49B, 49C, 49D, 49E, 49F, 49G, 49H, 49I, 49J, 49K, 49L, 49M, 49N, 49O, 49P, 49Q, 49R, 49S, 49T, 49U, 49V, 49W, 49X, 49Y, 49Z, 50A, 50B, 50C, 50D, 50E, 50F, 50G, 50H, 50I, 50J, 50K, 50L, 50M, 50N, 50O, 50P, 50Q, 50R, 50S, 50T, 50U, 50V, 50W, 50X, 50Y, 50Z, 51A, 51B, 51C, 51D, 51E, 51F, 51G, 51H, 51I, 51J, 51K, 51L, 51M, 51N, 51O, 51P, 51Q, 51R, 51S, 51T, 51U, 51V, 51W, 51X, 51Y, 51Z, 52A, 52B, 52C, 52D, 52E, 52F, 52G, 52H, 52I, 52J, 52K, 52L, 52M, 52N, 52O, 52P, 52Q, 52R, 52S, 52T, 52U, 52V, 52W, 52X, 52Y, 52Z, 53A, 53B, 53C, 53D, 53E, 53F, 53G, 53H, 53I, 53J, 53K, 53L, 53M, 53N, 53O, 53P, 53Q, 53R, 53S, 53T, 53U, 53V, 53W, 53X, 53Y, 53Z, 54A, 54B, 54C, 54D, 54E, 54F, 54G, 54H, 54I, 54J, 54K, 54L, 54M, 54N, 54O
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- NOTES:**
1. THIS MAP AND SURVEY HAVE BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300b-1 THRU 20-300b-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. IT IS A PROPERTY SURVEY BASED ON A FIRST SURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS A2. TOPOGRAPHIC FEATURES CONFORM TO TOPOGRAPHIC ACCURACY CLASS T-2. CONTOUR INTERVAL = 2 FEET. VERTICAL DATUM = NAVD88.
  2. REFERENCE IS MADE TO THE FOLLOWING MAPS:  
A. PLAN OF LAND TO BE CONVEYED BY GLADYS CACCIAPUOTI IN THE VILLAGE OF BALLOUVILLE, CONN. - SCALE: 1"=40' - NOV. 19, 1951 - WILLIAM W. PIKE, SURVEYOR  
B. SUBDIVISION PLAN PREPARED FOR CHARLES R. PAQUETTE & JOHN M. PAQUETTE - PINEVILLE ROAD, KILLINGLY, CONNECTICUT - SCALE: 1"=50' - DATE: 9/2/1987 - REVISED TO 12/1/1987 - BY: KIELTYKA, WOODIS & PIKE  
C. SURVEY PLAN PREPARED FOR ROBERT E. SAYLES - WARE ROAD, KILLINGLY, CONNECTICUT - SCALE: 1"=40' - DATE: 12/03/1997 - BY: KWP ASSOCIATES  
D. PROPERTY SURVEY SHOWING PARCEL DIVISION PREPARED FOR PASSCO, LLC - PINEVILLE ROAD, KILLINGLY, CONNECTICUT - SCALE: 1"=30' - DATE: 8/17/2010 - REVISED 10/06/2010 - BY: KILLINGLY ENGINEERING ASSOCIATES
  3. LOT OWNERS OF RECORD:  
LOT 27: JPF RENTALS, LLC - VOL. 1358, PG. 285  
LOT 33 AND PARCEL "A": CHRISTOPHER CHENETTE, VOL. 1353, PG. 729
  4. SUBJECT PARCELS ARE SHOWN AS MAP 40, LOTS 27 AND 33 OF THE KILLINGLY ASSESSOR'S RECORDS.
  5. ZONING DISTRICT: MEDIUM DENSITY
  6. STREET LINES ARE ASSUMED BASED ON FIELD EVIDENCE, DEED CALLS AND DEED DIMENSIONS.
  7. PARCEL "A" IS A PORTION OF LOT 33 TO BE COMBINED WITH LOT 27 TO FORM ONE CONTIGUOUS, UNDIVIDED LOT.
  8. VOL. & PG. REFERENCES TO KILLINGLY LAND RECORDS.
  9. PUBLIC WATER IS AVAILABLE ON PINEVILLE ROAD. PUBLIC SEWER IS AVAILABLE ON WARE AND PINEVILLE ROADS.

**RECEIVED**

JAN 16 2024

PLANNING & ZONING DEPT.  
TOWN OF KILLINGLY

TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

PAUL A. TERWILLIGER, L.S. NO. 70155 DATE 1/4/2024

NO CERTIFICATION IS EXPRESSED OR IMPLIED UNLESS THIS MAP BEARS THE EMBOSSED SEAL OF THE LAND SURVEYOR WHOSE SIGNATURE APPEARS HEREON.

PROPERTY SURVEY PROPERTY LINE RELOCATION BETWEEN LANDS OF <b>JPF RENTALS, LLC</b> AND <b>CHRISTOPHER CHENETTE</b>		SURVEYING • MAPPING • PLOT PLANS LAND RECORD RESEARCH 	
WARE ROAD & PINEVILLE ROAD KILLINGLY, CONNECTICUT		63 SNAKE MEADOW RD KILLINGLY, CT 06239 860 774 6230	
DATE: MAY 2023		SHEET NO: 1 OF 1	
SCALE: 1" = 40'		REVISED: 1/4/2024	
JOB NO: 23004		F.B. NO: 231	DRAWN BY: P.A.T. MAP NO:

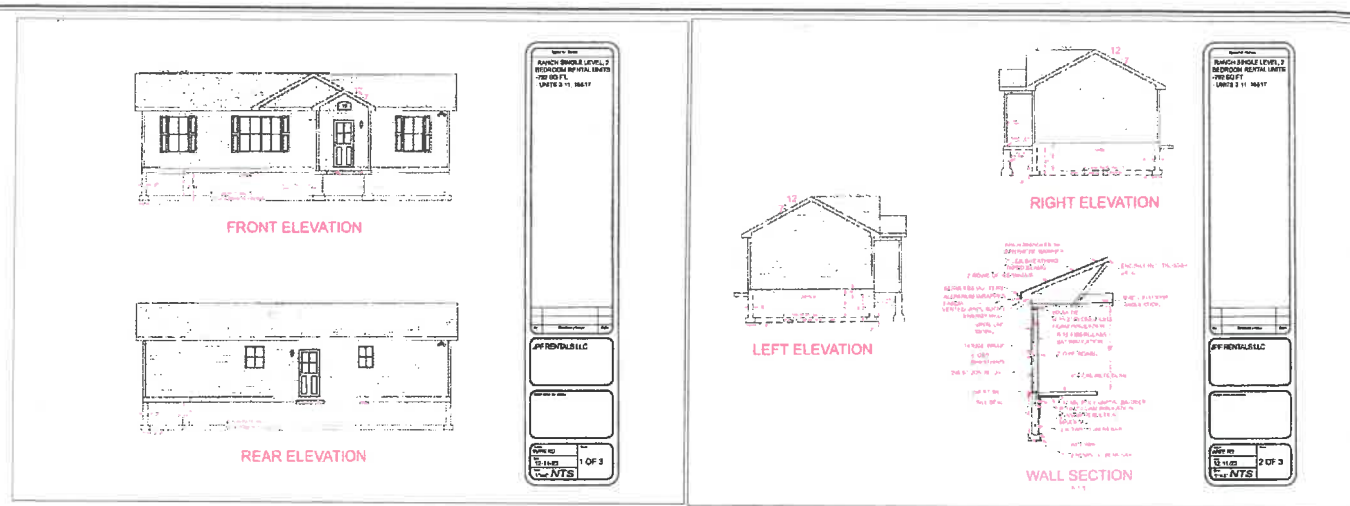




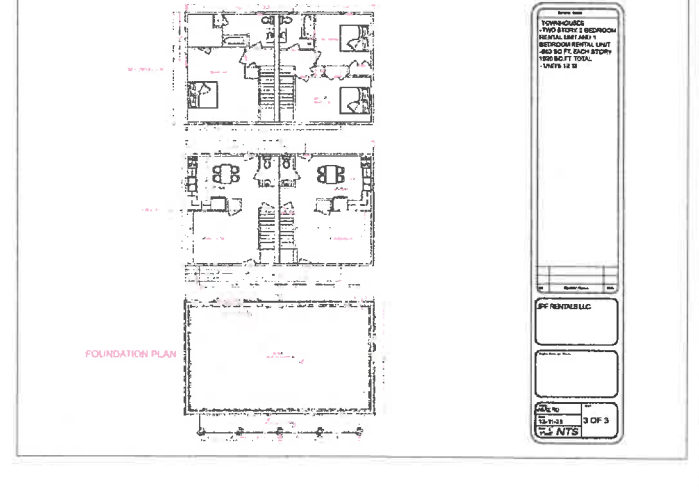
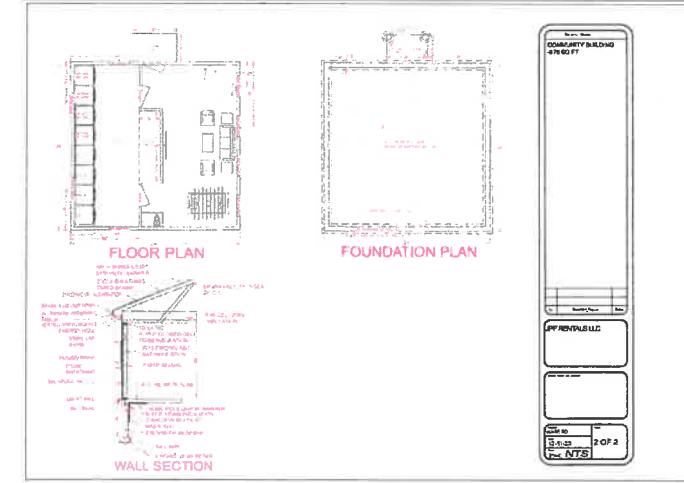
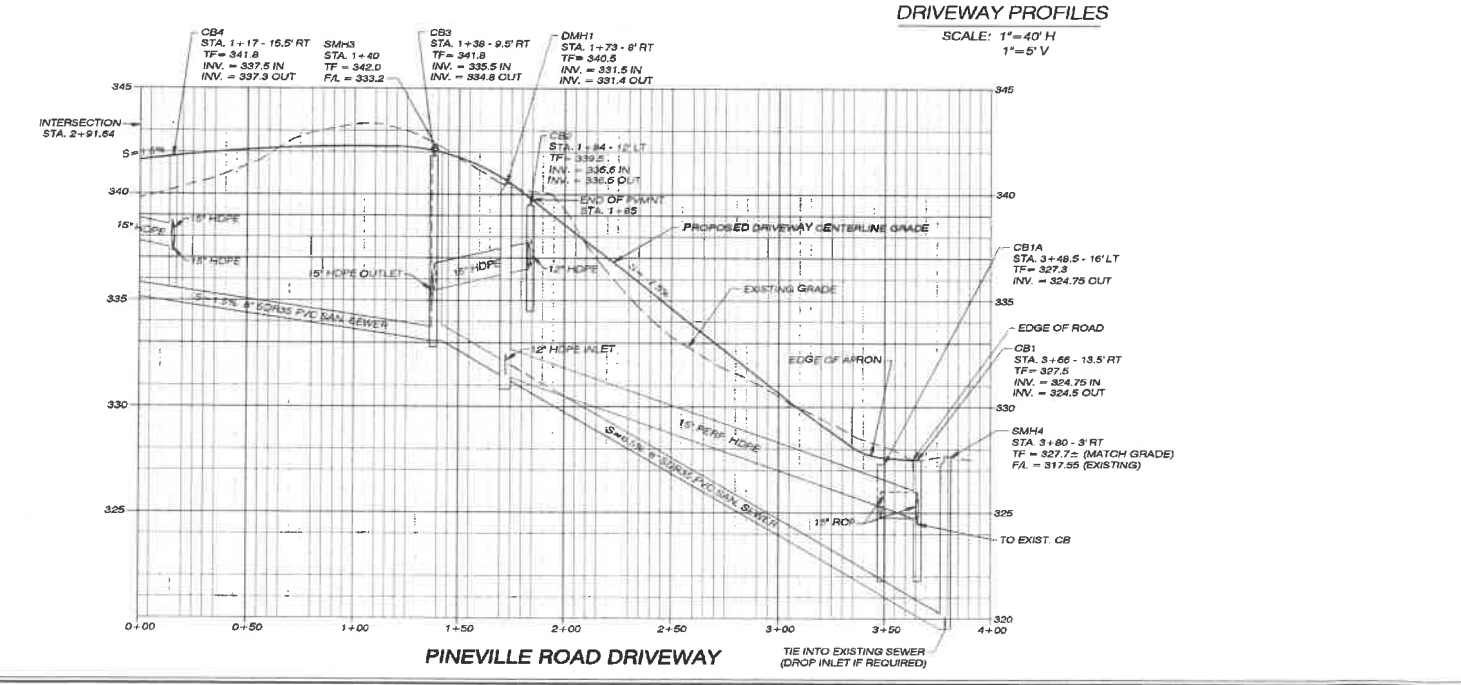
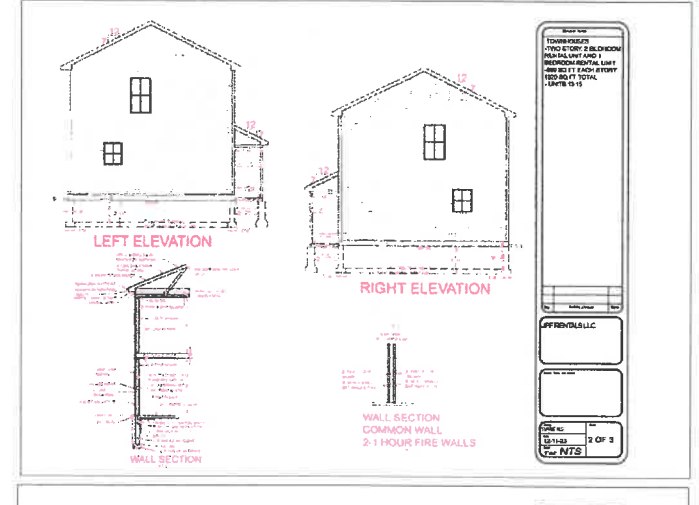
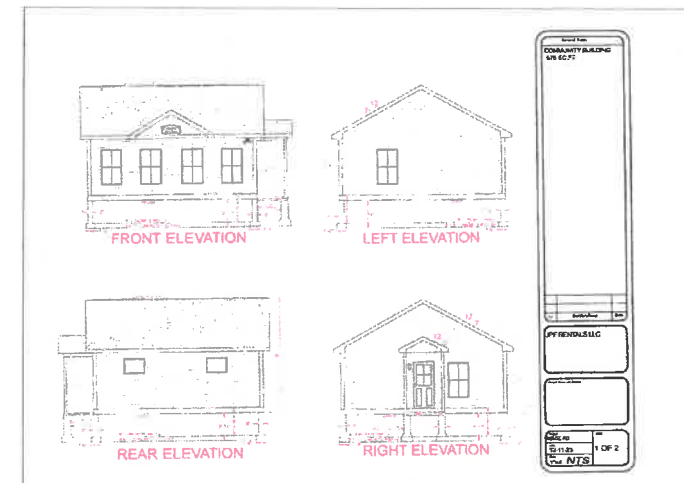
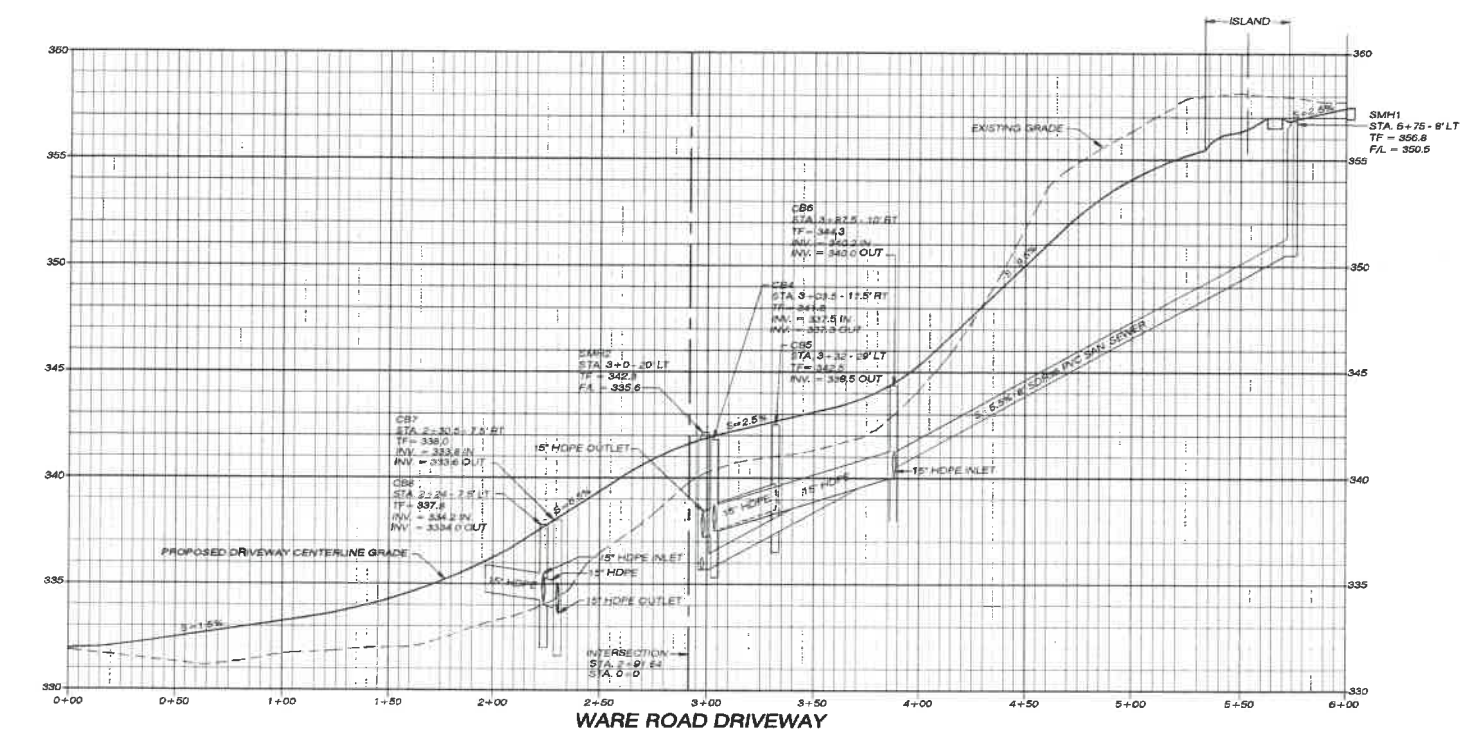
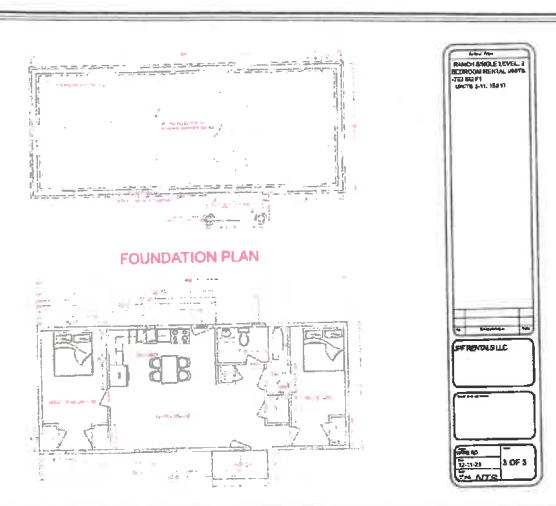
# PINEVILLE VILLAS

**PROPOSED MULTI-FAMILY DEVELOPMENT  
WARE ROAD & PINEVILLE ROAD  
KILLINGLY, CONNECTICUT  
JANUARY 2024**





NOTE: UNITS MAY BE MIRRORED AS SITE CONDITIONS WARRANT



RECEIVED  
JAN 16 2024

PLANNING & ZONING DEPT.  
TOWN OF KILLINGLY

SPECIAL PERMIT NO. \_\_\_\_\_  
APPROVED BY THE KILLINGLY  
PLANNING & ZONING COMMISSION  
ON \_\_\_\_\_  
CHAIRMAN \_\_\_\_\_ DATE \_\_\_\_\_

Killingly Engineering  
Associates  
114 Westcott Road  
P.O. Box 421  
Dayville, Connecticut 06241  
860 779 7299

NORMAND THIBEAULT, JR., P.E. No. 22834 DATE \_\_\_\_\_

**PINEVILLE VILLAS**

DRIVEWAY PROFILE & UNIT PLANS

PLAN OF  
PROPOSED MULTI-FAMILY  
DEVELOPMENT  
PREPARED FOR  
**JPF RENTALS, LLC**

WARE ROAD & PINEVILLE ROAD  
KILLINGLY, CONNECTICUT

DATE: SEPTEMBER 2023  
SCALE: 1" = AS SHOWN

REVISIONS:  
11/20/23 - TOWN COMMENTS  
12/14/23 - 1/4/24

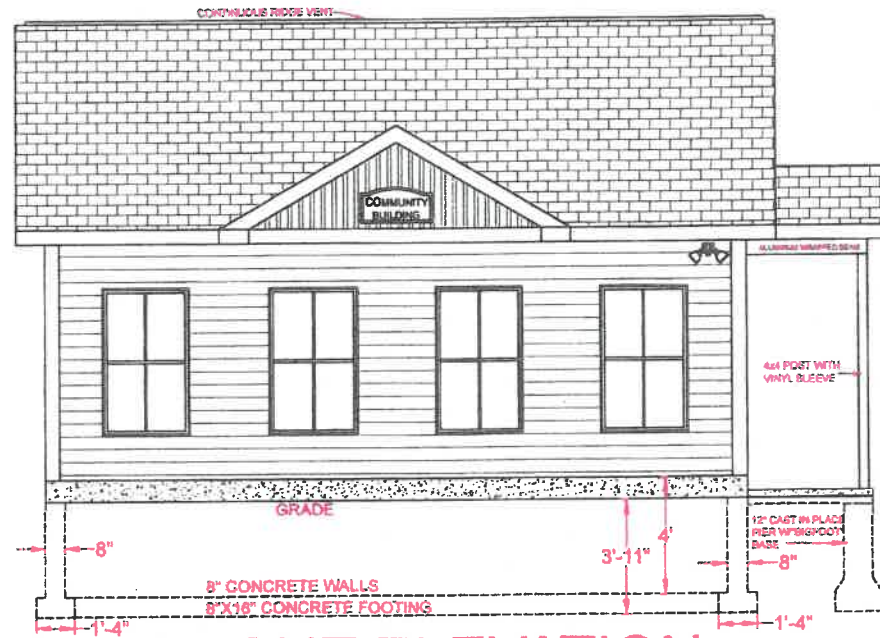
63 SNAKE MEADOW RD  
KILLINGLY, CT 06239  
860 774 6280

SHEET NO: 8 OF 9

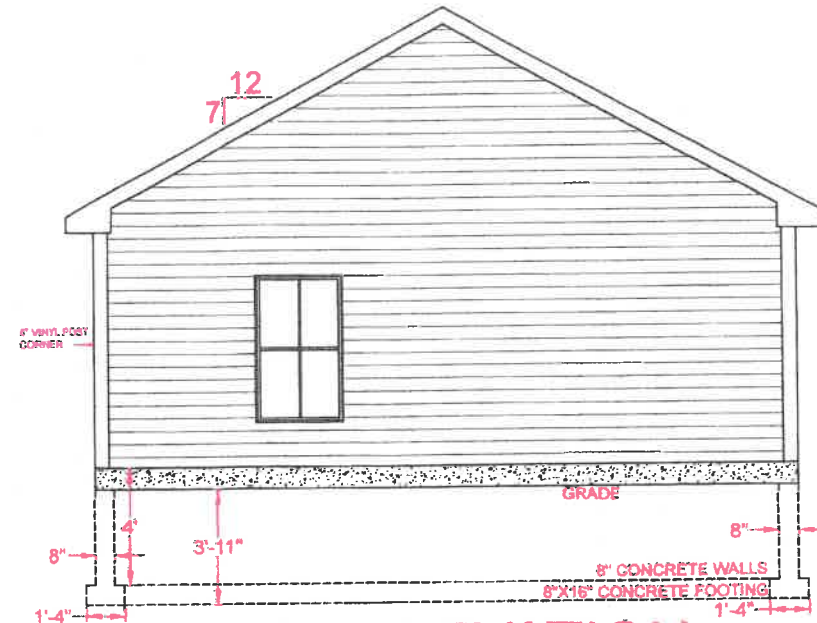
REVISIONS:  
11/20/23 - TOWN COMMENTS  
12/14/23 - 1/4/24

JOB NO: 23004 F.B. NO: N/A DRAWN BY: P.A.T. MAP NO:

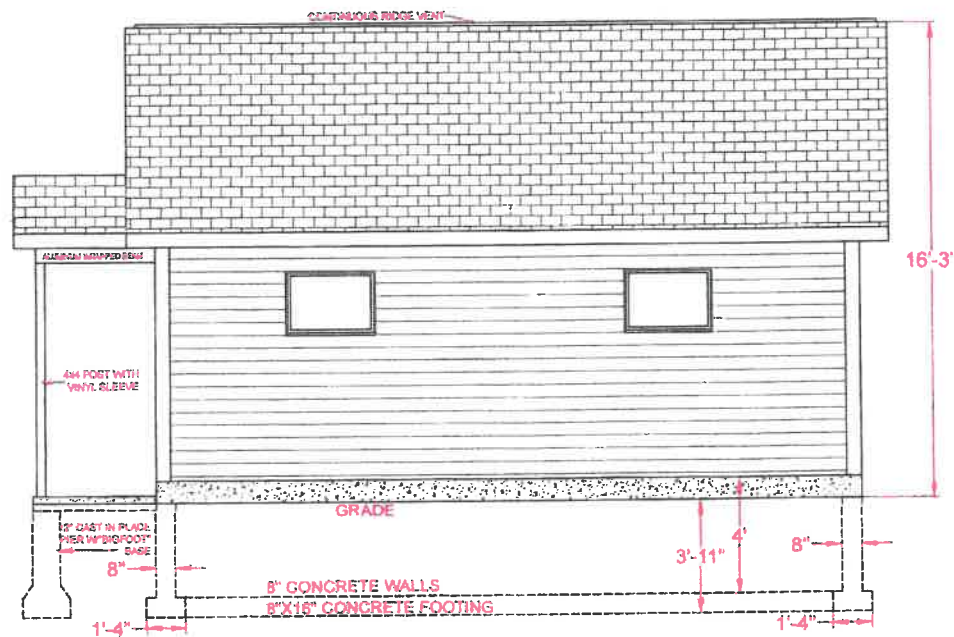




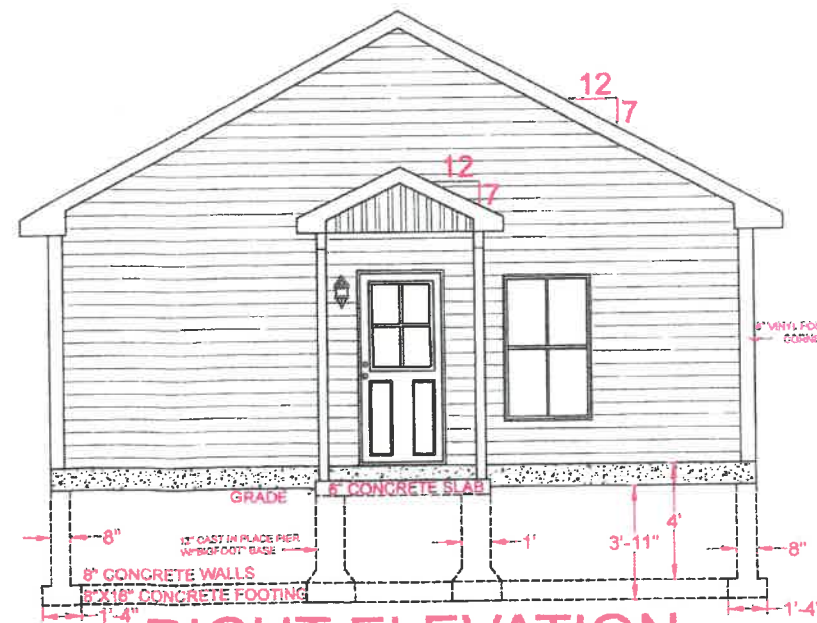
FRONT ELEVATION



LEFT ELEVATION



REAR ELEVATION



RIGHT ELEVATION

General Notes

COMMUNITY BUILDING  
-576 SQ.FT.

No.	Revision/Issue	Date

JPF RENTALS LLC

Project Name and Address

Project  
WARE RD

Date  
12-11-23

Scale  
1"=4'

Sheet

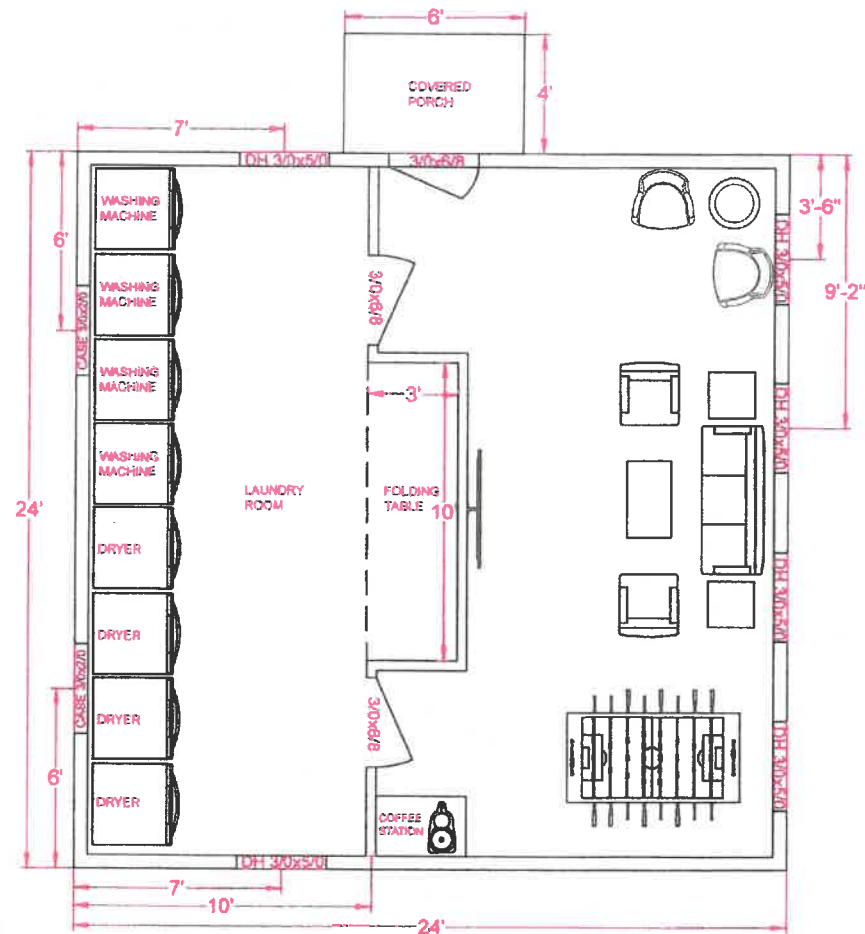
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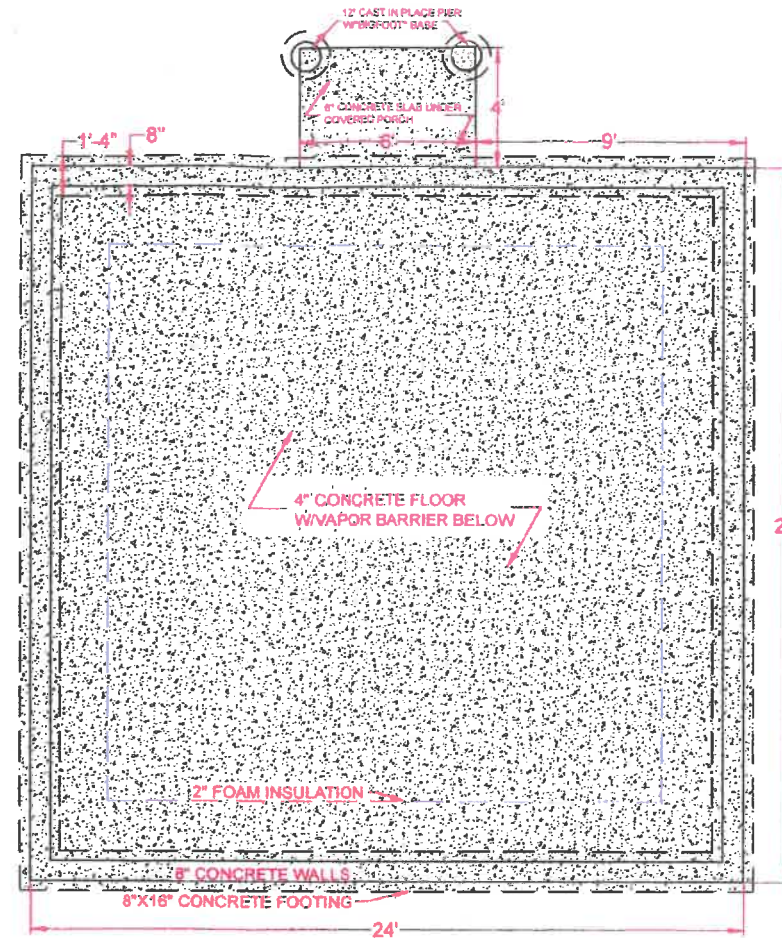
DEC 14 2023

PLANNING & ZONING DEPT.  
TOWN OF KILLINGLY

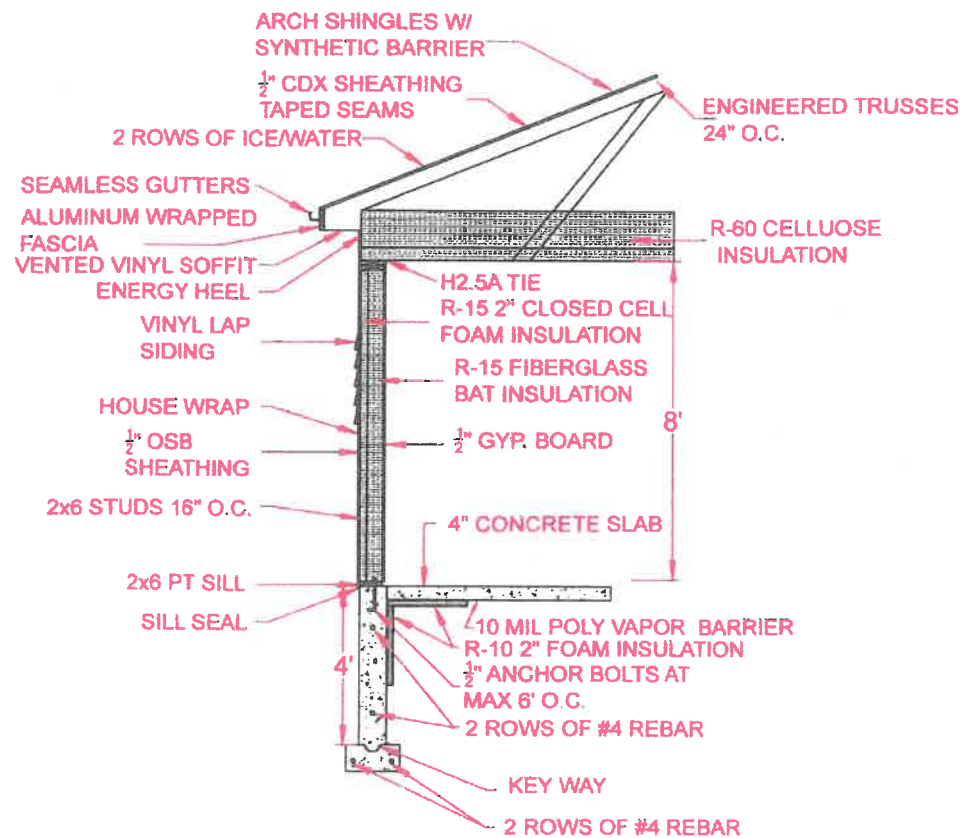
Community Building



**FLOOR PLAN**



**FOUNDATION PLAN**



**WALL SECTION**

General Notes

**COMMUNITY BUILDING**  
-576 SQ.FT.

No.	Revision/Issue	Date

JPF RENTALS LLC

Project Name and Address

Project  
WARE RD

Date  
12-11-23

Scale  
1"=4'

Sheet

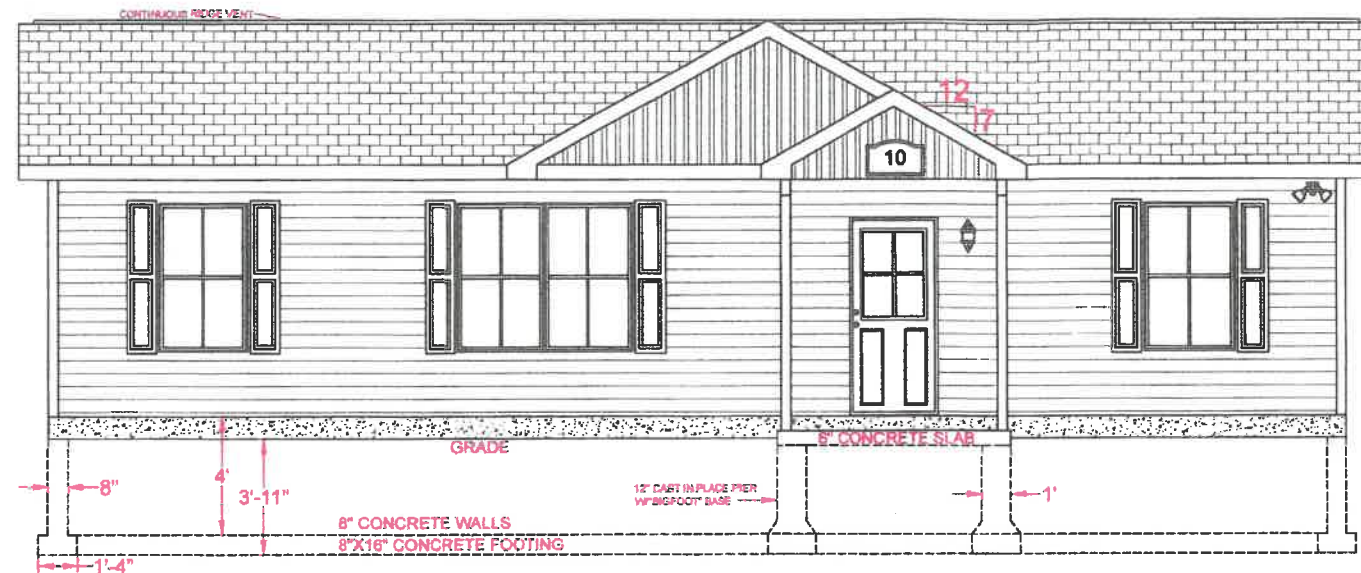
2 OF 2

**RECEIVED**

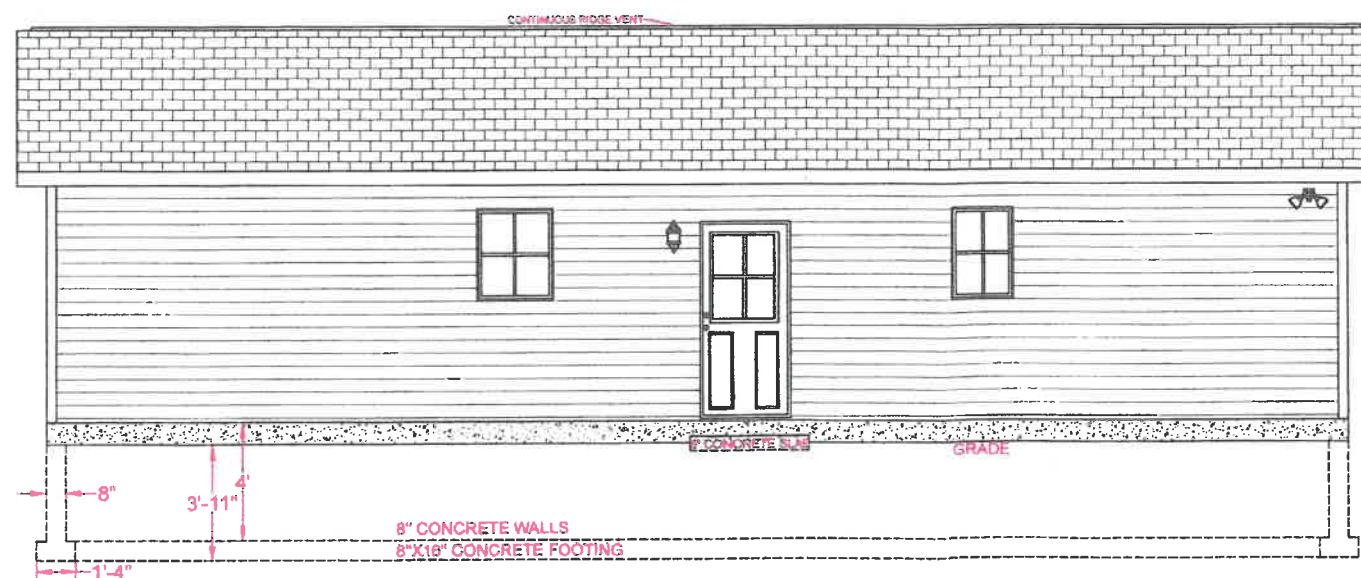
DEC 14 2023

PLANNING & ZONING DEP  
TOWN OF KILLINGLY





FRONT ELEVATION



REAR ELEVATION

General Notes

RANCH SINGLE LEVEL, 2  
BEDROOM RENTAL UNITS.  
-792 SQ.FT.  
- UNITS 3-11, 16&17

No.	Revision/Issue	Date

JPF RENTALS LLC

Project Name and Address

Project  
WARE RD

Date  
12-11-23

Scale  
1"=4'

Sheet

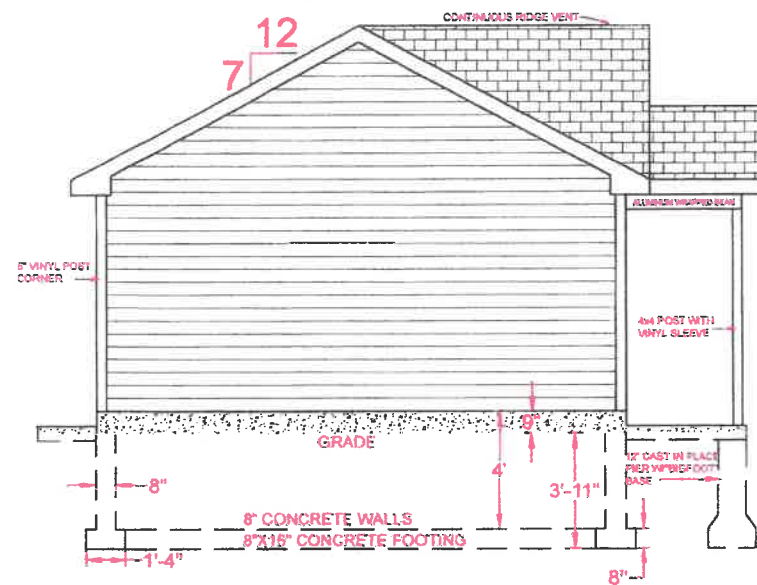
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RECEIVE

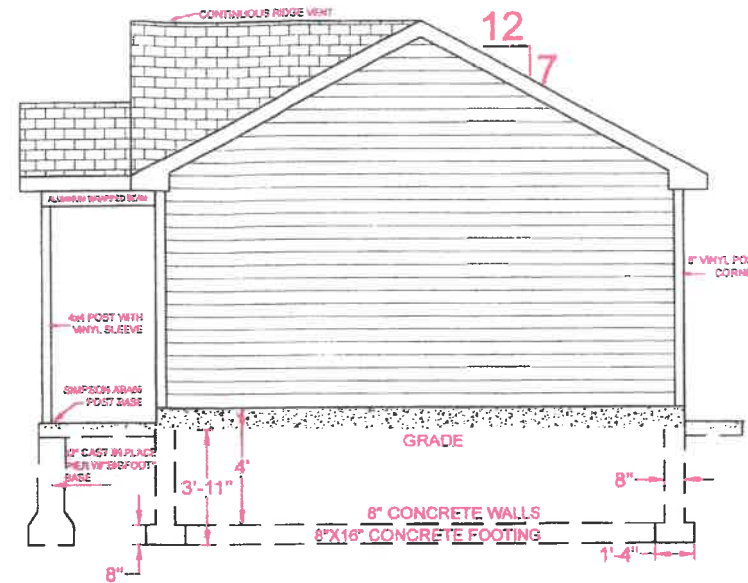
DEC 14 2023

PLANNING & ZONING DEPT  
TOWN OF KILLINGLY

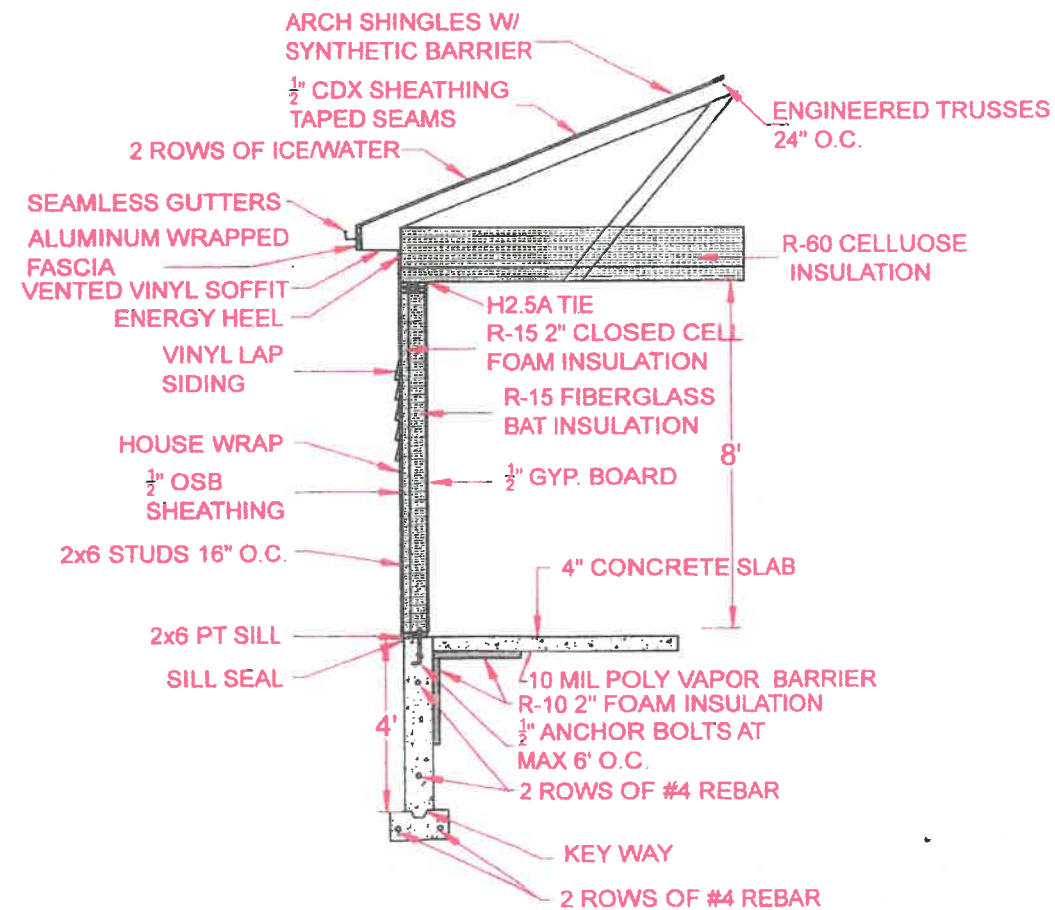
Single level



LEFT ELEVATION



RIGHT ELEVATION



WALL SECTION

N.T.S

General Notes

RANCH SINGLE LEVEL, 2  
BEDROOM RENTAL UNITS.  
-792 SQ.FT.  
- UNITS 3-11, 16&17

No.	Revision/Issue	Date

JPF RENTALS LLC

Project Name and Address

Project  
WARE RD

Date  
12-11-23

Scale  
1"=4'

Sheet

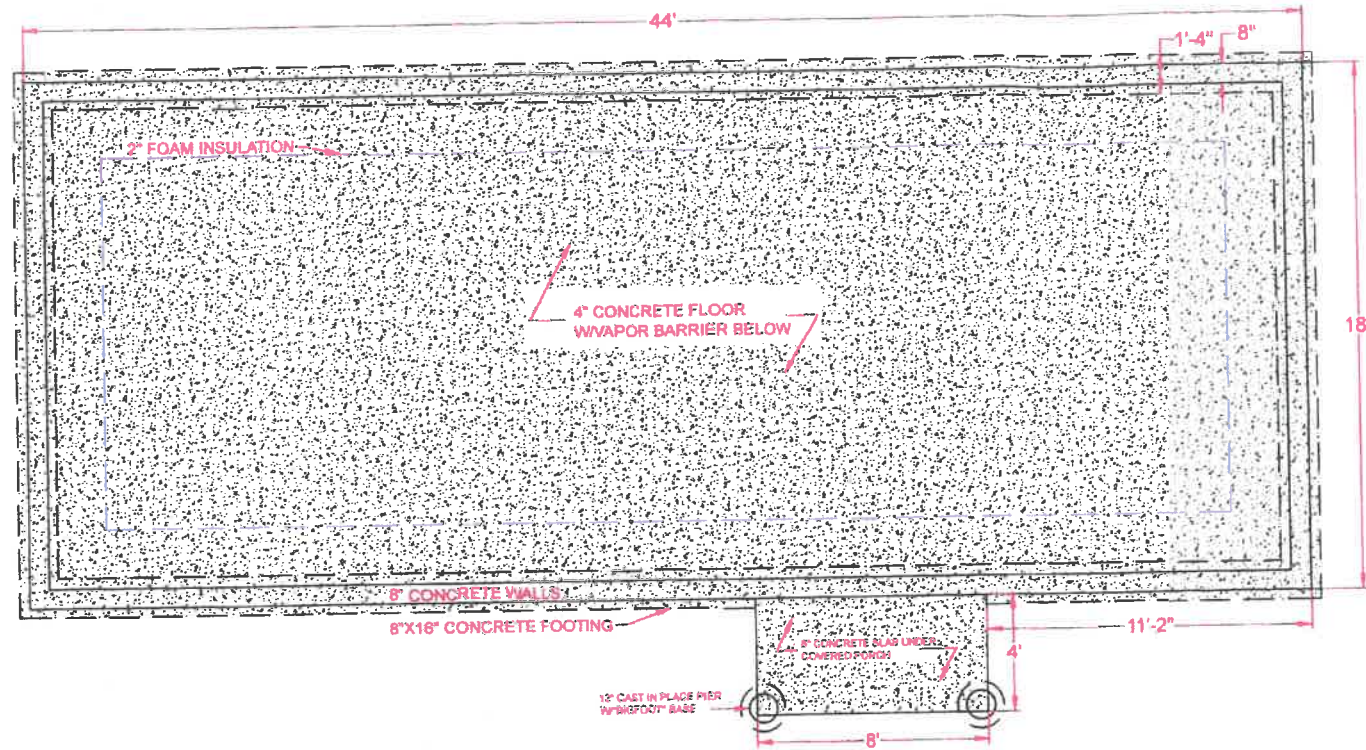
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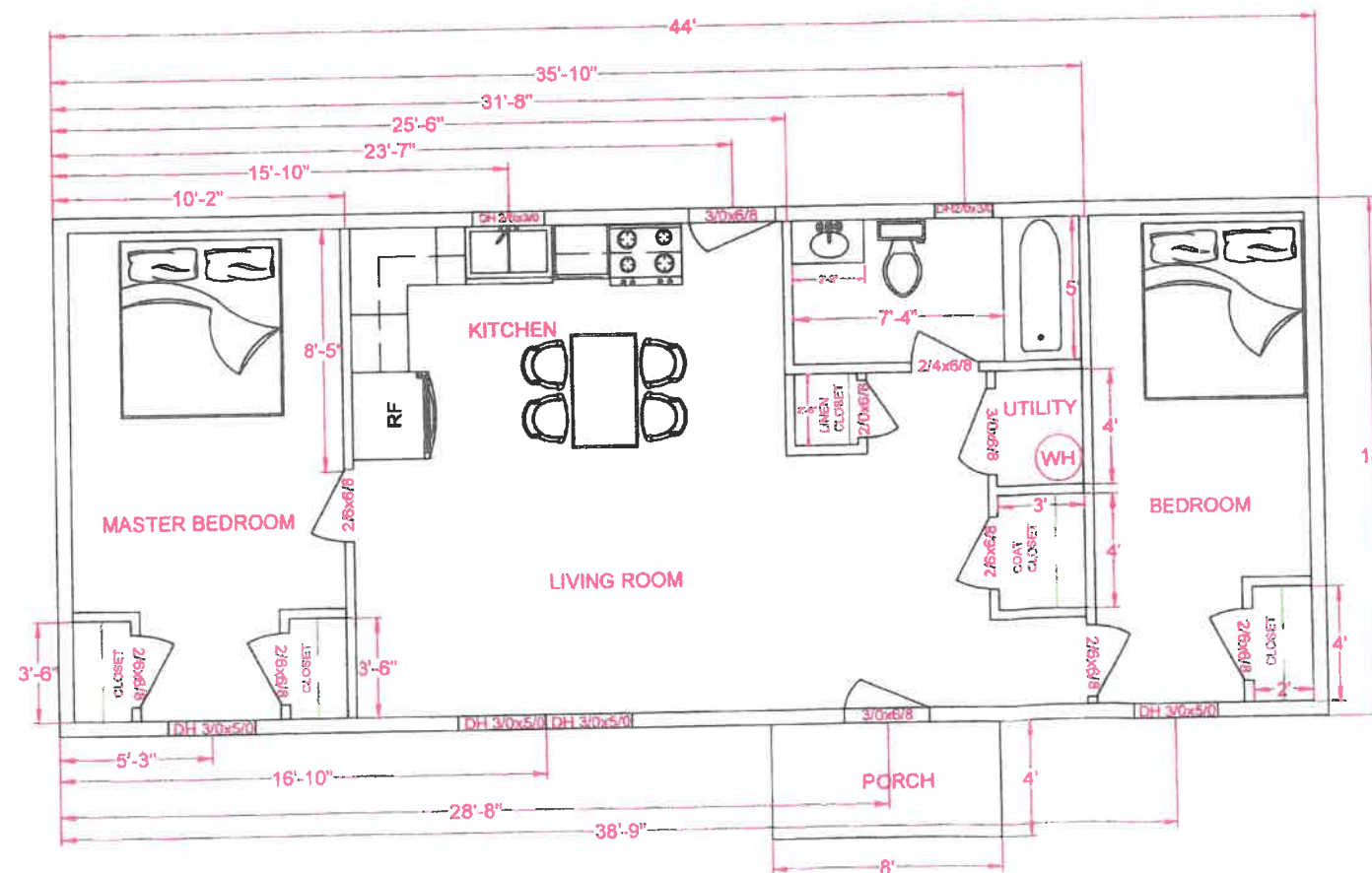
DEC 14 2023

PLANNING & ZONING DE  
TOWN OF KILLINGLY





FOUNDATION PLAN



General Notes

RANCH SINGLE LEVEL, 2  
BEDROOM RENTAL UNITS.  
-792 SQ.FT.  
- UNITS 3-11, 16&17

No.	Revision/Issue	Date

JPF RENTALS LLC

Project Name and Address

Project  
WARE RD  
Date  
12-11-23  
Scale  
1"=4'

Sheet  
3 OF 3

RECEIVE

DEC 14 2023

PLANNING & ZONING DE  
TOWN OF KILLINGLY



FRONT ELEVATION



REAR ELEVATION

General Notes

TOWNHOUSES  
-TWO STORY, 2 BEDROOM  
RENTAL UNIT AND 1  
BEDROOM RENTAL UNIT.  
-960 SQ.FT. EACH STORY  
1920 SQ.FT. TOTAL  
- UNITS 12-15

No.	Revision/Issue	Date

JPF RENTALS LLC

Project Name and Address

Project  
WARE RD

Date  
12-11-23

Scale  
1"=4'

Sheet

1 OF 3

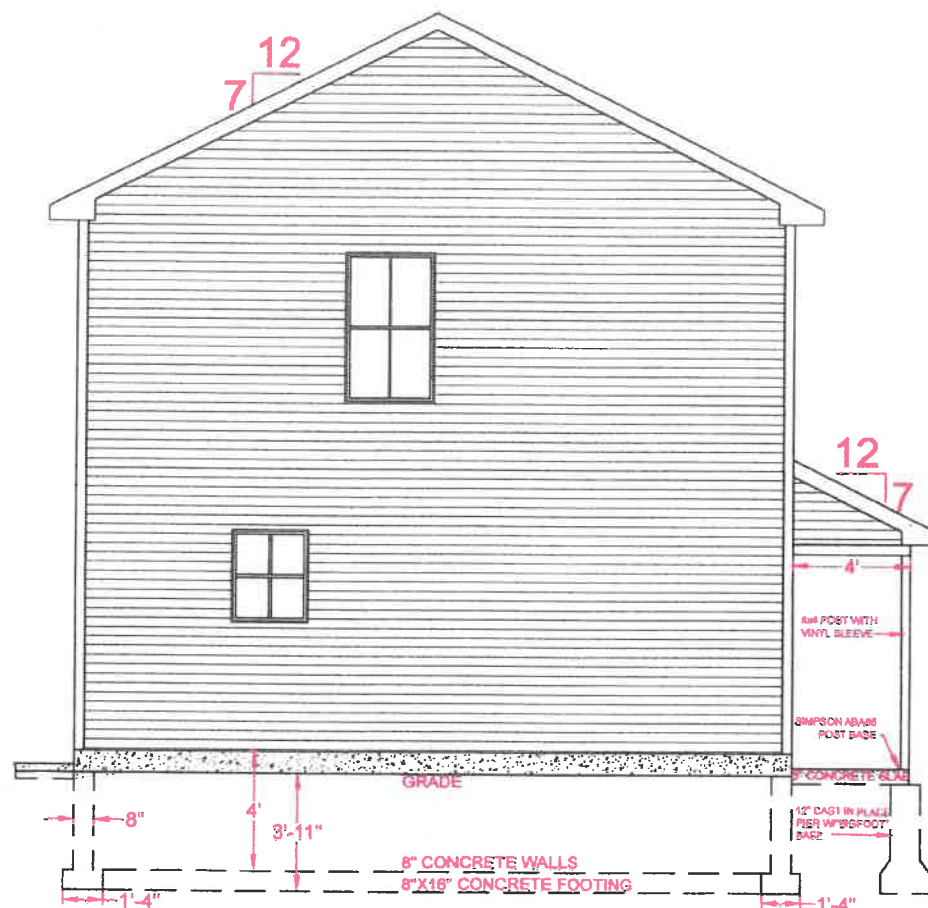
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DEC 14 2023

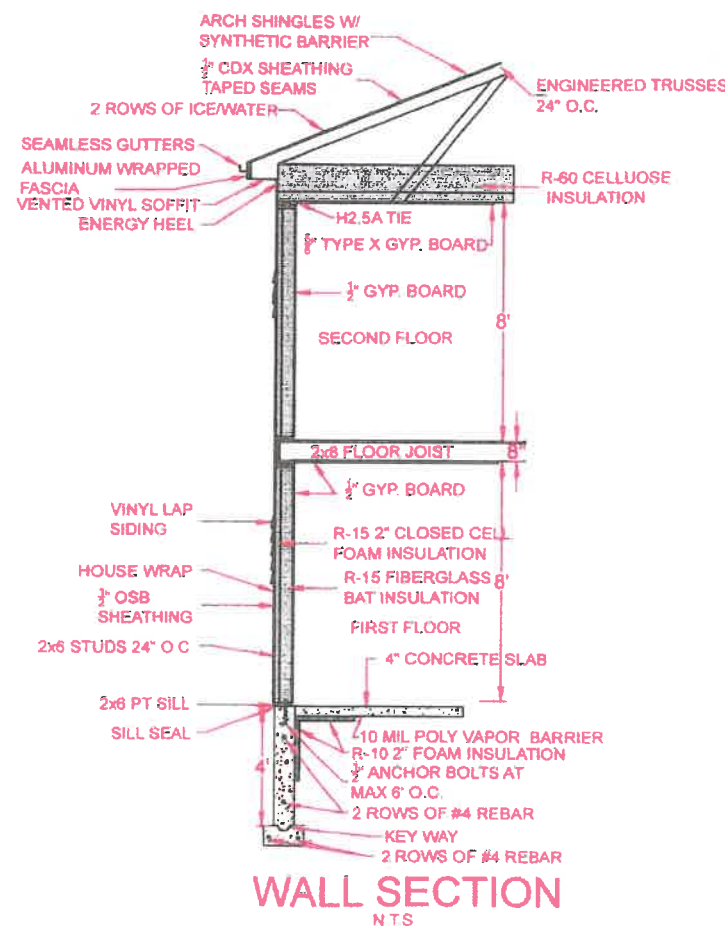
PLANNING & ZONING DE  
TOWN OF KILLINGLY

Town of Killingly

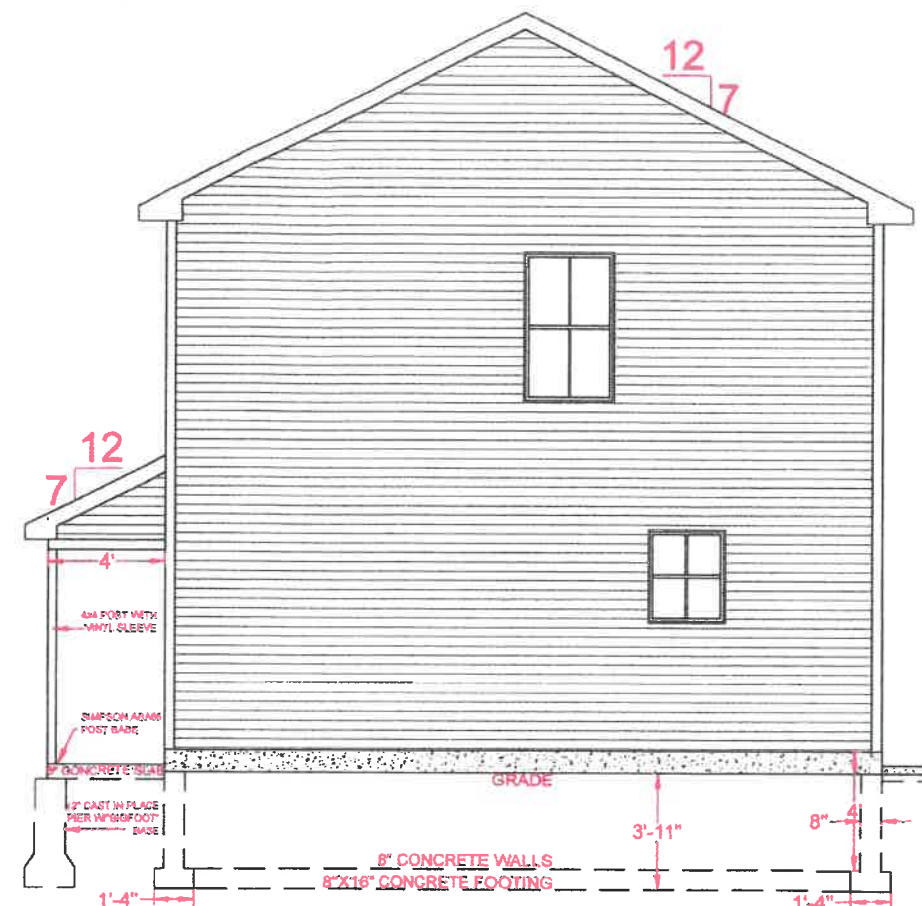




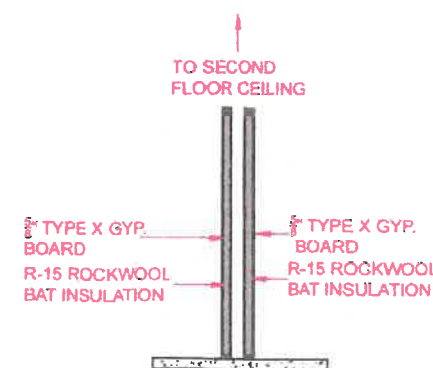
LEFT ELEVATION



WALL SECTION  
N.T.S.



RIGHT ELEVATION



WALL SECTION  
COMMON WALL  
2-1 HOUR FIRE WALLS  
N.T.S.

General Notes

TOWNHOUSES  
-TWO STORY, 2 BEDROOM  
RENTAL UNIT AND 1  
BEDROOM RENTAL UNIT.  
-960 SQ.FT. EACH STORY  
1920 SQ.FT. TOTAL  
- UNITS 12-15

No.	Revision/Issue	Date

JPF RENTALS LLC

Project Name and Address

Project  
WARE RD

Date  
12-11-23

Scale  
1"=4'

Sheet

2 OF 3

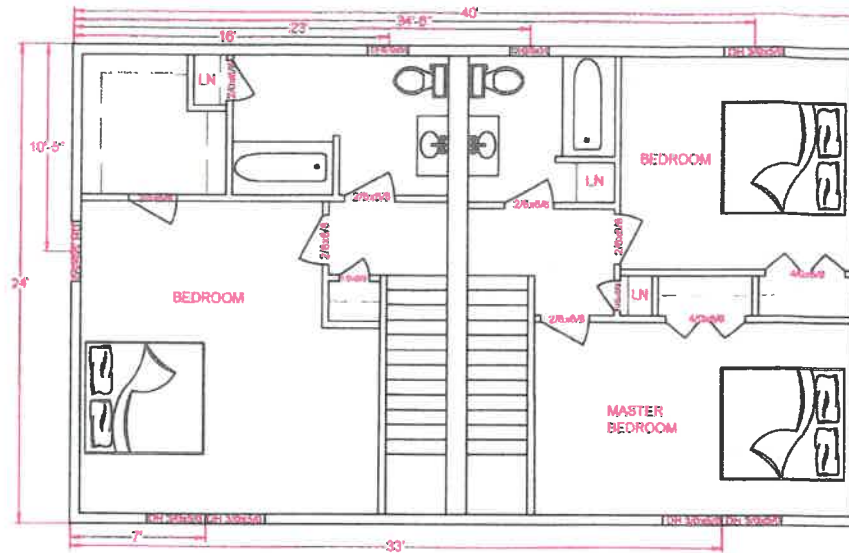
RECEIVE

DEC 14 2023

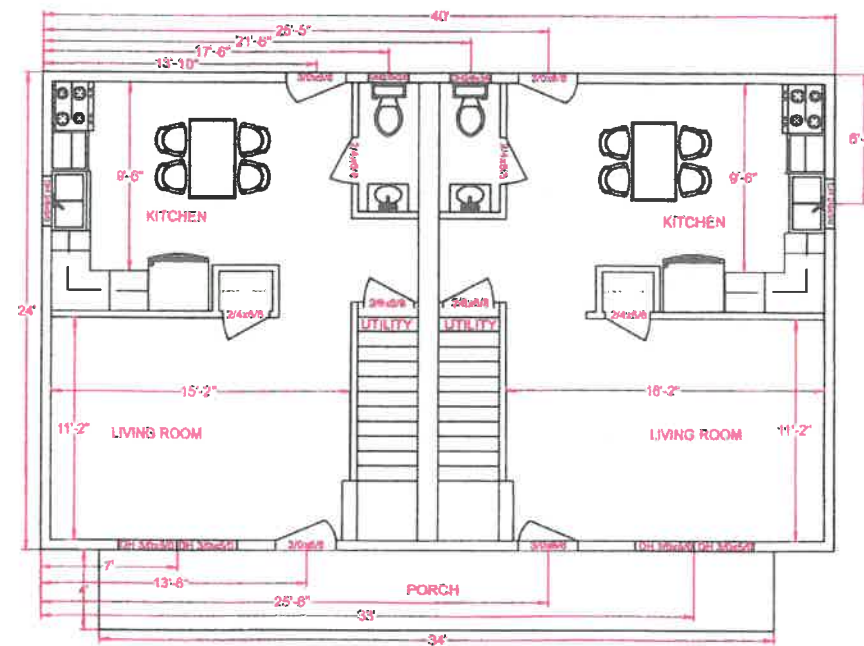
PLANNING & ZONING DE  
TOWN OF KILLINGLY



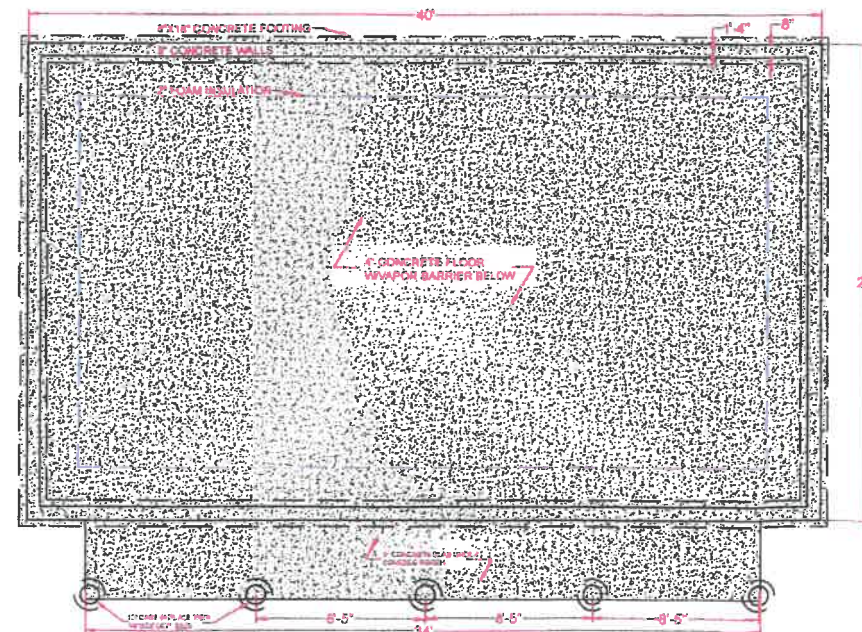
SECOND FLOOR



FIRST FLOOR



FOUNDATION PLAN



General Notes

TOWNHOUSES  
-TWO STORY, 2 BEDROOM  
RENTAL UNIT AND 1  
BEDROOM RENTAL UNIT.  
-960 SQ.FT. EACH STORY  
1920 SQ.FT. TOTAL  
- UNITS 12-15

No.	Revision/Issue	Date

JPF RENTALS LLC

Project Name and Address

Project WARE RD	Sheet 3 OF 3
Date 12-11-23	
Scale 1"=6'	

RECEIVED

DEC 14 2023

PLANNING & ZONING DEP  
TOWN OF KILLINGLY

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**VI. PUBLIC HEARINGS – (review / discussion / action)**

2) **Special Permit Appl: 24-1328**; Austin Noel (Fred Schramm/Landowner); 427 Chestnut Hill Rd, GIS MAP 66, LOT 14, Rural Development; (home occupation) welding and fabrication business out of the garage, RD Sect. 410.1.2(l), (Spec Perm, Home Occupation) and Sect 595 (Home Occupation).

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<b>APPLICANT(S):</b>	Austin Noel
<b>LANDOWNERS:</b>	Frederick G. Schramm
<b>SUBJECT PROPERTY:</b>	427 Chestnut Hill Road
<b>TAX ASSESSOR INFO:</b>	GIS MAP 66, LOT 14
<b>ACREAGE:</b>	~8.87 acres
<b>ZONING DISTRICT:</b>	Rural Development
<b>REQUEST:</b>	Home Occupation Outside the Residence / Welding and fabrication business
<b>REGULATIONS:</b>	TOK Zoning Regulations Section 410.1.2(l) – (Special Permit Home Occupation o/side residence) Section 595 – Home Occupation Section 700 – Special Permitted Uses Section 470 – Site Plan Review ( <b>applicant requests waiver – bldg. exists, etc.</b> )

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**Documents received for TUESDAY, FEBRUARY 20, 2024**

- 1) Application with fee paid in full
  - 2) GIS Map showing location
  - 3) GIS Map showing approximate distances to boundaries for subject structure.
- 

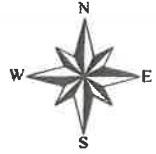
**Legal Notices for FEBRUARY 20, 2024**

- 1) Legal Notice Hearings (on February 20, 2024) – posted in Town Clerk’s Office on 1/31/2024 & P&D Office
  - 2) Legal Notice Hearings (on February 20, 2024) – published on 02/06/24 & 02/13/24 in Norwich Bulletin
  - 3) Legal Notice Hearings (on February 20, 2024) – posted outside of TMR
  - 4) Hearing Placard posted at site – and inspected by Zoning Enforcement Officer
- 

**STAFF COMMENTS AND SUGGESTIONS**

- 1) Staff suggests that commission members read the application, documents, and the appropriate regulations,
- 2) Staff requests that the applicant initial and sign the home occupation regulations (was sent to him, but he never returned them) – so the original can be kept in the file.
- 3) Staff also noted the following
  - a) house is 1,232 square feet – metal garage is 1,200 square feet
  - b) according to GIS MAP there may be junk vehicles there – that need to be removed, etc.
- 4) Staff suggest that a condition – if the application is approved – should be that the applicant show staff that the site is cleaned up prior to opening – the regulations do require that everything be kept inside the structure.
- 5) Staff will be in attendance to respond to any further questions, etc.
- 6) Staff has concerns about building and fire safety





# 427 Chestnut Hill Road

Town of Killingly, CT

1 inch = 141 Feet



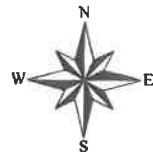
[www.cai-tech.com](http://www.cai-tech.com)

January 10, 2024



Data shown on this map is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this map.





# 427 Chestnut Hill

Town of Killingly, CT

1 inch = 43 Feet



www.cai-tech.com

February 15, 2024



Data shown on this map is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this map.

## **Section 595. Home Occupations**

The purpose of "Home Occupations" is to permit the conduct of a business for income purposes in a residential district while ensuring that the residential character of said district is maintained and preserved.

- 595.1 Home occupations are permitted accessory uses in Rural Development and Low Density Residential zones only so long as all the following conditions and requirements are observed.
- A. The occupation is operated entirely within the confines of the dwelling by the occupant of such dwelling, except as provided in Section 595.2.
  - B. Storage and display of any materials and/or products shall not be permitted on the premises outside of the dwelling unit.
  - C. The occupation shall be clearly secondary to the residential use of the dwelling.
  - D. Such occupation shall not occupy more than a total of 1,000 square feet of floor area.
  - E. No more than two nonresident employees shall be employed on the premises.
  - F. Such occupation shall not change the residential character of the dwelling in any visible manner.
  - G. Such occupation shall not create objectionable noise, smoke, odor, toxic fumes, waste products, vibration or unsightly conditions that would set the dwelling apart in its surroundings or degrade residential property in the neighborhood.
  - H. No traffic shall be generated by such home occupation in greater volumes than would normally be expected in a residential neighborhood.
  - I. Such occupation shall not create interference with radio or television reception in the neighborhood.
  - J. Off street parking shall be provided at a rate of one space for each employee. Where on-site sales are intended, there shall be customer parking at the rate of one space for each 200 square feet of floor area (or portion thereof) devoted to the use.

- K. Articles sold on the premises as part of said home occupation shall only be the product for which the permit is issued.
- L. Such occupation shall comply with all applicable state and federal regulations.
- M. All alterations to the dwelling must be approved by the Killingly Building Official.

595.2 The Commission may, by Special Permit, permit the conduct of a home occupation outside the confines of the dwelling if it determines that the occupation will otherwise meet all conditions of 595.1 A through M.

595.3 All home occupations operated within the confines of a dwelling must be authorized by a zoning permit issued by the Zoning Enforcement Officer.

Both zoning permits and special permits granted under the above provisions allow the home occupation use for a two (2) year period. Applications for zoning and special permit renewal must be applied for two (2) months prior to their expiration.

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**VI. PUBLIC HEARINGS – (review / discussion / action)**

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3) **Zone TEXT Change Appl: 24-1329**; Lake Apartments, LLC; Zone TEXT Change – revision to multi-family zoning requirements for clarification purposes for density.

**(NOTE:** Edits, if any, may be suggested, and made, to the proposed text up to the close of the hearing. There will be no further advertisement of those edits until the decision of the PZC is published.)

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<b>APPLICANT(S):</b>	Lake Apartments, LLC
<b>LANDOWNERS:</b>	D/N/A
<b>SUBJECT PROPERTY:</b>	D/N/A
<b>TAX ASSESSOR INFO:</b>	D/N/A
<b>ACREAGE:</b>	D/N/A
<b>ZONING DISTRICT:</b>	Low Density, Medium Density, and Residential High (Borough)
<b>REQUEST:</b>	Update of Multi-Family Regulations re: clarification purposes for density
<b>REGULATIONS:</b>	TOK Zoning Regulations Section 555 – Mult-Family Development

---

**Documents received for TUESDAY, FEBRUARY 20, 2024**

- 1) Application with fee paid in full
  - 2) Proposed Text Change Amendment
    - Blue Text – To be deleted.
    - Red Text – To be added.
- 

**Legal Notices for FEBRUARY 20, 2024**

- 1) Legal Notice Hearings (on February 20, 2024) – posted in Town Clerk’s Office on 1/31/2024 & P&D Office
  - 2) Legal Notice Hearings (on February 20, 2024) – published on 02/06/24 & 02/13/24 in Norwich Bulletin
  - 3) Legal Notice Hearings (on February 20, 2024) – posted outside of TMR
  - 4) Notice Sent to NECCOG on January 19, 2024 – received the same day
  - 5) Memorandum Posted on January 19, 2024, in the Town Clerk’s Office
- 

**STAFF COMMENTS AND SUGGESTIONS**

- 1) Applicant has presented wording that they feel clarifies the discussion around how to determine the density (number of units) within a multi-family development.
- 2) Staff have also included Article IX (Amendments) of the Zoning Regulations for your convenience.
- 3) Staff will be available to answer any further questions.



Blue Text ~ Deleted

Red Text - New

## SECTION 555 MULTI-FAMILY DEVELOPMENT

Multi-Family development may be allowed in the LD, MD and Residential High (Boro) zones only by Special Permit.

### Multi-Family development standards:

1. Public water and sewer must be used.
2. The property shall meet the minimum lot size and frontage for the zone in which the development is proposed, and shall not exceed the maximum lot size allowance as established in the definition of Multi-Family Development.
3. ~~Multi-family development shall comply with the underlying zone lot coverage and height requirement.~~  
**Lot coverage in a multi-family development shall not exceed the following:**
  - **30% in Low Density Zone**
  - **35% in Medium Density Zone**
  - **40% in Residential High (Borough) Zone****Maximum building heights shall comply with the requirements of the underlying zone.**
4. Multi-family developments shall comply with the minimum setbacks as established for the underlying zone. ~~Principal structures within the development shall be separated by not less than forty 40 feet.~~ **The minimum distance between principal buildings shall be based on minimum fire code requirements.**
5. Multi-family developments shall comply with off-street parking design and ratio.
6. Multi-family development driveways shall be owned and maintained by the property owner(s). Said drives shall be constructed to Town standards, as amended, and shall meet the design requirements of Section 530.2.
7. Driveway curb-cuts shall be located along the lot frontage so as to maximize public safety. The Planning & Zoning Commission shall have the discretion to modify driveway location if in its opinion a proposed driveway location is unsafe.
8. Side and rear yards shall be established as planted buffers to provide privacy between the multi-family development and abutting properties.
9. As a Special Permit provision, sidewalks may be required to interconnect the project main entrances, parking areas, Community facilities and the road(s) where the frontage is (are) calculated. A pedestrian circulation system must be so designed wherever possible for separation between pedestrian and vehicular traffic. All such walks shall be designed and built as handicap accessible.



TEXT CHANGE AMENDMENT – Application #24-1329 (Section 555 – Multi-Family Development)

Blue Text – Deleted

Red Text - New

The Commission may require that existing walks on a subject property be upgraded or improved. Where sidewalks are to be repaired or constructed they shall meet or exceed town standard as amended.

10. Multi-family densities shall be determined in accordance with the ~~requirements of the underlying zone (LD, MD, RH-B)~~ **maximum coverage requirements contained herein.**
11. Structures within the Multi-family development shall be externally marked or identified. Exterior unit identification (or directories) also shall be provided as necessary and shall be externally lighted.
12. Solid waste receptacles shall be provided on-site, and shall be screened from the view from the street giving access, and abutting properties. Provisions shall be made for the collection of separated wastes, as required by Town ordinance.
13. All Multi-family housing developments shall be designed so as to require minimal earth grading. Final designs shall permit direct and rapid access and alternate access by emergency response vehicles and personnel.
14. Driveways and parking areas shall be lighted. Lighting shall be shielded to prevent direct glare into streets and onto abutting properties.
15. The developer shall furnish such performance bond or bonds that may be determined by the Planning and Zoning Commission to assure performance in the construction of public utilities, and other facilities in accordance with the approved plan and to protect the public interest in the event of abandonment of the project by the developer.
16. Utilities in a Multi-family housing development shall be installed underground where practical.
17. Principal buildings within a Multi-family housing development shall be coordinated in terms of architecture colors texture and scale.

Effective date August 16, 1989

**ARTICLE IX.**  
**AMENDMENTS**

**Section 900. Application.**

These regulations, or the official Zoning Map, may be amended or repealed as provided herein. Such change may be requested by the Commission or by petition. Application for amendment shall be made on a form specified by the Commission and shall be accompanied by:

- 900.1 A fee is required for a Zone Change application and Change to Regulations application.
- 900.1.1 The applicant shall erect or cause to have erected a sign on the premises affected by the proposed zone change application at least ten (10) days prior to the public hearing on such zone change.
- Signs shall be provided by the Town for each Zone Change Application. Said sign shall be securely fastened or staked, and be clearly visible from the street closest to the affected property and be maintained as such until the day following the public hearing.
- A report from the Zoning Enforcement Officer attesting to whether the above described sign was erected and maintained as required shall be made part of the record at the public hearing. Failure of a petitioner to comply with this requirement may be grounds for automatic denial of the zone change, with consideration being given to cases where weather conditions or acts of vandalism have destroyed a properly posted sign. (Effective 3/1/90).
- 900.2 In case of an amendment to the Zoning map, a site plan drawn to a scale of 100 feet to the inch for a change involving 10 acres or less, or a scale of 200 feet to the inch for larger tracts. Such plan shall contain the following information:
- 900.2.1 Property lines, including streets and watercourses and the names of all abutting property owners including those across any streets.
- 900.2.2 Existing and proposed zoning district boundaries.
- 900.2.3 Location of any existing or proposed buildings, structures, streets, driveways, parking and loading spaces, and outside storage areas.

- 900.2.4 Location of any existing or proposed watercourses, 100 year flood plains, special flood hazard areas, wetlands, storm drainage and sewage disposal facilities. The required provision of any of the above information may be waived at the discretion of the Commission. Applications will be received only at regular meetings of the Commission, but must be submitted to the office of the Commission at least seven days prior to such meeting for review and placement on the agenda.

#### **Section 901. Procedure.**

No such amendment shall become effective until a public hearing has been held thereon by a majority of the members of the Commission. Such hearing shall be held within 65 days of the receipt of a completed application. At such hearing, parties in interest and citizens shall have an opportunity to be heard.

##### **901.1 Notice of hearings.**

Notice of the time and place of such hearings shall be published in the form of a legal advertisement, in a newspaper of general circulation in the Town, at least twice at intervals of not less than two days, the first not more than fifteen nor less than ten days and the second not less than two days before such hearing. A copy of such proposed amendment shall be filed in the office of the Town Clerk at least ten days before such hearing and may be published in full in such newspaper.

##### **901.2 Requirements for adoption.**

Amendments may be adopted by a majority vote of the Commission, except that if a protest is filed at the public hearing signed by the owners of twenty percent or more of the lots included in such proposed change or of the lots within 500 feet in all directions of the property included in the proposed change, such change shall not be adopted except by a vote of two-thirds of the members of the Commission.

##### **901.3 Decision of the commission.**

The Commission shall adopt or deny the amendment requested within 65 days after the public hearing. The petitioner may consent to extension of the periods provided for hearing or decision, provided such extension does not exceed 65 days, or may withdraw such petition. If the amendment is approved, the Commission shall state upon its records the reasons why the change was made.

## **Section 902. Criteria.**

In judging any such proposed amendment, the Commission shall take into account the various factors favorable and unfavorable to such a change, including but not limited to:

- 902.1 Errors in the existing zoning regulations, changes that have taken place in the rate and pattern of the Town's development and land use; the supply of land available in the present and proposed zones; the physical suitability of the land for the proposed zone; the effect of the change on the surrounding area (physical, social and economic), the purposes of zoning and the objectives of the Plan of Development; and neighborhood acceptance weighed against community needs.
- 902.2 The legality of the proposed amendment and whether some other method or procedure is more appropriate under the zoning regulations; and
- 902.3 The size of the area involved. Changes creating a total contiguous zone of less than 10 acres are, in general, not to be considered favorably.

## **Section 903. Effective Date.**

Amendments shall become effective at such time as is fixed by the Commission, provided a copy of such change shall be filed with the Town Clerk and notice of the decision shall have been published in a newspaper of general circulation in the Town.

## **Section 904. Rehearings**

The Commission shall not be required to hear any petition relating to the same changes, or substantially the same changes, more than once in a period of twelve months.



TOWN OF KILLINGLY, CT  
PLANNING AND ZONING COMMISSION

2024 JAN 23 AM 11:02  
Legal Information

**TUESDAY – JANUARY 16, 2024**

**Regular Meeting – HYBRID MEETING**

**7:00 PM**

**TOWN MEETING ROOM – 2<sup>ND</sup> FLOOR**

**Killingly Town Hall**

**172 Main Street**

**Killingly, CT**

THE PUBLIC IS ALLOWED TO ATTEND THE MEETING IN PERSON  
OR THE PUBLIC MAY VIEW THIS MEETING AS DESCRIBED BELOW

**MINUTES**

THE PUBLIC CAN VIEW THIS MEETING ON FACEBOOK LIVE.

GO TO [WWW.KILLINGLY.ORG](http://WWW.KILLINGLY.ORG) AND CLICK ON FACEBOOK LIVE AT THE BOTTOM OF THE PAGE.

I. **CALL TO ORDER** – Chair, Keith Thurlow, called the meeting to order at 7:20 p.m.

**ROLL CALL** – Matthew Wendorf and Keith Thurlow.

John Sarantopoulos and Virge Lorents were present via online.

Brian Card and Michael Hewko were absent with notice.

**Staff Present** – Ann-Marie Aubrey, Director of Planning & Development; Jonathan Blake, Planner I/ZEO;  
Jill St. Clair, Director of Economic Development.

**Also Present** – Gary Jaworski; Stephen Jaworski; Marilyn Jaworski; Daniel Blanchette, J & D Civil Engineers.  
There was one additional person present in the audience.

**Present via Online** – Christine M. McGannon, Jack Helfgott (WELD, LLC/Landowner); Jaymin Patel, DMD, LLC;  
Chirag Solanki, MAAHIR Real Estate, LLC; Bruce Woodis, Archer Surveying/KWP Associates;  
Ulla Tiik-Barclay, Town Council Liaison.

II. **SEATING OF ALTERNATES** – None.

III. **AGENDA ADDENDUM** – None.

IV. **CITIZENS' COMMENTS ON ITEMS NOT SUBJECT TO PUBLIC HEARING** (Individual presentations not to exceed 3 minutes; limited to an aggregate of 21 minutes unless otherwise indicated by a majority vote of the Commission)

**NOTE:** Public comments can be emailed to [publiccomment@killinglyct.gov](mailto:publiccomment@killinglyct.gov) or mailed to the Town of Killingly, 172 Main Street, Killingly, CT 06239. All public comment must be received prior to 2:00 PM, the day of the meeting. Public comment received will be posted on the Town's website [www.killingly.org](http://www.killingly.org).

**NOTE:** To participate in the CITIZENS' COMMENTS– the public may join the meeting via telephone while viewing the meeting on Facebook live.

To join by phone please dial 1-415-655-0001; and use the access code **2630-623-8482** when prompted.

There were no comments from the public either in person or online.

V. COMMISSION/STAFF RESPONSES TO CITIZENS' COMMENTS – None.

VI. PUBLIC HEARINGS – (review / discussion / action)

NOTE: PUBLIC HEARING comments can be emailed to [publiccomment@killinglyct.gov](mailto:publiccomment@killinglyct.gov) or mailed to the Town of Killingly, 172 Main Street, Killingly, CT 06239. All public comment must be received prior to 2:00 PM, the day of the meeting.

Public Hearing comments received will be posted on the Town's website [www.killingly.org](http://www.killingly.org)

NOTE: To participate in THE PUBLIC HEARINGS – the public may join the meeting via telephone while viewing the meeting on Facebook live.

To join by phone please dial 1-415-655-0001; and use the access code 2630-623-8482 prompted.

1) Special Permit Appl #23-1322 – JPF Rentals LLC (JPF Rentals, LLC & Christopher Chenette/ Landowners ); 18 Ware Road (GIS MAP 40, LOT 27) and 21 Pineville Road (GIS MAP 40, LOT 33); Medium Density; approximately 4 acres; to construct 14 new residential rental units, w/community bldg., parking, drainage and appurtenant utility services; under TOK Zoning Regulations; Medium Density, Section 410.3.2(j) Special Permitted Uses, (j) Multi-family Development; Section 555, Multi-Family Development; Article VII, Special Permits; Section 470 Site Plan Review. **CONT FROM 11/20/2023 & 12/18/2023**

Keith Thurlow announced that this public hearing is continued to February 20, 2024.

2) Special Permit Appl #23-1324 – John DeLuca, Jack Helfgott, Christine McGannon (Weld, LLC/Landowner); 543 Wauregan Rd, GIS MAP 262, LOT 20; ~2.1 acres; GC; to create an all interior, climate controlled, self-service storage facility fully contained in the existing bldg.; under GC-SP Sect. 420.2.2(q) Self-Service Storage Facilities; Sect 700 Special Permits. **CONT. 12/18/2023**

Keith Thurlow stated that the Applicant is requesting a waiver for the survey.

Jack Helfgott and Christine McGannon gave an overview. Maps were displayed as discussed:

- Mr. Helfgott explained that a survey had been done when the property was re-zoned from GC to Light Industrial. So, a survey is already on file.
- They are not proposing any changes to the building, landscape or footprint of the building.
- Mr. Helfgott summarized/explained:
  - Facility to be self-enclosed.
  - Doors to be locked. Security – fencing with controlled access (key card or code for when the office is not staffed).
  - On-site office to be staffed. Office Hours – Monday thru Saturday.
  - Log book of renters to be kept on-site.
  - No outdoor storage.
  - There was discussion regarding the limit of six times per year for auctions.  
Ms. Aubrey explained that auctions for multiple units could take place on the same date. So, it is not a limit on the number of units per year, but a limit of six auction dates per year.  
Mr. Helfgott explained that the auctions are done, primarily, online now.  
Mr. Thurlow asked for clarification regarding the limit of six is per State mandate or per the Killingly PZC.  
Ms. Aubrey explained that it was the Commission's decision due to concerns regarding six units vs. six auction dates.  
Ms. McGannon stated agreement with six auction dates and she explained that there would not be a lot of traffic or a lot of people coming in due to the auctions taking place online.
- Mr. Helfgott stated that they will comply with all State of CT licensing requirements, which will be submitted to the Town and will be displayed at the Facility as required.
- Regarding accessory uses, Mr. Helfgott explained that the types of merchandise they would sell would be locks, insurance, packing materials.
- No rental equipment.

- Electrical would be lighting in the building and climate control. Individual units would not have electrical service.
- No plumbing facilities or floor drains inside storage units.
- At this time, they do not intend to allow outdoor storage of any vehicles, recreational or otherwise. All goods and property to be stored within the confines of the building.
- Existing loading docks to remain as is. No additional loading docks to be added.
- All existing buffers to remain as they currently are.
- All outdoor lighting to be dark-sky compliant. Mr. Helfgott explained that Weld, LLC had already installed lighting as per their approval. Ms. McGannon explained that she had submitted specifications for that exterior lighting for this Application.
- Regarding prohibited uses, Mr. Helfgott explained that they will comply. He said that it is just dry storage. He explained about the lease that is signed which will outline all of the prohibited items and activities.

**QUESTIONS/COMMENTS FROM THE COMMISSION:**

- Keith Thurlow asked about the number of units, if there are two levels of storage, if there would be changes to outdoor signage, if there is a plan to put fencing around the exterior of the property, and about employees. They currently are not sure about the number of units. There are approximately 14,800 s.f. of actual storage space and it would depend on configurations. Ms. McGannon stated that the current plan shows about 180 units, but she doesn't think it will have that many. There is square footage allocated to office space. Mr. Helfgott explained that, right now, they are only looking at the storefront level and they will work to develop the bottom floor at a later date. Ms. McGannon explained that they would like to utilize it, but it depends on demand. Mr. Helfgott explained that on the front of the building, they are thinking of putting "Storage on 12" and a similar storefront sign. If there is any lighting for the sign, it will be dark-sky compliant. He said that any necessary permit would be requested. Ms. McGannon stated that she would like to utilize the sign at the street. Ms. Aubrey confirmed that there is an existing, free-standing sign and she stated that they had spoken with her about just doing a re-face of that sign. Mr. Helfgott stated that there is no fencing to be installed because the building is self-contained. Ms. McGannon explained that everything will be accessed from inside the building. The office which will be locked is not connected to the storage. Ms. McGannon explained that she or Mr. Helfgott will be there six days a week (owner operated). It will not be a self-service facility.
- John Sarantopoulos asked what triggers an auction. Mr. Helfgott and Ms. McGannon explained that non-payment of rent for a unit starts the process.
- Matthew Wendorf asked if there is any impact from the lighting beyond the property. Ms. McGannon explained that the current owner had told her that he had the lighting installed per his permit approval. She believes that it is in compliance.

There were no comments from the public.

Motion was made by Virge Lorents to close the public hearing for **Special Permit Appl #23-1324** – John DeLuca, Jack Helfgott, Christine McGannon (Weld, LLC/Landowner); 543 Wauregan Rd, GIS MAP 262, LOT 20; ~2.1 acres; GC; to create an all interior, climate controlled, self-service storage facility fully contained in the existing bldg.; under GC-SP Sect. 420.2.2(q) Self-Service Storage Facilities; Sect 700 Special Permits. **CONT. 12/18/2023**  
Second by Matthew Wendorf. No discussion.  
Motion carried unanimously by voice vote (4-0-0).

3) **Re-Subdivision Appl # 23-1325** - Gary Jaworski (Stephen & Marilyn Jaworski/Landowners); 1602 North Road, GIS MAP 21; LOT 11; 9.43 acres total; (#1 – 6.45 acres; #2 – 2.98 acres); rural Development; re-subdivision of Lot #11 into two (2) separate lots.

Daniel Blanchette. Licensed Civil Engineer with J & D Civil Engineers, represented the Applicant and gave an overview. Gary Jaworski, Stephen Jaworski and Marilyn Jaworski were present in the audience. Plans were displayed as discussed:

- Mr. and Mrs. Jaworski want to split off a lot for their son, Gary, to build a single-family, 3-bedroom, raised-ranch style home on approximately 3 acres.
- The property was created in 1988 by a previous subdivision.
- It is a simple project, with some wetlands that cross the site. IWWC approval was received last week.
- It would be a family transfer, so no delineation of open space would be required.
- Mr. Blanchette received a letter with comments from Town Engineer, David Capacchione (on Friday, January 19, 2024). Mr. Capacchione requested that a driveway detail and the two easements from the original approval be added to the plans: 1) 25-foot slope easement along the road frontage in favor of the Town of Killingly; and 2) unrestricted rights to drain - catch basins along the road that discharge across the property).
- Mr. Blanchette stated that they are complying with all Zoning Regulations.

**QUESTIONS/COMMENTS FROM THE COMMISSION:**

- Keith Thurlow commented that, as part of a re-subdivision application, everything has to be landscaped when completed. The plans indicate that it is a re-subdivision.  
Mr. Thurlow commented about the family transfer.  
Ms. Aubrey stated that verbiage regarding the family transfer needs to be posted on the front page of the plans and it needs to include language about taxes due if the family sells, no fee-in-lieu and no open space required. She will provide appropriate verbiage to the Applicant.  
Mr. Thurlow asked about the width and slope of the driveway.  
Mr. Blanchette stated that it would be 12 feet wide as indicated on the driveway detail on the current plans dated 1/15/2024.  
Mr. Blanchette explained that it is quite flat, it runs parallel with the 5-26 contour.
- Matthew Wendorf commented that his only concern was with the wetlands.  
Jon Blake explained that the only modification is extension of E&S (silt fence) a little further. It is not fully reflected on the current plan. The IWWC considered the style of the house (raised ranch) and proximity to the wetland behind it (there is not much banking). It is not in a floodplain.  
Mr. Blake explained that another modification made was that the house was moved forward, but meets all setbacks.

There were no comments from the public.

Motion was made by Virge Lorents to close the public hearing for **Re-Subdivision Appl # 23-1325** - Gary Jaworski (Stephen & Marilyn Jaworski/Landowners); 1602 North Road, GIS MAP 21; LOT 11; 9.43 acres total; (#1 – 6.45 acres; #2 – 2.98 acres); rural Development; re-subdivision of Lot #11 into two (2) separate lots.

Second by Matthew Wendorf.

Discussion:

Ms. Aubrey suggested that, if approved, the IWWC Conditions be incorporated.

Mr. Blanchette stated that he would include it on the mylar to be recorded. He also offered to post the IWWC and PZC approval letters on the mylar.

There was discussion about procedure regarding approval letters.

Mr. Thurlow stated that he would also like verbiage about landscaping to be included on the mylar.

Motion carried unanimously by voice vote (4-0-0).

**4) Subdivision Appl # 23-1326** – Pyramid Builders (Applicant/Owner); 70 Otis Street: GIS MAP 113, LOT 64, MD; subdivision to create two (2) Lots (previous free/first split).

Ann-Marie Aubrey provided copies of a letter dated January 15, 2024, from Archer Surveying/KWP Associates, showing how they calculated an appraised value/fee-in lieu of open space, using Assessor's information (also provided to Commission Members).

Bruce Woodis, Archer Surveying/KWP Associates, represented the Applicant and gave an overview:

- Mr. Woodis explained the location of the property which the Applicant purchased as a vacant property. They took an A-3 split (Lot 64-1) and are, now, dividing again.
- There is a house under construction.



- Proposing to connect to public utilities (sewer and water).
- Relatively simple division, not a lot of land disturbance, and no wetlands in the area.

**QUESTIONS/COMMENTS FROM THE COMMISSION:**

- Keith Thurlow commented that footing should be staked for location because it is right on the setbacks.  
Mr. Woodis stated agreement and said that, for the building under construction, it has already been done and will be done for the next ones, within a foot or two of the setback line.  
Mr. Thurlow asked about submitting an as-built of the location to the Town. He asked if he did for the other two.  
Mr. Woodis stated that it was up to the Town and that he had not had to submit it for the other two, so far.  
Mr. Thurlow stated that he feels it should be submitted, for the Record.  
Jon Blake explained that A2 surveys had been submitted for proposal for the zoning permits for the first two. He explained that they meet with the surveyor on-site prior to pouring the footings and ensure that everything has been pinned out by the surveyor (that it is reflective of the A-2 survey). Usually, we can forego the as-built, provided that step is done. Otherwise, an as-built would be required before a Certificate of Occupancy would be issued.  
Mr. Thurlow feels that a letter from the surveyor should be submitted for the Record.  
Mr. Blake stated that it doesn't hurt, they've done that before.  
Mr. Thurlow asked if it will be landscape.  
Mr. Woodis stated that it would.
- Matthew Wendorf commented that he would like to see a landscape plan.  
Mr. Blake explained about the E&S guidelines which have a requirement for CO, and they make the contractors bond for the landscaping.

**QUESTIONS/COMMENTS FROM STAFF:**

- Ann-Marie Aubrey asked if the Commission agrees with the proposal for the appraised value and fee-in-lieu of open space.  
There was discussion. Mr. Blake explained that the Applicant and the Commission had not had a discussion to agree upon an appraiser at the date of receipt. Per the Regulations, a narrative can be submitted, which is what the Applicant has done, base off the Town's assessed value from October 1, 2023. It is up to the Commission if they choose to require a professional assessment or not.  
Ms. Aubrey read aloud from page 32 of the Subdivision Regulations – Fee-in-Lieu of Open Space, #1.  
Mr. Thurlow stated that, as it reads, he feels that they met the requirement. There was discussion about how it was calculated, free split was removed. Ms. Aubrey explained the calculation for how the figure of \$3,112 was reached. She explained that it was done within a 3-month timeframe.  
There was a consensus of the Commission Members to accept the proposal for fee-in-lieu of open space.

There were no comments from the public.

Motion was made by John Sarantopoulos to close the public hearing for **Subdivision Appl # 23-1326** – Pyramid Builders (Applicant/Owner); 70 Otis Street; GIS MAP 113, LOT 64, MD; subdivision to create two (2) Lots (previous free/first split).  
Second by Virge Lorents. No discussion.

Motion carried unanimously by voice vote (4-0-0).

5) **Special Permit Appl #23-1327** – DMD, LLC (Maahir Real Estate, LLC/Landowner); 13 Commerce Avenue, GIS MAP 198; LOT 68; ~0.42 acres; (Boro) Central Business District; construction of a redemption center to be entirely within the structure; Boro of Danielson Zoning Regs; Sect. 440 (CBD); Art. VII (Spec Perm); Sect. 490 (Site Plan Review)

Chirag Solanki (MAAHIR Real Estate, LLC) and Jaymin Patel (DMD, LLC) were present via online and gave an overview (plans were displayed as discussed):

- The way the facility is to operate was explained.
- Capability to count up to 300 plastic bottles and aluminum cans per minute.
- Ample space for storage, although they do not anticipate a need for a lot of storage.

- Back door and garage door in back. Vendors will each pick up their products once or twice per week, from the back.

**QUESTIONS/COMMENTS FROM STAFF:**

- Jon Blake asked if there is a full bathroom facility.  
The answer was that there is a full bathroom.

**QUESTIONS/COMMENTS FROM THE COMMISSION:**

- Virge Lorents commented that this is a needed Facility.
- Kieth Thurlow asked if there is to be outside storage.  
The answer was that there would not be anything stored outside.  
Mr. Thurlow asked where product would enter the building.  
The answer was that all product would come in through the front door. There were photos which were displayed and explained. An explanation was given regarding a side entrance with a ramp that they can open for customers with large quantities. These people can park and bring the product into the building at that location. No parking on the street.  
Mr. Thurlow asked if cans would be crushed.  
No crushing. Product will be sorted/separated according to brand for pickup by the companies at the garage door in the back of the building.  
Mr. Blake asked if this is a loading dock or on grade and what type of vehicles are anticipated for pick-ups.  
The answer was that it is on the ground. Type of vehicles anticipated would be van size or lift-gate size, no 18 wheelers. They would be there a maximum of ten minutes.  
Mr. Thurlow asked if trucks would be parked perpendicular or parallel with the road.  
The answer was that they would be parallel with the road, in the back. No interference with traffic.  
Mr. Blake stated that the machine uses compressed air to sort and he asked if there is any washing.  
The answer was that there is no washing, no discharge of cleaning water, fluid or anything going into the sewer system.  
Mr. Thurlow asked about signage.  
They will be changing the signage in the front of the building.  
Mr. Thurlow asked if the cans would be bagged when they leave the Facility.  
The answer was that they would be bagged in plastic, see-thru bags.  
Mr. Thurlow asked about hours of operation.  
The answer was Monday thru Saturday - 9 am to 6 pm, closed on Sunday.  
Mr. Thurlow asked about the number of employees.  
The answer was that there would be four employees, but it may change depending on the volume.  
Mr. Thurlow asked if all deliveries and pick-up would be between 9 am and 6 pm.  
The answer was "correct."
- John Sarantopoulos commented that he sees two problems: 1) cans and bottles contain liquids and, if rinsed, that leaves water/residue in them; and 2) density, if not crushed. That means more trucks to get them off the premises. It was explained that the second floor could also be used for storage, if needed.  
Jon Blake commented that they have another store space on the property (the old Stove King) which the Applicant had mentioned for future storage or another line.  
The answer was "yes."  
Ms. Aubrey explained that if they do expand, they would need to come back and speak with Staff.  
The Applicant stated "yes."
- Virge Lorents that she donates her cans to the Boy Scouts. She asked how people get their money back.  
The answer was that the machine gives a printout with a barcode. There is a register by the machine and the people with get their money right away.

There were no comments from the public.

Motion was made by Matthew Wendorf to close the public hearing for Special Permit Appl #23-1327 – DMD, LLC (Maahir Real Estate, LLC/Landowner); 13 Commerce Avenue, GIS MAP 198; LOT 68; ~0.42 acres; (Boro) Central Business District; construction of a

redemption center to be entirely within the structure; Boro of Danielson Zoning Regs; Sect. 440 (CBD); Art. VII (Spec Perm); Sect. 490 (Site Plan Review).

Second by Virge Lorents. No discussion.

Motion carried unanimously by voice vote (4-0-0).

**VII. UNFINISHED BUSINESS – (review / discussion / action)**

1) **Subdivision Appl. #23-1319** – Kathie A. Hess (Bruce & Brenda Weeks / Landowners); 2 Weeks Lane; GIS MAP 108, LOT 30.1; 1.06 acres; ALZOD overlay district; to subdivide Lot 30.1 into two parcels, also a lot line adjustment between LOT 30 and LOT 30.1 will be necessary to create a conforming lot. (review/discussion/action) **CONT. FROM 09/18/2023, 10/16/2023, & 11/20/2023 – THIS IS WITHDRAWN.**

2) **Special Permit Appl #23-1322** – JPF Rentals LLC (JPF Rentals, LLC & Chirstopher Chenette/ Landowners ); 18 Ware Road (GIS MAP 40, LOT 27) and 21 Pineville Road (GIS MAP 40, LOT 33); Medium Density; approximately 4 acres; to construct 14 new residential rental units, w/community bldg., parking, drainage and appurtenant utility services; under TOK Zoning Regulations; Medium Density, Section 410.3.2(j) Special Permitted Uses, (j) Multi-family Development; Section 555, Multi-Family Development; Article VII, Special Permits; Section 470 Site Plan Review. **CONT. FROM 11/20/2023 & 12/18/2023**

Continued to February 20, 2024.

3) **Special Permit Appl #23-1324** – John DeLuca, Jack Helfgott, Christine McGannon (Weld, LLC/Landowner); 543 Wauregan Rd, GIS MAP 262, LOT 20; ~2.1 acres; GC; to create an all interior, climate controlled, self-service storage facility fully contained in the existing bldg.; under GC-SP Sect. 420.2.2(q) Self-Service Storage Facilities; Sect 700 Special Permits. **CONT. 12/18/2023**

Motion was made by Matthew Wendorf to approve **Special Permit Appl #23-1324** – John DeLuca, Jack Helfgott, Christine McGannon (Weld, LLC/Landowner); 543 Wauregan Rd, GIS MAP 262, LOT 20; ~2.1 acres; GC; to create an all interior, climate controlled, self-service storage facility fully contained in the existing bldg.; under GC-SP Sect. 420.2.2(q) Self-Service Storage Facilities; Sect 700 Special Permits, as submitted, and grant the request of the waiver.

Second by Virge Lorents. No discussion.

**ROLL CALL VOTE:** Virge Lorents – yes; John Sarantopoulos – yes; Matthew Wendorf – yes; Keith Thurlow – yes.

Motion carried unanimously (4-0-0).

4) **Re-Subdivision Appl # 23-1325** - Gary Jaworski (Stephen & Marilyn Jaworski/Landowners); 1602 North Road, GIS MAP 21; LOT 11; 9.43 acres total; (#1 – 6.45 acres; #2 – 2.98 acres); rural Development; re-subdivision of Lot #11 into two (2) separate lots.

Motion was made by Matthew Wendorf to approve **Re-Subdivision Appl # 23-1325** - Gary Jaworski (Stephen & Marilyn Jaworski/Landowners); 1602 North Road, GIS MAP 21; LOT 11; 9.43 acres total; (#1 – 6.45 acres; #2 – 2.98 acres); rural Development; re-subdivision of Lot #11 into two (2) separate lots, with the following conditions:

- All conditions of the IWWC approval are met and to be included on the plan.
- Landscaping to be included on the plan.
- Family transfer to be included on the plan.

Second by John Sarantopoulos. No discussion.

**ROLL CALL VOTE:** John Sarantopoulos – yes; Matthew Wendorf – yes; Virge Lorents – yes; Keith Thurlow – yes.

Motion carried unanimously (4-0-0).

5) **Subdivision Appl # 23-1326** – Pyramid Builders (Applicant/Owner); 70 Otis Street: GIS MAP 113, LOT 64, MD; subdivision to create two (2) Lots (previous free/first split).

Motion was made by Matthew Wendorf to approve **Subdivision Appl # 23-1326** – Pyramid Builders (Applicant/Owner); 70 Otis Street: GIS MAP 113, LOT 64, MD; subdivision to create two (2) Lots (previous free/first split), as submitted, also approving the fee-in-lieu of open space, as submitted as part of the Application.

Second by Virge Lorents. No discussion.

**ROLL CALL VOTE:** Matthew Wendorf – yes; Virge Lorents – yes; John Sarantopoulos – yes; Keith Thurlow – yes.

Motion carried unanimously (4-0-0).

6) **Special Permit Appl #23-1327** – DMD, LLC (Maahir Real Estate, LLC/Landowner); 13 Commerce Avenue, GIS MAP 198; LOT 68; ~0.42 acres; (Boro) Central Business District; construction of a redemption center to be entirely within the structure; Boro of Danielson Zoning Regs; Sect. 440 (CBD); Art. VII (Spec Perm); Sect. 490 (Site Plan Review)

Motion was made by Matthew Wendorf to approve **Special Permit Appl #23-1327** – DMD, LLC (Maahir Real Estate, LLC/Landowner); 13 Commerce Avenue, GIS MAP 198; LOT 68; ~0.42 acres; (Boro) Central Business District; construction of a redemption center to be entirely within the structure; Boro of Danielson Zoning Regs; Sect. 440 (CBD); Art. VII (Spec Perm); Sect. 490 (Site Plan Review), as submitted,

Second by Virge Lorents.

Discussion:

John Sarantopoulos voiced concern that he feels that the Health Department should be involved as there could be issues with insects, odors, liquids.

Jon Blake explained that if there were a problem, it would be dealt with as a nuisance under Town Ordinance and tap into any agency as needed (Health Department/DEEP). This type of application is subject to a State license and registry, so there is oversight.

**ROLL CALL VOTE:** Virge Lorents – yes; John Sarantopoulos – yes; Matthew Wendorf – yes; Keith Thurlow – yes.

Motion carried unanimously (4-0-0).

#### VIII. NEW BUSINESS – (review/discussion/action)

1) **Special Permit Appl: 24-1328:** Austin Noel (Fred Schramm/Landowner); 427 Chestnut Hill Rd, GIS MAP 66, LOT 14, Rural Development; (home occupation) welding and fabrication business out of the garage, RD Sect. 410.1.2(I), (Spec Perm, Home Occupation) and Sect 595 (Home Occupation). **Receive, and schedule for hearing on TUESDAY, FEBRUARY 20, 2024.**

There was discussion regarding that the Commission is to determine whether the Application is complete.

Motion was made by Matthew Wendorf to receive and schedule a public hearing for **Special Permit Appl: 24-1328;** Austin Noel (Fred Schramm/Landowner); 427 Chestnut Hill Rd, GIS MAP 66, LOT 14, Rural Development; (home occupation) welding and fabrication business out of the garage, RD Sect. 410.1.2(I), (Spec Perm, Home Occupation) and Sect 595 (Home Occupation, to the next regularly scheduled meeting of the Planning and Zoning Commission to be held on Tuesday, February 20, 2024, Town Meeting Room, 2<sup>nd</sup> Floor, 172 Main Street, at 7:00 p.m.

Second by John Sarantopoulos. No discussion.

Motion carried unanimously by voice vote (4-0-0).

2) **Zone TEXT Change Appl: 24-1329:** Lake Apartments, LLC; Zone TEXT Change – revision to multi-family zoning requirements for clarification purposes for density. **Receive, and schedule for hearing on TUESDAY, FEBRUARY 20, 2024.**

Allison??

Jon Blake explained that there was a previous law that required certification from CASIO for ZEO's, but there has been a clarification that you are grandfathered-in if you were appointed before January 1, 2024. Last month's meeting was cancelled, therefore, "Allison??" above can be ignored.

Ms. Aubrey explained that there is a revision to multi-family zoning due to the way for determining density is not clear. Stronger, more clarifying language is being proposed.

Motion was made by Matthew Wendorf to receive and schedule a public hearing for **Zone TEXT Change Appl: 24-1329;** Lake Apartments, LLC; Zone TEXT Change – revision to multi-family zoning requirements for clarification purposes for density, to the next regularly scheduled meeting of the Planning and Zoning Commission to be held on Tuesday, February 20, 2024, Town Meeting Room, 2<sup>nd</sup> Floor, 172 Main Street, at 7:00 p.m.

Second by John Sarantopoulos. No discussion.

Motion carried unanimously by voice vote (4-0-0).

**IX. ADOPTION OF MINUTES – (review/discussion/action)**

1) Regular Meeting Minutes – NOVEMBER 20, 2023

Motion was made by Virge Lorents to adopt the Regular Meeting Minutes of November 20, 2023.  
Second by John Sarantopoulos. No discussion.  
Motion carried by voice vote (3-0-1). Matthew Wendorf abstained as he had not attended the meeting.

2) Regular Meeting Minutes – DECEMBER 18, 2023 (NO MINUTES – MEETING CANCELLED)

**X. OTHER / MISCELLANEOUS – (review / discussion / action)**

**XI. CORRESPONDENCE**

- 1) Killingly Panning & Zoning Commission Meeting Dates for 2024
- 2) Zoning Practice – January 2024 Edition

**XII. DEPARTMENTAL REPORTS – (review/discussion/action)**

- A. Zoning Enforcement Officer’s & Zoning Board of Appeal’s Report(s) – No discussion.
- B. Inland Wetlands and Watercourses Agent’s Report – No discussion.

**XIII. ECONOMIC DEVELOPMENT DIRECTOR REPORT**

Jill St Clair reported on recent EDC activities and the new businesses in Town.

**XIV. TOWN COUNCIL LIAISON REPORT**

Ulla Tiik-Barclay reported on the Special Meeting of the Town Council.

**XV. ADJOURNMENT**

Motion was made by Virge Lorents to adjourn at 8:59 p.m.  
Second by John Sarantopoulos. No discussion.  
Motion carried unanimously by voice vote (4-0-0).

Respectfully submitted,

J.S. Perreault  
Recording Secretary



PZC  
2/20/24.

Crown Castle  
3 Corporate Park Drive, Suite 101  
Clifton Park, NY 12065

RECEIVED  
JAN 12 2024

PLANNING & ZONING DEPT.  
TOWN OF KILLINGLY

January 11, 2024

Melanie A. Bachman  
Executive Director  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

RE: **Notice of Exempt Modification for T-Mobile: CTNL140B**  
**Crown Site ID# 857013**  
**280 Ross Road, Killingly, CT 06239**  
**Latitude: 41° 46' 17.49" / Longitude: -71° 51' 20.39"**

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 110-foot mount on the existing 119-foot monopole tower located at 280 Ross Road, Killingly, CT. The property is owned by Snake Meadow Club Inc, and the tower is owned by Crown Castle. T-Mobile now intends to replace three (3) antennas, three (3) remote radios and ancillary equipment at the 110ft level. This modification/proposal includes hardware that is both 4G (LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

**Panned Modification:**

**Tower:**

Install New:

- (3) Ericsson – Air 6419 B41
- (3) Ericsson – 4460 B25+B66 Radios
- (3) RF Cellwave – HB158-21U6S24-xxM - Hybrid Cables

Remove:

- (3) RFS – APX16DWV-16DWV-S-E-A20 Antennas
- (3) Generic Twin Style 1A PCS TMAs
- (1) RFS/Celwave-HB114-U6S12-XXX-LI Hybrid Cable
- (6) Andrew LDF-50A Coaxial Cables
- (6) AVA7-50 Coaxial Cables

**Ground:**

Install New:

- (1) Ericsson – 6160 AC V1 Enclosure
- (2) (1) Ericsson- B160 Enclosure

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Remove:

- (1) RBS-6102 MUAC Enclosure
- (1.) Batter Back up Unit

The facility was approved by the Connecticut Siting Council Docket NO.283 on June 23, 2004.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mary Calorio – Town Manager, Town of Killingly, Ann-Marie Aubrey – Director of Planning and Development, Town of Killingly. Snake Meadow Club Inc, Property Owner and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Sincerely,

  
Jeffrey Barbadora  
Site Acquisition Specialist  
1800 W. Park Drive  
Westborough, MA 01581  
(781) 970-0053  
Jeff.Barbadora@crowncastle.com

Melanie A. Bachman

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Attachments

cc:

Mary Calorio – Town Manager  
Town of Killingly  
172 Main Street  
Killingly, CT 06239  
860-779-5335

Ann-Marie Aubrey – Director of Planning and Development  
Town of Killingly  
172 Main Street  
Killingly, CT 06239  
860-779-5313

Snake Meadow Club Inc  
c/o Paul Chase  
PO BOX 236  
Central Village, CT 06332-0236

Crown Castle - Tower Owner



PZC FEB 20, 2024

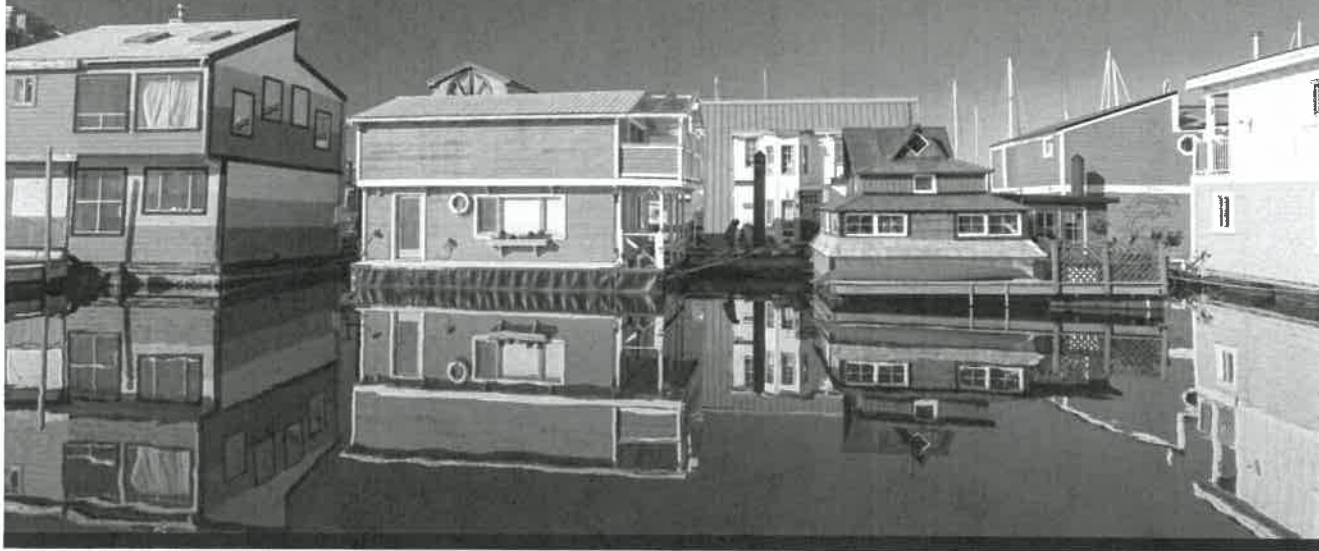
FEBRUARY 2024 | VOL. 41 NO. 2

APA

# ZONING PRACTICE

Unique Insights | Innovative Approaches | Practical Solutions

## Climate-Resilient Floating Residences



**In this Issue:** [The Climate Case for Floating Residences](#) | [Floating Residence Types](#) | [Obstacles to Floating Residences](#) | [Existing Floating Residence Regulations](#) | [Climate-Smart Regulatory Strategies](#) | [Conclusions](#)

# Climate-Resilient Floating Residences

By Meg Byerly Williams, ESQ.

Most people are unfamiliar with floating residences other than what is portrayed in the media, such as the floating home in which Tom Hanks' character lives in the classic 1993 movie *Sleepless in Seattle*; however, these residences, which are designed to float in a water body, present a potential opportunity for coastal communities to enhance their resilience in the face of climate change.

The U.S. is home to thousands of floating residences (McPherson 2017), and in other countries, like the Netherlands, developers have begun building amphibious houses that adapt to rising water levels (Climate ADAPT 2023). Because they rise and fall with water, amphibious homes potentially could help communities adapt to flooding, storm surge, and sea level rise associated with climate change. Despite these adaptive benefits, many local governments ban floating residences

or tightly regulate them, making it difficult, if not impossible, to live in a floating house.

This issue of *Zoning Practice* explores the climate-adaptive features of floating residences, describes the different types of floating residences and the regulatory barriers they face, and explains how local jurisdictions typically regulate floating residences. It concludes by suggesting some climate-smart zoning strategies for floating residences and encourages communities to further investigate how they can support these resilient homes.

## The Climate Case for Floating Residences

Floating residences could be a useful strategy to help shoreline communities build resiliency and adapt to climate change. Where built, these homes enable occupants to ride out flooding and storms

The Schoonschip floating community in Amsterdam, the Netherlands  
(Credit: Milos Ruzicka, iStock Editorial / Getty Images Plus)



(Climate ADAPT 2023). Residents of the floating Schoonschip community in Amsterdam, the Netherlands, weathered a significant storm in 2021. “They tied up their bikes and outdoor benches, checked in with neighbors to ensure everyone had enough food and water, and hunkered down as their neighborhood slid up and down its steel foundational pillars, rising along with the water and descending to its original position after the rain subsided” (Rubin 2021).

Although floating residences impact the environment, their effects are minimal. Floating residences may employ foundations that protrude deep into the ground below water and can alter water bodies via silt erosion, like around bridge piers, and impact water flow (Ross and Paddison 2016); however, floating residences also can affect aquatic habitat positively. A recent study found that they have minimal effect on water quality while attracting nesting birds and supporting “lively” underwater ecosystems (Pedroso de Lima, de Graaf-van Dinther, and Boogard 2022).

Floating residences also can ease demand for greenfield development. U.S. Census Bureau projections predict that the U.S. population will grow

from 333 million in 2022 to 361 million in 2050 (2023). Floating residences can help absorb growing demand for housing and can help reduce development pressure in flood-prone inland areas (Climate ADAPT 2023).

Finally, floating residences might be more resource-efficient than land-built homes. The floating houses in Schoonschip are energy- and water-efficient and integrate solar panels, green roofs, and thermal exchangers that use canal water to regulate indoor temperatures (Climate ADAPT 2023). Due to its location in a former manufacturing area of Amsterdam, Schoonschip is a “short ferry ride from central Amsterdam, where many of the residents work” (Rubin 2021). For all of these reasons, floating residences are a strategy U.S. communities could employ to build resiliency and reduce climate impacts.

**Floating Residence Types**

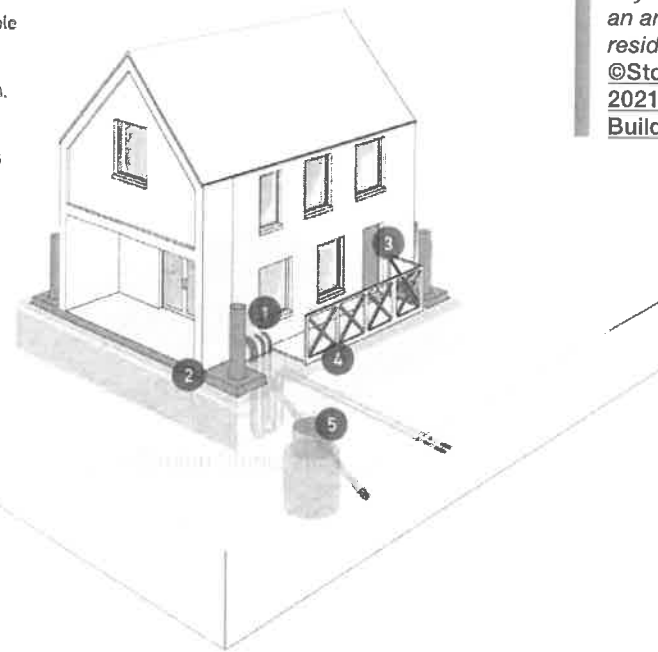
Homes located on water come in different shapes and sizes but generally fall into one of three categories, which sometimes are used interchangeably. *Houseboats* are like RVs. They can be disconnected from on-shore utilities and services and



*Student apartments in Copenhagen, Denmark, built with upcycled shipping containers (Credit: Ole Schwander, iStock Editorial / Getty Images Plus)*

#### Amphibious Construction

1. Locating dock, permeable concrete base and structural guide posts
2. Water resistant pontoon, typically waterproof concrete or steel
3. Raised apertures, doors and windows
4. Flexible and insulated services
5. Pumped foul drainage



Key features of an amphibious residence (Credit: ©Stolon Studios 2021, Designing Buildings Wiki)

moved to a new location relatively easily (Zillow 2013), as they have a built-in motor and navigation system. A houseboat's hull is usually constructed from fiberglass, steel, or aluminum, but these vessels typically look more like a house than a boat (Thorsby 2023).

Conversely, *floating homes* are docked in one place, typically among other floating homes, where they are permanently connected to utilities and other services. Floating homes do not have motors or navigation systems and have hulls made of concrete (Thorsby 2023). The hull forms a counterweight, keeping the floating home stable in water (Rubin 2021). Floating homes come in a range of sizes, from small, single-family dwellings to multi-story, multifamily residences (Zillow 2023).

People have been living in houseboats and floating homes since the late 1800s (FLOHOM 2023), but in recent decades, developers have begun building a newer type of floating residence, the amphibious home. *Amphibious homes* look like floating homes but "are stabilized by poles dug roughly 65 meters into the ground and outfitted with shock-absorbent materials to reduce the feeling of movement from nearby waves" (Rubin 2021). The amphibious home is fastened to this mooring post, which limits water-caused motion, and has a concrete foundation (Climate ADAPT

2023). Unlike floating homes that permanently float in water, amphibious homes rest above the water and move upward when the water rises (Climate ADAPT 2023). In this way, amphibious homes adapt to water levels that fluctuate due to flooding, storm surge, and sea level rise.

It is unknown how many floating residences currently exist in the U.S., but many people live in floating homes and houseboats in Florida, Louisiana, Massachusetts, Oregon, South Carolina, Texas, and Washington State (Zillow 2023). In places where floating homes are relatively prevalent, they number from around a few hundred to over a thousand. In 2017, Portland, Oregon, was home to approximately 1,400 floating houses, and at its peak, Seattle boasted around 2,000 floating structures (McPherson 2017).

Amphibious homes exist in the U.S. but are much less common. After Hurricane Katrina, the Make it Right Foundation built almost 100 houses in the Lower Ninth Ward in New Orleans, which flooded during the hurricane, and one of those houses, the "FLOAT House," is amphibious with a raft-like base that can float vertically along the house's guideposts during floods (Buoyant Foundation 2023). In another Louisiana community, a group of fishermen converted their existing houses to amphibious homes because the homes

**It is unknown how many floating residences currently exist in the U.S., but many people live in floating homes and houseboats in Florida, Louisiana, Massachusetts, Oregon, South Carolina, Texas, and Washington State.**

are situated in Raccourci Old River, which is a prime fishing spot located outside the local levee system that is vulnerable to frequent flooding (de Melker 2012). The fishermen fastened steel frames with buoyant material to the underside of existing buildings and attached the frames to vertical guidance posts. In Louisiana, The Buoyant Foundation works to help retrofit other existing homes into amphibious homes (de Melker 2012).

### **Obstacles to Floating Residences**

Despite their climate adaptive promise, floating residences regularly encounter regulatory barriers to their existence. Owners of floating residences struggle to obtain National Flood Insurance Protection (NFIP) for these properties. The Federal Emergency Management Agency (FEMA) “requires that structures in flood-prone areas to be ‘adequately anchored to prevent flotation, collapse, or lateral movement,’” and FEMA has not been involved with amphibious housing in the past (de Melker 2012). FEMA’s stance that amphibious homes (and likely other floating residences) are not eligible for NFIP seems to have limited their development.

Local restrictions also hamper floating residence development. After the passage of local regulations limiting their use, the number of floating homes in Seattle dwindled to approximately 500, with 150 other floating structures (McPherson 2017). In the 1980s, local restrictions on floating homes and houseboats were prevalent on the East Coast as well. At that time, Long Island municipalities in New York began to ban floating homes due to concerns

about “water pollution, loss of property taxes, a blighted scenic coastline, population growth beyond that provided for by planners, and loss of limited space for recreational boaters and commercial fishermen” (Wacker 1984). This trend continued into the 2000s. For example, in 2013, Riverhead, New York, banned new floating homes and house boats on town waterways (Civiletti 2013).

### **Existing Floating Residence Regulations**

Local jurisdictions that allow floating residences weigh multiple planning considerations when regulating these structures. For example, municipalities must consider the effect of floating homes on other water-dependent uses to ensure these homes do not obstruct waterways. Additionally, they must consider how to create secure connections to onsite utilities and services like public transportation, ensure continued adequate public access to the waterfront, and reduce risks from sinking and fire. Floating residences also affect the housing market and could impact short-term rentals within the community.

These planning considerations inform local regulations that control where and how floating residences may be inhabited. Localities that allow floating residences typically require them to meet minimum building standards, as well as construction standards specific to this particular use. Municipalities also often adopt zoning regulations that define and allow floating residences within certain districts if these homes meet required conditions. Other jurisdictions may require floating residence owners to register or license these homes. A few jurisdictions have adopted laws protecting floating homes from rent increases and eviction.

### **Building Codes**

Floating homes “require extra infrastructure and work to connect to the electricity grid and sewer system, with special waterproof cords and pumps needed to link to municipal services on higher ground” (Rubin 2021). Some local jurisdictions use specialized building codes to establish construction and occupancy standards for floating residences.



Houseboats along the shore of South Lake Union in Seattle (Credit: MarkHatfield, E+)



For example, Alameda, California, adopted standards for floating homes and moorages in its building code that require all floating homes to have a certificate of occupancy and building permit (§13-38). Floating-home applicants must submit a moorage site plan that includes moorage location, dimension, and service details, and moorages must comply with specific access, walkway, off-street parking, garbage disposal, laundry, lavatory, lighting, electrical, sewage disposal, fuel gas piping, fire protection, and open space standards. Additionally, floating homes must be “stable under the action of dead and live loads” (§13-38.16), must take into effect off-center loading and wind loading, and must be designed using accepted basic engineering principles. Additional standards regulate flotation devices that keep the home afloat, electrical wiring and service, plumbing, inboard sewerage devices, fuel gas piping, room sizes, ceiling heights, building height, framing, exit facilities, guard rails, fire protection, and life-saving equipment.

Fort Lauderdale, Florida, requires floating homes to meet similar requirements, as well as minimum housing standards (§9-176 et seq.). The city’s floating home building standards include water distribution requirements that “regulate[] water service and piping systems and include[] requirements for water supply connections and backflow prevention,” as well as requirements for connections to public streets (§9-221). Marin County, California’s regulations for the construction and maintenance of floating homes include material requirements for decking, siding, and subflooring; require the use of diaphragm walls in flooring, walls, and flotation devices; and mandate the use of an inboard sewerage and graywater device (§19.18). Marin County also requires floating homes to provide a disconnecting means, branch circuit protective equipment, grounding of metal parts, and calculations by a qualified engineer showing that the floating home’s stability conforms to requirements.

### Zoning Standards

Some local jurisdictions restrict the use, placement, and dimensions of floating homes in their zoning regulations. Fort Lauderdale adopted accessory use regulations for floating homes that permit floating homes in municipal dock areas; licensed commercial marinas located in certain public purpose, business, and mixed-use zones; licensed yacht clubs; and waterways adjacent to property in certain business and mixed-use zones (§47-19.6). A floating home in Fort Lauderdale must have at least one off-street parking spot and cannot block more than 30 percent of the waterway. Additionally, the zoning district density limitations applicable to adjacent real property cannot be exceeded in residential areas. Fort Lauderdale prohibits habitation on floating homes if these requirements are not met.

Marin County includes standards for floating home marinas in the county's zoning code (§22.32.070). These standards allow certain accessory uses like laundries, dry cleaning facilities, and storage facilities in small marinas and allow convenience stores and doctor/dental services as accessory uses in large marinas. In addition, at least 50 percent of total water area proposed for floating home marinas

must be open water, and there must be at least six to 10 feet between floating homes, a minimum fairway width of 35 feet, and only one dwelling unit per vessel. Marinas must have access to on-land public transportation and retail, must be compatible with the view of the area, cannot create adverse effects on surrounding communities, and must protect habitat and water quality. Finally, marinas must adhere to a minimum density of no more than 10 vessels per acre.

Additional zoning requirements for floating homes may include design and access standards or registration requirements. Sausalito, California, adopted specific use requirements that require houseboats to have a compatible scale to recreational boats and other houseboats nearby; rooflines designed to visually reduce boat's hulk, such as curved, sloped, articulated roof lines; and architectural details to "enhance character" and eliminate a "box-like appearance," including eaves, bay windows, and decks (§10.44.160). Sausalito's view and water access standards require houseboat placement that preserves existing water views, privacy, and sunlight for adjacent homes. Seattle adopted specific use standards that

Homes floating  
on San Francisco  
Bay in Sausalito,  
California (Credit:  
Yingchao Teng,  
iStock / Getty  
Images Plus)



require floating home owners to obtain and display a “registration number on the landward side of the floating home in numbers at least three inches high in a location legible from the pier, or if public access to the pier is not available, then on a side visible from the water” (§23.60A.202).

**Special Zoning Districts**

Other jurisdictions control the placement of floating homes by adopting special-purpose zoning districts. Amityville, New York, adopted a floating home district and requires all floating homes to be located on private land within this zone (§183-115 et seq.). Only one-family dwellings are permitted, and the district’s bulk and area requirements restrict floating homes to no more than 21 feet high measured from the waterline, with a minimum underwater lot of 7,5000 square feet, a maximum building area of 25 percent of the underwater lot area, a minimum distance of five feet between the pier/bulkhead line and front wall of the floating home, and a minimum distance of 24 feet of open water space between adjacent floating homes. In addition, each floating home must have a minimum of two paved off-street parking spaces. Developers may apply to have a floating home district created and mapped

on the village’s zoning map. The Town of Babylon, New York, adopted an almost identical floating home zoning district that also prohibits the use of floating homes for a business or profession (§203-107).

**Licensing/Permitting Standards**

Some localities adopt licensing or permitting standards for floating homes that address site requirements and operational characteristics to control the placement and occupancy of floating residences. For example, Saugatuck, Michigan, adopted regulations that establish a process to license floating homes and their moorages (§99). In Saugatuck, owners must apply for a floating home license and pay a fee. When issuing a license, the enforcing officer considers whether the floating home and moorage meet all code requirements, are safe and sanitary, are compatible with the surrounding land-use pattern and normal area wave and water patterns, and will need extension/expansion of public facilities and services. The enforcing officer may attach reasonable conditions to approved licenses, such as requiring a specific location or placement and stabilization equipment, and may inspect the licensed floating home. Saugatuck’s floating home regulations forbid location



*Floating residences along the waterfront in Portland, Oregon (Credit: 4nadia, iStock / Getty Images Plus)*



**Homeowners in coastal communities likely will remain reluctant to adopt floating residence technology, especially amphibious homes, if these homes remain ineligible for NFIP insurance.**

in waters adjacent to residential zones, licensed street ends, or city parks.

Winthrop, Massachusetts, adopted regulations that require houseboat marina operators to obtain a special permit (§12.33). Applicants must submit a fee and site plan showing the proposed marina's location and facilities, including each houseboat dock, slip, or mooring and, for each anticipated houseboat, a permanent water supply with an individual backflow prevention valve, a sewer connection leading into a permanent sewer, a permanent supply of electricity and water, and any wastewater disposal facility. These regulations also require houseboats to secure occupancy permits and comply with minimum standards, such as providing interior space of at least 150 square feet for the first occupant and no less than 100 square feet for each additional occupant.

#### **Owner/Resident Protections**

Finally, some local jurisdictions adopt special protections to prevent exorbitant rent increases for or sudden evictions from floating homes. Egg Harbor Township, New Jersey, adopted rent review regulations that protect tenants, including those who live in floating homes, from rent increases and surcharges (§180). These regulations created Egg Harbor's Rent Review Board and authorized it to adjudicate applications from landlords for rent increases, consider landlord/tenant agreements for increased rents, and hear tenant objections to rent increases and applications for reduced rent. Landlords must use a special method for calculating a tax surcharge or capital improvement surcharge for floating homes.

Seattle adopted consumer protection regulations for floating home moorages

"to protect[] the stability, viability, and fiscal integrity of Seattle's unique floating home communities by preventing the eviction of floating homes from their moorages through arbitrary actions and unreasonable rent increases . . . ." (§7.20). Under these regulations, moorage owners may only give notice to remove a floating home for failure to pay a moorage fee, to comply with reasonable terms and conditions of occupancy, or to abate a nuisance. Under these circumstances, the moorage owner must give the floating home owner or tenant at least six-months written notice from the demanded date of removal, and the notice must state the reason for eviction. The regulations forbid moorage owners from retaliating against a floating home owner or tenant due to that party's good faith exercise of their legal rights. The regulations also require 30-days' notice for any moorage fee increases and grant moorage-site lessees the right to file a collective petition for review of certain fee increases. In these cases, a hearing examiner determines whether the fee increase is necessary to assure a fair and reasonable return for the moorage owner.

#### **Climate-Smart Regulatory Strategies**

Although some local jurisdictions allow and regulate for floating residences, most coastal communities do not. Changes must be made to both federal and local policy and regulations to harness the full climate adaptive and resilient potential of floating residences.

#### **Advocate for NFIP Insurance for Floating Residences**

Homeowners in coastal communities likely will remain reluctant to adopt floating residence technology, especially amphibious homes, if these homes remain ineligible for NFIP insurance. NFIP provides flood insurance to residents of participating communities that meet minimum NFIP criteria by adopting a floodplain management ordinance (FEMA 2023). Residents of participating communities are eligible to receive flood insurance for properties located above the Base Flood Elevation, which is outlined on NFIP flood maps. In the past, NFIP has not recognized floating



Coastal homes  
in Port Bolivar,  
Texas (Credit:  
felixmizioznikov,  
iStock / Getty  
Images Plus)

residences, curtailing efforts to build amphibious homes in coastal communities (de Melker 2012). To remove this barrier, NFIP regulations and policy should be revised to make amphibious and other floating residences explicitly eligible for flood insurance and to even incentivize these technologies. Without this change, floating residence development will remain hampered, as coastal homeowners in NFIP participating communities must consider what offers better protection: (1) a floating residence with a greater chance of avoiding flood damage but without flood insurance or (2) a traditional house that is more vulnerable to flooding but that can access flood insurance reimbursements. In the absence of regulatory change, only the latter option guarantees financial security despite its greater risk of flood damage.

#### **Amend Local Building Codes to Accommodate Floating Residences**

In addition to advocating for NFIP changes, where authorized by state law, local jurisdictions also should amend their building codes to facilitate floating residences. To ensure the safety and welfare of the community, building code requirements for floating residences may need to address moorage location, dimension, and service; unit identification; connections to public streets; utility connections; waste disposal; fire protection; stability and loading; construction materials;

guard rails; exit facilities; and life-saving equipment, among other appropriate factors. Building codes also should include appropriate construction standards for amphibious homes to ensure these residences have sound and safe floating foundations, guidance posts, and up/down systems. Additionally, local governments should amend building codes to enable retrofits of existing traditional housing into floating residences. Where it is a concern, municipalities should consider adopting registration requirements to help address future property maintenance issues. To enhance sustainability, building code requirements for floating residences can include standards requiring thermal exchanges that use water to regulate indoor temperatures, energy-efficient appliances/targets, water-efficient plumbing, integrated renewable energy systems, and green roofs, among other green technologies.

Coastal communities that currently regulate floating residences should examine their existing building code requirements to determine where these standards could be loosened, as appropriate, to make it easier for homeowners to construct and own floating residences. Where local conditions require it, a complex regulatory framework may be needed to ensure public welfare and safety, but in other locations, this is not necessary. Wherever possible, municipalities should take a more streamlined approach, only

adding the regulatory standards needed to keep the community safe. Sitka, Alaska, takes a streamlined approach to the regulation of floating residences, requiring them to meet minimum standards of the International Residential Code, as well as a handful of additional standards relevant to floating residences, like mooring, floatation stability, buoyancy criteria, fire safety, and emergency exits (§19.15).

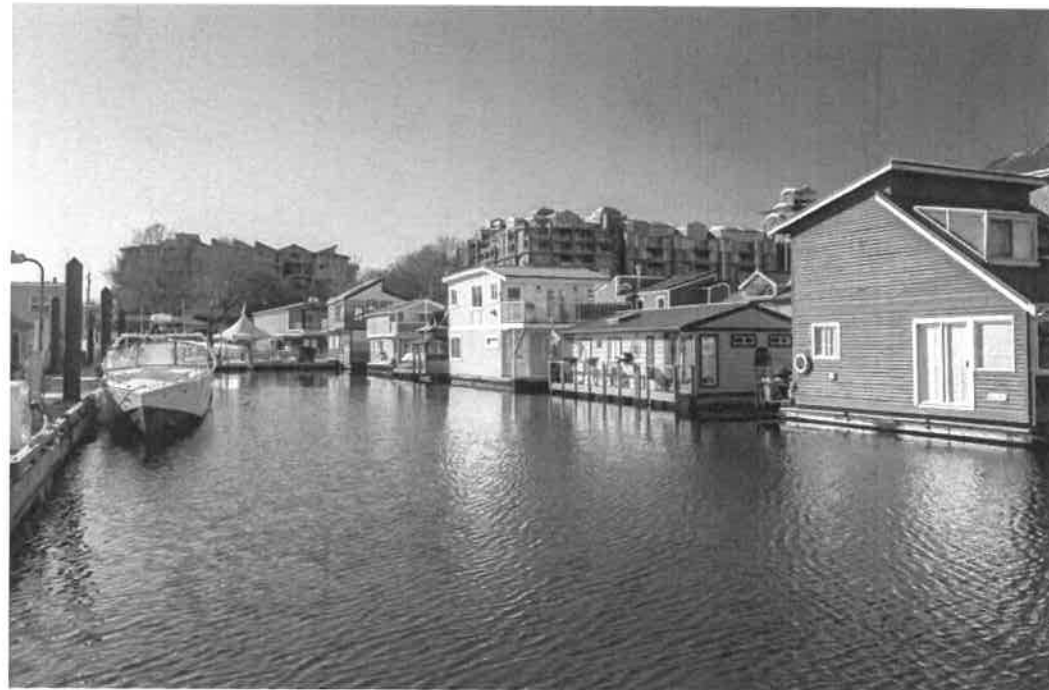
#### **Amend Zoning to Allow Floating Residences**

Additionally, floating residences cannot proliferate without modifications to local zoning laws. Where not currently allowed, coastal localities should begin by removing any existing bans on floating residences. To permit and regulate floating residences, local governments should amend the definitions section of the zoning code to define the floating residences the community wishes to allow. Municipalities take different approaches to defining these structures, sometimes delineating between the different types and sometimes combining them into one term. For example, zoning definitions for *floating homes* often include houseboats. When making this determination, municipalities should think through the planning

considerations associated with each type of floating residence and the extent to which these uses require different regulatory approaches. If the anticipated floating residences share similar features and safety concerns, a single defined term may suffice, but if their safety and service requirements are significantly different, a more discrete typology is appropriate. For instance, vertical movement along guideposts likely warrants a separate zoning definition and treatment for amphibious homes. If multi-unit floating residences will be allowed, the municipality should adopt an applicable zoning definition for this use as well.

Municipalities also should allow floating residences in appropriate zoning districts by amending the use regulations for those zones to permit defined floating residences and marinas as-of-right. Due to local circumstances, it might be necessary to confine floating residences to marinas, but where possible, municipalities should amend appropriate use regulations to allow scattered-site floating residences, especially near on-land public transportation and commercial centers where residents can access food and community-serving retail. Additionally, local jurisdictions should amend use regulations

*A village of floating homes at Fisherman's Wharf in Victoria, British Columbia (Credit: Roman\_Makedonsky, iStock / Getty Images Plus)*





**About the Author**  
**Meg Byerly Williams, ESQ., MEM, MS,** is in-house counsel for Skeo Solutions, Inc., where she is a regular consultant to the Land Use Law Center at Pace Law School. Williams serves as Editor of the Case Law Digest for the APA's Planning and Law Division and is the Ex Officio Member of APA's Divisions Council Executive Committee. Williams thanks David Morley, AICP, *Zoning Practice's* editor, for his significant contributions to this issue.

to allow floating residences as multi-unit structures and accessory dwelling units (ADUs) where possible.

To ensure appropriate scale of development, municipalities also should amend the zoning code to include suitable density and bulk and area requirements for permitted floating residences. Typical dimensional requirements include minimum distances between vessels (requiring more space for multi-unit residences), minimum fairway widths, and minimum development densities compatible with the surrounding area. Additional zoning requirements for floating residences should protect public waterfront access, allow residences to block only a small portion of the waterway, and, where needed, require a scale and design that is compatible with the surrounding neighborhood.

Municipalities can further modify zoning to make floating residences more sustainable and climate-adaptive by adopting standards that limit impacts on aquatic habitat and water quality; protect the area's waterfront viewshed and sunlight for adjacent homes; allow accessory uses like laundries and personal services retail; and eliminate or reduce off-street parking requirements for floating residence locations that are within walking distance of commercial services and that have access to on-street or shared parking.

#### **Consider Other Related Local Regulations**

When embarking on a local process to facilitate floating residences, municipalities should consider these changes in the context of their existing local regulatory framework to determine whether other local laws and policies will interact with or be impacted by the introduction of floating residences. Where necessary, local jurisdictions should modify these laws and policies accordingly. For example, floating residence owners may seek to turn these vessels into short-term rentals,

which could have additional impacts on surrounding neighborhoods. Municipalities may want to adopt short-term rental provisions for floating residences or modify existing short-term rental laws to address this use.

#### **Conclusions**

Floating residences are climate adaptive. They can weather flooding, storm surge, and sea level rise without incurring damage, are associated with minimal environmental impacts, and can be implemented in a resource- and energy-efficient manner that further helps to reduce climate impacts.

Multiple types of floating residences exist, including houseboats with navigation systems, stationary floating homes, and amphibious homes that can move vertically with rising water. Despite their resiliency, floating residences are relatively rare in the U.S. They currently are ineligible for NFIP flood insurance, and many jurisdictions ban them or possibly overregulate them.

To facilitate floating residences, local jurisdictions must amend their zoning codes to define and allow them in appropriate zoning districts with appropriate dimensional requirements and (where possible) must amend their building codes to ensure sound and safe construction and mooring of floating residences. However, municipalities should only regulate floating residences to the extent necessary to ensure public health, safety, and welfare and should advocate for the extension of flood insurance to floating residences. The exact approach each jurisdiction should take will vary due to local circumstances, but as more communities facilitate climate adaptive floating residences, planners will likely identify more specific recommendations for how to best regulate floating residences.

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