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## AGENDA NOTICE (6/24/2026)

THE PLANNING COMMISSION OF THE CITY OF EAGLE RIVER WILL HOLD A MEETING ON THURSDAY, JULY 2, 2026, AT 5:00 P.M. AT CITY HALL, 525 E. MAPLE STREET IN EAGLE RIVER.

*Notice is hereby given that a majority of the City Council of the City of Eagle River may be attending scheduled Planning Commission meetings either in person or via zoom. This constitutes a meeting of the City Council pursuant to State ex rel. Badke v. Greendale Village Bd., 173 Wis. 2d 553, 494 N.W.2d 409 (1993), and must be noticed as such, although the Council will not take any formal action at these meetings.*

This meeting will be available by Zoom at the following link:

<https://us06web.zoom.us/j/85111695208?pwd=x5pMv8crrbsPuYwefObTYbJG0m83b3.1>

Meeting ID: 851 1169 5208

Passcode: 963936

- 1) Call to Order.
- 2) Roll Call.
- 3) Approval of minutes.
- 4) Public Hearings, discussion and possible action on the following agenda item(s):
  - a) **Conditional Use Permit Public Hearing - Continuation:** Request by Amerco Real Estate Company/U-Haul for a conditional use permit to construct two (2) self-storage units totaling 51,977 square feet at 1100 N. Railroad Street, Eagle River, computer number 221-1019-06, in accordance with Chapter 106, Article VI, Division 7, Sec 106-473 Uses permitted by conditional grant, (8) Storage buildings not used for habitation – human or animal.
  - b) **Conditional Use Permit Public Hearing:** The Vilas County Fair Board has submitted a request for a conditional use permit to allow camping by circus workers at the Vilas County Fairgrounds, July 13-15, 2026. The Vilas County Fairgrounds property, Parcel 221-182, 133 South Forrest Street, is described as Sect. 32, T40N,R10E, MILL LOT 1 COUNTY CLERK'S PLAT GOVT LOT 1 & PRT SE NE EXC 23-382,196-598,580174, 584885 RESOLUTION 441482.
  - c) **Conditional Use Permit Public Hearing:** The Vilas County Fair Board has submitted a request for a conditional use permit to allow camping by carnival workers at the Vilas County Fairgrounds during the County Fair, August 13-16, 2026, with additional shoulder dates as required for set-up/tear-down of the fair attractions. The Vilas County Fairgrounds property, Parcel 221-182, 133 South Forrest Street, is described as Sect. 32, T40N,R10E, MILL LOT 1 COUNTY CLERK'S PLAT GOVT LOT 1 & PRT SE NE EXC 23-382,196-598,580174, 584885 RESOLUTION 441482.
  - d) **Rezoning Public Hearing:** Resolution to consider the rezoning and subsequent change to the Comprehensive Plan of the City of Eagle River, for Elm Drive properties listed below from Parks/Recreation to Office/Residential zoning classification:
    - i) **Tuff:** Parcel #221-1058-5801, 1020 Elm Drive, SE-SE,Sect. 33, T40N,R10E, PRT SE SE. Full description in tax roll.
    - ii) **Hom:** Parcel #221-1058-6012, SE-SE,Sect. 33, T40N,R10E, LOT 3 22CS212 CSM 5874 PRT SE SE. Full description in the tax roll.
    - iii) **Buskager:** Parcel #221-1058-6011, 1025 Elm Drive, SE-SE,Sect. 33, T40N,R10E, LOT 2 22CS212 CSM 5874 FKA PRT SE SE EXC 540834.
  - e) **Information Only - Meadows** – Withdrawal of request to purchase City-Owned Parcel Adjacent to 655 N Bond.
- 5) Adjournment.

Robin Ginner, City Administrator



June 4, 2026

A meeting of the Plan Commission of the City of Eagle River was called to order at 5:00pm by Mayor Deb Brown.

Roll Call: Alex Forer, Mary Horant, Brad Adamovich, Adam Grassl, John Hletko, Kim Schaffer and Deb Brown. Also in attendance Robin Ginner and Becky Bolte.

*Motion by Horant, 2<sup>nd</sup> by Hletko to approve the minutes of the 5-7-2026 meeting. Carried, all.*

a) Conditional Use Permit Public Hearing Continuation: Request by Amerco Real Estate Company/U-Haul for a conditional use permit to construct two (2) self-storage units totaling 51,977 square feet at 1100 N. Railroad Street, Eagle River, computer number 221-1019-06, in accordance with Chapter 106, Article VI, Division 7, Sec 106-473 Uses permitted by conditional grant, (8) Storage buildings not used for habitation – human or animal. Shawn Odden, representative for U-Haul Company of WI, was present. Ginner reported that updated engineering plans by Vreeland Associates Land Surveyors and Engineers had been supplied to the city. Justin Vreeland answered questions regarding the updated plans. Erosion Control/Storm Water Management/Maintenance/Operation plan, landscaping plan, lighting and siding samples were presented. Mayor Brown opened the floor for public comments at 5:20PM with two minute time limits for public comments. The public hearing included extensive testimony from approximately 16 residents and business owners who opposed the project, citing concerns about aesthetics, impact on local businesses, and potential flooding issues. Mayor Brown closed the public comments portion of the public hearing at 5:45PM. Discussion on key concerns raised included the storage units' impact on property values, visual appearance conflicting with the Northwoods aesthetic, and potential infrastructure damage from removing 6 feet of fill material during construction. Vreeland explained their stormwater management plan involving infiltration basins and ditches. MSA Engineering has not had ample time to review the engineering plans for the city. The commission discussed the constraints of Wisconsin Act 67, which put limitations on denying conditional use permits. Bluebird Road business owners, including Jay Stock from Tribute Brewing Company and Jay Johnstone and Vito Bortolotti from Bortolotti's Cin Cin, requested additional time to obtain property appraisals to assess the financial impact on their businesses. The commission acknowledged the strong public opposition but noted the legal constraints around denying permits based on aesthetics/opinions alone, while expressing concerns about the project's impact on local businesses in the BID district and the need for proper stormwater management. Discussion. *Motion by Hletko, 2<sup>nd</sup> by Horant to schedule a special Planning Commission meeting on June 17, 2026, to give business owners and city engineers time to do due diligence. Carried on a roll call vote, all.*

b) Final Plan Review – Bike/Pedestrian crossing at Bridge & Spruce Streets (GHT & ERRP) Laura VanValkenberg, President of Great Headwaters Trails Foundation, and JoAnn Simmons, Executive Director of Eagle River Revitalization Program presented DOT ready plans set for submission as drawn by Becher Hoppe. Aaron Wallner of Becher Hoppe was available via zoom for questions. Discussion. *Motion by Grassl, 2<sup>nd</sup> by Forer to recommend final plan review approval to City Council for the bike/pedestrian crossing at Bridge and Spruce Streets pending timing of the construction is coordinated with the city, any alteration or destruction of existing sidewalks along Railroad St is coordinated with the city, and push button assemblies be installed on both the east and west side of Hwy 45 crossing as well as in the median. Carried on a roll call vote. 4/2 Ayes: Grassl, Forer, Adamovich, Hletko Nays: Horant, Schaffer*

c) Dennis Meadows, Formal Request: Purchase of City-Owned Parcel Adjacent to 655 N Bond: Meadows has requested to purchase 60' of frontage at the T-docks of city owned land directly across from his family owned parcel at 655 N Bond. Meadows presented an affidavit from 1944 regarding the Lake Park Addition and parties M.D. Hirzel and G.F. Bond. Discussion with petitioner Dennis Meadows, Commission, and the public. Ginner reported that Attorney Garbowicz has advised the city not to sell requested parcel

and that adverse possession does not apply to a municipality. *Motion by Grassl, 2<sup>nd</sup> by Hletko to postpone until Meadows can provide the Commission with a full title search and the City Attorney is able to provide legal opinion on chain of title with the information provided in the full title search. Carried on a roll call vote, all.*

d) Comprehensive Plan - Scheduling of future comprehensive plan sessions as stand-alone meetings. Discussion. Commission to suspend the sessions for the summer and to resume Comprehensive Plan Update meetings beginning September 17, 2026, at 5:00PM with a set two hour time limit.

e) Discussion Only on Sponsor/off-site signage displayed year-round at local facilities (ie: Snowmobile Derby Track, Vilas County Fairgrounds) Ginner presented that there is currently no distinction in city code between off premise signs and sponsorship signs. Ginner to research options to bring back to the Commission.

*Motion by Horant, 2<sup>nd</sup> by Forer to adjourn at 8:03PM. Carried, all.*

DRAFT

## Legal Notice

Publish twice, beginning June 15, 2026 – Affidavit requested

### **NOTICE OF PUBLIC HEARING CITY OF EAGLE RIVER PLANNING COMMISSION**

Amerco Real Estate Company/U-Haul is requesting a conditional use permit to construct two (2) self-storage units totaling 51,977 square feet at 1100 N. Railroad Street, Eagle River, computer number 221-1019-06, in accordance with Chapter 106, Article VI, Division 7, Sec 106-473 Uses permitted by conditional grant, (8) Storage buildings not used for habitation – human or animal. The property, zoned as Highway Commercial, is described as: Sec. 28, T40N, R10E PRT NW NW. Complete legal in tax roll.

The City of Eagle River Planning Commission has scheduled a public hearing for **Thursday, July 2, 2026 at 5 pm**, located in the Eagle River Common Council Chambers, 525 E. Maple Street, Eagle River, WI 54521.

Comments can be made in person at the public hearing or by mail to City Administrator, PO. Box 1269, Eagle River, WI 54521; by phone (715) 479-8682 x227 or email [rcginner@eagleriverwi.gov](mailto:rcginner@eagleriverwi.gov). Documents will be available for review at City Hall. PETITIONERS, OR THEIR REPRESENTATIVES, SHALL BE PRESENT.



## Robin Ginner

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**From:** Robin Ginner  
**Sent:** Thursday, June 18, 2026 3:48 PM  
**To:** vicwash@sbcglobal.net; COER Mayor  
**Subject:** FW: City of Eagle River Proposed U-Haul Facility Stormwater Review  
**Attachments:** WinSLAMM v10\_UHaul\_Inputs.pdf; WinSLAMM v10\_UHaul\_Outputs.pdf; Hauling on substandard road research and experience.pdf; Research Summary\_ Limiting Pavement Damage from Detours \_ MnDOT Digital Library.pdf; COUNTY ROAD UPGRADE AND MAINTENANCE AGREEMENT.pdf; 6-18-26\_ESTIMATE OF PROBABLY COSTS - Pulverize and overlay option.pdf; 6-18-26\_ESTIMATE OF PROBABLY COSTS - Base Replacement option.pdf; 00088145 U-Haul Plan Review Memo.pdf

See attached and below for the recommendations from MSA on stormwater mitigation.

Thanks,

*Robin*

Robin Ginner  
City Administrator  
City of Eagle River

**Note my new email address:** [rcginner@eagleriverwi.gov](mailto:rcginner@eagleriverwi.gov)

*Elected Officials and Members of City Committees: In order to comply with Open Meetings Act Requirements, please limit any reply to only the sender of this electronic communication. Please be aware that written communication, emails and faxes are generally considered open public records.*

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**From:** John Promer <jpromer@msa-ps.com>  
**Sent:** Thursday, June 18, 2026 3:17 PM  
**To:** Robin Ginner <rcginner@eagleriverwi.gov>  
**Subject:** City of Eagle River Proposed U-Haul Facility Stormwater Review

Hello Robin,

We have completed reviewing the U-Haul Stormwater plans and have several observations and recommendations we outline in the attached technical memo and supporting reference attachments.

I reached out to our stormwater experts for additional input.

The basic highlights from the review are:

Is that design does meet current code ( NR 151) for 1 & 2 year stormwater events, meets the infiltration and suspended solids requirements; and is therefore sufficient.

Some of their stormwater modeling shows outputs that differ from other modeling, report, and the plans. As a result it should be updated and results further explained.

We recommend adding the bio-filtration areas to the sides of the basins in addition to the bottoms of the basins.

We recommend adding an equalization culvert under one of the entrances.

We recommend adding fractured rip rap at the ends of culverts.

We recommend the biofiltration area at the bottom of the basins be extended to include the sides of the infiltration basins. As well as adding note that the detail applies to all of the infiltration basins.

We recommend adding a fence around the infiltration basins to protect from public's entry.

Properties to the west of Bluebird road are at or below the road's current elevation.

Regrading and or a combination of grading and infiltration basins are recommended on these properties.

Further mitigation of stormwater onto these properties could include adding curb and gutter and associated storm sewer to the streets.

Would you be able to share the time for the meeting discussing this on July 2<sup>nd</sup> ? 5pm?

If you have additional questions, please let us know.

Have a great rest of the day,

John



**John Promer, P.E.** | Project Engineer, Public Works

Licensed in WI & MI

MSA Professional Services, Inc.

100% Employee Owned

+1 (715) 304-0415



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**To:** City Of Eagle River  
**From:** John Promer - MSA Professional Services Inc.  
**Subject:** U-Haul Storm Water Management Review  
**Date:** June 17, 2026

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MSA has recently been retained by the City of Eagle River to provide Stormwater Management plan review for the planned U-Haul Development along North Bluebird Road and Airport Road located within the City of Eagle River.

The recommended materials and design considerations outlined in this memorandum are based on the exhibits provided to MSA on May 29, 2026. This document is intended to serve as a general guide and standard for use during the design phase of the project. Final design details, specifications, and construction methods will be subject to review and approval by the City of Eagle River and applicable regulatory agencies.

**Recommended Erosion Control Materials:**

- Erosion Control Blanket: (Class 1 Type B, Urban)
  - For 4:1 or Steeper Slopes that are to be mowed.
  - Bio-Degradeable double netting.
  - Bio-Degradeable Stakes/Staples.
  - Erosion blanket shall be from the DOT Erosion Control PAL acceptability list.

**Observations & Recommendations:**

- It was observed that there is no rip rap shown at the ends of culverts.
  - It would be recommended to use 100% fractured rip rap at a 6inch minus gradation.
- It was observed from proposed site plan that the basins are approximately 4feet deep and that there is no fencing around the infiltration basins to protect them.
  - It is recommended that a fence be installed around the infiltration basins to protect public safety and to discourage unauthorized public access to the infiltration basins. This is particularly from adjacent roadways and the nearby snowmobile/ATV trail.
- It was observed that there is no equalization culvert under the southern most entrance.
  - It is recommended that a properly sized culvert be added.
- It was observed in the Stormwater Management Plan that the current analysis indicates a pre-development 100-year peak discharge of 1.04 cfs, while the post-development 100-year peak discharge from the report is 4.26 cfs peak.

## MEMO

June 17, 2026

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- As noted above, the report includes the 100-yr post-development flow as 4.26 cfs. However, the HydroCAD report indicated the outlet flow is 7.30 cfs for the 100-yr event. Please update the report or provide justification for the 4.26 cfs result.
- Additional stormwater management measures should be evaluated to further attenuate peak flows and minimize the increase in 100-yr discharge from the site to the maximum extent practical.
- Vilas County does not have additional post-construction requirements from NR 151. Therefore, only the 1-yr 24-hr and 2-yr 24-hr storm events are regulated. Given the HSG A soils at the site, meeting the 100-yr 24-hr pre- vs post-construction flows is difficult. The proposed basins total area is greater than the required 2% of the project site. Therefore, the design is sufficient to meet NR 151 requirements if additional measures are not feasible.
- It is unclear what mitigation factors are to be used after the infiltration basins overflow as shown in detail on sheet C7 of the proposed stormwater plan and detail.
  - It is recommended to add clarity and further address the overflow discharge.
  - Include the location of the emergency overflows on the plans, including dimensions and elevations. Indicate overtopping flow paths or entrance points to municipal systems. Weir velocities shown in HydroCAD do not exceed 2 fps during the 100-yr storm, so vegetated or paved flow paths will be sufficient.
- WinSLAMM inputs do not match HydroCAD or the plans. See the attached WinSLAMM output for correct inputs. The solution shows a TSS reduction of 93.01% and infiltration of 92.20%. Therefore, the design is sufficient. Please update the results in the report accordingly.
- Update the plans to note that the infiltration basin detail is for all basins, or provide details for all. Include a separate detail for basins P3 and P4, to show the shared overflow spillway between.

### Observations Regarding Adjoining properties to the West of the proposed U-Haul Development

- Properties to the west of the proposed development along Bluebird road are at or below the existing road elevation.
  - Additional stormwater management measures are recommended to prevent additional runoff impacts
    - Such as recommend regrading areas, Infiltration Basins, and/or adding additional stormwater management features to the properties to the west of Bluebird Road and to the proposed development.
    - Additional features for stormwater control before it enters the properties could include regrading road for addition of curb and gutter, and storm sewer.



John Promer P.E.  
Project Engineer  
MSA Professional Services, Inc.

Data file name: C:\Users\mamundson\OneDrive - MSA Professional Services, Inc\Desktop\Offline Projects\Eagle River UHaul Review\UHaul\WaterQuality.mdb  
WinSLAMM Version 10.4.1  
Rain file name: C:\WinSLAMM Files\Rain Files\WI\_Multi\_rain\GreenBay\WisReg - Green Bay WI Annual 1969.ran  
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI\_AVG01.pscx  
Runoff Coefficient file name: C:\WinSLAMM Files\WI\_SL06 Dec06.rsvx  
Residential Street Delivery file name: C:\WinSLAMM Files\WI\_Res and Other Urban Dec06.std  
Institutional Street Delivery file name: C:\WinSLAMM Files\WI\_Com Inst Indust Dec06.std  
Commercial Street Delivery file name: C:\WinSLAMM Files\WI\_Com Inst Indust Dec06.std  
Industrial Street Delivery file name: C:\WinSLAMM Files\WI\_Com Inst Indust Dec06.std  
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI\_Res and Other Urban Dec06.std  
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std  
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False  
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI\_GEO03.ppd  
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv  
Cost Data file name:  
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations  
Seed for random number generator: -42  
Study period starting date: 01/02/69                      Study period ending date: 12/28/69  
Start of Winter Season: 12/02                              End of Winter Season: 03/12  
Date: 06-17-2026    Time: 16:28:01  
Site information:

LU# 1 - Commercial: Commercial 1    Total area (ac): 0.421  
1 - Roofs 1: 0.268 ac.    Pitched    Connected    PSD File: C:\WinSLAMM Files\NURP.cpz  
13 - Paved Parking 1: 0.110 ac.    Connected    PSD File: C:\WinSLAMM Files\NURP.cpz  
51 - Small Landscaped Areas 1: 0.042 ac.    Normal Sandy    PSD File: C:\WinSLAMM Files\NURP.cpz  
70 - Water Body Areas: 0.001 ac.    PSD File:

LU# 2 - Commercial: Commercial 2    Total area (ac): 0.934  
1 - Roofs 1: 0.333 ac.    Pitched    Connected    PSD File: C:\WinSLAMM Files\NURP.cpz  
13 - Paved Parking 1: 0.387 ac.    Connected    PSD File: C:\WinSLAMM Files\NURP.cpz  
51 - Small Landscaped Areas 1: 0.200 ac.    Normal Sandy    PSD File: C:\WinSLAMM Files\NURP.cpz  
70 - Water Body Areas: 0.014 ac.    PSD File:

LU# 3 - Commercial: Commercial 3    Total area (ac): 0.081  
1 - Roofs 1: 0.021 ac.    Pitched    Connected    PSD File: C:\WinSLAMM Files\NURP.cpz  
13 - Paved Parking 1: 0.007 ac.    Connected    PSD File: C:\WinSLAMM Files\NURP.cpz  
51 - Small Landscaped Areas 1: 0.049 ac.    Normal Sandy    PSD File: C:\WinSLAMM Files\NURP.cpz  
70 - Water Body Areas: 0.004 ac.    PSD File:

LU# 4 - Commercial: Commercial 4    Total area (ac): 0.119  
1 - Roofs 1: 0.034 ac.    Pitched    Connected    PSD File: C:\WinSLAMM Files\NURP.cpz  
51 - Small Landscaped Areas 1: 0.078 ac.    Normal Sandy    PSD File: C:\WinSLAMM Files\NURP.cpz  
70 - Water Body Areas: 0.007 ac.    PSD File:

LU# 5 - Commercial: Commercial 5    Total area (ac): 0.975  
1 - Roofs 1: 0.513 ac.    Pitched    Connected    PSD File: C:\WinSLAMM Files\NURP.cpz  
13 - Paved Parking 1: 0.331 ac.    Connected    PSD File: C:\WinSLAMM Files\NURP.cpz  
51 - Small Landscaped Areas 1: 0.105 ac.    Normal Sandy    PSD File: C:\WinSLAMM Files\NURP.cpz  
70 - Water Body Areas: 0.026 ac.    PSD File:

LU# 6 - Commercial: Commercial 6    Total area (ac): 0.180  
51 - Small Landscaped Areas 1: 0.180 ac.    Normal Sandy    PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Biofilter CP# 1 (DS) - DS Biofilters # 1

1. Top area (square feet) = 810
2. Bottom area (square feet) = 1
3. Depth (ft): 6
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 8
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 1
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 0
10. Porosity of rock filled volume = 0
11. Engineered soil infiltration rate: 13
12. Engineered soil depth (ft) = 2
13. Engineered soil porosity = 0.43
14. Percent solids reduction due to flow through engineered soil = 80
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0

Soil Data                      Soil Type Fraction in Eng. Soil

User-Defined Soil Type      1.000  
Saturation water content percent (Porosity) = 0  
Field capacity (%) = 0  
Permanent Wilting Point (%) = 0  
Infiltration rate (in/hr) = 13

Biofilter Outlet/Discharge Characteristics:

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 5
2. Weir crest width (ft): 5
3. Height of datum to bottom of weir opening: 5

Outlet type: Surface Discharge Pipe

1. Surface discharge pipe outlet diameter (ft): 0.67
2. Pipe invert elevation above datum (ft): 3.15
3. Number of surface pipe outlets: 1

Control Practice 2: Biofilter CP# 2 (DS) - DS Biofilters # 2

1. Top area (square feet) = 6100
2. Bottom area (square feet) = 500
3. Depth (ft): 6
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 8
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 1
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 0
10. Porosity of rock filled volume = 0
11. Engineered soil infiltration rate: 13
12. Engineered soil depth (ft) = 2
13. Engineered soil porosity = 0.43
14. Percent solids reduction due to flow through engineered soil = 80
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0

Soil Data                      Soil Type Fraction in Eng. Soil

User-Defined Soil Type      1.000  
Saturation water content percent (Porosity) = 0  
Field capacity (%) = 0  
Permanent Wilting Point (%) = 0  
Infiltration rate (in/hr) = 13

Biofilter Outlet/Discharge Characteristics:

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 5
3. Height of datum to bottom of weir opening: 4.5

Outlet type: Surface Discharge Pipe

1. Surface discharge pipe outlet diameter (ft): 1
2. Pipe invert elevation above datum (ft): 4.15
3. Number of surface pipe outlets: 1

Control Practice 3: Biofilter CP# 3 (DS) - DS Biofilters # 3

1. Top area (square feet) = 5000
2. Bottom area (square feet) = 460
3. Depth (ft): 4
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 8
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 1
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 0
10. Porosity of rock filled volume = 0
11. Engineered soil infiltration rate: 13
12. Engineered soil depth (ft) = 2
13. Engineered soil porosity = 0.43
14. Percent solids reduction due to flow through engineered soil = 80
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0

Soil Data                      Soil Type Fraction in Eng. Soil

User-Defined Soil Type      1.000  
Saturation water content percent (Porosity) = 0  
Field capacity (%) = 0  
Permanent Wilting Point (%) = 0  
Infiltration rate (in/hr) = 13

Biofilter Outlet/Discharge Characteristics:

Outlet type: Sharp Crested Weir

1. Weir length (ft): 10
2. Invert elevation above datum (ft): 3.5

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 5
2. Weir crest width (ft): 4
3. Height of datum to bottom of weir opening: 3

Control Practice 4: Biofilter CP# 4 (DS) - DS Biofilters # 4

1. Top area (square feet) = 5000
2. Bottom area (square feet) = 800
3. Depth (ft): 4
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 8
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 1
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 0
10. Porosity of rock filled volume = 0
11. Engineered soil infiltration rate: 13
12. Engineered soil depth (ft) = 2
13. Engineered soil porosity = 0.43
14. Percent solids reduction due to flow through engineered soil = 80
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0

Soil Data                      Soil Type Fraction in Eng. Soil

User-Defined Soil Type      1.000  
Saturation water content percent (Porosity) = 0  
Field capacity (%) = 0  
Permanent Wilting Point (%) = 0  
Infiltration rate (in/hr) = 13

Biofilter Outlet/Discharge Characteristics:

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 4
3. Height of datum to bottom of weir opening: 3.5

Control Practice 5: Biofilter CP# 5 (DS) - DS Biofilters # 5

1. Top area (square feet) = 2000
2. Bottom area (square feet) = 1140
3. Depth (ft): 7
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 8
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 1
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 0
10. Porosity of rock filled volume = 0
11. Engineered soil infiltration rate: 13
12. Engineered soil depth (ft) = 2
13. Engineered soil porosity = 0.43
14. Percent solids reduction due to flow through engineered soil = 80
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0

Soil Data                      Soil Type Fraction in Eng. Soil

User-Defined Soil Type      1.000  
Saturation water content percent (Porosity) = 0  
Field capacity (%) = 0  
Permanent Wilting Point (%) = 0  
Infiltration rate (in/hr) = 13

Biofilter Outlet/Discharge Characteristics:

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 4
3. Height of datum to bottom of weir opening: 4.75

SLAMM for Windows Version 10.4.1

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Data file name: C:\Users\mamundson\OneDrive - MSA Professional Services, Inc\Desktop\Offline Projects\Eagle River UHaul Review\UhaulWaterQuality.mdb

Data file description:

Rain file name: C:\WinSLAMM Files\Rain Files\WI\_Multi\_rain\GreenBay\WisReg - Green Bay WI Annual 1969.ran

Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI\_AVG01.pscx

Runoff Coefficient file name: C:\WinSLAMM Files\WI\_SLO6 Dec06.rsvx

Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI\_GE003.ppdx

Residential Street Delivery file name: C:\WinSLAMM Files\WI\_Res and Other Urban Dec06.std

Institutional Street Delivery file name: C:\WinSLAMM Files\WI\_Com Inst Indust Dec06.std

Commercial Street Delivery file name: C:\WinSLAMM Files\WI\_Com Inst Indust Dec06.std

Industrial Street Delivery file name: C:\WinSLAMM Files\WI\_Com Inst Indust Dec06.std

Other Urban Street Delivery file name: C:\WinSLAMM Files\WI\_Res and Other Urban Dec06.std

Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std

Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False  
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv

Cost Data file name:

If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations

Seed for random number generator: -42

Start of Winter Season: 12/02 End of Winter Season: 03/12

Model Run Start Date: 01/02/69 Model Run End Date: 12/28/69

Date of run: 06-17-2026 Time of run: 16:34:30

Total Area Modeled (acres): 2.710

Years in Model Run: 0.99

Particulate	Percent	Runoff	Percent Particulate
Solids	Particulate	Volume	Solids
Yield	Solids	(cu ft)	Conc.
(lbs)	Reduction	Reduction	(mg/L)
Total of all Land Uses without Controls:		146332	65.79
601.0	-		
Outfall Total with Controls:		11421	58.90
42.00	93.01%	92.20%	
Annualized Total After Outfall Controls:		11579	
42.58			





## Limiting Pavement Damage from Detours

Detours for highway construction projects direct heavy freight vehicles onto local roads that were not designed to accommodate the frequency of heavy loads. Detours to these local roads often accelerate pavement deterioration that shortens their service life and requires additional repair. This project examined the structural and economic impacts of detours on local roads to develop a framework for optimizing detour routes that limit pavement damage while maintaining traffic mobility.

### What Was the Need?

Highway detours route heavy trucks onto local roads that were designed to support only a limited number of these heavy loads over their service life. Consequently, accelerated pavement damage occurs, and reimbursements to counties are often not enough to restore the roads to their pre-detour service life. Designing detour routes that direct heavy trucks away from the most vulnerable local roads could mitigate the negative impacts.

This project developed methods and a framework for quantifying detour-related consumption and optimizing detour routes to minimize long-term impacts on Minnesota's road network. The results could offer insight to state and local traffic engineers as they design future detour routes.

### What Did We Do?

A literature review evaluated current approaches for estimating pavement consumption costs. Investigators reviewed processes for assessing pavement structural damage using nondestructive testing (NDT) methods, including a falling weight deflectometer and ground-penetrating radar. They also calculated the remaining service life (RSL) for numerous detour and haul road sites in Minnesota.

A multiclass traffic assignment model integrated with MnDOT's CUBE framework was developed to predict changes in car and truck traffic patterns caused by construction-related closures. The model provided insights into congestion, rerouting behavior and increased truck flows on local roads.

*“This framework represents a promising starting point to map detour routes that will minimize pavement consumption on the available local network.”*

—TIM ANDERSEN, PAVEMENT DESIGN ENGINEER,  
MnDOT OFFICE OF MATERIALS AND ROAD RESEARCH

Pavement performance curves were used to assess the reduction in RSL, and loss of effective service area was used to assess pavement performance curves that estimated detour-related consumption. Investigators then coupled these estimates with traffic pattern predictions to develop an optimization algorithm that would map detour routes to minimize truck-related pavement consumption and still consider efficient travel routes for vehicles.

Investigators synthesized the project’s findings into a framework that allows MnDOT and local agencies to quantify pavement consumption and optimize detour planning and routing. This framework integrates pavement condition data, NDT results, performance curves and traffic pattern predictions with map optimization tools.

## What Did We Learn?

Pavement consumption assessment results demonstrated the significant impact of detours on local roads. For example, a case study of a road in Goodhue County found that a three-month detour due to rehabilitation activities on U.S. Highway 61 reduced the adjacent local road’s service life by more than two years and decreased the effective service area by more than 25%.

To mitigate these negative impacts, investigators developed a detour route optimization tool to identify locations for detour signs. Simulations

using the optimization tool designed detour routes with significant reductions in truck flows on vulnerable roads that maintained network efficiency.

The proposed framework has five steps:

1. Collect essential network data such as rehabilitation history, pavement layer thickness and precalibrated performance curves.
2. Quantify pavement consumption by using the RSL or loss of area under the performance curve methodology.
3. Optimize a detour routing tool that incorporates traffic assignment model predictions for truck miles on restricted roads for a given detour.
4. Execute an algorithm that identifies optimal detour signage through simulation testing.
5. Validate and compare proposed routes using truck flow reductions on critical routes, RSL consumption assessments and other metrics.

Additional practical recommendations stemming from the project include the adoption of performance curve-based evaluations, standardized NDT protocols and the use of traffic modeling for detour planning.

## What’s Next?

This project provides analytical tools for data-driven outputs when estimating pavement consumption and mapping detour routes. The framework for designing detour routes balances the mitigation of infrastructure damage with mobility and overall network efficiency.

However, the outputs are based on many assumptions, and better-quality data for local roads is required for more accurate assessments of pavement condition and traffic patterns used to model and optimize routing decisions. For example, future validations should use field-measured performance curves and real-time traffic feedback.

This work is an effective starting point to better assess pavement consumption and routing detours. Future field studies will help to refine the process for determining pavement consumption assessments and detour routing used by municipal and state transportation agencies.

## About This Project

**REPORT 2026-06**

“Haul Road and Detour Maintenance.”

Find it at [mdl.mndot.gov](http://mdl.mndot.gov).

### CONTACT

[research.dot@state.mn.us](mailto:research.dot@state.mn.us).

### TECHNICAL LIAISON

Timothy Andersen, MnDOT

[Timothy.Lee.Andersen@state.mn.us](mailto:Timothy.Lee.Andersen@state.mn.us)

### INVESTIGATOR

Mihai Marasteanu,

University of Minnesota

[Maras002@umn.edu](mailto:Maras002@umn.edu)

### PROJECT COST

\$153,003

[www.mndot.gov/research](http://www.mndot.gov/research)

WisDOT has a standard bid item for haul road maintenance which includes travel on public roadways. That is similar to what would be required below. In that bid item, the contractor is responsible for any damage to area roadways that are affected by the Work.

For your project, the municipality has every right to restrict loads on their roadways. The roadway should be posted to officially limit traffic. It could be posted as a Class B highway or other restrictions for reduced axle loads. An ordinance is required along with signs posted in order for the weight limits to be enforced by local law enforcement.

A few MSA Experiences from over the years

1. In a municipal client community 8 years ago, a contractor working for the local school district hauled many hundreds of fully loaded vehicles on a roadway with very little pavement and base. The roadway was damaged in many areas including huge ruts and base course pumping through the asphalt. So yes, this happens. The City claimed the roadway was not a truck route and not designed to handle heavy loads. The contractor agreed to contribute many thousands of dollars to the City to repave the roadway. This was after the fact though.
2. On another project 6 years ago where a PW/City contractor was hauling excavated material to a remote waste site off a town road. We monitored the roadway (took photos and videos, preconstruction) and wrote some special procedures about existing roadway maintenance. The contractor did a good job of hauling only at certain times (this was a winter project, so hauling at night or early morning when frozen). There was limited damage to the roadway during construction and the contractor did agreement to repair minor sections of the town road.

After the experiences noted above, it can be worth adding a bid item to certain projects where the local roads are needed for hauling material and equipment. This would be one method to basically require the contractor to review roadways and repair damaged pavement. Documentation of existing road conditions prior to hauling on the road(s) would be a crucial aspect of the method.

**TEMPLATE**

**TOWN ROAD UPGRADE AND MAINTENANCE AGREEMENT**

This TOWN ROAD UPGRADE AND MAINTENANCE AGREEMENT (this “Agreement”) is made and entered into this \_\_\_ day of \_\_\_\_\_, 20\_\_\_ by and between the Town of Holland (the “Town”), and \_\_\_\_\_ (the “Operator”).

**RECITALS**

WHEREAS, [insert appropriate language describing the operation such as mining, manure hauling, timber sales, etc.] [In the case of a mining operation: *Operator is in the business of mining and production of silica sand, and is in the process of constructing, developing, operating, maintaining and reclaiming a non-metallic mining facility (the “Project”) in the Town of Holland, Wisconsin, and has submitted an application for a Non-metallic Mining Reclamation Permit for the Project with the County of La Crosse in accordance with the Non-metallic Mining Reclamation Ordinance of La Crosse County, and ]*

WHEREAS, in connection with the construction, development, operation, maintenance and reclamation of the Project, the Parties desire to address certain issues relating to the roads owned, operated and maintained by the Town (collectively, the “Town Roads”) over which it will be necessary for Operator and Operator’s Representatives to, among other things, transport heavy equipment and certain locally sourced materials, [*including, but not limited to, silica sand,*] over certain Town Roads, which may in certain cases be in excess of the design limits of the Town Roads; and both parties acknowledge that certain of the Town Roads may not be constructed to withstand the frequency and weight of shipments necessary for the Operator to transport its products and equipment.

WHEREAS, Wis. Stat. §349.16(1)(c) authorizes the Town Board to enter into an agreement with any owner or operator of any vehicle being operated on a highway maintained by the Town that provides that the Town will be reimbursed for any damage done to the highway, and

WHEREAS, Operator has provided to Town a site layout plan for the Project that shows the access road entrances, a copy of which is attached as Exhibit A (the “Plan”), and

WHEREAS, Operator and Town wish to set forth their understanding and agreement as to the road issues relating to the construction, development, operation, maintenance and reclamation of the Project, and

WHEREAS, this Agreement shall apply to those Town Roads listed on the attached Exhibit B and, subject to Section 4.B. herein, any other Town Road(s) used by Operator or Operator’s Representatives in direct support of the construction, development, operation, maintenance and reclamation of the Project.

## AGREEMENT

NOW, THEREFORE, in consideration of the mutual promises and covenants herein set forth, the parties, intending to be legally bound, agree as follows:

Section 1. Term of Agreement.

This Agreement shall commence upon the date indicated above (the “Effective Date”) and shall continue in full force and effect until [*Operator’s Non-metallic Mining Reclamation*] Permit has expired, has been terminated, or until Operator has fully discontinued its construction, development, operation, maintenance and reclamation of the Project and any and all transportation activities related thereto on the Town Roads listed on Exhibit B, whichever occurs later.

The Operator shall notify the Town in writing of the designated haul route at least three weeks before hauling materials over a Town road. The Town or its representative will subsequently survey the existing condition of that haul route to establish a baseline for assessing damage that the Operator’s hauling operation might cause. The process of surveying the route will incorporate but is not limited to, previous PASER rating logs, video recording, soil borings and structure evaluations.

Section 2. Operator, in respect to the Project constructed, developed, operated, maintained and reclaimed by it, acknowledges and agrees the Project may require Town to undertake the following activities in order to preserve Town Roads and that the Operator shall be financially responsible for the costs of said activities to the extent provided for under the terms of this Agreement:

- A. The cost of upgrading pavement sections on Town Roads to withstand the hauling of products and equipment that are necessary for the Project shall be done to standards in accordance with the appropriate/applicable sections of the WIDOT, Facilities Development Manual, and in accordance with Chapter 82 of the State Stats and TRANS 204 of the Administrative Code.
- B. The cost of upgrading the geometric design of the Town Roads that will safely and efficiently accommodate the traffic that Operator has indicated the Project will generate; including improvements at entrances, intersections and to the typical cross-section, shall be done to a standard as directed by the WIDOT, Facilities Development Manual and in accordance with Chapter 82 of the State Stats and TRANS 204 of the Administrative Code. Geometric improvements shall also include any improvements to Structures and Culverts necessary to accommodate the increased traffic from the Project.

Structures already programmed for replacement or reconstruction in the Wisconsin Department of Transportation Bridge Program will not be subject to cost share. During the replacement of a WIDOT programmed structure, the Town will work with the Operator to ensure that the structure is replaced as quickly as possible so as not to inconvenience the operator, however, there may be periods of time that an alternate route shall be designated and that route may be subject to load posting or hauling permits.

- C. The cost for providing Engineering Plans for all improvements needed under Sections 2.A. and 2.B. above, including any Right-of-Way needed.
- D. Operator shall be responsible for all exceptional maintenance costs, above normal maintenance requirements, that are attributable to damage to Town Roads from the hauling of products and equipment related to the Project. Said maintenance cost may occur either before or after any of the improvements to Town Roads indicated in Sections 2.A., 2.B. and 2.C. above are made. Town shall inform Operator if it has a good faith basis to believe any exceptional maintenance costs become necessary and provide a good faith estimate of costs to Operator prior to commencing work.

Town will invoice the Operator for exceptional maintenance costs incurred as the work is completed. Operator shall have thirty (30) days from the date of invoicing to make payment to Town.

- E. In order to compensate Town for repairs needed as a result of Operator's use and to accomplish the work indicated in Sections 2.A., 2.B. and 2.C. above, Operator shall make a payment to Town of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) at the time of execution of this Agreement. Based on the construction plans provided by the Operator and cost estimate agreed upon by both parties, the payment amount should be sufficient for Town to make needed improvements to the Haul Route.

Notwithstanding the above, Operator acknowledges that conditions may be encountered or additional requirements imposed by the WIDOT or other regulatory agency that require additional work by the Town and that the cost of all additional work is the responsibility of the Operator. When improvements are complete the Town will invoice the Operator for any additional costs incurred. Operator shall have thirty (30) days from the date of invoicing to make payment to Town.

After construction of the improvements is complete any remaining funds will be returned to Operator within thirty (30) days of project audit by Town.

- F. At the discretion of the Town, a bond may be required to insure against costs associated with excessive wear and tear on Town Roads.

Section 3. Town, in accordance with the terms of this Agreement, agrees to:

- A. Review for approval all access points to the Town Road system by giving consideration to sight distances, drainage and proximity to other entrances, in a reasonable manner, and in accordance with accepted engineering practices;
- B. Review for approval permits for all utility encroachments on Town rights-of-way in a reasonable manner, and in accordance with accepted engineering practices;
- C. Coordinate with Operator and Operator's Representatives so as to minimize the impact of their use of the Town Road system;
- D. Perform all maintenance and construction of all improvements pursuant to this Agreement on the Town Roads used for the construction, development, operation, maintenance and reclamation of the Project.
- E. Keep those Town Roads listed on the attached Exhibit B of this Agreement open to Operator to haul products and equipment related to the Project for the entire term of this Agreement without further restrictions, other than those indicated in this Agreement, for all vehicles meeting statutory requirements for weight, width, height and length. Town shall retain the right and its authority to establish and set traffic speed limits in accordance with generally accepted highway standards and safety practices.

Section 4. Road Inventory.

- A. Routing and Access Approval.

This Agreement applies only to the Town Roads listed on the attached Exhibit B of this Agreement. If conditions or circumstances change and Operator desires to change haul routes, it must first request authorization from the Town. All expenses for additional haul routes are not part of this Agreement and shall be negotiated by the Operator and Town in a separate agreement in the event any changes are requested.

- B. Incidental Use

The Parties recognize that the Project traffic may, either through mistake or with the consent of Town, use Town Roads other than those listed on Exhibit B of this Agreement. Repairs for damage caused by Operator or Operator's Representatives during such mistaken or permitted use shall be treated as exceptional maintenance under Section 2.D. above.

Section 5.

Construction Cooperation.

A. Operator.

Operator shall submit to Town a schedule with planned activities that affect the Town Roads. Said Schedule shall reasonably indicate the estimated number of trucks that will be hauling products and equipment and daily hours of operation. Operator shall submit the Schedule to Town within two (2) weeks of execution of this Agreement. Operator shall further provide Town with an updated Schedule within two (2) weeks of any material changes being made with the Project. Operator understands that Town Road construction and maintenance activities will be on-going while Project hauling is occurring, and that while Town Roads will be open to traffic, Operator acknowledges that these activities may slow hauling operations.

B. Town:

During the term of this Agreement, Town and Operator shall meet as needed to discuss Project activities and Town Road construction and maintenance schedules. Town agrees to keep those Town Roads specified in Exhibit B open to Project traffic during Town Road construction and maintenance activities, except that Town may temporarily close any of the Town Roads specified in Exhibit B for replacement of a culvert, structure or due to an emergency. Town will provide a temporary alternate haul route when reasonably practicable. Annual seasonal weight limitations shall apply to all haul routes in Exhibit B and to any alternate routes approved by Town.

Town agrees to exclusively use any payments received from Operator as part of 2(E) of this Agreement on Town Roads used as haul routes by the Operator.

C. Emergency Actions.

Notwithstanding the foregoing, in the event Operator or Operator's Representatives have caused damage to Town Roads of a magnitude sufficiently great to create a hazard to the motoring public, which in Town's opinion warrants an immediate repair or Town Road closing, Town may unilaterally close those Town Road(s) affected and make or authorize repair, with the reasonable, documented costs thereof paid for by Operator.

Both Parties acknowledge that while Town is the Jurisdictional Authority for those Town Roads listed in Exhibit B, certain emergency situations may arise that fall under law enforcement, fire district or emergency

management control. In such situations the road may be closed to traffic, including traffic from the Project, outside the control of Town. Town shall not be responsible for any harm to Operator, Operator's Representatives or the Project that may result from Town Road closings that occur due to such emergencies.

Section 6. Indemnification/Hold Harmless and Liability Insurance Provisions.

A. Indemnification by Operator. Operator hereby releases and agrees to indemnify and hold harmless Town and its respective officers, employees, elected or appointed officials, and agents, and their respective heirs, executors, administrators, successors and assigns (hereinafter collectively "Town Releasees") from any and all third party actions, causes of action, suits, claims, expenses (including reasonable attorney's fees) and demands against Town Releasees arising out of or relating to the performance by Operator of its obligations under this Agreement. More particularly, but without in any way limiting the foregoing, Operator hereby releases Town Releasees and agrees to indemnify and hold harmless Town Releasees from any and all third party actions, causes of action, suits, claims, expenses (including reasonable attorney's fees) and demands arising directly or indirectly from any personal injury, death or property damage arising out of the use by Operator or Operator's Representatives of any Town Road subject to this Agreement.

1. Limitations of Liability. In no event shall Town or any of their Board, officers, elected or appointed officials, agents, investors, principals, shareholders, members or employees be liable (in contract or in tort, involving negligence, strict liability, or otherwise) to the Operator or its contractors, suppliers, employees, members and shareholders for indirect, incidental, consequential or punitive damages resulting from the performance, non-performance or delay in performance under this Agreement.

2. Required Insurance. Operator shall at all times throughout the term of this Agreement maintain in full force and effect commercial general liability insurance, naming Town, its Board, officers, elected or appointed officials, agents and employees as an additional insured, in the aggregate amount equal to \_\_\_\_\_ dollars (\$ \_\_\_\_\_) of primary and/or excess insurance to satisfy this requirement.

Or

Required Escrow. Operator shall at all times throughout the term of this Agreement establish and maintain in full force and effect an escrow account in the amount of \_\_\_\_\_ dollars (\$ \_\_\_\_\_) to cover performance of this Agreement.

Section 7. Remedies and Enforcement.

Each of the Parties hereto covenant and agree that in the event of default of any of the terms, provisions or conditions of this Agreement by any party (the “Defaulting Party”), which default is not caused by the party seeking to enforce said provisions (the “Non-Defaulting Party”) and after notice and reasonable opportunity to cure has been provided to the Defaulting Party, then in such an event, the Non-Defaulting Party shall have the right of specific performance. The remedy of specific performance and injunctive relief shall not be exclusive of any other remedy available at law or in equity.

Section 8. Savings/Severability.

It is mutually agreed by the Parties that in the event any provision of this Agreement is determined by any court of law of competent jurisdiction to be unconstitutional, invalid, illegal or unenforceable in any respect, it is the intention of the parties that such unconstitutionality, invalidity, illegality or unenforceability shall not affect the other provisions, and the Agreement shall be construed as if such unconstitutional, invalid, illegal or unenforceable provision had never been contained in this Agreement.

Section 9. Entire Agreement.

This Agreement and the exhibits attached thereto constitute the entire agreement among the Parties hereto with respect to the subject matter hereof, and supersede any prior understandings or written or oral agreements between the parties with respect to the subject matter of this Agreement. No amendment, modification, cancellation or alteration of the terms of this Agreement shall be binding on any party hereto unless the same is in writing, dated subsequent to the date hereof and is duly authorized and executed by the Parties hereto.

Section 10. Designated Representative.

FOR TOWN:  
David Carlson, Chair  
Town of Holland  
W7937 County Road MH  
Holmen, WI 54636

FOR OPERATOR:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Section 11. Notices.

All notices to be given under the terms of this Agreement shall be in writing and signed by the person serving the notice and shall be sent via registered or certified mail, return receipt requested, postage prepaid, or hand delivered to the addresses of the parties listed below. Notice shall be deemed to have been received on the date of receipt as shown on the return receipt or other written evidence of receipt.

Section 12. Assignability/Consent.

This Agreement shall be binding on the Parties hereto, their respective heirs, devisees and successors. Except as otherwise provided herein, or except as may be hereafter determined by the Parties, Operator may not sell, assign or transfer its interest in this Agreement, or any of its rights, duties or obligations hereunder, without the prior written consent of Town. Whenever the consent or the approval of Town is required herein, Town shall not unreasonably withhold, delay or deny such consent or approval.

Section 13. Choice of Law and Forum Selection.

This Agreement shall be governed by, and construed, interpreted and enforced in accordance with the laws of the State of Wisconsin. The Parties agree, for any claim or suit or other dispute relating to this Agreement that cannot be mutually resolved, the venue shall be in the Circuit Court of La Crosse County, and the parties further agree to submit themselves to the jurisdiction of said court, to the exclusion of any other judicial district that may have jurisdiction over such a dispute according to any law.

Section 14. Waiver of Terms and Conditions.

The failure of a Party to enforce or insist upon compliance with any of the terms or conditions of this Agreement shall not constitute a general waiver or relinquishment of any such terms or conditions, but the same shall be and remain at all times in full force and effect.

Section 15. Cooperation.

The Parties agree to cooperate with each other in addressing any unforeseen or extraordinary events caused by Operator's activity that would result in significant impacts to the Town Roads. The parties further agree to cooperate with each other in addressing any unforeseen impact to Operator's ability to utilize the haul route or any alternative route provided for in this Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the  
day and year first written above.

OPERATOR:

\_\_\_\_\_.

By: \_\_\_\_\_  
Its \_\_\_\_\_

TOWN:

\_\_\_\_\_  
By: David Carlson  
Chairman, Town of Holland

## EXHIBIT A

The Plan

## EXHIBIT B

Haul Routes

# ESTIMATE OF PROBABLE COSTS

## N BLUEBIRD ROAD & AIRPORT ROAD PAVEMENT REPLACEMENT

BASE REPLACEMENT OPTION  
CITY OF EAGLE RIVER

DATE: 6/18/2026

ESTIMATE YEAR: **2026**  
CONSTRUCTION YEAR: **2026**

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
<b>GENERAL</b>					
1	Mobilization, Bonds, & Insurance	1	L.S.	\$ 40,000.00	\$ 40,000
2	Erosion and Sedimentation Control	1	L.S.	\$ 5,000.00	\$ 5,000
3	Traffic Control	1	L.S.	\$ 5,000.00	\$ 5,000
4	Turf Restoration	1	L.S.	\$ 10,000.00	\$ 10,000
5	Adjust Manhole Casting	2	EA.	\$ 2,000.00	\$ 4,000
6	Adjust Water Valve Box	2	EA.	\$ 500.00	\$ 1,000
<b>ROADWAY - North Bluebird Rd.</b>					
7	Unclassified Excavation (Includes Removals)	1	L.S.	\$ 15,000	\$ 15,000
8	Furnish and install 10 Inch Thick Aggregate Base Course, 1 1/4 -inch	2,400	S.Y.	\$ 28	\$ 67,200
9	Excavation Below Subgrade	30	C.Y.	\$ 25	\$ 750
10	Furnish & Install Granular Borrow	30	C.Y.	\$ 25	\$ 750
11	Gravel Shoulder, 3-Inch Thick	200	S.Y.	\$ 25	\$ 5,000
12	Furnish & Install 3-Inch Thick Asphaltic Pavement	2,200	S.Y.	\$ 27	\$ 59,400
13	Sawcut Asphalt Pavement	200	L.F.	\$ 6	\$ 1,200
<b>ROADWAY - Airport Rd.</b>					
14	Unclassified Excavation (Includes Removals)	1	L.S.	\$ 10,000	\$ 10,000
15	Furnish and install 10 Inch Thick Aggregate Base Course, 1 1/4 -inch	1,200	S.Y.	\$ 28	\$ 33,600
16	Excavation Below Subgrade	30	C.Y.	\$ 25	\$ 750
17	Furnish & Install Granular Borrow	30	C.Y.	\$ 25	\$ 750
18	Gravel Shoulder, 3-Inch Thick	100	S.Y.	\$ 25	\$ 2,500
19	Furnish & Install 3-Inch Thick Asphaltic Pavement	1,100	S.Y.	\$ 27	\$ 29,700
20	Sawcut Asphalt Pavement	200	L.F.	\$ 6	\$ 1,200
<b>ESTIMATED CONSTRUCTION SUBTOTAL</b>					<b>\$ 292,800</b>
Contingency 15%					\$ 43,920
<b>ESTIMATED CONSTRUCTION COST( 2026 )</b>					<b>\$ 336,720</b>
Design Engineering 10%					\$ 33,700
Construction Engineering 10%					\$ 33,700
<b>TOTAL ESTIMATED PROJECT COST:</b>					<b>\$ 404,120</b>

**Disclaimers & Assumptions**

- 1 This estimate of probable cost is approximate. Actual construction bids may vary significantly from this estimate due to timing of bids, constructural schedule restraints, labor rate increases, material increases, or other factors beyond the control of the estimator.
- 2 2-12' Lanes with 2' shoulders N. Bluebird 800 Ft Long
- 3 2-12' Lanes 150 ft taper to 2-15' lanes 175ft with 2' shoulders airport road (325 Ft Long)
- 4 10inch Thick base aggregate replacement
- 5 3in asphalt pavement
- 6 this estimate assumes that the existing pavement depth is equal to the proposed depth

# ESTIMATE OF PROBABLE COSTS

## N BLUEBIRD ROAD & AIRPORT ROAD PAVEMENT REPLACEMENT PULVERISE AND OVERLAY OPTION CITY OF EAGLE RIVER

DATE: 6/18/2026

ESTIMATE YEAR: **2026**  
CONSTRUCTION YEAR: **2026**

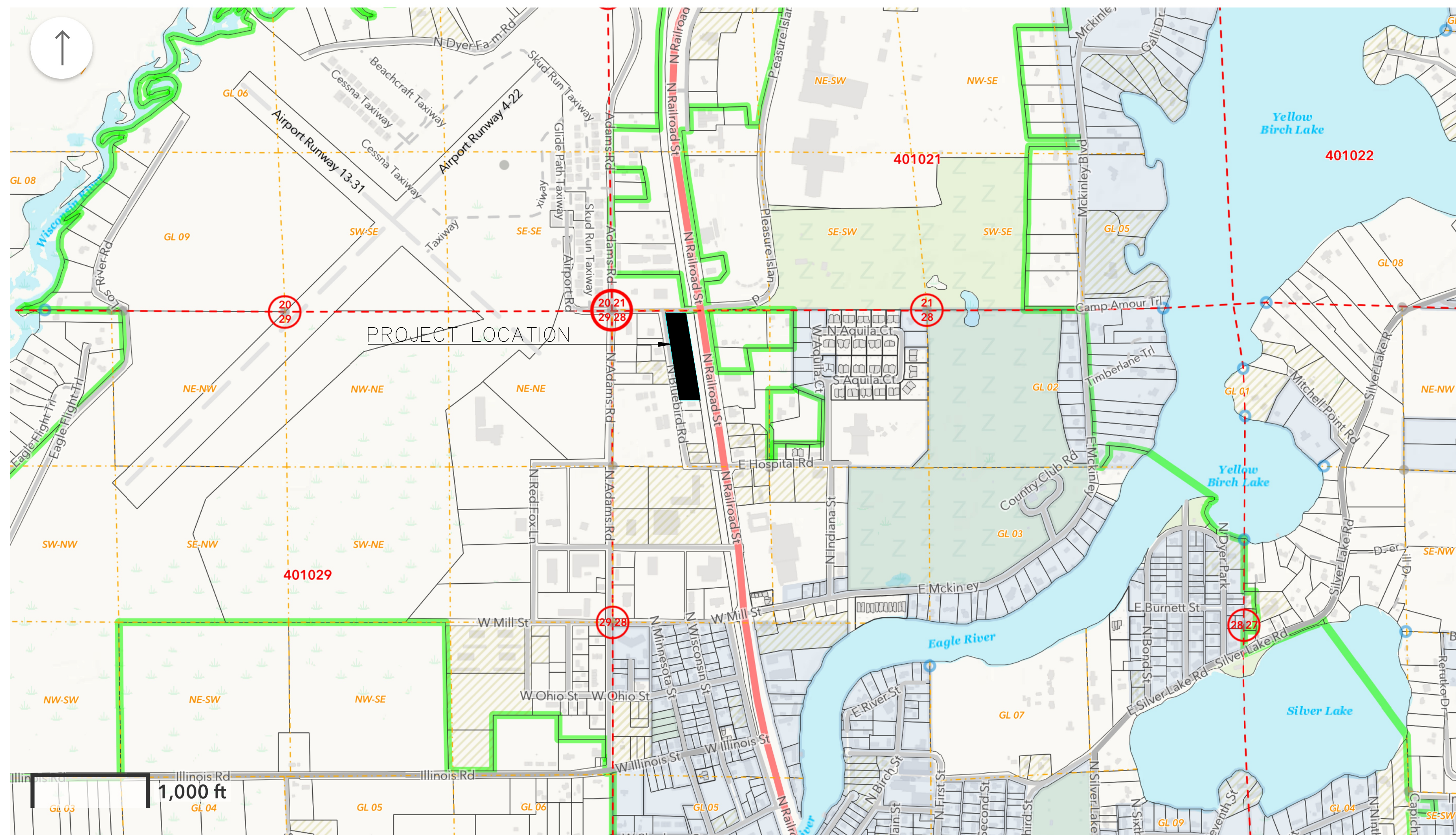
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
<b>GENERAL</b>					
1	Mobilization, Bonds, & Insurance	1	L.S.	\$ 25,000.00	\$ 25,000
2	Erosion and Sedimentation Control	1	L.S.	\$ 5,000.00	\$ 5,000
3	Traffic Control	1	L.S.	\$ 5,000.00	\$ 5,000
4	Turf Restoration	1	L.S.	\$ 10,000.00	\$ 10,000
5	Adjust Manhole Casting	2	EA.	\$ 2,000.00	\$ 4,000
6	Adjust Water Valve Box	2	EA.	\$ 500.00	\$ 1,000
<b>ROADWAY - North Bluebird Rd.</b>					
7	Pulverize Existing Pavement and Shape N. Bluebird Rd. South 750 FT from Airport Rd.	2,200	S.Y.	\$ 5.00	\$ 11,000
8	Unclassified Excavation (Includes Removals)	1	L.S.	\$ 5,000	\$ 5,000
9	Gravel Shoulder, 3-Inch Thick	200	S.Y.	\$ 25	\$ 5,000
10	Furnish & Install 3-Inch Thick Asphaltic Pavement	2,200	S.Y.	\$ 27	\$ 59,400
11	Sawcut Asphalt Pavement	200	L.F.	\$ 6	\$ 1,200
<b>ROADWAY - Airport Rd.</b>					
12	Pulverize Existing Pavement and Shape Airport Rd. West 325 FT from N. Railroad St.	1,000	S.Y.	\$ 5.00	\$ 5,000
13	Unclassified Excavation (Includes Removals)	1	L.S.	\$ 5,000	\$ 5,000
14	Gravel Shoulder, 3-Inch Thick	100	S.Y.	\$ 25	\$ 2,500
15	Furnish & Install 3-Inch Thick Asphaltic Pavement	1,000	S.Y.	\$ 27	\$ 27,000
16	Sawcut Asphalt Pavement	200	L.F.	\$ 6	\$ 1,200
<i>ESTIMATED CONSTRUCTION SUBTOTAL</i>					<b>\$ 172,300</b>
Contingency 15%					\$ 25,845
<i>ESTIMATED CONSTRUCTION COST( 2026 )</i>					<b>\$ 198,145</b>
Design Engineering 10%					\$ 19,900
Construction Engineering 10%					\$ 19,900
<b>TOTAL ESTIMATED PROJECT COST:</b>					<b>\$ 237,945</b>

**Disclaimers & Assumptions**

- 1 This estimate of probable cost is approximate. Actual construction bids may vary significantly from this estimate due to timing of bids, constructural schedule restraints, labor rate increases, material increases, or other factors beyond the control of the estimator.
- 2 2-12' Lanes with 2' shoulders N. Bluebird 800 Ft Long
- 3 2-12' Lanes 150 ft taper to 2-15' lanes 175ft with 2' shoulders airport road (325 Ft Long)
- 4 3in asphalt pavement
- 5 this estimate assumes that the existing pavement depth is equal to the proposed depth
- 6 Assumes a pulverize and overly option

ADDRESS:  
1100 N RAILROAD STREET EAGLE RIVER, WI

LOCATION:  
PART OF THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 28,  
TOWNSHIP 40 NORTH, RANGE 10 EAST, CITY OF EAGLE RIVER,  
VILAS COUNTY, WISCONSIN



DRAWING INDEX

- SHEET C2 EXISTING SITE
- SHEET C3 PROPOSED SITE PLAN
- SHEET C4 PROPOSED GRADING PLAN
- SHEET C5 PROPOSED EROSION CONTROL PLAN
- SHEET C6 PROPOSED SITE DETAILS
- SHEET C7 PROPOSED STORMWATER PLAN & DETAILS
- SHEET C8 PROPOSED LANDSCAPING PLAN

LOCATION MAP

**SCALE NOTE:**  
IF YOU ARE VIEWING THESE PLANS IN AN 11"x17" SIZE THEY MAY BE HALF SCALE FROM THE ORIGINAL 22"x34" SIZE DRAWING AND THE DRAWING SCALE IS HALF OF THAT STATED. CHECK SCALE.

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BY	DATE	DESCRIPTION

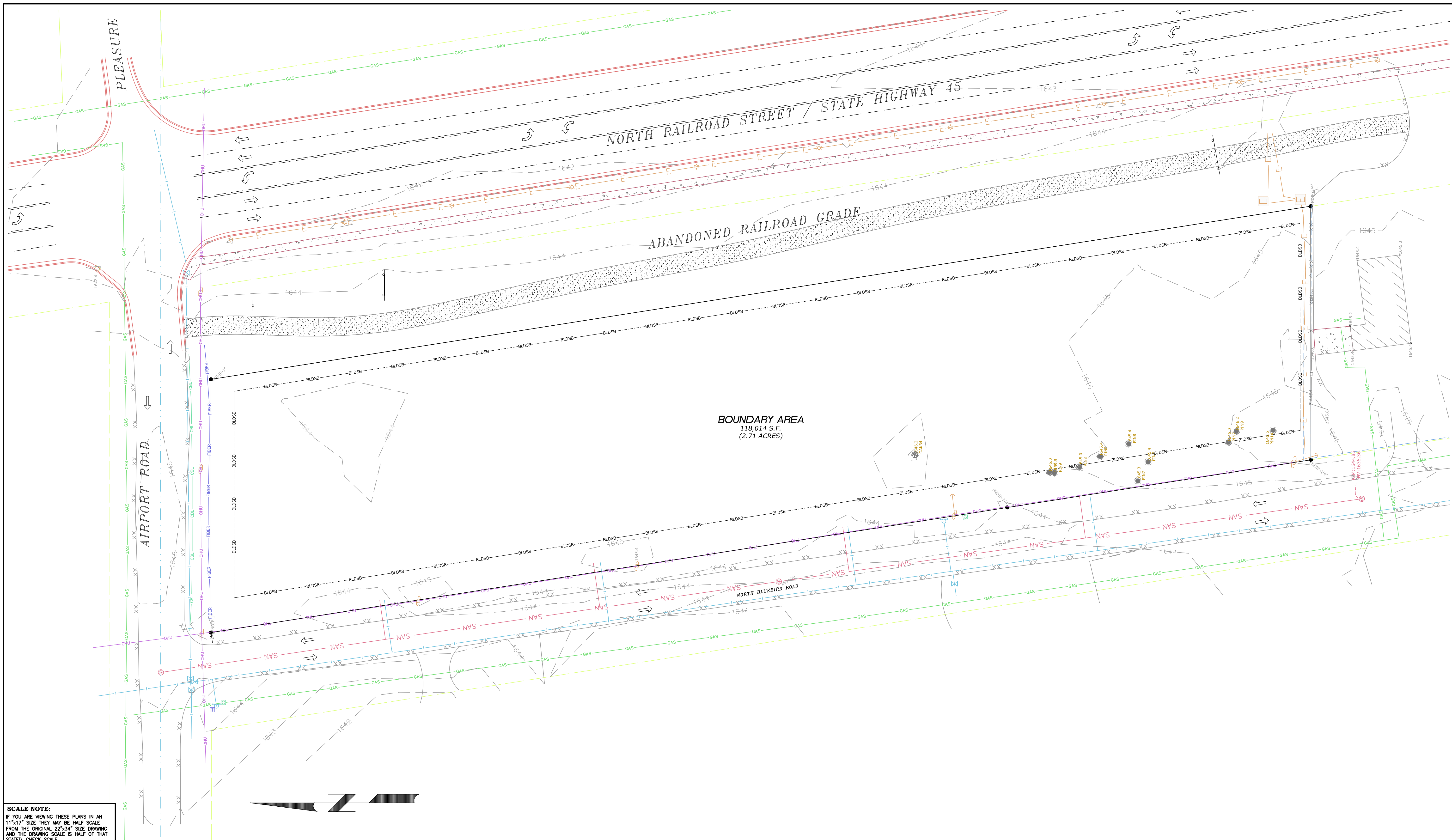
TITLE PAGE: <b>COVER PAGE</b>	
PROJECT:	U-HAUL EAGLE RIVER
LOCATION:	CITY OF EAGLE RIVER VILAS COUNTY, WISCONSIN



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6103 DAWN STREET WESTON, WI. 54476  
PHONE NO.: (715) 241-0947  
EMAIL: [dustin@vreelandassociates.us](mailto:dustin@vreelandassociates.us)  
WEBSITE: [www.vreelandlandsurveying.com](http://www.vreelandlandsurveying.com)  
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PREPARED FOR:	DAVID BARNES
PLAN DATE:	JUNE 30, 2026

DESIGNER: DUSTIN VREELAND
SURVEYED BY: OTHERS
FILE NO.: 26-0159
ORIGINAL PLAN DATE: 5/28/2026
SCALE: <b>NO SCALE</b>
SHEET <b>C1</b>



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STAMP/SIGNATURE:		
REVISIONS		
BY	DATE	DESCRIPTION

**TITLE PAGE:**  
**EXISTING SITE**

**PROJECT:** U-HAUL EAGLE RIVER

**LOCATION:** CITY OF EAGLE RIVER  
 VILAS COUNTY, WISCONSIN

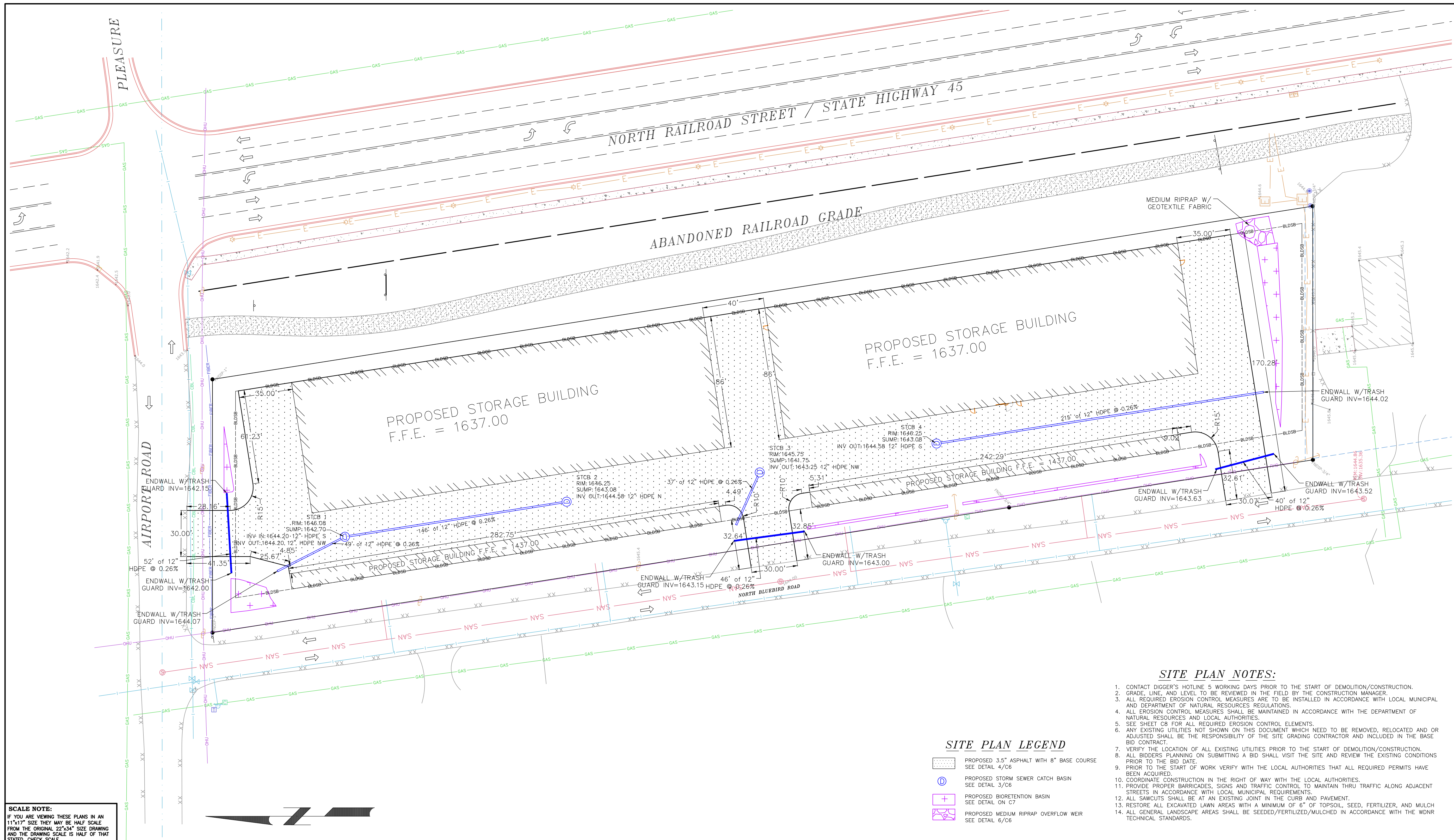


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**PREPARED FOR:** DAVID BARNES

**PLAN DATE:** JUNE 30, 2026

**DESIGNER:** DUSTIN VREELAND  
**SURVEYED BY:** OTHERS  
**FILE NO.:** 26-0159  
**ORIGINAL PLAN DATE:** 5/28/2026  
**SCALE:** 1" = 30'  
**SHEET:** C2



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**TITLE PAGE:**  
**PROPOSED SITE PLAN**

**PROJECT:** U-HAUL EAGLE RIVER

**LOCATION:** CITY OF EAGLE RIVER  
 VILAS COUNTY, WISCONSIN



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**PREPARED FOR:** DAVID BARNES

**PLAN DATE:** JUNE 30, 2026

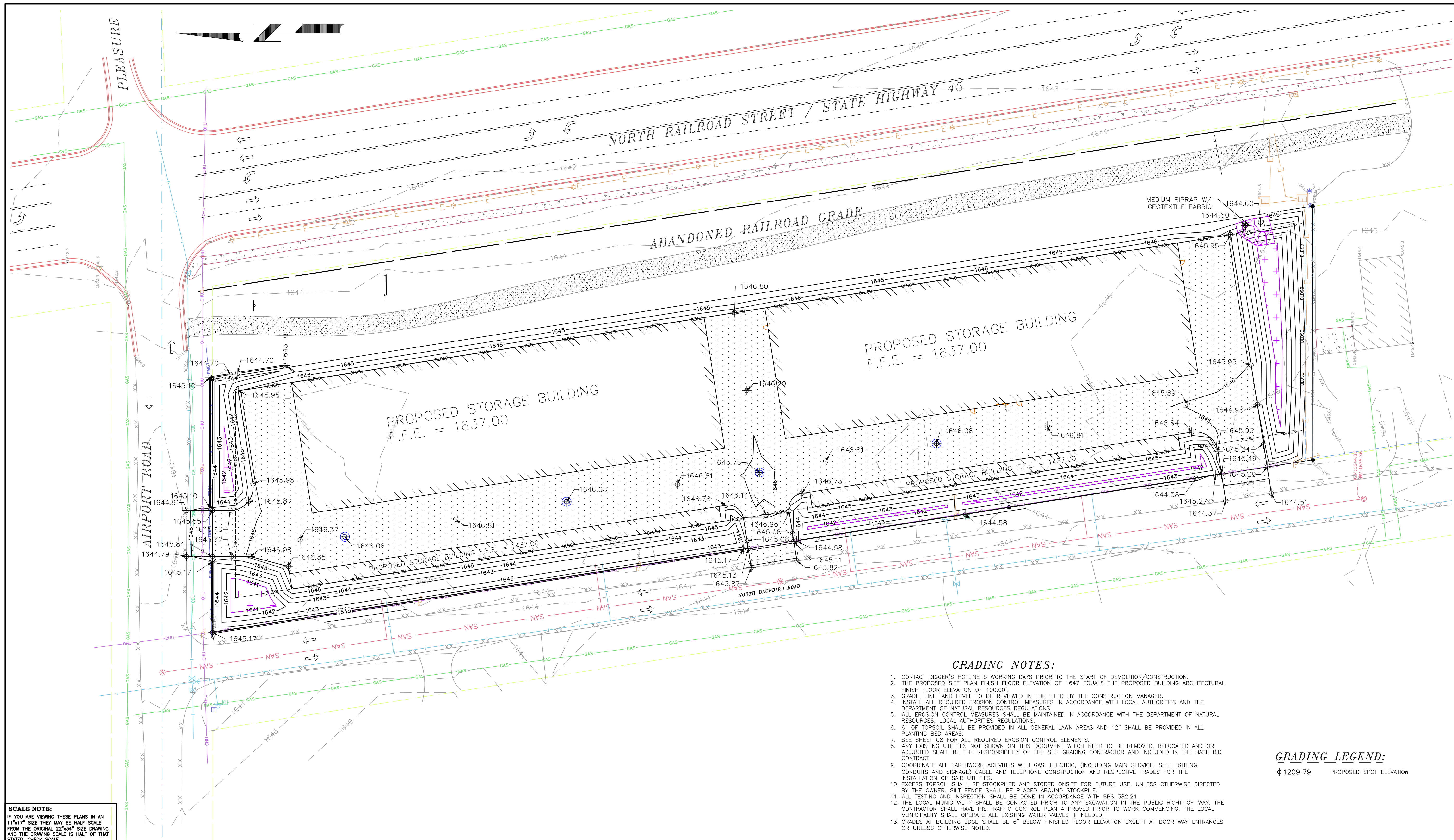
**DESIGNER:** DUSTIN VREELAND  
**SURVEYED BY:** OTHERS  
**FILE NO.:** 26-0159  
**ORIGINAL PLAN DATE:** 5/28/2026  
**SCALE:** 1" = 30'  
**SHEET:** C3

**SITE PLAN NOTES:**

- CONTACT DIGGER'S HOTLINE 5 WORKING DAYS PRIOR TO THE START OF DEMOLITION/CONSTRUCTION.
- GRADE, LINE, AND LEVEL TO BE REVIEWED IN THE FIELD BY THE CONSTRUCTION MANAGER.
- ALL REQUIRED EROSION CONTROL MEASURES ARE TO BE INSTALLED IN ACCORDANCE WITH LOCAL MUNICIPAL AND DEPARTMENT OF NATURAL RESOURCES REGULATIONS.
- ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES AND LOCAL AUTHORITIES.
- SEE SHEET C8 FOR ALL REQUIRED EROSION CONTROL ELEMENTS.
- ANY EXISTING UTILITIES NOT SHOWN ON THIS DOCUMENT WHICH NEED TO BE REMOVED, RELOCATED AND OR ADJUSTED SHALL BE THE RESPONSIBILITY OF THE SITE GRADING CONTRACTOR AND INCLUDED IN THE BASE BID CONTRACT.
- VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO THE START OF DEMOLITION/CONSTRUCTION.
- ALL BIDDERS PLANNING ON SUBMITTING A BID SHALL VISIT THE SITE AND REVIEW THE EXISTING CONDITIONS PRIOR TO THE BID DATE.
- PRIOR TO THE START OF WORK VERIFY WITH THE LOCAL AUTHORITIES THAT ALL REQUIRED PERMITS HAVE BEEN ACQUIRED.
- COORDINATE CONSTRUCTION IN THE RIGHT OF WAY WITH THE LOCAL AUTHORITIES.
- PROVIDE PROPER BARRICADES, SIGNS AND TRAFFIC CONTROL TO MAINTAIN THRU TRAFFIC ALONG ADJACENT STREETS IN ACCORDANCE WITH LOCAL MUNICIPAL REQUIREMENTS.
- ALL SAWCUTS SHALL BE AT AN EXISTING JOINT IN THE CURB AND PAVEMENT.
- RESTORE ALL EXCAVATED LAWN AREAS WITH A MINIMUM OF 6" OF TOPSOIL, SEED, FERTILIZER, AND MULCH
- ALL GENERAL LANDSCAPE AREAS SHALL BE SEEDED/FERTILIZED/MULCHED IN ACCORDANCE WITH THE WDNR TECHNICAL STANDARDS.

**SITE PLAN LEGEND**

- PROPOSED 3.5" ASPHALT WITH 8" BASE COURSE  
SEE DETAIL 4/C6
- PROPOSED STORM SEWER CATCH BASIN  
SEE DETAIL 3/C6
- PROPOSED BIORETENTION BASIN  
SEE DETAIL ON C7
- PROPOSED MEDIUM RIPRAP OVERFLOW WEIR  
SEE DETAIL 6/C6



**GRADING NOTES:**

1. CONTACT DIGGER'S HOTLINE 5 WORKING DAYS PRIOR TO THE START OF DEMOLITION/CONSTRUCTION.
2. THE PROPOSED SITE PLAN FINISH FLOOR ELEVATION OF 1647 EQUALS THE PROPOSED BUILDING ARCHITECTURAL FINISH FLOOR ELEVATION OF 100.00'.
3. GRADE, LINE, AND LEVEL TO BE REVIEWED IN THE FIELD BY THE CONSTRUCTION MANAGER.
4. INSTALL ALL REQUIRED EROSION CONTROL MEASURES IN ACCORDANCE WITH LOCAL AUTHORITIES AND THE DEPARTMENT OF NATURAL RESOURCES REGULATIONS.
5. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES, LOCAL AUTHORITIES REGULATIONS.
6. 6" OF TOPSOIL SHALL BE PROVIDED IN ALL GENERAL LAWN AREAS AND 12" SHALL BE PROVIDED IN ALL PLANTING BED AREAS.
7. SEE SHEET C8 FOR ALL REQUIRED EROSION CONTROL ELEMENTS.
8. ANY EXISTING UTILITIES NOT SHOWN ON THIS DOCUMENT WHICH NEED TO BE REMOVED, RELOCATED AND OR ADJUSTED SHALL BE THE RESPONSIBILITY OF THE SITE GRADING CONTRACTOR AND INCLUDED IN THE BASE BID CONTRACT.
9. COORDINATE ALL EARTHWORK ACTIVITIES WITH GAS, ELECTRIC, (INCLUDING MAIN SERVICE, SITE LIGHTING, CONDUITS AND SIGNAGE) CABLE AND TELEPHONE CONSTRUCTION AND RESPECTIVE TRADES FOR THE INSTALLATION OF SAID UTILITIES.
10. EXCESS TOPSOIL SHALL BE STOCKPILED AND STORED ONSITE FOR FUTURE USE, UNLESS OTHERWISE DIRECTED BY THE OWNER. SILT FENCE SHALL BE PLACED AROUND STOCKPILE.
11. ALL TESTING AND INSPECTION SHALL BE DONE IN ACCORDANCE WITH SPS 382.21.
12. THE LOCAL MUNICIPALITY SHALL BE CONTACTED PRIOR TO ANY EXCAVATION IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL HAVE HIS TRAFFIC CONTROL PLAN APPROVED PRIOR TO WORK COMMENCING. THE LOCAL MUNICIPALITY SHALL OPERATE ALL EXISTING WATER VALVES IF NEEDED.
13. GRADES AT BUILDING EDGE SHALL BE 6" BELOW FINISHED FLOOR ELEVATION EXCEPT AT DOOR WAY ENTRANCES OR UNLESS OTHERWISE NOTED.

**GRADING LEGEND:**

⊕1209.79 PROPOSED SPOT ELEVATION

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BY	DATE	DESCRIPTION

**TITLE PAGE:**  
**PROPOSED GRADING PLAN**

**PROJECT:** U-HAUL EAGLE RIVER

**LOCATION:** CITY OF EAGLE RIVER  
VILAS COUNTY, WISCONSIN

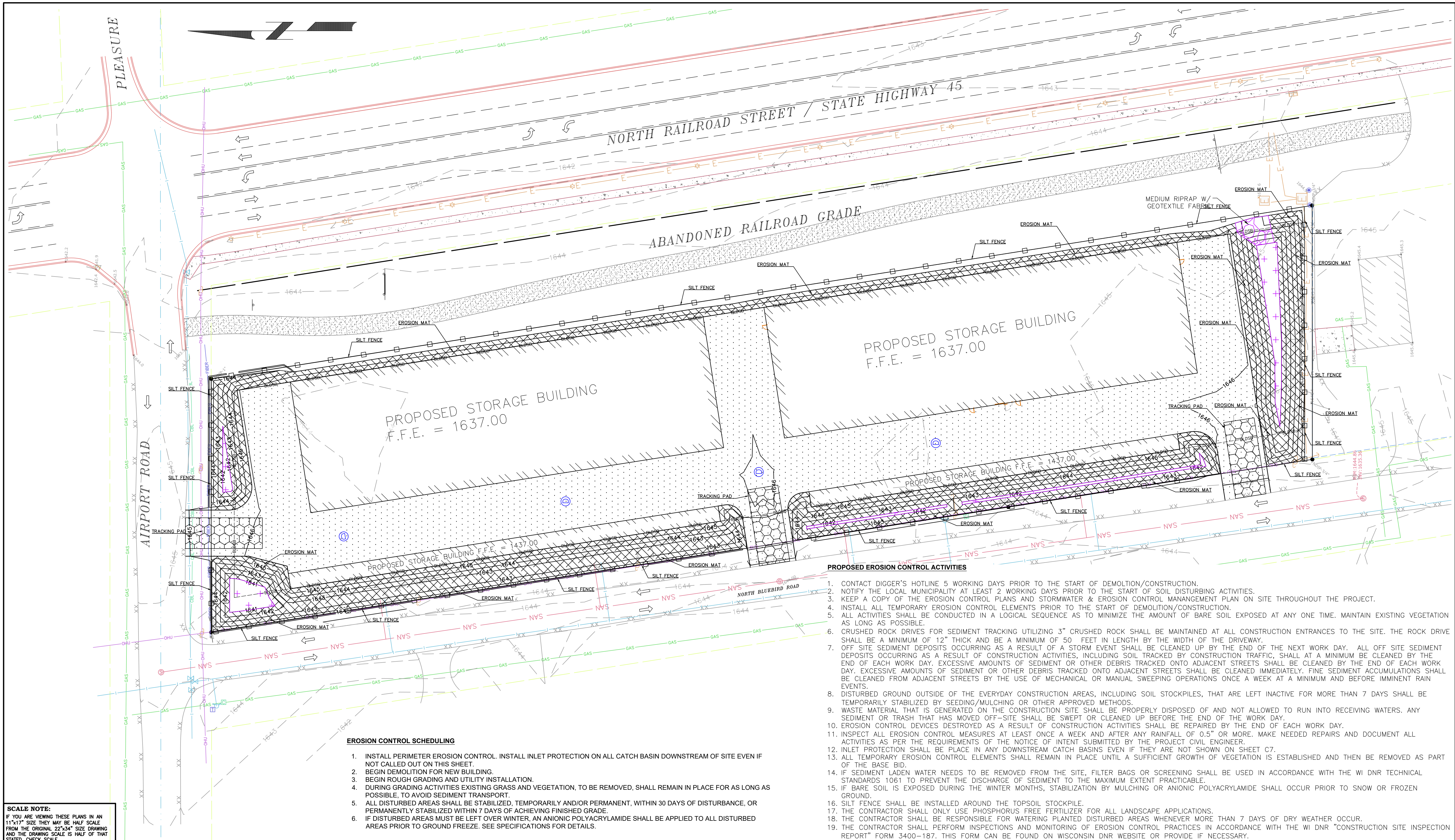


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**PREPARED FOR:** DAVID BARNES

**PLAN DATE:** JUNE 30, 2026

**DESIGNER:** DUSTIN VREELAND  
**SURVEYED BY:** OTHERS  
**FILE NO.:** 26-0159  
**ORIGINAL PLAN DATE:** 5/28/2026  
**SCALE:** 1" = 30'  
**SHEET:** C4



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**EROSION CONTROL SCHEDULING**

1. INSTALL PERIMETER EROSION CONTROL. INSTALL INLET PROTECTION ON ALL CATCH BASIN DOWNSTREAM OF SITE EVEN IF NOT CALLED OUT ON THIS SHEET.
2. BEGIN DEMOLITION FOR NEW BUILDING.
3. BEGIN ROUGH GRADING AND UTILITY INSTALLATION.
4. DURING GRADING ACTIVITIES EXISTING GRASS AND VEGETATION, TO BE REMOVED, SHALL REMAIN IN PLACE FOR AS LONG AS POSSIBLE, TO AVOID SEDIMENT TRANSPORT.
5. ALL DISTURBED AREAS SHALL BE STABILIZED, TEMPORARILY AND/OR PERMANENT, WITHIN 30 DAYS OF DISTURBANCE, OR PERMANENTLY STABILIZED WITHIN 7 DAYS OF ACHIEVING FINISHED GRADE.
6. IF DISTURBED AREAS MUST BE LEFT OVER WINTER, AN ANIONIC POLYACRYLAMIDE SHALL BE APPLIED TO ALL DISTURBED AREAS PRIOR TO GROUND FREEZE. SEE SPECIFICATIONS FOR DETAILS.

**PROPOSED EROSION CONTROL ACTIVITIES**

1. CONTACT DIGGER'S HOTLINE 5 WORKING DAYS PRIOR TO THE START OF DEMOLITION/CONSTRUCTION.
2. NOTIFY THE LOCAL MUNICIPALITY AT LEAST 2 WORKING DAYS PRIOR TO THE START OF SOIL DISTURBING ACTIVITIES.
3. KEEP A COPY OF THE EROSION CONTROL PLANS AND STORMWATER & EROSION CONTROL MANAGEMENT PLAN ON SITE THROUGHOUT THE PROJECT.
4. INSTALL ALL TEMPORARY EROSION CONTROL ELEMENTS PRIOR TO THE START OF DEMOLITION/CONSTRUCTION.
5. ALL ACTIVITIES SHALL BE CONDUCTED IN A LOGICAL SEQUENCE AS TO MINIMIZE THE AMOUNT OF BARE SOIL EXPOSED AT ANY ONE TIME. MAINTAIN EXISTING VEGETATION AS LONG AS POSSIBLE.
6. CRUSHED ROCK DRIVES FOR SEDIMENT TRACKING UTILIZING 3" CRUSHED ROCK SHALL BE MAINTAINED AT ALL CONSTRUCTION ENTRANCES TO THE SITE. THE ROCK DRIVE SHALL BE A MINIMUM OF 12" THICK AND BE A MINIMUM OF 50 FEET IN LENGTH BY THE WIDTH OF THE DRIVEWAY.
7. OFF SITE SEDIMENT DEPOSITS OCCURRING AS A RESULT OF A STORM EVENT SHALL BE CLEANED UP BY THE END OF THE NEXT WORK DAY. ALL OFF SITE SEDIMENT DEPOSITS OCCURRING AS A RESULT OF CONSTRUCTION ACTIVITIES, INCLUDING SOIL TRACKED BY CONSTRUCTION TRAFFIC, SHALL AT A MINIMUM BE CLEANED BY THE END OF EACH WORK DAY. EXCESSIVE AMOUNTS OF SEDIMENT OR OTHER DEBRIS TRACKED ONTO ADJACENT STREETS SHALL BE CLEANED BY THE END OF EACH WORK DAY. EXCESSIVE AMOUNTS OF SEDIMENT OR OTHER DEBRIS TRACKED ONTO ADJACENT STREETS SHALL BE CLEANED IMMEDIATELY. FINE SEDIMENT ACCUMULATIONS SHALL BE CLEANED FROM ADJACENT STREETS BY THE USE OF MECHANICAL OR MANUAL SWEEPING OPERATIONS ONCE A WEEK AT A MINIMUM AND BEFORE IMMINENT RAIN EVENTS.
8. DISTURBED GROUND OUTSIDE OF THE EVERYDAY CONSTRUCTION AREAS, INCLUDING SOIL STOCKPILES, THAT ARE LEFT INACTIVE FOR MORE THAN 7 DAYS SHALL BE TEMPORARILY STABILIZED BY SEEDING/MULCHING OR OTHER APPROVED METHODS.
9. WASTE MATERIAL THAT IS GENERATED ON THE CONSTRUCTION SITE SHALL BE PROPERLY DISPOSED OF AND NOT ALLOWED TO RUN INTO RECEIVING WATERS. ANY SEDIMENT OR TRASH THAT HAS MOVED OFF-SITE SHALL BE SWEEPED OR CLEANED UP BEFORE THE END OF THE WORK DAY.
10. EROSION CONTROL DEVICES DESTROYED AS A RESULT OF CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY THE END OF EACH WORK DAY.
11. INSPECT ALL EROSION CONTROL MEASURES AT LEAST ONCE A WEEK AND AFTER ANY RAINFALL OF 0.5" OR MORE. MAKE NEEDED REPAIRS AND DOCUMENT ALL ACTIVITIES AS PER THE REQUIREMENTS OF THE NOTICE OF INTENT SUBMITTED BY THE PROJECT CIVIL ENGINEER.
12. INLET PROTECTION SHALL BE PLACE IN ANY DOWNSTREAM CATCH BASINS EVEN IF THEY ARE NOT SHOWN ON SHEET C7.
13. ALL TEMPORARY EROSION CONTROL ELEMENTS SHALL REMAIN IN PLACE UNTIL A SUFFICIENT GROWTH OF VEGETATION IS ESTABLISHED AND THEN BE REMOVED AS PART OF THE BASE BID.
14. IF SEDIMENT LADEN WATER NEEDS TO BE REMOVED FROM THE SITE, FILTER BAGS OR SCREENING SHALL BE USED IN ACCORDANCE WITH THE WI DNR TECHNICAL STANDARDS 1061 TO PREVENT THE DISCHARGE OF SEDIMENT TO THE MAXIMUM EXTENT PRACTICABLE.
15. IF BARE SOIL IS EXPOSED DURING THE WINTER MONTHS, STABILIZATION BY MULCHING OR ANIONIC POLYACRYLAMIDE SHALL OCCUR PRIOR TO SNOW OR FROZEN GROUND.
16. SILT FENCE SHALL BE INSTALLED AROUND THE TOPSOIL STOCKPILE.
17. THE CONTRACTOR SHALL ONLY USE PHOSPHORUS FREE FERTILIZER FOR ALL LANDSCAPE APPLICATIONS.
18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING PLANTED DISTURBED AREAS WHENEVER MORE THAN 7 DAYS OF DRY WEATHER OCCUR.
19. THE CONTRACTOR SHALL PERFORM INSPECTIONS AND MONITORING OF EROSION CONTROL PRACTICES IN ACCORDANCE WITH THE WI DNR "CONSTRUCTION SITE INSPECTION REPORT" FORM 3400-187. THIS FORM CAN BE FOUND ON WISCONSIN DNR WEBSITE OR PROVIDE IF NECESSARY.

**STAMP/SIGNATURE:**

REVISIONS		
BY	DATE	DESCRIPTION

**TITLE PAGE:** *PROPOSED EROSION CONTROL PLAN*

**PROJECT:** U-HAUL EAGLE RIVER

**LOCATION:** CITY OF EAGLE RIVER  
VILAS COUNTY, WISCONSIN

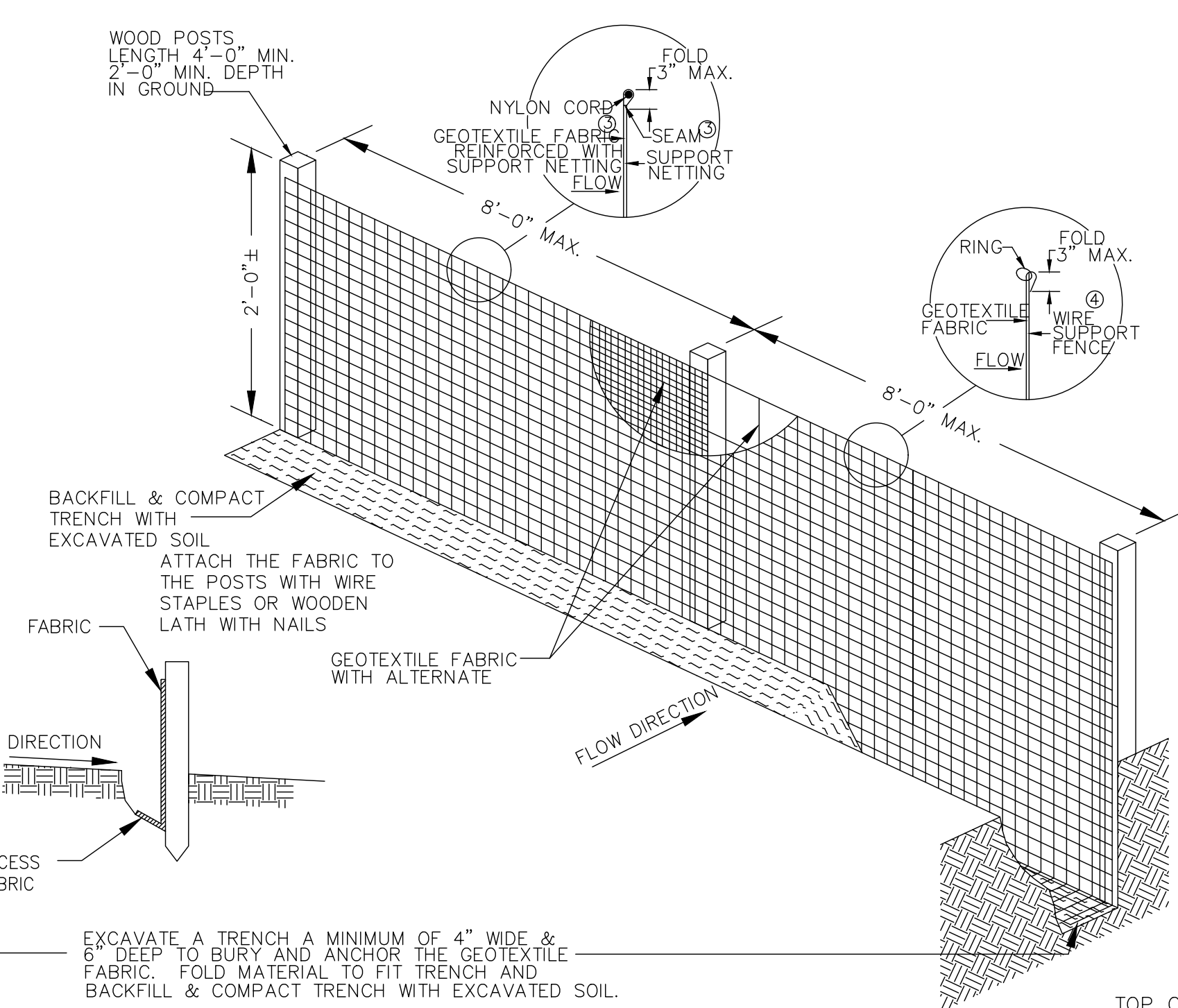
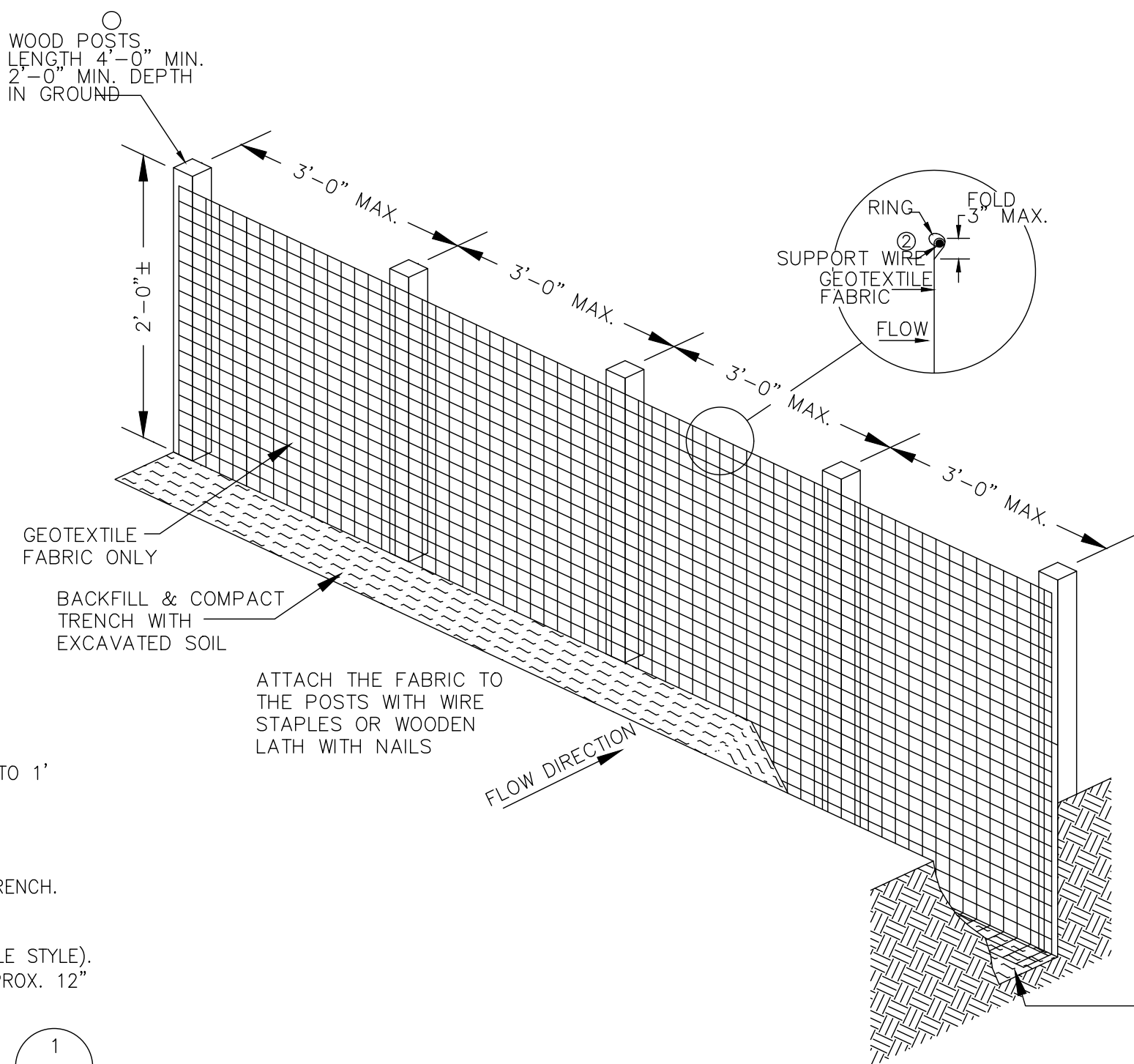
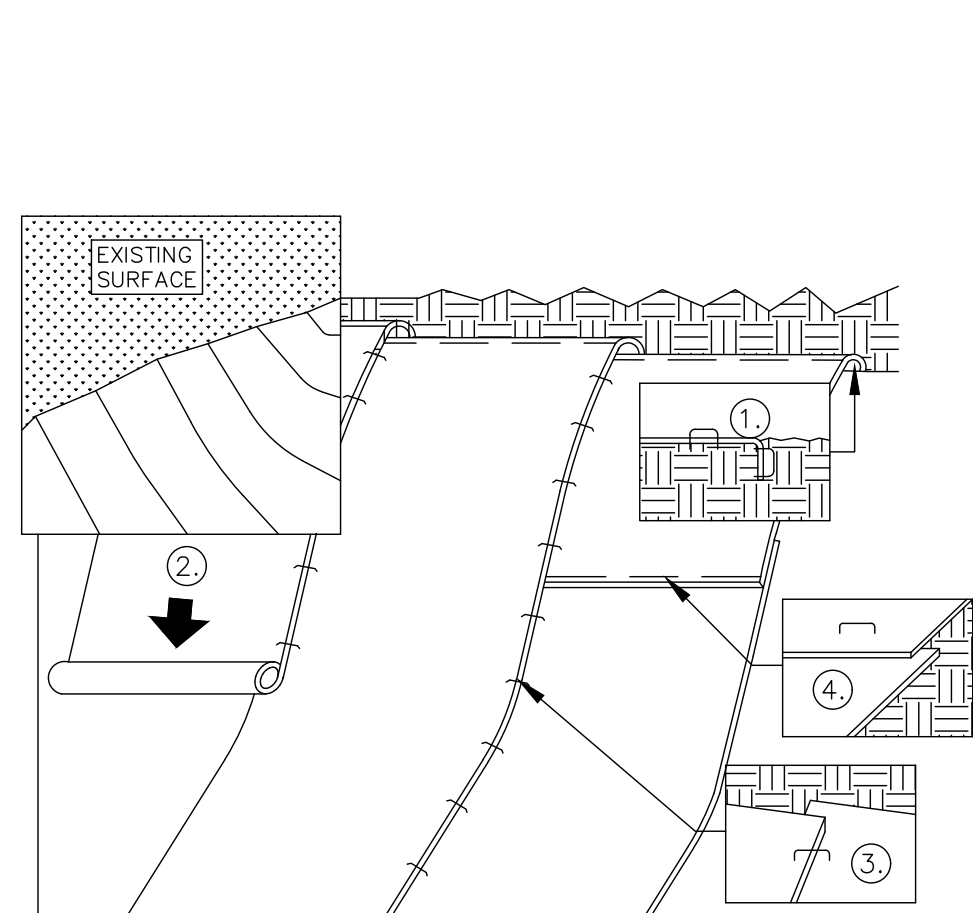


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**PREPARED FOR:** *DAVID BARNES*

**PLAN DATE:** *JUNE 30, 2026*

**DESIGNER:** DUSTIN VREELAND  
**SURVEYED BY:** OTHERS  
**FILE NO.:** 26-0159  
**ORIGINAL PLAN DATE:** 5/28/2026  
**SCALE:** 1" = 30'  
**SHEET:** C5



- GENERAL NOTES:**
- DETAIL OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.
- WHEN POSSIBLE THE SILT FENCE SHOULD BE CONSTRUCTED IN AN ARC OR HORSESHOE SHAPE, WITH THE ENDS POINTING UPSLOPE TO MAXIMIZE BOTH STRENGTH AND EFFECTIVENESS.
- ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOIL CONDITIONS.
- ALTERNATES "A" & "B" ARE EQUAL AND EITHER MAY BE USED.
- ATTACH THE FABRIC TO THE POSTS WITH WIRE STAPLES OR WOODEN LATH AND NAILS.
- STEEL POSTS SHALL BE A STUDDED "TEE" OR "U" TYPE WITH A MINIMUM WEIGHT OF 1.28 LBS/LINEAL FOOT (WITHOUT ANCHOR). FIN ANCHORS SUFFICIENT TO RESIST POST MOVEMENT ARE REQUIRED. WOOD POSTS SHALL BE A MINIMUM SIZE OF 4" DIA. OR 1 1/2" X 3 1/2" EXCEPT WOOD POSTS FOR GEOTEXTILE FABRIC REINFORCED WITH NETTING SHALL BE MINIMUM SIZE OF 1 1/8" X 1 1/8" OAK OR HICKORY.
  - MINIMUM 14 GAGE WIRE REQUIRED, FOLD FABRIC 3" OVER THE WIRE AND STAPLE OR PLACE WIRE RINGS ON 12" C-C.
  - GEOTEXTILE FABRIC SHALL BE REINFORCED WITH AN INDUSTRIAL POLYPROPYLENE NETTING WITH A MAXIMUM MESH SPACING OF 3/4" OR EQUAL. A HEAVY DUTY NYLON TOP SUPPORT CORD OR EQUIVALENT IS REQUIRED.
  - WIRE SUPPORT FENCE SHALL BE 14 GAGE MINIMUM WOVEN WIRE WITH A MAXIMUM MESH SPACING OF 6". SECURE TOP OF GEOTEXTILE FABRIC TO TOP OF FENCE WITH STAPLES OR WIRE RINGS AT 12" C-C.
  - LENGTH NOT LESS THAN THE CIRCUMFERENCE OF THE LARGEST TIRE ON THE CONSTRUCTION EQUIPMENT, PLUS 5 FEET.

NOTES:  
EROSION MAT WILL BE INSTALLED AT ANY SLOPE AT OR GREATER THAN 5' HORIZONTAL TO 1' VERTICAL.

INSTALLATION NOTES:

- BEGIN AT THE TOP OF THE SLOPE. ANCHOR THE MAT IN A 6" WIDE X 6" DEEP TRENCH. BACKFILL AND COMPACT THE TRENCH.
- ROLL THE MAT DOWN THE SLOPE IN DIRECTION OF FLOW.
- OVERLAP PARALLEL EROSION MAT APPROX. 2". PLACE MAT END OVER END (SHINGLE STYLE).
- OVERLAP END TO END APPROX. 6" AND STAPLE OVERLAP AREA WITH STAPLES APPROX. 12" APART.

**EROSION MAT**

1  
C6

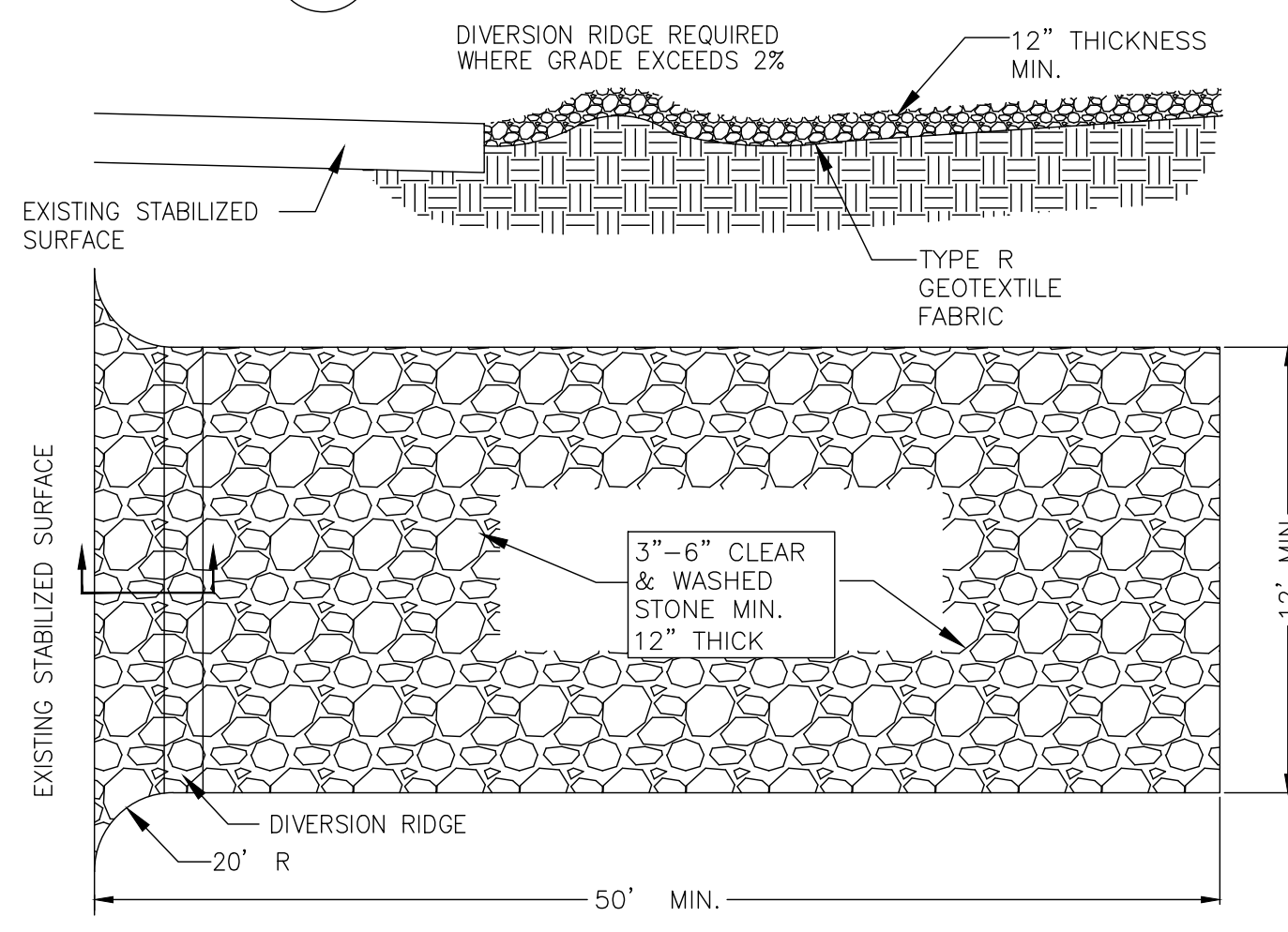
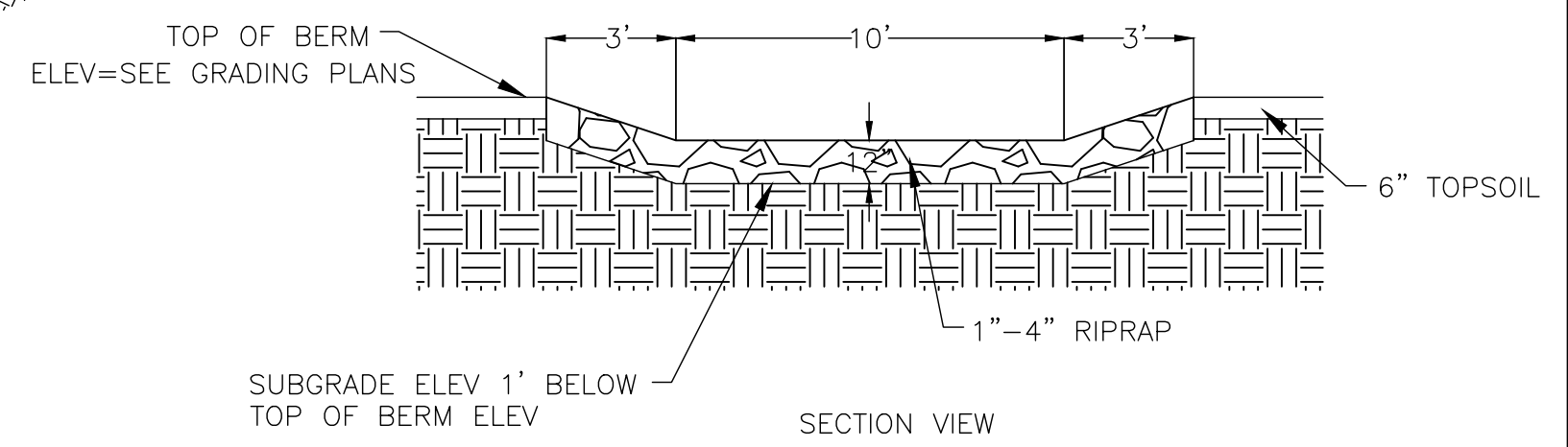
**ALTERNATE "A"**

**TRENCH DETAIL**

**ALTERNATE "B"**

**SILT FENCE**

2  
C6



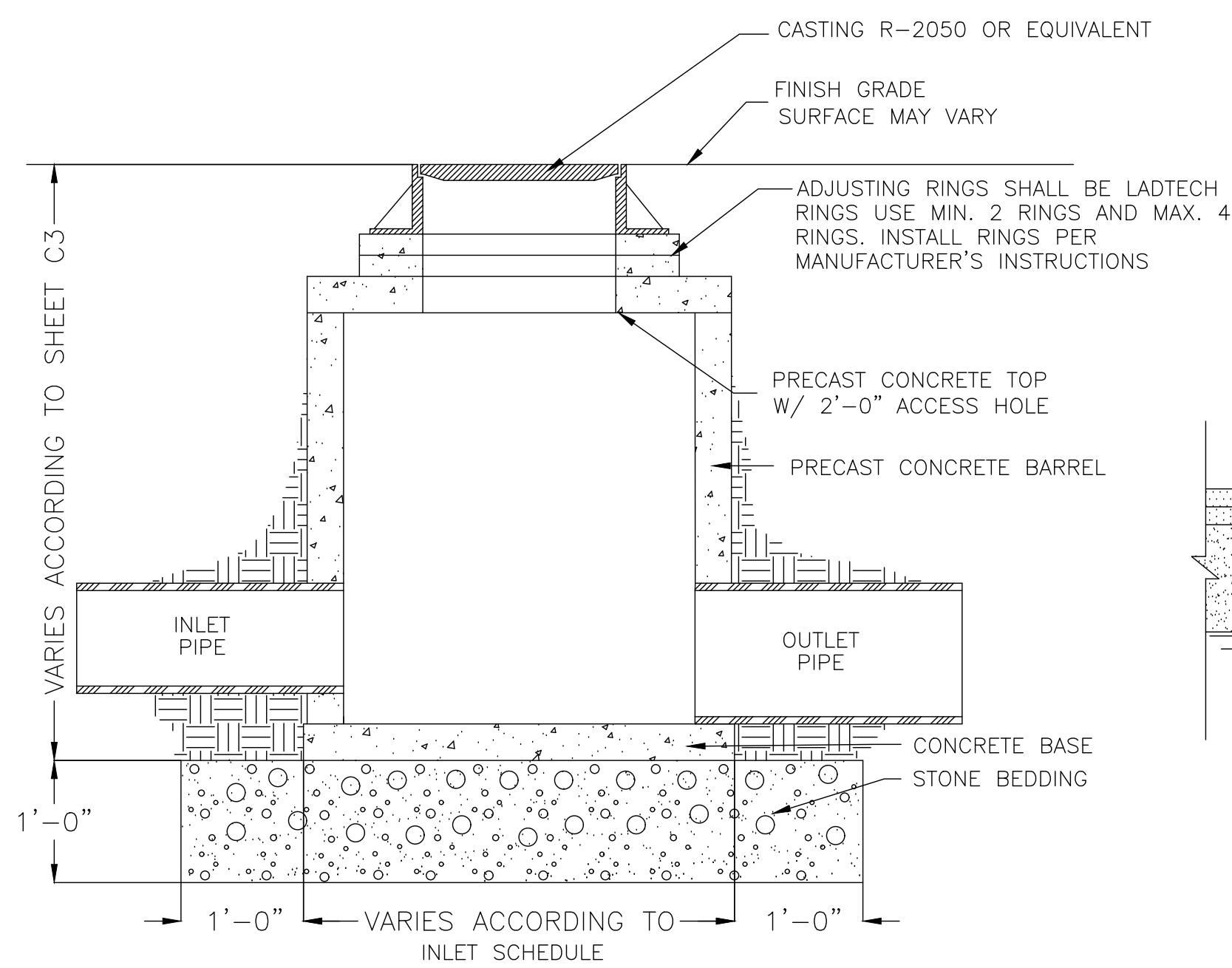
- NOTES:
- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING. REPAIR AND/OR CLEANOUT ANY MEASURES USED TO TRAP SEDIMENT.
  - WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
  - WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
  - IF TRACKING PAD IS FILLED WITH SEDIMENT REMOVE AND REPLACE AGGREGATE.
  - IF A 50' PAD LENGTH IS NOT POSSIBLE DUE TO SITE GEOMETRY, INSTALL MAXIMUM LENGTH PRACTICABLE.

**TRACKING PAD**

5  
C6

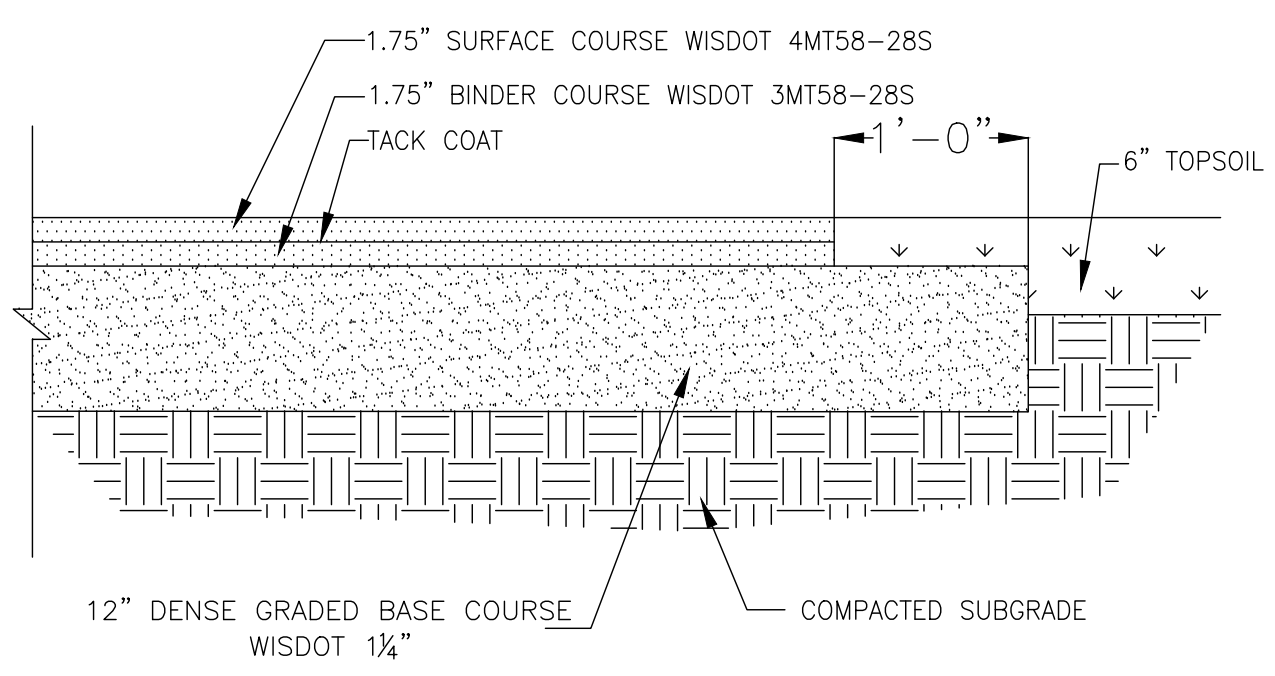
**RIPRAP OVERFLOW WEIR**

6  
C6



**CONCRETE STORM MANHOLE/INLET**

3  
C6



**3.5" ASPHALT PAVEMENT**

4  
C6

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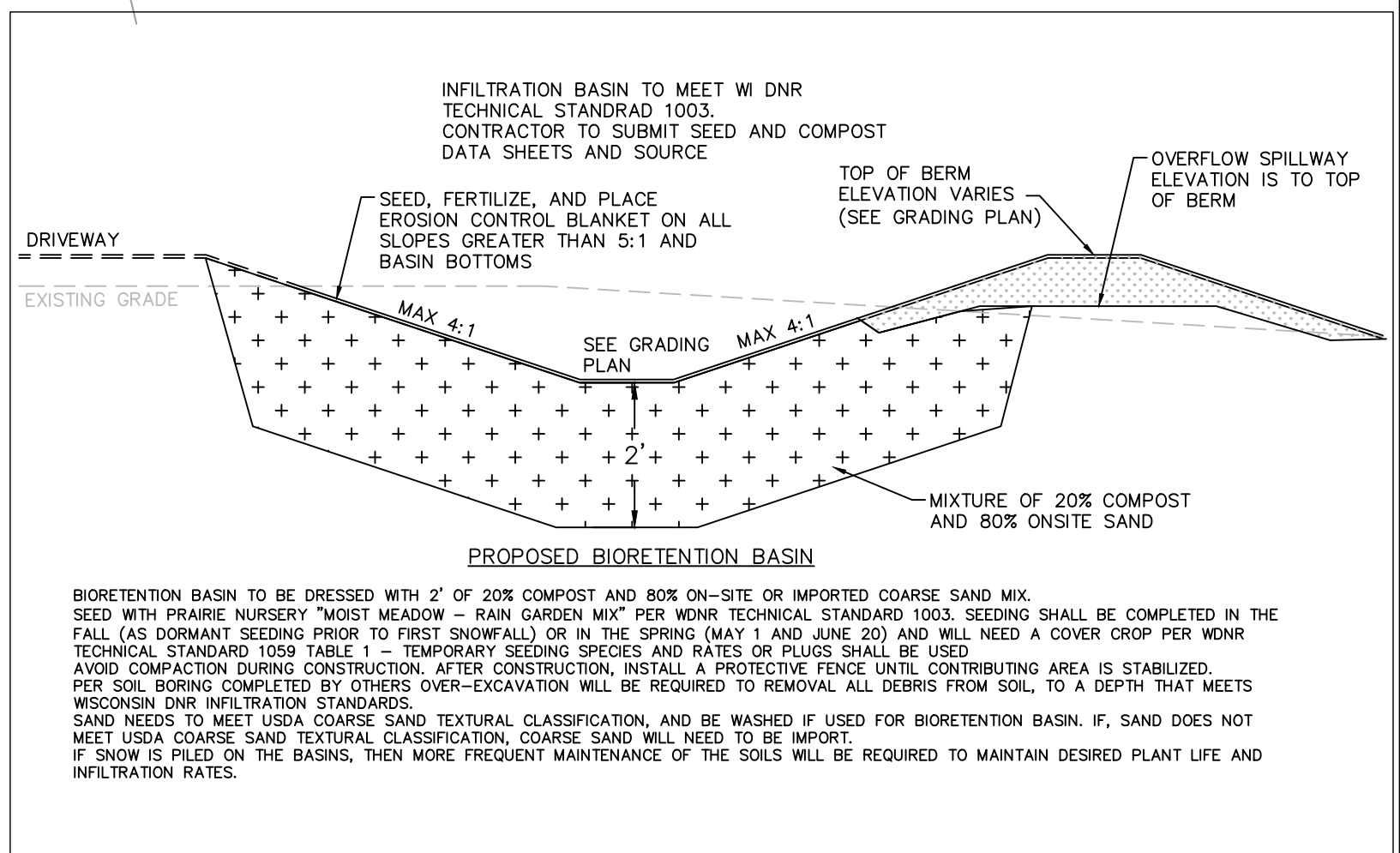
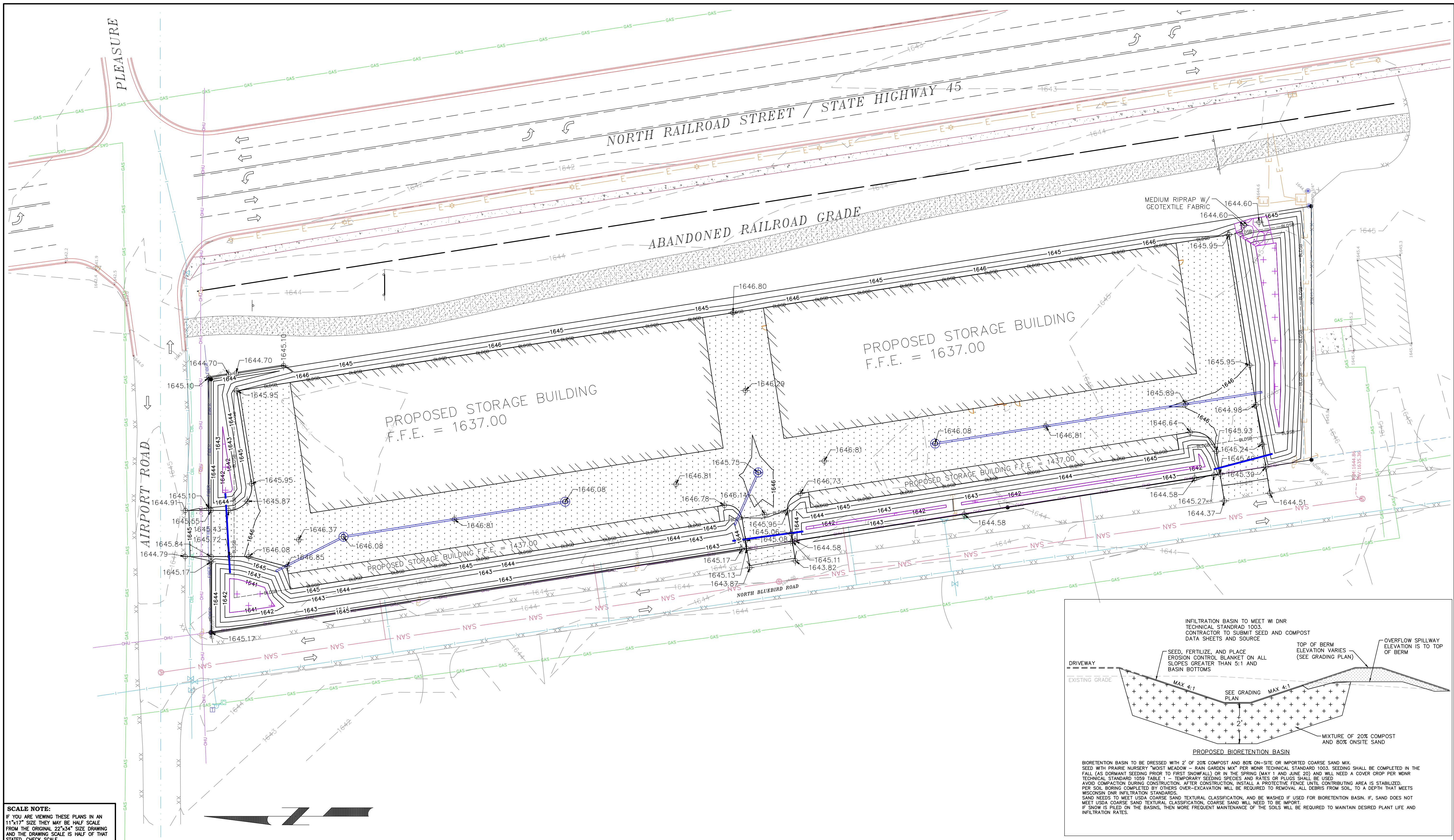
STAMP/SIGNATURE:		REVISIONS			TITLE PAGE:
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<b>SITE DETAILS</b>	
PROJECT:	U-HAUL EAGLE RIVER
LOCATION:	CITY OF EAGLE RIVER VILAS COUNTY, WISCONSIN



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PREPARED FOR:	DAVID BARNES	DESIGNER: DUSTIN VREELAND
PLAN DATE:	JUNE 30, 2026	SURVEYED BY: OTHERS
		FILE NO.: 26-0159
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**TITLE PAGE:** *PROPOSED STORMWATER PLAN & DETAIL*

**PROJECT:** U-HAUL EAGLE RIVER

**LOCATION:** CITY OF EAGLE RIVER  
VILAS COUNTY, WISCONSIN

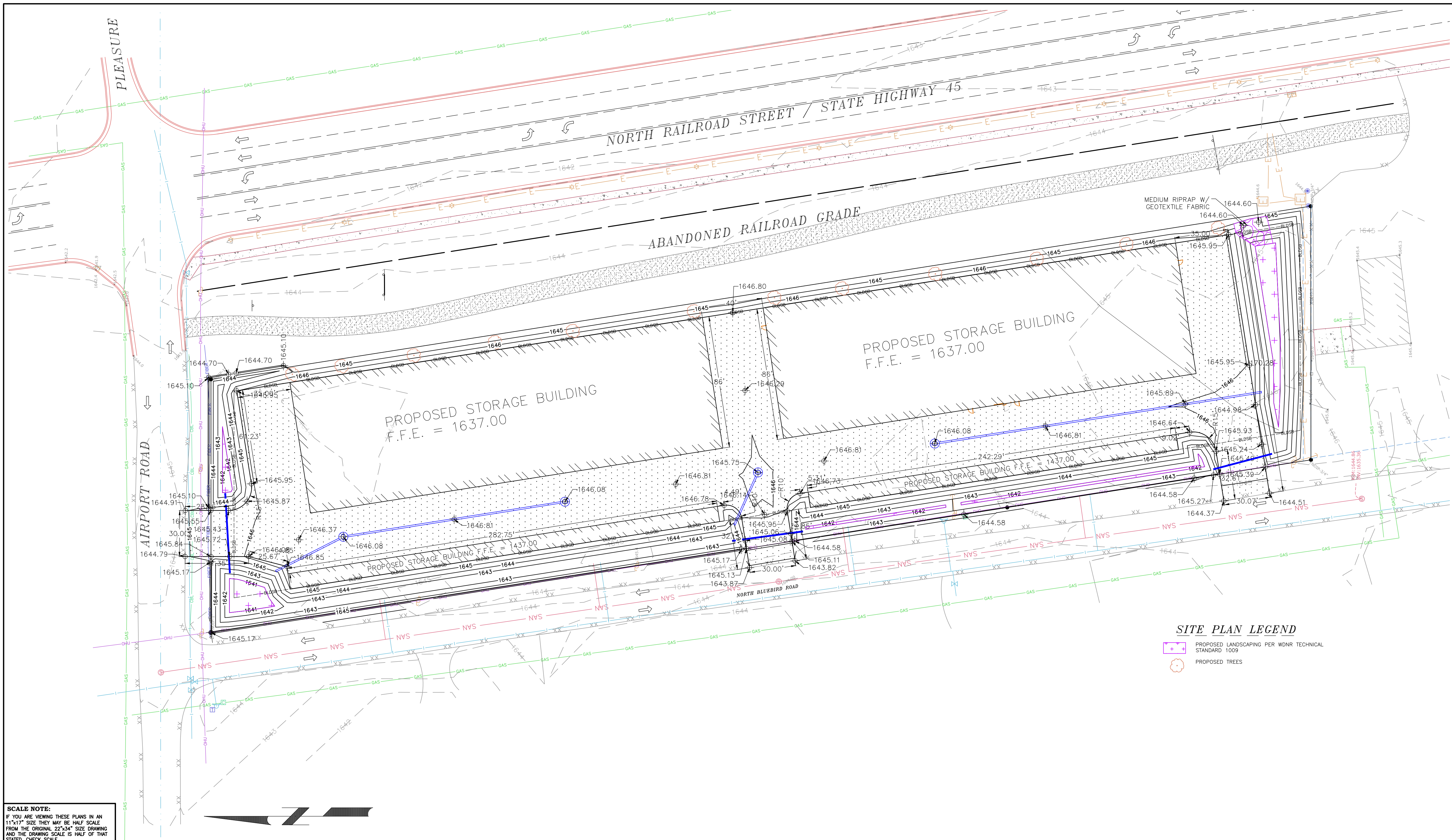


**VREELAND ASSOCIATES LAND SURVEYORS & ENGINEERS**  
6103 DAWN STREET WESTON, WI. 54476  
PHONE NO.: (715) 241-0947  
EMAIL: [dustin@vreelandassociates.us](mailto:dustin@vreelandassociates.us)  
WEBSITE: [www.vreelandlandsurveying.com](http://www.vreelandlandsurveying.com)  
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**PREPARED FOR:** *DAVID BARNES*

**PLAN DATE:** *JUNE 30, 2026*

**DESIGNER:** DUSTIN VREELAND  
**SURVEYED BY:** OTHERS  
**FILE NO.:** 26-0159  
**ORIGINAL PLAN DATE:** 5/28/2026  
**SCALE:** 1" = 30'  
**SHEET:** C7



**SITE PLAN LEGEND**  
 [Purple dashed line] PROPOSED LANDSCAPING PER WDNR TECHNICAL STANDARD 1009  
 [Orange circle] PROPOSED TREES

**SCALE NOTE:**  
 IF YOU ARE VIEWING THESE PLANS IN AN 11"x17" SIZE THEY MAY BE HALF SCALE FROM THE ORIGINAL 22"x34" SIZE DRAWING AND THE DRAWING SCALE IS HALF OF THAT STATED. CHECK SCALE.

**STAMP/SIGNATURE:**

REVISIONS		
BY	DATE	DESCRIPTION

**TITLE PAGE:**  
**PROPOSED LANDSCAPING PLAN**

**PROJECT:** U-HAUL EAGLE RIVER

**LOCATION:** CITY OF EAGLE RIVER  
 VILAS COUNTY, WISCONSIN



**VREELAND ASSOCIATES LAND SURVEYORS & ENGINEERS**  
 6103 DAWN STREET WESTON, WI. 54476  
 PHONE NO.: (715) 241-0947  
 EMAIL: [dustin@vreelandassociates.us](mailto:dustin@vreelandassociates.us)  
 WEBSITE: [www.vreelandlandsurveying.com](http://www.vreelandlandsurveying.com)  
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**SURVEYED BY:** OTHERS  
**FILE NO.:** 26-0159  
**ORIGINAL PLAN DATE:** 5/28/2026  
**SCALE:** 1" = 30'  
**SHEET:** C8

# **Erosion Control/Storm Water Management Maintenance/Operation Plan**

For:  
**U-Haul Eagle River**

Prepared By:



**6103 Dawn Street  
Weston, WI 54476**

Located in:  
**City of Eagle River  
Vilas County, WI**

Dated:  
**June 30, 2026**

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U-Haul Eagle River  
City of Eagle River, Wisconsin

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**Appendices**

- A.** Location Map
- B.** Geotechnical Data
- C.** Existing Drainage Map and Calculations
- D.** Proposed Drainage Map and Calculations
- E.** Soil Loss and Sediment Discharge Map and Calculations
- F.** State of Wisconsin Construction Site Inspection Report and Plan of Operation

**Erosion Control/Storm Water Management  
Maintenance and Operation Plan  
for  
U-Haul Eagle River**

**1.0 BACKGROUND & GENERAL INFORMATION**

**1.1 Introduction and Project Location**

Vreeland Associates has been retained by David Barnes to perform storm water management calculations and prepare a storm water management plan per NR216.47 and NR151, for the proposed shed buildings project. The project site is located at 1100 N Railroad Street Eagle River, WI. The project is located in part of the Northwest ¼ of the Northwest ¼ of Section 28, Township 40 North, Range 10 East, City of Eagle River, Vilas County, Wisconsin.

**1.2 Project Description**

The proposed project consists of developing proposed 2.7 acres for indoor storage and parking lot. The site will be graded for storm water management best management practices. (See Location Plan in **Appendix A**).

**1.3 Project Requirements**

The project area includes approximately 2.7 acres that will be disturbed. Since the disturbed area exceeds one acre, a Wisconsin Department of Natural Resources Notice of Intent application/permit (NOI-WPDES per WDNR) is required.

The storm water management plan for this project is developed in accordance with the NOI-WPDES requirements and NR216.47/NR151.121 for new development site.

**1.4 General Project Data**

Soils

Based on existing soil mapping data from the Natural Resources Conservation Service (NRCS), the existing subgrade soils are expected to be Rubicon sand, which are classified as hydrologic class "A". Stormwater test pits were performed by Partners. The borings found to topsoil overlaying fill sand and sand. These borings are consistent with NRCS. The determined limiting factor for stormwater infiltration was sand layer with an infiltration rate of 3.6 in/hr. The geotechnical data containing soil hydrologic classes are attached in **Appendix B**.

Groundwater

At the site of the proposed infiltration groundwater was encountered. Groundwater will be well below the proposed project and will not be disturbed.

Wetlands

According to the Wisconsin DNR Wetlands and Wetlands Indicator map, there are not identified wetlands within the project limits.

## **2.0 EXISTING DRAINAGE CONDITIONS**

### **2.1 Existing Drainage Area**

The existing site consists of one sub-basin (E1). Sub-basin E1 contains grass. E1 generally flows to the northeast of the property. An existing drainage map can be found in **Appendix C**.

### **2.2 Existing Drainage Calculation Summary**

Existing drainage calculations utilize TR-55 methodology and results for a 1, 2, 10 and 100-year design storm are included. Existing drainage calculations are provided in **Appendix C**.

### **2.3 Existing Off-Site Drainage**

Existing off-site storm water runoff draining onto the project site has been taken into consideration for the existing or proposed drainage evaluation.

## **3.0 PROPOSED DRAINAGE CONDITIONS**

### **3.1 Proposed Drainage Areas**

The proposed site is divided into six sub-basins (D1-D5, 1S). 1S consists of runoff from the grass area. Runoff from D1 consists of parking lot, building, and grass. Runoff from D1 is conveyed to the north and will runoff into P1 for treatment and rate control. D2 consists of the parking lot, building and grass area. Runoff from D2 is conveyed to the west into P2 for treatment and rate control. D3 consists of runoff from the proposed buildings, parking lot and lawn area. Runoff from D3 is conveyed into the proposed stormwater detention basin 3P for treatment and rate control. D4 consists of runoff from the proposed buildings, parking lot and lawn area. Runoff from D4 is conveyed into the proposed stormwater detention basin 3P for treatment and rate control. D5 consists of runoff from the proposed buildings, parking lot and lawn area. Runoff from D5 is conveyed into the proposed stormwater detention basin 3P for treatment and rate control. A proposed drainage area map is provided in **Appendix C**.

### **3.2 Post-Development Runoff Summary**

Proposed drainage calculations utilize TR-55 methodology and results for a 1, 2, 10 and 100-year design storm have been attached. A proposed drainage area map and calculations are provided in **Appendix D**.

### **3.3 Proposed Detention Areas**

There are five proposed treatment and rate control devices for storm water management. Pond P1 is a stormwater infiltration basin that will be used for infiltration purposes, total suspended solids removal and peak discharge control. Infiltration basin (1P) is located on the northeast corner of the proposed project. The basin will have a culvert to flow into P2 to control the depth of water. An emergency overflow has been included for extreme storm events. Pond P2 is a stormwater infiltration basin that will be used for infiltration purposes, total suspended solids removal and peak discharge control. Infiltration basin (P2) is located on the northwest side of the proposed project. The basin will have a culvert to flow into P3 to control the depth of water. An emergency overflow has been included for extreme storm events. Pond P3 is a stormwater infiltration basin that will be used for infiltration purposes, total suspended solids removal and peak discharge control. Infiltration basin (P3) is located on the west side of the proposed project. The basin will have a broadcrested weir into P4 to control the depth of water. An emergency overflow has been included for extreme storm events. Pond P4 is a stormwater infiltration basin that will be used for infiltration purposes, total suspended solids removal and peak discharge control. Infiltration basin (4P) is located on the west side of the proposed project. The basin will have a culvert to flow into P5 to control the depth of water. An emergency overflow has been included for extreme storm

events. Pond P5 is a stormwater infiltration basin that will be used for infiltration purposes, total suspended solids removal and peak discharge control. Infiltration basin (P5) is located on the south side of the proposed project. An emergency overflow has been included for extreme storm events. See **Appendix C** detention basin volume calculations.

**4.0 POST-DEVELOPMENT PERFORMANCE STANDARDS**

**4.1 Total Suspended Solids**

1. According to NR151.122, BMPs shall be designed in accordance with Table 1, or to the maximum extent practicable. For new development projects Table 1 indicates that the total suspended solids load from parking areas and roads shall be reduced by 80 percent, based on an average annual rainfall, as compared to no runoff management controls.

The total suspended solids removal has been modeled in WinSLAMM version 10.5. According to the WinSLAMM modeling the expected TSS removal from the entire site is **99.69%** (excluding the proposed grass swales) the proposed design meets the requirements of NR151.122. See **Appendix D** for the WinSLAMM modeling inputs and outputs.

**4.2 Infiltration**

NR 151 requires that the post-development site infiltrate 90% of the pre-development runoff based on an average annual rainfall. Using WinSLAMM and HydroCAD the results show that the post-development site infiltrates **99.94%** of the average annual rainfall utilizing the infiltration basin for infiltration. See **Appendix D** for input and output results using HydroCAD and WinSLAMM and soil report for measured infiltration.

**4.3 Peak Discharge**

According to NR151.123(1), BMPs shall be employed to maintain or reduce the peak runoff discharge rates, to the maximum extent practicable, as compared to pre-development conditions.

The pre-development and post-development peak rates of discharge leaving the site are summarized in the table below. Curve numbers used for the modeling of this site were Class C soils per the soil borings completed by Star Environmental. See **Appendix C** for HydroCAD modeling routing diagrams, summaries, and node listings.

	<b>Pre-Development</b>	<b>Post-Development</b>
	<b>Total (E1)</b>	<b>Total (2L)</b>
<b>1-year 24-hour Peak Flow</b>	0.00 cfs	0.00 cfs
<b>2-year 24-hour Peak Flow</b>	0.00 cfs	0.00 cfs
<b>10-year 24-hour Peak Flow</b>	0.01 cfs	0.00 cfs
<b>100-year 24-hour Peak Flow</b>	0.95 cfs	0.60 cfs

**4.4 Protective Area**

According to NR151.125(4)(e) areas of post-construction sites from which the runoff does not enter the surface water, including wetlands, without first being treated by a BMP to meet the requirements of 151.122 to 151.123, are exempt from meeting the requirements of the Protective Areas performance standards. Not applicable.

## **4.5 Summary**

The modeling of this site shows that the requirements set by the Department of Natural Resources for total suspended solids, peak discharge, and infiltration can all be met with the proposed design. The site is overdesigned to alleviate the concerns of the community of stormwater runoff.

The Storm Water Management Plan shows basic compliance with accepted engineering practice in hydrology planning and design. The resulting development will function as a positive addition to the community while sustaining environmental benefits in storm water management and quality.

## **5.0 CONSTRUCTION SITE PERFORMANCE STANDARDS**

### **5.1 Erosion Control**

The purpose of this control plan is to provide guidelines that comply with the state and local requirements, as well as to make recommendations regarding erosion control and storm water management. The construction of this development is a critical phase in terms of storm water management and runoff control. Construction site erosion control will help minimize the impact of development, enhance and protect local environment, and protect the surrounding project area by applying best management practices for erosion control at construction sites. This work shall be planned and executed in accordance with the Wisconsin Department of Natural Resources Storm Water Management Technical Standards and/or accepted local engineering practice. The owner/developer will be responsible for erosion control during the process of construction. Silt fence, site vegetation, inlet protection, tracking pad, and erosion mat will be utilized to keep sediment from leaving the construction site.

### **5.2 Construction Site Erosion Control Measures**

The following erosion control devices may be used on the project site at any time during the construction phases to ensure the compliance with NR 216 and local erosion control requirements, as applicable.

a) Silt Fence (WDNR 1056)

Continuous silt fencing will be required along all areas downstream of disturbed area, and around the base of all stockpiled material subject to sediment transportation during rain fall events (stockpiled topsoil, gravel base, etc.). The silt fencing will provide a siltation barrier between the disturbed area and any inlets and ultimately downstream water bodies. All silt fence shall be removed upon completion of the project or when disturbed areas have generated sufficient vegetation to prevent erosion and the threat of sediment reaching inlets and bodies of water.

b) Site Vegetation

Existing site vegetation outside of project limits shall be protected and maintained to the maximum extent practicable. Existing site vegetation within the project limits shall remain undisturbed until construction schedule warrants disturbance. For disturbed areas vegetation that resists erosion, maintains slow storm water velocities, and retains sediment from runoff shall be provided by the contractor. Temporary seeding may be required for disturbed areas that are subject to long periods of construction inactivity. Temporary vegetation is used when areas are disturbed and may remain unfinished long enough to allow vegetation to grow and assist with erosion control. Permanent vegetation is encouraged as soon as possible in the construction process.

c) Tracking Pad (WDNR 1057)

Stone tracking pads will be constructed at all entrances to the construction site to minimize sediment tracking onto existing streets. A minimum of one construction entrance is required for

the project site. Tracking pads are temporary and will be removed or much of the aggregate will be removed before the site is completed.

d) Non-channel Erosion Mat (WDNR 1052)

The purpose of this practice is to protect the soil surface from the erosive effect of rainfall and prevent sheet erosion during the establishment of grass or other vegetation, and to reduce soil moisture loss due to evaporation. This practice applies to both Erosion Control Re-vegetative Mats (ECRM) and Turf-Reinforcement Mats (TRM).

1. CLASS I: A short-term duration (minimum of 6 months), light duty, organic mat with photodegradable plastic or biodegradable netting.
  - a. Type A – Use on erodible slopes 2.5:1 or flatter.
  - b. Type B – Double netted product for use on erodible slopes 2:1 or flatter.

e) Waste and Material Disposal

All waste and unused building materials (including garbage, debris, cleaning wastes, or other construction materials) shall be properly disposed of and not allowed to be carried by runoff into a receiving channel or inlet.

### 5.3 Operation and Maintenance, Short-term

The owner of this project is directly responsible for implementation and maintenance of the construction site erosion control measures.

The Contractor shall conduct the following inspections:

- Weekly inspections of implemented erosion and sediment controls.
- Inspections of erosion and sediment controls within 24 hours after precipitation event 0.5 inches or greater which results in runoff during active construction periods.

The Contractor shall maintain weekly written reports of all inspections that include:

- The date, time, and exact place of the inspection.
- The name of the individual who performed the inspection.
- An assessment of the condition of erosion and sediment controls.
- A description of any erosion and sediment control implementation and maintenance performed.
- A description of the present phase of construction at the site.

Repairs shall be made immediately, as required, to maintain effectiveness, until permanent vegetation is established. All repairs to erosion control devices shall be documented on the Wisconsin Department of Natural Resources Construction Site Inspection Report (Form 3400-187). A copy of Form 3400-187 can be found in **Appendix F**.

### 5.4 Operation and Maintenance, Long-term

The OWNER of this project is directly responsible for the operation, inspection, and maintenance of all storm water facilities located within the project site, as described below.

- Bioretention basin:
  - Inspection: Look for accumulation of sediment and/or debris in basin and riprap. Length of time water is retained in basin. Look for erosion or damage. Review plant health; look for weeds and grasses encroaching on plants.
  - Maintenance: Remove accumulated sediment deposits and/or debris in basin and riprap and repair any eroded or damaged grass areas. Remove any identified weeds or grasses.

Do not plow/store snow in bio-retention basin. Annually mow the side slopes to reduce brush and other large root vegetation that may weaken the berms. Once every five years, deep-till infiltration basin promotes infiltration.

- Grass Swale:  
Inspection: Look for accumulation of sediment and/or debris in pond and riprap. Look for erosion or damage. Review plant/grass health.  
Maintenance: Remove accumulated sediment deposits and/or debris in swale and riprap and repair any eroded or damaged grass areas. If water is retained for more than 24-48 hours after a storm event, replace topsoil by removing the top 6" of topsoil, tilling bottom of basin, installing new topsoil and restoring grass in basin.

## **6.0 SOIL AND SEDIMENT LOSS DISCHARGE**

The Wisconsin DNR requires that all construction sites must lose less than 5 tons per acre of sediment during the construction of the project. The DNR Soil Loss & Sediment Discharge Calculation Tool version 2.0 was used to determine the construction site sediment discharge. Using the worst-case scenario of a fully disturbed site and the maximum possible flow length, the calculations show that the soil loss is 1.7 tons/acre and the sediment discharge is 1.0 tons/acre. This assumes silt fence sediment control practices. This meets the DNR requirements. Calculations are shown in **Appendix E**. Soil Loss map shows the worst case scenario.

## **APPENDIX A**

### **Location Map**

# ALTA/NSPS LAND TITLE SURVEY CERTIFICATION

~for~ **AMERCO REAL ESTATE COMPANY**  
 ~of~ **1100 NORTH RAILROAD STREET**  
**EAGLE RIVER, WI 54521**  
**ENTITY NUMBER: 868086**

I hereby certify to AMERCO Real Estate Company, a Nevada corporation; to U-Haul Co. of Wisconsin; to Landmark Title Assurance Agency; and to First American Title Insurance Company National Commercial Services, that this is a survey of:

The Land referred to herein below is situated in the County of Vilas, State of Wisconsin, and is described as follows:

Part of the Northwest Quarter of the Northwest Quarter (NW 1/4 NW 1/4), Section Twenty-eight (28), Township Forty (40) North, Range Ten (10) East of the Fourth Principal Meridian, City of Eagle River, Vilas County, Wisconsin, described as follows:

Beginning at a point on the South side of Airport Road where the West side of the C & NW Ry. Co. right-of-way intersects the South side of said Airport Road as the place of beginning of the land to be described; thence Southerly 50 rods along the West side of said right-of-way; thence Westerly parallel to said Airport Road, 10 rods; thence Northerly parallel with the aforesaid right-of-way of the C & NW Ry. Co. 50 rods to the South side of said Airport Road, thence Easterly along the South side of said Airport Road, 10 rods to the place of beginning.

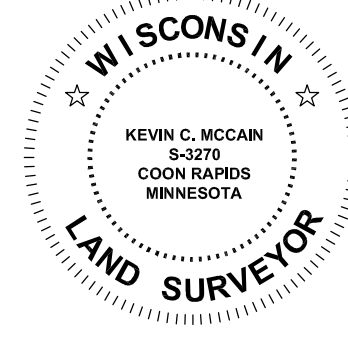
EXCEPTING THEREFROM that parcel of land described in Volume 616 Micro Records, Page 288.

and is based upon information found in the commitment for title insurance prepared by First American Title Insurance Company, File No. 8119-6606780, dated effective January 08, 2026 at 8:00 a.m., and that all easements, if any, listed in Schedule B-II on the herein referenced commitment for title insurance, are shown hereon; and that this map or plat and the survey on which it is based were made (i) in accordance with "Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys," jointly established and adopted by ALTA and NSPS in 2021, and (ii) pursuant to the Accuracy Standards as adopted by ALTA and NSPS and in effect on the date of this certification, the undersigned further certifies that in my professional opinion, as a land surveyor licensed in the State of Minnesota, the Relative Positional Accuracy of this survey does not exceed that which is specified therein and includes Items 1, 2, 3, 4, 5, 7(a), 7(b1), 7(c), 8, 9, 11(b), 13, 14, 16, 17, 19, and 20 (topo details per AMERCO Exhibit B 2025) of Table A thereof. The field work was completed on January 22, 2026.

I further certify that this survey was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Wisconsin.

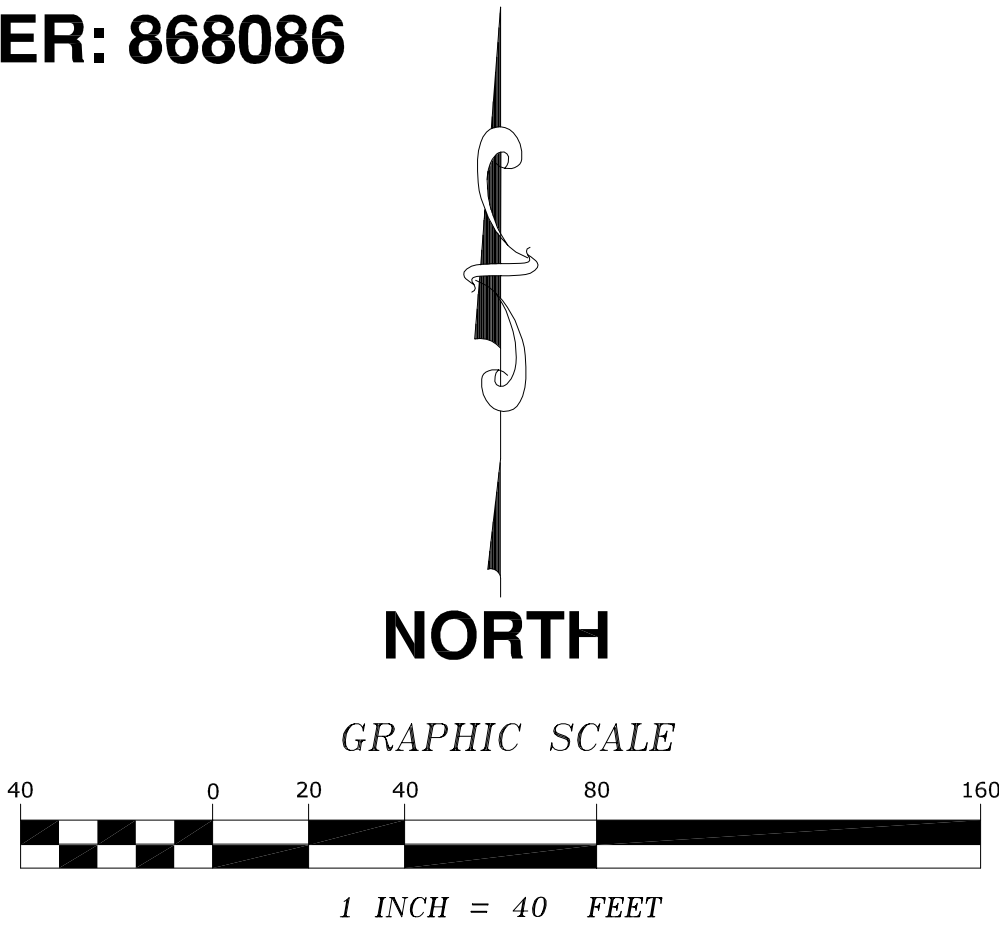
Date: March 20, 2026

E.G. Rud & Sons, Inc.  
*Kevin C. McCain*  
 Kevin C. McCain, Land Surveyor  
 Wisconsin License No. S-3270



## BENCHMARK:

NGS BENCHMARK  
 DESIGNATION: 7H68  
 PID: DP1777  
 ELEVATION: 1637.48 (NAVD 88)



## GENERAL NOTES

- Fee ownership is vested in Aspirus Buildings, Inc. Parcel ID Number: 221-1019-06.
- Address of the surveyed premises: 1100 North Railroad Street, Eagle River, WI 54521
- Bearings shown hereon are based on the Vilas County Coordinate System.
- Surveyed premises shown on this survey map is in Flood Zone X (Areas determined to be outside the 0.2% annual chance floodplain.), according to Flood Insurance Rate Map Community No. 550461 Panel No. 0670 Suffix B by the Federal Emergency Management Agency, effective date June 5, 2012.
- Boundary area of the surveyed premises: 118,014± sq. ft. (2.71 acres).
- There are no marked or striped parking areas onsite.
- The surveyed premises has direct access to North Bluebird Road, a public street. The city administrator has confirmed that any future access must be to Bluebird Road. Access will not be allowed to Airport Road.
- Location of utilities existing on or serving the surveyed property determined by:
  - Observed evidence collected pursuant to Section 5.E.IV.
  - Markings and drawings requested by E.G. Rud and Sons, Inc per Diggers Hotline Ticket Nos. 20260306584 and 20260306593.
  - Utility mapping provided by the City of Eagle River.
 Excavations were not made during the process of this survey to locate underground utilities and/or structures. The location of underground utilities and/or structures may vary from locations shown hereon and additional underground utilities and/or structures may be encountered. Diggers Hotline locate and other similar utility locate requests from surveyors may be ignored or result in an incomplete response. Where additional or more detailed information is required, the client is advised that excavation may be necessary. Contact Diggers Hotline at (800) 242-8511 for verification of utility type and field location, prior to excavation.
- Subsurface and environmental conditions were not examined or considered during the process of this survey. No statement is made concerning the existence of underground or overhead containers or facilities that may affect the use or development of the surveyed premises.
- There was no observed evidence of recent earth moving work, building construction or building additions observed in the process of conducting the fieldwork.
- The surveyor is unaware of any proposed changes in street right of way lines. There was no recent street or sidewalk construction or repairs observed in the process of conducting the fieldwork.
- Due to field work being completed during the winter season there may be improvements in addition to those shown that were not visible due to snow and ice conditions characteristic of Wisconsin winters.
- There were no wetland markers on site. National Wetland Inventory (NWI) mapping does not show any wetlands on site.
- First American Title Insurance Company, File No. 8119-6606780, Schedule B-II Survey Related Exceptions:
  - Limitations imposed upon ingress to and egress from the above described premises to United States Highway 45, more specifically known as South County Line - STH 17 including ramps and connection roads on the right of way thereof, as set forth in a finding, determination and declaration by the State Highway Commission of Wisconsin, Recorded: September 24, 1998 Volume 837 of records, Page 76, Document No. 342707 wherein said highway is designated a controlled-access highway under the provisions of Section 84.25 of the Wisconsin Statutes. Authorization for Access to or Across a Controlled-Access Highway recorded July 28, 1999 in Volume 881, Page 381 as Document No. 353566. [Surveyor's note: Access per Doc. No. 353566 is south of the subject property and is shown on the survey.]
  - Utility Easement to Eagle River Light & Water, its successors and assigns, dated May 03, 2005, recorded/filed May 04, 2005 in Volume 1342, Page 663 as Document No. 431319. [Surveyor's note: Shown on survey.]

## LEGEND

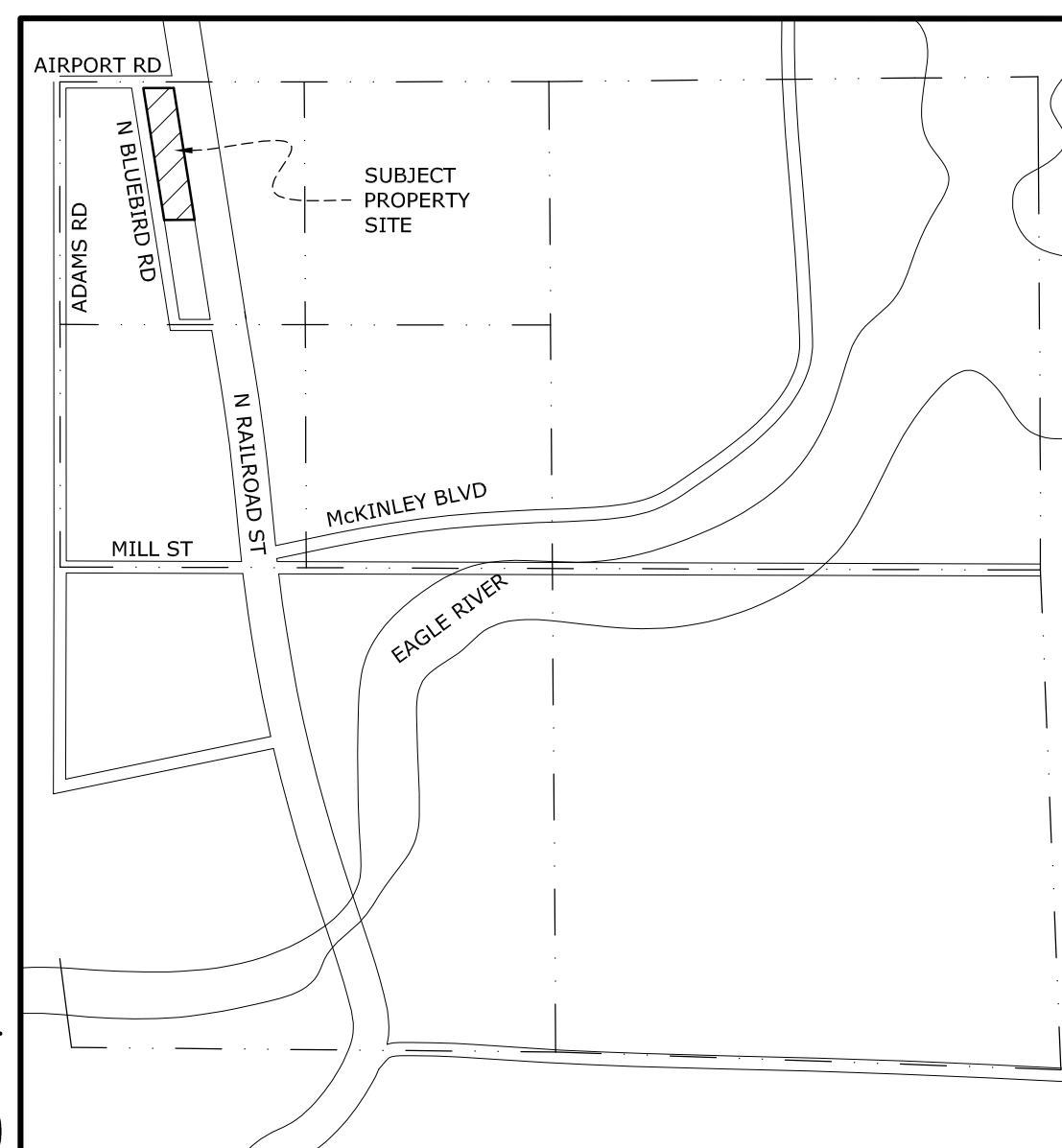
- DENOTES IRON MONUMENT FOUND AS LABELED
- DENOTES BOLLARD
- DENOTES CATCH BASIN
- ▣ DENOTES CABLE PEDESTAL
- ⊠ DENOTES ELECTRIC TRANSFORMER/METER
- ⊡ DENOTES EXISTING SPOT ELEVATION
- ⊢ DENOTES FIBER OPTIC BOX
- ⊣ DENOTES GUY WIRE
- ⊤ DENOTES HYDRANT
- ⊥ DENOTES POWER POLE
- ⊦ DENOTES SANITARY SEWER MANHOLE
- ⊧ DENOTES LIGHT POLE
- ⊨ DENOTES SIGN
- ⊩ DENOTES WATER VALVE
- ⊪ DENOTES SCHEDULE B-II EXCEPTION NO.
- ⊫ DENOTES TELEPHONE PEDESTAL
- ⊬ DENOTES WOOD FENCE
- ⊭ DENOTES EXISTING CONTOURS
- ⊮ DENOTES EXISTING SANITARY SEWER
- ⊯ DENOTES EXISTING STORM SEWER
- ⊰ DENOTES EXISTING WATER MAIN
- ⊱ DENOTES OVERHEAD UTILITY
- ⊲ DENOTES UNDERGROUND ELECTRIC LINE
- ⊳ DENOTES UNDERGROUND GAS LINE
- ⊴ DENOTES UNDERGROUND CABLE LINE
- ⊵ DENOTES UNDERGROUND TELEPHONE LINE
- ⊶ DENOTES UNDERGROUND FIBER OPTIC LINE
- ⊷ DENOTES BUILDING SETBACK LINE
- ⊸ DENOTES SIGNIFICANT OBSERVATION
- ⊹ DENOTES DIRECTION OF TRAFFIC FLOW
- ⊺ DENOTES BITUMINOUS SURFACE
- ⊻ DENOTES CONCRETE SURFACE
- ⊼ DENOTES GRAVEL SURFACE
- ⊽ DENOTES ADJACENT PARCEL OWNER INFORMATION (PER VILAS COUNTY TAX INFORMATION)

## TREE DETAIL

- DENOTES ELEVATION
- DENOTES TREE QUANTITY
- DENOTES TREE SIZE IN INCHES
- DENOTES TREE TYPE

## VICINITY MAP

PART OF SEC. 28, TWP. 40, RNG. 10



VILAS COUNTY, WISCONSIN  
 (NO SCALE)

## SIGNIFICANT OBSERVATIONS

- There are existing overhead wires and power poles running along the west boundary line. The guy wire crosses the boundary by 14.1 feet.
- There is a wood privacy fence that lies on/near the southerly boundary line.
- There is an underground fiber optic line on/near the north boundary line.

DRAWN BY: BPN	JOB NO: 26.0036AB	DATE: 2/10/2026	
CHECK BY: JER	FIELD CREW: DT/CT		
1 3/20/2026	CLIENT COMMENTS	BPN	
2			
3			
NO.	DATE	DESCRIPTION	BY

**E. G. RUD & SONS, INC.**  
 EST. 1977 Professional Land Surveyors  
 6776 Lake Drive NE, Suite 110  
 Lino Lakes, MN 55014  
 Tel. (651) 361-8200 Fax (651) 361-8701

# ALTA/NSPS LAND TITLE SURVEY

~for~ AMERCO REAL ESTATE COMPANY  
 ~of~ 1100 NORTH RAILROAD STREET  
 EAGLE RIVER, WI 54521  
 ENTITY NUMBER: 868086

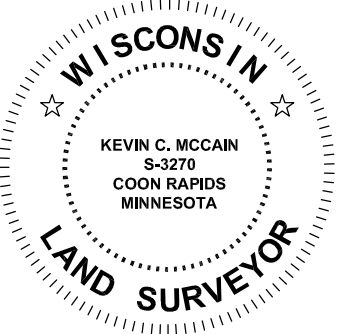
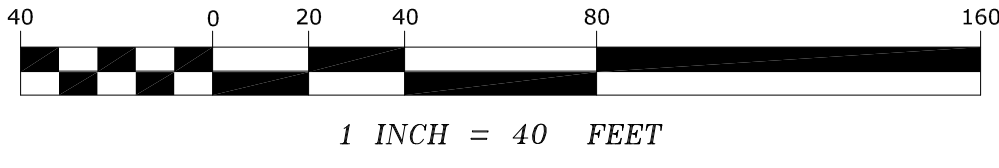
## BENCHMARK:

NGS BENCHMARK  
 DESIGNATION: 7H68  
 PID: DP1777  
 ELEVATION: 1637.48 (NAVD 88)

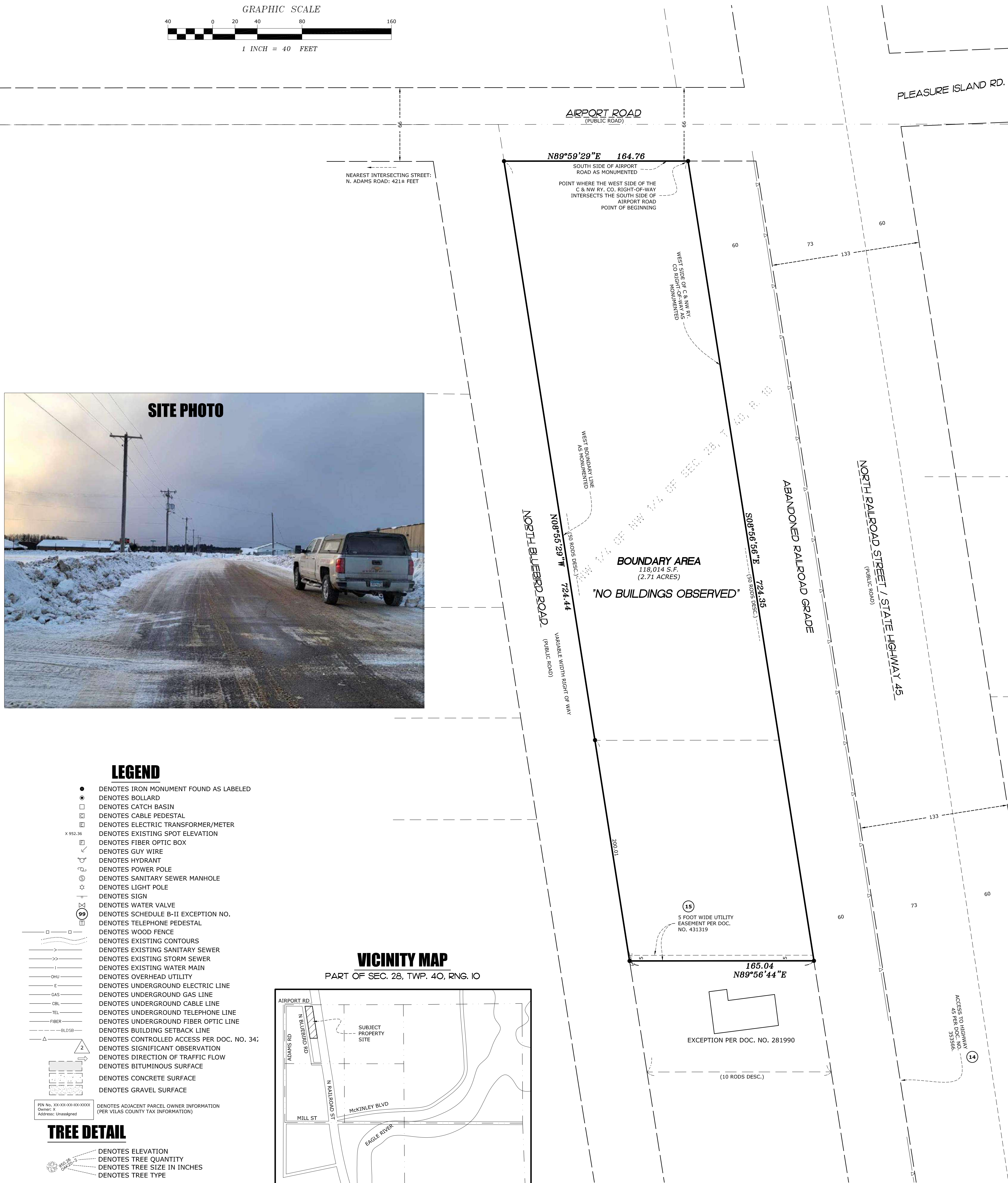
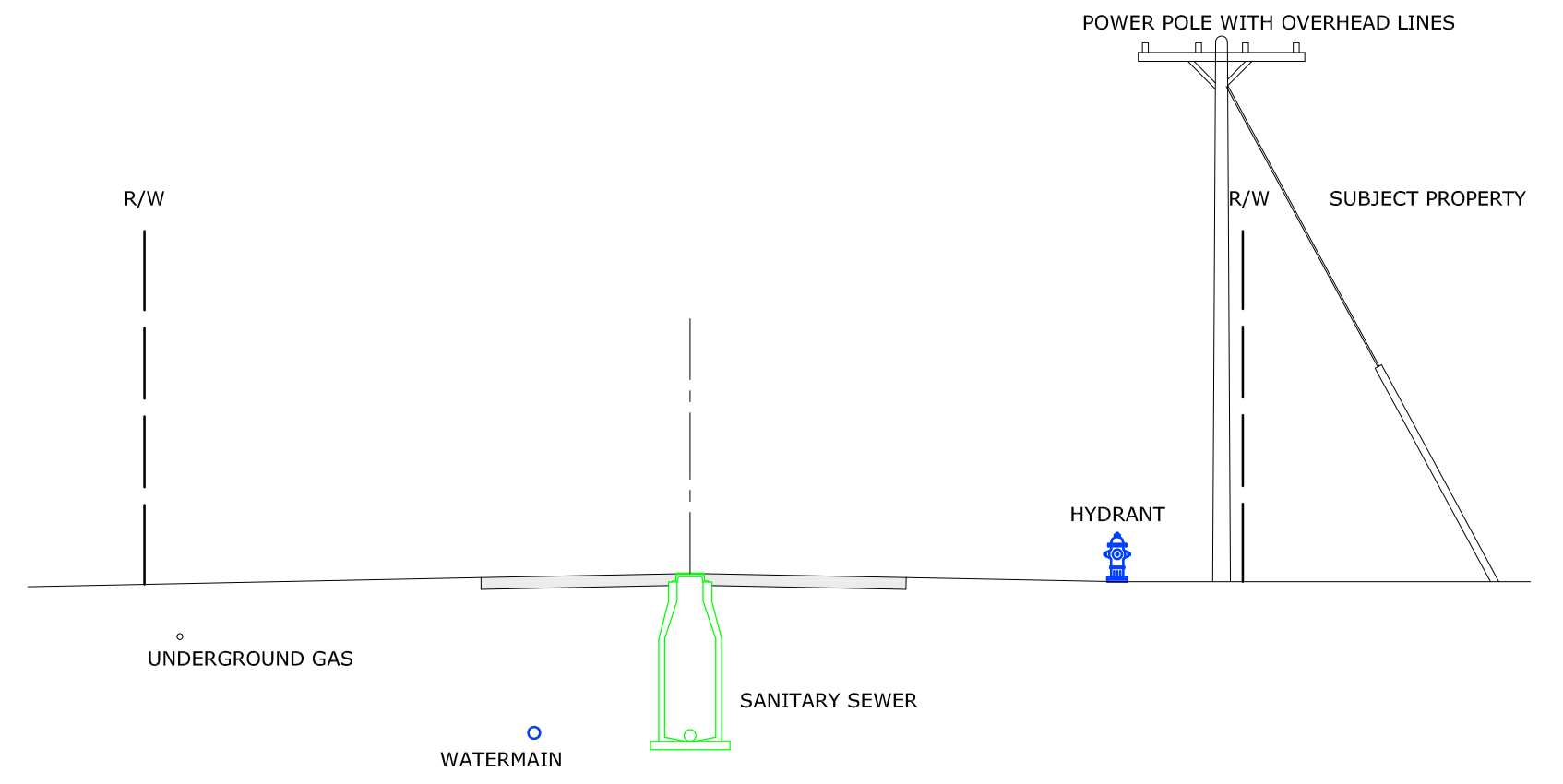


NORTH

GRAPHIC SCALE



## TYPICAL UTILITY LAYOUT NORTH BLUEBIRD ROAD



SITE PHOTO

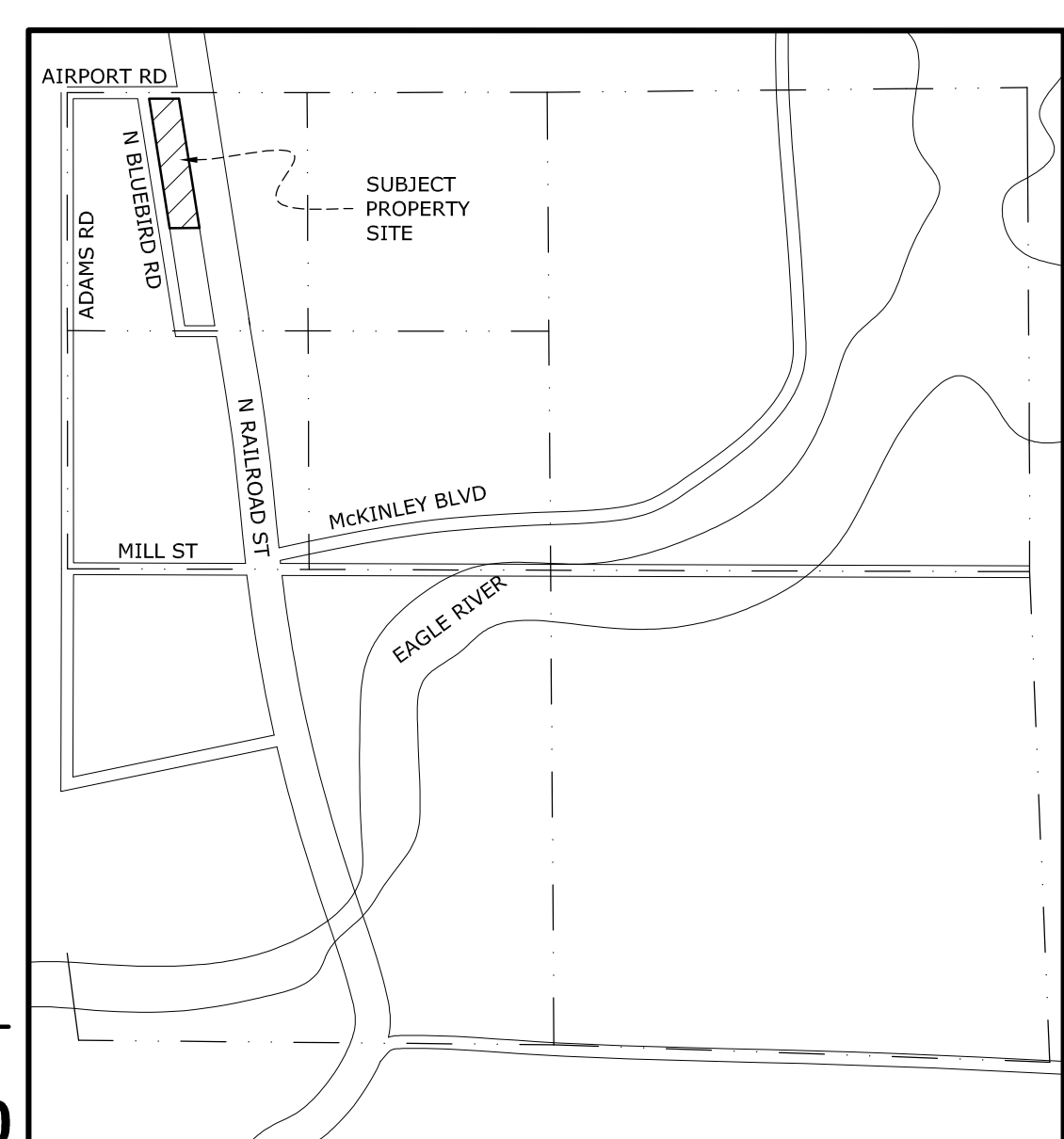
## LEGEND

- DENOTES IRON MONUMENT FOUND AS LABELED
- DENOTES BOLLARD
- DENOTES CATCH BASIN
- ▣ DENOTES CABLE PEDESTAL
- ⊞ DENOTES ELECTRIC TRANSFORMER/METER
- ⊞ DENOTES EXISTING SPOT ELEVATION
- ⊞ DENOTES FIBER OPTIC BOX
- ⊞ DENOTES GUY WIRE
- ⊞ DENOTES HYDRANT
- ⊞ DENOTES POWER POLE
- ⊞ DENOTES SANITARY SEWER MANHOLE
- ⊞ DENOTES LIGHT POLE
- ⊞ DENOTES SIGN
- ⊞ DENOTES WATER VALVE
- ⊞ DENOTES SCHEDULE B-II EXCEPTION NO.
- ⊞ DENOTES TELEPHONE PEDESTAL
- ⊞ DENOTES WOOD FENCE
- ⊞ DENOTES EXISTING CONTOURS
- ⊞ DENOTES EXISTING SANITARY SEWER
- ⊞ DENOTES EXISTING STORM SEWER
- ⊞ DENOTES EXISTING WATER MAIN
- ⊞ DENOTES OVERHEAD UTILITY
- ⊞ DENOTES UNDERGROUND ELECTRIC LINE
- ⊞ DENOTES UNDERGROUND GAS LINE
- ⊞ DENOTES UNDERGROUND CABLE LINE
- ⊞ DENOTES UNDERGROUND TELEPHONE LINE
- ⊞ DENOTES UNDERGROUND FIBER OPTIC LINE
- ⊞ DENOTES BUILDING SETBACK LINE
- ⊞ DENOTES CONTROLLED ACCESS PER DOC. NO. 34:
- ⊞ DENOTES SIGNIFICANT OBSERVATION
- ⊞ DENOTES DIRECTION OF TRAFFIC FLOW
- ⊞ DENOTES BITUMINOUS SURFACE
- ⊞ DENOTES CONCRETE SURFACE
- ⊞ DENOTES GRAVEL SURFACE
- ⊞ DENOTES ADJACENT PARCEL OWNER INFORMATION (PER VILAS COUNTY TAX INFORMATION)

## TREE DETAIL

- ⊞ DENOTES ELEVATION
- ⊞ DENOTES TREE QUANTITY
- ⊞ DENOTES TREE SIZE IN INCHES
- ⊞ DENOTES TREE TYPE

## VICINITY MAP PART OF SEC. 28, TWP. 40, RNG. 10



VILAS COUNTY, WISCONSIN  
 (NO SCALE)

## SIGNIFICANT OBSERVATIONS

- 1 There are existing overhead wires and power poles running along the west boundary line. The guy wire crosses the boundary by 14.1 feet.
- 2 There is a wood privacy fence that lies on/near the southerly boundary line.
- 3 There is an underground fiber optic line on/near the north boundary line.

DRAWN BY: BPN	JOB NO: 26.0036AB	DATE: 2/10/2026	
CHECK BY: JER	FIELD CREW: DT/CT		
1 3/20/2026	CLIENT COMMENTS	BPN	
2			
3			
NO.	DATE	DESCRIPTION	BY

**E. G. RUD & SONS, INC.**  
 EST. 1977 Professional Land Surveyors  
 6776 Lake Drive NE, Suite 110  
 Lino Lakes, MN 55014  
 Tel. (651) 361-8200 Fax (651) 361-8701

S:\RUD\CAD\26PROJ\260036AB\260036-AB.DWG

## **APPENDIX B**

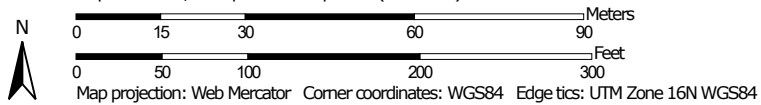
### **Geotechnical Data**

Hydrologic Soil Group—Vilas County, Wisconsin




Soil Map may not be valid at this scale.

Map Scale: 1:1,340 if printed on A portrait (8.5" x 11") sheet.



### MAP LEGEND

**Area of Interest (AOI)**









 Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**





-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

**Soil Rating Lines**

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

**Soil Rating Points**






-  A
-  A/D
-  B
-  B/D

-  C
-  C/D
-  D
-  Not rated or not available


**Water Features**

 Streams and Canals

**Transportation**

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

**Background**

 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

**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: Vilas County, Wisconsin  
 Survey Area Data: Version 23, Sep 10, 2025

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

Date(s) aerial images were photographed: Aug 16, 2021—Sep 1, 2021

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.

## Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3174B	Rubicon sand, 0 to 6 percent slopes	A	3.1	100.0%
<b>Totals for Area of Interest</b>			<b>3.1</b>	<b>100.0%</b>

### Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

### Rating Options

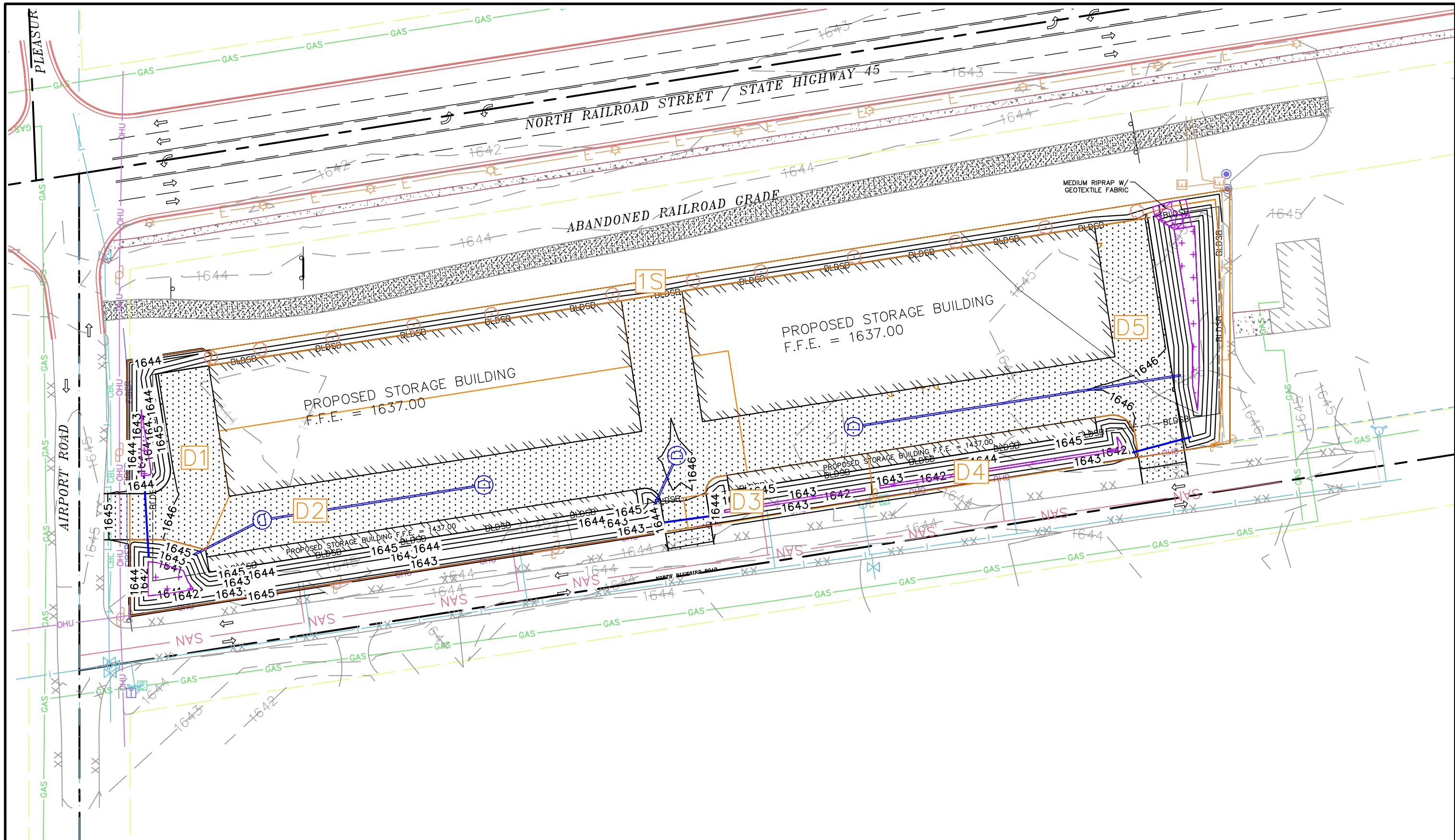
*Aggregation Method: Dominant Condition*

*Component Percent Cutoff: None Specified*

*Tie-break Rule:* Higher

## **APPENDIX C**

### **Existing & Proposed Drainage Map and Calculations**



STAMP/SIGNATURE:		
REVISIONS		
BY	DATE	DESCRIPTION

**TITLE PAGE:**  
**PROPOSED CATCHMENT AREA**

PROJECT: **U-HAUL EAGLE RIVER**

LOCATION: **CITY OF EAGLE RIVER  
 VILAS COUNTY, WISCONSIN**



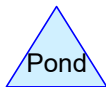
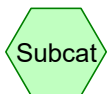
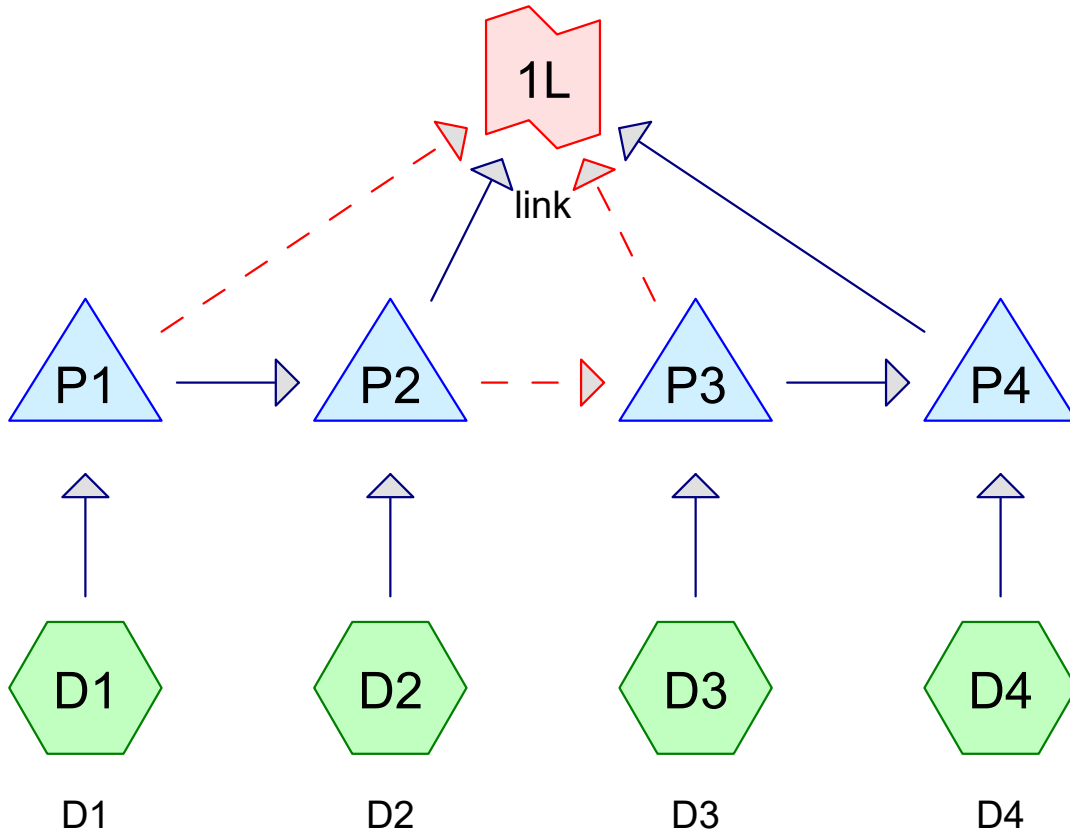
**VREELAND ASSOCIATES LAND SURVEYORS & ENGINEERS**  
 6103 DAWN STREET WESTON, WI. 54476  
 PHONE NO.: (715) 241-0947  
 EMAIL: [dustin@vreelandassociates.us](mailto:dustin@vreelandassociates.us)  
 WEBSITE: [www.vreelandlandsurveying.com](http://www.vreelandlandsurveying.com)

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PREPARED FOR: **DAVID BARNES**

PLAN DATE: **MAY 28TH, 2026**

DESIGNER: DUSTIN VREELAND  
 SURVEYED BY: OTHERS  
 FILE NO.: 26-0159  
 ORIGINAL PLAN DATE: 5/28/26  
 SCALE: **1" = 60'**  
 SHEET **PROP**



**Routing Diagram for 26-0159 north**  
 Prepared by Vreeland Associates, Printed 7/1/2026  
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**26-0159 north**

Prepared by Vreeland Associates

HydroCAD® 10.20-8a s/n 09881 © 2025 HydroCAD Software Solutions LLC

Printed 7/1/2026

Page 2

**Rainfall Events Listing**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	MSE 24-hr	4	Default	24.00	1	2.22	2
2	2-Year	MSE 24-hr	4	Default	24.00	1	2.56	2
3	10-Year	MSE 24-hr	4	Default	24.00	1	3.79	2
4	100-Year	MSE 24-hr	4	Default	24.00	1	6.43	2

**26-0159 north**

Prepared by Vreeland Associates

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Printed 7/1/2026

Page 3

**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
0.369	39	>75% Grass cover, Good, HSG A (D1, D2, D3, D4)
0.026	98	basin (D1, D2, D3, D4)
0.656	98	building (D1, D2, D3, D4)
0.504	98	parking lot (D1, D2, D3)
<b>1.555</b>	<b>84</b>	<b>TOTAL AREA</b>

**26-0159 north**

Prepared by Vreeland Associates

Printed 7/1/2026

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Page 4

**Pipe Listing (all nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	P1	1,642.15	1,642.00	55.0	0.0027	0.012	0.0	12.0	0.0	
2	P2	1,643.15	1,643.00	55.0	0.0027	0.012	0.0	12.0	0.0	
3	P4	1,643.63	1,643.52	40.0	0.0028	0.012	0.0	12.0	0.0	

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment D1: D1** Runoff Area=0.421 ac 90.02% Impervious Runoff Depth=1.79"  
Tc=10.0 min CN=WQ Runoff=0.91 cfs 0.063 af

**Subcatchment D2: D2** Runoff Area=0.934 ac 78.59% Impervious Runoff Depth=1.57"  
Tc=10.0 min CN=WQ Runoff=1.75 cfs 0.122 af

**Subcatchment D3: D3** Runoff Area=0.081 ac 39.51% Impervious Runoff Depth=0.79"  
Tc=10.0 min CN=WQ Runoff=0.08 cfs 0.005 af

**Subcatchment D4: D4** Runoff Area=0.119 ac 34.45% Impervious Runoff Depth=0.69"  
Tc=10.0 min CN=WQ Runoff=0.10 cfs 0.007 af

**Pond P1:** Peak Elev=1,643.07' Storage=468 cf Inflow=0.91 cfs 0.063 af  
Discarded=0.06 cfs 0.036 af Primary=0.69 cfs 0.027 af Secondary=0.00 cfs 0.000 af Outflow=0.73 cfs 0.063 af

**Pond P2:** Peak Elev=1,643.07' Storage=3,142 cf Inflow=2.44 cfs 0.149 af  
Discarded=0.31 cfs 0.149 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.31 cfs 0.149 af

**Pond P3:** Peak Elev=1,641.70' Storage=69 cf Inflow=0.08 cfs 0.005 af  
Discarded=0.01 cfs 0.005 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.005 af

**Pond P4:** Peak Elev=1,642.01' Storage=85 cf Inflow=0.10 cfs 0.007 af  
Discarded=0.04 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.007 af

**Link 1L: link** Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 1.555 ac Runoff Volume = 0.197 af Average Runoff Depth = 1.52"**  
**23.73% Pervious = 0.369 ac 76.27% Impervious = 1.186 ac**

**Summary for Subcatchment D1: D1**

Runoff = 0.91 cfs @ 12.17 hrs, Volume= 0.063 af, Depth= 1.79"  
 Routed to Pond P1 :

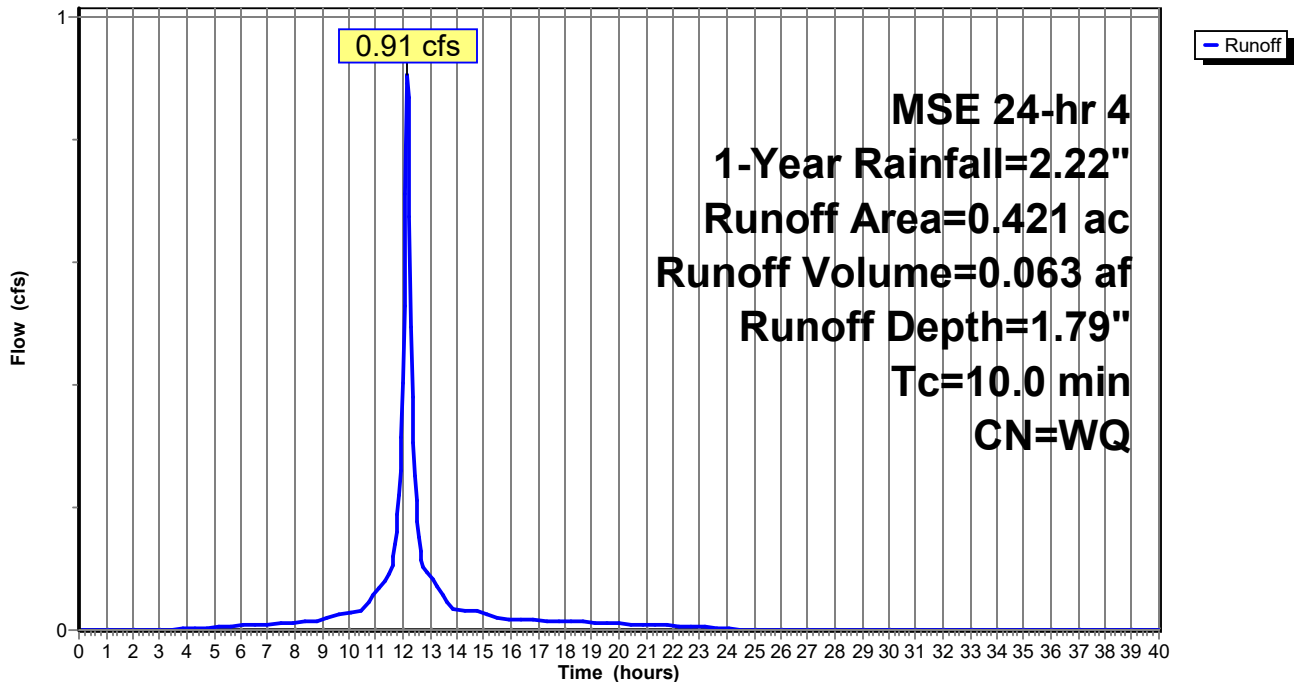
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 1-Year Rainfall=2.22"

Area (ac)	CN	Description
* 0.110	98	parking lot
* 0.268	98	building
* 0.001	98	basin
0.042	39	>75% Grass cover, Good, HSG A
0.421		Weighted Average
0.042		9.98% Pervious Area
0.379		90.02% Impervious Area

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

**Subcatchment D1: D1**

Hydrograph



### Summary for Subcatchment D2: D2

Runoff = 1.75 cfs @ 12.17 hrs, Volume= 0.122 af, Depth= 1.57"  
 Routed to Pond P2 :

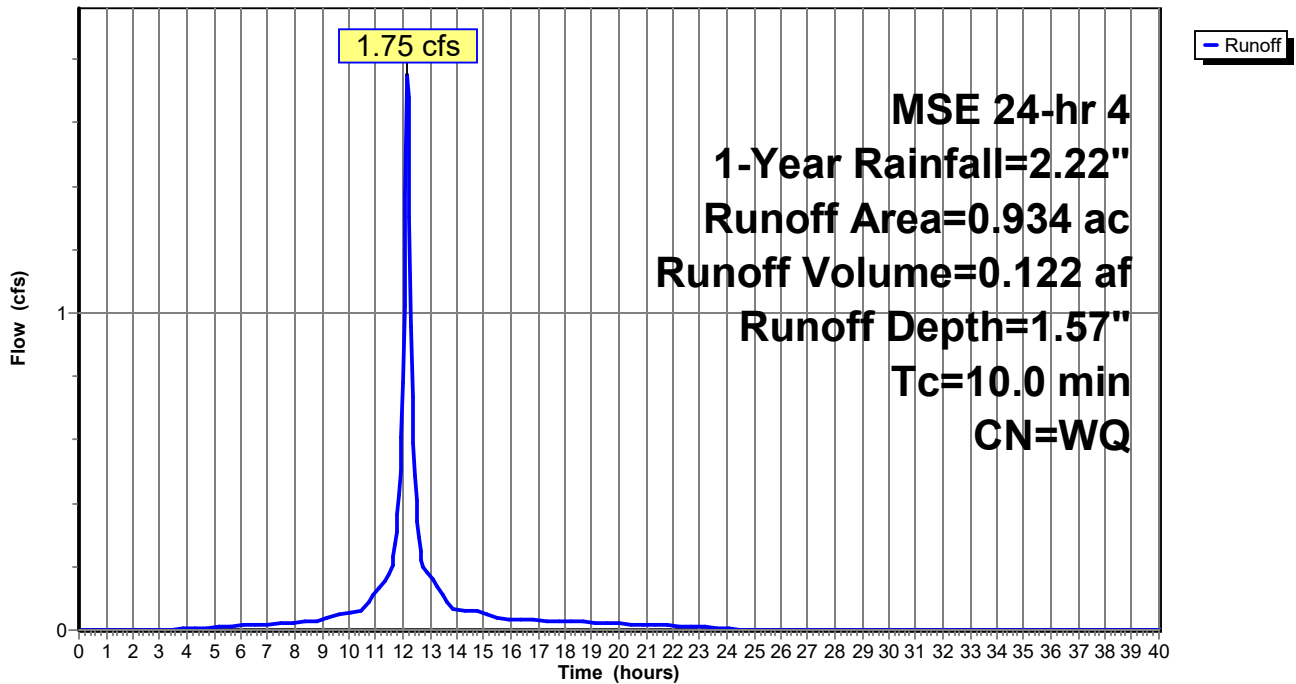
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 1-Year Rainfall=2.22"

Area (ac)	CN	Description
* 0.014	98	basin
* 0.387	98	parking lot
0.200	39	>75% Grass cover, Good, HSG A
* 0.333	98	building
0.934		Weighted Average
0.200		21.41% Pervious Area
0.734		78.59% Impervious Area

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

### Subcatchment D2: D2

Hydrograph



### Summary for Subcatchment D3: D3

Runoff = 0.08 cfs @ 12.17 hrs, Volume= 0.005 af, Depth= 0.79"  
 Routed to Pond P3 :

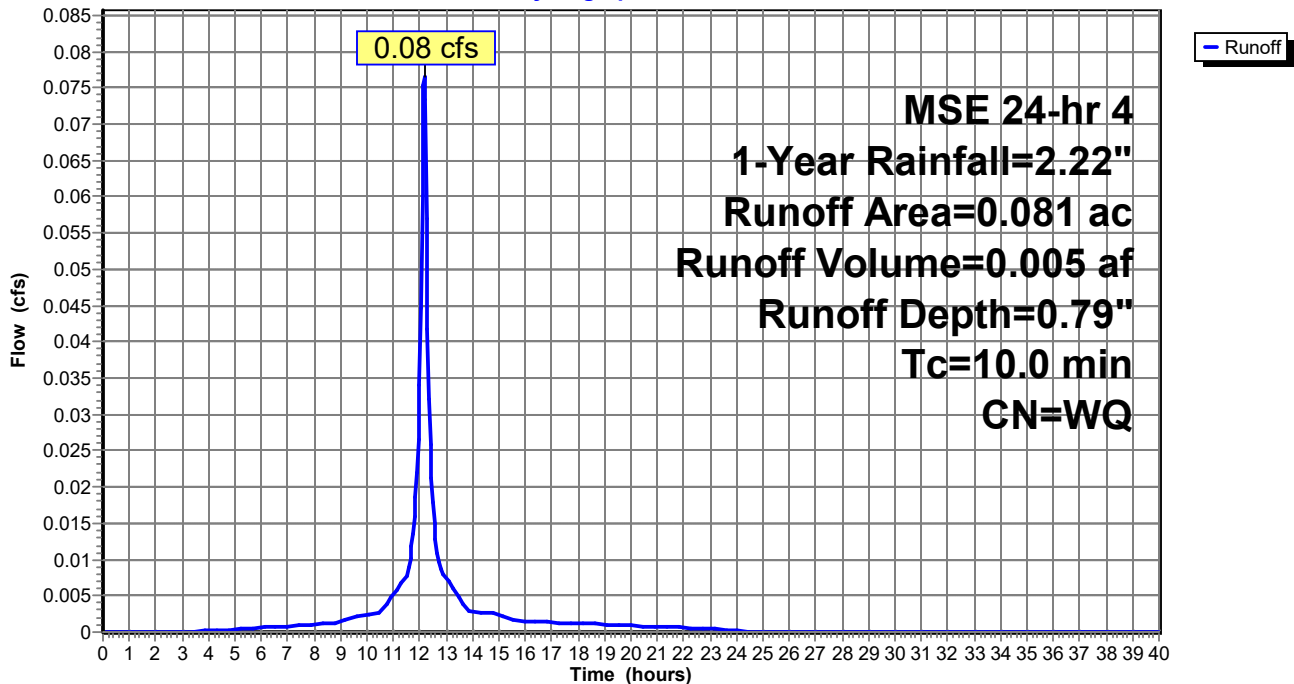
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 1-Year Rainfall=2.22"

Area (ac)	CN	Description
* 0.007	98	parking lot
* 0.021	98	building
* 0.004	98	basin
0.049	39	>75% Grass cover, Good, HSG A
0.081		Weighted Average
0.049		60.49% Pervious Area
0.032		39.51% Impervious Area

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

### Subcatchment D3: D3

Hydrograph



**Summary for Subcatchment D4: D4**

Runoff = 0.10 cfs @ 12.17 hrs, Volume= 0.007 af, Depth= 0.69"  
 Routed to Pond P4 :

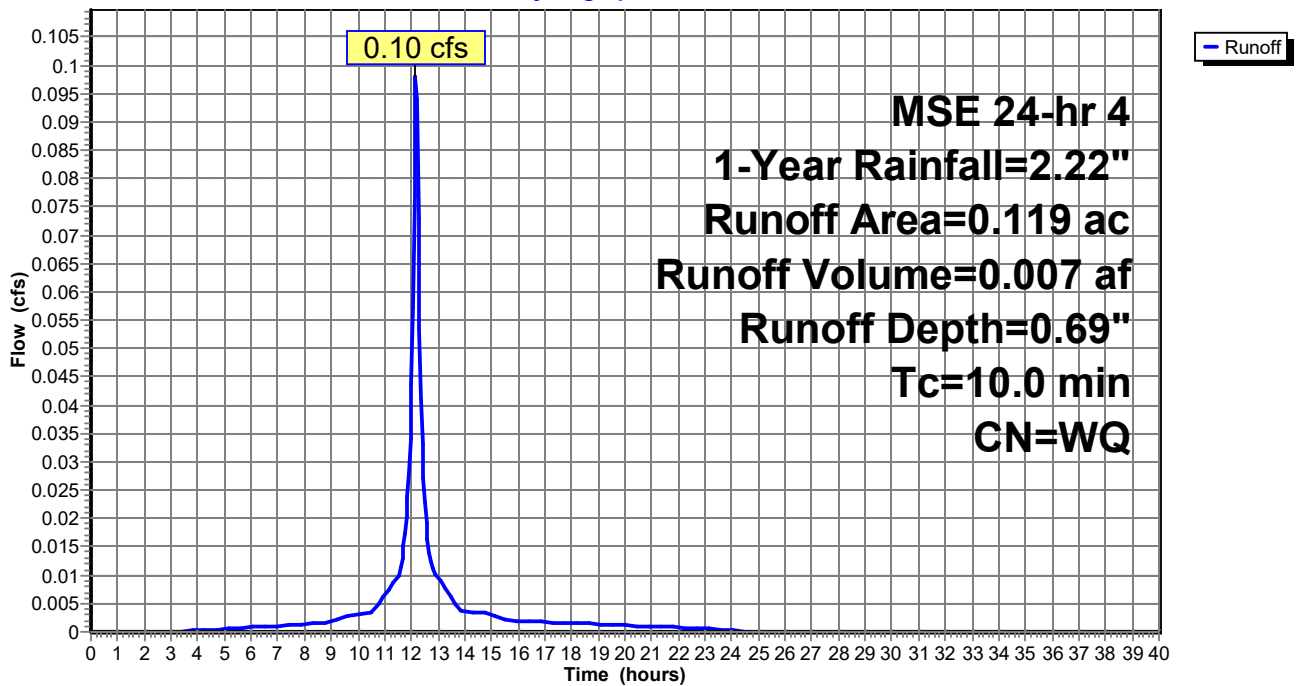
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 1-Year Rainfall=2.22"

Area (ac)	CN	Description
* 0.034	98	building
* 0.007	98	basin
0.078	39	>75% Grass cover, Good, HSG A
0.119		Weighted Average
0.078		65.55% Pervious Area
0.041		34.45% Impervious Area

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

**Subcatchment D4: D4**

Hydrograph



**Summary for Pond P1:**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)

Inflow Area = 0.421 ac, 90.02% Impervious, Inflow Depth = 1.79" for 1-Year event  
 Inflow = 0.91 cfs @ 12.17 hrs, Volume= 0.063 af  
 Outflow = 0.73 cfs @ 12.17 hrs, Volume= 0.063 af, Atten= 19%, Lag= 0.1 min  
 Discarded = 0.06 cfs @ 12.71 hrs, Volume= 0.036 af  
 Primary = 0.69 cfs @ 12.17 hrs, Volume= 0.027 af  
 Routed to Pond P2 :  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,643.07' @ 12.71 hrs Surf.Area= 737 sf Storage= 468 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 46.3 min ( 811.3 - 765.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	8,625 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,640.00'	81 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		300 cf Overall x 27.0% Voids	
		8,706 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	150	0	0
1,643.00	550	350	350
1,644.00	1,120	835	1,185
1,645.00	1,880	1,500	2,685
1,646.00	10,000	5,940	8,625

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,640.00	150	0	0
1,642.00	150	300	300

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,644.70'	<b>5.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,640.00'	<b>3.600 in/hr Exfiltration over Surface area</b>
#3	Primary	1,642.15'	<b>12.0" Round Culvert</b> L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,642.15' / 1,642.00' S= 0.0027 ' S= 0.0027 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.06 cfs @ 12.71 hrs HW=1,643.07' (Free Discharge)

↳2=Exfiltration (Exfiltration Controls 0.06 cfs)

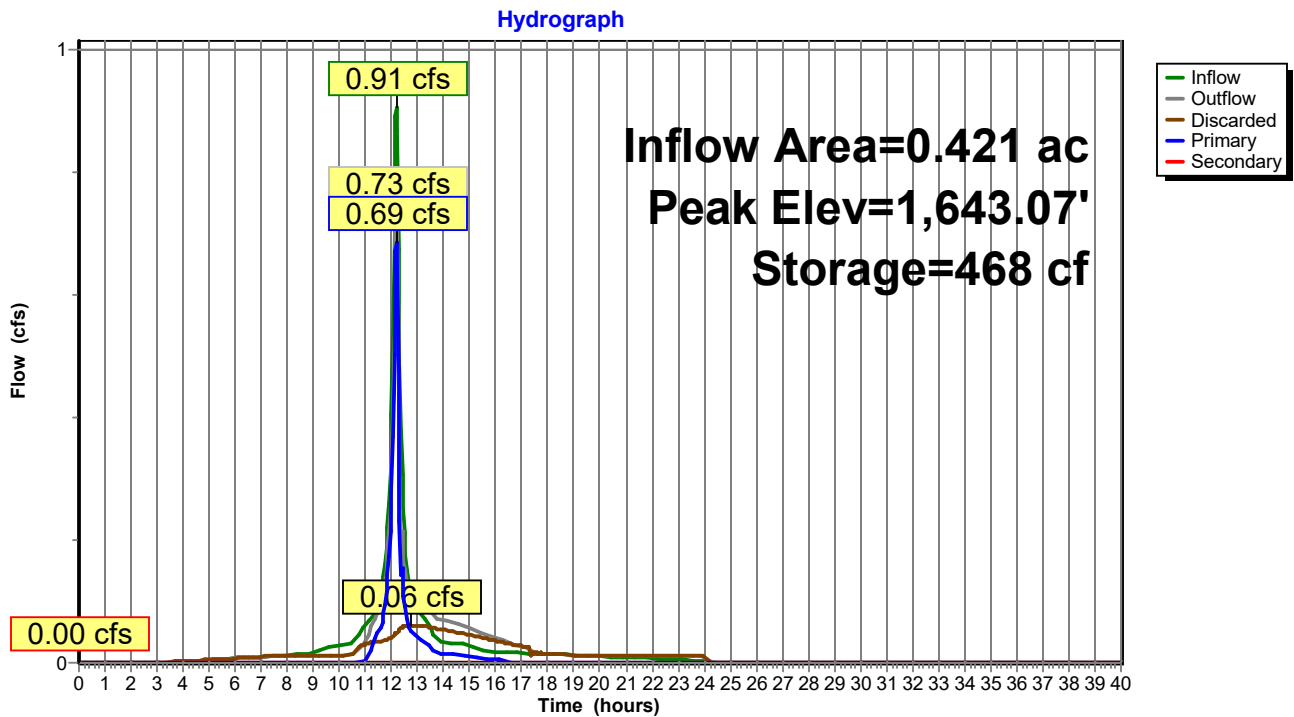
Primary OutFlow Max=0.36 cfs @ 12.17 hrs HW=1,642.70' TW=1,642.63' (Dynamic Tailwater)

↳3=Culvert (Outlet Controls 0.36 cfs @ 1.17 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,640.00' TW=0.00' (Dynamic Tailwater)

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

Pond P1:



**Summary for Pond P2:**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=14)

[80] Warning: Exceeded Pond P1 by 0.06' @ 12.30 hrs (0.59 cfs 0.013 af)

Inflow Area = 1.355 ac, 82.14% Impervious, Inflow Depth = 1.32" for 1-Year event  
 Inflow = 2.44 cfs @ 12.17 hrs, Volume= 0.149 af  
 Outflow = 0.31 cfs @ 12.66 hrs, Volume= 0.149 af, Atten= 87%, Lag= 29.4 min  
 Discarded = 0.31 cfs @ 12.66 hrs, Volume= 0.149 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 1L : link  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond P3 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,643.07' @ 12.66 hrs Surf.Area= 3,684 sf Storage= 3,142 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 120.0 min ( 881.4 - 761.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	19,450 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,639.00'	270 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
			1,000 cf Overall x 27.0% Voids
		19,720 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	500	0	0
1,642.00	900	700	700
1,643.00	3,040	1,970	2,670
1,644.00	5,260	4,150	6,820
1,645.00	20,000	12,630	19,450

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,639.00	500	0	0
1,641.00	500	1,000	1,000

Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.79'	<b>10.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,639.00'	<b>3.600 in/hr Exfiltration over Surface area</b>
#3	Secondary	1,643.15'	<b>12.0" Round Culvert</b> L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,643.15' / 1,643.00' S= 0.0027 ' / Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.31 cfs @ 12.66 hrs HW=1,643.06' (Free Discharge)

↳2=Exfiltration (Exfiltration Controls 0.31 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,639.00' TW=0.00' (Dynamic Tailwater)

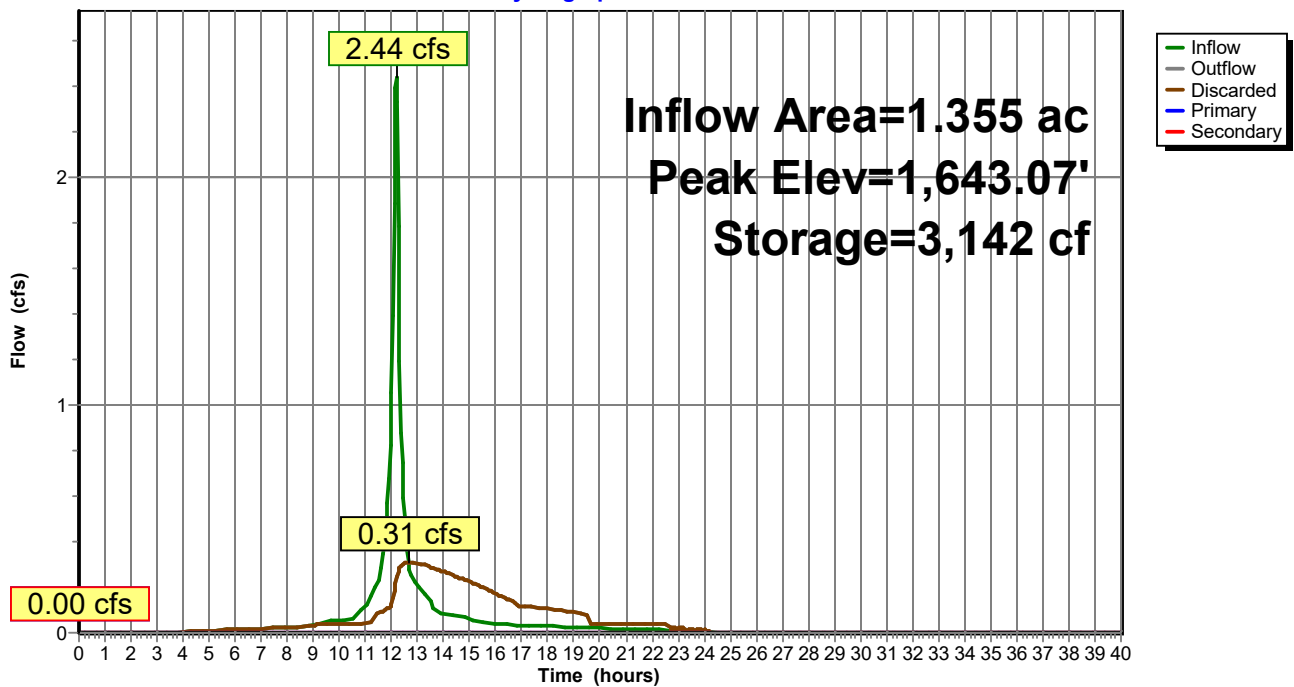
↳1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,639.00' TW=1,640.00' (Dynamic Tailwater)

↳3=Culvert ( Controls 0.00 cfs)

### Pond P2:

Hydrograph



**Summary for Pond P3:**

[92] Warning: Device #1 is above defined storage

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=90)

Inflow Area = 0.081 ac, 39.51% Impervious, Inflow Depth = 0.79" for 1-Year event  
 Inflow = 0.08 cfs @ 12.17 hrs, Volume= 0.005 af  
 Outflow = 0.01 cfs @ 11.90 hrs, Volume= 0.005 af, Atten= 84%, Lag= 0.0 min  
 Discarded = 0.01 cfs @ 11.90 hrs, Volume= 0.005 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond P4 :  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,641.70' @ 12.61 hrs Surf.Area= 150 sf Storage= 69 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 33.0 min ( 798.0 - 765.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	11,025 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,640.00'	81 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		300 cf Overall	x 27.0% Voids
		11,106 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	150	0	0
1,643.00	2,100	1,125	1,125
1,644.00	3,850	2,975	4,100
1,645.00	10,000	6,925	11,025

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,640.00	150	0	0
1,642.00	150	300	300

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,645.11'	<b>10.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,640.00'	<b>3.600 in/hr Exfiltration over Surface area</b>
#3	Primary	1,643.00'	<b>5.0' long + 4.0 ' SideZ x 10.0' 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) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.01 cfs @ 11.90 hrs HW=1,640.07' (Free Discharge)

↳2=Exfiltration (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,640.00' TW=1,640.00' (Dynamic Tailwater)

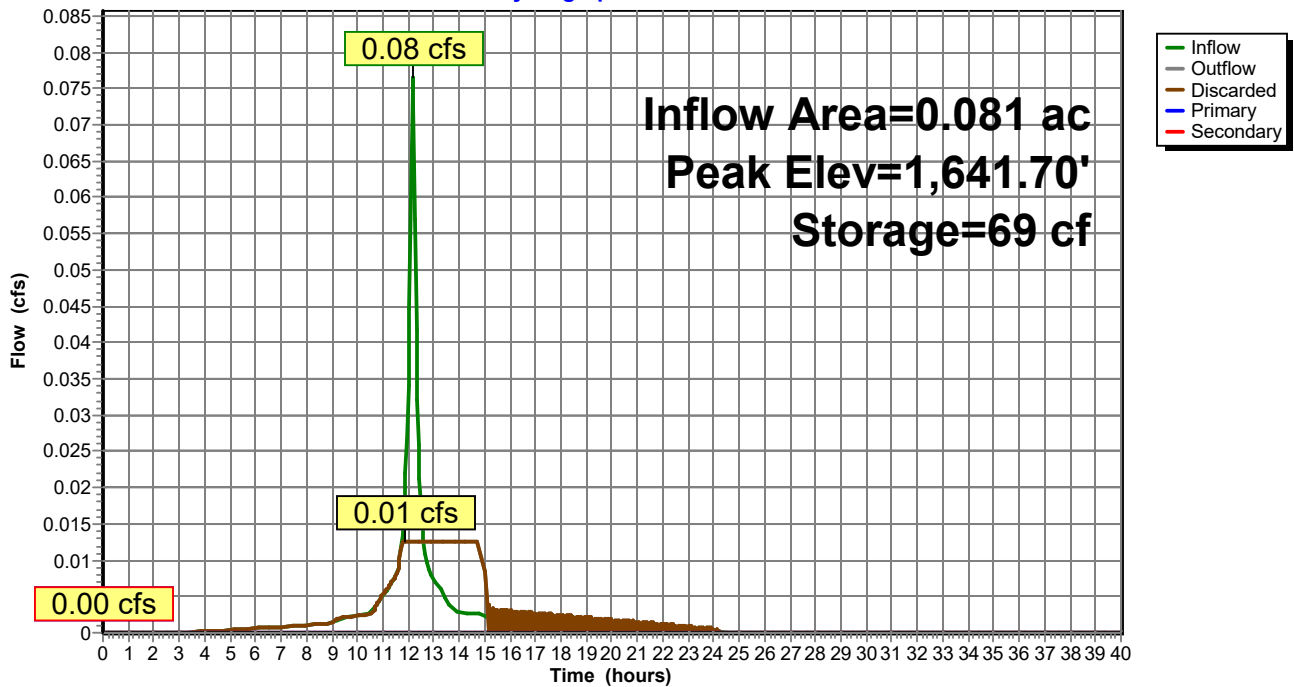
↳3=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,640.00' TW=0.00' (Dynamic Tailwater)

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

Pond P3:

Hydrograph



**Summary for Pond P4:**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=84)

Inflow Area = 0.200 ac, 36.50% Impervious, Inflow Depth = 0.41" for 1-Year event  
 Inflow = 0.10 cfs @ 12.17 hrs, Volume= 0.007 af  
 Outflow = 0.04 cfs @ 12.35 hrs, Volume= 0.007 af, Atten= 62%, Lag= 10.8 min  
 Discarded = 0.04 cfs @ 12.35 hrs, Volume= 0.007 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,642.01' @ 12.35 hrs Surf.Area= 445 sf Storage= 85 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 38.4 min ( 803.4 - 765.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	11,085 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,640.00'	81 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		300 cf Overall	x 27.0% Voids
		11,166 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	270	0	0
1,643.00	2,100	1,185	1,185
1,644.00	3,850	2,975	4,160
1,645.00	10,000	6,925	11,085

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,640.00	150	0	0
1,642.00	150	300	300

Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.00'	<b>10.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,640.00'	<b>3.600 in/hr Exfiltration over Surface area</b>
#3	Primary	1,643.63'	<b>12.0" Round Culvert</b> L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1,643.63' / 1,643.52' S= 0.0028 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.04 cfs @ 12.35 hrs HW=1,642.01' (Free Discharge)

↳2=Exfiltration (Exfiltration Controls 0.04 cfs)

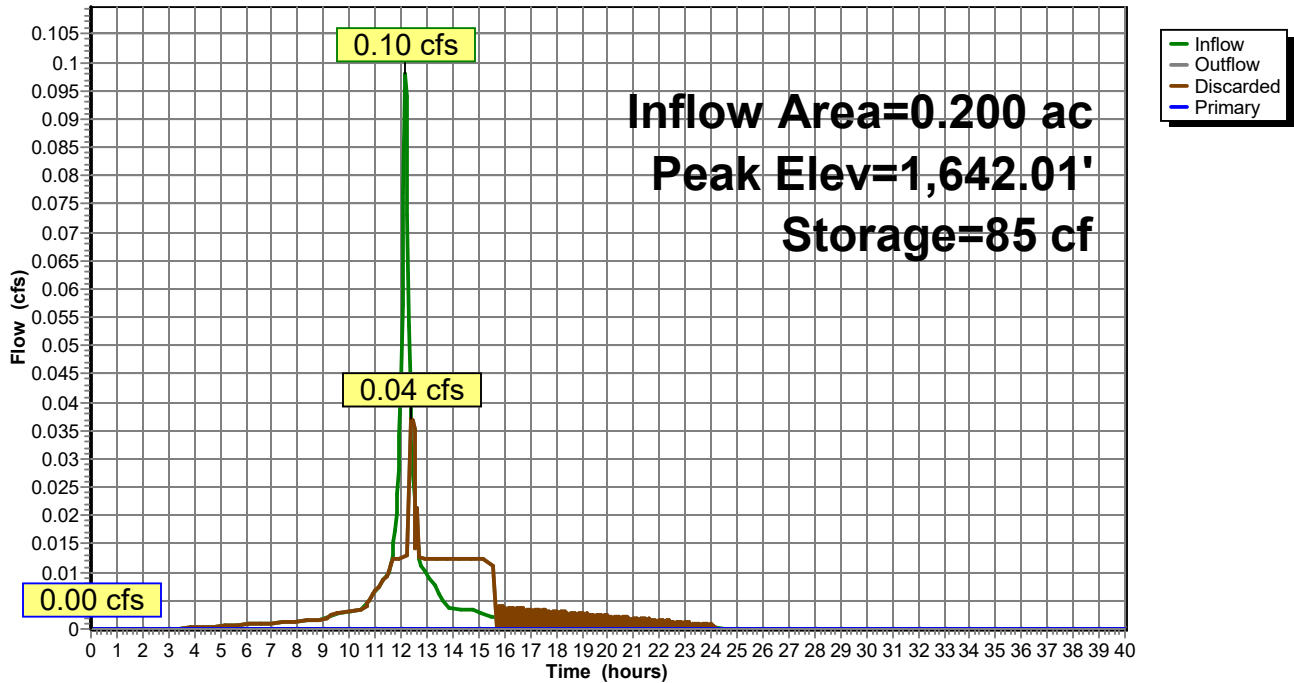
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,640.00' TW=0.00' (Dynamic Tailwater)

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

↳3=Culvert ( Controls 0.00 cfs)

Pond P4:

Hydrograph



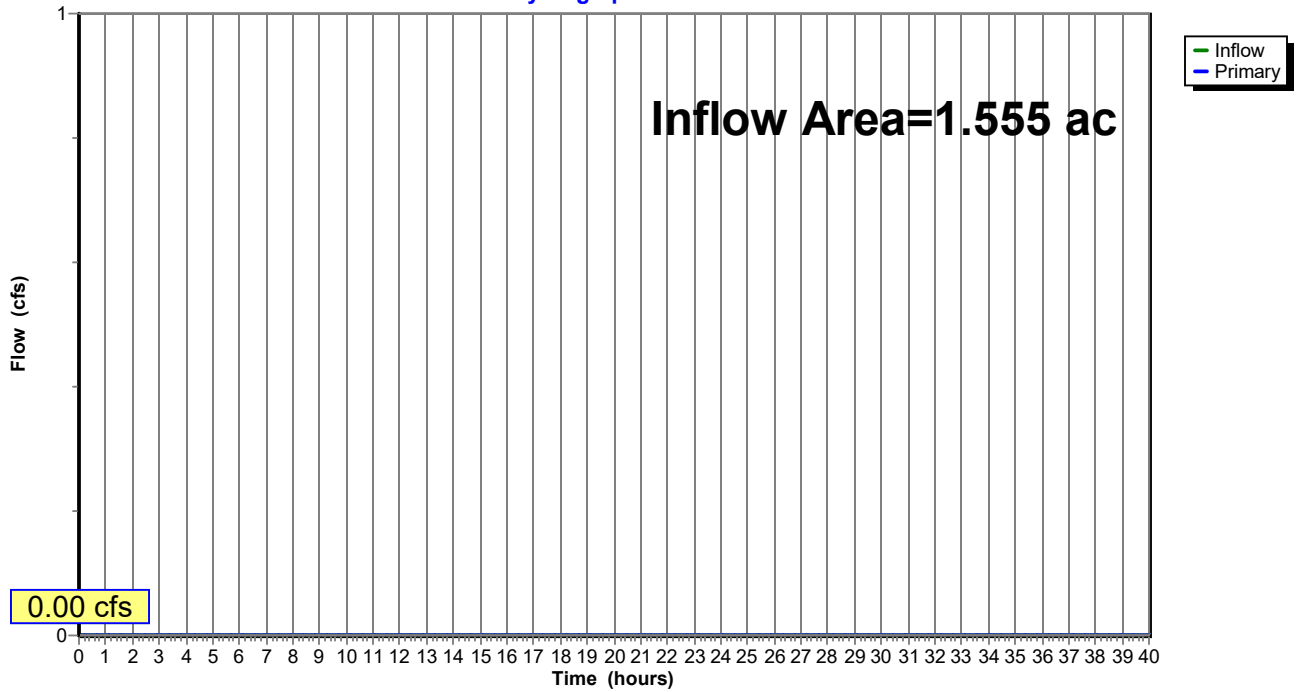
### Summary for Link 1L: link

Inflow Area = 1.555 ac, 76.27% Impervious, Inflow Depth = 0.00" for 1-Year event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

### Link 1L: link

Hydrograph



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment D1: D1** Runoff Area=0.421 ac 90.02% Impervious Runoff Depth=2.10"  
Tc=10.0 min CN=WQ Runoff=1.05 cfs 0.074 af

**Subcatchment D2: D2** Runoff Area=0.934 ac 78.59% Impervious Runoff Depth=1.83"  
Tc=10.0 min CN=WQ Runoff=2.04 cfs 0.143 af

**Subcatchment D3: D3** Runoff Area=0.081 ac 39.51% Impervious Runoff Depth=0.92"  
Tc=10.0 min CN=WQ Runoff=0.09 cfs 0.006 af

**Subcatchment D4: D4** Runoff Area=0.119 ac 34.45% Impervious Runoff Depth=0.80"  
Tc=10.0 min CN=WQ Runoff=0.11 cfs 0.008 af

**Pond P1:** Peak Elev=1,643.24' Storage=576 cf Inflow=1.05 cfs 0.074 af  
Discarded=0.07 cfs 0.042 af Primary=0.72 cfs 0.031 af Secondary=0.00 cfs 0.000 af Outflow=0.77 cfs 0.074 af

**Pond P2:** Peak Elev=1,643.23' Storage=3,715 cf Inflow=2.74 cfs 0.174 af  
Discarded=0.34 cfs 0.173 af Primary=0.00 cfs 0.000 af Secondary=0.02 cfs 0.001 af Outflow=0.35 cfs 0.174 af

**Pond P3:** Peak Elev=1,642.02' Storage=85 cf Inflow=0.09 cfs 0.007 af  
Discarded=0.03 cfs 0.007 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.007 af

**Pond P4:** Peak Elev=1,642.05' Storage=95 cf Inflow=0.11 cfs 0.008 af  
Discarded=0.04 cfs 0.008 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.008 af

**Link 1L: link** Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 1.555 ac Runoff Volume = 0.230 af Average Runoff Depth = 1.78"**  
**23.73% Pervious = 0.369 ac 76.27% Impervious = 1.186 ac**

### Summary for Subcatchment D1: D1

Runoff = 1.05 cfs @ 12.17 hrs, Volume= 0.074 af, Depth= 2.10"  
 Routed to Pond P1 :

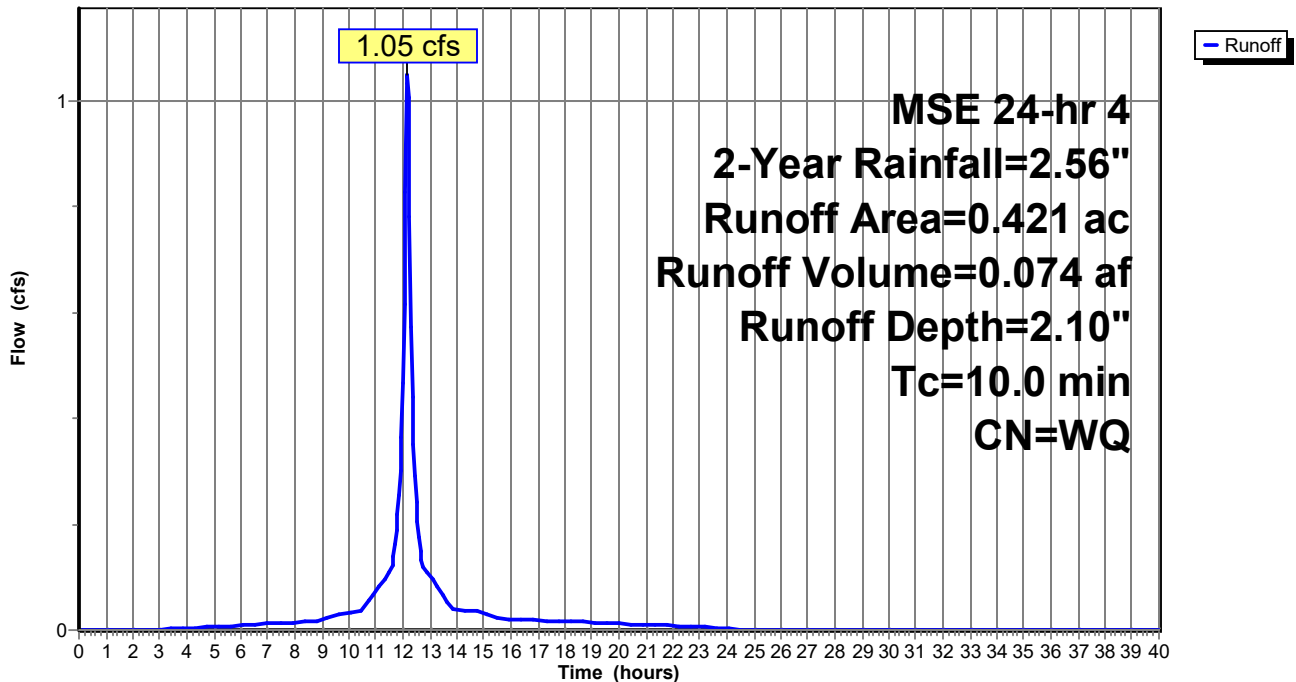
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 2-Year Rainfall=2.56"

Area (ac)	CN	Description
* 0.110	98	parking lot
* 0.268	98	building
* 0.001	98	basin
0.042	39	>75% Grass cover, Good, HSG A
0.421		Weighted Average
0.042		9.98% Pervious Area
0.379		90.02% Impervious Area

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

### Subcatchment D1: D1

Hydrograph



**Summary for Subcatchment D2: D2**

Runoff = 2.04 cfs @ 12.17 hrs, Volume= 0.143 af, Depth= 1.83"  
 Routed to Pond P2 :

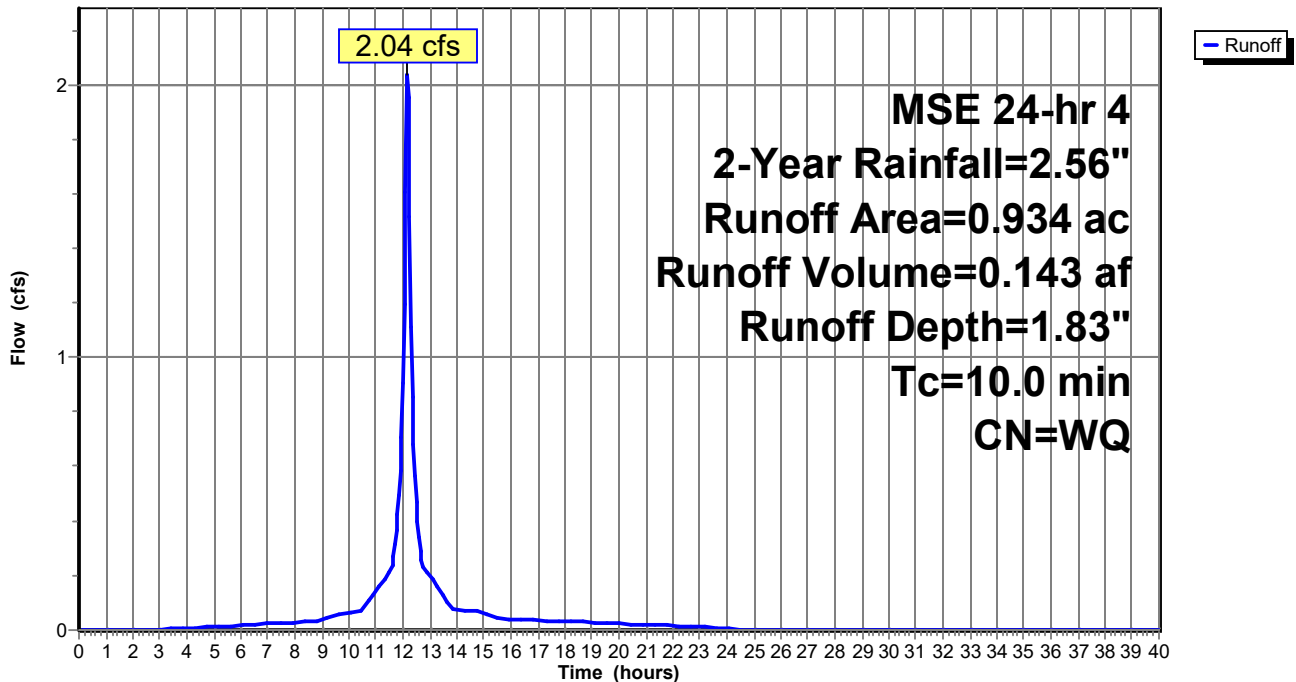
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 2-Year Rainfall=2.56"

Area (ac)	CN	Description
* 0.014	98	basin
* 0.387	98	parking lot
0.200	39	>75% Grass cover, Good, HSG A
* 0.333	98	building
0.934		Weighted Average
0.200		21.41% Pervious Area
0.734		78.59% Impervious Area

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

**Subcatchment D2: D2**

Hydrograph



### Summary for Subcatchment D3: D3

Runoff = 0.09 cfs @ 12.17 hrs, Volume= 0.006 af, Depth= 0.92"  
 Routed to Pond P3 :

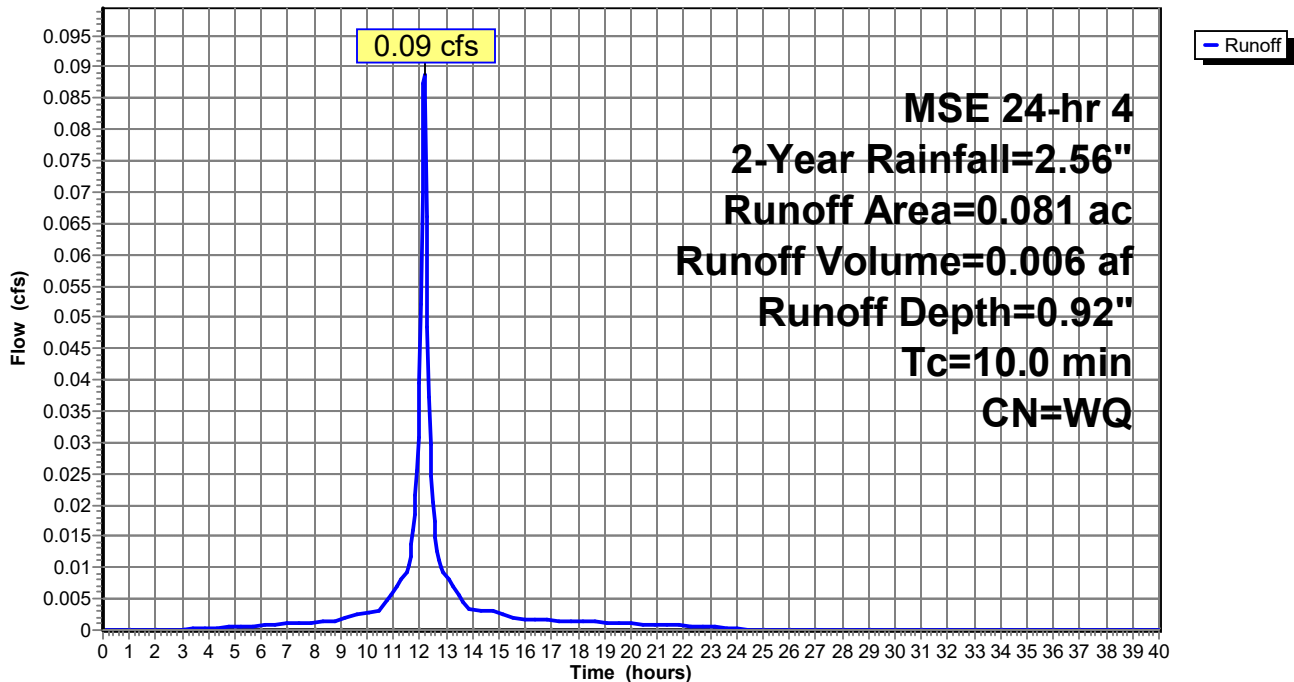
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 2-Year Rainfall=2.56"

Area (ac)	CN	Description
* 0.007	98	parking lot
* 0.021	98	building
* 0.004	98	basin
0.049	39	>75% Grass cover, Good, HSG A
0.081		Weighted Average
0.049		60.49% Pervious Area
0.032		39.51% Impervious Area

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

### Subcatchment D3: D3

Hydrograph



**Summary for Subcatchment D4: D4**

Runoff = 0.11 cfs @ 12.17 hrs, Volume= 0.008 af, Depth= 0.80"  
 Routed to Pond P4 :

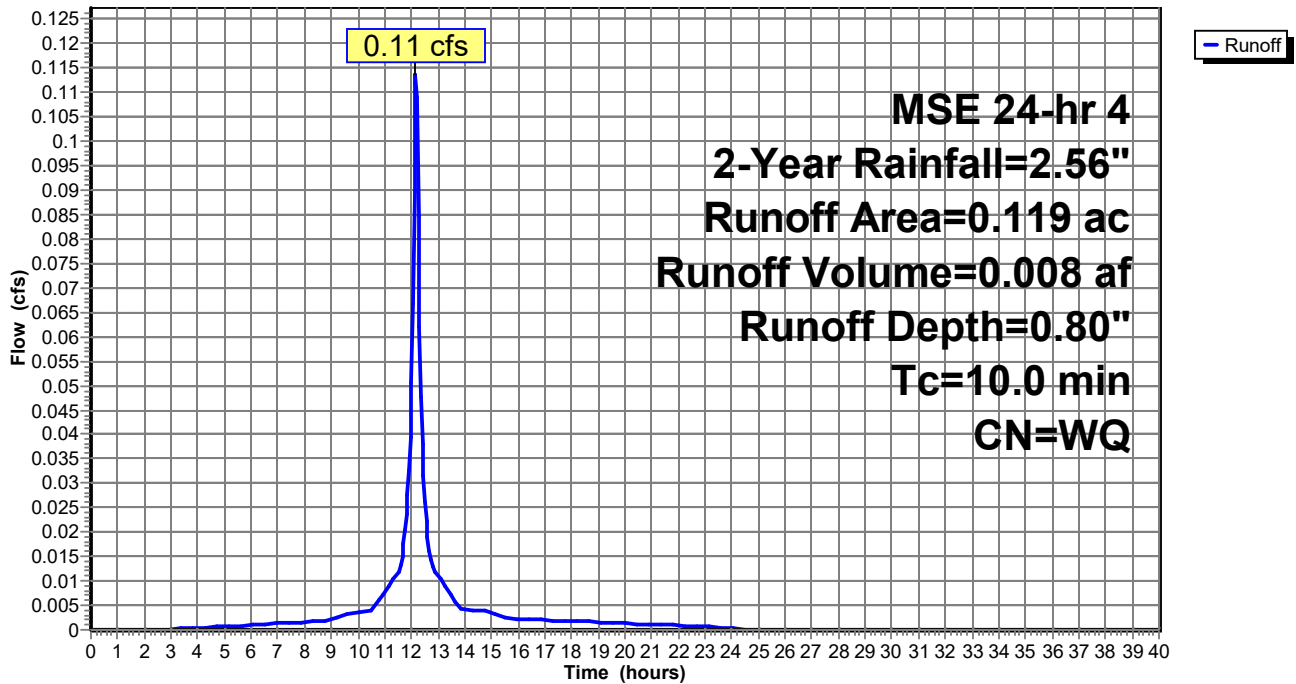
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 2-Year Rainfall=2.56"

Area (ac)	CN	Description
* 0.034	98	building
* 0.007	98	basin
0.078	39	>75% Grass cover, Good, HSG A
0.119		Weighted Average
0.078		65.55% Pervious Area
0.041		34.45% Impervious Area

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

**Subcatchment D4: D4**

Hydrograph



**Summary for Pond P1:**

Inflow Area = 0.421 ac, 90.02% Impervious, Inflow Depth = 2.10" for 2-Year event  
 Inflow = 1.05 cfs @ 12.17 hrs, Volume= 0.074 af  
 Outflow = 0.77 cfs @ 12.18 hrs, Volume= 0.074 af, Atten= 26%, Lag= 0.6 min  
 Discarded = 0.07 cfs @ 12.71 hrs, Volume= 0.042 af  
 Primary = 0.72 cfs @ 12.18 hrs, Volume= 0.031 af  
 Routed to Pond P2 :  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,643.24' @ 12.71 hrs Surf.Area= 834 sf Storage= 576 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 49.6 min ( 811.5 - 762.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	8,625 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,640.00'	81 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		300 cf Overall x 27.0% Voids	
		8,706 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	150	0	0
1,643.00	550	350	350
1,644.00	1,120	835	1,185
1,645.00	1,880	1,500	2,685
1,646.00	10,000	5,940	8,625

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,640.00	150	0	0
1,642.00	150	300	300

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,644.70'	<b>5.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,640.00'	<b>3.600 in/hr Exfiltration over Surface area</b>
#3	Primary	1,642.15'	<b>12.0" Round Culvert</b> L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,642.15' / 1,642.00' S= 0.0027 ' S= 0.0027 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.07 cfs @ 12.71 hrs HW=1,643.23' (Free Discharge)

↳2=Exfiltration (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 12.18 hrs HW=1,642.81' TW=1,642.83' (Dynamic Tailwater)

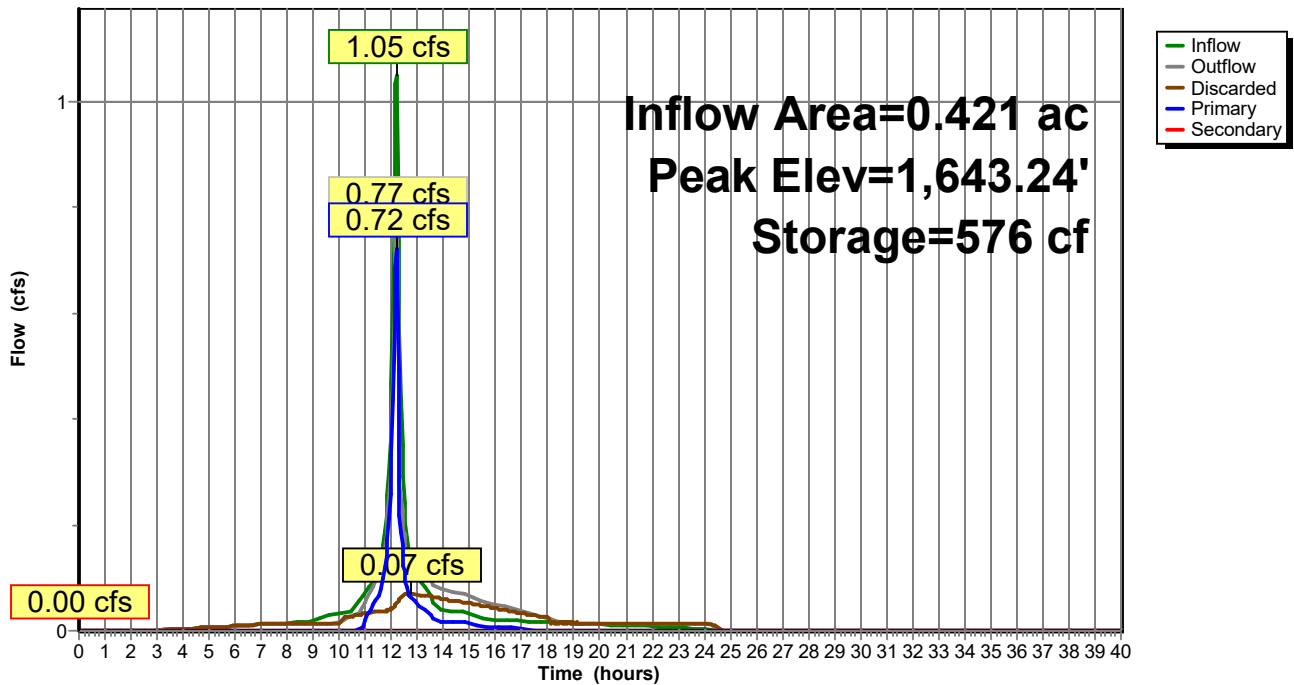
↳3=Culvert ( Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,640.00' TW=0.00' (Dynamic Tailwater)

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

Pond P1:

Hydrograph



**Summary for Pond P2:**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=7)

[80] Warning: Exceeded Pond P1 by 0.08' @ 12.25 hrs (0.75 cfs 0.019 af)

Inflow Area = 1.355 ac, 82.14% Impervious, Inflow Depth = 1.54" for 2-Year event  
 Inflow = 2.74 cfs @ 12.17 hrs, Volume= 0.174 af  
 Outflow = 0.35 cfs @ 12.66 hrs, Volume= 0.174 af, Atten= 87%, Lag= 29.3 min  
 Discarded = 0.34 cfs @ 12.66 hrs, Volume= 0.173 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 1L : link  
 Secondary = 0.02 cfs @ 12.66 hrs, Volume= 0.001 af  
 Routed to Pond P3 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,643.23' @ 12.66 hrs Surf.Area= 4,061 sf Storage= 3,715 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 128.1 min ( 887.3 - 759.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	19,450 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,639.00'	270 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		1,000 cf Overall	x 27.0% Voids
		19,720 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	500	0	0
1,642.00	900	700	700
1,643.00	3,040	1,970	2,670
1,644.00	5,260	4,150	6,820
1,645.00	20,000	12,630	19,450

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,639.00	500	0	0
1,641.00	500	1,000	1,000

Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.79'	<b>10.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,639.00'	<b>3.600 in/hr Exfiltration over Surface area</b>
#3	Secondary	1,643.15'	<b>12.0" Round Culvert</b> L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,643.15' / 1,643.00' S= 0.0027 ' /' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Discarded OutFlow** Max=0.34 cfs @ 12.66 hrs HW=1,643.23' (Free Discharge)

↳ **2=Exfiltration** (Exfiltration Controls 0.34 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,639.00' TW=0.00' (Dynamic Tailwater)

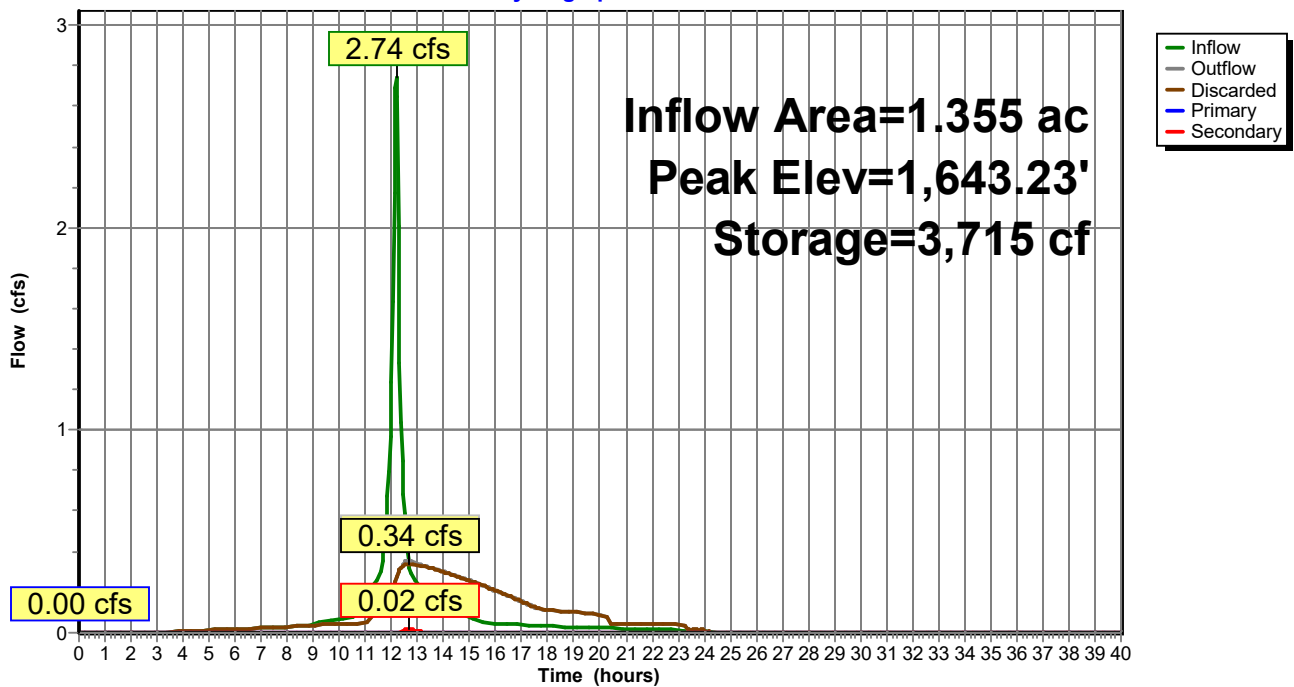
↳ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.02 cfs @ 12.66 hrs HW=1,643.23' TW=1,642.02' (Dynamic Tailwater)

↳ **3=Culvert** (Barrel Controls 0.02 cfs @ 0.79 fps)

**Pond P2:**

Hydrograph



**Summary for Pond P3:**

[92] Warning: Device #1 is above defined storage

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=83)

Inflow Area = 0.081 ac, 39.51% Impervious, Inflow Depth = 1.03" for 2-Year event  
 Inflow = 0.09 cfs @ 12.17 hrs, Volume= 0.007 af  
 Outflow = 0.03 cfs @ 12.67 hrs, Volume= 0.007 af, Atten= 68%, Lag= 30.1 min  
 Discarded = 0.03 cfs @ 12.67 hrs, Volume= 0.007 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond P4 :  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,642.02' @ 12.67 hrs Surf.Area= 341 sf Storage= 85 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 39.3 min ( 801.8 - 762.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	11,025 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,640.00'	81 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		300 cf Overall	x 27.0% Voids
		11,106 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	150	0	0
1,643.00	2,100	1,125	1,125
1,644.00	3,850	2,975	4,100
1,645.00	10,000	6,925	11,025

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,640.00	150	0	0
1,642.00	150	300	300

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,645.11'	<b>10.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,640.00'	<b>3.600 in/hr Exfiltration over Surface area</b>
#3	Primary	1,643.00'	<b>5.0' long + 4.0 ' SideZ x 10.0' 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) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Discarded OutFlow** Max=0.03 cfs @ 12.67 hrs HW=1,642.02' (Free Discharge)

↳ **2=Exfiltration** (Exfiltration Controls 0.03 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,640.00' TW=1,640.00' (Dynamic Tailwater)

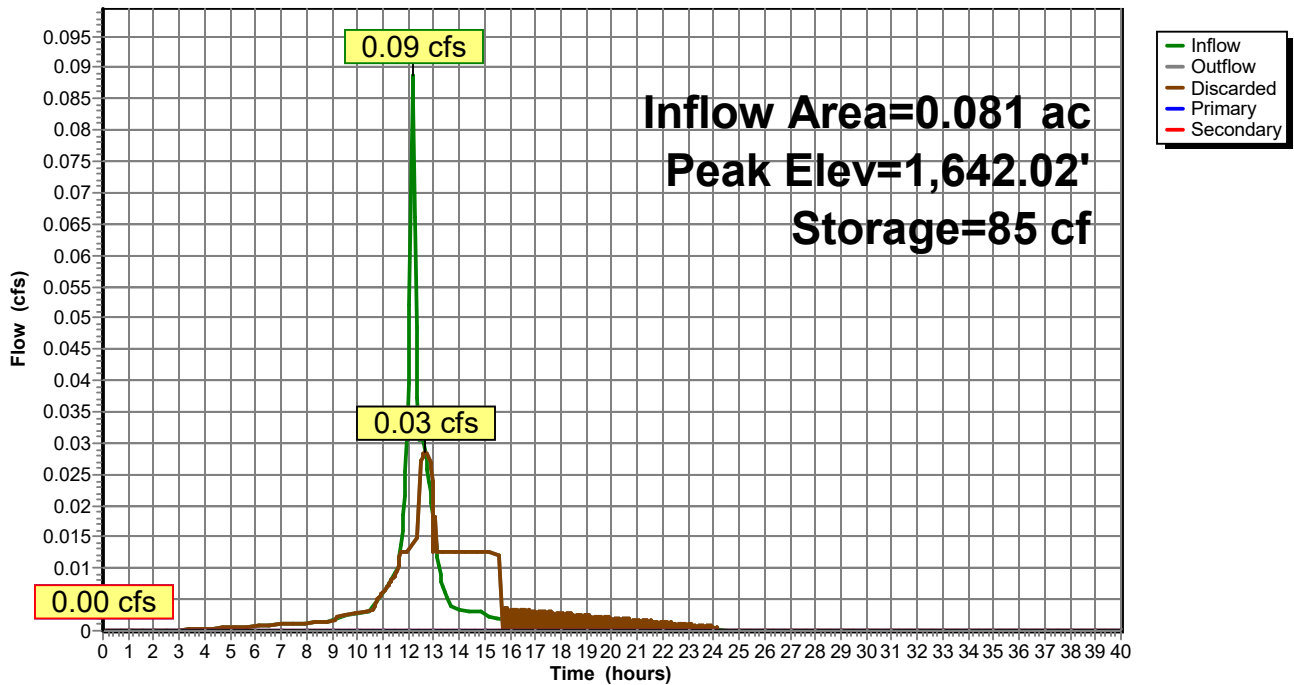
↳ **3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,640.00' TW=0.00' (Dynamic Tailwater)

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

**Pond P3:**

Hydrograph



**Summary for Pond P4:**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=82)

Inflow Area = 0.200 ac, 36.50% Impervious, Inflow Depth = 0.48" for 2-Year event  
 Inflow = 0.11 cfs @ 12.17 hrs, Volume= 0.008 af  
 Outflow = 0.04 cfs @ 12.38 hrs, Volume= 0.008 af, Atten= 63%, Lag= 12.8 min  
 Discarded = 0.04 cfs @ 12.38 hrs, Volume= 0.008 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,642.05' @ 12.38 hrs Surf.Area= 503 sf Storage= 95 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 36.9 min ( 798.8 - 762.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	11,085 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,640.00'	81 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		300 cf Overall x 27.0% Voids	
		11,166 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	270	0	0
1,643.00	2,100	1,185	1,185
1,644.00	3,850	2,975	4,160
1,645.00	10,000	6,925	11,085

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,640.00	150	0	0
1,642.00	150	300	300

Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.00'	<b>10.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,640.00'	<b>3.600 in/hr Exfiltration over Surface area</b>
#3	Primary	1,643.63'	<b>12.0" Round Culvert</b> L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1,643.63' / 1,643.52' S= 0.0028 ' S= 0.0028 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.04 cfs @ 12.38 hrs HW=1,642.04' (Free Discharge)

↳2=Exfiltration (Exfiltration Controls 0.04 cfs)

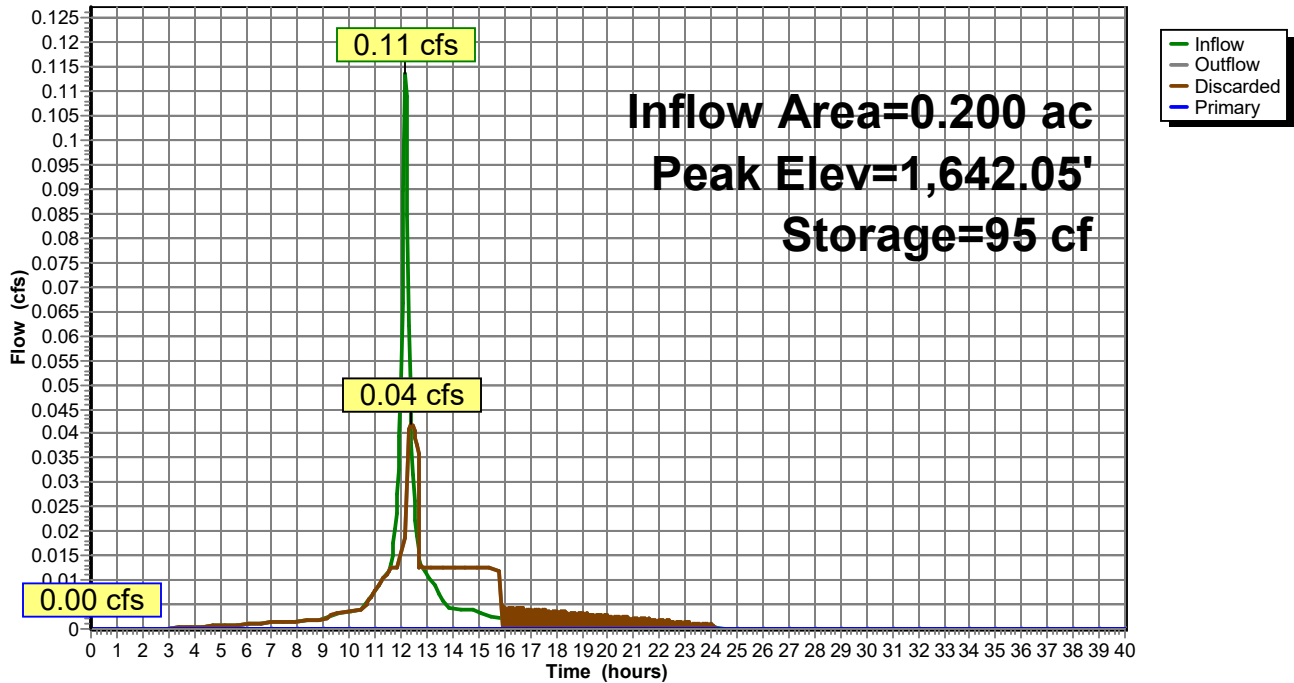
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,640.00' TW=0.00' (Dynamic Tailwater)

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

↳3=Culvert ( Controls 0.00 cfs)

**Pond P4:**

Hydrograph



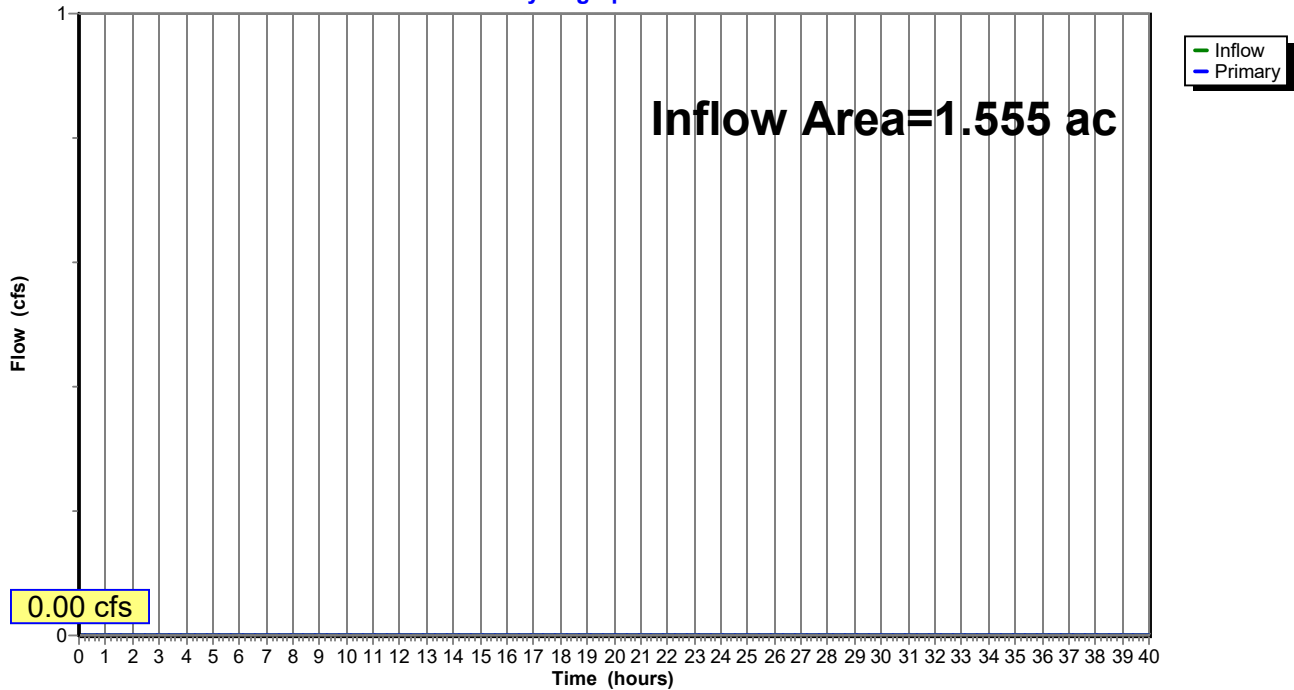
### Summary for Link 1L: link

Inflow Area = 1.555 ac, 76.27% Impervious, Inflow Depth = 0.00" for 2-Year event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

### Link 1L: link

Hydrograph



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment D1: D1** Runoff Area=0.421 ac 90.02% Impervious Runoff Depth=3.20"  
Tc=10.0 min CN=WQ Runoff=1.57 cfs 0.112 af

**Subcatchment D2: D2** Runoff Area=0.934 ac 78.59% Impervious Runoff Depth=2.80"  
Tc=10.0 min CN=WQ Runoff=3.04 cfs 0.218 af

**Subcatchment D3: D3** Runoff Area=0.081 ac 39.51% Impervious Runoff Depth=1.42"  
Tc=10.0 min CN=WQ Runoff=0.13 cfs 0.010 af

**Subcatchment D4: D4** Runoff Area=0.119 ac 34.45% Impervious Runoff Depth=1.24"  
Tc=10.0 min CN=WQ Runoff=0.17 cfs 0.012 af

**Pond P1:** Peak Elev=1,643.63' Storage=895 cf Inflow=1.57 cfs 0.112 af  
Discarded=0.09 cfs 0.056 af Primary=0.95 cfs 0.056 af Secondary=0.00 cfs 0.000 af Outflow=1.02 cfs 0.112 af

**Pond P2:** Peak Elev=1,643.63' Storage=5,298 cf Inflow=4.00 cfs 0.274 af  
Discarded=0.41 cfs 0.231 af Primary=0.00 cfs 0.000 af Secondary=0.57 cfs 0.044 af Outflow=0.98 cfs 0.274 af

**Pond P3:** Peak Elev=1,643.01' Storage=1,223 cf Inflow=0.60 cfs 0.053 af  
Discarded=0.19 cfs 0.053 af Primary=0.01 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.20 cfs 0.053 af

**Pond P4:** Peak Elev=1,642.17' Storage=152 cf Inflow=0.17 cfs 0.012 af  
Discarded=0.06 cfs 0.012 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.012 af

**Link 1L: link** Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 1.555 ac Runoff Volume = 0.352 af Average Runoff Depth = 2.72"**  
**23.73% Pervious = 0.369 ac 76.27% Impervious = 1.186 ac**

**Summary for Subcatchment D1: D1**

Runoff = 1.57 cfs @ 12.17 hrs, Volume= 0.112 af, Depth= 3.20"  
 Routed to Pond P1 :

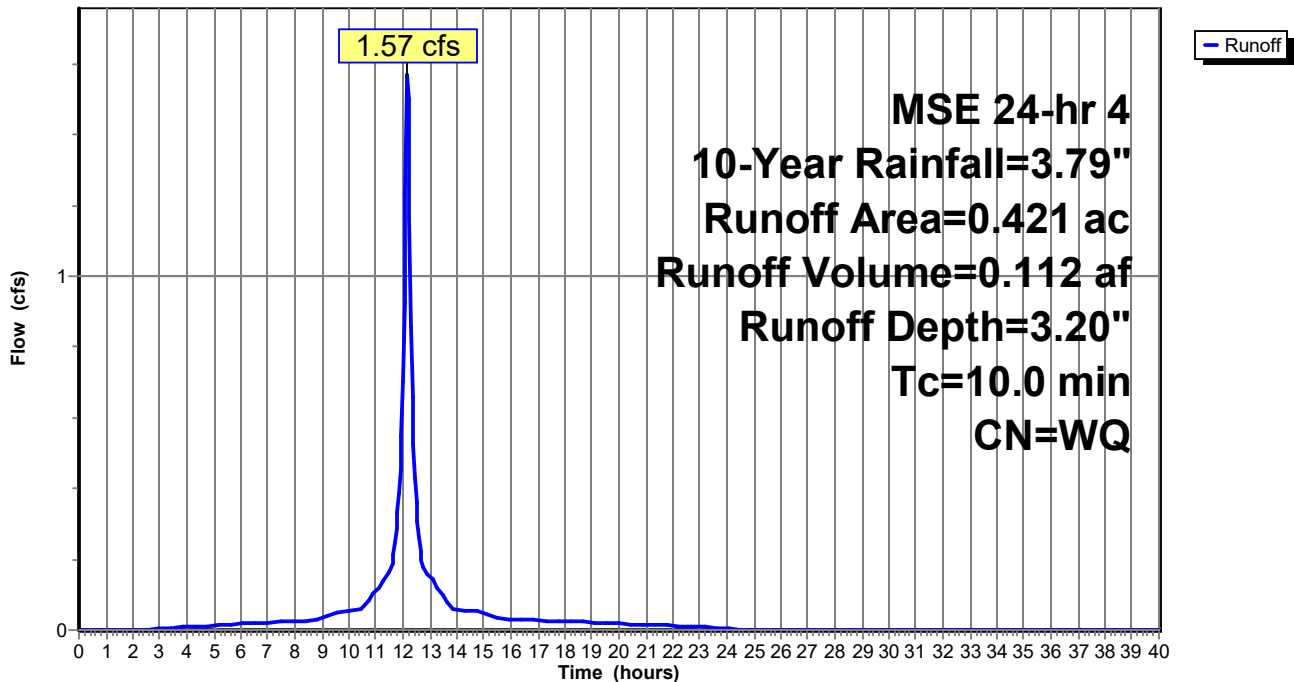
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 10-Year Rainfall=3.79"

Area (ac)	CN	Description
* 0.110	98	parking lot
* 0.268	98	building
* 0.001	98	basin
0.042	39	>75% Grass cover, Good, HSG A
0.421		Weighted Average
0.042		9.98% Pervious Area
0.379		90.02% Impervious Area

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

**Subcatchment D1: D1**

Hydrograph



**Summary for Subcatchment D2: D2**

Runoff = 3.04 cfs @ 12.17 hrs, Volume= 0.218 af, Depth= 2.80"  
 Routed to Pond P2 :

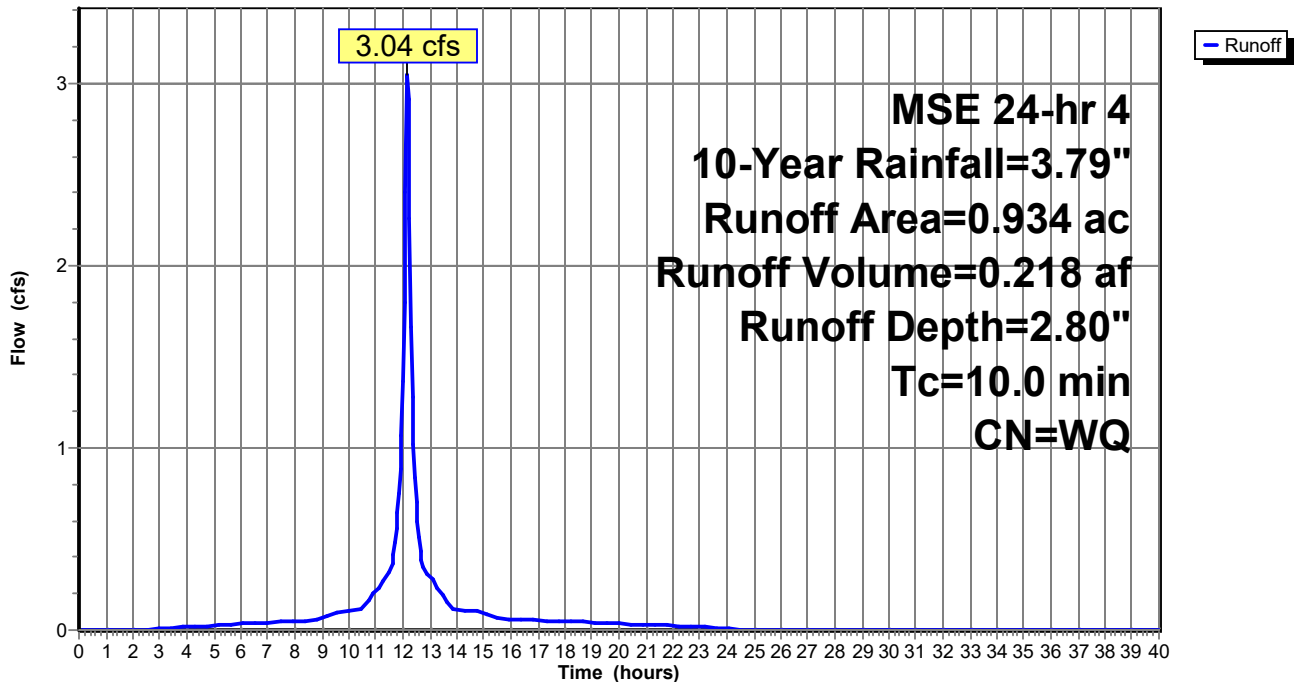
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 10-Year Rainfall=3.79"

Area (ac)	CN	Description
* 0.014	98	basin
* 0.387	98	parking lot
0.200	39	>75% Grass cover, Good, HSG A
* 0.333	98	building
0.934		Weighted Average
0.200		21.41% Pervious Area
0.734		78.59% Impervious Area

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

**Subcatchment D2: D2**

Hydrograph



**Summary for Subcatchment D3: D3**

Runoff = 0.13 cfs @ 12.17 hrs, Volume= 0.010 af, Depth= 1.42"  
 Routed to Pond P3 :

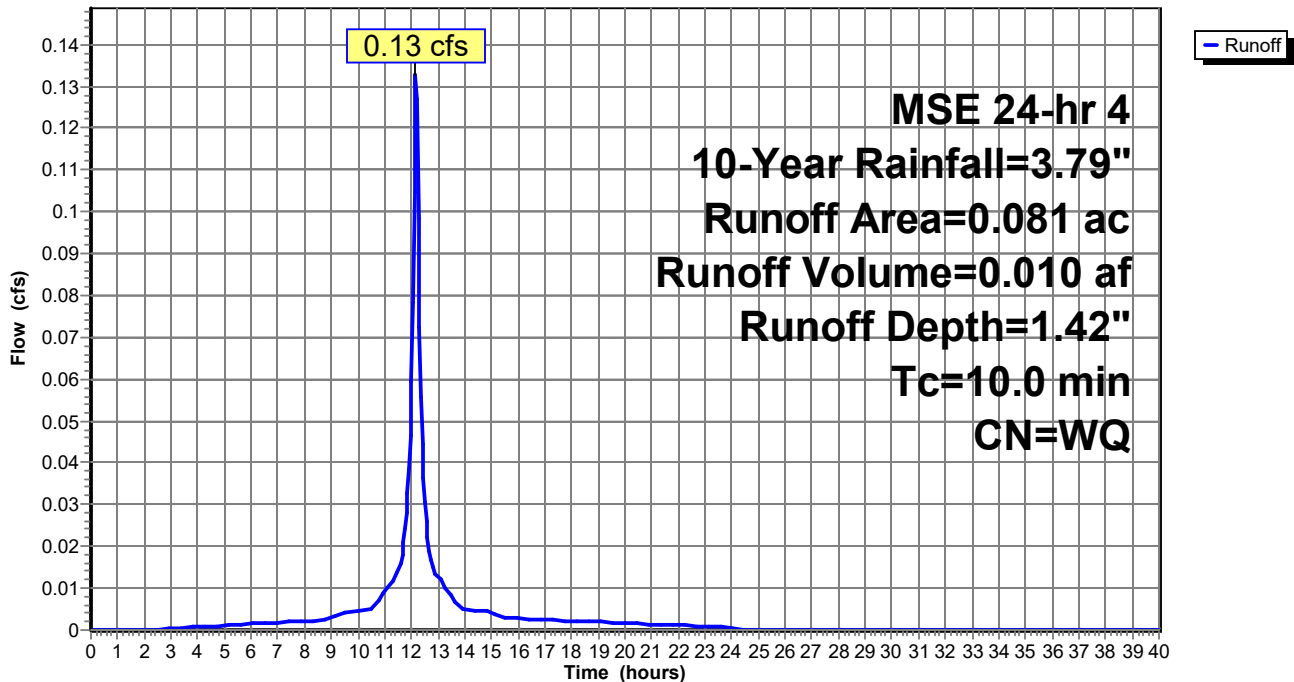
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 10-Year Rainfall=3.79"

Area (ac)	CN	Description
* 0.007	98	parking lot
* 0.021	98	building
* 0.004	98	basin
0.049	39	>75% Grass cover, Good, HSG A
0.081		Weighted Average
0.049		60.49% Pervious Area
0.032		39.51% Impervious Area

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

**Subcatchment D3: D3**

Hydrograph



**Summary for Subcatchment D4: D4**

Runoff = 0.17 cfs @ 12.17 hrs, Volume= 0.012 af, Depth= 1.24"  
 Routed to Pond P4 :

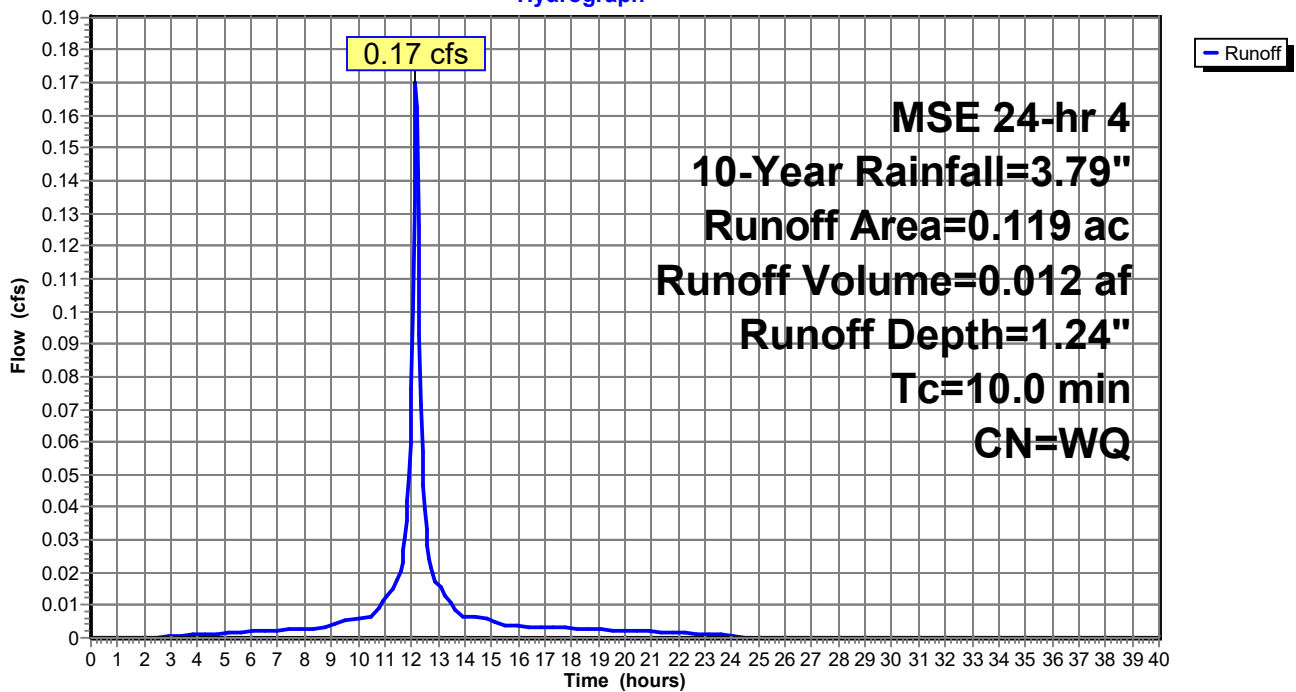
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 10-Year Rainfall=3.79"

Area (ac)	CN	Description
* 0.034	98	building
* 0.007	98	basin
0.078	39	>75% Grass cover, Good, HSG A
0.119		Weighted Average
0.078		65.55% Pervious Area
0.041		34.45% Impervious Area

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

**Subcatchment D4: D4**

Hydrograph



**Summary for Pond P1:**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=8)

Inflow Area = 0.421 ac, 90.02% Impervious, Inflow Depth = 3.20" for 10-Year event  
 Inflow = 1.57 cfs @ 12.17 hrs, Volume= 0.112 af  
 Outflow = 1.02 cfs @ 12.17 hrs, Volume= 0.112 af, Atten= 35%, Lag= 0.0 min  
 Discarded = 0.09 cfs @ 12.54 hrs, Volume= 0.056 af  
 Primary = 0.95 cfs @ 12.17 hrs, Volume= 0.056 af  
 Routed to Pond P2 :  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,643.63' @ 12.54 hrs Surf.Area= 1,062 sf Storage= 895 cf

Plug-Flow detention time= 48.9 min calculated for 0.112 af (100% of inflow)  
 Center-of-Mass det. time= 49.1 min ( 804.0 - 754.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	8,625 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,640.00'	81 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		300 cf Overall x 27.0% Voids	
		8,706 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	150	0	0
1,643.00	550	350	350
1,644.00	1,120	835	1,185
1,645.00	1,880	1,500	2,685
1,646.00	10,000	5,940	8,625

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,640.00	150	0	0
1,642.00	150	300	300

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,644.70'	<b>5.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,640.00'	<b>3.600 in/hr Exfiltration over Surface area</b>
#3	Primary	1,642.15'	<b>12.0" Round Culvert</b> L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,642.15' / 1,642.00' S= 0.0027 ' S= 0.0027 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.09 cfs @ 12.54 hrs HW=1,643.63' (Free Discharge)

↳2=Exfiltration (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 12.17 hrs HW=1,643.16' TW=1,643.25' (Dynamic Tailwater)

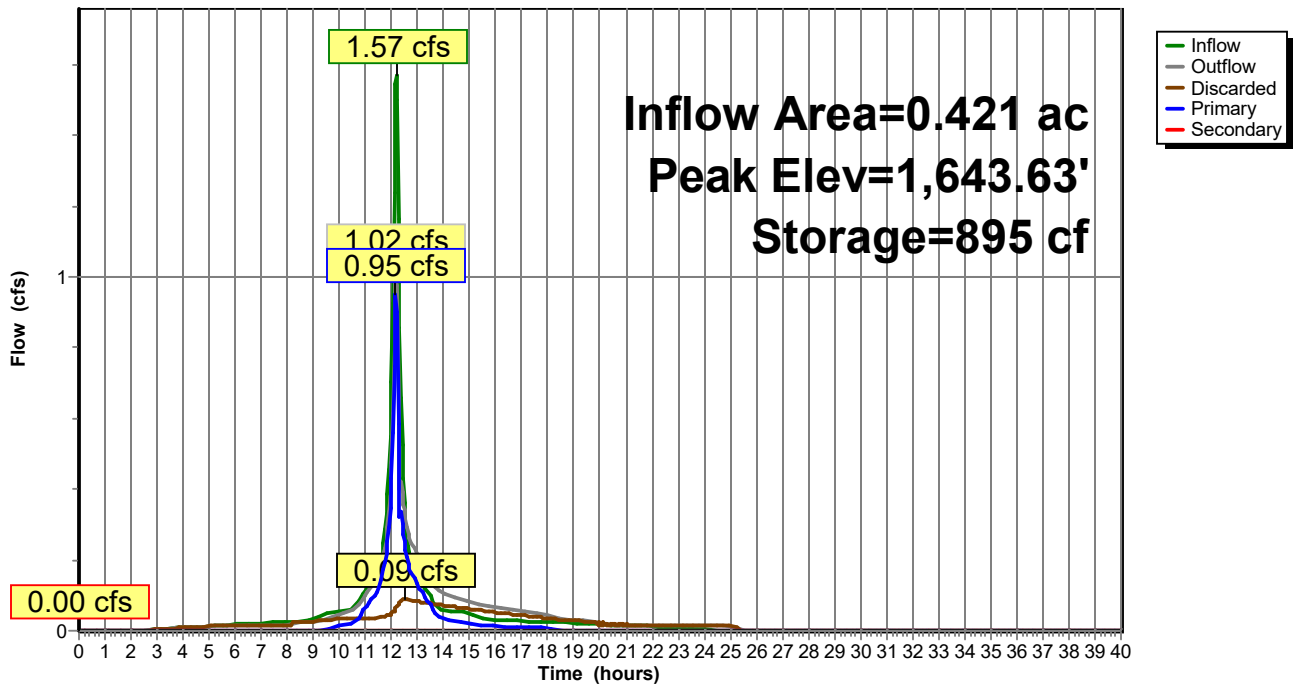
↳3=Culvert ( Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,640.00' TW=0.00' (Dynamic Tailwater)

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

Pond P1:

Hydrograph



**Summary for Pond P2:**

[80] Warning: Exceeded Pond P1 by 0.10' @ 12.20 hrs (1.18 cfs 0.028 af)

Inflow Area = 1.355 ac, 82.14% Impervious, Inflow Depth = 2.43" for 10-Year event  
 Inflow = 4.00 cfs @ 12.17 hrs, Volume= 0.274 af  
 Outflow = 0.98 cfs @ 12.49 hrs, Volume= 0.274 af, Atten= 75%, Lag= 19.5 min  
 Discarded = 0.41 cfs @ 12.49 hrs, Volume= 0.231 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 1L : link  
 Secondary = 0.57 cfs @ 12.49 hrs, Volume= 0.044 af  
 Routed to Pond P3 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,643.63' @ 12.49 hrs Surf.Area= 4,940 sf Storage= 5,298 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 119.4 min ( 873.9 - 754.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	19,450 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,639.00'	270 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
			1,000 cf Overall x 27.0% Voids
		19,720 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	500	0	0
1,642.00	900	700	700
1,643.00	3,040	1,970	2,670
1,644.00	5,260	4,150	6,820
1,645.00	20,000	12,630	19,450

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,639.00	500	0	0
1,641.00	500	1,000	1,000

Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.79'	<b>10.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,639.00'	<b>3.600 in/hr Exfiltration over Surface area</b>
#3	Secondary	1,643.15'	<b>12.0" Round Culvert</b> L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,643.15' / 1,643.00' S= 0.0027 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

**Discarded OutFlow** Max=0.41 cfs @ 12.49 hrs HW=1,643.63' (Free Discharge)

↳ **2=Exfiltration** (Exfiltration Controls 0.41 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,639.00' TW=0.00' (Dynamic Tailwater)

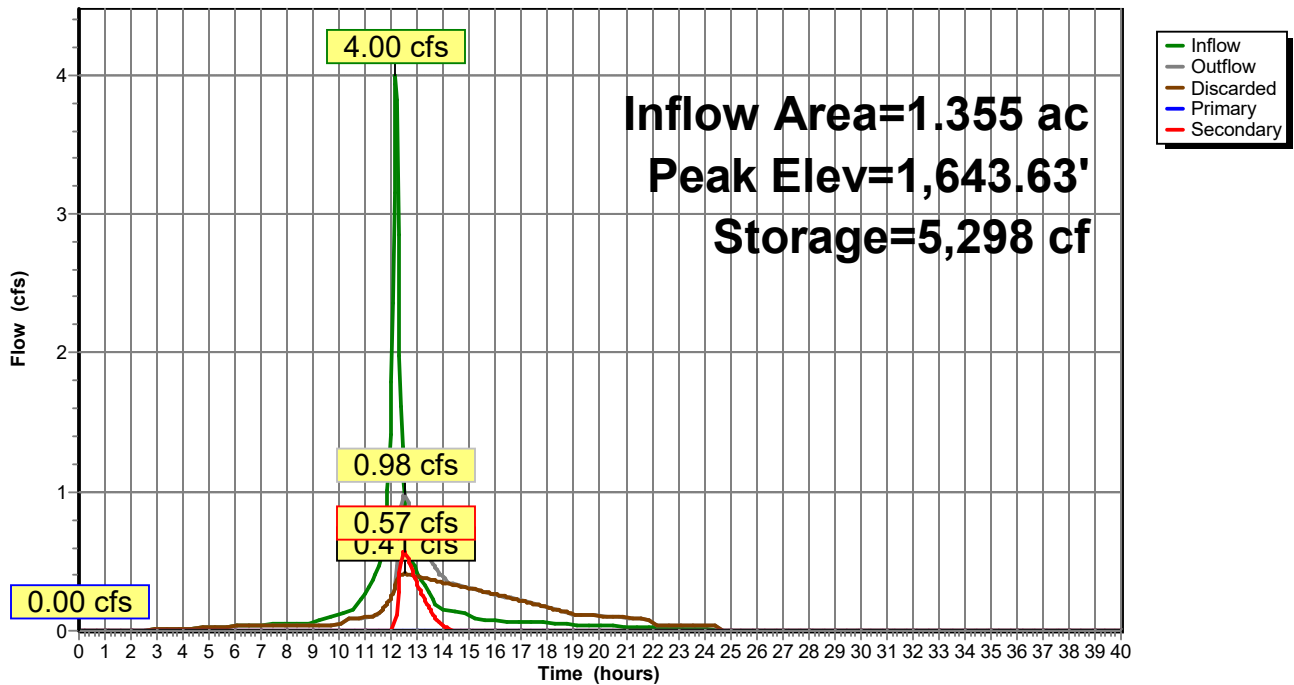
↳ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.57 cfs @ 12.49 hrs HW=1,643.63' TW=1,642.61' (Dynamic Tailwater)

↳ **3=Culvert** (Barrel Controls 0.57 cfs @ 2.23 fps)

**Pond P2:**

Hydrograph



**Summary for Pond P3:**

[92] Warning: Device #1 is above defined storage

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=49)

Inflow Area = 0.081 ac, 39.51% Impervious, Inflow Depth = 7.88" for 10-Year event  
 Inflow = 0.60 cfs @ 12.47 hrs, Volume= 0.053 af  
 Outflow = 0.20 cfs @ 13.37 hrs, Volume= 0.053 af, Atten= 67%, Lag= 53.7 min  
 Discarded = 0.19 cfs @ 13.37 hrs, Volume= 0.053 af  
 Primary = 0.01 cfs @ 13.37 hrs, Volume= 0.000 af  
 Routed to Pond P4 :  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,643.01' @ 13.37 hrs Surf.Area= 2,264 sf Storage= 1,223 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 78.9 min ( 847.0 - 768.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	11,025 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,640.00'	81 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		300 cf Overall x 27.0% Voids	
		11,106 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	150	0	0
1,643.00	2,100	1,125	1,125
1,644.00	3,850	2,975	4,100
1,645.00	10,000	6,925	11,025

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,640.00	150	0	0
1,642.00	150	300	300

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,645.11'	<b>10.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,640.00'	<b>3.600 in/hr Exfiltration over Surface area</b>
#3	Primary	1,643.00'	<b>5.0' long + 4.0 ' SideZ x 10.0' 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) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.19 cfs @ 13.37 hrs HW=1,643.01' (Free Discharge)

↳2=Exfiltration (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.01 cfs @ 13.37 hrs HW=1,643.01' TW=1,642.00' (Dynamic Tailwater)

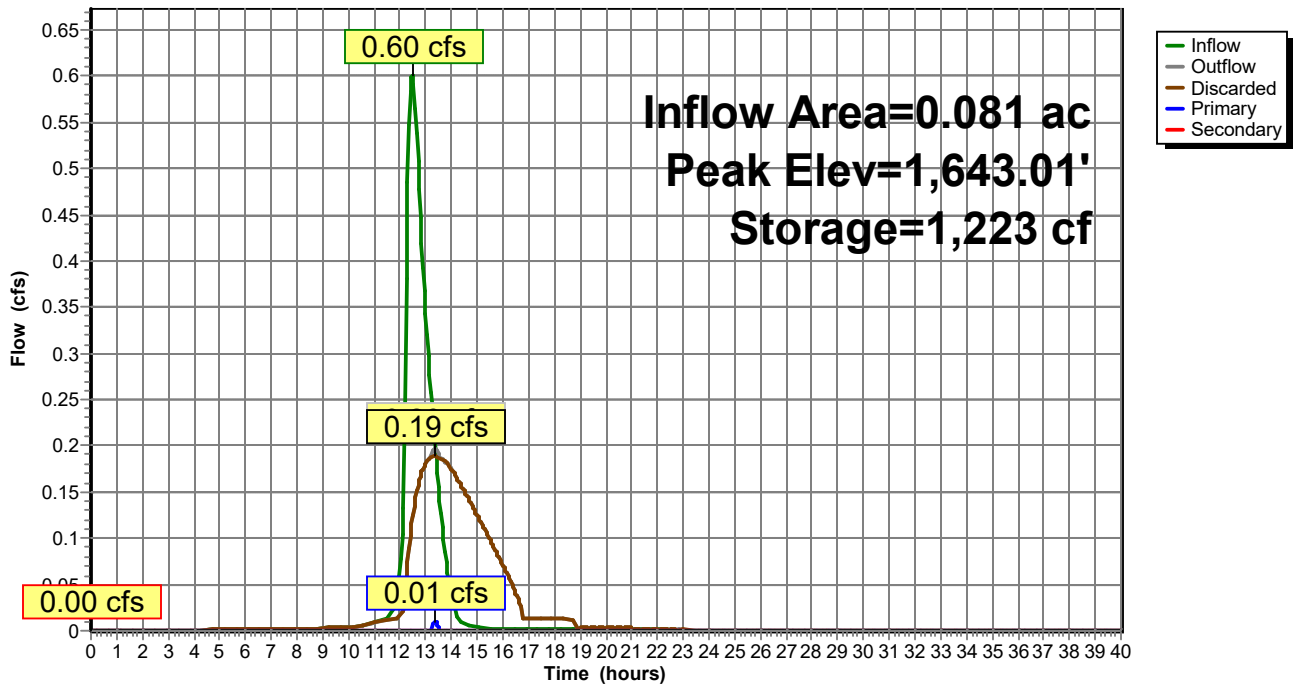
↳3=Broad-Crested Rectangular Weir (Weir Controls 0.01 cfs @ 0.22 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,640.00' TW=0.00' (Dynamic Tailwater)

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

Pond P3:

Hydrograph



**Summary for Pond P4:**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=75)

Inflow Area = 0.200 ac, 36.50% Impervious, Inflow Depth = 0.75" for 10-Year event  
 Inflow = 0.17 cfs @ 12.17 hrs, Volume= 0.012 af  
 Outflow = 0.06 cfs @ 12.39 hrs, Volume= 0.012 af, Atten= 64%, Lag= 13.3 min  
 Discarded = 0.06 cfs @ 12.39 hrs, Volume= 0.012 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,642.17' @ 12.39 hrs Surf.Area= 726 sf Storage= 152 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 34.5 min ( 795.0 - 760.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	11,085 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,640.00'	81 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		300 cf Overall	x 27.0% Voids
		11,166 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	270	0	0
1,643.00	2,100	1,185	1,185
1,644.00	3,850	2,975	4,160
1,645.00	10,000	6,925	11,085

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,640.00	150	0	0
1,642.00	150	300	300

Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.00'	<b>10.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,640.00'	<b>3.600 in/hr Exfiltration over Surface area</b>
#3	Primary	1,643.63'	<b>12.0" Round Culvert</b> L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1,643.63' / 1,643.52' S= 0.0028 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.06 cfs @ 12.39 hrs HW=1,642.17' (Free Discharge)

↳2=Exfiltration (Exfiltration Controls 0.06 cfs)

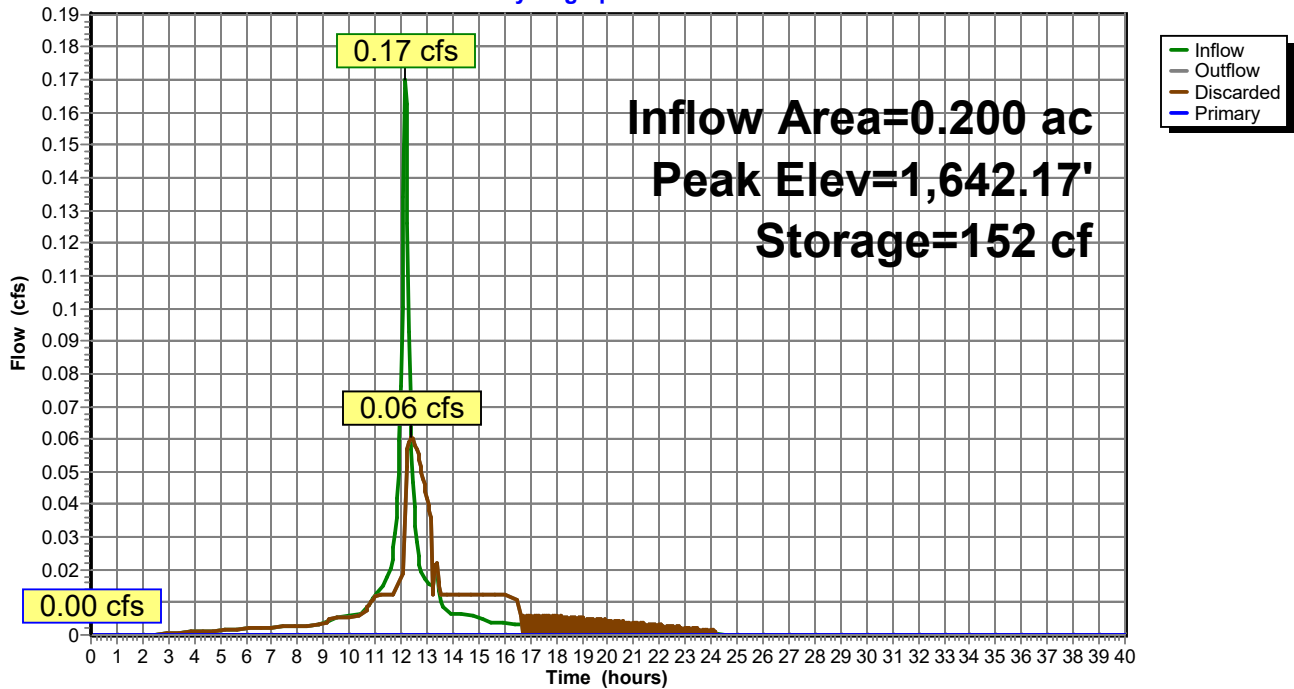
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,640.00' TW=0.00' (Dynamic Tailwater)

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

↳3=Culvert ( Controls 0.00 cfs)

Pond P4:

Hydrograph



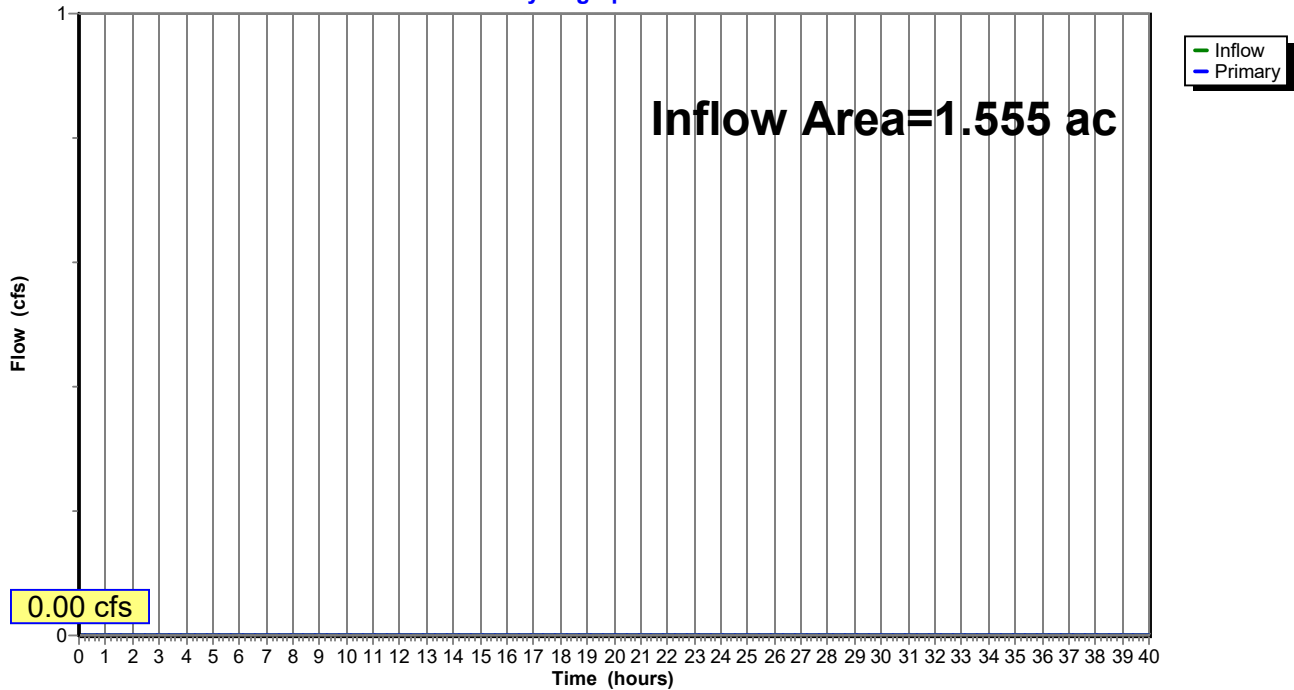
### Summary for Link 1L: link

Inflow Area = 1.555 ac, 76.27% Impervious, Inflow Depth = 0.00" for 10-Year event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

### Link 1L: link

Hydrograph



**26-0159 north**

MSE 24-hr 4 100-Year Rainfall=6.43"

Prepared by Vreeland Associates

Printed 7/1/2026

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Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment D1: D1** Runoff Area=0.421 ac 90.02% Impervious Runoff Depth=5.63"  
Tc=10.0 min CN=WQ Runoff=2.69 cfs 0.198 af

**Subcatchment D2: D2** Runoff Area=0.934 ac 78.59% Impervious Runoff Depth=4.99"  
Tc=10.0 min CN=WQ Runoff=5.24 cfs 0.388 af

**Subcatchment D3: D3** Runoff Area=0.081 ac 39.51% Impervious Runoff Depth=2.79"  
Tc=10.0 min CN=WQ Runoff=0.24 cfs 0.019 af

**Subcatchment D4: D4** Runoff Area=0.119 ac 34.45% Impervious Runoff Depth=2.51"  
Tc=10.0 min CN=WQ Runoff=0.31 cfs 0.025 af

**Pond P1:** Peak Elev=1,644.22' Storage=1,528 cf Inflow=2.69 cfs 0.198 af  
Discarded=0.12 cfs 0.078 af Primary=1.43 cfs 0.120 af Secondary=0.00 cfs 0.000 af Outflow=1.54 cfs 0.198 af

**Pond P2:** Peak Elev=1,644.17' Storage=8,225 cf Inflow=6.65 cfs 0.508 af  
Discarded=0.69 cfs 0.334 af Primary=0.00 cfs 0.000 af Secondary=2.04 cfs 0.174 af Outflow=2.73 cfs 0.508 af

**Pond P3:** Peak Elev=1,643.58' Storage=2,725 cf Inflow=2.14 cfs 0.193 af  
Discarded=0.27 cfs 0.109 af Primary=1.80 cfs 0.084 af Secondary=0.00 cfs 0.000 af Outflow=2.02 cfs 0.193 af

**Pond P4:** Peak Elev=1,643.58' Storage=2,784 cf Inflow=1.87 cfs 0.109 af  
Discarded=0.27 cfs 0.109 af Primary=0.00 cfs 0.000 af Outflow=0.27 cfs 0.109 af

**Link 1L: link** Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Total Runoff Area = 1.555 ac Runoff Volume = 0.630 af Average Runoff Depth = 4.86"**  
**23.73% Pervious = 0.369 ac 76.27% Impervious = 1.186 ac**

### Summary for Subcatchment D1: D1

Runoff = 2.69 cfs @ 12.17 hrs, Volume= 0.198 af, Depth= 5.63"  
 Routed to Pond P1 :

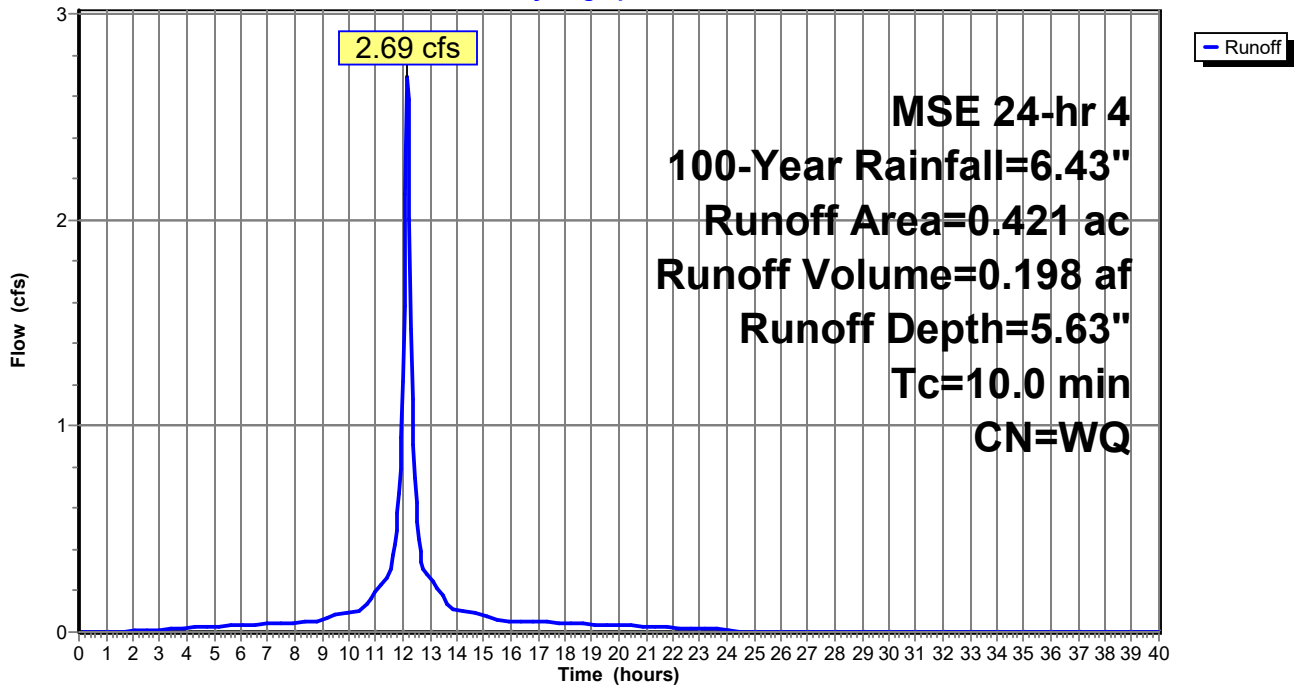
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 100-Year Rainfall=6.43"

Area (ac)	CN	Description
* 0.110	98	parking lot
* 0.268	98	building
* 0.001	98	basin
0.042	39	>75% Grass cover, Good, HSG A
0.421		Weighted Average
0.042		9.98% Pervious Area
0.379		90.02% Impervious Area

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

### Subcatchment D1: D1

Hydrograph



### Summary for Subcatchment D2: D2

Runoff = 5.24 cfs @ 12.17 hrs, Volume= 0.388 af, Depth= 4.99"  
Routed to Pond P2 :

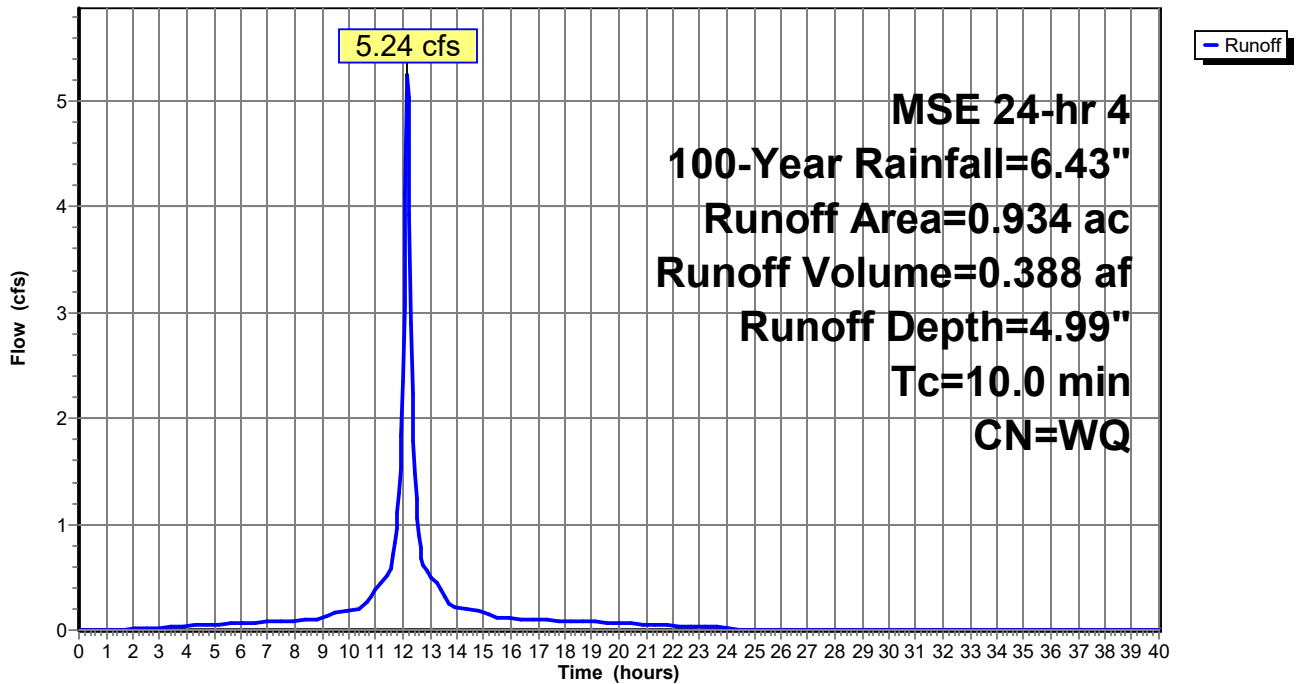
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
MSE 24-hr 4 100-Year Rainfall=6.43"

Area (ac)	CN	Description
* 0.014	98	basin
* 0.387	98	parking lot
0.200	39	>75% Grass cover, Good, HSG A
* 0.333	98	building
0.934		Weighted Average
0.200		21.41% Pervious Area
0.734		78.59% Impervious Area

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

### Subcatchment D2: D2

Hydrograph



**Summary for Subcatchment D3: D3**

Runoff = 0.24 cfs @ 12.18 hrs, Volume= 0.019 af, Depth= 2.79"  
 Routed to Pond P3 :

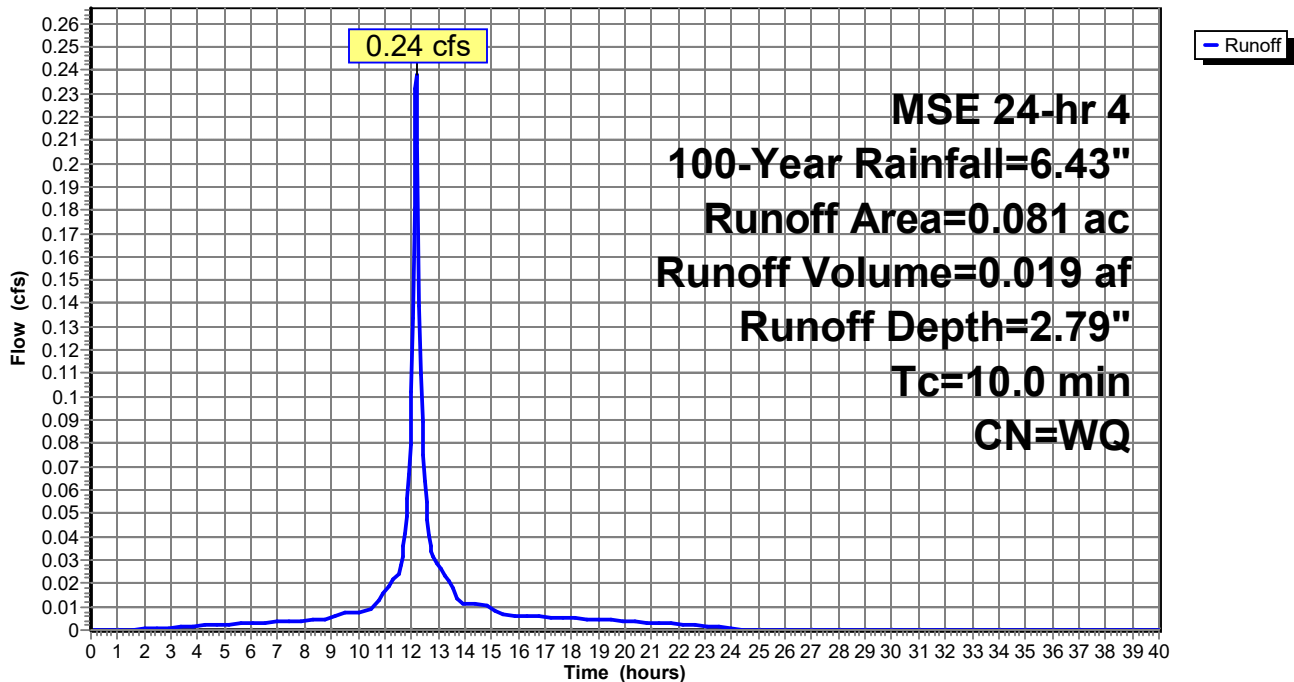
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 100-Year Rainfall=6.43"

Area (ac)	CN	Description
* 0.007	98	parking lot
* 0.021	98	building
* 0.004	98	basin
0.049	39	>75% Grass cover, Good, HSG A
0.081		Weighted Average
0.049		60.49% Pervious Area
0.032		39.51% Impervious Area

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

**Subcatchment D3: D3**

Hydrograph



**Summary for Subcatchment D4: D4**

Runoff = 0.31 cfs @ 12.18 hrs, Volume= 0.025 af, Depth= 2.51"  
 Routed to Pond P4 :

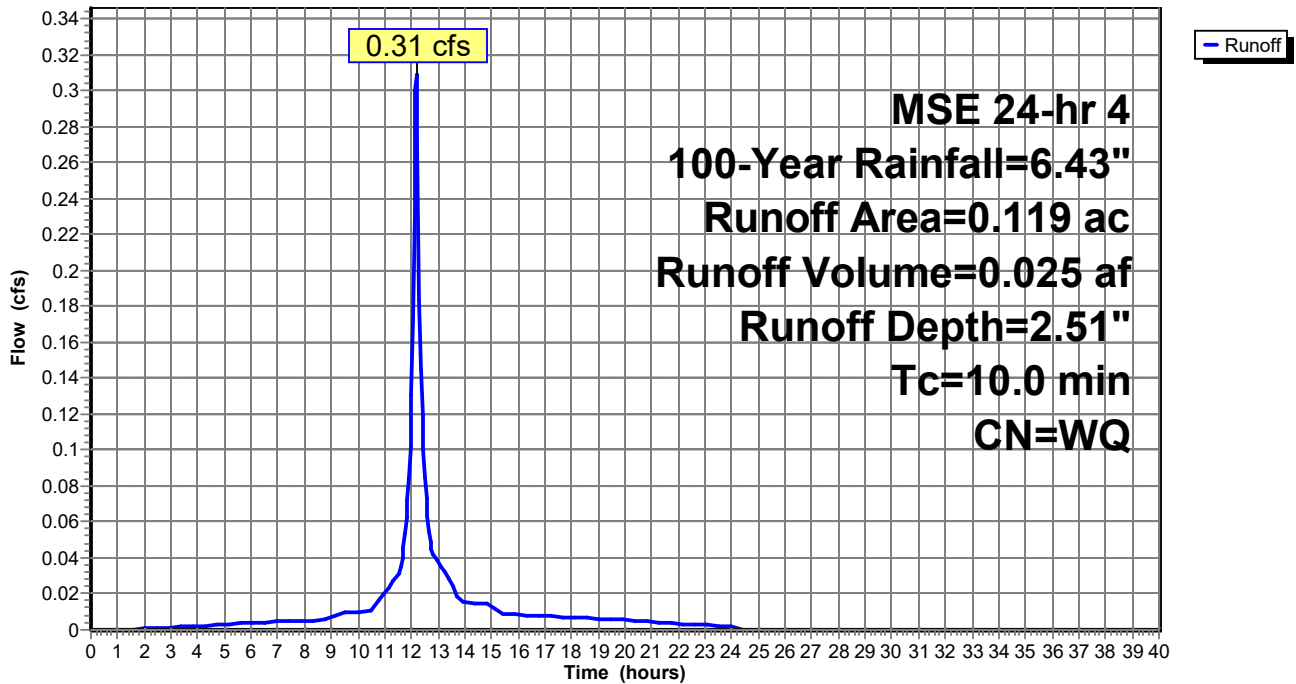
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 100-Year Rainfall=6.43"

Area (ac)	CN	Description
* 0.034	98	building
* 0.007	98	basin
0.078	39	>75% Grass cover, Good, HSG A
0.119		Weighted Average
0.078		65.55% Pervious Area
0.041		34.45% Impervious Area

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

**Subcatchment D4: D4**

Hydrograph



**Summary for Pond P1:**

Inflow Area = 0.421 ac, 90.02% Impervious, Inflow Depth = 5.63" for 100-Year event  
 Inflow = 2.69 cfs @ 12.17 hrs, Volume= 0.198 af  
 Outflow = 1.54 cfs @ 12.19 hrs, Volume= 0.198 af, Atten= 43%, Lag= 1.3 min  
 Discarded = 0.12 cfs @ 12.40 hrs, Volume= 0.078 af  
 Primary = 1.43 cfs @ 12.19 hrs, Volume= 0.120 af  
 Routed to Pond P2 :  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,644.22' @ 12.40 hrs Surf.Area= 1,436 sf Storage= 1,528 cf

Plug-Flow detention time= 44.5 min calculated for 0.197 af (100% of inflow)  
 Center-of-Mass det. time= 44.6 min ( 793.1 - 748.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	8,625 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,640.00'	81 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		300 cf Overall x 27.0% Voids	
		8,706 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	150	0	0
1,643.00	550	350	350
1,644.00	1,120	835	1,185
1,645.00	1,880	1,500	2,685
1,646.00	10,000	5,940	8,625

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,640.00	150	0	0
1,642.00	150	300	300

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,644.70'	<b>5.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,640.00'	<b>3.600 in/hr Exfiltration over Surface area</b>
#3	Primary	1,642.15'	<b>12.0" Round Culvert</b> L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,642.15' / 1,642.00' S= 0.0027 ' S= 0.0027 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.12 cfs @ 12.40 hrs HW=1,644.22' (Free Discharge)

↳2=Exfiltration (Exfiltration Controls 0.12 cfs)

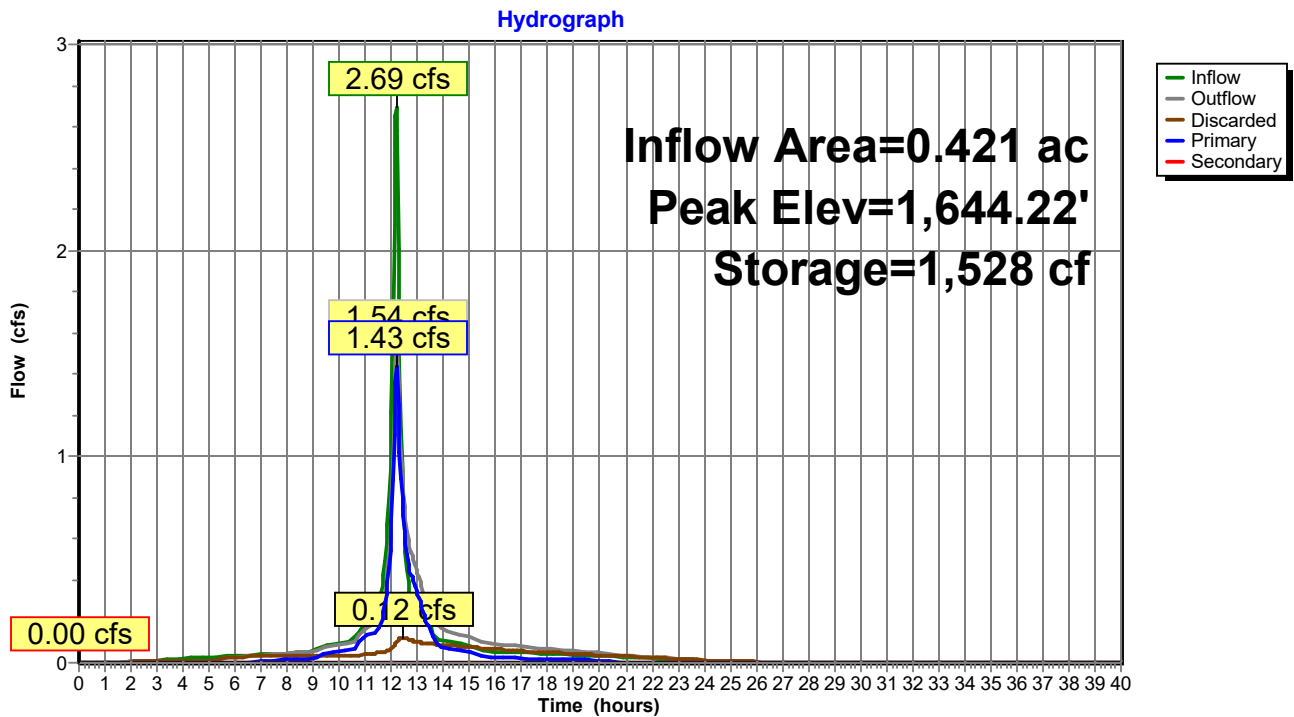
Primary OutFlow Max=0.00 cfs @ 12.19 hrs HW=1,643.93' TW=1,643.95' (Dynamic Tailwater)

↳3=Culvert ( Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,640.00' TW=0.00' (Dynamic Tailwater)

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

Pond P1:



**Summary for Pond P2:**

[80] Warning: Exceeded Pond P1 by 0.08' @ 12.05 hrs (1.01 cfs 0.038 af)

Inflow Area = 1.355 ac, 82.14% Impervious, Inflow Depth = 4.50" for 100-Year event  
 Inflow = 6.65 cfs @ 12.17 hrs, Volume= 0.508 af  
 Outflow = 2.73 cfs @ 12.39 hrs, Volume= 0.508 af, Atten= 59%, Lag= 13.0 min  
 Discarded = 0.69 cfs @ 12.39 hrs, Volume= 0.334 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 1L : link  
 Secondary = 2.04 cfs @ 12.39 hrs, Volume= 0.174 af  
 Routed to Pond P3 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,644.17' @ 12.39 hrs Surf.Area= 8,319 sf Storage= 8,225 cf

Plug-Flow detention time= 103.6 min calculated for 0.507 af (100% of inflow)  
 Center-of-Mass det. time= 103.7 min ( 855.7 - 752.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	19,450 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,639.00'	270 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
			1,000 cf Overall x 27.0% Voids
		19,720 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	500	0	0
1,642.00	900	700	700
1,643.00	3,040	1,970	2,670
1,644.00	5,260	4,150	6,820
1,645.00	20,000	12,630	19,450

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,639.00	500	0	0
1,641.00	500	1,000	1,000

Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.79'	<b>10.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,639.00'	<b>3.600 in/hr Exfiltration over Surface area</b>
#3	Secondary	1,643.15'	<b>12.0" Round Culvert</b> L= 55.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,643.15' / 1,643.00' S= 0.0027 ' S= 0.0027 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.69 cfs @ 12.39 hrs HW=1,644.17' (Free Discharge)

↳2=Exfiltration (Exfiltration Controls 0.69 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,639.00' TW=0.00' (Dynamic Tailwater)

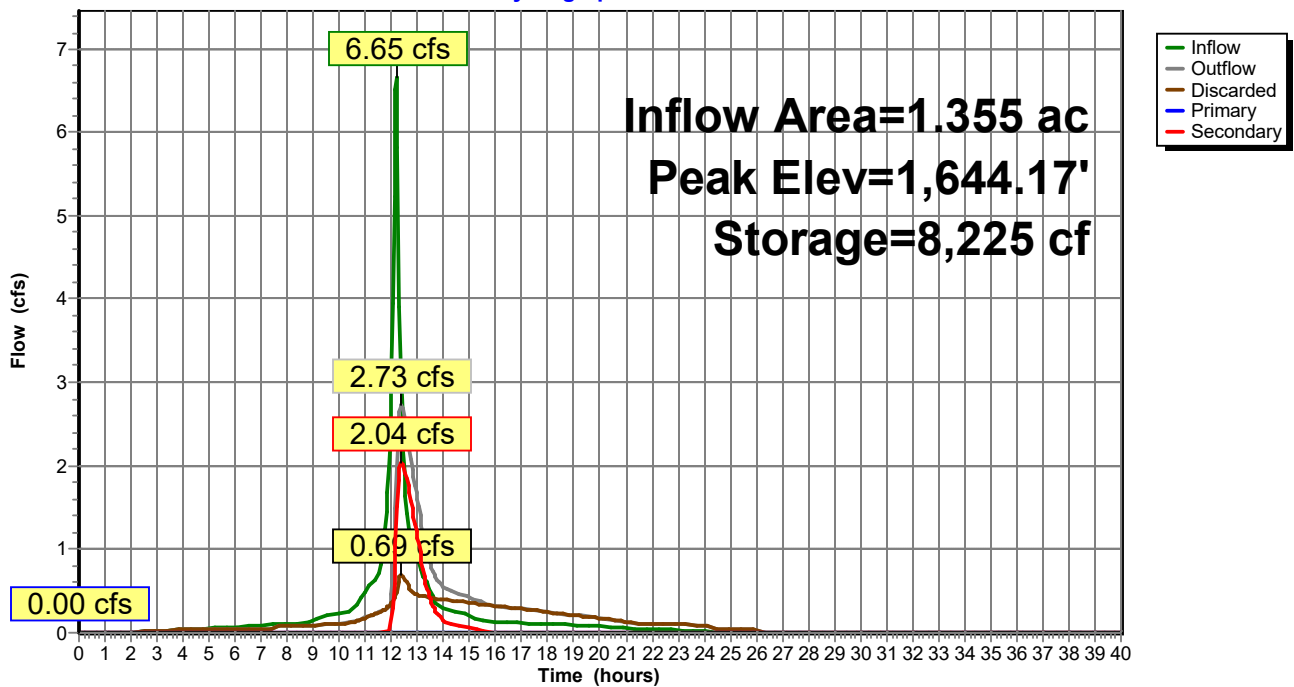
↳1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

Secondary OutFlow Max=2.03 cfs @ 12.39 hrs HW=1,644.17' TW=1,643.20' (Dynamic Tailwater)

↳3=Culvert (Barrel Controls 2.03 cfs @ 3.15 fps)

Pond P2:

Hydrograph



**Summary for Pond P3:**

[92] Warning: Device #1 is above defined storage

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=18)

Inflow Area = 0.081 ac, 39.51% Impervious, Inflow Depth = 28.56" for 100-Year event  
 Inflow = 2.14 cfs @ 12.36 hrs, Volume= 0.193 af  
 Outflow = 2.02 cfs @ 12.53 hrs, Volume= 0.193 af, Atten= 5%, Lag= 10.0 min  
 Discarded = 0.27 cfs @ 13.43 hrs, Volume= 0.109 af  
 Primary = 1.80 cfs @ 12.53 hrs, Volume= 0.084 af  
 Routed to Pond P4 :  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,643.58' @ 13.43 hrs Surf.Area= 3,269 sf Storage= 2,725 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 67.1 min ( 836.6 - 769.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	11,025 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,640.00'	81 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		300 cf Overall	x 27.0% Voids
		11,106 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	150	0	0
1,643.00	2,100	1,125	1,125
1,644.00	3,850	2,975	4,100
1,645.00	10,000	6,925	11,025

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,640.00	150	0	0
1,642.00	150	300	300

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,645.11'	<b>10.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,640.00'	<b>3.600 in/hr Exfiltration over Surface area</b>
#3	Primary	1,643.00'	<b>5.0' long + 4.0 ' SideZ x 10.0' 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) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.27 cfs @ 13.43 hrs HW=1,643.58' (Free Discharge)

↳2=Exfiltration (Exfiltration Controls 0.27 cfs)

Primary OutFlow Max=1.76 cfs @ 12.53 hrs HW=1,643.25' TW=1,643.02' (Dynamic Tailwater)

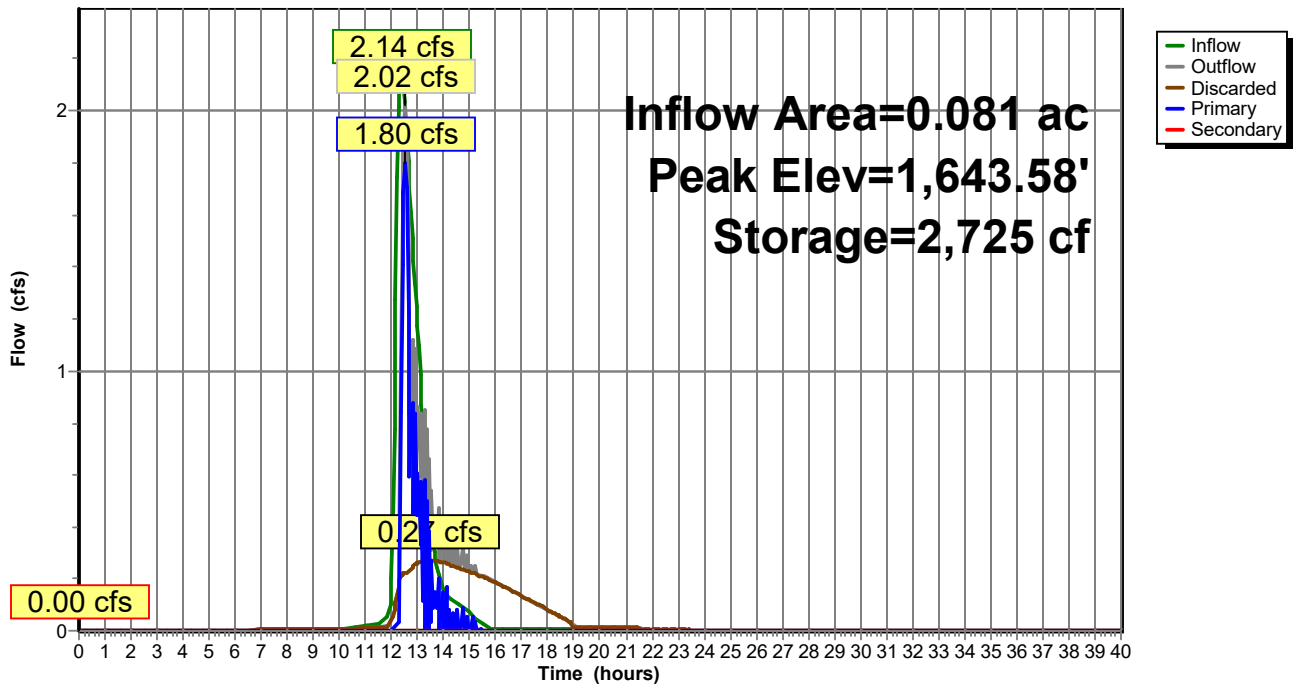
↳3=Broad-Crested Rectangular Weir (Weir Controls 1.76 cfs @ 1.19 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,640.00' TW=0.00' (Dynamic Tailwater)

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

Pond P3:

Hydrograph



**Summary for Pond P4:**

[80] Warning: Exceeded Pond P3 by 0.04' @ 12.70 hrs (1.73 cfs 0.117 af)

Inflow Area = 0.200 ac, 36.50% Impervious, Inflow Depth = 6.52" for 100-Year event  
 Inflow = 1.87 cfs @ 12.52 hrs, Volume= 0.109 af  
 Outflow = 0.27 cfs @ 13.38 hrs, Volume= 0.109 af, Atten= 85%, Lag= 51.8 min  
 Discarded = 0.27 cfs @ 13.38 hrs, Volume= 0.109 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 1L : link

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,643.58' @ 13.38 hrs Surf.Area= 3,268 sf Storage= 2,784 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 118.7 min ( 890.8 - 772.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,642.00'	11,085 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,640.00'	81 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		300 cf Overall	x 27.0% Voids
		11,166 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,642.00	270	0	0
1,643.00	2,100	1,185	1,185
1,644.00	3,850	2,975	4,160
1,645.00	10,000	6,925	11,085

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,640.00	150	0	0
1,642.00	150	300	300

Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.00'	<b>10.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,640.00'	<b>3.600 in/hr Exfiltration over Surface area</b>
#3	Primary	1,643.63'	<b>12.0" Round Culvert</b> L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 1,643.63' / 1,643.52' S= 0.0028 ' S= 0.0028 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.27 cfs @ 13.38 hrs HW=1,643.58' (Free Discharge)

↳ 2=Exfiltration (Exfiltration Controls 0.27 cfs)

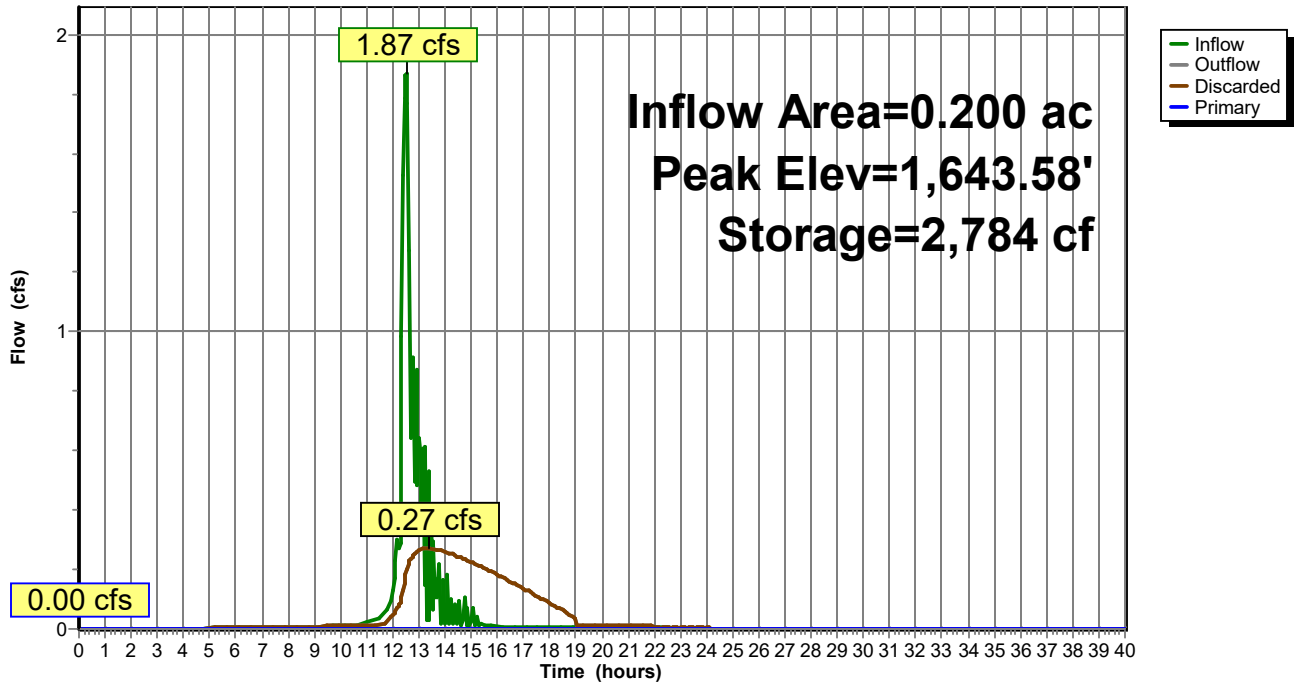
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,640.00' TW=0.00' (Dynamic Tailwater)

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

↳ 3=Culvert ( Controls 0.00 cfs)

### Pond P4:

Hydrograph



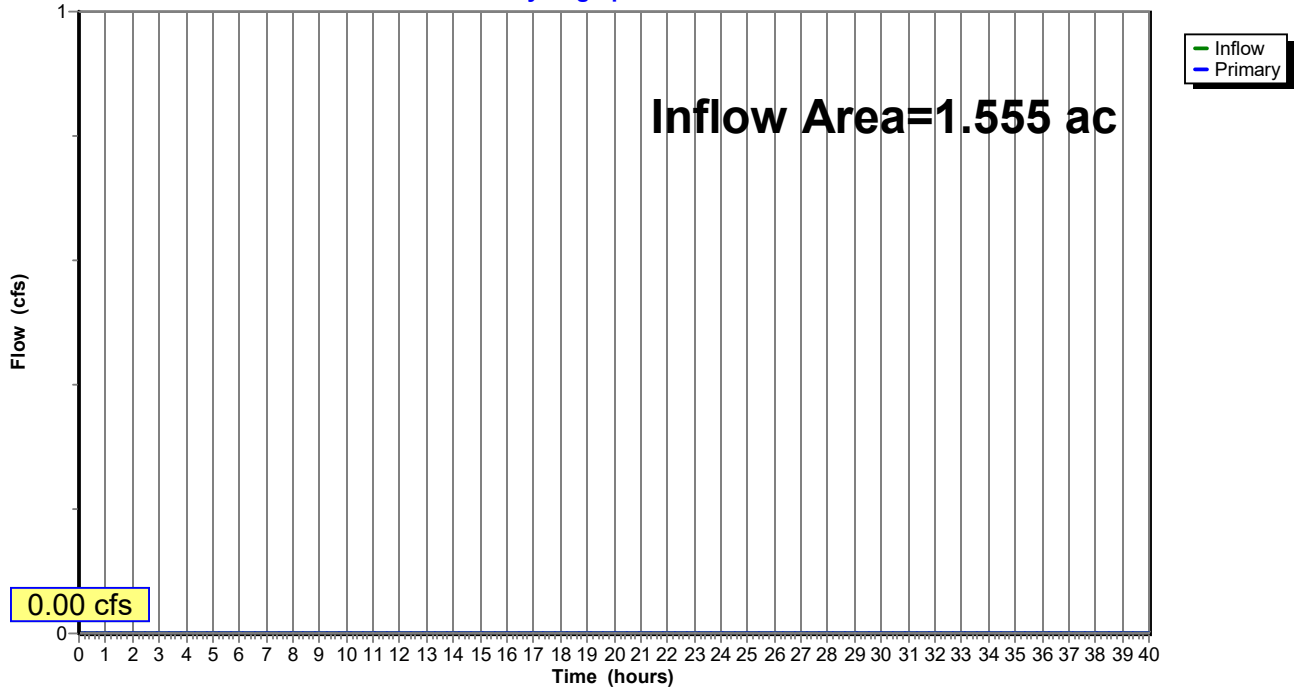
### Summary for Link 1L: link

Inflow Area = 1.555 ac, 76.27% Impervious, Inflow Depth = 0.00" for 100-Year event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

### Link 1L: link

Hydrograph



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- 23 Subcat D4: D4
- 24 Pond P1:
- 26 Pond P2:
- 28 Pond P3:
- 30 Pond P4:
- 32 Link 1L: link

**10-Year Event**

- 33 Node Listing
- 34 Subcat D1: D1
- 35 Subcat D2: D2
- 36 Subcat D3: D3
- 37 Subcat D4: D4
- 38 Pond P1:
- 40 Pond P2:
- 42 Pond P3:
- 44 Pond P4:
- 46 Link 1L: link

**100-Year Event**

- 47 Node Listing
- 48 Subcat D1: D1
- 49 Subcat D2: D2

**26-0159 north**

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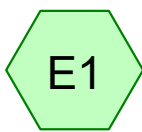
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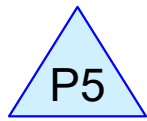
*Table of Contents*

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50	Subcat D3: D3
51	Subcat D4: D4
52	Pond P1:
54	Pond P2:
56	Pond P3:
58	Pond P4:
60	Link 1L: link



existing



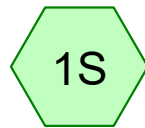
D5



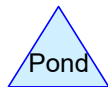
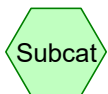
offsite runoff



north



Runoff



**Routing Diagram for 26-0159 south**

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**26-0159 south**

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**Rainfall Events Listing**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	MSE 24-hr	4	Default	24.00	1	2.22	2
2	2-Year	MSE 24-hr	4	Default	24.00	1	2.56	2
3	10-Year	MSE 24-hr	4	Default	24.00	1	3.79	2
4	100-Year	MSE 24-hr	4	Default	24.00	1	6.43	2

**26-0159 south**

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**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
2.995	39	>75% Grass cover, Good, HSG A (1S, D5, E1)
0.026	98	basin (D5)
0.513	98	building (D5)
0.331	98	pavement (D5)
<b>3.865</b>	<b>52</b>	<b>TOTAL AREA</b>

**26-0159 south**

MSE 24-hr 4 1-Year Rainfall=2.22"

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Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Runoff** Runoff Area=0.180 ac 0.00% Impervious Runoff Depth=0.00"  
Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af

**Subcatchment D5: D5** Runoff Area=0.975 ac 89.23% Impervious Runoff Depth=1.78"  
Tc=6.0 min CN=WQ Runoff=2.39 cfs 0.144 af

**Subcatchment E1: existing** Runoff Area=2.710 ac 0.00% Impervious Runoff Depth=0.00"  
Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af

**Pond P5:** Peak Elev=1,642.49' Storage=2,781 cf Inflow=2.39 cfs 0.144 af  
Discarded=0.25 cfs 0.145 af Primary=0.00 cfs 0.000 af Outflow=0.25 cfs 0.145 af

**Link 2L: offsite runoff** Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Link 4L: north** 1-Year Inflow Imported from 26-0159 north~Link 1L.hce Inflow=0.00 cfs 0.000 af  
Area= 1.555 ac 76.27% Imperv. Primary=0.00 cfs 0.000 af

**Total Runoff Area = 3.865 ac Runoff Volume = 0.144 af Average Runoff Depth = 0.45"**  
**77.49% Pervious = 2.995 ac 22.51% Impervious = 0.870 ac**

**Summary for Subcatchment 1S: Runoff**

[45] Hint: Runoff=Zero

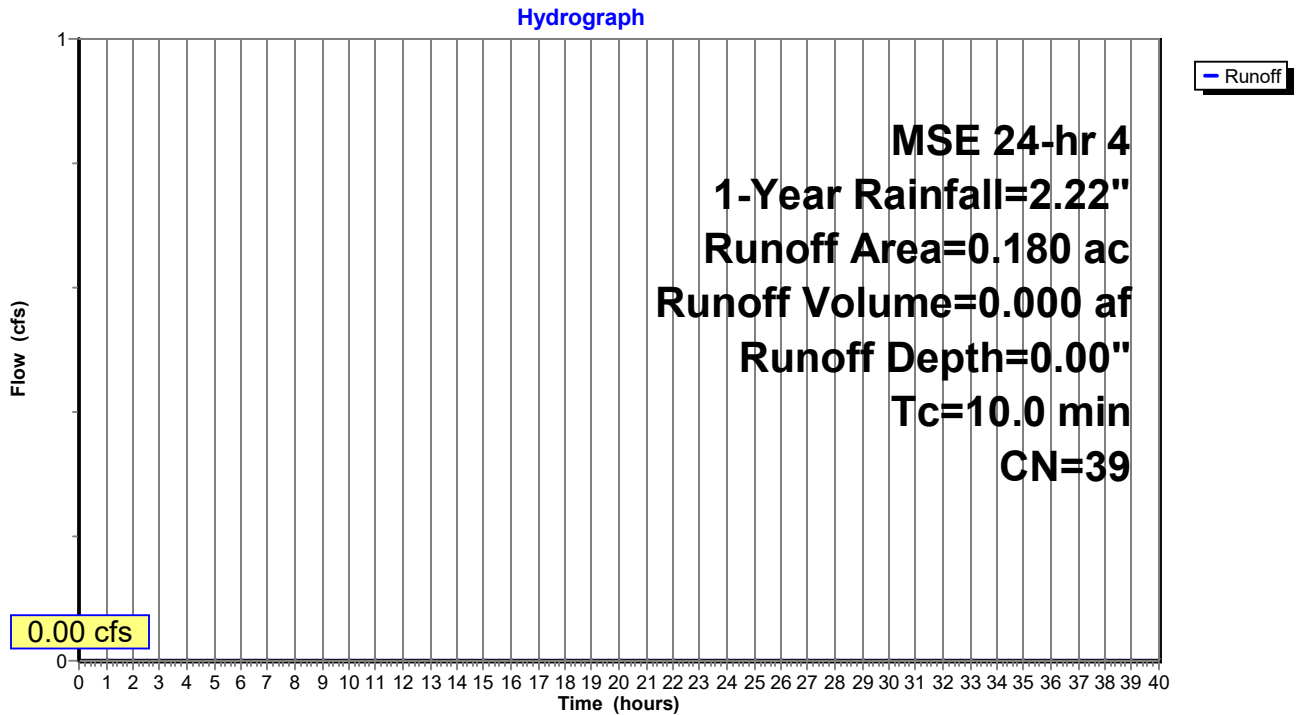
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Link 2L : offsite runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 1-Year Rainfall=2.22"

Area (ac)	CN	Description
0.180	39	>75% Grass cover, Good, HSG A
0.180		100.00% Pervious Area

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

**Subcatchment 1S: Runoff**



**Summary for Subcatchment D5: D5**

Runoff = 2.39 cfs @ 12.13 hrs, Volume= 0.144 af, Depth= 1.78"  
 Routed to Pond P5 :

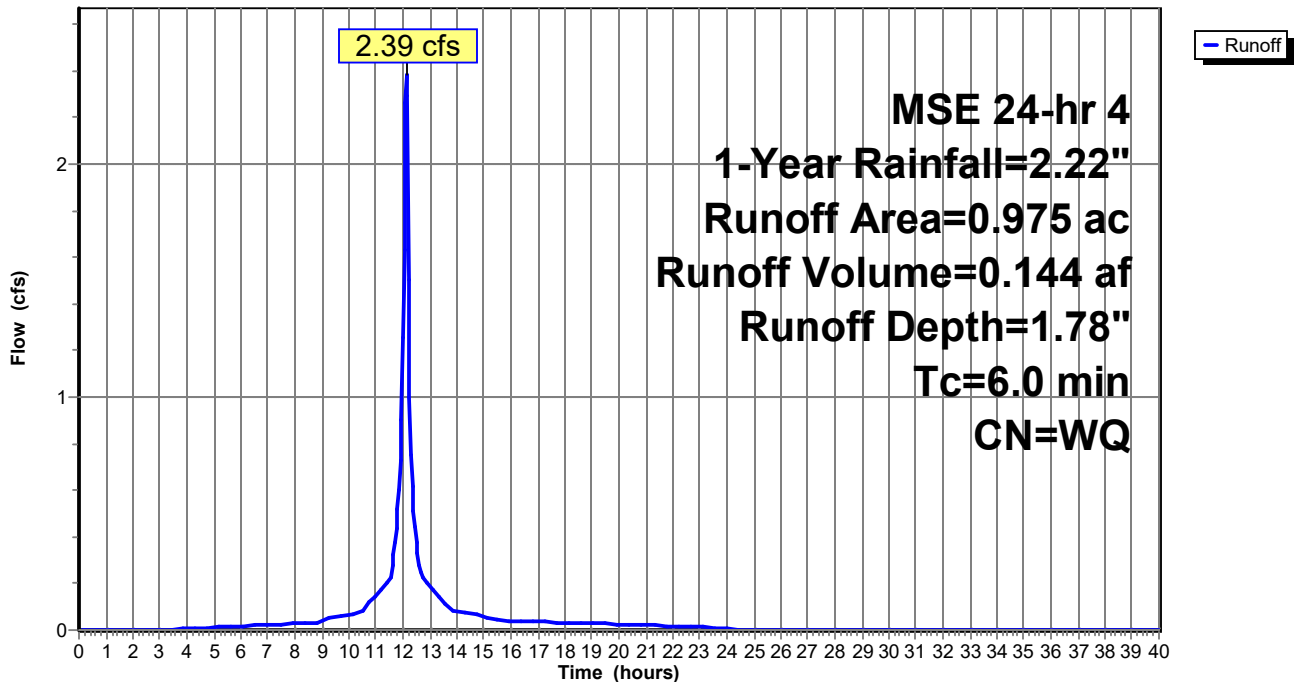
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 1-Year Rainfall=2.22"

Area (ac)	CN	Description
* 0.331	98	pavement
* 0.513	98	building
* 0.026	98	basin
0.105	39	>75% Grass cover, Good, HSG A
0.975		Weighted Average
0.105		10.77% Pervious Area
0.870		89.23% Impervious Area

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

**Subcatchment D5: D5**

Hydrograph



### Summary for Subcatchment E1: existing

[45] Hint: Runoff=Zero

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

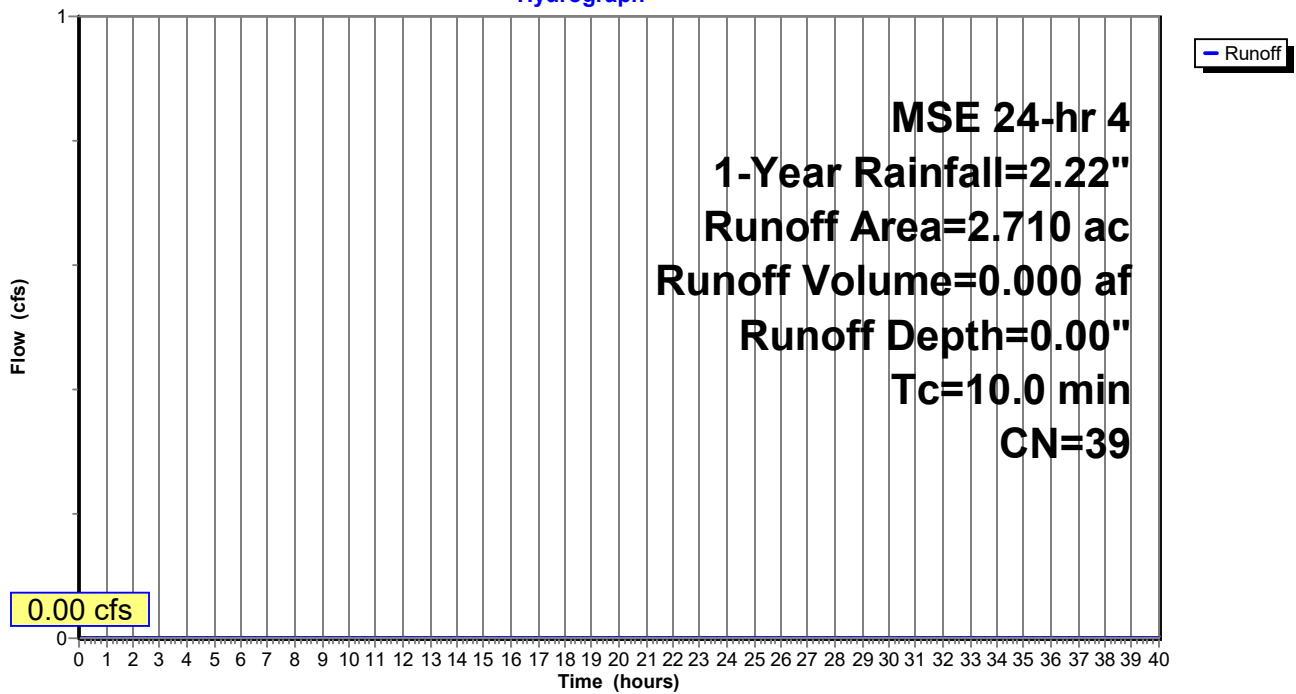
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
MSE 24-hr 4 1-Year Rainfall=2.22"

Area (ac)	CN	Description
2.710	39	>75% Grass cover, Good, HSG A
2.710		100.00% Pervious Area

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

### Subcatchment E1: existing

Hydrograph



**Summary for Pond P5:**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=29)

Inflow Area = 0.975 ac, 89.23% Impervious, Inflow Depth = 1.78" for 1-Year event  
 Inflow = 2.39 cfs @ 12.13 hrs, Volume= 0.144 af  
 Outflow = 0.25 cfs @ 12.66 hrs, Volume= 0.145 af, Atten= 90%, Lag= 31.7 min  
 Discarded = 0.25 cfs @ 12.66 hrs, Volume= 0.145 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 2L : offsite runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,642.49' @ 12.66 hrs Surf.Area= 2,996 sf Storage= 2,781 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 107.7 min ( 868.9 - 761.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	30,420 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,639.00'	568 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
			1,720 cf Overall x 33.0% Voids
		30,988 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	860	0	0
1,642.00	1,690	1,275	1,275
1,643.00	2,600	2,145	3,420
1,644.00	3,590	3,095	6,515
1,645.00	4,650	4,120	10,635
1,646.00	7,460	6,055	16,690
1,647.00	20,000	13,730	30,420

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,639.00	860	0	0
1,641.00	860	1,720	1,720

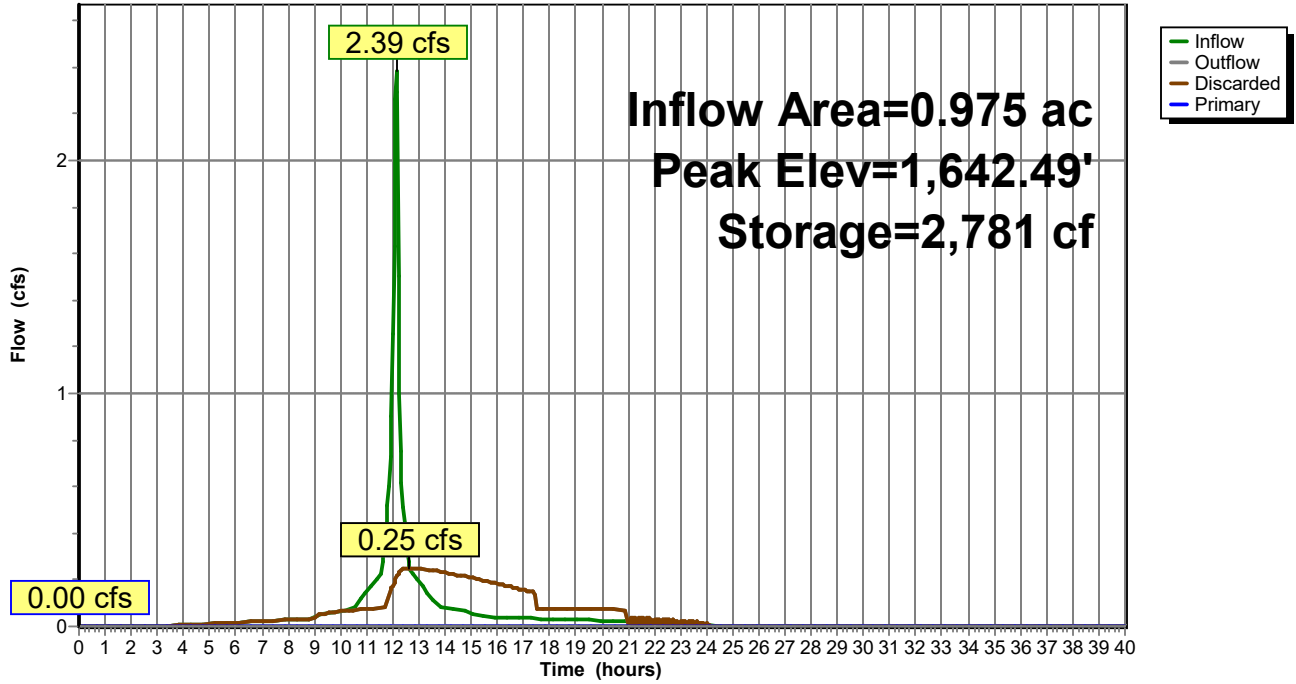
Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.60'	<b>10.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,639.00'	<b>3.600 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.25 cfs @ 12.66 hrs HW=1,642.49' (Free Discharge)  
 ↳2=Exfiltration (Exfiltration Controls 0.25 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,639.00' TW=0.00' (Dynamic Tailwater)  
 ↳1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

Pond P5:

Hydrograph



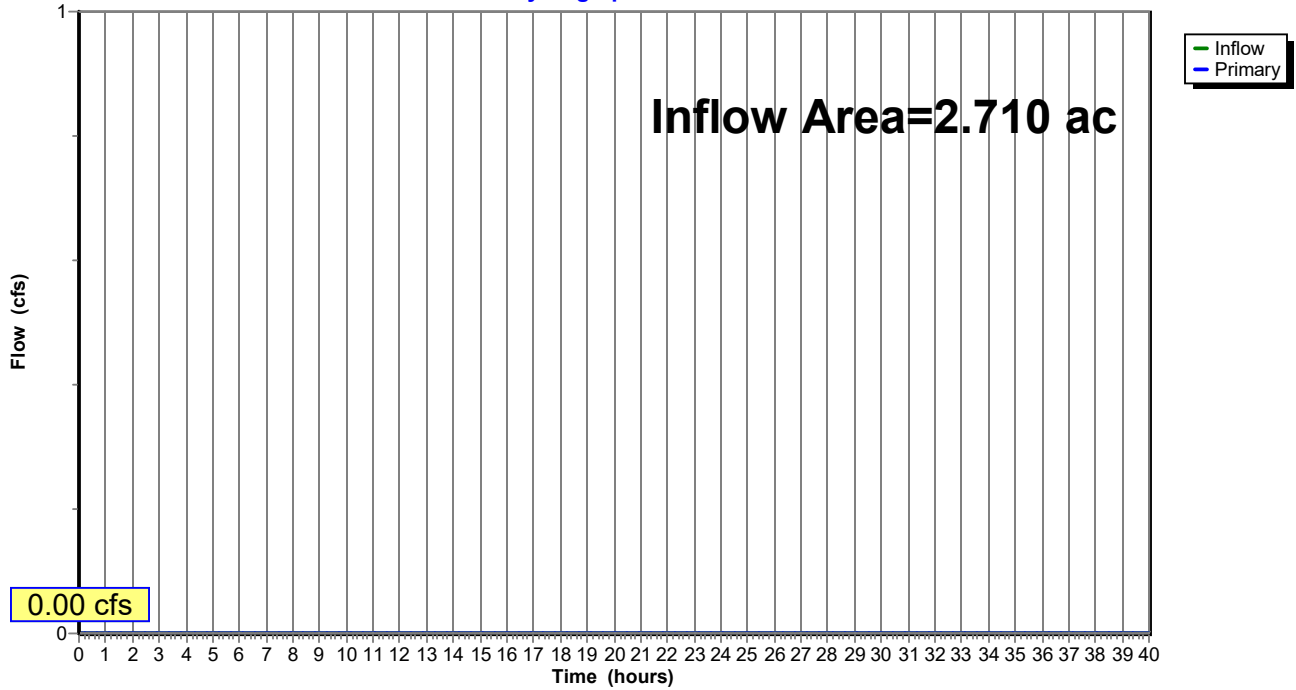
### Summary for Link 2L: offsite runoff

Inflow Area = 2.710 ac, 75.87% Impervious, Inflow Depth = 0.00" for 1-Year event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

### Link 2L: offsite runoff

Hydrograph



Summary for Link 4L: north

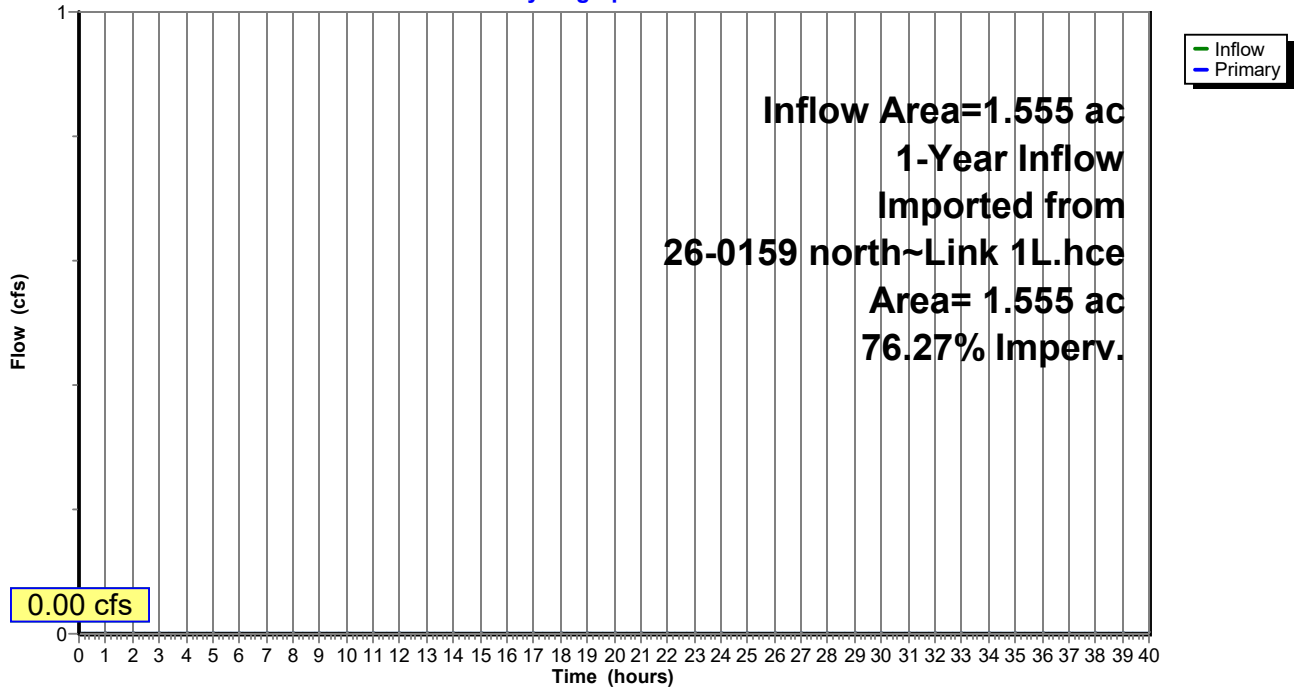
Inflow Area = 1.555 ac, 76.27% Impervious, Inflow Depth = 0.00" for 1-Year event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Routed to Link 2L : offsite runoff

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

1-Year Inflow Imported from 26-0159 north~Link 1L.hce

Link 4L: north

Hydrograph



**26-0159 south**

MSE 24-hr 4 2-Year Rainfall=2.56"

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Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Runoff** Runoff Area=0.180 ac 0.00% Impervious Runoff Depth=0.00"  
Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af

**Subcatchment D5: D5** Runoff Area=0.975 ac 89.23% Impervious Runoff Depth=2.08"  
Tc=6.0 min CN=WQ Runoff=2.77 cfs 0.169 af

**Subcatchment E1: existing** Runoff Area=2.710 ac 0.00% Impervious Runoff Depth=0.00"  
Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af

**Pond P5:** Peak Elev=1,642.73' Storage=3,330 cf Inflow=2.77 cfs 0.169 af  
Discarded=0.27 cfs 0.169 af Primary=0.00 cfs 0.000 af Outflow=0.27 cfs 0.169 af

**Link 2L: offsite runoff** Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Link 4L: north** 2-Year Inflow Imported from 26-0159 north~Link 1L.hce Inflow=0.00 cfs 0.000 af  
Area= 1.555 ac 76.27% Imperv. Primary=0.00 cfs 0.000 af

**Total Runoff Area = 3.865 ac Runoff Volume = 0.169 af Average Runoff Depth = 0.52"**  
**77.49% Pervious = 2.995 ac 22.51% Impervious = 0.870 ac**

### Summary for Subcatchment 1S: Runoff

[45] Hint: Runoff=Zero

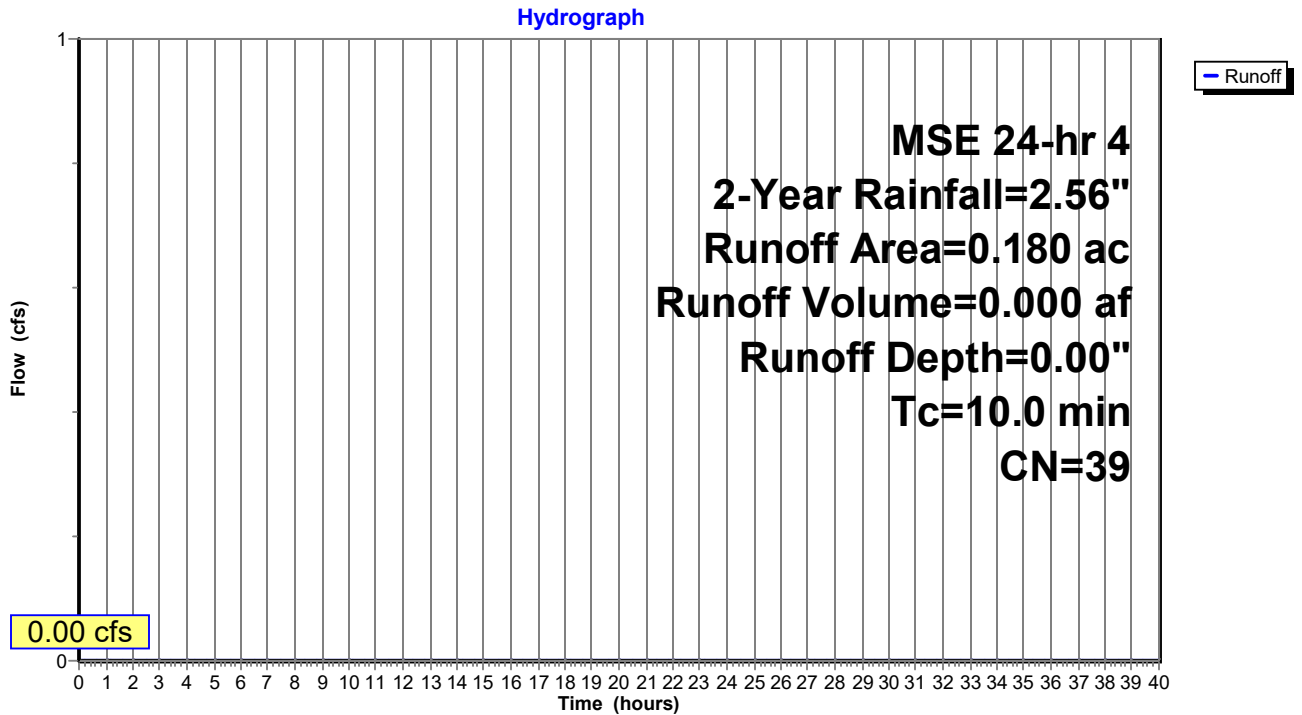
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"  
 Routed to Link 2L : offsite runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 2-Year Rainfall=2.56"

Area (ac)	CN	Description
0.180	39	>75% Grass cover, Good, HSG A
0.180		100.00% Pervious Area

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

### Subcatchment 1S: Runoff



**Summary for Subcatchment D5: D5**

Runoff = 2.77 cfs @ 12.13 hrs, Volume= 0.169 af, Depth= 2.08"  
 Routed to Pond P5 :

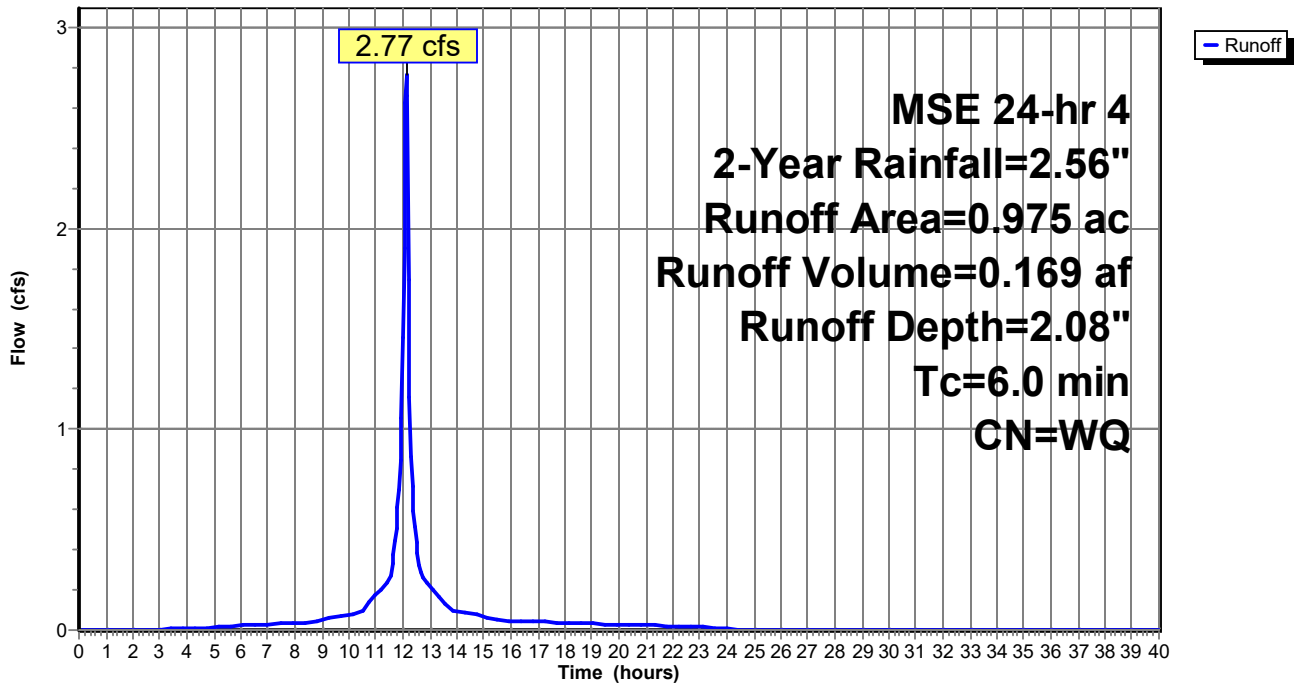
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 2-Year Rainfall=2.56"

Area (ac)	CN	Description
* 0.331	98	pavement
* 0.513	98	building
* 0.026	98	basin
0.105	39	>75% Grass cover, Good, HSG A
0.975		Weighted Average
0.105		10.77% Pervious Area
0.870		89.23% Impervious Area

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

**Subcatchment D5: D5**

Hydrograph



### Summary for Subcatchment E1: existing

[45] Hint: Runoff=Zero

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

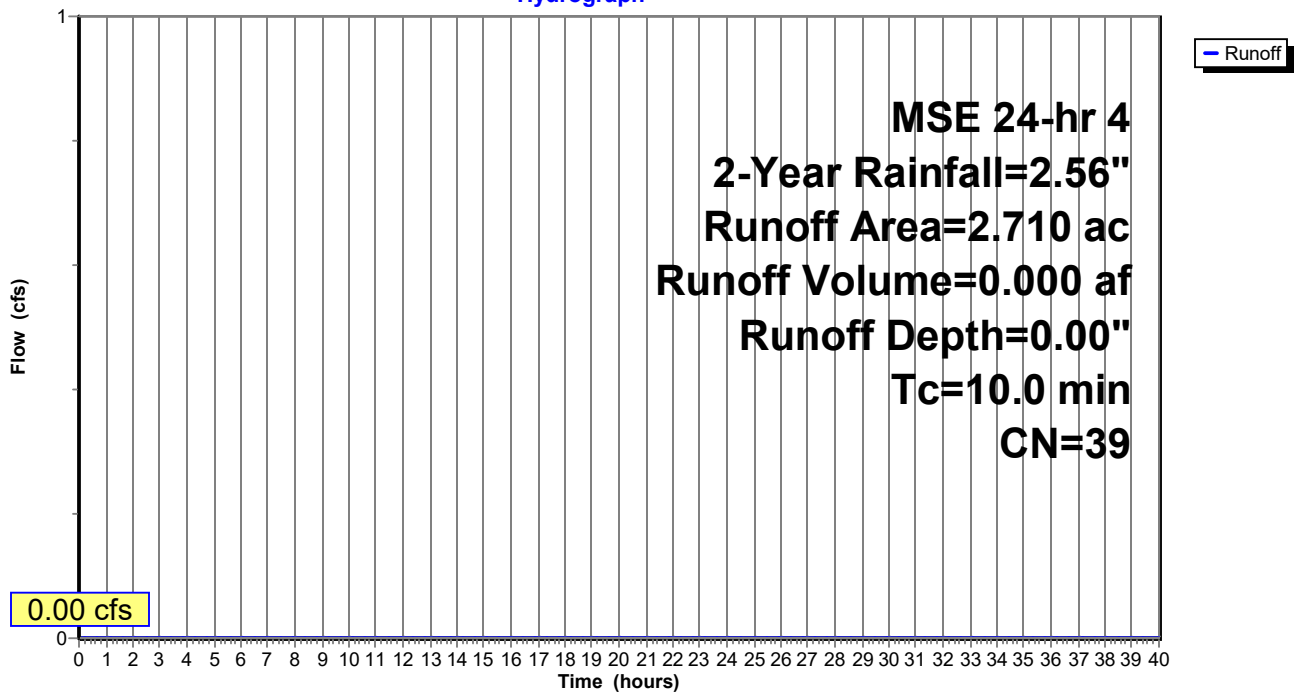
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
MSE 24-hr 4 2-Year Rainfall=2.56"

Area (ac)	CN	Description
2.710	39	>75% Grass cover, Good, HSG A
2.710		100.00% Pervious Area

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

### Subcatchment E1: existing

Hydrograph



**Summary for Pond P5:**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=20)

Inflow Area = 0.975 ac, 89.23% Impervious, Inflow Depth = 2.08" for 2-Year event  
 Inflow = 2.77 cfs @ 12.13 hrs, Volume= 0.169 af  
 Outflow = 0.27 cfs @ 12.72 hrs, Volume= 0.169 af, Atten= 90%, Lag= 35.4 min  
 Discarded = 0.27 cfs @ 12.72 hrs, Volume= 0.169 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 2L : offsite runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,642.73' @ 12.72 hrs Surf.Area= 3,219 sf Storage= 3,330 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 121.0 min ( 879.3 - 758.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	30,420 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,639.00'	568 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
			1,720 cf Overall x 33.0% Voids
		30,988 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	860	0	0
1,642.00	1,690	1,275	1,275
1,643.00	2,600	2,145	3,420
1,644.00	3,590	3,095	6,515
1,645.00	4,650	4,120	10,635
1,646.00	7,460	6,055	16,690
1,647.00	20,000	13,730	30,420

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,639.00	860	0	0
1,641.00	860	1,720	1,720

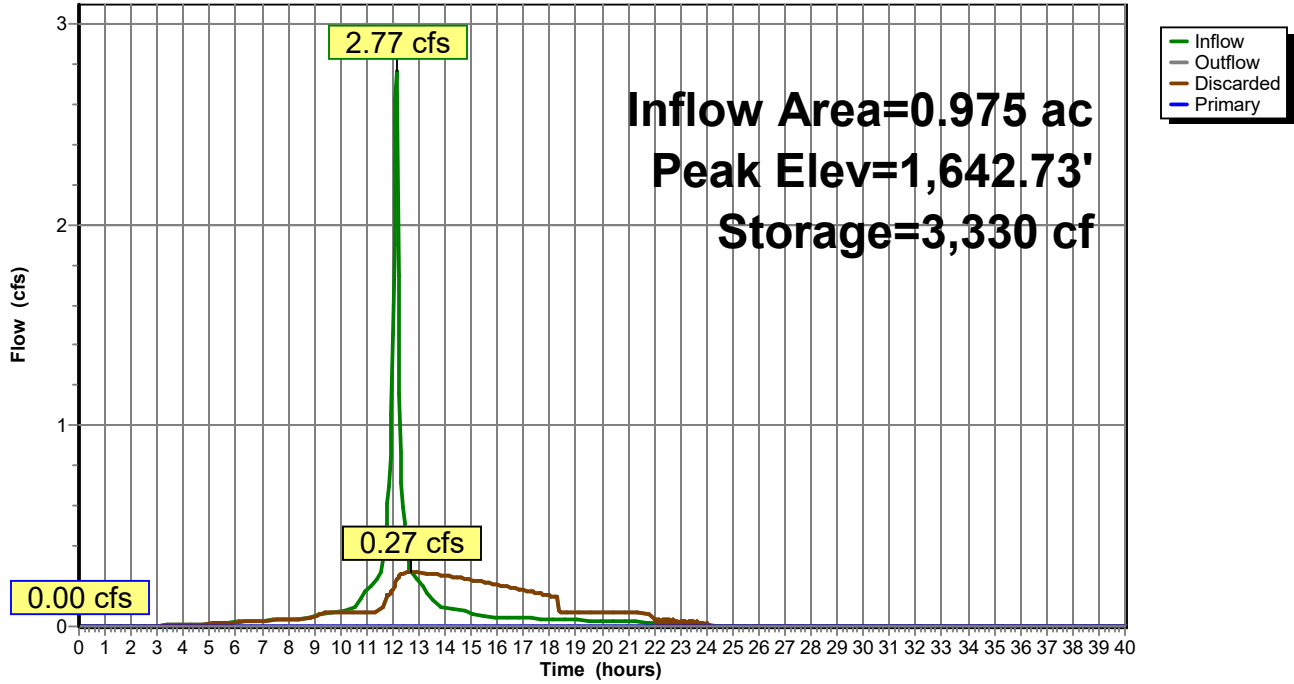
Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.60'	<b>10.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,639.00'	<b>3.600 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.27 cfs @ 12.72 hrs HW=1,642.73' (Free Discharge)  
 ↳2=Exfiltration (Exfiltration Controls 0.27 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,639.00' TW=0.00' (Dynamic Tailwater)  
 ↳1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

Pond P5:

Hydrograph



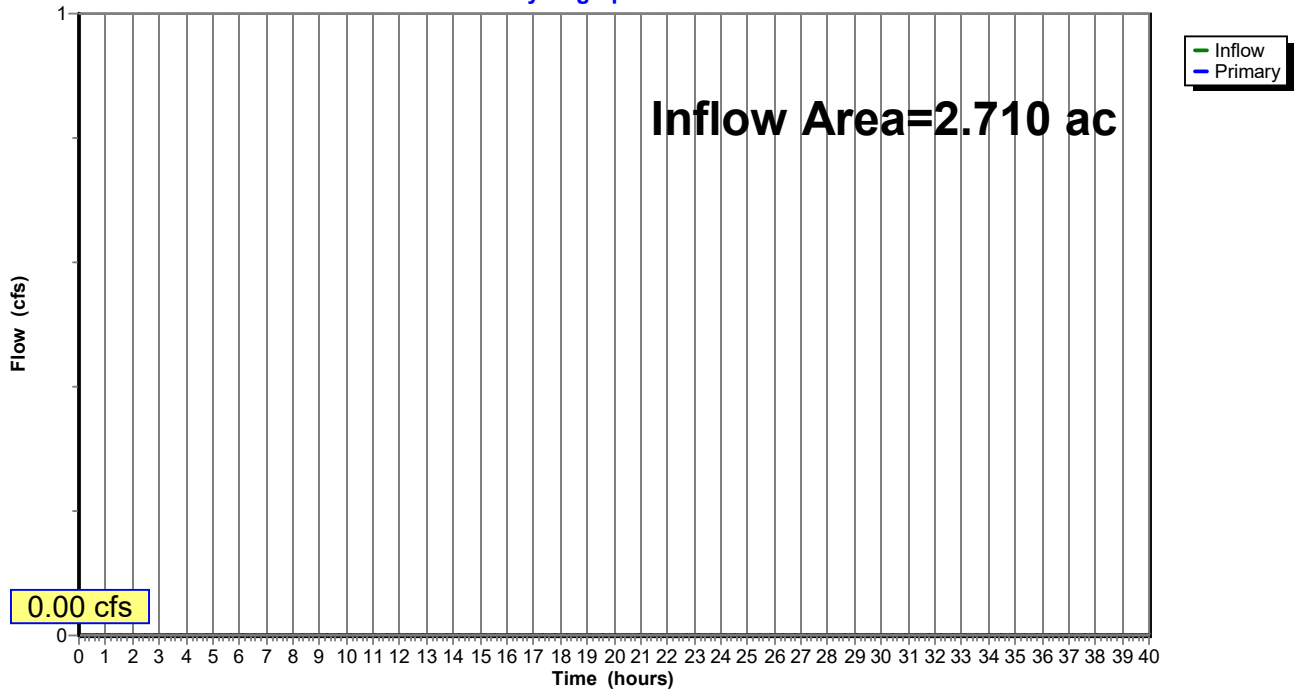
### Summary for Link 2L: offsite runoff

Inflow Area = 2.710 ac, 75.87% Impervious, Inflow Depth = 0.00" for 2-Year event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

### Link 2L: offsite runoff

Hydrograph



### Summary for Link 4L: north

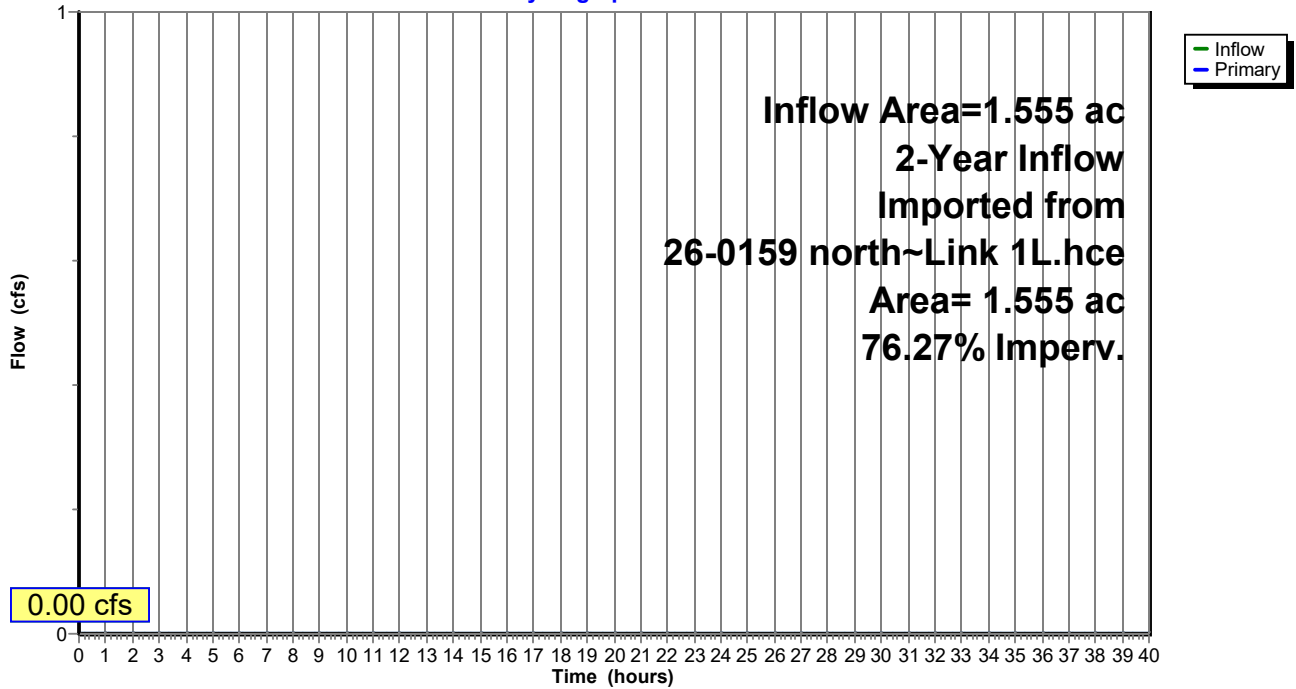
Inflow Area = 1.555 ac, 76.27% Impervious, Inflow Depth = 0.00" for 2-Year event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Routed to Link 2L : offsite runoff

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

2-Year Inflow Imported from 26-0159 north~Link 1L.hce

### Link 4L: north

Hydrograph



**26-0159 south**

MSE 24-hr 4 10-Year Rainfall=3.79"

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Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Runoff** Runoff Area=0.180 ac 0.00% Impervious Runoff Depth=0.03"  
Tc=10.0 min CN=39 Runoff=0.00 cfs 0.000 af

**Subcatchment D5: D5** Runoff Area=0.975 ac 89.23% Impervious Runoff Depth=3.18"  
Tc=6.0 min CN=WQ Runoff=4.14 cfs 0.258 af

**Subcatchment E1: existing** Runoff Area=2.710 ac 0.00% Impervious Runoff Depth=0.03"  
Tc=10.0 min CN=39 Runoff=0.01 cfs 0.006 af

**Pond P5:** Peak Elev=1,643.52' Storage=5,464 cf Inflow=4.14 cfs 0.258 af  
Discarded=0.33 cfs 0.258 af Primary=0.00 cfs 0.000 af Outflow=0.33 cfs 0.258 af

**Link 2L: offsite runoff** Inflow=0.00 cfs 0.000 af  
Primary=0.00 cfs 0.000 af

**Link 4L: north** 10-Year Inflow Imported from 26-0159 north~Link 1L.hce Inflow=0.00 cfs 0.000 af  
Area= 1.555 ac 76.27% Imperv. Primary=0.00 cfs 0.000 af

**Total Runoff Area = 3.865 ac Runoff Volume = 0.264 af Average Runoff Depth = 0.82"**  
**77.49% Pervious = 2.995 ac 22.51% Impervious = 0.870 ac**

**Summary for Subcatchment 1S: Runoff**

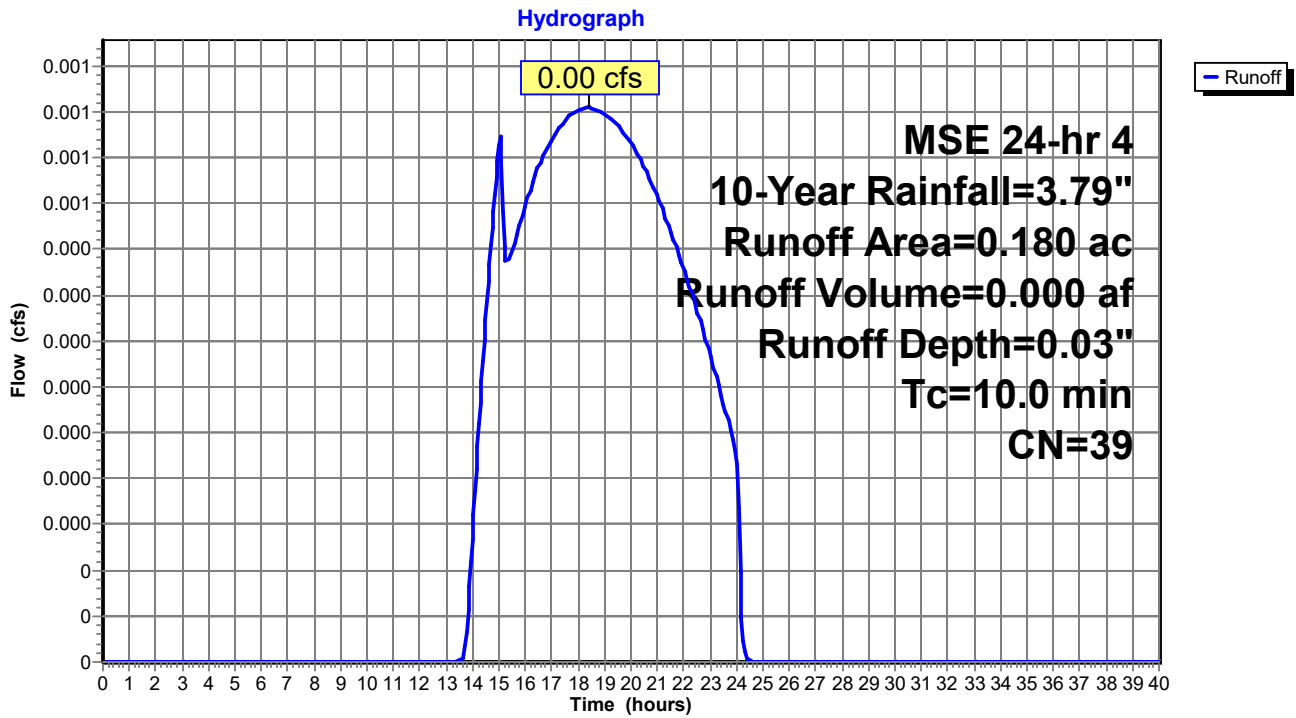
Runoff = 0.00 cfs @ 18.40 hrs, Volume= 0.000 af, Depth= 0.03"  
 Routed to Link 2L : offsite runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 10-Year Rainfall=3.79"

Area (ac)	CN	Description
0.180	39	>75% Grass cover, Good, HSG A
0.180		100.00% Pervious Area

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

**Subcatchment 1S: Runoff**



**Summary for Subcatchment D5: D5**

Runoff = 4.14 cfs @ 12.13 hrs, Volume= 0.258 af, Depth= 3.18"  
 Routed to Pond P5 :

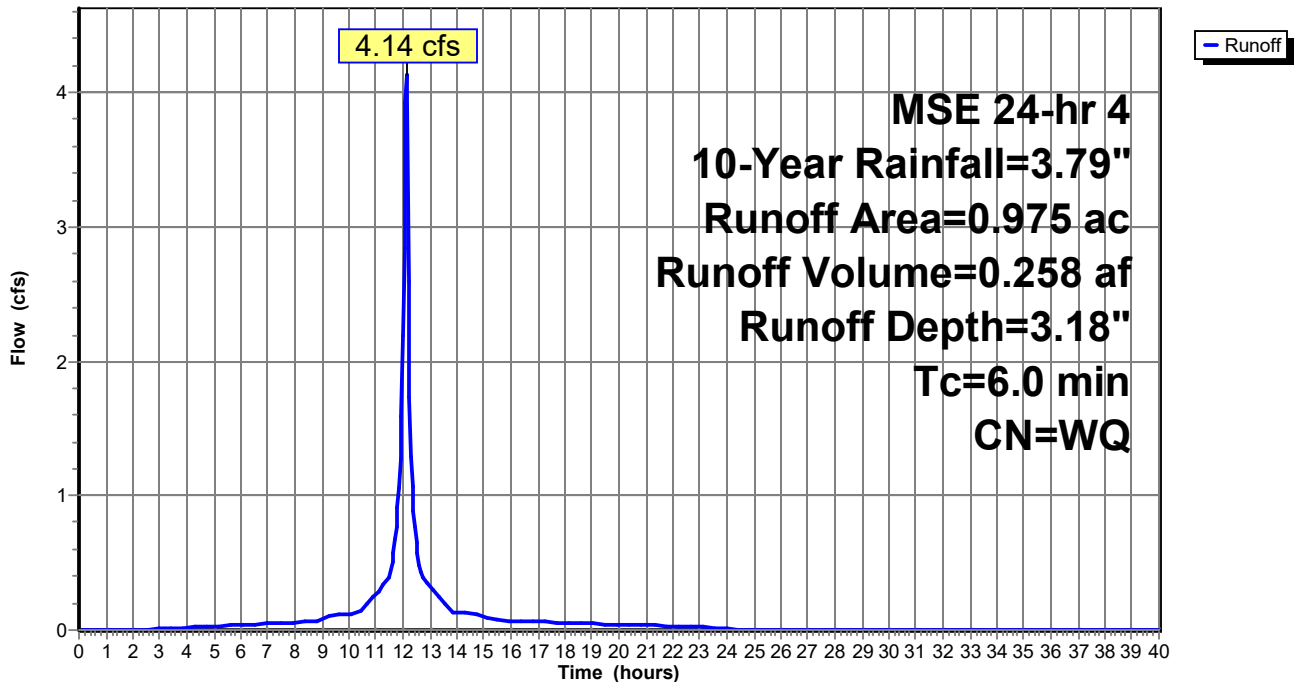
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 10-Year Rainfall=3.79"

Area (ac)	CN	Description
* 0.331	98	pavement
* 0.513	98	building
* 0.026	98	basin
0.105	39	>75% Grass cover, Good, HSG A
0.975		Weighted Average
0.105		10.77% Pervious Area
0.870		89.23% Impervious Area

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

**Subcatchment D5: D5**

Hydrograph



**Summary for Subcatchment E1: existing**

Runoff = 0.01 cfs @ 18.40 hrs, Volume= 0.006 af, Depth= 0.03"

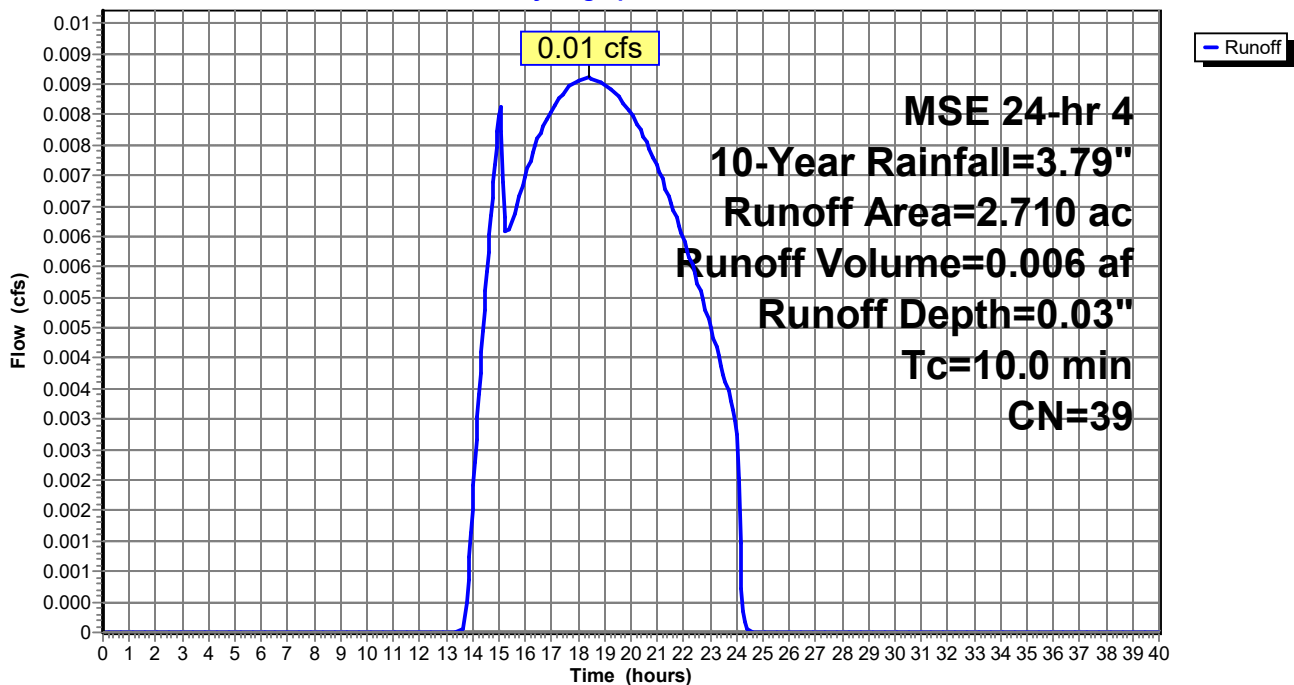
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 10-Year Rainfall=3.79"

Area (ac)	CN	Description
2.710	39	>75% Grass cover, Good, HSG A
2.710		100.00% Pervious Area

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

**Subcatchment E1: existing**

Hydrograph



**Summary for Pond P5:**

Inflow Area = 0.975 ac, 89.23% Impervious, Inflow Depth = 3.18" for 10-Year event  
 Inflow = 4.14 cfs @ 12.13 hrs, Volume= 0.258 af  
 Outflow = 0.33 cfs @ 12.99 hrs, Volume= 0.258 af, Atten= 92%, Lag= 51.8 min  
 Discarded = 0.33 cfs @ 12.99 hrs, Volume= 0.258 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Link 2L : offsite runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,643.52' @ 12.99 hrs Surf.Area= 3,972 sf Storage= 5,464 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 167.1 min ( 918.4 - 751.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	30,420 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,639.00'	568 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
			1,720 cf Overall x 33.0% Voids
		30,988 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	860	0	0
1,642.00	1,690	1,275	1,275
1,643.00	2,600	2,145	3,420
1,644.00	3,590	3,095	6,515
1,645.00	4,650	4,120	10,635
1,646.00	7,460	6,055	16,690
1,647.00	20,000	13,730	30,420

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,639.00	860	0	0
1,641.00	860	1,720	1,720

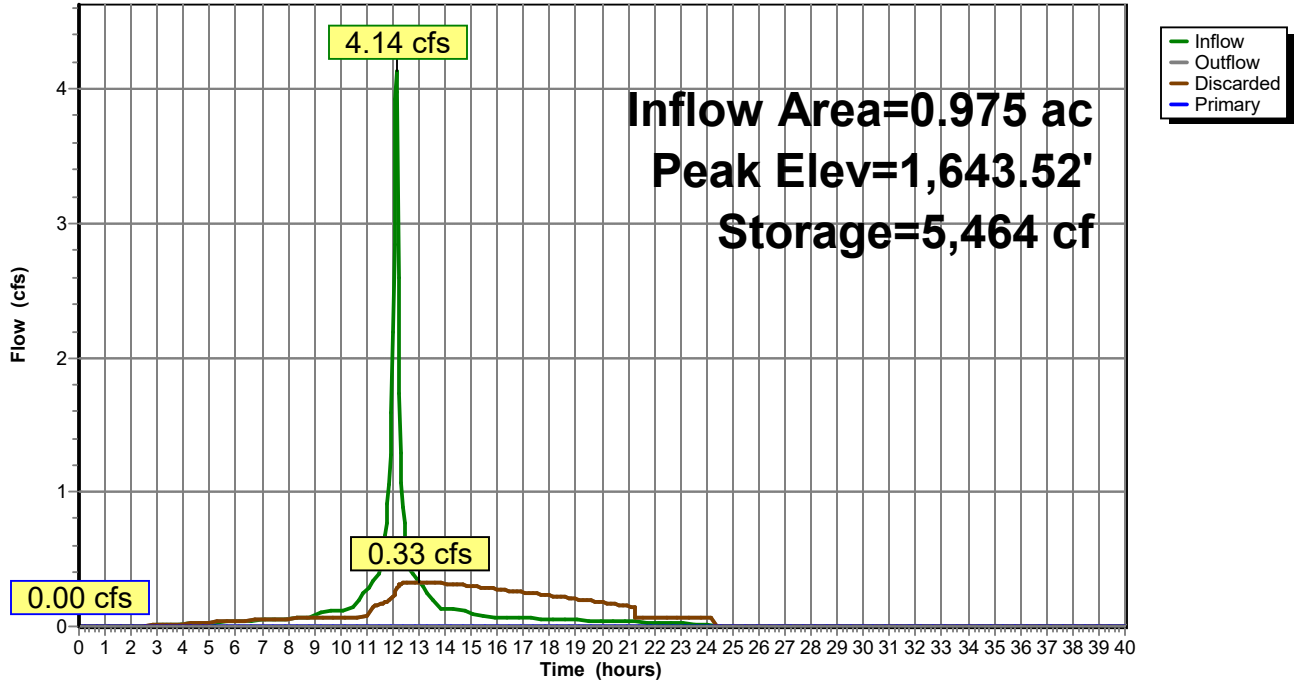
Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.60'	<b>10.0' long + 4.0 ' /' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,639.00'	<b>3.600 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.33 cfs @ 12.99 hrs HW=1,643.52' (Free Discharge)  
 ↑2=Exfiltration (Exfiltration Controls 0.33 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=1,639.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

Pond P5:

Hydrograph

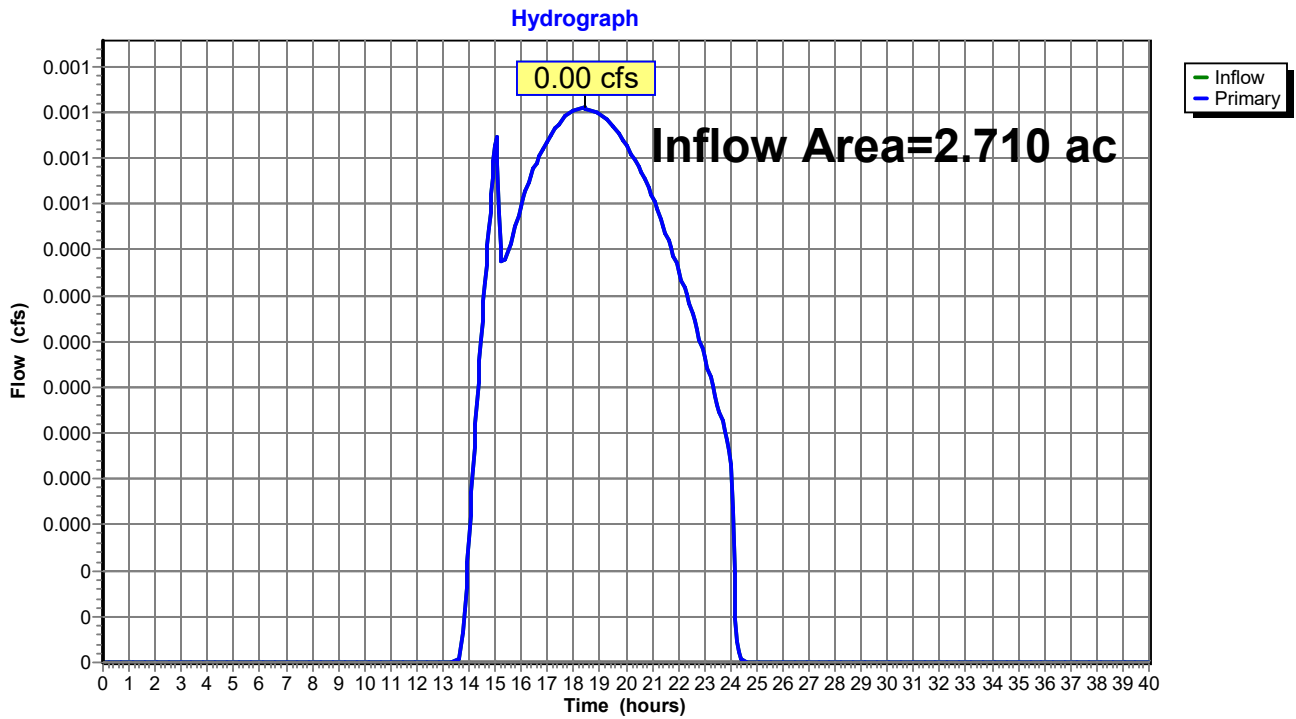


### Summary for Link 2L: offsite runoff

Inflow Area = 2.710 ac, 75.87% Impervious, Inflow Depth = 0.00" for 10-Year event  
Inflow = 0.00 cfs @ 18.40 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 18.40 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

### Link 2L: offsite runoff



Summary for Link 4L: north

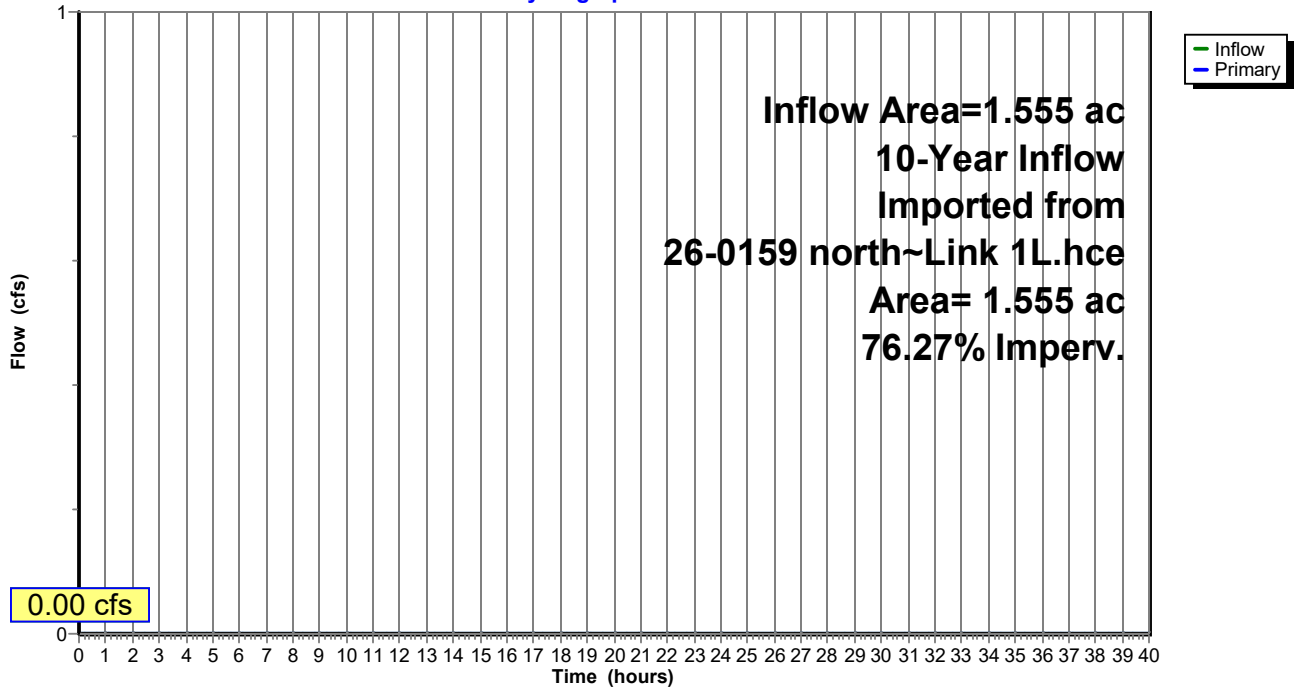
Inflow Area = 1.555 ac, 76.27% Impervious, Inflow Depth = 0.00" for 10-Year event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Routed to Link 2L : offsite runoff

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

10-Year Inflow Imported from 26-0159 north~Link 1L.hce

Link 4L: north

Hydrograph



**26-0159 south**

MSE 24-hr 4 100-Year Rainfall=6.43"

Prepared by Vreeland Associates

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Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Runoff** Runoff Area=0.180 ac 0.00% Impervious Runoff Depth=0.58"  
Tc=10.0 min CN=39 Runoff=0.06 cfs 0.009 af

**Subcatchment D5: D5** Runoff Area=0.975 ac 89.23% Impervious Runoff Depth=5.59"  
Tc=6.0 min CN=WQ Runoff=7.09 cfs 0.454 af

**Subcatchment E1: existing** Runoff Area=2.710 ac 0.00% Impervious Runoff Depth=0.58"  
Tc=10.0 min CN=39 Runoff=0.95 cfs 0.130 af

**Pond P5:** Peak Elev=1,644.67' Storage=9,745 cf Inflow=7.09 cfs 0.454 af  
Discarded=0.43 cfs 0.431 af Primary=0.56 cfs 0.023 af Outflow=0.99 cfs 0.454 af

**Link 2L: offsite runoff** Inflow=0.60 cfs 0.032 af  
Primary=0.60 cfs 0.032 af

**Link 4L: north** 100-Year Inflow Imported from 26-0159 north~Link 1L.hce Inflow=0.00 cfs 0.000 af  
Area= 1.555 ac 76.27% Imperv. Primary=0.00 cfs 0.000 af

**Total Runoff Area = 3.865 ac Runoff Volume = 0.593 af Average Runoff Depth = 1.84"**  
**77.49% Pervious = 2.995 ac 22.51% Impervious = 0.870 ac**

### Summary for Subcatchment 1S: Runoff

Runoff = 0.06 cfs @ 12.26 hrs, Volume= 0.009 af, Depth= 0.58"  
Routed to Link 2L : offsite runoff

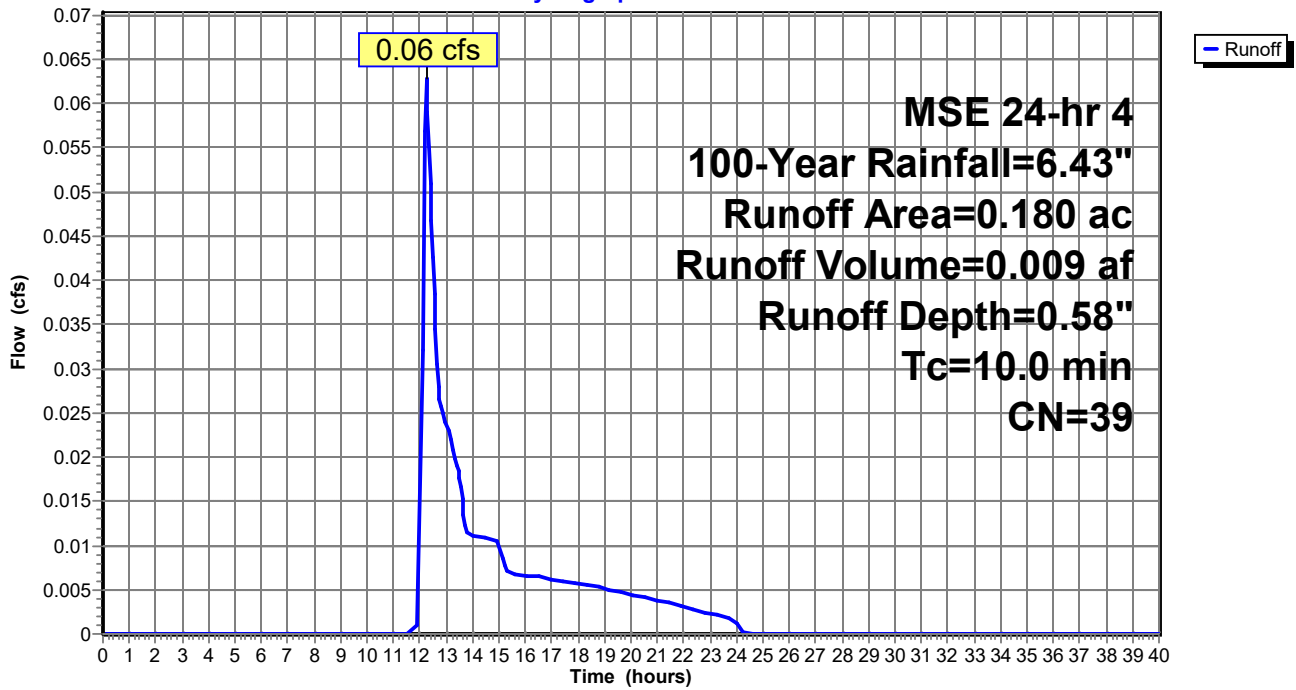
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
MSE 24-hr 4 100-Year Rainfall=6.43"

Area (ac)	CN	Description
0.180	39	>75% Grass cover, Good, HSG A
0.180		100.00% Pervious Area

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

### Subcatchment 1S: Runoff

Hydrograph



**Summary for Subcatchment D5: D5**

Runoff = 7.09 cfs @ 12.13 hrs, Volume= 0.454 af, Depth= 5.59"  
 Routed to Pond P5 :

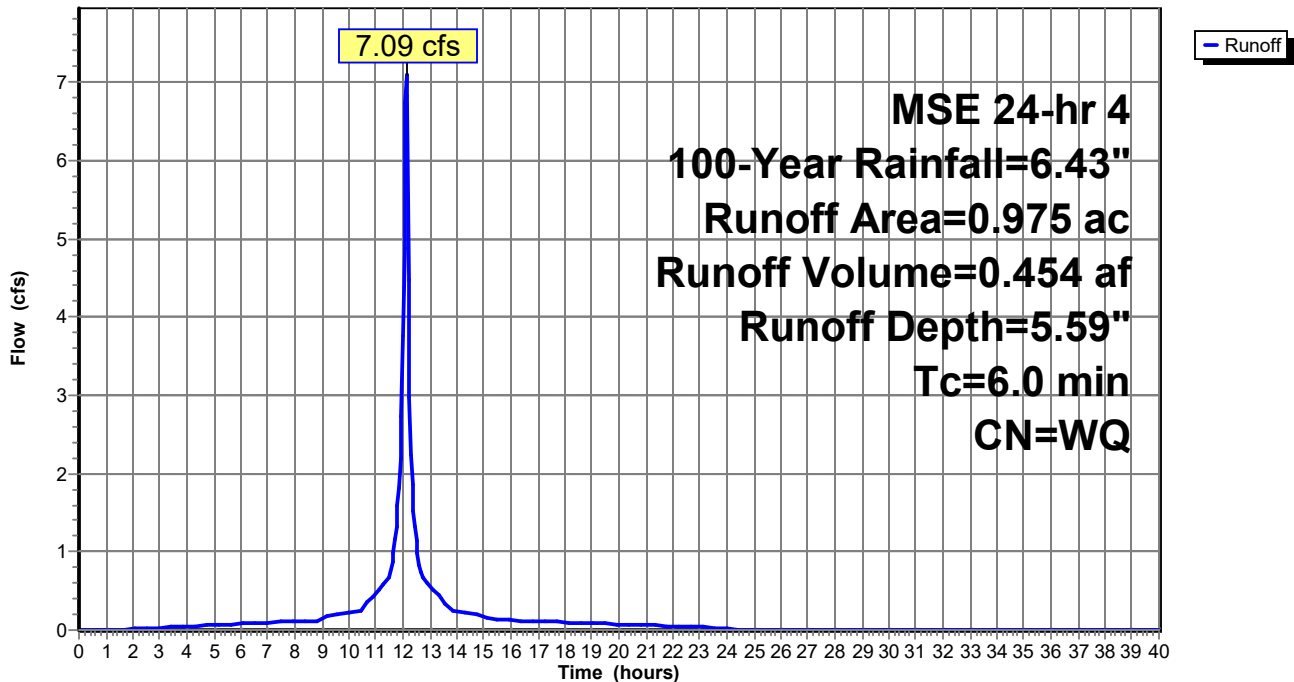
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 4 100-Year Rainfall=6.43"

Area (ac)	CN	Description
* 0.331	98	pavement
* 0.513	98	building
* 0.026	98	basin
0.105	39	>75% Grass cover, Good, HSG A
0.975		Weighted Average
0.105		10.77% Pervious Area
0.870		89.23% Impervious Area

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

**Subcatchment D5: D5**

Hydrograph



### Summary for Subcatchment E1: existing

Runoff = 0.95 cfs @ 12.26 hrs, Volume= 0.130 af, Depth= 0.58"

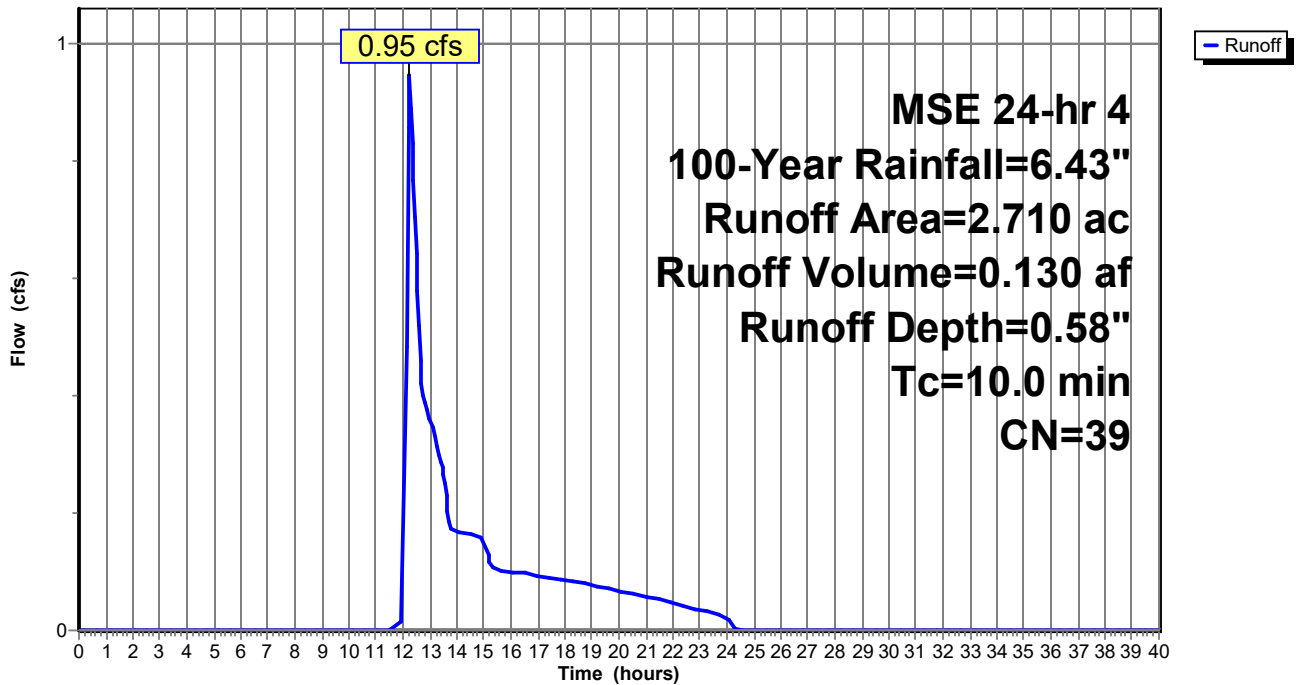
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
MSE 24-hr 4 100-Year Rainfall=6.43"

Area (ac)	CN	Description
2.710	39	>75% Grass cover, Good, HSG A
2.710		100.00% Pervious Area

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

### Subcatchment E1: existing

Hydrograph



**Summary for Pond P5:**

Inflow Area = 0.975 ac, 89.23% Impervious, Inflow Depth = 5.59" for 100-Year event  
 Inflow = 7.09 cfs @ 12.13 hrs, Volume= 0.454 af  
 Outflow = 0.99 cfs @ 12.55 hrs, Volume= 0.454 af, Atten= 86%, Lag= 25.7 min  
 Discarded = 0.43 cfs @ 12.55 hrs, Volume= 0.431 af  
 Primary = 0.56 cfs @ 12.55 hrs, Volume= 0.023 af  
 Routed to Link 2L : offsite runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,644.67' @ 12.55 hrs Surf.Area= 5,165 sf Storage= 9,745 cf

Plug-Flow detention time= 225.6 min calculated for 0.453 af (100% of inflow)  
 Center-of-Mass det. time= 225.6 min ( 970.5 - 744.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	1,641.00'	30,420 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2	1,639.00'	568 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
			1,720 cf Overall x 33.0% Voids
		30,988 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,641.00	860	0	0
1,642.00	1,690	1,275	1,275
1,643.00	2,600	2,145	3,420
1,644.00	3,590	3,095	6,515
1,645.00	4,650	4,120	10,635
1,646.00	7,460	6,055	16,690
1,647.00	20,000	13,730	30,420

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,639.00	860	0	0
1,641.00	860	1,720	1,720

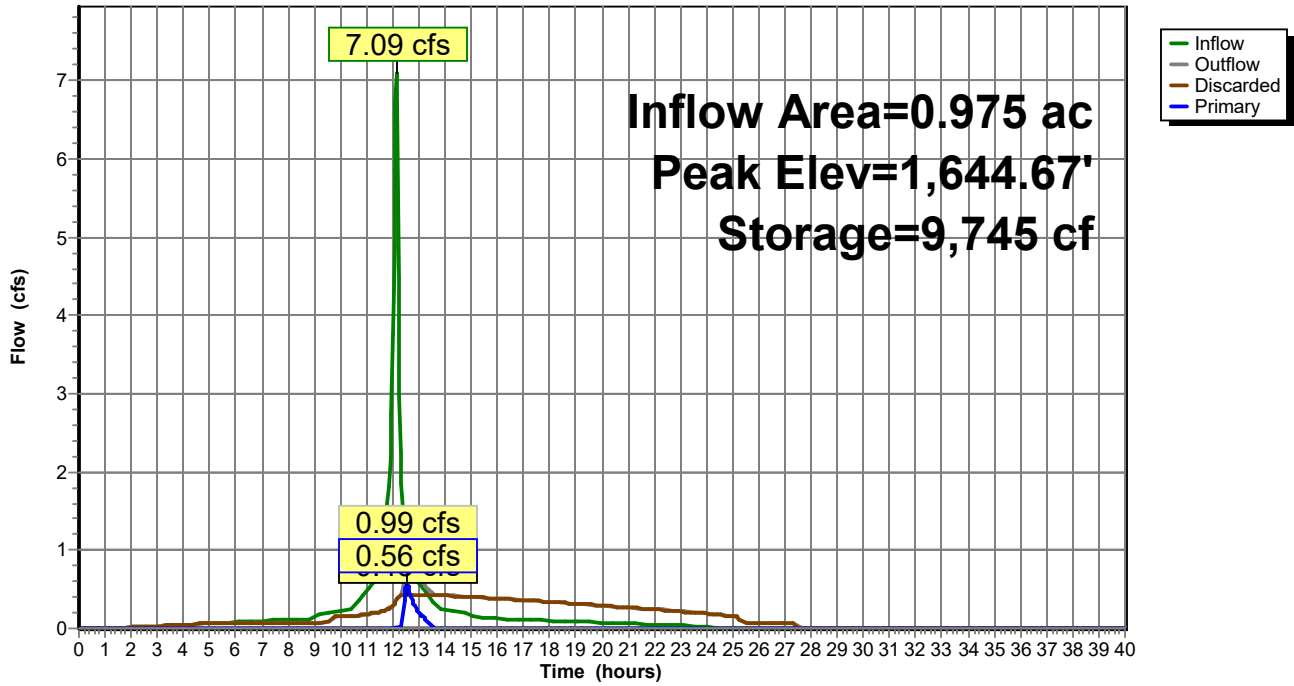
Device	Routing	Invert	Outlet Devices
#1	Primary	1,644.60'	<b>10.0' long + 4.0 ' SideZ x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Discarded	1,639.00'	<b>3.600 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.43 cfs @ 12.55 hrs HW=1,644.67' (Free Discharge)  
 ↳2=Exfiltration (Exfiltration Controls 0.43 cfs)

**Primary OutFlow** Max=0.56 cfs @ 12.55 hrs HW=1,644.67' TW=0.00' (Dynamic Tailwater)  
 ↳1=Broad-Crested Rectangular Weir (Weir Controls 0.56 cfs @ 0.73 fps)

Pond P5:

Hydrograph



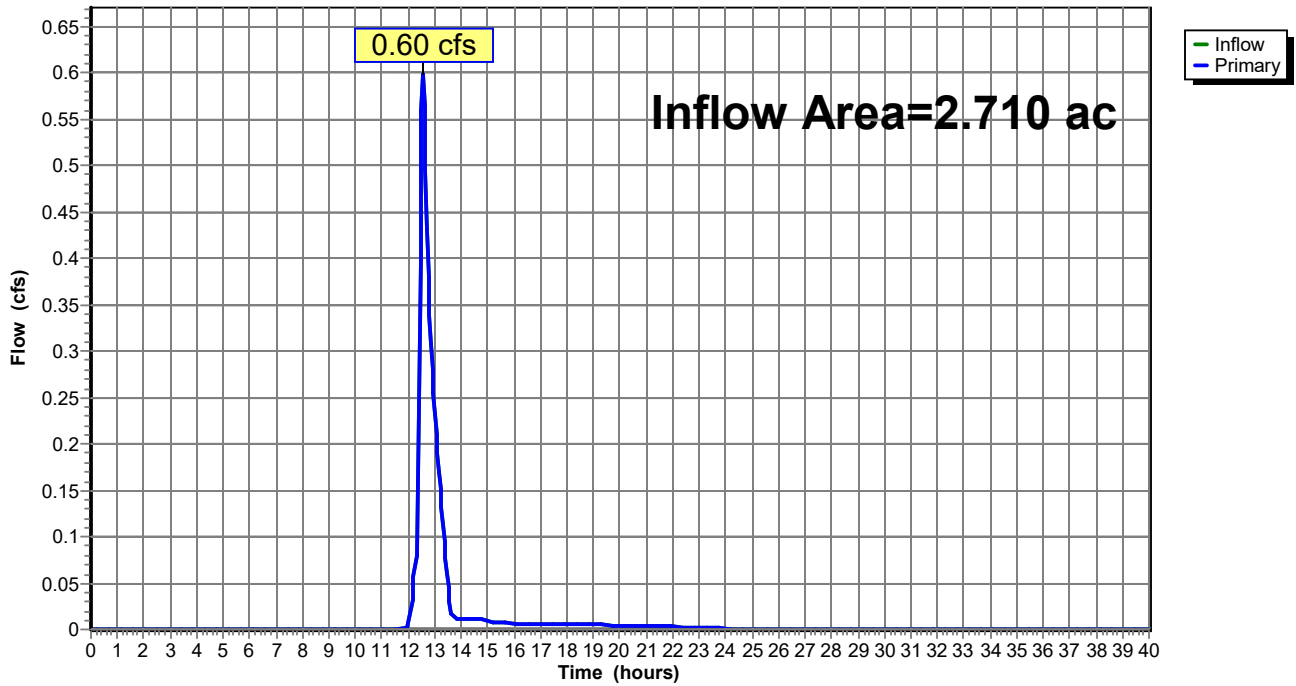
### Summary for Link 2L: offsite runoff

Inflow Area = 2.710 ac, 75.87% Impervious, Inflow Depth = 0.14" for 100-Year event  
Inflow = 0.60 cfs @ 12.55 hrs, Volume= 0.032 af  
Primary = 0.60 cfs @ 12.55 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

### Link 2L: offsite runoff

Hydrograph



Summary for Link 4L: north

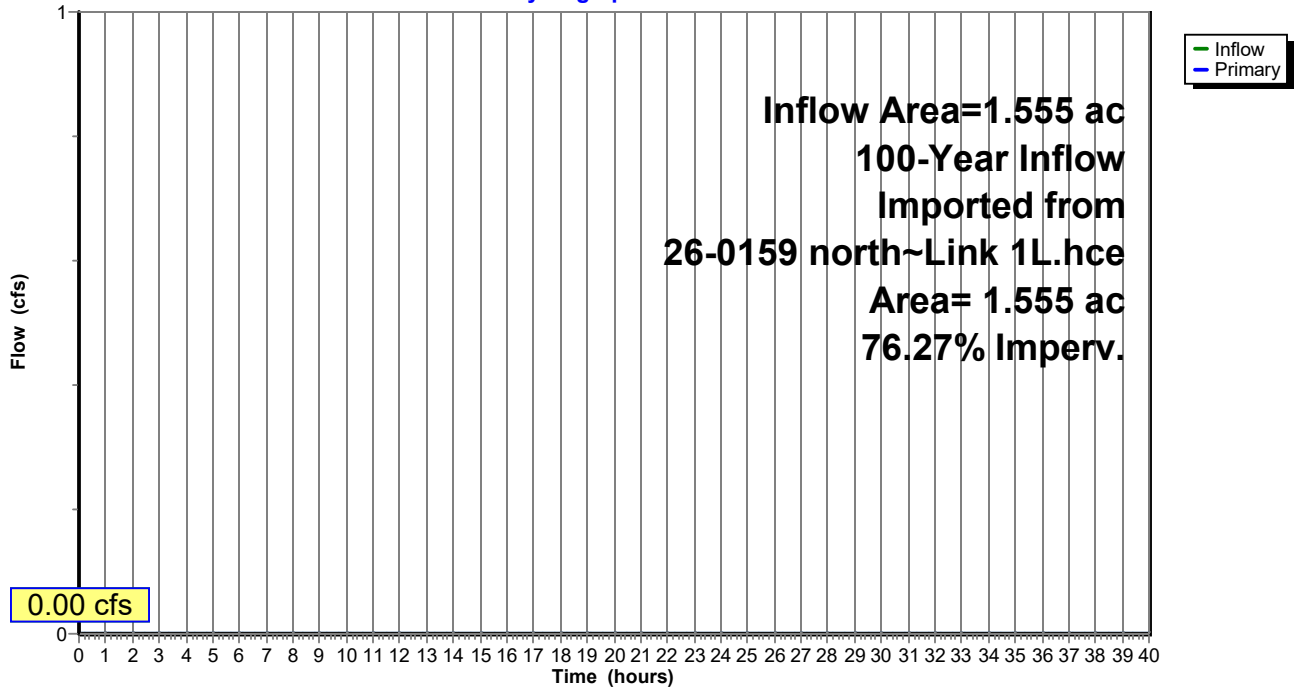
Inflow Area = 1.555 ac, 76.27% Impervious, Inflow Depth = 0.00" for 100-Year event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Routed to Link 2L : offsite runoff

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

100-Year Inflow Imported from 26-0159 north~Link 1L.hce

Link 4L: north

Hydrograph



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- 3 Area Listing (all nodes)

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- 6 Subcat D5: D5
- 7 Subcat E1: existing
- 8 Pond P5:
- 10 Link 2L: offsite runoff
- 11 Link 4L: north

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- 14 Subcat D5: D5
- 15 Subcat E1: existing
- 16 Pond P5:
- 18 Link 2L: offsite runoff
- 19 Link 4L: north

**10-Year Event**

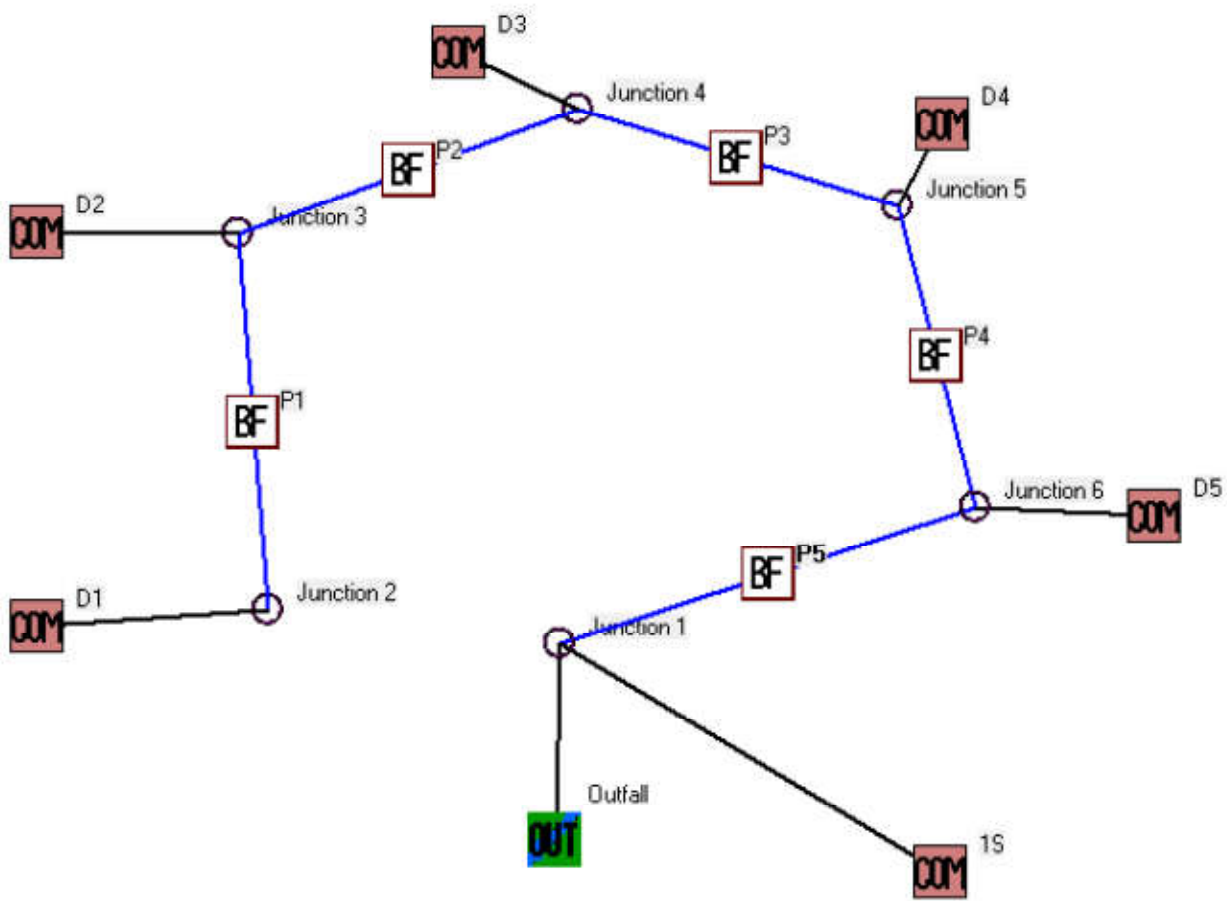
- 20 Node Listing
- 21 Subcat 1S: Runoff
- 22 Subcat D5: D5
- 23 Subcat E1: existing
- 24 Pond P5:
- 26 Link 2L: offsite runoff
- 27 Link 4L: north

**100-Year Event**

- 28 Node Listing
- 29 Subcat 1S: Runoff
- 30 Subcat D5: D5
- 31 Subcat E1: existing
- 32 Pond P5:
- 34 Link 2L: offsite runoff
- 35 Link 4L: north

## **APPENDIX D**

### **Proposed Infiltration and WinSLAMM Calculations**



Data file name: \\VREELAND-SERVER\Data\Vital\Cad Files\2026\26-0159 Barnes - UHaul Eagle River\26-0159 winslamm.mdb  
 WinSLAMM Version 10.5.0  
 Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Green Bay WI 1969.RAN  
 Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI\_AVG01.pscx  
 Runoff Coefficient file name: C:\WinSLAMM Files\WI\_SL06 Dec06.rsvx  
 Residential Street Delivery file name: C:\WinSLAMM Files\WI\_Res and Other Urban Dec06.std  
 Institutional Street Delivery file name: C:\WinSLAMM Files\WI\_Res and Other Urban Dec06.std  
 Commercial Street Delivery file name: C:\WinSLAMM Files\WI\_Res and Other Urban Dec06.std  
 Industrial Street Delivery file name: C:\WinSLAMM Files\WI\_Res and Other Urban Dec06.std  
 Other Urban Street Delivery file name: C:\WinSLAMM Files\WI\_Res and Other Urban Dec06.std  
 Freeway Street Delivery file name: C:\WinSLAMM Files\WI\_Res and Other Urban Dec06.std  
 Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False  
 Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI\_GE003.ppd  
 Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv  
 Cost Data file name:  
 Seed for random number generator: -42  
 Study period starting date: 01/02/69 Study period ending date: 12/28/69  
 Start of Winter Season: 11/25 End of Winter Season: 03/29  
 Date: 07-01-2026 Time: 09:50:54  
 Site information:

Pre-Development Area Description	Pre-Development Area (ac)	Pre-Development CN
GRASS	2.710	39
Total Area (ac)/Composite CN	2.710	39

LU# 1 - Commercial: D1 Total area (ac): 0.421  
 1 - Roofs 1: 0.268 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
 13 - Paved Parking 1: 0.110 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
 51 - Small Landscaped Areas 1: 0.042 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
 70 - Water Body Areas: 0.001 ac. Source Area PSD File:

LU# 2 - Commercial: D2 Total area (ac): 0.934  
 1 - Roofs 1: 0.333 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
 13 - Paved Parking 1: 0.387 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
 51 - Small Landscaped Areas 1: 0.200 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
 70 - Water Body Areas: 0.014 ac. Source Area PSD File:

LU# 3 - Commercial: D3 Total area (ac): 0.081  
 1 - Roofs 1: 0.021 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
 13 - Paved Parking 1: 0.007 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
 51 - Small Landscaped Areas 1: 0.049 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
 70 - Water Body Areas: 0.004 ac. Source Area PSD File:

LU# 4 - Commercial: D4 Total area (ac): 0.119  
1 - Roofs 1: 0.034 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
51 - Small Landscaped Areas 1: 0.078 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
70 - Water Body Areas: 0.007 ac. Source Area PSD File:

LU# 5 - Commercial: D5 Total area (ac): 0.975  
1 - Roofs 1: 0.513 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
13 - Paved Parking 1: 0.331 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
51 - Small Landscaped Areas 1: 0.105 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
70 - Water Body Areas: 0.026 ac. Source Area PSD File:

LU# 6 - Commercial: 15 Total area (ac): 0.180  
51 - Small Landscaped Areas 1: 0.180 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Biofilter CP# 1 (DS) - P1

1. Top area (square feet) = 810
  2. Bottom area (square feet) = 150
  3. Depth (ft): 5
  4. Biofilter width (ft) - for Cost Purposes Only: 10
  5. Infiltration rate (in/hr) = 3.6
  6. Random infiltration rate generation? No
  7. Infiltration rate fraction (side): 0.001
  8. Infiltration rate fraction (bottom): 1
  9. Depth of biofilter that is rock filled (ft) 0
  10. Porosity of rock filled volume = 0
  11. Engineered soil infiltration rate: 3.6
  12. Engineered soil depth (ft) = 2
  13. Engineered soil porosity = 0.27
  14. Percent solids reduction due to flow through engineered soil = 80
  15. Biofilter peak to average flow ratio = 3.8
  16. Number of biofiltration control devices = 1
  17. Particle size distribution file: Not needed - calculated by program
  18. Initial water surface elevation (ft): 0
- Soil Data Soil Type Fraction in Eng. Soil  
User-Defined Media Type 1.000
- Biofilter Outlet/Discharge Characteristics:  
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 5
  2. Weir crest width (ft): 5
  3. Height of datum to bottom of weir opening: 4.7
- Outlet type: Surface Discharge Pipe
1. Surface discharge pipe outlet diameter (ft): 1
  2. Pipe invert elevation above datum (ft): 2.15
  3. Number of surface pipe outlets: 1

Control Practice 2: Biofilter CP# 2 (DS) - P2

1. Top area (square feet) = 5260
2. Bottom area (square feet) = 500
3. Depth (ft): 6





SLAMM for Windows Version 10.5.0

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Data file name: \\VREELAND-SERVER\Data\Vital\Cad Files\2026\26-0159 Barnes - UHaul Eagle River\26-0159 winslamm.mdb

Data file description:

Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Green Bay WI 1969.RAN

Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI\_AVG01.pscx

Runoff Coefficient file name: C:\WinSLAMM Files\WI\_SL06 Dec06.rsvx

Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI\_GEO03.ppdx

Residential Street Delivery file name: C:\WinSLAMM Files\WI\_Res and Other Urban Dec06.std

Institutional Street Delivery file name: C:\WinSLAMM Files\WI\_Res and Other Urban Dec06.std

Commercial Street Delivery file name: C:\WinSLAMM Files\WI\_Res and Other Urban Dec06.std

Industrial Street Delivery file name: C:\WinSLAMM Files\WI\_Res and Other Urban Dec06.std

Other Urban Street Delivery file name: C:\WinSLAMM Files\WI\_Res and Other Urban Dec06.std

Freeway Street Delivery file name: C:\WinSLAMM Files\WI\_Res and Other Urban Dec06.std

Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False

Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv

Cost Data file name:

Seed for random number generator: -42

Start of Winter Season: 11/25                      End of Winter Season: 03/29

Model Run Start Date: 01/02/69      Model Run End Date: 12/28/69

Date of run: 07-01-2026      Time of run: 09:50:32

Total Area Modeled (acres): 2.710

Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	139829	-	65.90	575.2	-
Outfall Total with Controls:	127.4	99.91%	227.0	1.806	99.69%
Annualized Total After Outfall Controls:	129.2			1.831	

## Infiltration Volumes

### U-Haul Eagle River

Location: City of Eagle River

#### Existing Infiltration Volume:

---

Inflow Area: 118,048 sf  
Rainfall Total: 22.63 in

Total Volume= Inflow Area x Rainfall Total  
Total Volume: 222,618 cf

Volume Leaving Site: 0

Existing Infiltration Volume = Total Volume-Volume Leaving Site  
Existing Infiltration Volume: 222,618 cf

#### Proposed Infiltration Volume:

---

Inflow Area: 118,048 sf  
Total Rainfall Infiltrated: 22.63 in

Total Volume= Inflow Area x Rainfall Total  
Total Potential Volume Runoff: 222,618 cf  
Outfall Total (from WinSLAMM): 127 cf  
Proposed Infiltration Volume 222,491 cf

#### Percent of Pre-development Infiltration Volume Infiltrated:

---

Infiltration Percent = Proposed Infiltration Volume/Existing Infiltration Volume  
Infiltration Percent: 99.94%

Calculated by: **Dustin Vreeland**

Date: 5/28/2026

## **APPENDIX E**

### **Soil Loss and Sediment Discharge Map and Calculations**



# Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

WDNR Version 2.1 (12-05-2024)



YEAR 1

Developer: U-Haul

Project: U-Haul Eagle River

Date: 05/28/26

County: Vilas

Version 2.1

Activity (1)	Begin Date (2)	End Date (3)	Period % R (4)	Annual R Factor (5)	Sub Soil Texture (6)	Soil Erodibility K Factor (7)	Slope (%) (8)	Slope Length (ft) (9)	LS Factor (10)	Land Cover C Factor (11)	Soil loss A (tons/acre) (12)	SDF (13)	Sediment Control Practice (14)	Sediment Discharge (t/ac) (15)
Bare Ground	07/01/26	04/01/27	64.2%	100	Sand	0.15	1.2%	195	0.17	1.00	1.7	0.924	Silt Fence	0.9
Seed with Mulch or Erosion Control	04/01/27	06/01/27	16.4%	100	Sand	0.15	1.2%	195	0.17	0.10	0.0	0.924	Silt Fence	0.0
End	06/01/27	----	----	----	-----	----	1.2%	195	0.17	-----	----	0.000		0.0
		----	----	----	-----	----	1.2%	195	0.17	-----	----	0.000		0.0
		----	----	----	-----	----	1.2%	0	----	-----	----	0.000		0.0
		----	----	----	-----	----	0.0%	0	----	-----	----	0.000		0.0
<b>TOTAL</b>											<b>1.7</b>		<b>TOTAL</b>	<b>1.0</b>
													<b>% Reduction Required</b>	<b>NONE</b>

**Notes:**

See Help Page for further descriptions of variables and items in drop-down boxes.  
 The last land disturbing activity on each sheet must be 'End'. This is either 12 months from the start of construction or final stabilization.  
 For periods of construction that exceed 12 months, please demonstrate that 5 tons/acre/year is not exceeded in any given 12 month period.

NOTE: THIS TOOL ONLY ADDRESSED SOIL EROSION DUE TO SHEET FLOW. MEASURES TO CONTROL CHANNEL EROSION MAY ALSO BE REQUIRED TO MEET SEDIMENT DISCHARGE REQUIREMENTS.

**Recommended Permanent Seeding Dates:**

4/15-6/1 and 8/1-8/21 Turf, introduced grasses and legumes  
 Thaw-6/30 Native Grasses, forbs, and legumes

Designed By:	Dustin Vreeland
Date	5/28/2026

**APPENDIX F**

**State of Wisconsin Construction Site Inspection Report**

**Notice:** This form was developed in accordance with s. NR 216.48 Wis. Adm. Code for WPDES permittees' convenience; however, use of this specific form is voluntary. Multiple copies of this form may be made to compile the inspection report. Inspections of the construction site and implemented erosion and sediment control best management practices (BMPs) must be performed weekly and within 24 hours after a rainfall event 0.5 inches or greater.

<b>Construction Site Name and Location (Project, Municipality, and County):</b>	<b>Site/Facility ID No. (FIN):</b>
<b>Onsite Contact/Contractor:</b>	<b>Onsite Phone/Cell:</b>

**Note: Inspection reports, along with erosion control and storm water management plans, are required to be maintained on site in accordance with s. NR 216.48 (4) and made available upon request. PLEASE PRINT LEGIBLY.**

<b>Date of inspection:</b>	<b>Time of inspection:</b> Start: _____ <input type="radio"/> am <input type="radio"/> pm End: _____ <input type="radio"/> am <input type="radio"/> pm	<b>Type of inspection:</b> <input type="radio"/> Weekly <input type="radio"/> Precipitation Event <input type="radio"/> Other (specify)
<b>Weather/Site Conditions:</b> Temp. _____ °F Antecedent Soil Moisture <input type="radio"/> Dry <input type="radio"/> Frozen or snow covered <input type="radio"/> Variable <input type="radio"/> Frozen (Thaw predicted in next week) <input type="radio"/> Wet <input type="radio"/> Melting Snow/slush Last Rainfall Depth: _____ inches Last Rainfall Date: _____	<b>Describe current phase of construction:</b>  Scheduled Final Stabilization Date for Universal Soil Loss Equation (USLE) <sup>1</sup> : _____ <b>Project on Schedule<sup>2</sup>?</b> <input type="radio"/> Yes <input type="radio"/> No	
<b>Name(s) of individual(s) performing inspection:</b>	<b>Inspector Phone/Cell:</b>	

I certify that the information contained on this form is an accurate assessment of site conditions at the time of inspection:

**Inspector Signature** \_\_\_\_\_

**Date:** \_\_\_\_\_

Inspection Questions:	Yes	No (Identify Actions Required):	Location/Comments:	Actions Completed by Date & Initials
1. Is the erosion control plan accessible to operators?	<input type="checkbox"/>	<input type="checkbox"/> Provide onsite copy		
2. Is the permit certificate posted where visible?	<input type="checkbox"/>	<input type="checkbox"/> Post certificate		
3. Is the current phase of construction on sequence with the site-specific erosion and sediment control plan, including installation/stabilization of ponds and ditches?	<input type="checkbox"/>	<input type="checkbox"/> Add sediment control <input type="checkbox"/> Install missing ditch/pipe/pond <input type="checkbox"/> Stabilize bare soil		
4. Are all erosion and sediment control BMPs shown on plan properly installed and in functional condition?	<input type="checkbox"/>	<input type="checkbox"/> Repair <input type="checkbox"/> Modify <input type="checkbox"/> Install/Replace		
5. Is inlet protection properly installed and functioning in all inlets likely to receive runoff from the site?	<input type="checkbox"/>	<input type="checkbox"/> Clean <input type="checkbox"/> Replace <input type="checkbox"/> Install		
6. Is the air free of fugitive dust resulting from construction activity and bare soil exposure?	<input type="checkbox"/>	<input type="checkbox"/> Apply water <input type="checkbox"/> Apply dust control product		

<sup>1</sup> The Universal Soil Loss Equation (USLE) model and the Construction Site Soil Loss and Sediment Discharge Guidance are available at: [http://dnr.wi.gov/topic/stormwater/standards/const\\_standards.html](http://dnr.wi.gov/topic/stormwater/standards/const_standards.html)

<sup>2</sup> If the project is not on schedule then the soil loss summary for the project should be reviewed and schedule, plan or practices modified accordingly.

Inspection Questions:	Yes	No (Identify Actions Required):	Location/Comments:	Actions Completed by Date & Initials
7. Is the public right of way curb line free of tracked soil and accumulation?	<input type="checkbox"/>	<input type="checkbox"/> Install tracking pad <input type="checkbox"/> Widen/lengthen pad <input type="checkbox"/> Amend stone/Add geotextile <input type="checkbox"/> Install wheel washing station <input type="checkbox"/> Close entrance/exit <input type="checkbox"/> Limit traffic across disturbed areas <input type="checkbox"/> Sweep road and curb line		
8. Are wetlands, lakes, streams, ditches, or storm sewers downstream of the site free of sedimentation and turbid water leaving the site? <sup>3</sup>	<input type="checkbox"/>	<input type="checkbox"/> Repair/Replace erosion control <input type="checkbox"/> Add sediment controls <input type="checkbox"/> Modify operations <input type="checkbox"/> Contact DNR to verify extent of cleanup required		
9. Is dewatering and/or vehicle and equipment washing being done in a manner that prevents erosion and sediment discharge?	<input type="checkbox"/>	<input type="checkbox"/> Install treatment train <input type="checkbox"/> Install energy dissipation <input type="checkbox"/> Modify discharge location <input type="checkbox"/> Modify intake to reduce sediment		
10. Are soil stockpiles existing for more than 7 days covered and stabilized?	<input type="checkbox"/>	<input type="checkbox"/> Seed <input type="checkbox"/> Install mat/mulch/polymer <input type="checkbox"/> Cover with tarp/plastic sheeting		
11. Are downstream channels and other downhill areas protected from scour and erosion?	<input type="checkbox"/>	<input type="checkbox"/> Install energy dissipation at outfall <input type="checkbox"/> Install ditch checks <input type="checkbox"/> Install slope interruption <input type="checkbox"/> Install onsite detention		
12. Are good housekeeping practices or treatment controls in place to prevent the discharge of chemicals, cement, trash, and other materials into wetlands, waterways, storm sewers, ditches, or drainage-ways? <sup>4</sup>	<input type="checkbox"/>	<input type="checkbox"/> Properly dispose of trash <input type="checkbox"/> Provide concrete washout station <input type="checkbox"/> Contact DNR to verify extent of cleanup required		
13. Is the plan reflective of current site operations and does it address all erosion and sediment control issues identified during the inspection?	<input type="checkbox"/>	<input type="checkbox"/> Revise sequence <input type="checkbox"/> Revise sediment control BMP <input type="checkbox"/> Revise erosion control BMP <input type="checkbox"/> Revise post-construction storm water BMP		
14. Are all areas where construction has temporarily ceased (and will not resume for more than 2 weeks) temporarily stabilized?	<input type="checkbox"/>	<input type="checkbox"/> Topsoil & seed <input type="checkbox"/> Install mat/mulch/polymer <input type="checkbox"/> Cover with tarp/plastic sheeting		
15. Are all areas at final grade permanently vegetated or stabilized with other treatments?	<input type="checkbox"/>	<input type="checkbox"/> Topsoil & seed <input type="checkbox"/> Install mat/mulch/polymer <input type="checkbox"/> Sod <input type="checkbox"/> Install stone base		
16. Have temporary sediment controls been removed in areas of the site that meet the permit definition of 'final stabilization'?	<input type="checkbox"/>	<input type="checkbox"/> Water to establish vegetation <input type="checkbox"/> Repair or reseed areas <input type="checkbox"/> Remove temporary practices		

<sup>3</sup> If sediment discharge enters a wetland or waterbody, the permittee should consult with DNR staff to determine if sediment cleanup and/or additional control measures are required.

<sup>4</sup> The permittee shall notify the DNR immediately via the spills hotline at (800)943-0003 of any release or spill of a hazardous substance to the environment in accordance with s. 292.11, Wis. Stats., and ch. NR 706, Wis. Adm. Code.

4701 W. Schroeder Dr.  
Brown Deer, WI. 53223  
414-630-1744  
mkarini@msn.com

## WISCONSIN INVESTMENT REALTY

June 30, 2026

Eagle River City Council  
City of Eagle River  
525 E Maple St.  
Eagle River, WI 54521

<b>SUBJECT PROPERTY</b>	1114 N Bluebird Road, Eagle River, Wisconsin
<b>PREPARED BY</b>	Rudy Gudgeon, Wisconsin Investment Realty
<b>EFFECTIVE DATE</b>	June 30, 2026
<b>PURPOSE</b>	Broker Opinion of Value, and the anticipated effect of the proposed self storage facility across Highway 45 on the value of the property and business.

Members of the Eagle River City Council:

My name is Rudy Gudgeon, and I am a licensed real estate sales person with Wisconsin Investment Realty/North Shore Realty Group. For thirty years my practice has centered on the sale, valuation, and operation of various businesses including restaurants, breweries, and other hospitality businesses throughout Wisconsin. That work sits squarely on the class of property at issue here, owner operated food and beverage real estate whose worth depends as much on the business it houses as on the land beneath it. I bring both transactional and operational experience to the opinion that follows.

On June 9, 2026, Jessica Bortolotti engaged me to address two questions. The first is the current value of her property at 1114 N Bluebird Road in Eagle River. The second is how the self storage facility now proposed across Highway 45, at 1100 N. Railroad Street would affect the value of the business she operates there. This letter responds to both. It is offered as a Broker Opinion of Value grounded in my market experience and professional judgment, and not as a certified appraisal.

### Property and Business Overview

The subject property fronts Highway 45 on the approach into Eagle River and is home to two related enterprises that Ms. Bortolotti owns and operates, the restaurant Bortolotti's Cin Cin and the catering business Jessica's Cucina Catering. Its position on the highway, at the point where arriving visitors form their first impression of this part of town, is central to how the property performs and therefore to how it should be valued.

The value of a property of this kind rests on two layers. The first is the real property itself, the land and improvements, which an appraiser would analyze through the cost, sales comparison, and income approaches. The second is the going concern value of the operating business, which reflects the revenue the location produces and the goodwill it has earned. For a highway restaurant in a tourism market these layers are not independent. The building's exposure to Highway 45 is a large part of what allows the business to generate the revenue that gives the property its income value. Anything that impairs that exposure reaches the going concern value first, and through it the value of the property as an operating restaurant.

## **The Proposal and the Concerns Raised**

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The matter before the Council is a large self storage facility proposed for the parcel directly across Highway 45 from the subject property and from the neighboring Tribute Brewing. Ms. Bortolotti has raised three concerns, which in my assessment are well founded and closely related. First, the scale of the proposed building would stand between Highway 45 traffic and her signage and cut the line of sight that a highway business depends on. Second, a low activity use with a utilitarian appearance would reduce the passing exposure her business relies on and degrade the arrival experience that a destination restaurant sells. Third, the parcel currently carries the Eagle River community welcome sign, a landmark that visitors routinely stop to photograph, and replacing it with a storage building would work against the identity the town has cultivated for a century and a half.

## **Analysis by Impact**

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### **Line of Sight and Highway Visibility**

For a business set on a highway rather than in a walkable downtown, visibility from the road is the single most valuable and continuous marketing asset it owns. Every vehicle that passes is an impression, and unlike paid advertising that exposure runs for every hour the road is in use and costs the owner nothing. The subject property's location on the approach into Eagle River gives it exactly this advantage. A large structure placed between the highway and the property's signage narrows the window in which approaching drivers can see and register the business, and it does so for traffic in both directions. What is lost is not only the sign but the accumulated impressions that convert, across a season, into customers coming through the door. In my experience valuing highway hospitality properties, a sustained impairment of visibility is among the more reliable indicators of softening revenue at an operating restaurant, because the exposure that is lost cannot easily be replaced.

### **Experiential and Aesthetic Impact**

A restaurant and a patio brewery sell more than food and drink. They sell an experience that begins at the roadside, with the first impression a visitor forms on approach, and that impression is part of what the going concern value capitalizes. A self storage facility presents blank metal walls, perimeter fencing, and rows of garage doors, and it would face the very stretch of highway that shapes a visitor's first read of this part of town. For Ms. Bortolotti's restaurant, and for Tribute Brewing beside it, both of which trade on atmosphere and a sense of place, an industrial frontage directly across the road works against the setting they have invested in and rely upon. The harm here is qualitative, but it is real, and it compounds the visibility loss rather than standing apart from it.

### **District Vitality and Adjacent Activity**

Land uses feed one another. A restaurant, a brewery, and comparable retail generate steady traffic through the day and into the evening, and that activity spills over to the benefit of neighboring businesses. Self storage does the opposite. By design it is a low activity use that draws few visitors and contributes little of the passing energy that helps a hospitality corridor feel alive and worth stopping for. Devoting an active gateway parcel to a use that adds almost nothing to the surrounding commercial rhythm removes support that adjacent operators such as Ms. Bortolotti quietly depend on.

### **Traffic, Security, and Evening Ambiance**

Self storage facilities commonly provide extended or continuous access, which introduces intermittent vehicle and truck movement at hours when a restaurant is working to hold an unhurried evening atmosphere. Facilities of this type can also invite loitering and late activity in a way that active, staffed businesses do not. For a restaurant whose dinner service and outdoor seating depend on a calm and secure setting, and whose guests park and walk in the evening, the character of what sits directly across the highway matters. This factor is smaller than visibility, but it is genuine, and it points in the same direction.

### **Maintenance and Proximity to Food Service**

There is a further risk that a seasoned operator learns to watch for. Storage facilities that are not diligently maintained can develop pest, odor, and code problems, and the proximity of any such condition to food establishments is a legitimate concern for the operators next to it. I raise this not as a certainty but as a foreseeable risk, one that depends on the standard to which the facility is built and maintained, and one the Council is well positioned to weigh.

### **Community Identity and the Welcome Sign**

Eagle River presents itself to the traveling public as a northwoods destination with a long and distinct identity. The welcome sign on the subject parcel is a small but real part of that presentation, a place visitors stop to photograph and a marker of arrival that reinforces the town's brand at the very moment a first impression forms. Replacing it with a utilitarian storage building trades a gateway image the community has carefully cultivated for the least evocative use a prominent corner can hold. The cost of that trade appears on no single balance sheet, yet it is felt by every business in the corridor that benefits from Eagle River reading, to the arriving visitor, as a place worth stopping.

### **Municipal Economics**

Finally, the Council has its own economic interest in how this corridor develops. Measured per acre, restaurants and retail generate materially more sales tax, more employment, and more visitor spending than self storage, which once built is a lightly staffed and low sales use. A gateway parcel on the highway approach to a tourism town is, by ordinary highest and best use reasoning, better suited to a use that captures visitor spending than to one that does not. In allocating a prominent corridor parcel to storage, the city would forgo the recurring public revenue and the corridor vitality that a more active use in that location would produce.

Eagle River City Council

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## **Opinion on Value Impact**

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Taken together, it is my opinion that the proposed self storage facility carries a real and adverse risk to the value of Ms. Bortolotti's business, and through it to the value of her property as an operating restaurant. I want to be measured about the basis for that opinion. Formal, published studies that isolate the effect of a specific adjacent land use on a specific restaurant's revenue are limited, and I will not represent otherwise. What I can offer is the judgment of thirty years spent valuing and operating properties of exactly this kind, applied through established appraisal and market principles. Those principles hold that a highway business's visibility is a core driver of its revenue, that impaired visibility and a degraded approach erode going concern value even when the land and building are physically unchanged, and that the income a property commands as a restaurant moves with the health of the business it houses.

For that reason my opinion is directional, and I frame it as risk rather than as a guaranteed figure. I would expect the primary impact to fall on the going concern value of the business, through a measurable reduction in visibility driven traffic and revenue, with a secondary effect on the value of the property as income producing restaurant real estate. I would not expect a meaningful change in the value of the land and improvements considered in isolation, and that distinction is precisely the point. A property can lose value as a functioning business without losing a square foot of ground, and it is that loss which is most likely to go unrecorded in a narrow reading of the proposal.

As to the current value of the subject property, I am providing my figure with the supporting comparable data under separate cover, expressed as a value range for the property in its present condition and use. Should the facility be approved and built as proposed, my opinion is that the reasonable expectation is downward pressure on the going concern component of that value over the seasons that follow, with the magnitude depending on the final scale, siting, and appearance of the facility.

## **Scope of Opinion and Limiting Conditions**

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This letter is a Broker Opinion of Value rather than an appraisal prepared under the Uniform Standards of Professional Appraisal Practice, and it should be read as the professional judgment of a broker experienced in hospitality property. It rests on my knowledge of the subject property and its market, on comparable data gathered for the property in its present condition and use, and on the facts regarding the proposed facility as they have been presented to me. Where those facts change, and in particular the final scale, siting, height, and appearance of the proposed building, my conclusions may change with them. I have assumed that the information provided to me is accurate, and I have not performed an independent audit of the business's financial records for purposes of this letter.

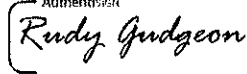
The opinions expressed here concern the direction and the relative magnitude of the likely value effects, and they are not a guarantee of any particular financial result, which will always depend on management, market conditions, and factors beyond the matter now before the Council. This letter is provided for the Council's use in its deliberations on the proposed facility. I confirm that my compensation for preparing it is not contingent on the conclusions reached or on any action the Council may take, that I hold no undisclosed interest in the subject property or in the proposed facility, and that the opinions given here are my own and are offered in good faith.

Eagle River City Council

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I offer this opinion to assist the Council in weighing a decision that reaches well beyond a single parcel, to the character and the economic health of the highway corridor that serves as Eagle River's front door. Ms. Bortolotti has built a restaurant and a catering business whose value is tied directly to the exposure and the setting this stretch of Highway 45 provides, and it is that value, the going concern on which her livelihood rests, that the proposal places most directly at risk. I would welcome the opportunity to expand on any part of this letter or to answer the Council's questions.

Respectfully submitted,

 Authentic

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**Rudy Gudgeon**

Licensed Real Estate Sales Person, State of Wisconsin  
Wisconsin Investment Realty/North Shore Realty Group  
License No. 79833-94  
Telephone: C. 414-630-1744 or O. 414-377-7004  
Email: mkarimi@msn.com





June 25, 2026

## **Realtor Opinion Regarding Potential Market Impact of Proposed Adjacent Development**

**Bortolotti's Cin Cin – 1114 N Bluebird Rd, Eagle River, WI**

I have been asked to provide my professional opinion regarding the potential impact that the proposed adjacent commercial development (U-Haul facility at 1100 N Railroad St, Eagle River, WI) may have on the subject property's (1114 N Bluebird Rd) marketability and overall value.

As a real estate agent actively involved in the local market, it is my opinion that the proposed development would likely have some negative impact on the property's marketability and, as a result, could negatively influence its market value.

Commercial buyers don't evaluate a property for the property only...they also consider what surrounds it. The proposed development would likely be located directly between the subject property and the main highway, reducing the property's visibility from one of the area's primary traffic corridors. For a restaurant or other customer-oriented business, highway visibility and overall curb appeal are often important factors in attracting customers and maintaining long-term value.

That said, it is not possible to accurately determine the extent of any impact before the project is completed and exposed to the open market. The final design, landscaping, screening, traffic patterns, and overall operation of the facility will all influence how the market ultimately reacts. Every buyer values these factors differently, making it impossible to reliably assign a specific dollar amount or percentage reduction in value at this time.

Based on my experience in the local real estate market, I believe the proposed development would likely have some adverse effect on the property's desirability to at least a portion of the buyer pool and could therefore negatively impact market value. However, any attempt to quantify that impact today would be speculative.

This opinion is based solely on my experience marketing and selling real estate in the local market and is intended as a broker's professional opinion rather than a certified appraisal.

Joe Misina  
Eliason Realty of the North, LLC  
Cell (715) 891-7701  
[JoeMisina.EliasonRealty.com](http://JoeMisina.EliasonRealty.com) | [Joe@EliasonRealty.com](mailto:Joe@EliasonRealty.com)





**Mary F. Ruffedt**  
Broker/Owner  
Licensed in WI/MN  
CRS, GRI, ABR, RRS, SRES, REALTOR®  
C: 715.828.9347  
O: 715.830.1001  
F: 715.830.1005  
info@maryruffedt.com  
www.maryruffedt.com  
www.eliterealty-wisconsin.com

June 26th, 2026

To whom it may concern,

My name is **Mary F. Ruffedt**, and I am the *Broker/Owner of Elite Realty Group, LLC*. I have been serving buyers, sellers, investors, and business owners throughout Wisconsin & Minnesota for nearly three decades now, specializing in residential, commercial, and investment real estate.

I am writing in support of my client, **Jessica Bortolotti (Key 23 Investments)**, a respected local business owner in the Eagle River community. Through my work with Jessica, I have come to appreciate not only her commitment to her own business, but also the positive impact that these locally owned establishments have on the character and economic vitality of the area.

As a real estate professional, I understand that **responsible** growth and development are important. I am all for growth, but *commercial growth must be smart growth*. However, I also recognize that the location and nature of a development can have lasting consequences for neighboring businesses, property values, visibility, traffic patterns, and the overall appeal of a commercial corridor. While I support responsible economic growth, I have concerns that the proposed U-Haul storage development in this location could have a significantly negative impact not only on Jessica's business but also on those of neighboring businesses that have helped shape the Eagle River community. To place a large storage building directly within the sight line of not only Jessica's personal business, but also others in the area would directly hinder their day-to-day operations.

I respectfully ask that careful consideration be given to the location of this proposed development and the potential effects it may have on the established local businesses that have invested in and contributed to the area for many years.

Thank you.

Respectfully,



Mary F Ruffedt  
Broker/Owner



**Robin Ginner**

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**From:** Vito S. Bortolotti <v.s.bortolotti@gmail.com>  
**Sent:** Wednesday, July 1, 2026 11:23 AM  
**To:** Robin Ginner  
**Subject:** Fwd: Another round of Letters/ Emails for the July 2nd Meeting

----- Forwarded message -----

**From:** Ally Ramesh <[ally@burkettrealty.com](mailto:ally@burkettrealty.com)>  
**Date:** Wed, Jul 1, 2026, 9:14 AM  
**Subject:**  
**To:** [v.s.bortolotti@gmail.com](mailto:v.s.bortolotti@gmail.com) <[v.s.bortolotti@gmail.com](mailto:v.s.bortolotti@gmail.com)>

Good afternoon Mr. Bortolotti,

It was very nice to meet you! Your family has a wonderful business.

My opinion is based solely on general real estate market observations. I believe the proposed development can have a negative impact on the restaurant's visibility from the highway, which may affect customer exposure and traffic patterns. Reduced visibility is generally considered a factor that can negatively influence the marketability and potential resale value of a business. A qualified business appraiser or valuation expert would be best suited to quantify any impact.

--

**Ally Ramesh** 🌲  
REALTOR® | Century 21 Burkett & Associates  
906-284-2918 | [ally@burkettrealty.com](mailto:ally@burkettrealty.com)  
Serving All of Northern Wisconsin

**JUNE 30, 2026**

**SUBJECT: STORAGE UNIT/CIN CIN PLANNING COMMISSION MEETING**

To Whom It May Concern,

I am writing in my capacity as a licensed Wisconsin REALTOR® with experience marketing commercial and residential properties throughout Northern Wisconsin.

This letter is not intended to express support for or opposition to the proposed development or conditional use permit. Rather, I am offering a professional opinion regarding how adjacent land uses can influence the marketability of neighboring commercial properties.

The Cin Cin restaurant benefits from its visibility along US Highway 45 and the ambiance it provides its patrons. From a real estate perspective, customer-facing businesses often rely not only on location, but also on the surrounding environment and overall dining experience. Should the proposed climate-controlled storage facility substantially alter the existing views or visual setting, it is my opinion that it could negatively affect the property's marketability and the ambiance that contributes to its appeal for customers.

My comments are limited to general real estate principles regarding commercial marketability and should not be interpreted as an opinion on the proposed project itself or its approval.

Respectfully,

**Drea Myszka**  
Wisconsin Licensed REALTOR®



Minocqua  
(800) 472-3410

Eagle River  
(800) 282-1774

Rhineland  
(800) 472-7334

Manitowish Waters  
(800) 433-9494

[shorewest.com](http://shorewest.com)

June 29, 2026

Vito Bortolotti  
1114 N. Bluebird  
Eagle River, WI 54521

Cin Cin Value

Sir,

Some information regarding your property located at 1114 N. Bluebird Rd, Eagle River, Wisconsin.

Assessed value is	\$210,500
Fair Market Value is	\$233,800
Most recent sale, 11/2016	\$106,000

My estimate of value of the real estate, excluding the business is \$290,000

Should a structure be built in front of the restaurant blocking visibility, my opinion of value drops to \$265,000.

I will be most happy to discuss.

Best regards,

James Mulleady  
Shorewest Realtors



CITY OF  
**EAGLE RIVER**  
*Wisconsin*

**Application for a Hearing before Planning Commission**

**Applicant MUST provide the following information:**

Name Agricultural Society / Vilas Co. Fair Board Phone 715-479-2057

Mailing Address 164 Forrest Street/Vilas County Fairgrounds

Interest in the Property Leasee

Name of Property Owner Vilas County

Mailing Address 164 Forrest Street, Eagle River

The above signed applicant does petition the City Council as follows:

**Amend the Zoning Classification or Boundaries of a District**

Change may only be initiated by the City Council, Plan Commission or a petition by one or more of the owners or lessees of the property proposed to be changed.

Present Zoning Classification \_\_\_\_\_

Requested Zoning Classification \_\_\_\_\_

Applicant must provide the following information

- Legal description and address of the property in question.
- A sketch drawn to a scale of not less than 100 feet to the inch, showing area to be changed, its location, the location of the existing boundaries and the uses within 300 feet of the property proposed to be changed.
- Property owners names, mailing address of all property within 300 feet of the property in question.
- Present use of the property in question.
- Proposed use of the property in question.

## Zoning Ordinance Amendment

Change initiated, must be initiated by Zoning Administrator.

Requested Amendment to section: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Conditional Use Permit

Zoning Classification of Property Parks/Recreation

List the requested conditional use, Camping for circus workers at the Vilas County fairgrounds, July 13-15, 2026,  
\_\_\_\_\_  
\_\_\_\_\_

Applicant must provide the following information:

- A legal description and address of the property where the use will take place.
- The names and mailing addresses of the abutting property owners.
- Present uses of the abutting properties.
- A site plan of the property showing distances of structures to property lines, parking areas, landscaping, lighting, traffic line of sight visibilities and any other information which will assist the Planning Commission to make a decision.

Additional information may be requested by the Eagle River Plan Commission or the Eagle River City Council to evaluate your application. The lack of information may in itself be sufficient cause to deny a petition. Failure to provide the above required information may result in additional public hearings, which additional costs will be borne by the applicant.

The completed application must be submitted to the Zoning Administrator's office no less than 30 days before the date of the Planning Commission meeting, 525 E. Maple Street, PO Box 1269, Eagle River, WI 54521.

***Applicant or Owner of the property or Agent shall appear before the Planning Commission.***

Dated this 9 day of June, 2026

Respectfully submitted by 

*For Office Use Only:*

Permit distribution:  Treasurer (w/check)     File     Planning Commission

Payment: \$ \_\_\_\_\_  Cash     Check # \_\_\_\_\_ Date: \_\_\_\_\_ Admin: \_\_\_\_\_ Date: \_\_\_\_\_



## NOTICE OF PUBLIC HEARING

### CITY OF EAGLE RIVER PLANNING COMMISSION

The Vilas County Fair Board has submitted a request to allow camping by circus workers at the Vilas County Fairgrounds, July 13-15, 2026. The Vilas County Fairgrounds property, Parcel 221-182, 133 South Forrest Street, is described as Sect. 32, T40N,R10E, MILL LOT 1 COUNTY CLERK'S PLAT GOVT LOT 1 & PRT SE NE EXC 23-382,196-598,580174, 584885 RESOLUTION 441482.

The City of Eagle River Planning Commission has scheduled a public hearing for **Thursday, July 2, 2026 at 5 pm**, located in the Eagle River Common Council Chambers, 525 E. Maple Street, Eagle River, WI 54521.

Comments can be made in person at the public hearing or by mail to City Administrator, PO. Box 1269, Eagle River, WI 54521; by phone (715) 479-8682 x227 or email [rcginner@eagleriverwi.gov](mailto:rcginner@eagleriverwi.gov). Documents will be available for review at City Hall. PETITIONERS, OR THEIR REPRESENTATIVES, SHALL BE PRESENT.

Legal Notice

Publish twice, beginning June 15, 2026. Affidavit requested.

**NOTICE OF PUBLIC HEARING - Correction**  
CITY OF EAGLE RIVER PLANNING COMMISSION

The Vilas County Fair Board has submitted a Conditional Use Permit request to allow camping by circus workers at the Vilas County Fairgrounds, July 13-15, 2026. The Vilas County Fairgrounds property, Parcel 221-182, 133 South Forrest Street, is described as Sect. 32, T40N,R10E, MILL LOT 1 COUNTY CLERK'S PLAT GOVT LOT 1 & PRT SE NE EXC 23-382,196-598,580174, 584885 RESOLUTION 441482.

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WEST PINE STREET LLC  
2303 RIDGEVIEW DR  
WAUSAU, WI 54401

THOMAS M POLLACK  
PO BOX 186  
EAGLE RIVER, WI 54521

STUART A LANDAU TRUST  
5100 DORSET AVE CHEVY  
CHASE, MD 20815

WEST PINE STREET LLC  
2303 RIDGEVIEW DR  
WAUSAU, WI 54401

KAP HOLDINGS LLC  
PO BOX 939  
EAGLE RIVER, WI 54521

SAS INCOME TRUST  
PO BOX 1015  
EAGLE RIVER, WI 54521

GPS II INC  
PO BOX 997  
EAGLE RIVER, WI 54521

THOMAS F WRANIK  
PO BOX 1266  
EAGLE RIVER, WI 54521

DANIEL M BAKOTIC TRUST  
503 NAVAJO DR  
NEW LENOX, IL 60451

EAGLE RIVER RE LLC  
1209 TYLER ST NE  
MINNEAPOLIS, MN 55413

THOMAS F WRANIK  
PO BOX 1266  
EAGLE RIVER, WI 54521

PATRICIA A LANGE  
24 MEDALIST LN  
ROTONDA WEST, FL 33947

BEAVERS LAND MANAGEMENT LLC  
2220 6TH AVE N  
ESCANABA, MI 49829

VILAS COUNTY  
330 COURT ST  
EAGLE RIVER, WI 54521

MATTHEW J GUTHRIE 149  
FIELDSTONE LN DIXON, IL  
61021

BTK GROUP LLC  
4299 ISLANDVIEW RD  
RHINELANDER, WI 54501

KEVIN M KADLEC  
PO BOX 348  
PORT CHARLOTTE, FL 33981

ELLEN S MOMMAERTS  
1740 DUBLIN LN APT 73  
NEENAH, WI 54956

HODAG PROPERTY HOLDINGS LLC  
7500 BIRCH TREE DR  
EAGLE RIVER, WI 54521

GERTA  
PO Box 1714  
EAGLE RIVER, WI 54521

CHARLES BURGESS  
604 CEDAR LN  
PFLUGERVILLE, TX 78660

VILAS COUNTY  
330 COURT ST  
EAGLE RIVER, WI 54521

BRIAN T WIRTH  
864 STONECROP DR  
HARTFORD, WI 53027

JOHN R BURCZYK TRUST  
741 RIVER EDGE  
EAGLE RIVER, WI 54521

KATIE L RHEINSCHMIDT  
741 E RIVER EDGE RD  
EAGLE RIVER, WI 54521

KENT & PATRICIA KOHN TRUST  
812 RIVER EDGE  
EAGLE RIVER, WI 54521

EVELYN D ABBATE TRUST  
812 RIVER EDGE  
EAGLE RIVER, WI 54521

MATTHEW J BROWN  
N3666 TOWER RD  
TIGERTON, WI 54486

DONALD L PETERSON  
16804 ENNERDALE AVE  
LOCKPORT, IL 60441

CITY OF  
**EAGLE RIVER**  
*Wisconsin*

**Application for a Hearing before Planning Commission**

Applicant MUST provide the following information:

Name Agricultural Society / Vilas County Fair Board Phone 715-479-2057

Mailing Address 164 Forrest Street/Vilas County Fairgrounds

Interest in the Property Leasee

Name of Property Owner Vilas County

Mailing Address 164 Forrest Street, Eagle River, WI

The above signed applicant does petition the City Council as follows:

**Amend the Zoning Classification or Boundaries of a District**

Change may only be initiated by the City Council, Plan Commission or a petition by one or more of the owners or lessees of the property proposed to be changed.

Present Zoning Classification \_\_\_\_\_

Requested Zoning Classification \_\_\_\_\_

Applicant must provide the following information

- Legal description and address of the property in question.
- A sketch drawn to a scale of not less than 100 feet to the inch, showing area to be changed, its location, the location of the existing boundaries and the uses within 300 feet of the property proposed to be changed.
- Property owners names, mailing address of all property within 300 feet of the property in question.
- Present use of the property in question.
- Proposed use of the property in question.

**Zoning Ordinance Amendment**

Change initiated, must be initiated by Zoning Administrator.

Requested Amendment to section: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Conditional Use Permit**

Zoning Classification of Property Parks/Recreation

List the requested conditional use, For the agricultural board to allow camping by carnival workers at the Vilas County fairgrounds during the Vilas County fair, August 13-16, 2026, and additional shoulder dates as required for set-up/tear-down of the fair attractions.

Applicant must provide the following information:

- A legal description and address of the property where the use will take place.
- The names and mailing addresses of the abutting property owners.
- Present uses of the abutting properties.
- A site plan of the property showing distances of structures to property lines, parking areas, landscaping, lighting, traffic line of sight visibilities and any other information which will assist the Planning Commission to make a decision.

Additional information may be requested by the Eagle River Plan Commission or the Eagle River City Council to evaluate your application. The lack of information may in itself be sufficient cause to deny a petition. Failure to provide the above required information may result in additional public hearings, which additional costs will be borne by the applicant.

The completed application must be submitted to the Zoning Administrator's office no less than 30 days before the date of the Planning Commission meeting, 525 E. Maple Street, PO Box 1269, Eagle River, WI 54521.

***Applicant or Owner of the property or Agent shall appear before the Planning Commission.***

Dated this 8 day of June, 2026

Respectfully submitted by Dale Ayers 

<i>For Office Use Only:</i>			
Permit distribution:	<input type="checkbox"/> Treasurer (w/check)	<input type="checkbox"/> File	<input type="checkbox"/> Planning Commission
Payment: \$ _____	<input type="checkbox"/> Cash	<input type="checkbox"/> Check # _____	Date: _____ Admin: _____ Date: _____



## NOTICE OF PUBLIC HEARING

### CITY OF EAGLE RIVER PLANNING COMMISSION

The Vilas County Fair Board has submitted a request to allow camping by carnival workers at the Vilas County Fairgrounds during the County Fair, August 13-16, 2026, with additional shoulder dates as required for set-up/tear-down of the fair attractions. The Vilas County Fairgrounds property, Parcel 221-182, 133 South Forrest Street, is described as Sect. 32, T40N,R10E, MILL LOT 1 COUNTY CLERK'S PLAT GOVT LOT 1 & PRT SE NE EXC 23-382,196-598,580174, 584885 RESOLUTION 441482.

The City of Eagle River Planning Commission has scheduled a public hearing for **Thursday, July 2, 2026 at 5 pm**, located in the Eagle River Common Council Chambers, 525 E. Maple Street, Eagle River, WI 54521.

Comments can be made in person at the public hearing or by mail to City Administrator, PO. Box 1269, Eagle River, WI 54521; by phone (715) 479-8682 x227 or email [rcginner@eagleriverwi.gov](mailto:rcginner@eagleriverwi.gov). Documents will be available for review at City Hall. PETITIONERS, OR THEIR REPRESENTATIVES, SHALL BE PRESENT.

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SAS INCOME TRUST  
PO BOX 1015  
EAGLE RIVER, WI 54521

GPS II INC  
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MATTHEW J BROWN  
N3666 TOWER RD  
TIGERTON, WI 54486

DONALD L PETERSON  
16804 ENNERDALE AVE  
LOCKPORT, IL 60441



CITY OF  
**EAGLE RIVER**  
*Wisconsin*

**Application for a Hearing before Planning Commission**

Applicant **MUST** provide the following information:

Name City of Eagle River Phone 715-479-8682

Mailing Address PO Box 1269, Eagle River, WI

Interest in the Property To fix City Zoning classifications where non-conforming use exists.

Name of Property Owner Tuff, Hom and Buskager

Mailing Address n/a

The above signed applicant does petition the City Council as follows:

**Amend the Zoning Classification or Boundaries of a District**

Change may only be initiated by the City Council, Plan Commission or a petition by one or more of the owners or lessees of the property proposed to be changed.

Present Zoning Classification Park/Recreation

Requested Zoning Classification Office/Residential

Applicant must provide the following information

- Legal description and address of the property in question.
- A sketch drawn to a scale of not less than 100 feet to the inch, showing area to be changed, its location, the location of the existing boundaries and the uses within 300 feet of the property proposed to be changed.
- Property owners names, mailing address of all property within 300 feet of the property in question.
- Present use of the property in question.
- Proposed use of the property in question.

## Zoning Ordinance Amendment

Change initiated, must be initiated by Zoning Administrator.

Requested Amendment to section: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Conditional Use Permit

Zoning Classification of Property \_\_\_\_\_

List the requested conditional use, \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Applicant must provide the following information:

- A legal description and address of the property where the use will take place.
- The names and mailing addresses of the abutting property owners.
- Present uses of the abutting properties.
- A site plan of the property showing distances of structures to property lines, parking areas, landscaping, lighting, traffic line of sight visibilities and any other information which will assist the Planning Commission to make a decision.

Additional information may be requested by the Eagle River Plan Commission or the Eagle River City Council to evaluate your application. The lack of information may in itself be sufficient cause to deny a petition. Failure to provide the above required information may result in additional public hearings, which additional costs will be borne by the applicant.

The completed application must be submitted to the Zoning Administrator's office no less than 30 days before the date of the Planning Commission meeting, 525 E. Maple Street, PO Box 1269, Eagle River, WI 54521.

***Applicant or Owner of the property or Agent shall appear before the Planning Commission.***

Dated this 9th day of June, 2026

Respectfully submitted by \_\_\_\_\_

*For Office Use Only:*

Permit distribution:  Treasurer (w/check)     File     Planning Commission

Payment: \$ \_\_\_\_\_  Cash     Check # \_\_\_\_\_ Date: \_\_\_\_\_ Admin: \_\_\_\_\_ Date: \_\_\_\_\_



City Of Eagle River  
Resolution No. \_\_\_\_\_

**A Resolution To Amend The City Of Eagle River Comprehensive Plan Future Land Use Map And Rezone Certain Properties Located On Elm Drive From Parks/Recreation To Office/Residential**

**WHEREAS**, the City of Eagle River has received requests to amend the Future Land Use Map of the Comprehensive Plan and to rezone certain properties located on Elm Drive; and

**WHEREAS**, the subject properties are currently designated and zoned as Parks/Recreation and are proposed to be redesignated and rezoned to Office/Residential; and

**WHEREAS**, the properties affected by this amendment and rezoning are legally described in the City tax roll and identified as follows:

1. **Tuff Property**  
Parcel No. 221-1058-5801  
1020 Elm Drive  
SE-SE, Section 33, Township 40 North, Range 10 East, Part of SE-SE.  
Full legal description on file in the tax roll.
2. **Hom Property**  
Parcel No. 221-1058-6012  
SE-SE, Section 33, Township 40 North, Range 10 East, Lot 3 of Certified Survey Map No. 5874, recorded as 22CS212, Part of SE-SE.  
Full legal description on file in the tax roll.
3. **Buskager Property**  
Parcel No. 221-1058-6011  
1025 Elm Drive  
SE-SE, Section 33, Township 40 North, Range 10 East, Lot 2 of Certified Survey Map No. 5874, recorded as 22CS212, formerly part of SE-SE, except Document No. 540834.  
Full legal description on file in the tax roll.

**WHEREAS**, pursuant to Wisconsin Statutes and the City of Eagle River Zoning Ordinance, the Planning Commission conducted a public hearing on July 2, 2026, at 5:00 p.m. in the Common Council Chambers at City Hall, 525 East Maple Street, Eagle River, Wisconsin, to receive testimony and public comment regarding the proposed Comprehensive Plan amendment and rezoning; and

**WHEREAS**, after consideration of the public testimony, staff review, applicable ordinances, and the goals and objectives of the City’s Comprehensive Plan, the Planning Commission has recommended approval of the proposed amendments; and

**WHEREAS**, the Common Council finds that the proposed Future Land Use Map amendment and rezoning are consistent with the public health, safety, and welfare of the community and are in the best interests of the City of Eagle River.

**NOW, THEREFORE, BE IT RESOLVED** by the Common Council of the City of Eagle River, Wisconsin, that:

**Section 1.** The Future Land Use Map of the City of Eagle River Comprehensive Plan is hereby amended to change the future land use designation of the properties identified above from Parks/Recreation to Office/Residential.

**Section 2.** The Official Zoning Map of the City of Eagle River is hereby amended to rezone the properties identified above from Parks/Recreation to Office/Residential.

**Section 3.** City staff are authorized and directed to make all necessary revisions to the Comprehensive Plan, Official Zoning Map, and related City records to reflect these amendments.

**Section 4.** This Resolution shall take effect upon its adoption and publication as required by law.

Adopted by the Common Council of the City of Eagle River, Wisconsin, this \_\_\_\_ day of \_\_\_\_\_, 2026.

SIGNED: \_\_\_\_\_  
Debra A Brown, Mayor Date

ATTEST: \_\_\_\_\_  
Becky Bolte, Clerk Date



## NOTICE OF PUBLIC HEARING

### CITY OF EAGLE RIVER PLANNING COMMISSION

The Planning Commission will consider the rezoning, and the subsequent change to the Comprehensive Plan of the City of Eagle River, for Elm Drive properties listed below from Parks/Recreation to Office/Residential zoning classification. The properties are described as:

- **Tuff:** Parcel #221-1058-5801, 1020 Elm Drive, SE-SE, Sect. 33, T40N, R10E, PRT SE SE. Full description in tax roll.
- **Hom:** Parcel #221-1058-6012, SE-SE, Sect. 33, T40N, R10E, LOT 3 22CS212 CSM 5874 PRT SE SE. Full description in the tax roll.
- **Buskager:** Parcel #221-1058-6011, 1025 Elm Drive, SE-SE, Sect. 33, T40N, R10E, LOT 2 22CS212 CSM 5874 FKA PRT SE SE EXC 540834

The City of Eagle River Planning Commission has scheduled a public hearing for **Thursday, July 2, 2026 at 5 pm**, located in the Eagle River Common Council Chambers, 525 E. Maple Street, Eagle River, WI 54521.

Comments can be made in person at the public hearing or by mail to City Administrator, PO. Box 1269, Eagle River, WI 54521; by phone (715) 479-8682 x227 or email [rcginner@eagleriverwi.gov](mailto:rcginner@eagleriverwi.gov). Documents will be available for review at City Hall. PETITIONERS, OR THEIR REPRESENTATIVES, SHALL BE PRESENT.

RORY TUFF  
1020 ELM DR  
EAGLE RIVER, WI 54521

CITY OF EAGLE RIVER  
PO BOX 1269  
EAGLE RIVER, WI 54521

SPENCER BUSKAGER  
7828 PRIMEVAL LN  
ST GERMAIN, WI 54558

KATIE HOM  
1005 ELM DR  
EAGLE RIVER, WI 54521

**Robin Ginner**

---

**From:** Rick Meadows <rick\_meadows@msn.com>  
**Sent:** Thursday, June 11, 2026 3:40 PM  
**To:** Robin Ginner  
**Subject:** Withdrawal of Real Estate Purchase Request

Members of the Eagle River Zoning Commission,

Please accept this email as formal notice that I am withdrawing my request to purchase the strip of land adjacent to my mother's property (655 Bond Blvd) and will not be pursuing the matter further.

My parents, George and Carol Meadows, have been part of the Eagle River community for many years, and as we prepare for the sale of the property and my mother's transition to assisted living, I have decided it is best to move forward without further consideration of this request.

I appreciate the opportunity to present the matter and the professionalism shown by the Commission throughout the process.

Thank you for your time.

Respectfully,

Rick Meadows  
Attorney-in-Fact for Carol Meadows