

October 20, 2025
File No. 2025-085

Chrissy Almanzar
Land Use Administrator
Town of Warner
5 East Main Street
PO Box 265
Warner, NH 03278
landuse@warnernh.gov

Re: Site Plan Application Review
Map 7, Lot 39 and 39-1
Warner, New Hampshire

Dear Ms. Almanzar:

On behalf of the Town of Warner (Town) Planning Board, Aries Engineering, LLC (Aries) prepared this engineering review of a Site Plan application for the property identified as Lots 39 and 39-1 on Warner Tax Map 7 (site) in Warner, New Hampshire.

The findings and conclusions presented herein are not scientific certainties, but rather our professional opinions concerning our evaluation of information and data submitted by others. Aries anticipates variations in actual site conditions beyond those interpreted and would have to re-evaluate the report conclusions and recommendations if additional site data are made available. Aries conducted this report in general accordance with accepted consulting practices. Aries makes no warranty, either expressed or implied.

OBJECTIVE

As requested by the Planning Board, Aries' objective was to conduct an engineering review of the Site Plan application and provide general comments regarding compliance with Warner's Site Plan and Zoning regulations and comments on requested items such as soils, dredge and fill, drainage and erosion control, driveway pitch and areas where driveway meets roadway, slope stabilization, runoff relative to abutters, and a specific opinion as to whether the NW area runoff would be improved or made worse for the abutter.

SITE DOCUMENTS AND MAPS

In preparing this report, Aries reviewed the following documents and data:

1. *"Residential Site Plan, Jennesstown Manor,"* prepared by Keach-Nordstrom Associates, Inc. (KNA) of Bedford, New Hampshire, and revised May 22, 2025;

2. “Alteration of Terrain Permit Application & Stormwater Drainage Analysis, Jennessstown Manor,” prepared by KNA, and revised May 27, 2025;
3. Alteration of Terrain Comment Response Letter, prepared by KNA, dated September 4, 2025;
4. “Site Plan Review Regulations, Town of Warner, New Hampshire”, amended March 11, 2020
5. “Town of Warner, New Hampshire Subdivision Regulations”, amended March 11, 2020 (Subdivision Regulations);
6. “Town of Warner, New Hampshire Zoning Ordinances”, amended March 13, 2024 (Zoning Ordinances);
7. “Driveway Regulations, Town of Warner, NH”, dated January 22, 2018;
8. Drainage Class Report, Web Soil Survey, U.S. Department of Agriculture (USDA);
9. Geographic Information System (GIS) data provided by New Hampshire Geographically Referenced Analysis and Information Transfer System (NH GRANIT), which is maintained by University of New Hampshire and the NH Office of Strategic Initiatives.

In this report, the above-referenced individual plans prepared by KNA are collectively referred to as “site plans”.

COMMENT REVIEW

Aries provided the following general comments:

Soils

1. Aries’ review of the U.S. Department of Agriculture (USDA) Web Soil Survey indicated site soils are generally moderately to excessively well-drained soil, with the exception of an approximate 8,200-square-foot (sf) area of poorly drained soils along the southwestern property boundary of Lot 39-1. It is unclear if this area was excluded from the “buildable area” calculation for Lot 39-1, but due to the limited area, this area of poorly-drained soils should not reduce the number of permitted dwelling units on the lot. The Web Soil Survey report is attached.

Site Access

2. Site access is proposed via a 20-foot-wide single access road to the proposed site facilities with steep grades of up ~ 15%. Section III (E.) of the Town Site Plan Review Regulations require, “...suitably located streets of sufficient width to accommodate existing and prospective traffic and to afford adequate light, air, and access for firefighting apparatus and equipment to buildings”. Further, Section XXIII (A.)(6) state that, “...adequate provisions must be made for fire safety, prevention, and control”. Aries recommends that the proposed site access be reviewed and approved by both

the Town fire and police department to ensure that site access for life-safety responses can be met by the Town.

3. Available Town Driveway Regulations allow for driveway grades of up to 15%. However, consideration should be given to the fact that the proposed driveway provides access to eight dwelling units that will require a greater level of life-safety support than a single-family residence.
4. Site plans show a 20-foot-wide access road with 2-foot-wide shoulders. Aries recommends that the proposed access road meet the Town road construction standards provided in the Town Subdivision Regulations, Appendix B¹, including 24-foot-wide paved roadway, with 3-foot minimum width shoulders.
5. The site plans depict a fire truck turnaround and enclosed dumpster located approximately halfway down the proposed steep access road. Based on this location, it is presumed that fire trucks would need to back halfway down the steep access road to turn around. Aries recommends relocating the turnaround and dumpster area adjacent to and at the same level of the dwelling units where both fire apparatus will need to reverse direction and where refuse will be generated. This would provide a second fire truck turnaround.
6. The site plans indicated an approximate access road starting elevation of 433 feet and a high point elevation of approximately 478 feet for the site access road, which is approximately 420 feet in length. The average grade is approximately 10.7%, while the majority of the access road is at a grade of 14.26%. Aries recommends that the proposed site access road be lengthened to meet the Section VII Design Standards grade of 10% for a local street for all portions of the access road.

Water System

7. Section XXIII (A.) of the Town Site Plan Review Regulations require, “...*the applicant to provide adequate information to prove that the area of the lot is adequate to permit the installation and operation of water and sewage systems...in areas not currently served by public water and sewer*”.
8. The site plans depict four bedrooms per dwelling unit, which results in a total of 32 bedrooms at the proposed development. Although the two four-unit buildings are situated on separate parcels, the buildings share a common access road and other facilities and should be considered one project. NHDES community water system rules, part Env-Dw 405.02, apply to water systems that supply water to 25 or more people, at least 60 days each year. According to Douglas Sayer, NHDES Drinking-Water-and-Groundwater Bureau Design Specialist, the proposed 8-unit development does not qualify as a community water system.
9. The well radius proposed for the two wells (one on each lot) is 125’, as depicted on the site plans. Using NHDES Water Supply Rules as best management guidance,

¹ - Appendix B, Street and Road Sample Drawings, Amended 1-24-11.



including Env-Dw 405.10 - Design Flow regulations, a four-bedroom design requires 150 gallons per day (gpd) per bedroom for residential uses. As such, the design flow for each 4-unit building is:

$$150 \text{ gpd/ Bedroom} = 600 \text{ gpd} * 4 \text{ units} = 2,400 \text{ gpd}$$

10. NHDES community water system rules (Env-Dw 405.12) require a source capacity that is two time the required design flow, which is 4,800 gpd, or approximately 3.3 gallons per minute (gpm) on average for each building's water supply system. This accounts for domestic water use but does not account for fire suppression or irrigation. Aries considers this to be a recommended best management practice. Based on a required minimum source capacity of 4,800 gpd per building, a Sanitary Protective Radius of 150' will be required. The current site plans depict 125' well radius.
11. Based on this guidance, the minimum sustainable well yield needs to be greater than 3.3 gpm for each building.
12. Because an adequate water supply is a requirement for Site Plan approval, Aries recommends that certification of sustainable well yield for the proposed development be provided to the Town as a pre-condition of approval of the site plan.

Alteration of Terrain Permit Application #250327-055

13. The site plans depict a cut of approximately 20 feet in Pocket Pond #41, where a proposed base elevation of 434 feet is located in the vicinity an existing ground surface elevation of 454.
14. Test Pit #9 is shown to be located within the proposed pocket pond. The excavation log for Test Pit #9 indicated the ground surface at the test pit was approximately 450 feet, and that the test pit was extended to a depth of approximately 20 feet below ground surface (bgs), or to an elevation of approximately 430 feet. Estimated Seasonal High-Water Table (ESHWT) was present at approximately 15 inches (1.25 feet) bgs, at an estimated elevation of approximately 448.75 feet, with observed water at a depth of 60 inches (5 feet) bgs, or at an elevation of approximately 445 feet. Based on these observations, the pocket pond will constantly discharge groundwater out of the Outlet Control Structure (OCS) #41, which has a proposed outlet invert elevation of 440.1 feet.
15. Based on this configuration, the proposed stormwater management system will unnecessarily cause groundwater levels in this area to decline due to the anticipated constant discharge from OCS #41.
16. The presence of standing water within Pocket Pond #41 will reduce the intended storage capacity², which is not likely accounted for in the stormwater model flows.

² The KNA hydraulic model indicates a cumulative storage volume of 9,184 cf below an elevation of 440.5 feet, which is near the proposed OCS #41 invert elevation.



17. Lastly, the groundwater discharge from OCS#41 will increase the volume of water discharge to the State Right-of-Way (ROW), where it will flow to catch basing CB#4 and be directed beneath Route 103 through an existing 15-inch reinforce concrete pipe (RCP) culvert. This additional contribution of groundwater is not accounted for in the KNA drainage model and report. However, this additional discharge should not affect the northwesterly abutting property.
18. Aries recommends that the stormwater storage in Pocket Pond #41 be evaluated and redesigned to provide adequate stormwater storage and to mitigate groundwater discharge.

Parking

19. Section IX - Site Plan Application Requirements require provision of off-street parking and loading spaces with a layout of the parking indicated snow storage locations. The site plans appear to provide adequate parking and snow storage.
20. Section XVII - Landscaping Standards require a minimum of one 2-1/2" caliper deciduous tree for every 20 parking spaces and every 60 feet of access roads. Available Landscape Plan details list only three deciduous trees to be planted, which does not meet the Town's Landscaping Standards.
21. Handicapped parking is required under the Town Site Plan Regulations and shall conform to the most current State and Federal law in place at the time of the application. Adequate provisions shall be made for handicapped parking and safe accessibility for the handicapped from the parking spaces to the proposed building(s)/use(s). Handicap parking areas should be shown on the Site Plan and should follow the 2010 Americans with Disabilities Act of 1990 (ADA) Standards for Accessible Design³

Refuse

22. Section IX - Site Plan Application Requirements require exterior solid waste disposal or recycling facilities be screened on each side. The site plans provide adequate details for the proposed solid waste disposal infrastructure.

Minimum Buildable Area

23. The 8 residential units are located within the Medium Density Residential (R2) Zoning District, which requires a buildable area of 2 acres per dwelling unit.
24. Note 2 of the Existing Conditions Plan indicates that Lot 39 has a buildable area of 8.774 acres, while Lot 39-1 has a buildable area of 11.05 acres. Both Lots meet the minimum buildable area.

³ <https://www.ada.gov/law-and-regs/design-standards/2010-stds/#parking-spaces>

Drainage

25. The site plans depict four proposed stormwater discharge structures that direct stormwater to level spreaders, all of which terminate on steeply sloping land. Aries anticipates that these level spreaders will not adequately distribute the runoff and that rills and channelization will develop over time causing erosion. Aries recommends that riprap armoring be installed downslope of the outlets to a point where slopes moderate. Check dams should be installed along the anticipate flow path.
26. A level spreader is depicted on Lot 39 at an approximate elevation of 498 feet located along the northerly property line. The site plans depict a drainage swale at an approximate elevation starting at 506 feet that captures surface water from the upper portion of Lot 39 and directs this stormwater to the aforementioned level spreader that is located near the northerly boundary of Lot 39. As previously noted, Aries anticipates that the level spreader will not adequately distribute the runoff and that rills and channelization will develop over time causing erosion. Further, this drainage swale concentrates stormwater flows from the upland areas of Lot 39 and directs it without adequate treatment toward the northerly abutting property. It is anticipated that stormwater flows from the swale will cause increased stormwater runoff onto the northerly abutting property. Aries recommends drainage from this outfall be directed to a stormwater infiltration practice located at distance from the northerly site property boundary to limit concentrated stormwater flows toward the northerly abutting property.

Erosion and Sediment Control

27. Erosion Control notes are provided in the site plan construction details. Aries recommends that the Town conduct periodic inspections to ensure that specified erosion control procedures are followed.

Please contact me at (603) 228-0008 if you have any questions regarding this report and its findings.

Sincerely,
Aries Engineering, LLC



George C. Holt, P.G.
Principal Hydrogeologist



Kathryn A, Ward, P.E.
Principal Engineer

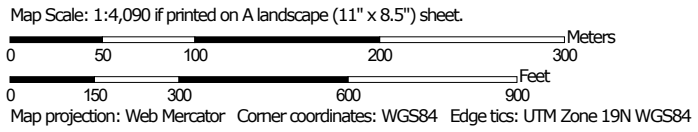
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Attachments: Web Soil Survey Report

Drainage Class—Merrimack and Belknap Counties, New Hampshire
(Site_Boundary)




Soil Map may not be valid at this scale.




MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

-  Excessively drained
-  Somewhat excessively drained
-  Well drained
-  Moderately well drained
-  Somewhat poorly drained
-  Poorly drained
-  Very poorly drained
-  Subaqueous
-  Not rated or not available


Soil Rating Lines

-  Excessively drained
-  Somewhat excessively drained
-  Well drained
-  Moderately well drained
-  Somewhat poorly drained
-  Poorly drained
-  Very poorly drained
-  Subaqueous
-  Not rated or not available






Soil Rating Points

-  Excessively drained
-  Somewhat excessively drained
-  Well drained
-  Moderately well drained
-  Somewhat poorly drained
-  Poorly drained
-  Very poorly drained
-  Subaqueous
-  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 1:24,000.

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: Merrimack and Belknap Counties, New Hampshire
Survey Area Data: Version 31, 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: Oct 6, 2022—Oct 22, 2022

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

Drainage Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
35C	Champlain loamy fine sand, 8 to 15 percent slopes	Somewhat excessively drained	1.0	2.9%
415B	Moosilauke fine sandy loam, 3 to 8 percent slopes, very stony	Poorly drained	1.5	4.5%
459D	Metacomet fine sandy loam, 15 to 25 percent slopes, very stony	Moderately well drained	8.9	25.9%
479C	Gilmanton fine sandy loam, 8 to 15 percent slopes, very stony	Moderately well drained	4.6	13.4%
480C	Millsite-Woodstock-Henniker complex, 8 to 15 percent slopes, very stony	Well drained	11.7	34.0%
480D	Millsite-Woodstock-Henniker complex, 15 to 25 percent slopes, very stony	Well drained	6.7	19.4%
Totals for Area of Interest			34.3	100.0%

Description

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher