KNA KEACH-NORDSTROM ASSOCIATES, INC.

May 27, 2025

Chrissy Almanzar
Warner Planning Board
5 East Main Street
Warner, NH 03278

RE: Jennesstown Manor Site Plan Application
Tax Map 7, Lots 39 & 39-1 – Warner

Dear Ms. Almanzar:

Our office is in receipt of the Planning Board review comments dated May 13, 2025. Based on the comments, we have made the required modifications and attached revised plans for review. A response to each comment has been provided below.

- The first and seemingly most important piece of information is that they've asked you to show that there are five acres of buildable land in the R-2 portions of each lot. Beyond this, they've asked for the following:

According to Article II.C.2., "Where a lot is located within more than one Zoning District all the relevant Zoning Ordinance requirements pertaining to each Zoning District type shall remain for each corresponding area of the lot." The parent parcel contains both R-2 and R-3 districts. The proposed buildings are in the R-2 district, where multi-family housing is permitted. Though multi-family housing is only allowed with special permission in the R-3 district, the proposed units are entirely in the R-2 district and therefore compliant with the zoning. Since the property is split by zoning districts one must apply a prorated calculation to determine the buildable area and maximum number of units allowed per the zoning ordinance. See the calculations below for required buildable areas for four dwelling units on a prorated basis:

R-2: 2 acres for one unit + (½ * 2 acres)/extra units * 3 extra units = 5 acres for four units

R-3: 3 acres for one unit + (½ * 3 acres)/extra units * 3 extra unit) = 7.5 acres for four units

Lot Number	*Lot Area (SF)*	*Lot Area (acres)*	*R-2 Buildable Area (acres)*	*R-3 Buildable Area (acres)*	*Total Buildable Area (acres)*
Map 7 Lot 39	*488,497*	*11.214*	*4.310*	*4.464*	***8.774***
Map 7 Lot 39-1	*665,946*	*15.228*	*2.548*	*8.502*	***11.050***

Based on the prorated calculation the two proposed lots can support a maximum of 11 units where 8 are proposed.

Under "Items Submitted with Application:

- F – A list of all the proposed easement (*with potential locations?*)

An easement plan has been added to the plan set, see Sheet 4.

- G – An elevation of the buildings indicating height of proposed structures.

The building height is listed on Architectural Sheet A-1.

- I – Excavation information including potential for blasting or material needed or removed from the site.

See the blasting certification on Cover Sheet and Note 18 on Sheet 3.

Items Missing from Plot Plan:

- F – List of proposed easements

Proposed easements are graphically shown on Sheet 4.

- I – Center the lot on the vicinity map and label the districts

See Cover Sheet for updated vicinity map with zoning districts within 1000 feet of the site.

- J – Add the use of the abutting properties

See Sheets 1 and 2.

- O – Add bearings and distances

See Sheet 3.

- S – Show parking lines (spaces) on the site plan

Parking spaces have been graphically depicted on Sheet 3.

- V – Indication of storage and staging areas to be used during construction

The temporary areas have been added to Sheet 6.

- W – Indicate the location of the stop sign on the site plan

The locations have been added to Sheets 3 and 10.

- Z(cc) – Include a note describing the intent and method for providing power (*with potential locations?*)

See Sheet 3 Note 19.

- Z(dd) – Add location, type, and lumens for exterior lighting

A lighting plan has been added to the plan set, see Sheet 8.

- Z(ee) – Add location, size, and design of a sign

See Sheets 3 and 12.

- Z(ff) – Add landscaping information such as locations of plants to be added such as bushes, trees, etc.

A landscape plan has been added to the plan set, see Sheet 7.

- Z(gg) – Intended visibility from the road (*Not necessary but helpful*)

A site visibility plan and profile sheet has been added to the plan set, see Sheet 9.

I trust the content of this response letter and its attachments will address each of the comments, as noted. Should you have further questions or require additional information, please do not hesitate to contact our office.

Respectfully,

Jason Lopez
Senior Project Manager
Keach-Nordstrom Associates, Inc.

KEACH-NORDSTROM ASSOCIATES, INC.

May 27, 2025

Kevin D. Thatcher, PE, CPESC
Alteration of Terrain Bureau
29 Hazen Drive
Concord, NH 03302

RE: Alteration of Terrain Permit Application #250327-055
Jennesstown Manor
Tax Map 7, Lots 39 & 39-1 – Warner

Dear Mr. Thatcher:

Our office is in receipt of the Alteration of Terrain review comments dated May 13, 2025. Based on the comments, we have made the required modifications and attached revised plans for review. A response to each comment has been provided below.

1. General Requirements:

Local Advisory Committee (LAC)

- Provide a copy of any comments received by the Warner River Local Advisory Committee and indicate how they have been addressed. Alternatively, provide correspondence from the LAC that they will not be commenting on this application.

See attached response letter to WRLAC.

Groundwater Monitoring Plan

- The plans indicate removal of ledge outcrops. Provide an estimate of the quantity of blast rock. If the quantity exceeds 5,000 cubic yards, you will be required to identify drinking water wells located within 2,000 feet of the proposed blasting activities and develop a groundwater quality sampling program to monitor for nitrate and nitrite either in the drinking water supply wells or in other wells that are representative of the drinking water supply wells in the area. The plan must be submitted to DES for approval prior to permitting and must include pre and post blast water quality monitoring. The groundwater sampling program must be implemented as approved by DES.

Test pits revealed ledge but the owner is going to use mechanical means to remove ledge encountered. See the Owner's blasting certification on the cover sheet of the plan set.

2. Application:

Section 7.

- Note the project is within ¼ mile of Warner River.

Added to application. See Sheet 3 Note 20.

Section 10.F.

- The stated value of 25,352 square feet is consistent with additional impervious cover not total impervious cover per HydroCAD reports. Clarify and also note total impervious cover.

Application has been updated to include total impervious cover.

Section 10.J.

- List the name of the receiving water in accordance with Env-Wq 1503.07(n).

Receiving water has been updated to state "Warner River".

Section 10.N.

- Plans depict the grading of surface ledge outcrops. Therefore, it is assumed that blasting will be required.

The areas hatched with dots on the plan are steep slopes, see legend on Sheet 1. Test pits revealed ledge but the owner is going to use mechanical means to remove ledge encountered. See the Owners blasting certification on the cover sheet.

Section 11.

- Registration and Notification Form for Stormwater Infiltration to Groundwater is not required for surface infiltration practices.

Box has been unchecked.

3. Plans:

Grading, Drainage, & Utilities Plan (Sheet 4 of 11)

- Show driveway stationing and identity profile high point.

The stationing and high point have been added to Sheet 5.

- Review design intent of drainage structures #42 and #44 as manholes versus catch basins.

The structure labels have been revised as catch basins.

- Define STR #19.

The structure label has been corrected to Headwall #42.

- Proposed grading at HW #210 and diversion ditch at northwest corner of the site suggest installation of a level spreader. Clarify design intent.

There is a level spreader at HW #210, see Sheet 5.

- Evaluate need for permanent erosion control measures at discharge from end of curb to swale to Pocket Pond #22P sediment forebay.

A swale calculation section has been added to the drainage report.

- Evaluate need for stone lining in roadside ditches at 15 percent grade.

A swale calculation section has been added to the drainage report. Stone lining will not be needed.

- Size and define sediment forebay spillways. Earthen berms are not recommended. See following comments on Post-Development HydroCAD model.

Additional construction data has been added to Sheet 5 and the details on Sheet 13 updated.

- Revise rim elevation for OCS #22 to be 471.65 feet.

Rim elevation has been revised to 471.65 feet, see Sheet 5.

- Define emergency spillway for Pocket Pond #22P and extend riprap to bottom of Infiltration Basin #21P.

Riprap has been extended, see Sheet 5.

- Evaluate providing level spreader instead of riprap apron at OCS #21P outlet.

Level spreader and riprap are provided at OCS #21P outlet, see Sheet 5.

Erosion Control Plan (Sheet 5 of 11)

- When project activities are located within 50 feet of a water body or wetland, please show a double row of perimeter controls on the plans.

Silt fence boundary has been updated, see Sheet 6.

- Silt fence is only to be used in areas where erosion will occur only in the form of sheet erosion and there is no concentration of water in a channel or other drainage way above the fence. Discontinue or relocate silt fence as appropriate at proposed pipe and ditch outlets. Provide alternative means of erosion control such as temporary check dams and riprap outlet protection.

The silt fence has been updated and the stone riprap and berms have been provided.

- Show stabilized construction entrance.

50-foot construction entrance has been added, see Sheet 6.

- Show temporary check dams in proposed ditches.

Temporary stone check dams have been added to proposed ditches, see Sheet 6.

- Show inlet protection at existing catch basins on NH Route 103.

Temporary inlet controls have been added, see Sheet 6.

Construction Details (Sheet 8 of 11)

- Precast Reinforced Catch Basin
  - Revise relative to project specific conditions.

See precast Reinforced Catch Basin on Sheet 12.

Construction Details (9 of 11)

- Typical Pocket Pond Section
  - Show sediment forebay.

See Sheet 13 Pocket Pond Cross Section.

  - Show outlet control structure.

See Sheet 13 Pocket Pond Cross Section.

  - Show permanent pool.

See Sheet 13 Pocket Pond Cross Section.

  - Evaluate feasibility of loam and seed within permanent pool.

See Sheet 13 Pocket Pond Cross Section. A specification for wetland/detention pond has been added.

  - Revise Elevation B for Pond 22P.

See Sheet 13 Pocket Pond Cross Section.

  - Evaluate providing emergency spillway for Pond 41P.

The emergency spillway for the pond is the top of the outlet structure.

- Typical Infiltration Pond Section
  - Show outlet control structure.

Outlet control structure has been added, see Sheet 13 Typical Infiltration Pond Section Detail.

  - Elevation D and stone berm associated with it are not consistent with project design.

See Sheet 13 Typical Infiltration Pond Section Detail.

  - Exclude loam and provide a surface treatment consistent with Env-Wq 1508.07(l)(4).

See Sheet 13 Typical Infiltration Pond Section Detail.

- Outlet Control Structures #22P and #41P Details
  - Provide detail for OCS #21P.

    See Sheet 13 Outlet Control Structure #21P Detail.

  - Show elevation view of orifice layout as size and elevations overlap.

    Orifices have been updated and an elevation view of the orifices has been provided, see Sheet 13 Outlet Control Structure #22 Detail.

  - Provide trash rack.

    See Sheet 13 Trash Rack Detail.

  - Provide detail for overflow grate.

    See Sheet 13 Halla Grate Detail.

  - Review orifice elevations.

    See Sheet 13.

- Emergency Spillway Detail
  - Revise length to be 4 feet consistent with HydroCAD.

    See Sheet 14 Emergency Spillway Detail.

  - Revise slope lengths based on depths of 0.25 and 0.35 feet defined in HydroCAD for Ponds 21P and 22P.

    See Sheet 14 Emergency Spillway Detail.

  - Provide a cutoff wall at the intended overflow elevation.
    - Alternatively, model the flow through the stone in HydroCAD.

    Concrete curbing has been added to provide a cutoff wall and level lip.

Construction Details (Sheet 10 of 11)

- General
  - Provide a temporary check dam detail conforming to Env-Wq 1506.07.

    See Stone Check Dam Detail and Stone Check Dam Spacing Detail on Sheet 15.

  - Provide an outlet protection apron detail.

    See Pipe Outlet ti Flat area with No Defined Channel Detail on Sheet 14.

- Stabilized Construction Exit Detail
  - Berm is required when overall length is less than 75 feet per Env-Wq 1506.09(b).

See Stabilized Construction Exit Detail on Sheet 15.

  - Construction Specification #1 is not consistent with requirements.

The detail has been revised to correct the stone size.

Construction Details (Sheet 11 of 11)
- Test Pit Logs
  - Review depth of test pits noted.
    - Recommend using consistent units of inches.

The dimensions have all been converted to inches, see Sheet 16.

4. Notes:

Please add the following notes to the plan set:

Wildlife Protection Notes (Env-Wq 1504.17)
- All observations of threatened or endangered species shall be reported immediately to the New Hampshire Fish and Game Department Nongame and Endangered Wildlife Environmental Review Program by phone at 603-271-2461 and by email at NHFGreview@wildlife.nh.gov. Email subject line: NHB24-0767, Jennesstown Manor, Wildlife Species Observation.
- Photographs of the observed species and nearby elements of habitat or areas of land disturbance shall be provided to NHF&G in digital format for verification as feasible;
- In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHF&G and implementation of corrective actions recommended by NHF&G, if any, to assure the project does not appreciably jeopardize the continued existence of threatened and endangered species as defined in Fis 1002.04
- The NHF&G, including its employees and authorized agents, shall have access to the property during the term of the permit.

Note has been added to the Cover Sheet.

Blasting (Env-Wq 1510)
- For any blasting activities, the plans must, at a minimum, require the best management practices contained in Attachment A of the DES document Rock Blasting and Water Quality Measures That Can Be Taken To Protect Water Quality and Mitigate Impacts available at: https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/wd-19-05.pdf

The Applicant intends to use mechanical means for clearing ledge and rock. See the blasting certification on the Cover Sheet.

- Route Device #6 to Device #1 for Pond 22P.

Device #6 is now routed to Device #1, see post-Development Report for Pond 22P.

Riprap Apron Sizing Calculations
- Provide sizing for OCS #22 and HW #210.

See updated Riprap Apron Sizing Calculations.

6. Revisions:

Pursuant to Env-Wq 1503.15(b), changes to the revised plans are to be called out and a revision date must be added to each page that has been changed. Graphical revision callouts should be included on the plans. If any changes to the project documents were made other than those identified above, please indicate what additional changes were made in your response letter.

Three sheets have been added per planning board comments: a landscape plan, a lighting plan, and a visibility from road plan.

7. Electronic Files:

Pursuant to Env-Wq 1503.15(e), provide, in electronic format, a copy of all project documents that were modified in response to the request for more information. As a separate document, provide a copy of the complete application with all documents current to reflect any modifications from the original application.

A pdf file of the entire application has been emailed.

I trust the content of this response letter and its attachments will address each of the comments, as noted. Should you have further questions or require additional information, please do not hesitate to contact our office.

Respectfully,

Jason Lopez
Senior Project Manager
Keach-Nordstrom Associates, Inc.

KEACH-NORDSTROM ASSOCIATES, INC.

May 27, 2025

Daniel J. Morrissey
Chair, Warner River Local Advisory Committee
561 South Road
Hopkinton, NH 03229

RE: Jennesstown Manor
Alteration of Terrain Application #250327-055
Tax Map 7, Lots 39& 39-1 – Warner

Dear Ms. Morrisey:

Our office is in receipt of the Warner River Local Advisory Committee review comments dated May 20, 2025. Based on the comments, we have made the required modifications and attached the revised plans. A response to each comment has been provided below.

1. The proposed project is adjacent to a "Significant Sand and Gravel Aquifer" as mapped by the U.S. Geological Survey. More specifically, the project is very close to the most productive part of the aquifer along the Warner River where thickness and permeability, and therefore aquifer yield, are greatest. (Geohydrology and Water Quality of Stratified-Drift Aquifers in the Contoocook River Basin, South-Central New Hampshire: U.S. Geological Survey Water Resources Investigation Report 92-4154). All runoff from the proposed project will eventually reach the Warner River through small intermittent streams or via groundwater discharge.

All stormwater systems will comply with the Alteration of Terrain regulations, such as treatment of runoff and recharge of groundwater.

2. The proposed project is also adjacent to the Town of Warner Ground Water Protection Overlay District, which is based on the above-mentioned U.S. Geological Survey mapping. (https://warnernh.gov/tow/downloads/gpc/Facts.pdf). All runoff from the proposed project will eventually be discharged to the aquifer protection overlay district area. Also, please include the extent of the Warner Ground Water Protection overlay on the Web GIS Figure.

The Warner Ground Protection overlay has been added to the report in addition to the Web Gis Figure. For clarity of viewing, they will remain as two separate documents.

3. Several test pits completed at the site in 2024 show that the site has a thin veneer of soil atop bedrock. Bedrock is exposed along much of the property frontage along Rt 103. Furthermore, the test pit logs included in the application (Sheet 11) are misleading because they do not use consistent units of measurement and should be corrected in the final application. The final depths of the test pits are labelled in feet while shallower depths are in inches.

The test pit logs have been updated to show accurate and consistent units of measurement, see Sheet 15.

4. The existing conditions description included in the application states that there are "many ledge outcroppings on site". The mapping provided by the applicant fails to indicate where the bedrock outcrops are located. The final application should indicate where the outcrops are located based upon field mapping by a registered professional geologist.

See Sheet 5 for ledge faces along the frontage mapped by the surveyor. The dotted hatch on Sheet 1 denotes steep slopes not ledge. The reference in the report referring to ledge has been revised.

5. The AOT application states that no blasting will be required for this project. However, based upon examination of the test pit logs, the bedrock outcrops along the property frontage on Rt 103, and the existence of "many bedrock outcrops" it is very possible that blasting will be required to complete the project. Blasting could result in contamination of ground and surface water runoff from the site which would ultimately travel to the Warner River and the adjacent aquifer.

The Applicant intends to remove ledge and rock by mechanical means, but should blasting of less than 5,000 cy be required, blasting best management practice outline in Env-Wq 1510 will be followed, see the blasting certification note on the Cover Sheet.

6. Sediment control during and after construction is critical. All runoff from the site is directed to 4 catch basins along 103 and to abutters property. As noted above, runoff from this site, through the culverts along Rt 103, will eventually reach the Warner River and the aquifer adjacent to the river. Periodic maintenance of the catch basins and culverts should be required.

The project approval will include an Operations and Maintenance Plan and catch basin section will be required. Records of these inspections will be kept in a maintenance log. See Sheet 6 Note 13.

7. The AOT application states that there is no need for Small Community Well approval by the NHDES. However, the application states that the proposed dwellings will share water supply wells and septic systems. In New Hampshire, water supply systems that supply water to 25 or more people, at least 60 days each year, are considered Public Water Systems. It seems possible that 25 or more people could inhabit the eight housing units proposed for the project and therefore the water supply system would be subject to NHDES regulations applicable to such systems.

   Each lot will have a 4-unit building. Each unit will have 4 bedrooms with the potential for 5 people per unit. This would make 20 people per building. Each building will have its own well and therefore the water supply system would not to be subject to NHDES Small Community Well regulations.

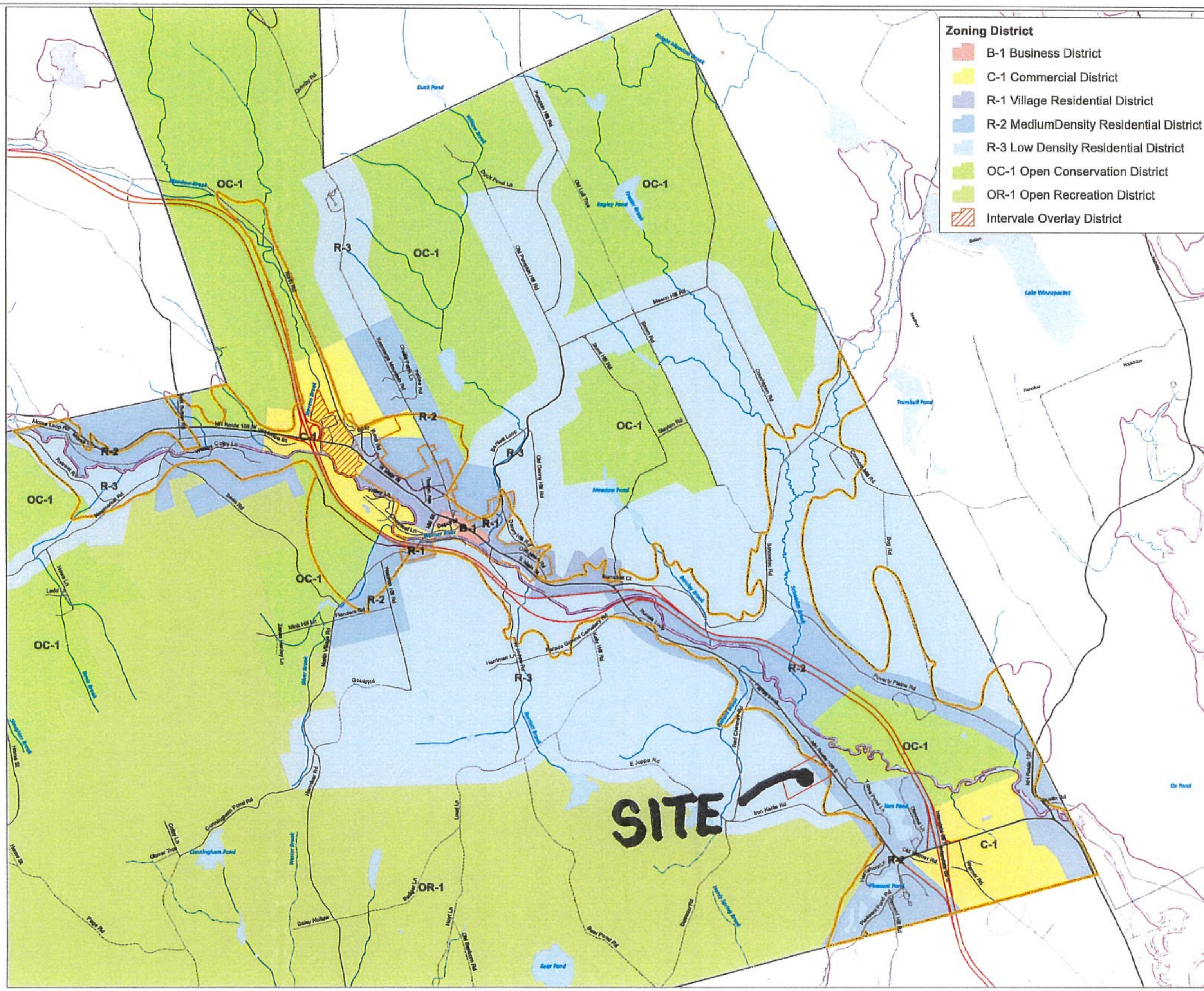
I trust the content of this response letter and its attachments will address each of the comments, as noted. Should you have further questions or require additional information, please do not hesitate to contact our office.

Respectfully,

Jason Lopez
Senior Project Manager
Keach-Nordstrom Associates, Inc.

Groundwater Protection Overlay District

TOWN OF WARNER, NH



Legend

- Proposed Groundwater Protection Overlay District
- Town Boundary
- Village Water District
- Aquifer Full Extent

Water Resources

- Lakes and Ponds
- Rivers and Streams
- Intermittent Streams

Roads

- Interstates
- Class I and II State Highways
- Class V Town Maintained Roads
- Class VI Unmaintained Roads
- Other Roads/Private

N
W E
S

0 0.5 1 1.5 Miles

March 14, 2023

This map was produced by the Central NH Regional Planning Commission for the Town of Warner. It is intended for planning purposes only.

Data Sources: NH GRANIT, NH Dept. of Environmental Services, NH Dept. of Transportation, FEMA, CNHRPC, Town of Warner, US Geologic Survey, Hazard Mitigation Subcommittee input. Corrections should be provided to the Town of Warner and to CNHRPC.

Central New Hampshire Regional Planning Commission
28 Commercial Street, Suite 3
Concord, NH 03301
603.226.6020
www.cnhrpc.org

STORMWATER

OPERATION & MAINTENANCE PLAN

Jennesstown Manor
Route 103
Warner, New Hampshire

Map 7 / Lots 39 & 39-1

March 7, 2025

KNA KEACH-NORDSTROM ASSOCIATES, INC.

TABLE OF CONTENTS:

I. General

Introduction

The project owner or their assigned heirs will maintain the stormwater treatment facilities after construction is completed. The Applicant of the project is Peacock Hill Road, LLC located at 145 Old Town Road Weare, NH. The Applicant will maintain the stormwater system.

The subject property is referenced on Map 7; Lots 39 and 39-1 in Warner, New Hampshire. Any transfer of responsibility for inspection and maintenance activities or transfer of ownership shall be documented to Warner in writing. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction. Long-term operation and maintenance for the stormwater management facilities are presented below.

Maintenance will be performed as described unless and until the system is formally accepted by a municipality or quasi-municipal district or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system.

Post Construction:

The following standards will be met after construction is complete:

Documentation:

A maintenance log will be kept summarizing inspections, maintenance, and any corrective actions taken. The log will include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean out of any sediments or debris, the location where the sediment and debris was disposed after removal will be indicated. The log will be made accessible to department and/or Warner staff and a copy provided upon request.

Maintenance Requirements

Pocket Ponds:

- Systems should be inspected at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24-hour period, with maintenance or rehabilitation conducted as warranted by such inspection.
- System embankments should be mowed periodically to maintain grass cover and any other vegetation found on the embankment should be removed at each inspection.
- Trash and debris found within the pond or in the outlet structure should be removed at each inspection.
- Removal of accumulated sediment
- Inspection and repair of embankments, inlet and outlet structures, and appurtenances

Infiltration Ponds:

- Systems should be inspected at least twice annually and following any rainfall event exceeding 2.5 inches in a 24-hour period, with maintenance or rehabilitation conducted as warranted by such inspection.
- Trash and debris should be removed at each inspection.
- Inspection of pre-treatment measures at least twice annually and removal of accumulated sediment as warranted by inspection, but no less than once annually.
- At least once annually, the system should be inspected for drawdown time. If the pond does not drain within 72-hours following a rainfall event, a qualified professional should assess the condition of the facility to determine measures required to restore filtration function or infiltration function (as applicable), including but not limited to the removal of accumulated sediments or reconstruction of the basin bottom.

Catch Basins and Closed Drainage Network:

- Catch basins may require frequent maintenance. This may require several cleanings of the sumps each year. At a minimum, it is recommended that catch basins be inspected at least twice annually.
- Sediment should be removed when it approaches half of the sump depth.
- If floating hydrocarbons are observed during an inspection, the material should be removed immediately by skimming, absorbent materials, or other methods and disposed in conformance with the applicable state and federal regulations.

Outlet Protection:

- Inspect the outlet protection annually for damage and deterioration. Repair damages immediately.

General:

- If any invasive species begin to grow in the stormwater management practices the species shall be disposed of in an appropriate manner that will not allow the pest to survive or spread. The disposal of such species shall be witnessed or approved by a state inspector. Methods for disposal may include, but not be limited to:
    - Encapsulating the plant(s) in plastic bags and disposing of the plant material in one of the following ways:
        - Trash pickup;
        - Discarding;
        - Open burning;
        - Incineration; or
        - Burial of infested nursery.

II. Supporting Documents

Annual Inspection and Maintenance Reporting Form
for
Jennesstown Manor
Warner, New Hampshire

Date: _____

To: **Peacock Hill Road, LLC**

Re: **Certification of Inspection and Maintenance; Submittal of Forms**

Property Name: _____

Property Address: _____

Contact Name: _____

Contact Phone #: _____

Contact Email Address: _____

I verify that the required stormwater facility inspections and required maintenance have been completed in accordance with the Operation & Maintenance Plan associated with the above referenced property.

The required Long-Term Inspection & Maintenance Plan Checklist is attached to this form.

_____	_____
Name of Party Responsible for Inspection & Maintenance	Property Owner
_____	_____
Authorized Signature	Signature

Long-Term Inspection & Maintenance Plan Checklist
Jennesstown Manor – Warner, NH

Current Owner Name:	Date:
Business Address:	Inspector:
Weather:	
Date of Last Rainfall:	Amount: Inches:

Best Management Practice			
Pocket Pond #22P	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Corrective Action Needed & Notes:	Yes ☐ No ☐		
Sideslopes & berms need repair?	Yes ☐ No ☐		
Clean inlet & outlet structures?	Yes ☐ No ☐		
Pocket Pond #41P	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Corrective Action Needed & Notes:	Yes ☐ No ☐		
Sideslopes & berms need repair?	Yes ☐ No ☐		
Clean inlet & outlet structures?	Yes ☐ No ☐		
Infiltration Pond #21P	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Corrective Action Needed & Notes:	Yes ☐ No ☐		
Visual Inspection of vegetation?	Yes ☐ No ☐		
Maintenance Required? Corrective Action Needed & Notes:	Yes ☐ No ☐		
Visual inspection of drawdown time?	Yes ☐ No ☐		
Drawdown time less than 72 hours?	Yes ☐ No ☐		

(if no, call a qualified professional for inspection)			
Catch Basins & Closed Drainage Network	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Corrective Action Needed & Notes: Photo:	Yes ☐ No ☐		
Outlet Protection	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Corrective Action Needed & Notes:	Yes ☐ No ☐		
General	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Corrective Action Needed & Notes:	Yes ☐ No ☐		

Long-Term Inspection & Maintenance Log
Jennesstown Manor - Warner, NH

Date	Inspection (Yes or No)	Maintenance (Yes or No)	List BMPs Inspected and/or Provide Comments	Inspected By:

III. Control of Invasive Plants

Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some Exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm by:

- becoming weedy and overgrown;
- killing established shade trees;
- obstructing pipes and drainage systems;
- forming dense beds in water;
- lowering water levels in lakes, streams, and wetlands;
- destroying natural communities;
- promoting erosion on stream banks and hillsides; and
- resisting control except by hazardous chemical.

During maintenance activities, check for the presence of invasive plants and suitably remove according to the methods provided in the table below. The following table, based on the "Control of Invasive Plants" published by the New Hampshire Department of Agriculture, describes the most common invasive plants in this region and proper methods of disposal.

Name	Description	Invasive Qualities	Control Methods
Invasive Trees			
Norway Maple	- Large leaves - Will exude milky white sap when leaves are broken - Leaves turn color in Late October (fall foliage is yellow)	- Suppresses growth of grass, garden plants, and forest understory -Wind-borne seeds can germinate and grow in deep shade	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out plants, including the root systems. Use a forked spade or weed wrench. - Cut down the tree. Grind out the stump, or clip off re-growth. - Girdle[1] - Frill[2] - Cut stem/ cut stump with glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray with glyphosate [3]* (mid-October to early November).
Tree of Heaven	- Long compound leaves with 11-25 lance shaped leaflets - Smell like peanut butter or burnt coffee when crushed	- Tough, can grow in poor conditions - Produces large quantities of wind-borne seeds - Grows rapidly - Secretes a toxin that kills other plants - Cannot be removed by mechanical means alone	- Pull seedlings when soil is moist. - Frill[2] (no more than 1" gap between cuts). Use Garlon 3a herbicide. - Cut stem/ cut stump with Garlon 3a. Follow label directions for cut stump application. Clip off sucker sprouts or paint with Garlon 3a.* - Foliar spray[3]* (on regrowth) - Paint bottom 12" of bark with Garlon 4 Ultra (February/March). Use maximum strength specified on label for all herbicide applications.
Invasive Shrubs			
Autumn Olive	- Formerly recommended for erosion control and wildlife value	- Highly invasive, diminishes the overall quality of wildlife habitat	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs (up to 4" diameter trunks). - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Bury stump - Do not mow

Invasive Shrubs (continued)			
Multiflora Rose	- Formerly recommended for erosion control, hedges, and wildlife habitat - Covered in white flowers in June - Very hard, curved thorns - Fringed edge to leaf stalk	- Huge shrub that chokes out all other vegetation - Too dense for most birds to nest in - Grows up trees like a vine in Shade	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems (at least 6" from the crown and 6" down). Use a forked spade or weed wrench for trees or shrubs. - Controlled burning[4] (on extensive infestations) - Cut stem/ cut stump with glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]* (mix Rodeo with extra sticker-spreader, or use Roundup Sure Shot Foam on small plants) - Herbicide may be applied in winter when other plants are dormant.
Bush Honeysuckles	- Includes Belle, Amur, Morrow's, and Tatarian Honeysuckle	- Creates dense shade reducing plant diversity and eliminating nest sites in forest interior spaces	- Deadhead to prevent spread of seeds (on ornamentals). Cut off seeds or fruits before they ripen. Bag and burn, or send to a landfill. - Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Mow or cutting at least 4 times a season to deplete plants' store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year (on shady sites only, brush cut in early spring and fall). - Controlled burning[4] (during growing season) - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate (late in the growing season). Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.*

Invasive Shrubs (continued)			
Blunt-Leaved Privet	- Medium sized shrub - Simple, oblong, dark green leaves 1-2" in length - Fragrant white flowers (spring) - Blackish-purple fruit (late summer)	- Toxic to mammals - Loss of valuable habitat	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Trim off all flowers - Do not cut back or mow
Burning Bush, Winged Euonymus	- Wide, corky wings on the Branches - Brilliant red autumn leaves - Fruit	- High seed production	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Trim off all flowers
Japanese Barberry	- Spiny deciduous shrub - Small leaves	- Very dense, displaces native plants - Can change chemistry of soil	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Trim off all flowers

Invasive Woody Vines			
Japanese Honeysuckle	- Gold and White flowers - Heavy scent and sweet nectar in June	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle - Rampant grower - Spirals around trees, often strangling them	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Mow or cutting at least 4 times a season to deplete plants' store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]* (fall or early spring when native vegetation is dormant) Plan to re-treat repeatedly
Oriental Bittersweet	- Bright orange seed capsules in clusters all along the stem - Flowers	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Keep ornamental plants cut back, remove all fruits as soon as they open, and bag or burn fruits. - Cut stem/ cut stump with Garlon 3a. Follow label directions for cut stump application. Clip off sucker sprouts or paint with Garlon 3a.*
Japanese Knotweed, Mexican Bamboo	- The stems have knotty joints, similar to bamboo - Grows 6-10' tall - Large, pointed oval or triangular leaves	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle - Can grow in shade	- Cut stem/ cut stump with Glyphosate (at least 3 times each during growing season). Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]* - Treat with Rodeo - In gardens, heavy mulch or dense shade may kill it.

Invasive Herbaceous Plants			
Garlic Mustard	- White-flowered biennial - Rough scalloped leaves (kidney, heart, or arrow shaped) - Garlic smell, mustard taste when its leaves are crushed	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle - Rampant grower - Spirals around trees, often strangling them	- Pull seedlings and small or shallow-rooted plants when soil is moist (before it flowers in spring). Dig out larger plants, including the crown and root systems. Use a forked spade or weed wrench for trees or shrubs. Tamp down soil afterwards. - Deadhead to prevent spread of seeds. Cut off seeds or fruits before they ripen. Bag and burn or send to a landfill. - Foliar spray[3]* (may be appropriate in some settings)
Japanese Stilt Grass	- Lime green color - Line of silvery hairs down the middle of the 2-3" long blade	- Tolerates sun or dense shade -Quickly invades areas left bare or disturbed by tilling or flooding - Builds a large seed bank in the soil	- Pull seedlings and small or shallow-rooted plants when soil is moist (pulled easily in early to mid-summer).Dig out larger plants, including root systems. Use a forked spade or weed wrench for trees or shrubs. Be sure to pull before it goes to seed. If seeds have formed, bag and burn or send to a landfill. - Mow or cutting at least 4 times a season to deplete plants' store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year. Mowing weekly or when it has just begun to flower may prevent it from setting seed. - Foliar spray[3]* (use glyphosate or herbicidal soap on large infestations. - Use a corn-based pre-emergence herbicide on annual weeds (spring). This product is also an organic fertilizer, i.e., it can stimulate growth of existing plants, including weeds, so it is appropriate for lawns and gardens but may not be appropriate in woodlands.

Invasive Herbaceous Plants (continued)			
Mile-A-Minute Vine, Devil's Tail Tearthumb	- Triangular leaves - Barbed stems - Turquoise berries	- Rapid growth - Quickly covers and shades out herbaceous plants	- Pull seedlings and small or shallow-rooted plants when soil is moist (pulled easily in early to mid-summer).Dig out larger plants, including root systems. Use a forked spade or weed wrench for trees or shrubs. Be sure to pull before it goes to seed. If seeds have formed, bag and burn or send to a landfill. - Mow or cutting at least 4 times a season to deplete plants' store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year. Mowing weekly or when it has just begun to flower may prevent it from setting seed. - Foliar spray[3]* (use glyphosate or herbicidal soap on large infestations. - Use a corn-based pre-emergence herbicide on annual weeds (spring). This product is also an organic fertilizer, i.e., it can stimulate growth of existing plants, including weeds, so it is appropriate for lawns and gardens but may not be appropriate in woodlands.
Spotted Knapweed	- Thistle-like flowers	- Dense, crowds out native species	- Do not pull unless the plant is young and the ground is very soft. The root will break and produce several new plants. - Wear sturdy gloves - Deadhead to prevent spread of seeds. Cut off seeds or fruits before they ripen. Bag and burn, or send to a landfill. - In lawns, spot treat with broad-leaf weed killer. Good lawn care practices (test soil; use lime and fertilizer only when soil test shows a need; mow high and frequently; leave clippings on lawn) reduce weed infestations. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]*

[1]Girdle: Cut through the bark and growing layer all around the trunk, about 6" above the ground. Girdling is most effective in spring (when the sap is rising) & middle-late summer (when the tree is sending food to the roots). Clip off sucker sprouts.

[2]Frill: Using a machete, hatchet, or similar device, hack scars (several holes in larger trees) downward into the growing layer, and squirt in glyphosate (or triclopyr if specified in table). Follow label directions for injection and frill applications. This is most effective from middle to late summer. Clip off any sucker sprouts or treat with glyphosate.

[3]Foliar Spray: Use a backpack or garden sprayer or mist blower, following label directions. Avoid overspray and/or dripping onto non-target plants, because glyphosate kills most plants except moss. If it rolls off waxy or grass-like foliage, use additional sticker-spreader. Deciduous trees, shrubs, and perennials move nutrients down to the roots in late summer. Glyphosate is particularly effective at this time and when plants have just gone out of flowering. Several invasive species retain their foliage after native plants have lost theirs, and resume growth earlier in spring than most natives. This allows you to treat them without harming the natives. However, the plant must be actively growing for the herbicide to work. Retreatments may be necessary the following year if suckering occurs or the plant hasn't been entirely killed.

[4]Controlled Burning: Burning during the spring (repeated over several years) will allow native vegetation to compete more effectively with the invasive species. This requires a permit. Spot treatment with glyphosate in late fall can be used to make this method more effective

*Herbicides: It is highly recommended that small populations try to be controlled using non-chemical methods where feasible. However, for large infestations, and for a few plants herbicide use is essential. Apply herbicides carefully to avoid non-target plants, glyphosate is the least environmentally damaging herbicide in most cases. Add food coloring for visibility, and a soap-based sticker such as Cide-Kick. Glyphosate is ineffective on some plants; for these, triclopyr or Garlon 3a may be indicated. When using herbicides read the entire label and observe all precautions listed, including proper disposal. If in doubt, call your local Cooperative Extension Service.

IV. Stormwater Practice Location Plan