

April 12, 2021

Norwell Community Housing Trust
Town of Norwell
345 Main Street
Norwell, MA 02061

Attn: Mr. Gregg McBride

**RE: Summary Letter of Feasibility Study
Conceptual Multi-Unit Residential 40-B Development
Wildcat Lane, Norwell, Massachusetts**

Dear Gregg and Committee Members:

In accordance with your request, Merrill Engineers and Land Surveyors (Merrill) is pleased to submit the following summary report to assist your Committee with the planning of the above referenced multi-unit residential development.

The purpose of this letter is to review the previous feasibility analysis and the assumptions utilized for the current conceptual development presented to the Committee, specifically with respect to the septic system sizing.

The purpose of the feasibility study prepared by Merrill in 2013 was to assist in determining the ability of the developed site to support a stormwater management system and an on-site septic system in compliance with applicable regulations. The study describes preliminary septic system sizing criteria per the Town of Norwell regulations which considers the entire Town to be a nitrogen sensitive area. This would restrict the bedroom count as described within the study.

“Since the entire Town of Norwell is considered a nitrogen sensitive area, the total allowable sewage flow for the property is limited to 440 gallons per day (gpd) per acre. Based on the total area for the site of 5.89 acres, the allowable sewage flow is 2591 gallons per day. The state Sanitary Code (Title V) specifies a flow of 110 gallons per day per bedroom which means that the site would support a total of 23 bedrooms. There is also a provision in Title V which specifies an allowable flow of 150 gallons per day for a two-bedroom elderly housing (over 55) unit which would allow more dwelling units on the property. If the project were to be all over 55 units, 17 units could be constructed. A combination of over 55 and traditional units could also be proposed.”

The current feasibility study presented by Leupold Brown Goldbach Architects LLC in 2019, the analysis considered the ability to request waivers from local regulations as a 40B Comprehensive Permit (40B). A 40B is essentially exempt from local regulations. The site is

not located within a MA DEP Zone II as shown on the most recent MassGIS mapping (attached). Therefore, this project would not have any septic flow restrictions if only State regulations were considered under a 40B scenario. This would allow an on-site septic system to support 54 bedrooms, as illustrated in the current conceptual design. Based on the state Sanitary Code (Title 5) design flow criteria of 110 gallons per day per bedroom, the approximate sewage flow would be 5,940 gallons per day. As mentioned above, there is also a provision in Title 5 for two-bedroom elderly housing (over 55) units with an allowable flow of 150 gallons per day per unit. If the project were to be proposed as an over 55 development (approximately 27 units), the approximate sewage flow would be 4,050 gallon per day.

The site is located in the Town of Norwell's Aquifer Protection District, which requires a higher level of treatment of surface and groundwater so as to preserve the present and potential water supplies for the public health and safety of the Town. The Aquifer Protection District requires that the development's groundwater quality meet the federal and state standards for drinking water at the downgradient property boundary (10 ppm concentration nitrate-nitrogen), provide a list of all chemicals or hazardous materials stored on site, and provide adequate groundwater recharge. The project will aim to meet these requirements but again, as a 40B development, the project could request a waiver from these local requirements if needed.

Should you have any questions, please do not hesitate to contact our office.

Very truly yours,

MERRILL ENGINEERS AND LAND SURVEYORS



Deborah W. Keller, P.E.
Senior Project Manager

Cc: File

Attachments: May 14, 2013 Feasibility Study Letter
MassGIS Figure

Zoom to a town

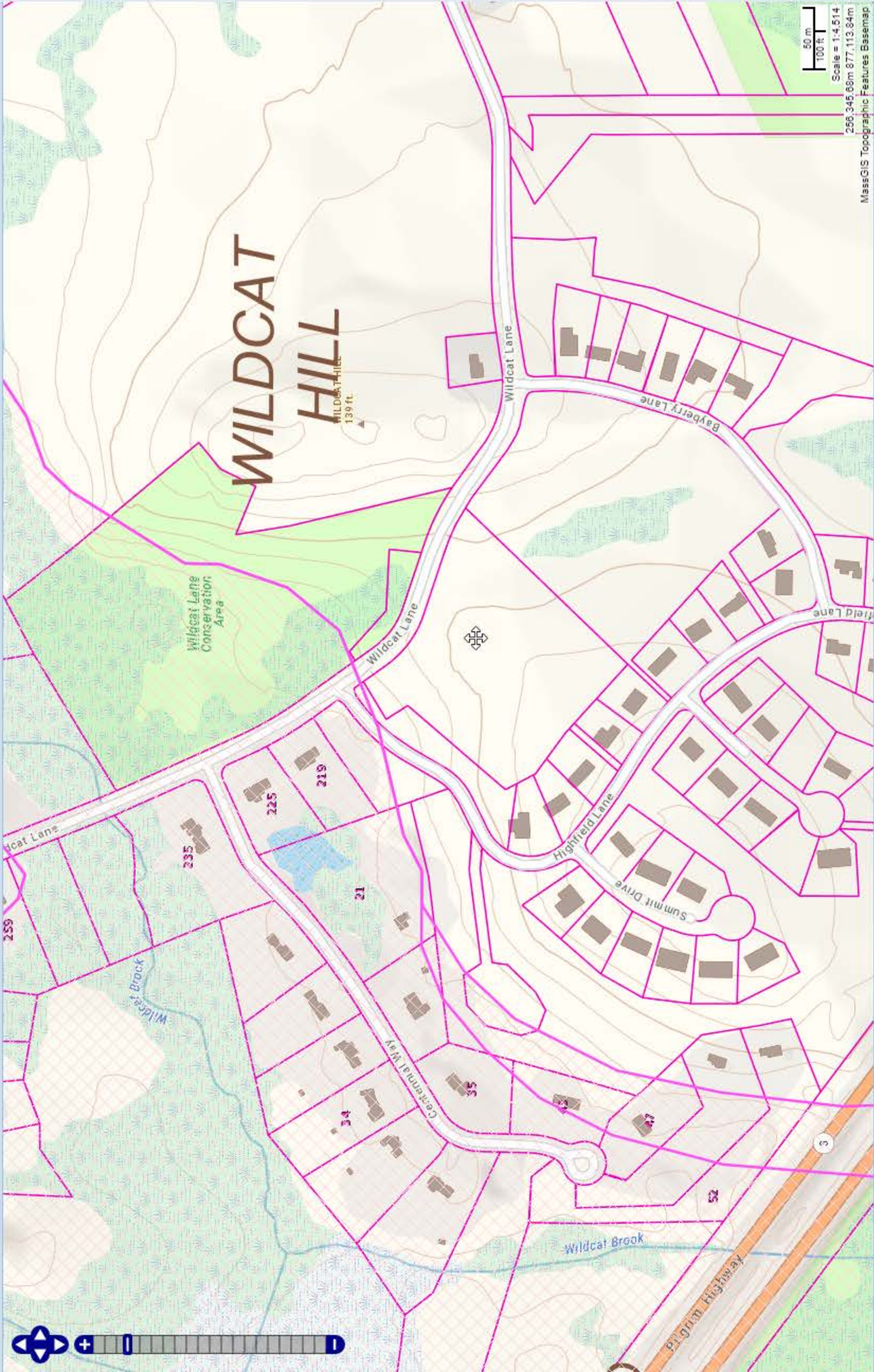
Available Data Layers

- Zone IIs
- Surface Water Protection Areas
 - Zone A
 - Zone B
 - Zone C
- Underground Storage Tanks
- Wellhead Protection Areas
 - IWPAs
 - IWPAs Dissolved
 - Zone Is
 - Zone Is Dissolved
 - Zone IIs
 - Zone IIs Dissolved
- Status / Availability (maps showing where data is a
- Theme Maps
- 1 share for Online

Active Data Layers

Check all | Uncheck all | Remove all

- Zone C
- Zone B
- Zone A
- IWPAs
- Zone Is
- Zone IIs
- Tax Parcels for Query



256,345.68m 877,113.84m
 MassGIS Topographic Features Basemap

0 m

Basemaps

May 14, 2013

Community Housing Trust
Town of Norwell
345 Main Street
Norwell, MA 02061

Attn: Mr. Gregg McBride

**RE: Proposed Multi-unit Residential Development (40B)
Advanced Feasibility Study
Wildcat Lane, Norwell Massachusetts**

Dear Gregg and Committee Members,

In accordance with your request, Merrill Associates, Inc. (MAI) is pleased to submit the following report to assist your Committee with the planning of the above referenced multi-unit residential development.

The purpose of this report is to provide information to determine the ability of the developed site to support a stormwater management system and an on-site septic system in compliance with applicable regulations.

1. Soils Testing

Soil Testing was performed at the property on April 3 & 4, 2013. A total of 16 test pits were dug, 10 for the subsurface sewage disposal system and 6 for the stormwater basin. Suitable soils for the septic system was found at the southerly end of the property at the higher elevation. Percolation rates ranged from 6 – 14 minutes per inch and groundwater was 1.5 feet to 8 feet below existing grade.

Regarding the soils for the stormwater basin, the soils encountered at the northerly side or lower end of the site were somewhat inconsistent. A total of 6 test pits were dug. Groundwater was 0 feet to 6 feet below existing grade and a percolation rate of 7 minutes per inch was obtained in 1 test pit.

2. Preliminary Septic System – Sizing and Layout

Since the entire Town of Norwell is considered a nitrogen sensitive area, the total allowable sewage flow for the property is limited to 440 gallons per day (gpd) per acre. Based on the total area for the site of 5.89 acres, the allowable sewage flow is 2591 gallons per day. The state Sanitary Code (Title V) specifies a flow of 110 gallons per day per bedroom which means that the site would support a total of 23 bedrooms. There is also a provision in Title V which specifies an allowable flow of 150 gallons per day for a two bedroom elderly housing (over 55) unit which would allow more dwelling units on the property. If the project were to be all over 55 units, 17 units could be constructed. A combination of over 55 and traditional units could also be proposed.

The soil testing established that the area most suitable for the leaching area was at the southerly end of the property at the higher elevations and consequently a pump system would be required. The sanitary sewage from each unit would flow by gravity to either 1500 gallon septic tanks servicing each unit or a common 6000 gallon septic tank located at the lower elevations of the property adjacent to the roadway. From the septic tank(s) the effluent would flow into a pump chamber and be pumped to the 90 foot long by 34 foot wide leaching area.

3. Preliminary Stormwater – Sizing and Layout

The Massachusetts DEP Stormwater Management Regulations require that the design of stormwater management systems address ten specific design standards. For this project all applicable standards will be met and the stormwater runoff will be directed by a series of catch basins, pipes and overland flow to a stormwater retention/detention basin located at the northerly end of the site. A portion of this runoff will be infiltrated to meet to the recharge requirements of the DEP Stormwater Management Regulations and a portion will be discharged at a rate not to exceed the existing condition also as mandated by the DEP Stormwater Management Regulations. The basin as shown on the plan, has been designed to attenuate post development stormwater flows for storms up to and including the 100 year – 24 hour storm event.

4. Preliminary Layout and Grading Plan Preparation

The layout and grading associated with the leaching system for the septic system as well as the stormwater basin is a function of the maximum estimated seasonal groundwater elevation and is presented on the plan.

The grading design for the roadway was performed to meet the requirements of the Norwell Planning Board Rules and Regulations as closely as possible. The maximum grade of 3% is provided at the entrance to the project for a distance of 75 feet. Beyond that a vertical curve of 180 feet will be required as the grade changes from 3% to 6% just prior to the cul de sac. From the cul de sac to the end of the roadway the grade will be in the range of 2%.

Should you have any questions or need additional information, please do not hesitate to contact this office.

Very truly yours,

MERRILL ASSOCIATES, INC.

Peter G. Palmieri, P.E.
Director of Engineering