

Site Suitability for Domestic Sewage Treatment and Disposal Systems

Seven Island Road
Danbury, NC
Stokes County

Property#: #694800820812

Prepared for: Jennifer Kelly, LD Land Holdings

Prepared by: Erik Severson, Severson Soil Consulting, PLLC

Report Date: 5/30/2024

SYNOPSIS

This report shows the findings of a preliminary soil and site evaluation of the referenced parcel in Stoke County, NC. The site evaluation revealed sufficient area for the installation of a conventional septic system for a four-bedroom dwelling in several areas on the property.

This report is intended to aid the permitting authority to evaluate the site.

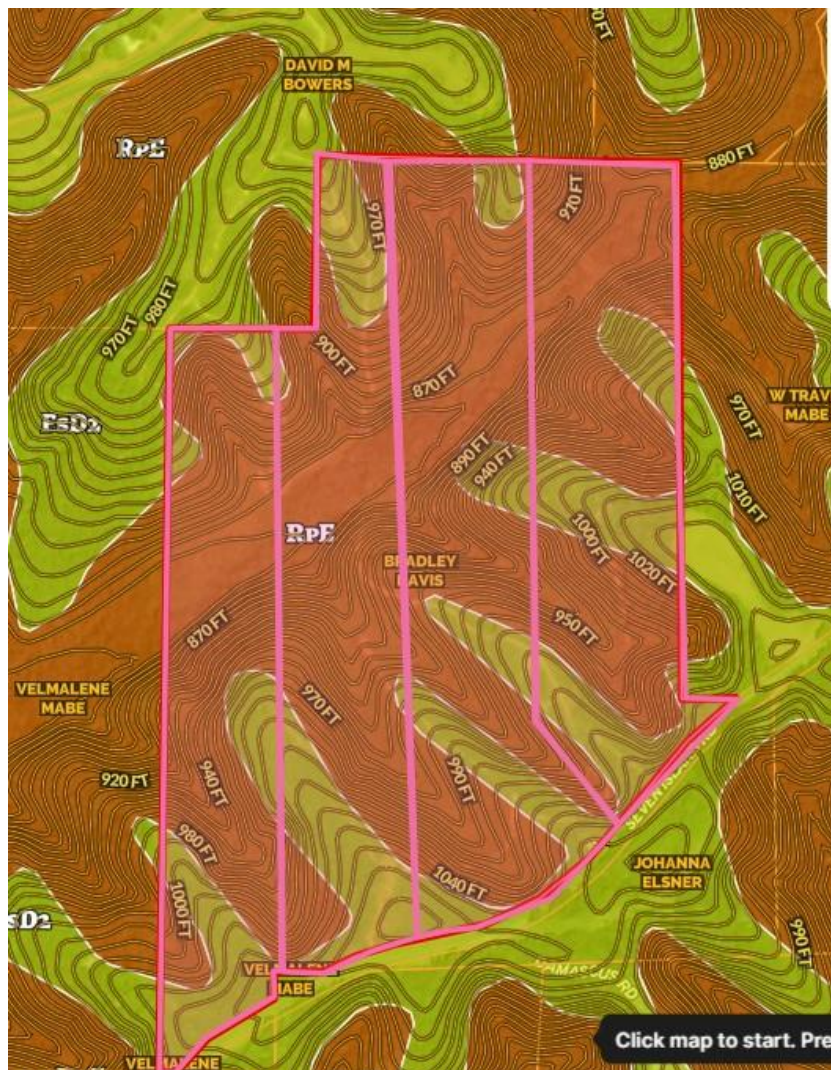


Figure 1. Property Location

Jennifer, this is a summary of my findings:

Severson Soil Consulting, PLLC (SSC) conducted a preliminary onsite wastewater soil feasibility study on the above referenced parcel to determine the area of soils, suitable for a subsurface onsite wastewater disposal system. The soil and site evaluation were performed by using a hand auger boring during moist soil conditions based on the criteria in the Rules and Laws Governing Onsite Wastewater Systems (18E rules). From this evaluation, SSC sketched an area suitable for the installation of a septic system. All dimensions, locations are approximate.

Site Description

The 85-acre tract was off of Sevel Island Road near Danbury, NC. The site lay in the Foothills sub-region of the Piedmont. There was one mapping unit of interest in the NRCS soil map, FsD2; Fairview-Woolwine-Siloam complex (figure 2). There was considerable erosion and evidence of prior logging activity on the site.



Figure 2. Soil map of the of the subject property (SoilWeb).

Soil Borings

Over 66 soil borings and observations were advanced on the parcel as seen in figure 3 below. Their depths to suitable soils categorized the soils: the red dots represent suitable soils to 30" and were the Fairview soils. The brown dots represented Woolwine soils that contained 20–24 inches of soil prior to encountering suitable saprolite or soft bedrock. The recommended LTAR (long term acceptance rate) for the Fairview and Woolwine soils are 0.3 per day per foot squared (GPD/ft²).

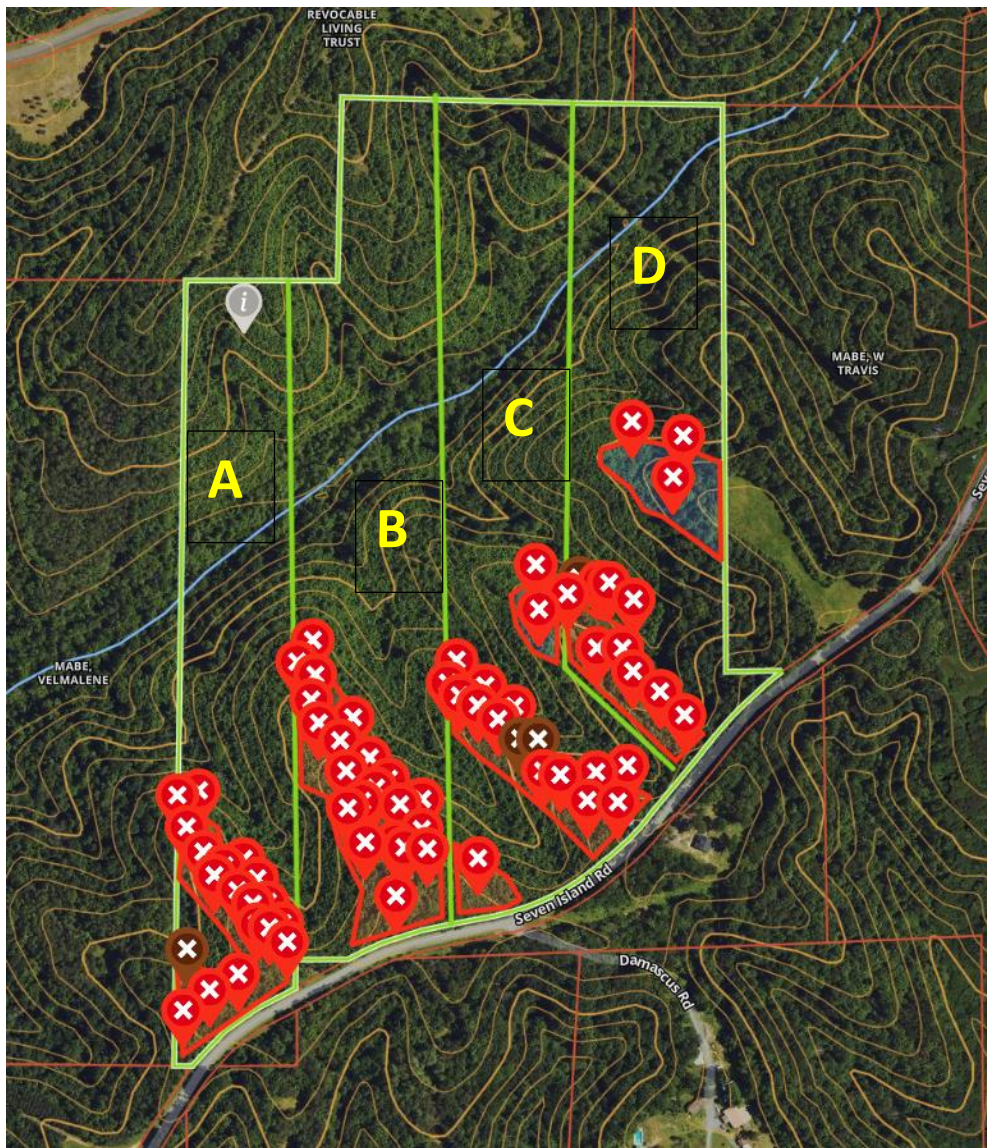


Figure 3. Soil boring locations within the lot as located by the onX Hunt application.

Required Area

The required linear footage needed for a conventional trench accepted status drainfield product is calculated by dividing the flow rate for a four-bedroom dwelling (4-BR= 480 gpd) by the long-term acceptance rate, LTAR (0.3 GPD/ft²). Then dividing that number by a 3-foot-wide trench bottom and finally multiplying that number by 0.75 (to account for a 25% reduction trench product).

$$[(480\text{gpd} / 0.3 \text{ gpd}/\text{ft}^2) / 3\text{ft wide trench}] \times 0.75 = 400 \text{ Linear Feet}$$

The required space of suitable soils was calculated based upon a 3-foot-wide trench and a 9-foot minimum center to center spacing of each trench. Assuming four 100-foot-long trench lengths, the minimum total area required would then be 10,000 ft² including primary and a 100% repair area (5,000 ft² x 2). Other drainfield lengths and configurations could be employed, such as additional shorter or longer lines.

Usable Ares

There were four areas evaluated, all on spur ridges of 10–25% slopes (Figures 1–3). They are denoted as A, B, C, and D. Every soil observation would support a potential installation of a conventional septic system. Usable area A was 2.79 acres, or 121,532 ft². This would be over 12 times the minimum space needed for a potential drainfield and repair for a 4-BR dwelling (figure 4). Usable area B was 3.93 acres, or 171,190 ft². This would be over 17 times the minimum space needed for a potential drainfield and repair for a 4-BR dwelling (figure 5). Usable area C totaled 3.41 acres, or 148,539 ft². This would be over 14 times the minimum space needed for a potential drainfield and repair for a 4-BR dwelling (figure 6). Usable area D totaled 4.79 acres, or 208,652 ft². This would be over 20 times the minimum space needed for a potential drainfield and repair for a 4-BR dwelling (figure 7).



Figure 4. Usable soil area A (2.79 acres = 121,532ft²)

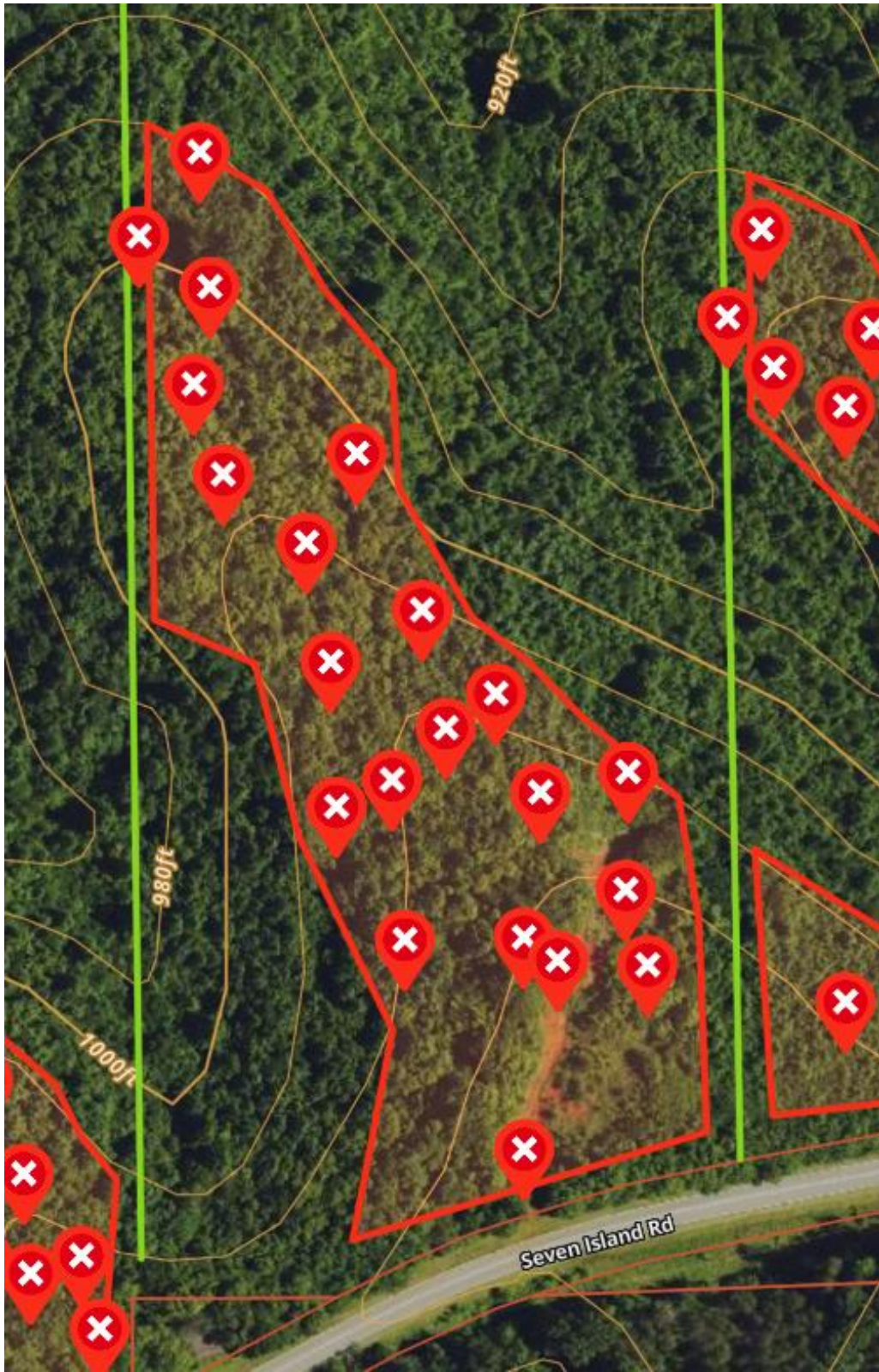


Figure 5. Usable soil area B (3.93 acres = 171,1190 ft²)



Figure 6. Combined usable soil area C (3.41 acres = 148,539 ft²)



Figure 7. Combined usable soil area C (4.791 acres = 208.652 ft²)

Permitting

Prior to the issuance of a septic permit, the lot will require a soil and site evaluation by the Stokes County Health Department or other permitting authority. The specific trench product type and soil loading rate will be determined by their assessment. The areas for proposed drainfields shall not be impacted by home sites, pools, garages, nor be mechanically altered from the natural lay of the land. Regulatory setbacks to property lines, roads, wells, etc. are to be maintained.

Exact locations of future drainfields, repair areas, buffer from property lines (current and future), building foundations, pools, decks, and well locations are not addressed in this report. Those items should be fully considered as the plans develop for the potential future use of the site. Depending on the position of the house location, house size, property lines and setbacks that may encroach on available usable space, this lot may require a septic system utilizing a pump.

Due to the subjective nature of the permitting process, zoning, variability of naturally occurring soil, and unforeseen circumstances, SSC cannot guarantee that areas delineated as suitable for on-site wastewater disposal systems will be permitted, as the permits are issued by the local governing agency. However, the areas of suitable soil have at least 12–20 times the needed space for a conventional system and repair depending on the loading rate. This report may be used to assist the local permitting agency to issue a septic permit.

Thank you for your business. Please do not hesitate to ask for more information regarding this report.

Sincerely,

Erik D. Severson



Erik D. Severson, Ph-D., LSS
North Carolina Licensed Soil Scientist #1275