

Site Suitability for Domestic Sewage Treatment and Disposal Systems

Todd Road
Lot 1
Roxboro, NC
Person County
Tax Map Number#: 76 20

Prepared for: Jennifer Kelly, LD Land Holdings

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SYNOPSIS

This report shows the findings of a preliminary soil and site evaluation of the referenced parcel in Roxboro, 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. The system type would need to be an at-grade low-profile chamber system. This report is intended to aid a permitting authority to evaluate the site.

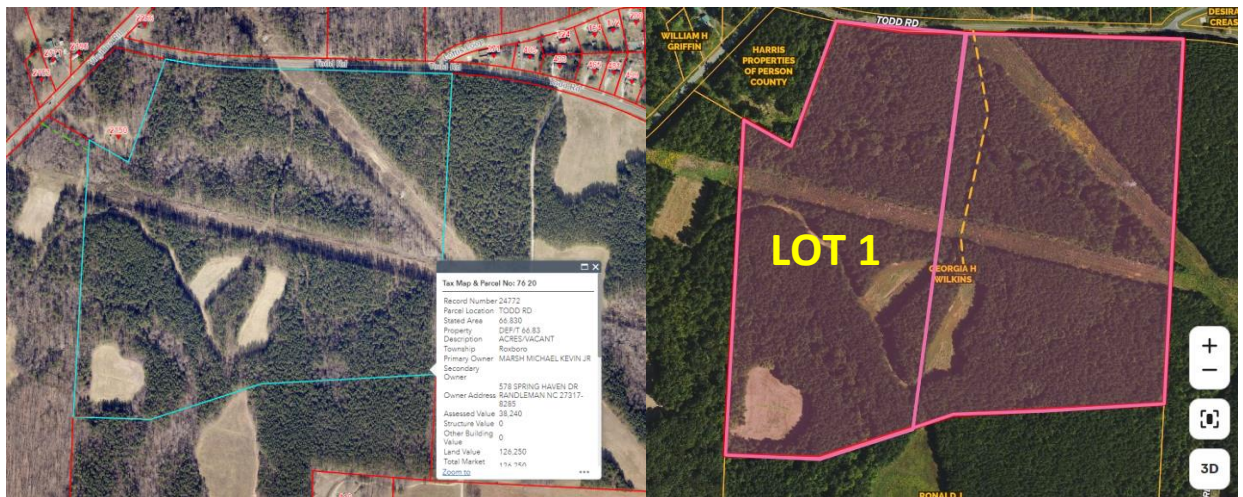


Figure 1. Property Location

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 **drought** soil conditions and were 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 and locations are approximate.

Site Description

The 36-acre tract was off Todd Road near Norlina, NC (figure 1). The site lies in the Piedmont region. There were two mapping units of interest in the NRCS soil map, ApC, Appling soils, and WeC, Wedowee soils (figure 2).



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

Soil Borings

Over 36 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 Appling and Wedowee soils. The recommended LTAR (long term acceptance rate) for the Appling and Wedowee soils are 0.3 per day per foot squared (GPD/ft²). The brown dots represent suitable soils to 20–24" and were the Vance soils. The recommended LTAR (long term acceptance rate) for the Vance soils are 0.25 per day per foot squared (GPD/ft²). The yellow dots represent an eroded Vance soil. The black dots represent granite rock outcrops.

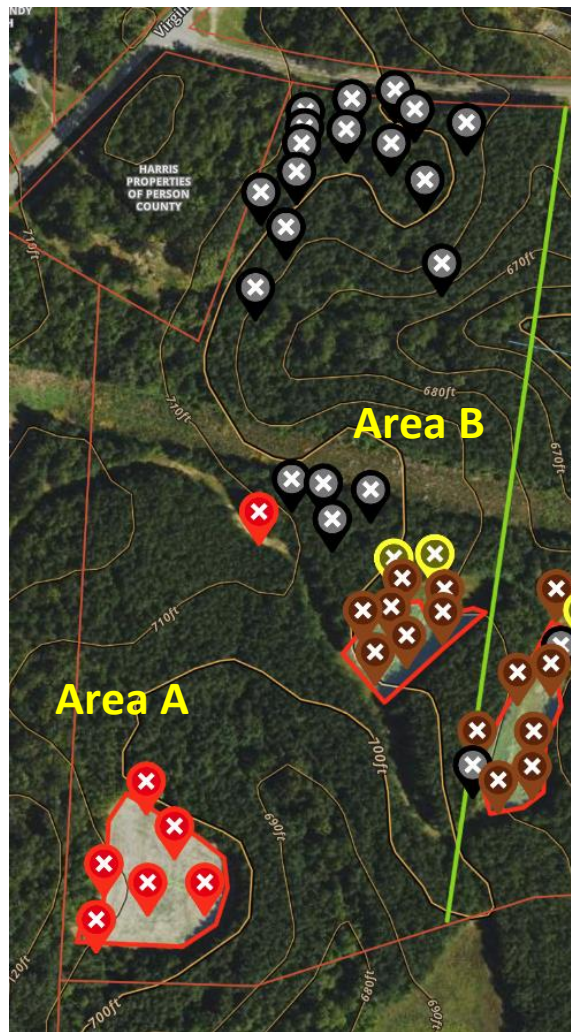


Figure 3. Soil boring locations within the lot as located by the onX Hunt application.

Required Area

Area A

The required linear footage needed for an 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. Finally multiply that product by 0.75 to account for the 25% reduction.

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

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).

Area B

The required linear footage needed for a low-profile chamber 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 (0.25 GPD/ft²). Then dividing that number by a 3-foot-wide trench bottom. There is NO reduction allowed for this type of drainfield product.

$$[(480\text{gpd} / 0.25 \text{ gpd}/\text{ft}^2) / 3\text{ft wide trench}] = 640 \text{ Linear Feet}$$

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 five 128-foot-long trench lengths, the minimum total area required would then be 12,000 ft² including primary and a 100% repair area (6,000 ft² x 2).

Other drainfield lengths and configurations could be employed, such as additional shorter or longer lines. The final design may require a pump and pressure manifold to accommodate for the site topography constraints.

Usable Areas

Area A

There were two usable areas on the lot, area A and B (see figure 3). The first an area of usable space in an open farmed field at the bottom of the proposed lot. The usable area was 1.42 acres, or 61,855 ft². This would be over six times the minimum space needed for a potential drainfield and repair for a 4-BR dwelling (see red outline figure 4).



Figure 4. Usable soil area A

Area B

There was an area of usable space in an open farmed field south of a powerline easement. The usable area was 0.67 acres, or 29,185 ft². This would be over two times the minimum space needed for a potential drainfield and repair for a 4-BR dwelling (see red outline figure 5).



Figure 5. Usable soil area B

Permitting

Prior to the issuance of a septic permit, the lot will require a soil and site evaluation by the Person 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 and pressure manifold.

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 2 to 6 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 in issuing a septic permit.

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

Sincerely,

Erik D. Severson



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North Carolina Licensed Soil Scientist #1275