

# *Site Suitability for Domestic Sewage Treatment and Disposal Systems*

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Bessie hicks Road  
Norlina, NC  
Warren County  
Map Number#: D4 60

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## SYNOPSIS

This report shows the findings of a preliminary soil and site evaluation of the referenced parcel in Norlina, NC. There were six areas of provisionally suitable soil found on the property. The site evaluation revealed sufficient areas for the installation of a conventional septic system for a four-bedroom dwelling in six areas on the property. This report is intended to aid the permitting authority to evaluate the site.

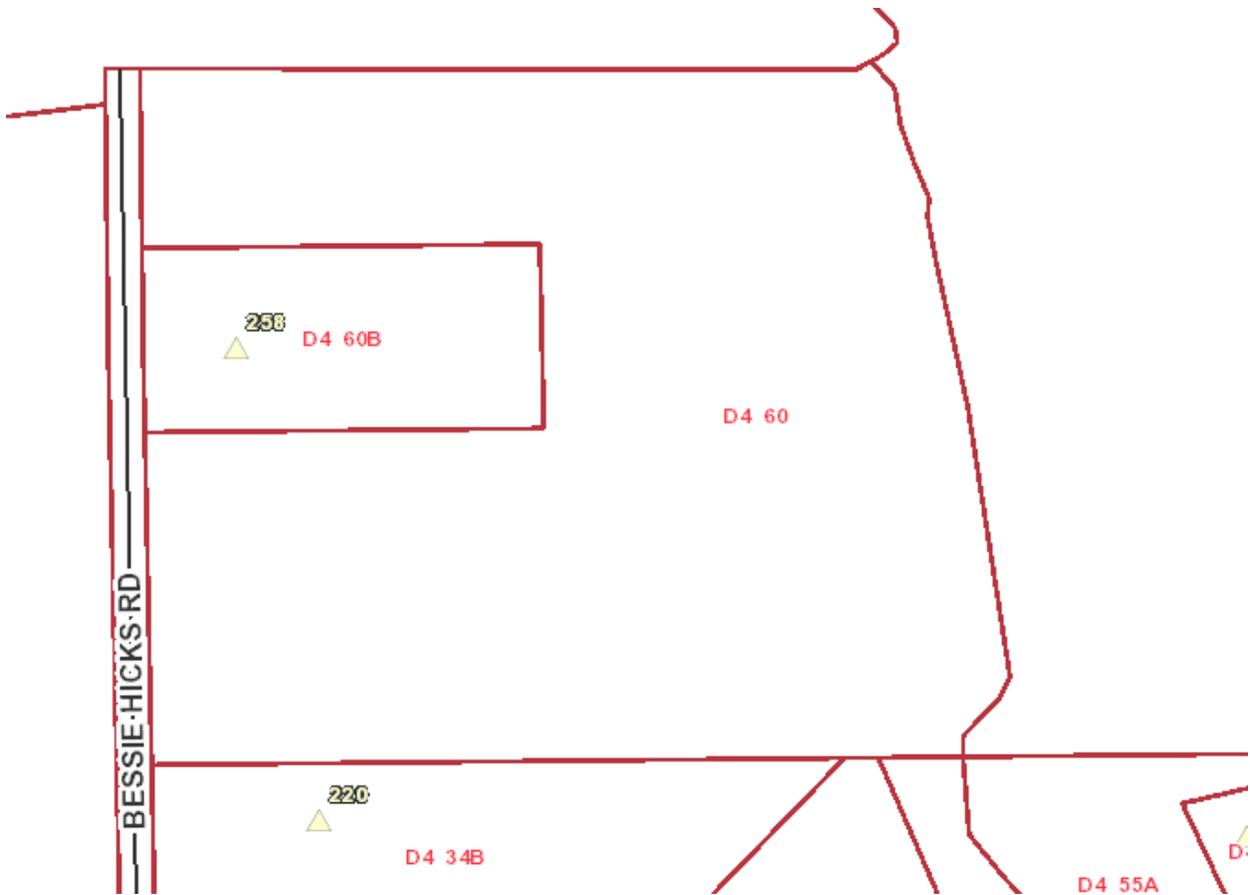


Figure 1. Property Location

**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 soil 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 (1900 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 33-acre tract was off Bessie Hicks Road near Norlina, NC (figure 1). The site lies in the Piedmont region. There was one mapping unit of interest in the NRCS soil map, PaB, Pacolet soils, and WoD, Wedowee soils (figure 2), both of which are typically suitable for conventional septic systems.



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

## Soil Borings

Over 43 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 Pacolet soil. The brown dots represented Wedowee soils that contained 20–24 inches of soil prior to encountering suitable sandy loam saprolite. The recommended LTAR (long term acceptance rate) for the Pacolet and Wedowee soils are 0.3 per day per foot squared (GPD/ft<sup>2</sup>). The yellow dot represented suitable soils from 18–19 inches to soil wetness conditions.

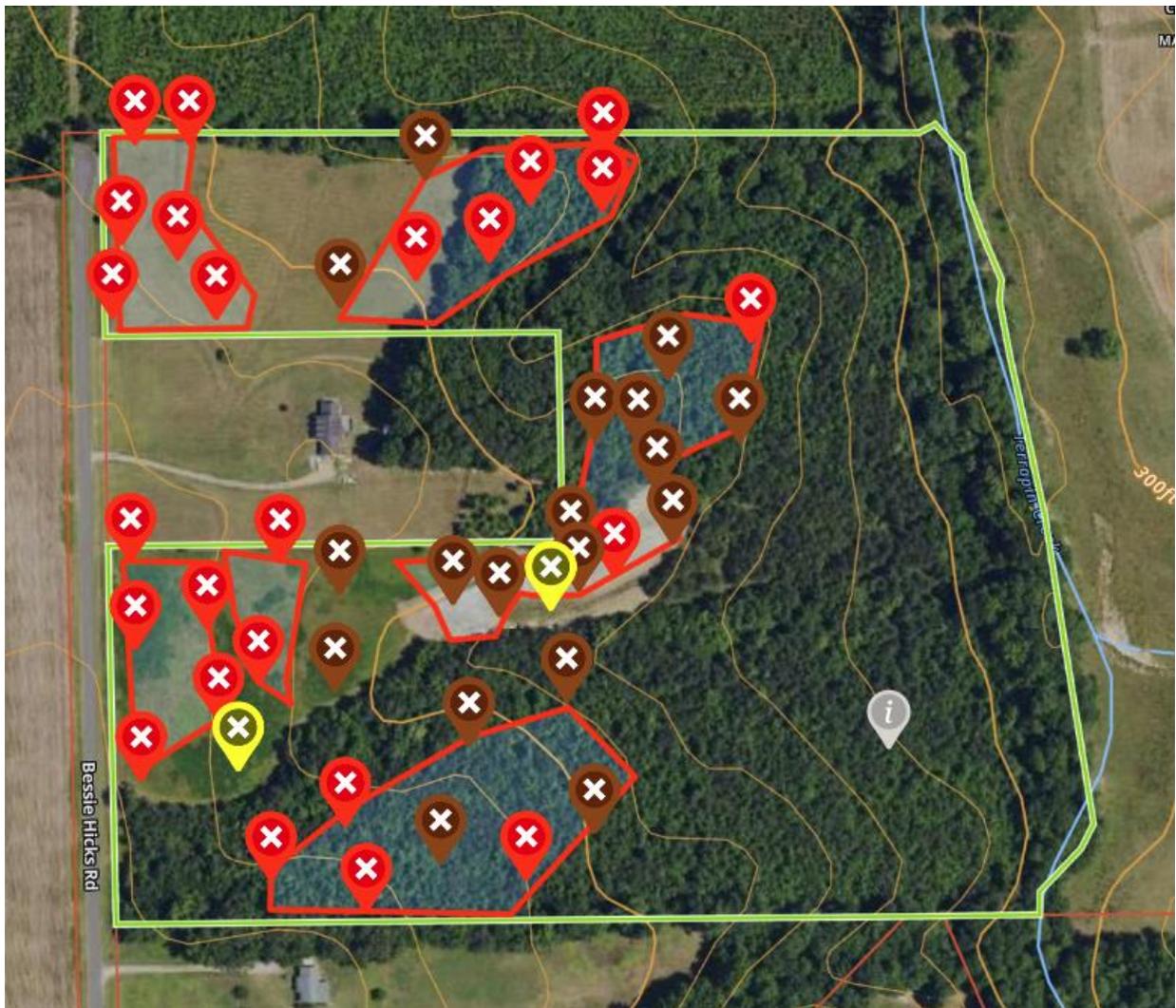


Figure 3. Soil boring locations within the lot as located by the onX Hunt application.

## 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/ft<sup>2</sup>). 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 ft<sup>2</sup> including primary and a 100% repair area (5,000 ft<sup>2</sup> x 2).

Other drainfield lengths and configurations could be employed, such as additional shorter or longer lines.

## Usable Ares

All soil observations within each suitable area would support the potential installation of a conventional septic system. There were six usable areas on the parcel as seen by the following figures 4, 5, and 6. Figure 4 shows usable areas 1, 2, and 3. Usable area 1 was 0.8 acres, or 34,848 ft<sup>2</sup> (3 times the required space for a 4-br). Usable area 2 was 0.39 acres, or 16,988 ft<sup>2</sup> (1 time the required space). Area 3 contained 2.36 acres or 102,802 ft<sup>2</sup> of usable area (10 times the required minimum space for one 4-br dwelling). Useable areas 1 and 2 were not contiguous and were separated by a large water diversion swale running north and south in between the areas.

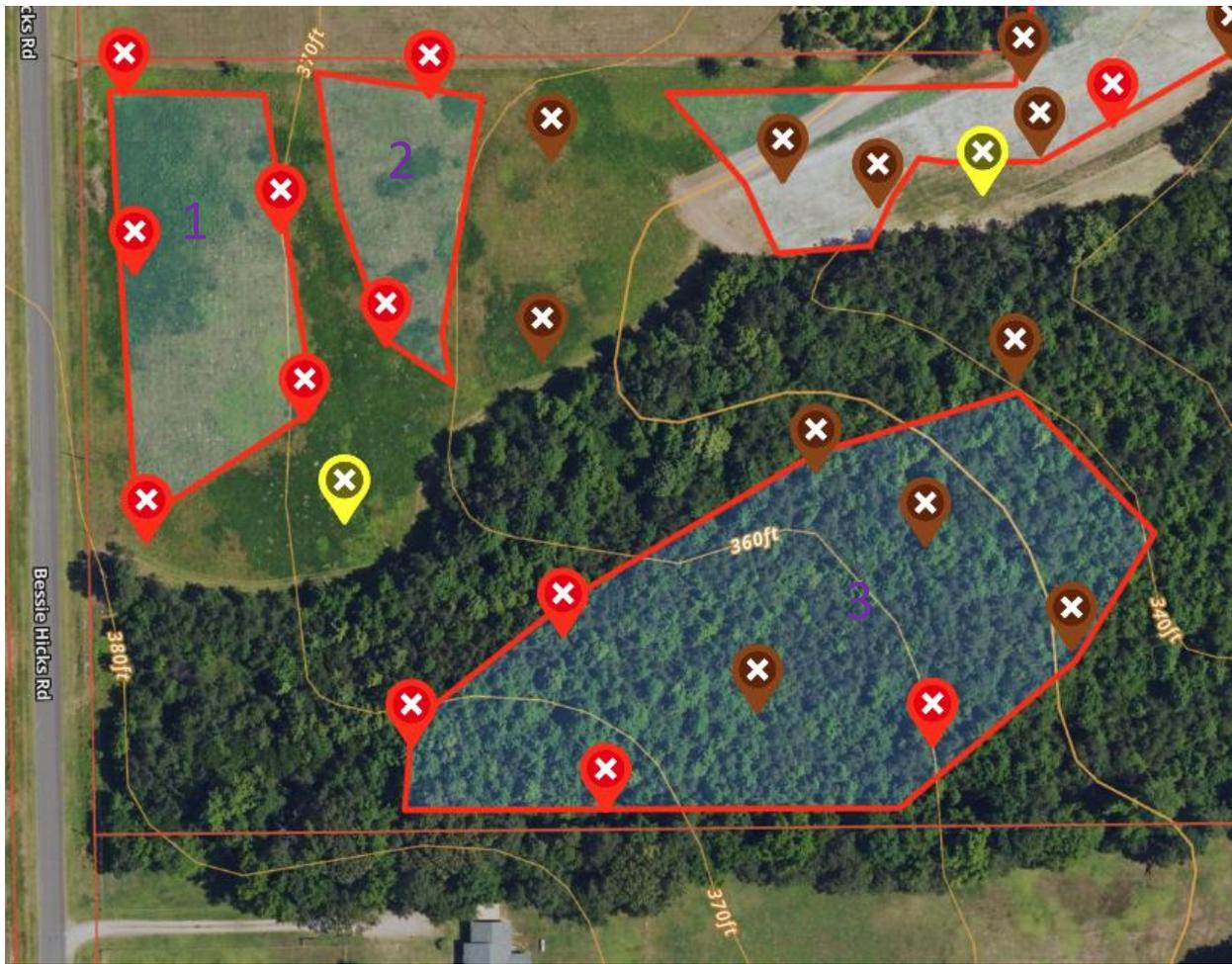


Figure 4. Usable soil areas 1, 2, and 3.

Area 4, as seen in figure 5, contained 2.03 acres of suitable soil or 88,429 ft<sup>2</sup> (8 times the minimum needed for a 4-br dwelling).

Area 5 in figure 6 had 1 acre of suitable soil (43,560 ft<sup>2</sup>) that exceeded the minimum space by 4 times. This area also contained grassed waterways, which should be avoided.

Area 6 in figure 6 had 1.5 acres or 65,776 ft<sup>2</sup> which was 6 times the minimum required space.



Figure 5. Usable soil area 4.



Figure 6. Usable soil areas 5 and 6.

## Permitting

Prior to the issuance of a septic permit, the lot will require a soil and site evaluation by the Warren 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 the proposed drainfield 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.

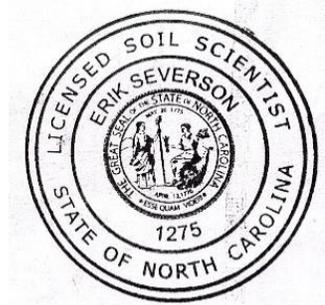
Exact locations of future drainfield, repair areas, buffer from property lines (current and future), building foundations, pools, decks, and well locations are not addressed in this report. Those items should be fully considered as the plans developed for the potential future use of the site. Depending 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 3 to 10 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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