SEVERSON SOIL CONSULTING, PLLC

Erik D. Severson, Ph.D., LSS
2714 Blaydon Dr. Raleigh, NC 27606
919-623-6175 seversonsoil@gmail.com

Site Suitability for Domestic Sewage Treatment and Disposal Systems

Tungsten Mine Road
Bullock, NC
Vance County
Parcel ID#: 310A01004

Prepared for: Pete Reese

Prepared by: Erik Severson, Severson Soil Consulting, PLLC

Report Date: 8/4/2023

SYNOPSIS

This report shows the findings of a preliminary soil and site evaluation of the referenced parcel in Vance County, NC. There was one areas of provisionally suitable soils found on the property suitable for the installation of an anaerobic drip system plus repair area for a four-bedroom dwelling. The system design must be performed by a manufacturer approved designer. This system would require a maintenance contract with a certified subsurface operator for the lifetime of the system.

Figure 1. Property Location (Vance Co, GIS).

To: Pete Reese Tungsten Mine Road
Re: Soil Feasibility for parcel: Parcel ID: 310A01004

Pete, 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 recommended criteria found in the "Laws and Rules for Sewage Treatment and Disposal Systems", 15NCAC 18A. 1900. From this evaluation, SSC sketched an area suitable for the installation of a septic system. All dimensions, locations are approximate.

Site Description

The 5-acre tract off of Tungsten Mine Rd (figure 1) lay in the Piedmont physiographic province near NC/VA border. The soil mapping units (CeB2 and CeD2) were different slope percentages of the same soil: Cecil (Figure 2). The Cecil soils are typically well suited for conventional septic systems.

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

Soil Borings

Over 23 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 were suitable soils to 30", the brown dots represent suitable soils from 20 to 24", the yellow dots represented soils that were 18-19" to a limiting feature, and the black dots were soils that had limiting features <12". The red dots were the Cecil soils while the brown dots were the eroded Wedowee soils shallow to saprolite. The yellow soils were the Saw Soil Series, which had sandy saprolite and shallow to granite bedrock. The black dots had hard bedrock shallower than 12 inches.

The findings depict a wavy boundary between depths of rock over the landscape. Within the suitable area, there were soils encountered that were 18-30 inches deep until hard granite bedrock. The majority of the suitable area described below had soils that were 18-20 inches deep to bedrock. Therefore, the site and soil are suitable for the potential installation of an anaerobic drip distribution system. The recommended LTAR (long term acceptance rate) for the Wedowee and Saw soils are 0.1 to 0.15 gallons per day per foot squared (GPD/ft2).

Prior land disturbance caused a minor drainageway to form at the road frontage. This included land on the road frontage and around an old dilapidated house. The neighboring lot to the north had a well near the property boundary and was marked blue in figure 3.

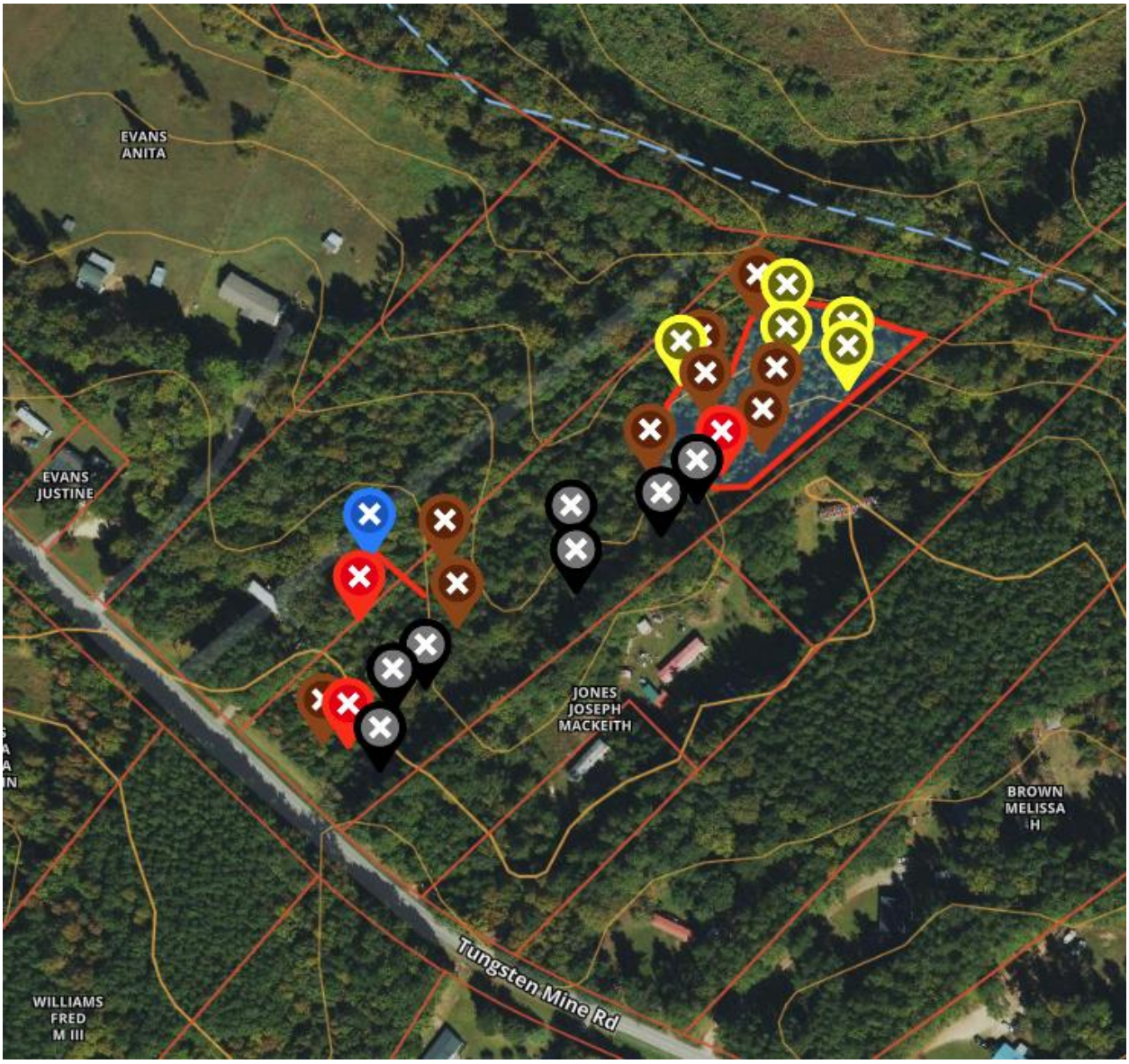


Figure 3. Soil boring locations within the lot as located by the onX Hunt application. The bottom picture shows a closeup of the top picture.

Required Area

The required square footage needed for an anaerobic drip is calculated by dividing the flow rate for a four-bedroom dwelling (4-BR= 480 gpd) by the long-term acceptance rate, LTAR (0.1 GPD/ft2).

480gpd / 0.1 gpd/ft2= 4,800 ft2

The minimum total area required would then be 9,600 ft2 including primary and a 100% repair area (4,800 ft2 x 2). Accounting for trees and other unforeseen factors in the field, this would increase the minimum size needed by 20 percent to 11,520 ft2.

Usable Areas

All soil observations would support a potential installation of an anaerobic drip septic system (Figure 4). This was located primarily on the gently sloping sideslopes (8-15% slopes). The usable area was 0.96 acres, or 41,818 ft2.

This would be approximately 3.5 times the minimum space needed for a potential anaerobic drainfield and repair for a 4-Bedroom dwelling.

Figure 4. Usable soil area for the installation of an anaerobic drip system.

Design and Maintenance

This information is intended to assist an approved designer for an anerobic drip system. The drainfield product manufacturer issues the designer approvals.

An anaerobic system requires routine maintenance visits and a contract with a certified subsurface operator for the lifetime of the system.

Permitting

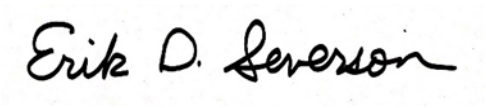
Prior to the issuance of a septic permit, the lot will require a soil and site evaluation by the Vance County Health Department of other permitting authority. The specific trench product type and soil loading rate will be determined by their assessment. The areas for proposed drainfields shall not be 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.

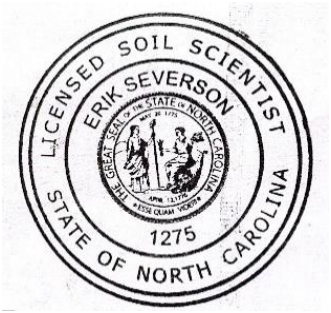
Exact locations of future drainfields, repair areas, buffer from property lines (current and future), building foundations, pools, decks, and well locations are not addressed in this report. Those items should be fully considered as the plans develop for the potential future use of the site. Depending 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 3.5 times the needed space for a conventional system and repair depending on the percolation 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, Ph-D., LSS
North Carolina Licensed Soil Scientist #1275