

PRELIMINARY SOIL AND SITE EVALUATION

Union County Parcel: 01153006
NC Highway 205
Marshville, NC 28103

Prepared For:

Eric Wickenheiser and Josh Guedesse
PO Box 411282
Charlotte, NC 28241

Prepared By:



Thompson Environmental Consulting, Inc.
PO Box 541
Midland, NC 28107

July 21, 2024



INTRODUCTION & SITE DESCRIPTION

This Preliminary Soil and Site Evaluation was performed on a portion of a 60.99-acre tract of land located off NC Highway 205, Marshville, North Carolina (Union County Parcel: 01153006).

Thompson Environmental Consulting, Inc. (TEC) was retained to determine whether the soils are suitable for onsite subsurface wastewater treatment and disposal. The property was evaluated in accordance with North Carolina statutes for waste disposal (“Laws and Rules for Sewage Treatment and Disposal Systems”, effective January 1, 2024).

INVESTIGATION METHODOLOGY & SITE PHYSICAL CHARACTERISTICS

Individual soil borings were evaluated, and soil color was determined with a Munsell Soil Color Chart. Observations of the landscape (slope, drainage patterns, etc.) as well as soil properties (depth, texture, structure, seasonal wetness, restrictive horizons, etc.) were recorded.

The project study area is currently undeveloped, is mostly cleared, and is being used for agricultural production. Several unsuitable topographic features and a jurisdictional stream feature were noted at the time of our evaluation and their approximate locations are depicted in the attached Figure 1.

FINDINGS

A field survey was conducted between July 18-20, 2024. Twenty-six soil borings were advanced with a hand-held auger and locations are noted in the attached Figure.

Suitable for Conventional Type Systems. Soil borings classified as Suitable for Conventional Systems may include Gravel, Accepted, Alternative, Shallow-Placed, and Prefabricated Permeable Block Panel Systems and are denoted in the attached Figure as green points. While the particulars and costs between the system types can vary considerably, these are generally the preferred system types. This soil appeared adequate to support a long-term acceptance rate (LTAR) of 0.275 to 0.3 GPD/sq-ft.

Provisionally Suitable for Subsurface Drip Systems. Subsurface Drip systems require a minimum of 13 inches of suitable soil. Soil with a restriction less than 17 inches will require the septic system to include a pretreatment unit that treats the wastewater to Treatment Standards II. Subsurface Drip systems are substantially more costly to install than Conventional Type and Low-Profile Chamber Systems. LTARs often need to be confirmed via in-situ hydraulic conductivity measurements, but these are expected to support an LTAR of 0.1 GPD/sq-ft. These soil borings are depicted in the attached Figure as purple points.

Unsuitable. Soil borings classified as Unsuitable for Subsurface Drip systems had a restrictive horizon with 12 inches of the ground surface and are depicted in the attached Figure as red points.

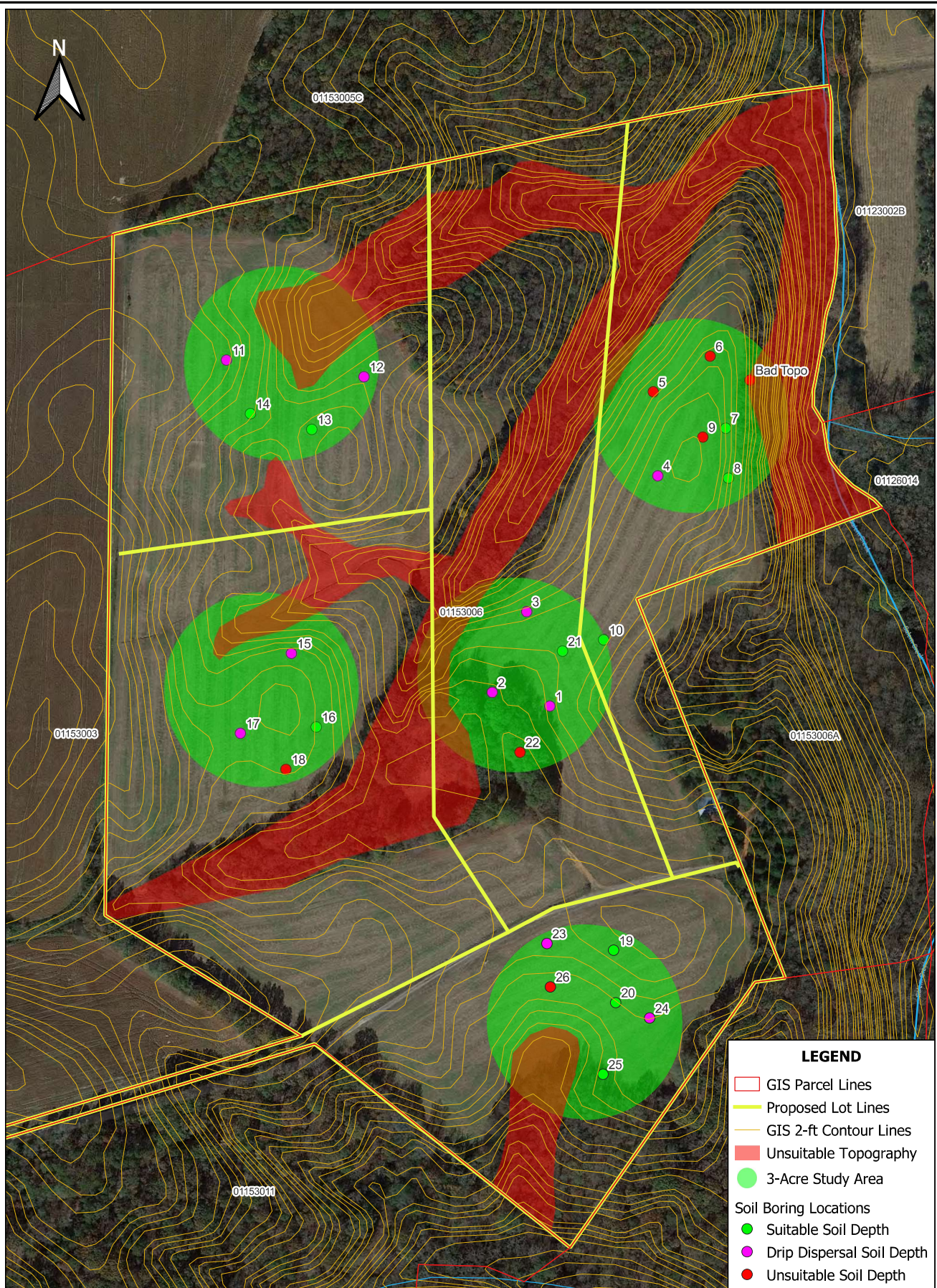
DISCUSSION

The soil borings identified with green points in the attached Figure are “Suitable” for the installation of Conventional Systems (Gravel, Accepted, Alternative, Shallow-Placed, and Prefabricated Permeable Block Panel Systems). It is estimated that between 7,000 to 10,500 square feet of suitable soil area would need to be allocated and left completely available for the installation and required repair area for a septic system installation serving a 4-bedroom single family residence in these areas. Supplemental soil work would be required to establish the required soil area for complete conventional system installations on each of the proposed lots. Due to the variability in observed soil depths, TEC would recommend that the supplemental soil work be performed with a compact excavator (pit evaluation).

The soils borings identified with purple points in the attached Figure are “Provisionally Suitable” for Subsurface Drip Dispersal drainfield products. While supplemental soil work would be required to determine the actual long-term acceptance rate for the soils that are less than 18 inches in depth, it is estimated that 10,000 square feet of suitable soil area would need to be allocated and left completely available for the installation and required repair area for a Subsurface Drip Dispersal system installation serving a 4-bedroom single family residence. If the conventional soil areas cannot accommodate a complete system installation, subsurface drip dispersal systems can be designated as the required repair areas or designated as both the initial as well as repair system type.

CONCLUSION

The findings presented herein represent TEC’s professional opinion based on our Soil and Site Evaluation and knowledge of the current laws and rules governing on-site wastewater systems in North Carolina. Soils naturally change across a landscape and contain many inclusions. As such, attempts to quantify them are not always precise and exact. Due to this inherent variability of soils and the subjectivity when determining limiting factors, there is no guarantee that a regulating authority will agree with the findings of this report.

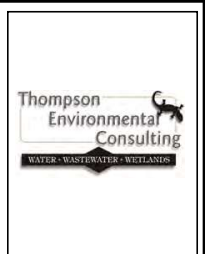


LEGEND

- GIS Parcel Lines
- Proposed Lot Lines
- GIS 2-ft Contour Lines
- Unsuitable Topography
- 3-Acre Study Area

Soil Boring Locations

- Suitable Soil Depth
- Drip Dispersal Soil Depth
- Unsuitable Soil Depth



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Preliminary Soil and Site Evaluation

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Union County

Date: July 2024

Scale:

TEC Job #: 24-251

Figure
1