

## Central Carolina Soil Consulting, PLLC

1900 South Main Street, Suite 110

Wake Forest, 27587

919-569-6704

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August 9, 2024

Project # 4858

Lee Perry  
4001 West Lake Road  
Apex, NC 27539

RE: Preliminary soil/site evaluation at 4001 West Lake road and an approximate 3.27-acre lot fronting West Lake Road.

Dear Mr. Perry

Central Carolina Soil Consulting, PLLC conducted a preliminary soil evaluation on the referenced parcel to determine the areas of soils which are suitable for subsurface wastewater disposal systems (conventional & LPP only). The soil/site evaluation was performed using hand auger borings and pits during moist soil conditions based on the criteria found in the State Subsurface Rules, 15ANCAC 18E "Laws and Rules for Sewage Treatment and Disposal Systems" along with "Regulations Governing Sewage Treatment and Disposal Systems in Wake County, Amended November 19, 2021". From this evaluation, CCSC sketched the soils areas through ground truthing and gps field location of soils borings/pits to increase mapping accuracy.

The above referenced parcel is located the piedmont region of Southern Wake County. This area lies in the felsic crystalline geologic unit where the soils have formed from acid crystalline parent material such as gneiss or schist. The soils that have formed on this parcel have characteristics similar to the Cecil Soil Series. The attached soils map indicates the areas of suitable vs. unsuitable soils. The Cecil soil series is generally suitable for subsurface wastewater systems. That is, the morphology of the soils contain suitable characteristics that would support subsurface septic systems such as clay textured subsoils which are not considered expansive and have blocky structure with no indicators of restrictive characteristics within 24 inches of the soil surface. These soil types are unsuitable for subsurface septic systems. Additional unsuitable soil areas are due to complex topographic features such as gullies and power line setbacks.

The attached soils map indicates the areas of soils which are suitable for subsurface wastewater systems. The "hatched soil units" on the attached map indicates the areas of soils that have 30 inches or more of suitable soil material. These areas have potential for conventional and modified conventional septic systems. There may be inclusions of soils 24-29 inches that would support LPP or ultra-shallow conventional septic systems in the areas mapped as conventional. The "cross hatched" soil units indicate areas of soils with 24-29 inches of provisionally suitable soils suitable for Low Pressure Pipe septic systems. Unit "UN" on the attached map indicates areas of soils with restrictive horizons within 24 inches of the soil surface or areas of unsuitable topography. Please note that the area of suitable soils was delineated by soil borings using hand auger in various locations and flagging out the unsuitable borings along with the unsuitable topography on the property. Central Carolina Soil Consulting cannot guarantee that every square foot of area shown as potentially suitable for septic systems will be permitted by the local health department due to the variability of naturally occurring soils.

#### **Future Subdivision Considerations**

Several factors should be considered before a final subdivision plan is created for this property. One consideration is that each proposed lot shall contain an adequate amount of suitable soils, which can support a primary septic system along with a repair septic system. The suitable soil areas cannot be affected by future homes, driveways, patios, excavation or filling activities and if an on-site well is used then a 100' setback is required around the well head. An exact square footage of suitable soils required per lot to obtain a permit cannot be given due to soil variability and topographic characteristics on each lot. The amount of suitable soils required to support a 4-bedroom residence will range between 10,000ft<sup>2</sup>-14,000 ft<sup>2</sup> (could be more or less) per lot. These soil area estimates are based upon soil application rates for a clay textured subsoil with a site LTAR of 0.275-.3 gallons per day/square foot for conventional type systems. The ultimate application rate will be assigned by the Wake County Health Department based on a detailed evaluation of each new lot or by a private AOWE.

The Wake County Planning Department requires that any proposed subdivision in the county with onsite wastewater disposal systems follow certain criteria set forth in the subdivision regulations. The regulations (Section V) mandate that any proposed lot for recordation shall have at least 30,000 ft<sup>2</sup> of suitable soils before it can be recorded. If the proposed lot is located in a watershed and will require an on-site well, then the minimum area required is raised to 40,000 ft<sup>2</sup>. **This site is not located in a water supply water shed area.** If any proposed lot does not meet the minimum 40,000 ft<sup>2</sup>

with an on-site well and suitable soils, then a septic system field layout is required demonstrating system and repair, along with the location of a house, well, drive, decks, etc. If the layout proves the lot can accommodate a system and repair on the lot with the house and other features, then it can be recorded under Section VI of the subdivision regulations. The amount of drain line required for each lot will be based upon the daily flow, soil application rate and type of system proposed on the lot. The daily flow is assigned by the number of actual bedrooms in a proposed home (120 gallons/day/bedroom). The field layouts required by the Section VI regulations do not represent a septic permit or a guarantee of a permit on such lots. The permits are ultimately issued by the local health department based on current subsurface wastewater regulations.

During the road construction process of a subdivision it is important not to impact any suitable soil areas with such activities as excavating or filling. Only the actual roadways and required drainage ditches and/or sediment basins should be constructed during this process. If the contractor requires a staging area to place fill from the construction process, then areas of unsuitable soils on the property should be utilized as long as they are not state/county buffers, jurisdictional wetlands or other areas protected by local zoning regulations. If this is not possible, then the disturbed areas should be minimized as much as possible. The same precautions should be taken when the individual lots are cleared for home sites. Only the vegetation should be removed in the areas of the proposed drain fields on lots to prevent any disturbance of the naturally occurring soil. A lot with adequate areas of suitable soils can be deemed unsuitable due to poor planning or site disturbance. Central Carolina Soil Consulting recommends that all lot clearing activities are delayed until a permit is issued by the local health department, with the exception of clearing thick vegetation to access the lot.

This report discusses the location of suitable soils for subsurface wastewater disposal systems and does not guarantee any permits or approval required by the local health department. Central Carolina Soil Consulting, PLLC is a professional consulting firm specializing in soil delineations and design for on-site wastewater disposal systems. The rules governing on-site wastewater disposal systems are complex and the interpretation of the rules are based upon the opinions of regulators (state and county level). Due to the subjective nature of the permitting process and the variability of naturally occurring soils, CCSC cannot guarantee that areas delineated as suitable for on-site wastewater disposal systems will be permitted by the governing agencies. These permitting considerations should be taken into account before a financial commitment is made on a tract of land.

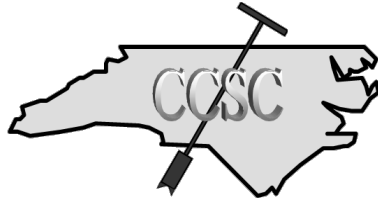
If you have any questions regarding the findings on the attached map or in this report, please feel free to contact me at any time. Thank you for allowing Central Carolina Soil Consulting to perform this site evaluation for you.

Sincerely,



Jason Hall  
NC Licensed Soil Scientist #1248

Encl: Soil Map



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### Checklist of required items for Subdivision Review with Respect to On-Site Sewage Disposal Systems for Lots 1-2 in 4001 West Lake Road Subdivision.

- A The following lots: 1-2 in 4001 West Lake Road Subdivision contain at least 40,000ft<sup>2</sup> of provisionally suitable soils and meet the minimum lot requirements set forth in Section V of the Sewage Regulations in Wake County.
- 1) Soil Map
- a) Soil suitability units marked on attached detailed soils map.
  - b) Square footage of each soil unit is outlined on the attached soils map.
  - c) Delineation of unsuitable topography that would prohibit the use of an onsite subsurface wastewater system is included with the soil unit "UN" on the attached detailed soils map.
  - d) Topographic map with 2' contours included on attached soils map.
- 2) Report
- a) When the initial evaluation was conducted, no road construction or installation of utilities had started. The evaluation was conducted under moist soil conditions.
  - b) Hand auger borings were used to evaluate the site.
  - c) The upland soils formed from felsic crystalline parent material such as gneiss or schist
  - d) Soil descriptions are attached to this document.
  - e) The proposed use for this subdivision will be 4 to 5-bedroom homes served by individual wells.
  - f) The Section V and VI Certifications are attached to the surveyor's mylars.
  - g) N/A

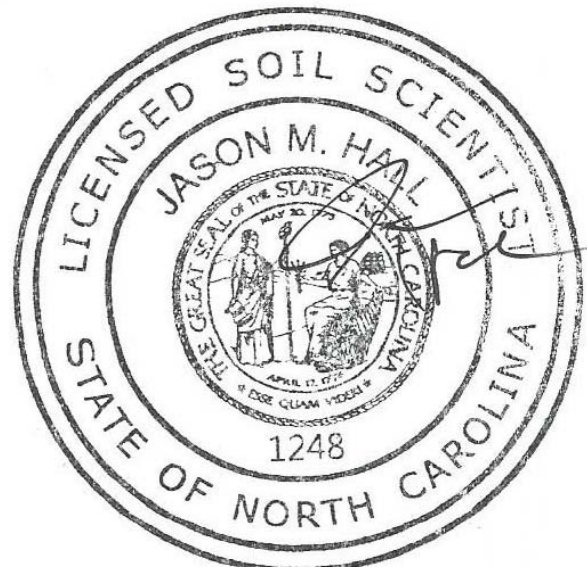
**B** Lots NA in 4001 West Lake Road Subdivision, do not contain 30,000ft<sup>2</sup> of provisionally suitable soils and do not meet the minimum lot requirements set forth in Section V of the Sewage Regulations in Wake County, but are considered to conform to Section VI of the Sewage Regulations

1) Site plans for lots NA are attached and drawn to the appropriate scale.

- a) Delineation of soil units attached on detailed soils map.
- b) Location of building envelope attached on each Section VI site plan.
- c) Location of existing and proposed accessory structures attached on each Section VI site plan.
- d) Location of existing well sites and/or drain fields on adjacent properties shown on attached soils map and/or appropriate site plan.
- e) Horizontal setback requirements shown on mylars or detailed soils map.
- f & g) Delineation of initial and repair wastewater disposal system shown on attached Section VI site plans.
- h) Ground elevations of nitrification lines, distribution method and tap charts provided with site plans.
- i) N/A

2) Soil Report

- a) Soil report for site is attached, which includes the proposed long term acceptance rates for the subdivision.
- b) The proposed systems in the subdivision will mostly be conventional depth (gravity, pressure manatee or pressure manifold) along with some Low Profile Chamber, T&J Panel Block and subsurface drip repair systems. There may be small inclusions of soils that will support LPP (low pressure pipe) systems.



SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM  
(Complete all fields in full)

OWNER: Lee Perry DATE EVALUATED: Feb 26, 2024  
ADDRESS: 4001 West Lake Road  
PROPOSED FACILITY: Single Family PROPOSED DESIGN FLOW (.0400): PROPERTY SIZE: 3.27 ac  
LOCATION OF SITE: 4001 West Lake Road lots 1 and 2 PROPERTY RECORDED:  
WATER SUPPLY: ☐ Public ☒ Single Family Well ☐ Shared Well ☐ Spring ☐ Other WATER SUPPLY SETBACK:  
EVALUATION METHOD: ☐ Auger Boring ☒ Pit ☐ Cut TYPE OF WASTEWATER: ☒ Domestic ☐ High Strength ☐ IPWW

| P<br>R<br>O<br>F<br>I<br>L<br>E<br><br># | .0502<br>LANDSCAPE<br>POSITION/<br>SLOPE % | HORIZON<br>DEPTH<br>(IN.) | SOIL MORPHOLOGY                |                                     | OTHER PROFILE FACTORS              |                        |                         |                           | .0509<br>PROFILE<br>CLASS &<br>LTAR* | .0502(d)<br>SLOPE<br>CORRECTION |
|------------------------------------------|--------------------------------------------|---------------------------|--------------------------------|-------------------------------------|------------------------------------|------------------------|-------------------------|---------------------------|--------------------------------------|---------------------------------|
|                                          |                                            |                           | .0503<br>TEXTURE/<br>STRUCTURE | .0503<br>CONSISTENCE/<br>MINERALOGY | .0504<br>SOIL<br>WETNESS/<br>COLOR | .0505<br>SOIL<br>DEPTH | .0506<br>SAPRO<br>CLASS | .0507<br>RESTR<br>HORIZON |                                      |                                 |
| 1                                        | LS 6%                                      | A 0-6                     | SL GR                          | VFR NS NP NEXP                      |                                    |                        |                         |                           |                                      | 2.16"                           |
|                                          |                                            | Bt1 6-34                  | C SBK                          | FR SS SP SEXP                       |                                    |                        |                         |                           | S, 0.30                              |                                 |
|                                          |                                            | BC 34-48                  | CL WSBK                        | FR SS SP SEXP                       |                                    | 48                     |                         |                           | S, 0.325                             |                                 |
|                                          |                                            |                           |                                |                                     |                                    |                        |                         |                           |                                      |                                 |
|                                          |                                            |                           |                                |                                     |                                    |                        |                         |                           |                                      |                                 |
| 2                                        |                                            |                           |                                |                                     |                                    |                        |                         |                           |                                      |                                 |
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| 3                                        |                                            |                           |                                |                                     |                                    |                        |                         |                           |                                      |                                 |
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|                                          |                                            |                           |                                |                                     |                                    |                        |                         |                           |                                      |                                 |

| DESCRIPTION             | INITIAL SYSTEM | REPAIR SYSTEM | SITE CLASSIFICATION (.0509): Suitable<br>EVALUATED BY: Matt Burdette<br>OTHER(S) PRESENT: |
|-------------------------|----------------|---------------|-------------------------------------------------------------------------------------------|
| Available Space (.0508) | Yes            | Yes           |                                                                                           |
| System Type(s)          |                |               |                                                                                           |
| Site LTAR               |                |               |                                                                                           |
| Maximum Trench Depth    |                |               |                                                                                           |

Comments:  
AR= Auger Refusal  
Pits needed if trenches shall be dug deeper

# LEGEND

| LANDSCAPE POSITION | SOIL GROUP | SOIL TEXTURE           | CONVENTIONAL LTAR (gpd/ft²) | SAPROLITE LTAR (gpd/ft²) | LPP LTAR (gpd/ft²) | MINERALOGY/ CONSISTENCE |                       | STRUCTURE               |                           |
|--------------------|------------|------------------------|-----------------------------|--------------------------|--------------------|-------------------------|-----------------------|-------------------------|---------------------------|
| CC (Concave slope) | I          | S (Sand)               | 0.8 - 1.2                   | 0.6 - 0.8                | 0.4 -0.6           | MOIST                   | WET                   | SG (Single grain)       |                           |
| CV (Convex Slope)  |            | LS (Loamy sand)        |                             | 0.5 -0.7                 |                    | Lo (Loose)              | NS (Non-sticky)       | M (Massive)             |                           |
| D (Drainage way)   | II         | SL (Sandy loam)        | 0.6 - 0.8                   | 0.4 -0.6                 | 0.3 - 0.4          | VFR (Very friable)      | SS (Slightly sticky)  | GR (Granular)           |                           |
| FP (Flood plain)   |            | L (Loam)               |                             | 0.2 - 0.4                |                    | FR (Friable)            | S (Sticky)            | SBK (Subangular blocky) |                           |
| FS (Foot slope)    | III        | SiL (Silt loam)        | 0.3 - 0.6                   | 0.1 - 0.3                | 0.15 - 0.3         | FI (Firm)               | VS (Very sticky)      | ABK (Angular blocky)    |                           |
| H (Head slope)     |            | SCL (Sandy clay loam)  |                             | 0.05 - 0.15**            |                    | VFI (Very firm)         | NP (Non-plastic)      | PR (Prismatic)          |                           |
| L (Linear Slope)   |            | CL (Clay loam)         |                             | None                     |                    | EFI (Extremely firm)    | SP (Slightly plastic) | PL (Platy)              |                           |
| N (Nose slope)     |            | SiCL (Silty clay loam) |                             |                          |                    |                         | P (Plastic)           |                         |                           |
| R (Ridge/summit)   |            | Si (Silt)              |                             |                          |                    |                         | VP (Very plastic)     |                         |                           |
| S (Shoulder slope) |            | IV                     |                             |                          |                    | SC (Sandy clay)         | 0.1 - 0.4             | 0.05 - 0.2              | SEXP (Slightly expansive) |
| T (Terrace)        |            |                        |                             | SiC (Silty clay)         |                    | EXP (Expansive)         |                       |                         |                           |
| TS (Toe Slope)     |            |                        |                             | C (Clay)                 |                    |                         |                       |                         |                           |
|                    |            | O (Organic)            | None                        |                          |                    |                         |                       |                         |                           |

\* Adjust LTAR due to depth, consistence, structure, soil wetness, landscape, position, wastewater flow and quality.

\*\*Sandy clay loam saprolite can only be used with advanced pretreatment in accordance with 15A NCAC 18E .1200.

*HORIZON DEPTH* In inches below natural soil surface

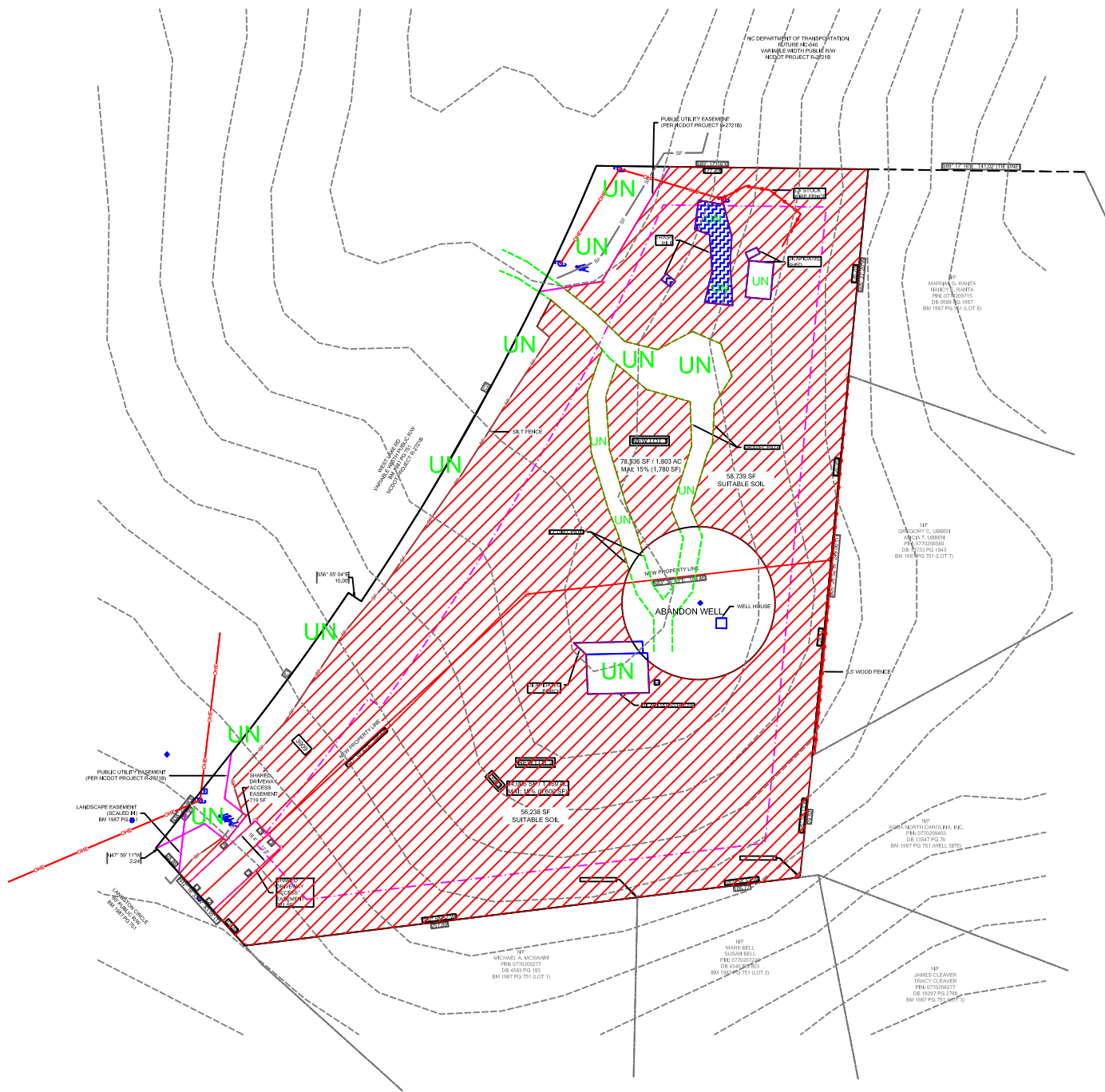
*DEPTH OF FILL* In inches from land surface

*RESTRICTIVE HORIZON* Thickness and depth from land surface

*SAPROLITE* S(suitable) or U(unsuitable); Evaluation of saprolite shall be by pits or auger borings.

*SOIL WETNESS* Inches from land surface to free water or inches from land surface to soil colors with chroma 2 or less - record Munsell color chip designation

*CLASSIFICATION* S (Suitable) or U (Unsuitable)

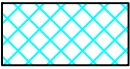


\*Soil borings flagged in the field and GPS located.  
\*Not a survey.  
\*Septic system setbacks listed below for new lots.  
1) 10' from property lines.  
2) 100' from wells for primary systems.  
3) 100' from wells for repair systems.  
4) 50' from surface waters (streams, ponds, lakes).  
\*Any mechanical disturbances such as grading, cutting and filling of the suitable soil areas can render areas unsuitable for future septic systems.  
\*See accompanying report for additional information.  
\*Base map acquired from Johnston County GIS website.  
\*Due to soil variability, CCSC cannot guarantee that the areas shown as suitable will be permitted by the local Health Department.  
\*The preliminary (approximate) soil lines cannot be used as legal descriptions for purposes of a land transfer or legal documentation.  
\*Additional field work may be required for a septic permit (septic system field layout/design)

Legend



Areas contain soils with 30 inches or more of provisionally useable material and have potential for conventional or modified conventional septic systems. There will be inclusions of soils in these areas that may only be suitable for LPP septic systems.



Areas contain soils with 24 to 29 inches or more of provisionally useable material and have potential LPP or ultra-shallow conventional septic systems. These areas will contain small areas of soil with greater than 30 inches of suitable soil material that can be used for conventional septic systems.



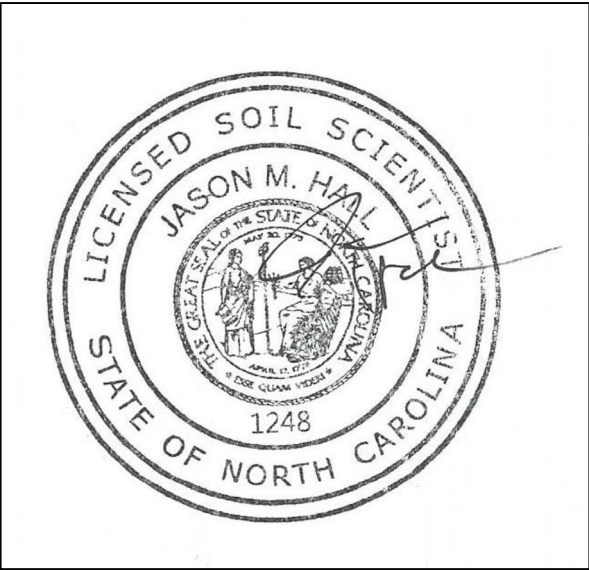
Areas not evaluated by CCSC.



Areas unsuitable for septic.



Drains observed by CCSC.



GRAPHIC SCALE  
1" = 100'

