



3/27/2026

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THIS IS NOT A PERMIT NOR CAN IT BE USED IN ANY ENGINEERING OPTIONS PERMIT

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- No work can be done if the soil is too wet. If there are questions, please contact us 919-210-2890; chandlersoil24@gmail.com

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Blaine Beadle

Dear Blaine,

Chandler Soil Corporation completed an Intensive soil evaluation for approximately 1 acre at West Antioch Drive, Parcel ID:193203149070, Granville County.

All septic systems in North Carolina must have a primary drain field area where the system is first installed (called the Initial area), and a secondary backup area (the Repair area), in case the primary one ever stops working. There is a "grandfather clause" "The repair area requirement shall not apply to a lot or tract of land: (1) which is specifically described in a document on file with the local health department on July 1, 1982, or which is specifically described in a recorded deed or a recorded plat on January 1, 1983." This lot does not require a Repair unless subdivided.

The type and cost of a septic system depend largely on how deep the usable soil is. In general, deeper soil allows for simpler and more cost-effective systems. The size of the area of a septic system is based on the soil properties, and the amount of area with those soil properties.

First, let's begin with a primer on septic systems. Septic systems, which have been used since Roman times, are a natural treatment system for the effluent from the house. In the simplest systems the effluent from the house enters a septic tank, where solids settle out from the liquids and

the liquids are then distributed to the drain field. The solids are pumped out of the tank roughly every 5 to 7 years.

Findings

We found shallow depth soils on all of the land.

The map shows the purple hatched area to be suitable for Pretreated Subsurface Aerobic Drip. (Please see The systems section).

- The approximately 8,625 square feet, could be suitable for an Initial for up to One 5-bedroom home (600 gallons at a Long-Term Acceptance Rate of 0.13 gallons day⁻¹ feet⁻² with 70% additional space for vegetation and topographical variations and rock).

This area has the possibility of expansion through delineation as explained below.

The System

Subsurface Pretreated Aerobic Drip System

Soil Requirements: In the purple hatched areas, a Subsurface Aerobic Drip System may be a viable option Soils must be at least 13 inches deep before encountering unsuitable conditions.

1. System Components:

- a. Includes drip lines, pumps, a septic tank, a sophisticated dosing control panel, and pretreatment filters. There are septic and pretreatment tanks in one.
- b. Standalone filters are housed in a box measuring 4 feet deep, 4 feet wide, and 8 feet long, filled with material that provides microbes a surface area to biodegrade effluent in the presence of oxygen.
- c. There is a new system, Fuji clean, that has put together the septic tank and the pretreatment tanks for around \$13,000 for 500 gallons (their smallest unit).

2. Additional Requirements:

- Only scrub and trees with a circumference of 4 inches or less need to be cleared.
- **Hydraulic conductivity testing** is required for the hydraulic report.
- An **operation and maintenance plan** is required.

Cost Estimates (Pretreated Aerobic Drip Systems):

- **4-bedroom home (480 gallons):** \$50,000–\$70,000
- **5-bedroom home (600 gallons):** \$60,000–\$80,000
- **Combined septic tank and pretreatment tanks may reduce the cost.**
- Please notify us before clearing begins so we can assess soil moisture levels and prevent compaction or rutting.

Other Requirements:

- A pump may be needed depending on house placement.

Operation and Maintenance Plan:

- A management plan is required for the ongoing operation and maintenance of the system.

The Map and the Soils

The soil restrictions on this lot include:

- Expansive clay (e)
- Soil Wetness (w)
- Crushable rock (cr)
- Platey structure (pL)

Expansive clay swells and shrinks as the soil wets and dries. The swelling of the clay restricts water movement through the soil.

Soil wetness is a term used to describe soils that are saturated regularly or on a seasonal basis. Over time, the water reveals the soil's grayish colors, which can be evaluated even in wet or dry weather.

Platey structure in soil, reduces the movement of water through that area

The Next Steps

1) Delineation

Our work on this property consisted of an Intensive evaluation. The Intensive evaluation surveys soils in the area, then we estimate the line or the extent of soils for the same system types. These areas would need to be delineated (shallow soils from deeper soils) before we know the actual square footage. During delineation we may gain or lose area as we refine the line.

1) Creating a site plan or subdivision plan. This can be done with an architect, a surveyor, or we can do it. We will need to know the house's dimensions you are considering.

2) Application must be made for an Improvement Permit.

a) **County Permit:** If you go this route, I strongly suggest that we visit the site with the County Health Department. This is to avoid any confusion or if needed to provide drain field changes while the County is on-site, reducing the run-around, which can eat up time and energy. (This usually cost around \$700-\$1000/system). The county will have full liability for the system.

b) **Licensed Soil Scientist Permit (A2)** As a Licensed Soil Scientist, I can fill out the documentation needed for obtaining the Improvement Permits which will be used for the design of the system. The County has to review it for completeness within 5 business days. When it is complete, then it will be deemed permitted by the County. Our firm accepts the liability for this work.

c) **Engineering Option Permit (described below)**

3) Perform whatever testing is required.

a) Hydraulic Conductivity Testing is required for the Special Site Evaluation's Hydraulic Report for the Subsurface Pretreated Aerobic Drip system.

b) These tests determine the rate of water movement through the soil. The testing is weather dependent.

(1) If a storm system is moving in, the water moves slower down through the soil, providing us with lower conductivity, which is not our desired outcome.

(2) The tests cannot be completed when the temperature is below 45. Again, the cold weather provides us with lower conductivity.

(3) If the soil is too wet, we cannot perform the testing until it has reached a moisture content of 45% or less.

c) These tests cost between \$3500 and \$4000 per system.

ANOTHER OPTION Engineering Operations Permit (EOP).

This option would save time, because it would have to be engineered. Also, it leaves the County out of the basic permitting of the lot. The engineer and our firm and the installer would accept the liability and responsibility for the system.

All the same steps would be involved, and several other steps added. For instance, we would:

- 1) If needed, several backhoe pits will be opened to look at details of the soil.
- 2) Our firm completes the Hydraulic Conductivity testing.
- 3) Hand our results to the Engineer
- 4) The engineering firm does the layout.
- 5) The engineering firm does the design of the system.
- 6) The engineering firm submits the EOP application.
- 7) The Improvement Permit, and the Authorization to Construct Permit are issued together.
- 8) Pre- installation meeting is set up and attended by the engineer, builder, and our firm.
- 9) Building of the house can begin.
- 10) At some point in the building process, the installation of the system can begin.
- 11) Our firm checks the condition of the soil for installation to make sure it is suitable.
- 12) Installation is completed.
our firm visits the site to make sure that at completion of installation the repair area is not disturbed and assesses whether more work needs to be completed on the field to make sure it was properly installed.
- 13) The Operations permit is applied for. Once the system is tested and all is ok, the Operations permit is issued.
- 14) The electricity can be turned on in the new house.

If so desired, within 30-60 days after an improvement permit is issued by the county, submit a survey of the lot, and the drain fields to acquire a “Permanent” Improvement Permit. This effectively stops time in the current rules. Unless you build within 5 years this is a wise investment.

Our evaluation was conducted in compliance with the following regulations:

- “Laws and Rules for Sewage Treatment and Disposal Systems” (15A NCAC 18E).
- 15A NCAC 2T.0600 regulations for “Waste Not Discharged to Surface Waters”.

We guarantee that our work was performed to professional standards.

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Chandler Soil Corporation
Intensive Soil Evaluation for Blaine Beadle
1 acre at West Antioch Drive,
Parcel ID:193203149070,
Granville County
3/27/2026

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Thank you for your business. Contact us if you have any questions or if we can be of further assistance.

Sincerely,

Dolores M Chandler

Dolores Chandler
North Carolina Licensed Soil Scientist #1187

Enclosed: Map



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