August 11, 2020

Four Seasons Contractors, LLC
P.O. Box 429
Nashville, NC 27856
(252) 462-0002

Attention: Mr. Steve Newcombe

Reference: **Report for Preliminary Soil/Site Assessment for Septic System Suitability**
Red Oak Road West Subdivision
Red Oak, Nash County, North Carolina

Dear Mr. Newcombe:

We have performed a preliminary soil and site assessment on the above referenced property. Our assessment was performed in order to determine areas of soil that have potential for subsurface wastewater treatment and disposal with individual on-site wastewater (septic) systems as part of the preliminary planning process for a proposed single-family residential subdivision.

Background Information

The site is approximately 92.54-acres in size and is located northwest of the intersection of Red Oak Road (SR 1003) and Hunter Hill Road (SR 1604) and is further identified by Nash County PIN: 3812-0084-5993U.

Scope of Services

In order to perform the detailed site and soil assessment, the site was traversed and the landscape was observed (slope, drainage patterns, past use, etc.) as well as soil conditions (depth, texture, structure, seasonal wetness, restrictive horizons, etc.) through the use of hand auger borings. The site was evaluated during dry soil conditions. From these observations, a detailed evaluation of the site was developed, relative to subsurface treatment and disposal of wastewater. The soil/site evaluation criteria used is that contained in 15 A NCAC 18A .1900 "Laws and Rules for Sewage Treatment and Disposal Systems" and Nash County criteria for soil reports effective as of November 20, 2006.

Numerous hand auger borings were made throughout the site, were flagged in the field, located with a GPS receiver and are shown on the attached Soil Assessment Exhibit (**Figure 1**). The "Red Oak Road West Subdivision Soil Data" table on the attached **Figure 1** lists the auger boring location number, the subsurface horizon texture, the depth to the seasonal high water table (SHWT), and the recommended LTAR for each hand auger boring location.

Findings

The areas with red soil borings that are numbered on the attached **Figure 1** represent areas that are potentially suitable and contain soils with predominately sandy clay loam, and sandy clay to clay textured subsurface horizons. These areas have a minimum of 24 inches to SHWT indicators and a minimum of 36 inches to unsuitable soil structure and are similar to the Norfolk and Faceville soil series. Please see attached typical soil profile descriptions for more information.

It should be noted that sandy clay loam soils belong to Soil Group III classification and are provisionally suitable with regard to soil texture, and the recommended long-term acceptance rate is 0.4 to 0.5 gallons/day/square feet (gpd/ft^2). Sandy clay and clay textured soils belong to Soil Group IV classification and are provisionally suitable with regard to soil texture, and the recommended long-term acceptance rate is 0.3 to 0.4 gallons/day/square feet (gpd/ft^2).

Areas located on the site with **"UN"** on the attached **Figure 1** contain soils with unsuitable landscape position / complex topography or were less than 24 inches to seasonal high water table indicators, or less than 36 inches to unsuitable clay mineralogy

Regulatory Considerations

Soils greater than 24 inches deep to unsuitable characteristics may be considered for use with various types of septic systems. These systems include the gravelless trenches such as the chamber and polystyrene aggregate trench systems. Soils that are at least 24 inches deep located on gently sloping landforms may be permitted with shallow conventional trenches per 15A NCAC 18A Laws and Rules for Sewage Treatment, and Disposal Systems Rule.1956 (1). Shallow trenches do require at least 6 inches of soil cover to be placed over the trenches. Conventional septic systems with trench bottoms placed 18 inches below the surface can be sited on soils with usable soil depths at least 30 inches below the surface.

Once potentially useable areas are located through vertical borings, the next consideration is the horizontal extent of those areas. The size and configuration of the useable soil area dictate the utility of that area. The size of a subsurface disposal field is determined by: 1) the design flow from the source, and 2) the long term acceptance rate (LTAR) of the soil (based on the hydraulic conductivity of the soil, a function of the soil's texture, mineralogy, structure, porosity, etc.). The configuration must be such that an efficient layout of disposal lines (on contour) is possible. An additional consideration is the required setbacks for the system from various elements. Some relevant setbacks to subsurface septic systems are as follows.

Any building foundation	5 feet
Any property line	10 feet
Basement	15 feet
Surface waters	50 feet
Any private or public water supply source	100 feet
Top of slope of embankments or cuts of two feet or more vertical height	15 feet

A list of additional setbacks can be found in Rule.1950.

The site plan for each proposed lot must ensure that adequate soil area for system and repair is unaffected by site elements (house placement, driveway, wells, patios, decks, etc.) on that, or adjacent lots. The area ultimately designated by the health department on the site plan for the septic system and repair must remain undisturbed (no mechanical clearing, excavation, heavy traffic or other significant site disturbing activities) until authorized by the health department. A lot with initially adequate useable soil area may be rendered unusable as a result of improper site planning and/or disturbance. A field layout of the proposed septic systems may be required as part of the individual lot development process.

An individual septic system permit will be required for each lot prior to obtaining a building permit. This will involve a detailed evaluation by the local health department to determine, among other things, system size and layout, well, drive and house location. Only after developing this information can a final determination be made concerning specifics of system design and site utilization.

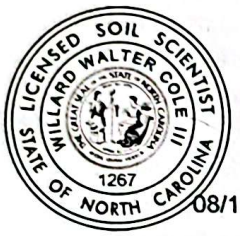
Limitations

This report is limited to the above referenced project and client and no other uses are authorized. This report identifies the general location of potentially usable soils for on-site wastewater treatment and disposal systems, and does not constitute or imply approval for permit, as required by the appropriate regulatory agency. Soil evaluations are done based on interpretations of the rules governing wastewater treatment and disposal systems and are not guarantees for site approval. This evaluation consists of a soil scientist evaluation and a more detailed soil evaluation will be necessary to determine total usable areas. The rules governing wastewater treatment (interpreted and governed by local and state agencies) are evolving constantly, and in many cases, affected by the opinions of individuals employed by these governing agencies. Because of this, I cannot guarantee that any areas will be permitted by the governing agencies. I recommend that anyone making financial commitments on a tract be fully aware of individual permit requirements on that site prior to final action.

Closing

If you have any questions or need additional information, please call me at (919) 801-3798.

Sincerely,



08/11/2020

Walter Cole
NC Licensed Soil Scientist #1267
Registered Environmental Health Specialist #1510

Encl. **Figure 1**: Soil Assessment Exhibit (1:100 & 1:100 Scale)
Figure 2: Boundary Survey / Land Division Plat (From Civiltek East)

TYPICAL SOIL PROFILE DESCRIPTION - NORFOLK

HORIZON	DEPTH	COLOR (MUNSELL)	TEXTURE	STRUCTURE
Ap	0 -6	10 YR 4/3	loamy sand	granular
E	6-16	2.5Y 6/4	loamy sand	granular
Bt1	6-24	10 YR 5/6	sandy clay loam	weak medium subangular blocky
Bt2	24-36	10 YR 5/8 5 YR 5/8	sandy clay loam	mod. to weak subangular blocky
Bt3	36+	10 YR 5/6 2.5 YR 4/6 mottles	sandy clay loam	weak, medium subangular blocky

Notes:

Soil similar to the Norfolk Soil Series.
LTAR 0.4 to 0.5 gpd/ft^2 for conventional septic systems.
Soil described from auger boring.
Slopes ranged from 5% to 10%.

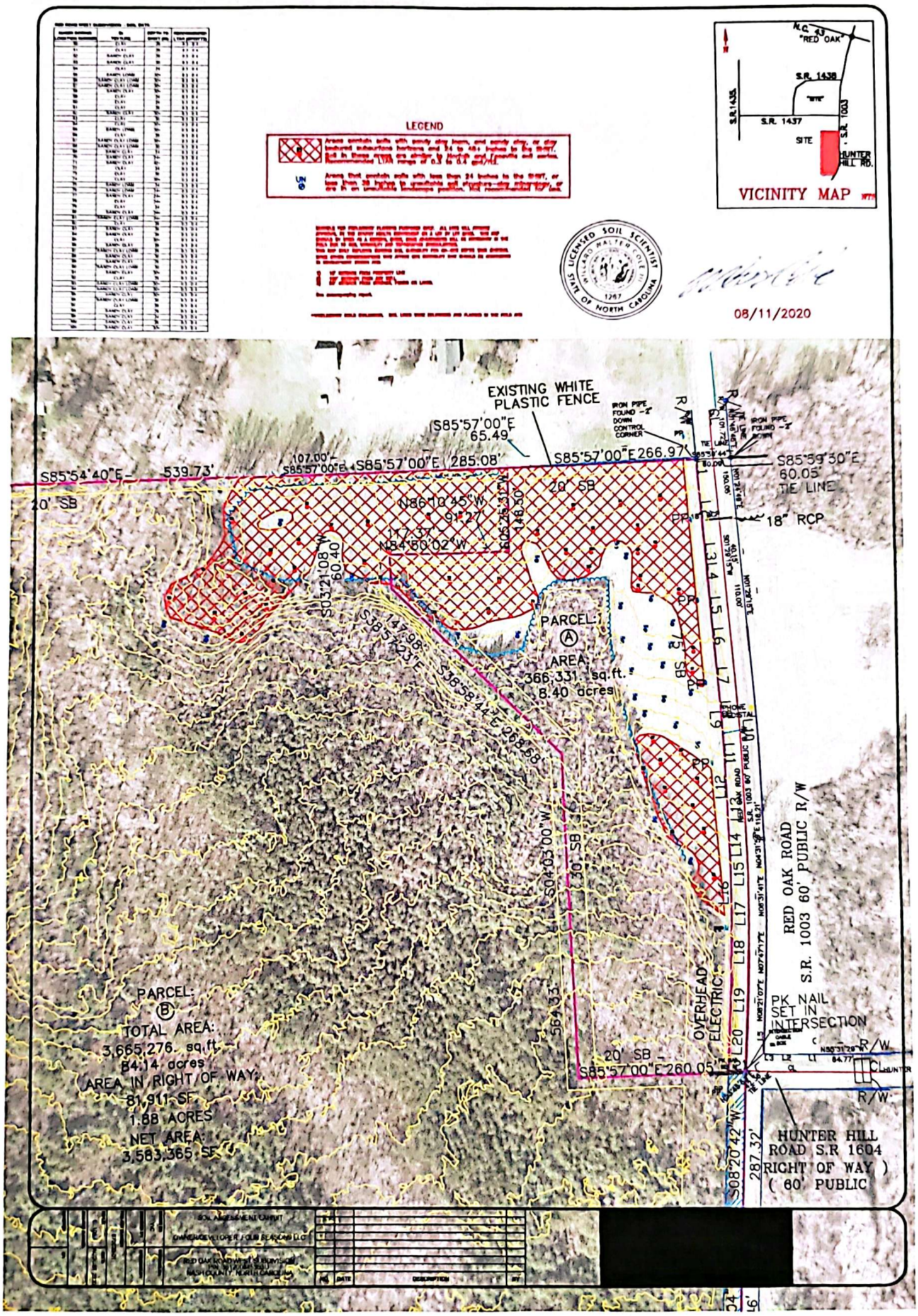
TYPICAL SOIL PROFILE DESCRIPTION - FACEVILLE

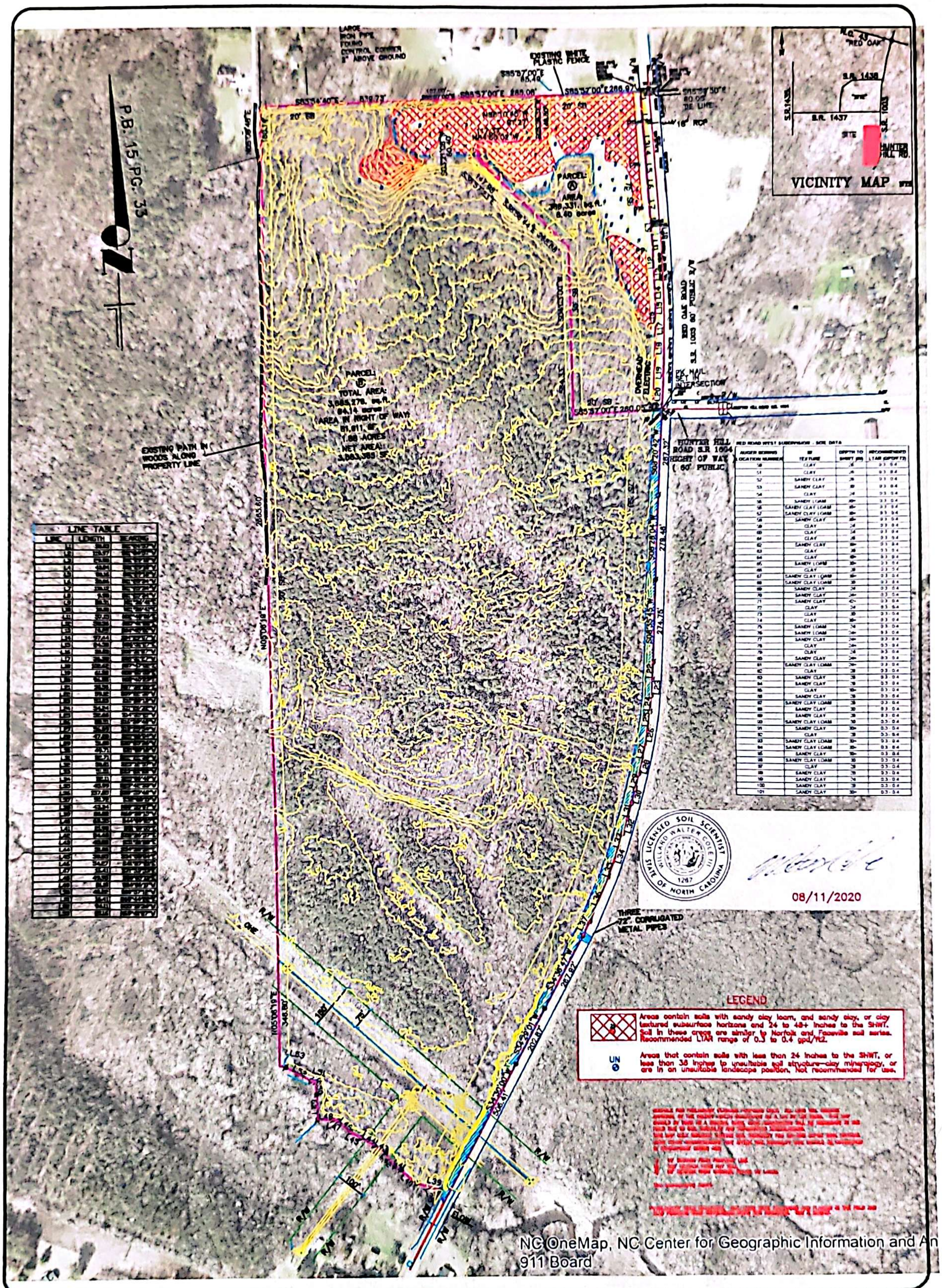
HORIZON	DEPTH	COLOR(MUNSELL)	TEXTURE	STRUCTURE
Ap	0 -8	10 YR 5/4	sandy loam	granular
Bt1	8-20	5 YR 5/6	sandy clay loam	medium subangular blocky
Bt2	20-36+	2.5 YR 4/8 10YR 6/6	clay	weak subangular blocky

Notes:

1) Soil similar to the Faceville Soil Series.
2) LTAR 0.3 to 0.4 gpd/ft^2 for conventional septic systems.
3) Soil described from auger boring.
4) Slopes ranged from 5% to 20%.

Figures


LEGEND
VICINITY MAP
N.C. 43 "RED OAK"
S.R. 1438
S.R. 1435
S.R. 1437
S.R. 1003
SITE
HUNTER HILL RD.
THIS LICENSED SOIL SCIENTIST MILLARD WALTER COLE III 1267 STATE OF NORTH CAROLINA
08/11/2020
EXISTING WHITE PLASTIC FENCE
IRON PIPE FOUND -2" DOWN CONTROL CORNER
S85°57'00"E 65.49'
S85°57'00"E 285.08'
S85°57'00"E 266.97'
S85°54'40"E 539.73'
S85°39'30"E 60.05' TIE LINE
18" RCP
20' SB
107.00'
N86°10'45"W 91.27'
N84°60'02"W 116.50'
S03°21'08"W 60.40'
S38°58'44"E 268.68'
PARCEL: A
AREA: 366,331 sq.ft. 8.40 acres
RED OAK ROAD
S.R. 1003 60' PUBLIC R/W
PK NAIL SET IN INTERSECTION
HUNTER HILL ROAD S.R 1604 RIGHT OF WAY) (60' PUBLIC
S08°20'42"W 287.32'
S04°03'00"W 564.33'
OVERHEAD ELECTRIC
20' SB S85°57'00"E 260.05'
PARCEL: B
TOTAL AREA: 3,665,276 sq.ft. 84.14 acres
AREA IN RIGHT OF WAY: 81,911 SF 1.88 ACRES
NET AREA: 3,583,365 SF



SOIL ASSESSMENT EXHIBIT

OWNER/DEVELOPER FOUR SEASONS LLC

RED OAK ROAD WEST SUBDIVISION
PIN 3812008[illegible]
NASH COUNTY, NORTH CAROLINA

1 : 200

AUGUST 2020

NO.	DATE	DESCRIPTION	BY

[redacted]

Closing

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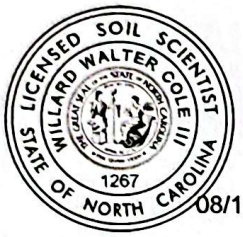
Sincerely,



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