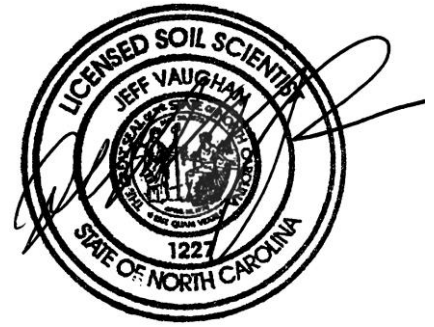




Agri-Waste Technology, Inc.

501 N Salem Street, Suite 203, Apex, NC 27502
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...

July 26, 2023

MEMORANDUM

TO: Jennifer and Evan Emerson, Client

FROM: Jeff Vaughan and Brent Purdum

SUBJECT: Site Evaluation for 2130 Timberlake Dr. Raleigh, NC 27604

A site evaluation was conducted for the properties located at 2130 Timberlake Dr. (about 0.62 acres total) in Raleigh, NC (Wake County). The property contains the Wedowee complex and Warsham sandy loam soil types (attached map), which are typically poorly suited for subsurface septic systems due to wetness. An in-field investigation was also conducted on the property on July 24, 2023. Most of the property is unsuitable for septic systems due to topography and landscape position. There is a pond buffer on the rear portion of the property. The front half of the property has steep slopes and complex topography. Five holes were bored in the soil on the property and the soil examined (attached map). The soil examination indicated that the soil was unsuitable for conventional and low pressure pipe septic systems due to the presence of wetness indications and/or massive clay within 12 inches of the soil surface and steep slopes with only soil depths to 20 inches from the soil surface. Therefore, the site is unsuitable for septic systems.

Please contact us with any questions, concerns, or comments.



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Preliminary Soil Evaluation

Jennifer Emerson
Wake Co., NC
PIN: 1724291396



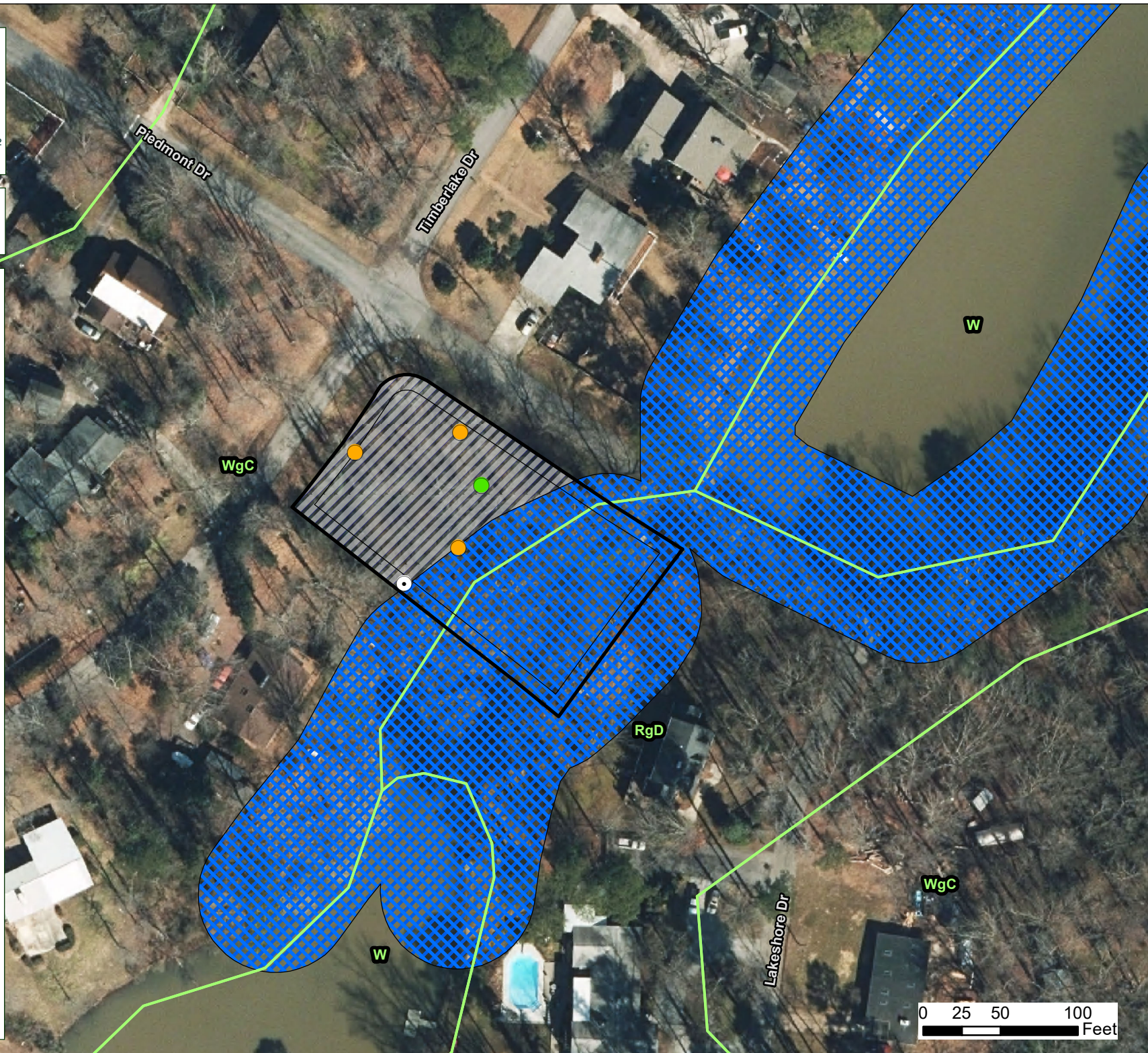
Soil Types:
RgD: Rawlings-Rion complex
WgC: Wedowee-Urban
land complex

- Parcel
- Parcel Buffer 10 ft.
- Soil Type
- Surface Water Buffer 50 ft.
- Bad Topo

Soil Boring Depth (in.)

- <12"
- 18-23"
- 30-35"

Drawn By: William Shoeyink
Reviewed By: Brent Purdum
Date: 7/26/2023





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Preliminary Soil Evaluation

Jennifer Emerson
Wake Co., NC
PIN: 1724291396



Soil Types:
RgD: Rawlings-Rion complex
WgC: Wedowee-Urban
land complex

- Parcel
- Parcel Buffer 10 ft.
- 2 ft. Contour
- Surface Water Buffer 50 ft.
- Bad Topo
- Soil Boring Depth (in.)**
 - <12"
 - 18-23"
 - 30-35"

Drawn By: William Shoeyink
Reviewed By: Brent Purdum
Date: 7/26/2023

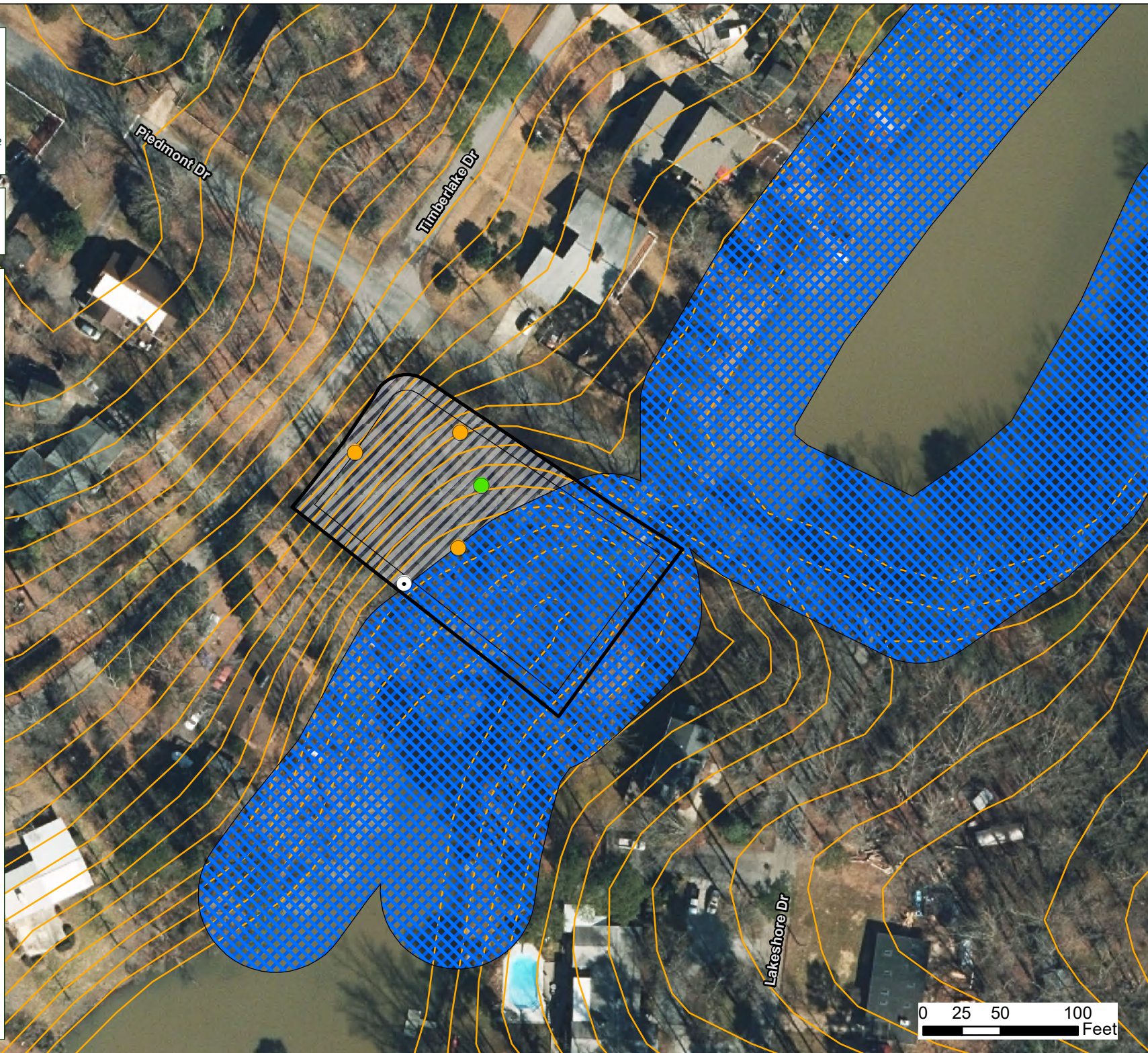


TABLE 6.—*Engineering*

Soil series and map symbols	Suitability as source of—		Degree of limitation for—		
	Topsoil	Road fill	Homebuilding sites	Septic tank absorption fields	Recreation
					Campsites
Wagram—Continued (WaC)-----	Fair-----	Good-----	Slight-----	Slight-----	Moderate: slopes of 6 to 10 percent.
Wahee (Wh)-----	Poor-----	Poor-----	Severe: flooding; high water table.	Severe: flooding; high water table.	Severe: flooding; high water table.
Wako: (WkC)-----	Poor-----	Poor-----	Severe: shallow to rock.	Severe: shallow to rock.	Slight to moderate: slopes of 2 to 10 percent.
(WkE)-----	Poor-----	Poor-----	Severe: shallow to rock.	Severe: shallow to rock.	Severe: slopes greater than 10 percent.
Wedowee: (WmB, WmB2)-----	Fair-----	Fair-----	Slight-----	Moderate: medium percolation rate.	Slight-----
(WmC, WmC2)-----	Fair-----	Fair-----	Slight-----	Moderate: medium percolation rate.	Moderate: slopes of 6 to 10 percent.
(WmD2)-----	Fair-----	Fair-----	Moderate: slopes of 10 to 15 percent.	Moderate: slopes of 10 to 15 percent.	Severe: slopes greater than 10 percent.
(WmE)-----	Fair-----	Fair-----	Moderate: slopes of 15 to 25 percent.	Severe: slopes greater than 15 percent.	Severe: slopes greater than 15 percent.
Wehadkee (Wn, Wo)----- (For interpretations of the Bibb soil in Wo, refer to the Bibb series.)	Poor-----	Poor-----	Severe: flooding; high water table.	Severe: flooding; high water table.	Severe: flooding; high water table.
White Store: (WsB, WsB2, WtB)-----	Fair-----	Poor-----	Severe: shrink-swell potential.	Severe: slow percolation rate; shrink-swell potential.	Moderate: fair trafficability.
(WsC, WsC2)-----	Fair-----	Poor-----	Severe: shrink-swell potential.	Severe: slow percolation rate; shrink-swell potential.	Moderate: fair trafficability; slopes of 6 to 10 percent.
(WsE)-----	Fair-----	Poor-----	Severe: shrink-swell potential.	Severe: slow percolation rate; shrink-swell potential.	Severe: slopes greater than 10 percent.
(WvD3)-----	Poor-----	Poor-----	Severe: shrink-swell potential.	Severe: slow percolation rate; shrink-swell potential.	Severe: clayey surface layer.
Wilkes: (WwC)-----	Fair-----	Poor-----	Severe: depth to rock 1 to 10 feet; shrink-swell potential.	Severe: depth to rock 1 to 10 feet; shrink-swell potential.	Moderate: fair trafficability.
(WwE)-----	Fair-----	Poor-----	Severe: depth to rock 1 to 10 feet; shrink-swell potential.	Severe: depth to rock 1 to 10 feet; shrink-swell potential.	Severe: slopes greater than 10 percent.

TABLE 6.—*Engineering*

Soil series and map symbols	Suitability as source of—		Degree of limitation for—		
	Topsoil	Road fill	Homebuilding sites	Septic tank absorption fields	Recreation
					Campsites
Wilkes—Continued (WwF)-----	Fair-----	Poor-----	Severe: depth to rock 1 to 10 feet; shrink-swell potential.	Severe: depth to rock 1 to 10 feet; shrink-swell potential.	Severe: slopes greater than 20 percent.
(WxE)-----	Poor-----	Poor-----	Severe: stoniness; depth to rock 1 to 10 feet.	Severe: depth to rock 1 to 10 feet.	Severe: slopes greater than 15 percent.
Worsham (Wy)-----	Poor-----	Poor-----	Severe: flooding; high water table.	Severe: flooding; high water table.	Severe: flooding; high water table.

Reaction, or the degree of acidity or alkalinity, is given in terms of pH values.

Shrink-swell potential indicates the expected change in volume when the moisture content changes. It is estimated primarily on the basis of the amount and type of clay in a soil. In general, soils classified as CH and A-7 have high shrink-swell potential. Sandy soils have low shrink-swell potential.

Engineering interpretations

Table 6 gives interpretations of the properties that affect suitability of the soils for engineering. The ratings as a source of topsoil are based on thickness, texture, fertility, and available water capacity. For example, droughty sands are given a rating of poor, but loams are given a rating of fair to good, depending on the thickness of the soil material.

Suitability as a source of road fill is rated according to texture, shrinkage, plasticity, water content, and the degree of compactive effort required to obtain the desired density. The water content of the soil at the time of use may affect suitability for road fill. A clayey soil, for example, is difficult to handle when it is wet.

The degree of limitation for homebuilding sites is based on the hazard of flooding, the height of the water table, slope, shrink-swell potential, and depth to hard rock.

The degree of limitation for sewage disposal in septic tank absorption fields is rated according to permeability of the soil, its slope and filtering capability, the level of the water table, and the hazard of flooding. Much of Wake County is rural; therefore, septic tank absorption fields are required for the disposal of sewage. Generally, absorption fields installed in a poorly drained soil fail because the soil is not permeable enough to absorb the effluent. In wet weather and for long periods afterward, the soils are saturated and the water table is near the surface. At such times, there is no space for outflow

from the septic tank and the movement of sewage effluent is very slow. Onsite investigation should be made before a septic tank absorption field is installed in any soil.

The degree of limitation for campsites is based on the hazards of flooding and wetness, and on trafficability and slope. Trafficability, as used here, refers to the ability of a soil to support vehicles or other traffic during normal weather. Campsites are considered as areas suitable for tents and activities that accompany outdoor living for periods of at least 1 week.

The degree of limitation for picnic areas is based on the hazards of flooding, wetness, and slope. Picnic areas are places suitable for pleasure outings, where picnic tables and fireplaces are usually furnished, and where meals can be prepared and eaten outdoors. Apart from these facilities, only a small amount of site preparation is needed.

The degree of limitation as areas for intensive play is based on the slope, depth to hard rock, wetness, soil texture, and the amount of coarse fragments in and on the soils. Areas for intensive play are developed for use as playgrounds and for playing organized games, as baseball, tennis, and badminton.

The suitability of the soils for highways is affected by such soil characteristics, as plasticity, high water table, water content, flooding, depth to hard rock, susceptibility to frost, and stability of slopes. Durham soils, for example, have no soil features that adversely affect their use as locations for highways. Their water table is low enough that it will not interfere with the construction of roads, the soil material has good bearing capacity and is not difficult to compact, and permeability is moderate. White Store soils, on the other hand, were rated as having features that adversely affect the location of highways. These soils are highly plastic, are slowly permeable, and have low bearing capacity (fig. 15).