



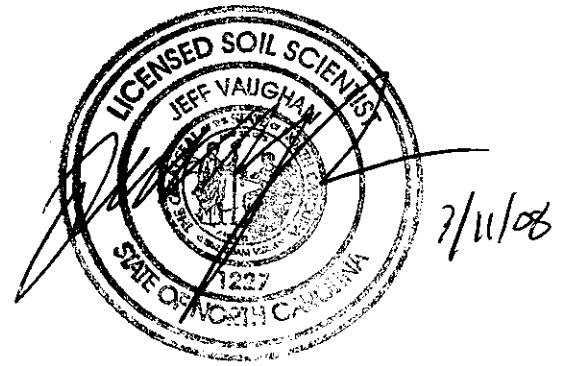
Agri-Waste Technology, Inc.

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Soil Suitability for Domestic Sewage Treatment and Disposal Systems

Polk's Village
Intersection of US 15-501 and Polk's
Landing Road, Chapel Hill, NC 27516
Chatham County

Prepared for: Mr. Brantley Powell, Owner

XCOPY: Mr. Trenton Stewart, Arcadia Consulting Engineers

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Sloan Griffin, S.S.I.T.
Soils Technician

Report Date: March 11, 2008



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DATE: March 11, 2008

Soil suitability for domestic sewage treatment and disposal systems was evaluated on January 9, 15, and 24, 2008, for property located at the intersection of US 15-501 and Polk's Landing Road in Chapel Hill, NC. Jeff Vaughan, Chris McGee, and Enrique Cachafeiro of Agri-Waste Technology, Inc. (AWT) conducted the soil evaluation. The soil was further evaluated by Jeff Vaughan and Sloan Griffin of AWT along with Mr. Thomas Boyce and Ms. Terri Ritter of the Chatham County Health Department (CCHD) on March 6, 2008, by digging soil pits on the property. The detailed soil evaluation of the land area will follow. A property reference map, provided by Mr. Trenton Stewart, is in Attachment 1. A review of the soil and landscape characteristics that dictate soil suitability for domestic sewage treatment and disposal systems can be found in Attachment 2.

The total property area is approximately 40 acres. The property is mostly wooded, but has recently been selectively logged. There are several drainage features with moderate slopes throughout the property (Attachment 3). It is our understanding that a mixed use commercial development is planned for this property with the structures to be located within the southeast corner of the tract (Attachment 3). Therefore, our soils evaluation was concentrated on the western 2/3 of the property.

Soil Suitability for Domestic Sewage Treatment and Disposal Systems

The aerial maps in Attachment 3 detail the approximate property boundaries, drainage features, soil boring locations, soil pit locations and numbers, topography, provisionally suitable soils areas, and soil types. Soil borings were flagged in the field with blue ribbon (24" or more of provisionally suitable soil), red/blue ribbon (18 - 23" of provisionally suitable soil), or red ribbon (12 - 17" of provisionally suitable soil). The provisionally suitable soils line was flagged in the field with pink ribbon. Approximately ninety soil borings and twenty-one soil pits were advanced within the property (Attachment 3). The overwhelming majority of the soil borings exhibited soil characteristics and soil depths (30" or greater) that are provisionally suitable for conventional or shallow conventional trench septic systems. Some parts of the property contained drainage features and/or complex topography and, thus, are unsuitable for septic systems. However, this evaluation was merely a preliminary review to determine what potential this land might have for domestic sewage treatment and disposal systems. Therefore, specific types of septic systems, exact locations of future drainfields and repair areas, plus buffers from property lines (current and potential future lot lines), building foundations, wells, etc. are not fully considered. These things will need to be more fully considered as the plans develop for the potential future of this site. It is likely that additional soil evaluations will be required once layouts are considered and developed for this property so that septic system types and the location of a septic drainfield can be more fully and appropriately considered.

Typical profile descriptions of the provisionally suitable soil for this property are in Attachment 4. Three distinct soil profiles were observed in the soil borings on the property, either a deep red clay subsoil, a shallower red subsoil with indications of saprolite beginning at approximately 24", or a deep reddish-yellow subsoil.

The provisionally suitable soil borings had the following characteristics. No restrictive horizons were found in any provisionally soil borings within 36" of the soil surface. Soil texture was provisionally suitable and was estimated to be sandy loam to a loam near the soil surface (A horizons) and clay loam to clay in the subsoil (B horizons). Soil structure was provisionally suitable and was estimated to be granular near the soil surface (A horizons) and subangular blocky in the subsoil (B horizons). Clay mineralogy was provisionally suitable with very friable to firm moist soil consistence and non-sticky to sticky and non-plastic to plastic wet soil consistence. Indications of saprolite were detected in some soil borings, but were not dominant in most profiles to a depth of 36".

The major soil types on this property are Vance sandy loam (map symbol VaB) and Wedowee sandy loam (map symbols WeB, WeC, WeD, and WeE). The Chatham County Soil Survey indicates that these soil types are moderately to poorly suited for septic systems (Attachment 5).

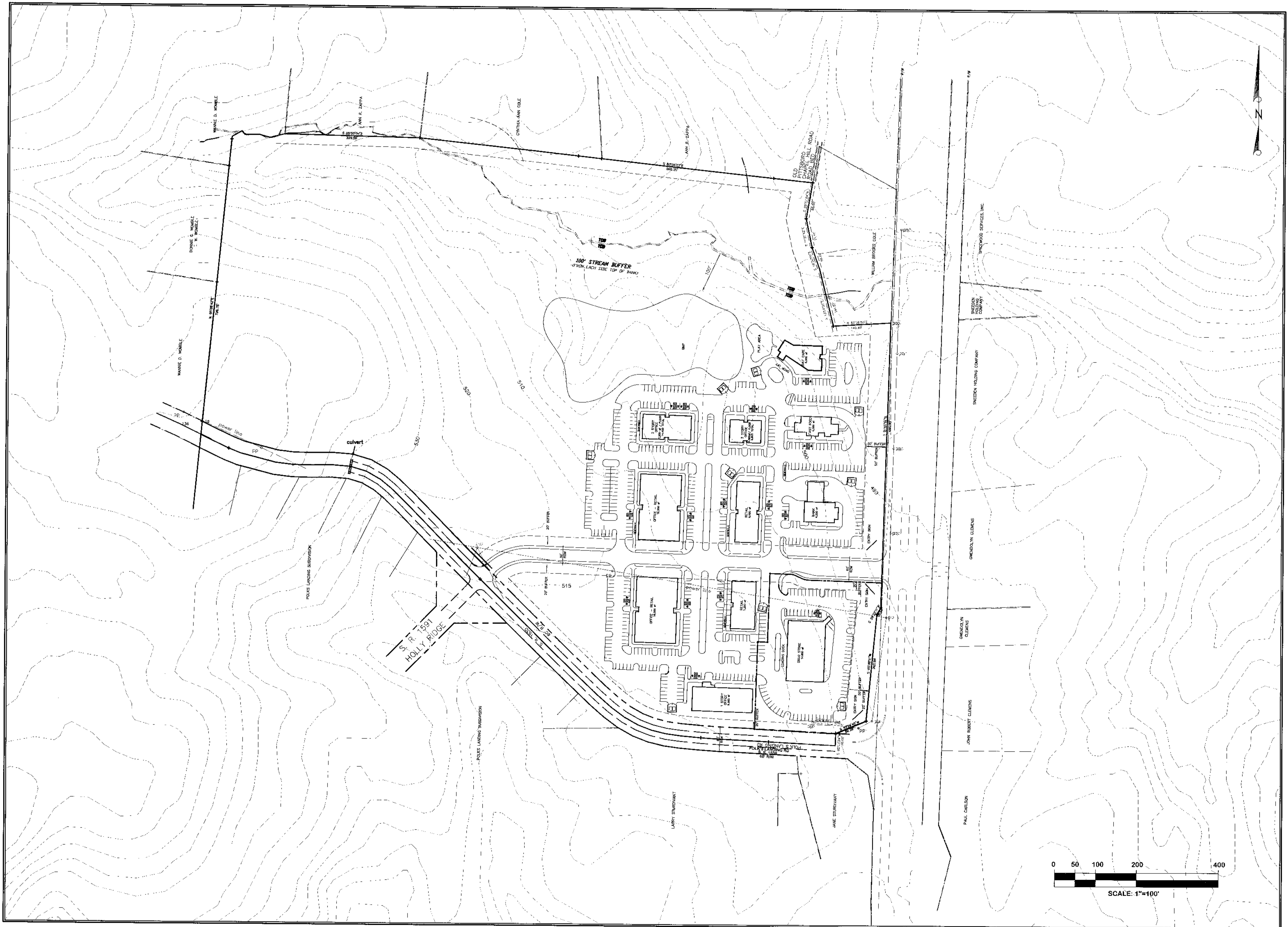
The land area required for a conventional or shallow conventional septic system is calculated based on the size of the facility and the Long-Term Acceptance Rate (LTAR) of the soil. The LTAR range for the provisionally suitable soils on this property is 0.1 – 0.4 GPD/ft² based on the most restrictive soil texture in the subsoil. The LTAR

suggested by AWT for a majority of the provisionally suitable soil is 0.30 GPD/ft², but the final LTAR for specific septic system types and septic drainfield locations will be set by the Chatham County Health Department.

Based on the results of this evaluation, the installation of conventional or shallow conventional septic systems seems most probable on much of this property. We appreciate the opportunity to assist you in this matter. Please contact us with any questions, concerns, or comments.

powell

ATTACHMENT 1: Property Reference Map



302 JEFFERSON STREET
 SUITE 200 RALEIGH, NC
 27605 TEL 919 832-7717
 FAX 919 832-7782

PRELIMINARY PLANS
POLKS VILLAGE

OWNER/DEVELOPER: TOWN OF APEX WAKE COUNTY NORTH CAROLINA

DRAWN BY	CHECKED BY
BGD	TDS
DATE	11-21-07

REVISIONS	

SHEET TITLE

SHEET NUMBER

OF

**ATTACHMENT 2: Review of Rules Pertaining to Domestic
Sewage Treatment and Disposal Systems**

Five categories of soil and landscape characteristics are evaluated to determine soil suitability for domestic sewage treatment and disposal systems and include: topography and landscape position, soil morphological characteristics, soil wetness conditions, soil depth, and restrictive horizons. The soil and landscape characteristics found in a particular location dictate the type(s) of domestic sewage treatment and disposal system that can be used on a parcel of land. The detailed rules can be found in Section .1900 – Sewage Treatment and Disposal Systems, but a general review of the five categories and other relevant rules can be found in the sections below.

.1940 TOPOGRAPHY AND LANDSCAPE POSITION

Uniform slopes less than 15 percent are considered suitable, uniform slopes between 15 and 30 percent are considered provisionally suitable, and slopes greater than 30 percent are considered unsuitable for domestic sewage treatment and disposal systems. Complex slope patterns and slopes dissected by gullies and ravines are considered unsuitable for domestic sewage treatment and disposal systems. Depressions and wetlands are also considered unsuitable for domestic sewage treatment and disposal systems.

.1941 SOIL MORPHOLOGICAL CHARACTERISTICS

Sandy and coarse loamy textured soils (sand, loamy sand, sandy loam, and loam) are considered suitable for domestic sewage treatment and disposal systems. Fine loamy and clayey textured soils (silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay) are considered provisionally suitable for domestic sewage treatment and disposal systems.

Crumb, granular, and single-grained soil structures are considered suitable for domestic sewage treatment and disposal systems. Blocky soil structures are considered provisionally suitable for domestic sewage treatment and disposal systems. Platy, prismatic, and massive soil structures are considered unsuitable for domestic sewage treatment and disposal systems.

Slightly expansive clay mineralogy is considered suitable for domestic sewage treatment and disposal systems. Slightly expansive clay minerals exhibit loose, very friable, friable, or firm moist soil consistence. Expansive clay mineralogy is considered unsuitable for domestic sewage treatment and disposal systems. Expansive clay minerals exhibit very firm or extremely firm moist soil consistence. Organic soils are considered unsuitable for domestic sewage treatment and disposal systems.

.1942 SOIL WETNESS CONDITIONS

Soil wetness conditions are caused by seasonal high water table, perched water table, tidal water, seasonally saturated soils, or lateral water movement. Soil wetness conditions are indicated by soil colors, either in mottles or mass, with a chroma of 2 or less according to the Munsell color charts. Soil wetness conditions detected 48 inches in depth or deeper are considered suitable for domestic sewage treatment and disposal systems. Soil wetness conditions detected between 36 to 48 inches in depth are considered provisionally suitable for domestic sewage treatment and disposal systems. Soil wetness conditions detected 36 inches in depth or shallower are considered unsuitable for domestic sewage treatment and disposal systems.

.1943 SOIL DEPTH

Soil depths to rock, parent material, or saprolite greater than 48 inches are considered suitable for domestic sewage treatment and disposal systems. Soil depths to rock, parent material, or saprolite between 36 and 48 inches are considered provisionally suitable for domestic sewage treatment and disposal systems. Soil depths to rock, parent material, or saprolite less than 36 inches are considered unsuitable for domestic sewage treatment and disposal systems. Saprolite has a massive, rock-controlled structure, and retains the mineral arrangement of its parent rock in at least 50 percent of its volume. Saprolite only forms from metamorphic and igneous rock parent materials and is typically referred to as "rotten rock".

.1944 RESTRICTIVE HORIZONS

Restrictive horizons are capable of perching ground water or sewage effluent and are strongly compacted or cemented. Restrictive horizons resist soil excavation or augering. Soils with restrictive horizons three inches or more in thickness at depths greater than 48 inches are considered suitable for domestic sewage treatment and disposal systems. Soils with restrictive horizons three inches or more in thickness at depths between 36 and 48 inches are considered provisionally suitable for domestic sewage treatment and disposal systems. Soils with restrictive horizons three inches or more in thickness at depths less than 36 inches are considered unsuitable for domestic sewage treatment and disposal systems.

.1950 LOCATION OF SANITARY SEWAGE SYSTEMS

WAKE COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES NOTICE

No area for domestic sewage treatment and disposal system installation (or repair in Wake County) may be disturbed by clearing, excavation, filling, vehicle or equipment traffic, or storage of building materials.

.1947 DETERMINATION OF OVERALL SITE SUITABILITY

.1948 SITE CLASSIFICATION

All of the criteria for the five categories above are to be determined and classified as suitable, provisionally suitable, or suitable according to the respective rules described above. If all criteria are classified the same, that overall site classification will prevail. If there is a variation in the classification of several criteria, the most limiting classification will be used to determine the overall site classification.

A suitable classification generally indicates soil and landscape conditions favorable for the operation of a domestic sewage treatment and disposal system or slight limitations that can be readily overcome by proper design and installation. A provisionally suitable classification indicates soil and/or landscape conditions have moderate limitations for the operation of a domestic sewage treatment and disposal system, but modifications and careful planning, design, and installation can result in satisfactory system function. An unsuitable classification indicates severe soil and/or landscape limitations for the operation of a domestic sewage treatment and disposal system.

SUMMARY

Suitable/provisionally suitable landscapes and soils to a depth of 36 inches can, in general, be used for conventional gravity driven septic systems. Suitable/provisionally suitable landscapes

and soils to a depth of 24 –36 inches can, in general, be used for alternative septic systems such as shallow conventional and low pressure pipe systems, among others. All alternative systems for provisionally suitable landscapes and soils must be proposed to and approved by the Chatham County Health Department. Any landscapes or soils classified as unsuitable may be reclassified as provisionally suitable by the Chatham County Health Department after a site investigation by department personnel.

**ATTACHMENT 3: Property Maps Detailing Soil Suitability
for Septic Systems and Soil Types**

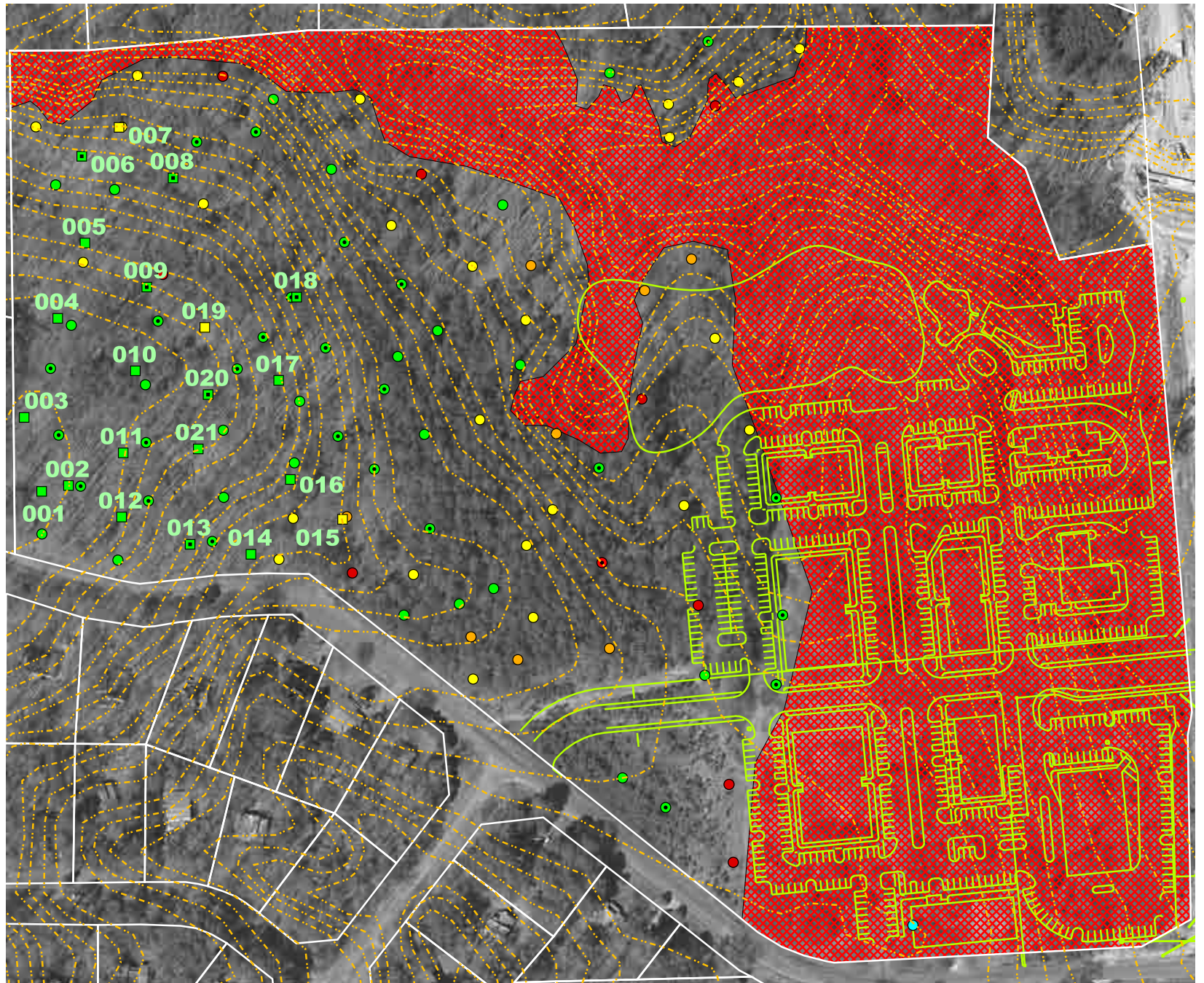
**Polk's Village
Chatham Co
CCHD & AWT
Soils Pits**



Legend

- 2ft Contours
- Depth of Prov Suitable Soil**
- < 12"
- 12" - 17"
- 18" - 23"
- 24" - 29"
- 30" - 35"
- > 36"
- Depth of Soil Pits**
- < 12"
- 12" - 17"
- 18" - 23"
- 24" - 29"
- 30" - 35"
- > 36"
- Parcels
- Unsuitable Area**
- Unsuitable Area
- Proposed Construction

Drawn By:
Enrique Cachafeiro
Reviewed By:
Jeff Vaughan
Date:
03/10/2008



300 0 300 600 Feet



Scale: 1:2400

**Polk's Village
Chatham Co
Soils Map**

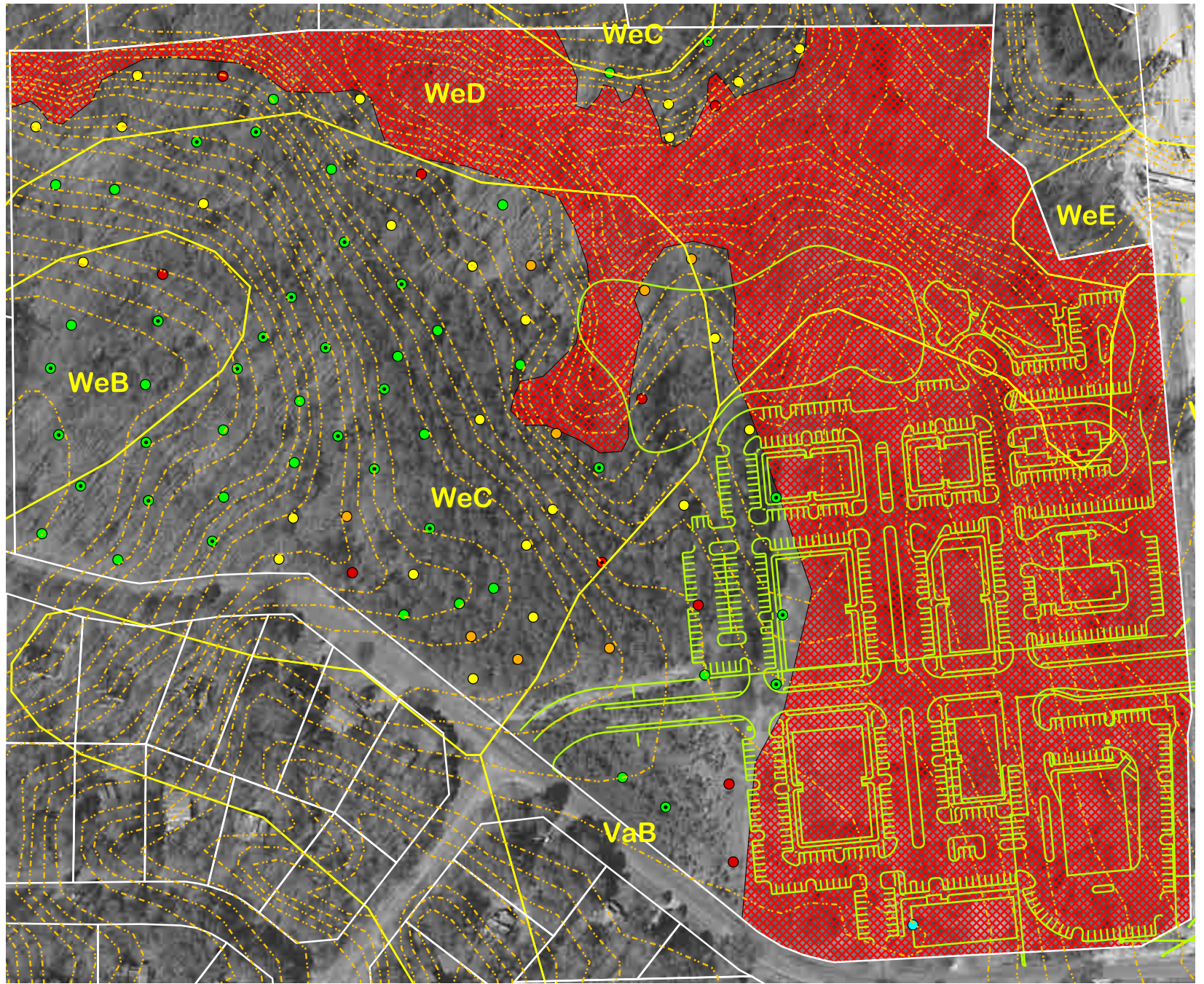


Soil Types:
VaB- Vance
sandy loam
WeB,C,D,E-
Wedowee
sandy loam

Legend

- 2ft Contours
- Depth of Prov Suitable Soil**
- < 12"
- 12" - 17"
- 18" - 23"
- 24" - 29"
- 30" - 35"
- > 36"
- Parcels
- Proposed Construction
- Unsuitable Area**
-
- Soil Types

Drawn By:
Enrique Cachafeiro
Reviewed By:
Jeff Vaughan
Date:
03/10/2008



300 0 300 600 Feet



Scale: 1:2400

**ATTACHMENT 4: Typical Profile Descriptions of
Provisionally Suitable Soil**

.1940 Landscape Pos/Slope %	- Suitable, <15%	Profile LTAR	- 0.4 – 0.1 GPD/ft ²
.1942 Wetness Condition	- Suitable	System Type	- Provisionally suitable for conventional systems due to texture, structure, and depth.
.1943/.1956 Saprolite	- Suitable		
.1944 Restrictive Horizon	- Suitable		
.1948 Profile Classification	- Provisionally suitable		

Comments: BC horizon starts between 28 and 34".

EVALUATED BY: Jeff Vaughan, Chris McGee, Sloan Griffin, and Enrique Cachafeiro

COMMENTS: _____

LEGEND OF ABBREVIATIONS FOR SITE EVALUATION FORM

<u>LANDSCAPE POSITION</u>	<u>TEXTURE GROUP</u>	<u>TEXTURE CLASS</u>	<u>.1955 LTAR</u> (gal/day/sqft)
CC - Concave Slope CV - Convex Slope DS - Debris Slump D - Depression DW - Drainage Way FP - Flood Plain FS - Foot Slope H - Head Slope I - Interflueve L - Linear Slope N - Nose Slope P - Pocosin R - Ridge S - Shoulder T - Terrace	I II III IV	S - Sand LS - Loamy Sand SL - Sandy Loam L - Loam SCL - Sandy Clay Loam CL - Clay Loam SiL - Silt Loam Si - Silt SiCL - Silt Clay Loam SC - Sandy Clay C - Clay SiC - Silty Clay O - Organic	1.2 - .08 0.8 - 0.6 0.6 - 0.3 0.4 - 0.1
<u>STRUCTURE</u>	<u>MOIST CONSISTENCE</u>	<u>MOTTLES</u>	<u>WET CONSISTENCE</u>
G - Single Grain M - Massive CR - Crumb GR - Granular SBK - Subgranular Blocky ABK - Angular Blocky PL - Platy PR - Prismatic	Vfr - Very Friable Fr - Friable Fi - Firm Vfi - Very Firm Efi - Extremely Firm	1 - Few 2 - Common 3 - Many F - Faint D - Distinct P - Prominent f - Fine m - Medium c - Coarse	NS - Non Sticky SS - Slightly Sticky S - Sticky VS - Very Sticky NP - Non Plastic SP - Slightly Plastic P - Plastic VP - Very Plastic

.1940 Landscape Pos/Slope %		Profile LTAR	
.1942 Wetness Condition		System Type	
.1943/1956 Saprolite			
.1944 Restrictive Horizon			
.1948 Profile Classification			

Comments:

EVALUATED BY: Jeff Vaughan, Chris McGee, Sloan Griffin, and Enrique Cachafeiro
COMMENTS: _____

LEGEND OF ABBREVIATIONS FOR SITE EVALUATION FORM

<u>LANDSCAPE POSITION</u>	<u>TEXTURE GROUP</u>	<u>TEXTURE CLASS</u>	<u>.1955 LTAR</u> (gal/day/sqft)
CC - Concave Slope CV - Convex Slope DS - Debris Slump D - Depression DW - Drainage Way FP - Flood Plain FS - Foot Slope H - Head Slope I - Interflueve L - Linear Slope N - Nose Slope P - Pocosin R - Ridge S - Shoulder T - Terrace	I II III IV	S - Sand LS - Loamy Sand SL - Sandy Loam L - Loam SCL - Sandy Clay Loam CL - Clay Loam SiL - Silt Loam Si - Silt SiCL - Silt Clay Loam SC - Sandy Clay C - Clay SiC - Silty Clay O - Organic	1.2 - .08 0.8 - 0.6 0.6 - 0.3 0.4 - 0.1
<u>STRUCTURE</u>	<u>MOIST CONSISTENCE</u>	<u>MOTTLES</u>	<u>WET CONSISTENCE</u>
G - Single Grain M - Massive CR - Crumb GR - Granular SBK - Subgranular Blocky ABK - Angular Blocky PL - Platy PR - Prismatic	Vfr - Very Friable Fr - Friable Fi - Firm Vfi - Very Firm Efi - Extremely Firm	1 - Few 2 - Common 3 - Many F - Faint D - Distinct P - Prominent f - Fine m - Medium c - Coarse	NS - Non Sticky SS - Slightly Sticky S - Sticky VS - Very Sticky NP - Non Plastic SP - Slightly Plastic P - Plastic VP - Very Plastic

ATTACHMENT 5: Soil Survey Information

37B=Wedowee sandy loam, 2 to 6 percent slopes

Septic tank absorption fields

Suitability: Moderately suited

Management concerns: Restricted permeability

Management measures and considerations:

The Chatham County Health Department should be contacted for guidance on sanitary facilities

Increasing the size of septic tank absorption field helps to improve performance.

Installing septic system distribution lines only during dry periods helps to reduce smearing and sealing of trench walls

Local roads and streets

Suitability: Moderately suited

Management concerns: Low strength

Management measures and considerations:

Incorporating sand and gravel with the soil material and compacting roadbeds helps to improve soil strength

Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive soil erosion

Recreational Development

Camp areas

Suitability: Well suited

Management concerns: No significant limitations affect camp areas

Management measures and considerations:

Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion

Picnic areas

Suitability: Well suited

Management concerns: No significant limitations affect picnic areas.

Management measures and considerations:

Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion

Playgrounds

Suitability: Moderately suited

Management concerns: steepness of slope

Management measures and considerations:

Cutting, filling, or grading only areas requiring excavation improves soil stability and reduces equipment limitations caused by the slope

Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion

Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to reduce siltation and provides shade

Paths and trails

Suitability: Well suited

Management concerns: No significant limitations affect paths and trails.

Management measures and considerations:

37C=Wedowee sandy loam, 6 to 10 percent slopes

Grading or shaping land prior to construction helps to reduce damage from surface water and prevent soil erosion

Vegetating disturbed areas and providing erosion-control structures, such as sediment fences and catch basins helps to keep eroding soil on site

Septic tank absorption fields

Suitability: Moderately suited

Management concerns: Restricted permeability and steepness of slope

Management measures and considerations:

The Chatham County Health Department should be contacted for guidance on sanitary facilities

Installing distribution lines on the contour helps to improve the performance of septic tank absorption fields

Increasing the size of septic tank absorption field helps to improve performance.

Installing septic system distribution lines only during dry periods helps to reduce smearing and sealing of trench walls

Local roads and streets

Suitability: Moderately suited

Management concerns: Low strength and steepness of slope

Management measures and considerations:

Incorporating sand and gravel with the soil material, compacting roadbeds, and designing roads that conform to the natural slope help to improve soil strength

Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive soil erosion

Recreational Development

Camp areas

Suitability: Moderately suited

Management concerns: Steepness of slope

Management measures and considerations:

Designing roads and trails on the contour and locating camping facilities in the less sloping areas helps to overcome the slope limitation.

Providing a level pad that has a gravel surface helps to improve the suitability of these soils for tents and other facilities.

Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas

Suitability: Moderately suited

Management concerns: Steepness of slope

Management measures and considerations:

Providing a level pad that has a gravel surface for picnic tables and other facilities helps to improve soil performance.

Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds

37D=Wedowee sandy loam, 10 to 15 percent slopes

Urban Development

Dwellings

Suitability: Moderately suited

Management concerns: Steepness of slope.

Management measures and considerations:

Designing structures that conform to the natural slope helps to improve soil performance.

Grading or shaping land prior to construction helps to reduce damage from surface water and prevent soil erosion.

Vegetating disturbed areas and providing erosion-control structures, such as sediment fences and catch basins helps to keep eroding soil on site.

Septic tank absorption fields

Suitability: Moderately suited

Management concerns: Restricted permeability and steepness of slope

Management measures and considerations:

The Chatham County Health Department should be contacted for guidance on sanitary facilities.

Installing distribution lines on the contour helps to improve the performance of septic tank absorption fields.

Increasing the size of septic tank absorption field helps to improve performance.

Installing septic system distribution lines only during dry periods helps to reduce smearing and sealing of trench walls.

Local roads and streets

Suitability: Moderately suited

Management concerns: Low strength and steepness of slope

Management measures and considerations:

Incorporating sand and gravel with the soil material, compacting roadbeds, and designing roads that conform to the natural slope help to improve soil strength.

Using a geotextile fabric filter cloth between the roadbed and the soil surface helps to minimize the loss of stone into the soil.

Constructing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.

Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive soil erosion.

Recreational Development

Camp areas

Suitability: Moderately suited

Management concerns: Steepness of slope

Management measures and considerations:

Designing roads and trails on the contour and locating camping facilities in the less sloping areas helps to overcome the slope limitation.

Providing a level pad that has a gravel surface helps to improve the suitability of these soils for tents and other facilities.

37E=Wedowee sandy loam, 15 to 25 percent slopes

Water should not be directly diverted across fill slopes because the concentrated flow of water can undercut roads and landings.

Constructing roads, fire lanes, and skid trails on the contour helps to overcome slope limitations.

Leaving a buffer zone of trees and shrubs adjacent to streams helps to reduce siltation and improve aquatic habitat by providing shade for the water surface.

Urban Development

Dwellings

Suitability: Poorly suited

Management concerns: Steepness of slope

Management measures and considerations:

Designing structures on the contour that conform to the natural slope or building in the less sloping areas helps to improve soil performance.

Grading or shaping land prior to construction helps to reduce damage from surface water and prevent soil erosion.

Vegetating disturbed areas and providing erosion-control structures, such as sediment fences and catch basins helps to keep eroding soil on site.

Septic tank absorption fields

Suitability: Poorly suited

Management concerns: Steepness of slope

Management measures and considerations:

The Chatham County Health Department should be contacted for guidance on sanitary facilities.

Installing distribution lines on the contour helps to improve the performance of septic tank absorption fields.

Increasing the size of septic tank absorption field helps to improve performance.

Installing septic system distribution lines only during dry periods helps to reduce smearing and sealing of trench walls.

Local roads and streets

Suitability: Poorly suited

Management concerns: Steepness of slope

Management measures and considerations:

Constructing roads on the contour and providing adequate water-control structures, such as culverts, helps to maintain road stability.

Using a geotextile fabric filter cloth between the roadbed and the soil surface helps to minimize the loss of stone into the soil.

Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive soil erosion.

Recreational Development

Camp areas

Suitability: Poorly suited

Management concerns: Steepness of slope

Management measures and considerations:

57B=Vance sandy loam, 2 to 6 percent slopes

Suitability: Well suited

Productivity class: Moderately high for loblolly pine

Management concerns: No significant limitations affect woodland management

Management measures and considerations:

Leaving a buffer zone of trees and shrubs adjacent to streams helps to reduce siltation and improve aquatic habitat by providing shade for the water surface.

Urban Development

Dwellings

Suitability: Moderately suited

Management concerns: Shrink-swell

Management measures and considerations:

Reinforcing foundations and footings or backfilling with coarse-textured material helps to strengthen buildings and prevent damage caused by wetness and shrinking and swelling.

Vegetating disturbed areas and providing erosion-control structures, such as sediment fences and catch basins helps to keep eroding soil on site.

Septic tank absorption fields

Suitability: Poorly suited

Management concerns: Restricted permeability

Management measures and considerations:

The Chatham County Health Department should be contacted for guidance on sanitary facilities.

Increasing the size of septic tank absorption fields and installing distribution lines on the contour helps to improve performance.

Installing septic system distribution lines only during dry periods helps to reduce smearing and sealing of trench walls.

Local roads and streets

Suitability: Poorly suited

Management concerns: Low strength

Management measures and considerations:

Incorporating sand and gravel with the soil material, compacting roadbeds, and designing roads that conform to the natural slope help to improve soil strength.

Using a geotextile fabric filter cloth between the roadbed and the soil surface helps to minimize the loss of stone into the soil.

Removing as much of the clay material as possible and increasing the thickness of the base aggregate helps to improve soil performance.

Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive soil erosion.

Recreational Development

Camp areas

Suitability: Moderately suited

Management concerns: Restricted permeability

Management measures and considerations: