LAND JUDGING AND HOMESITE EVALUATION IN FLORIDA

op Soil

Florida Cooperative Extension Service Institute of Food and Agricultural Sciences University of Florida, Gainesville John T. Woeste, Dean for Extension LAND JUDGING IN FLORIDA AND HOMESITE EVALUATION BY J. H. HERBERT, JR. Extension Conservationist, Cooperative Extension Service GAINESVILLE, FLORIDA

Soils always have been a basic resource! They will continue to be a most important item in our individual and national economy.

Soils differ one from another. Because of these differences land capabilities vary from place to place. A knowledge of soil characteristics will help to determine the capability of land, the proper use of land the conservation practices necessary.

These differences in soil characteristics can be described in rather definite terms. Once we have learned the proper terms, we can discuss soil differences with anyone else who "speaks the language".

First we must know several things about our soils. From this knowledge, we can determine what our land is capable of and just how we will have to treat it. We will need to know about soil texture, organic matter, thickness of rooting zone, permeability, slope, erosion and drainage. Soils with certain combinations of these characteristics are called soil types. Groups of similar types may be suited to similar agricultural uses. We arrange these groups into land capability classes. Understanding capability classification makes it easier to plan for conservation farming, ranching or grove management.

DEFINITIONS OF LAND CHARACTERISTICS

Texture

Texture is a soil property that is related to the proportion of sand, silt and clay that a soil contains. The soil should be moist to determine its texture by sense of touch. When soil is rubbed between the fingers: (a) sand is gritty, (b) silt is smooth and (c) clay is slick and sticky. Fourteen textural grades have been established but are grouped into three broad textural groups for land judging purposes.



Organic Matter

This is the residue of plant and animal material in various stages of decomposition. It helps hold both water and fertilizer in the plant root zone and upon decomposition becomes plant food. Organic matter of the surface soil (from the surface down to the first significant change in color) is determined by examining the darkness of color of an air dry sample. Usually the darker the color of the surface soil, the higher the organic matter content. It is generally agreed that where the soil organic matter is between zero and two percent it is low, between two and five percent it is medium and where it is over five percent it is high.

Thickness of Rooting Zone

This is the total thickness of surface and subsoil layers readily penetrated by plant roots. Dense hardpan, clay pan, rock or a permanently high water table limits rooting zone.

Thin	0-20 inches
Thick	20-40 inches
Very Thick	40 inches or more

Permeability

Movement of air and water in the soil is limited by the soil layer through which they move the slowest. Permeability can be estimated from texture, compaction and arrangement of soil particles (structure).

Rapid

These soils have loose or open sandy subsoil with little if any defined structure other than single grained (very little restriction to movement of water and air).

Moderate

These soils have friable to slightly firm, usually loamy subsoils with blocky, platy and prismatic structure. Weakly cemented sandy material is also included.

Slow

These soils have firm to very firm loamy and clayey subsoils with blocky, platy, prismatic and massive structure. Strongly cemented sandy material is also included.



Drawings illustrating some of the types of soil structure: A, prismatic; B, columnar; C, angular blocky; D, subangular blocky; E, platy; and F, granular.

Slope

Slope is measured in feet fall or rise per 100 feet of horizontal travel and is expressed in percent.

Α.	Nearly level	0- 2%
Β.	Gently sloping	2- 5%
С.	Moderately sloping	5- 8%
D.	Strongly sloping	8-12%
Ε.	Steep	12-17%
F.	Very steep	17% or more

Erosion -- Wind and Water

Erosion is the loss of soil by forces of water and wind. Following are the definitions of erosion terms.

- None to slight: Less than 25 percent of surface soil removed. No gullies.
- Moderate: 25 to 75 percent of surface soil removed with or without gullies.
- Severe: 75 percent or more of the surface soil removed with or without occasional uncrossable gullies.
- Very severe: All of the surface soil removed and up to 75 percent of the subsoil lost.

Drainage

Drainage can be regarded as an index of the natural condition of wetness. It is associated with the rate at which water is removed under natural conditions. Wetness of a soil is influenced by many factors including internal drainage, permeability, and depth to the water table. Generally, internal drainage is a reflection of permeability, for example, a very slowly permeable soil exhibits poor to very poor internal drainage. The presence and depth of a water table is not necessarily a reflection of permeability. Establishing depth and permanency of water table requires study during different seasons of the year.

<u>Poor</u>: Water is removed so slowly that the soil remains wet for a large part of the time. The water table is commonly within 20 inches of the surface during a considerable part of the year. Poorly drained conditions are due to a high water table, to a slowly permeable layer within the profile, to seepage or to some combination of these conditions. Poorly drained soils are usually characterized by uniform gray or mottled colors immediately below the surface soil. Some poorly drained sandy soils may be light gray from the surface downward with or without mottles. Mottling is normally associated with loamy or clayey subsoils. A spodic layer at depths of 10-40 inches is an indicator of wetness when accompanied by wetness indicators previously described. <u>Somewhat poor</u>: Water is removed from the soil slowly enough to keep it wet for significant periods. Water table is at depths of 20-40 inches for a considerable part of the year. Somewhat poorly drained conditions are due to a moderately high water table, to a slowly permeable layer within the profile, to seepage, or to some combination of these conditions. Somewhat poorly drained soils are usually characterized by uniform grayish, brownish, or yellowish colors in the upper profile and commonly have mottles between 20-40 inches. Somewhat poorly drained sandy soils may be gray from the surface downward with or without mottles. Mottling is normally associated with loamy or clayey subsoils.

Moderately well and well: Water is removed from the soil somewhat slowly so that the profile is wet for a small but significant part of the time. The water table is commonly between 40 and 72 inches. Moderately well drained soils commonly have a slowly permeable layer within or immediately beneath the subsoil, a relatively high water table, additions of water through seepage or some combinations of these conditions. Moderately well and well drained soils normally have uniform colors in surface soils and upper subsoil and are mottled in the lower subsoil (below 40 inches).

Excessive: Water is removed from the soil readily. Water table occurs at depths below 72 inches. The soil material is almost free of mottling throughout the profile. Dominant colors are pale brown, yellow and red. Some well drained sandy soils are white or light gray in color and lack evidence of wetness.

FACTORS DETERMINING CAPABILITY CLASS

SOME COMBINATIONS OF THE SEVEN LAND CHARACTERISTICS JUST DESCRIBED WILL DETERMINE THE CAPABILITY CLASS,

Land Capability Classes:

- Class 1: Soils in this class are suitable for cultivation over a long period of time. They are moderately well to well drained, deep, productive, nearly level, not subject to more than slight erosion regardless of treatment and are free from overflows that interfere with planting, growing, or harvesting of crops.
- Class II: This class includes soils which are suitable for cultivation over a long period of time; however, they have some hazards and limitations such as gentle slopes, slight erosion, or moderate wetness. Following are some of the practices which may be needed to overcome the hazards and limitations of soils in this class: rotations that include soil conserving and improving crops at least onehalf of the time, water control, contour sloping lands, diversion of overhead water and applications of fertilizers and lime as needed.

- Class III: These are good soils for cultivated crops but they have severe limitations that reduce the variety of plants that can be grown, require special conservation practices or both. Following are the treatments which may be needed: terracing and contour cultivation, strip cropping and crop residue management. They also need intensive crop rotations which include soil conserving and improving crops at least two-thirds of the time, diversion of overhead water and application of fertilizers and lime as needed. If the soils are wet they need water control for crop production.
- Class IV: Soils making up this class have very severe limitations that restrict the choice of plants, require very careful management, or both. Some of the limitations are steep slopes, excessive wetness or poor soil characteristics. They should be managed in a rotation which includes soil conserving and improving crops at least three-fourths of the time. When cultivated, sloping land should be broken in strips and will require practices such as terracing and contour farming. Wet lands will require water control. Both sloping and wet land will require conservation of all organic residues and the application of fertilizers and lime as needed. As a rule they are best suited for pasture or hay.
- Class V: These soils are not suitable for cultivation. They may be used for permanent vegetation. They are not more than slightly susceptible to deterioration and therefore require no special conservation practices or restrictions in use. These soils may be frequently flooded or poorly drained. The treatment needed is good grazing management if utilized for pasture or range and good timber management if used for woodland. All areas should be protected from wildfire.
- Class VI: Soils in Class VI have severe limitations that make them generally unsuited for cultivation and limit their use largely to pasture or range, woodland, or wildlife food and cover. Restrictions commonly needed on pasture and range are deferred and rotational grazing to maintain a good soil cover at all times. Timber land should be protected from grazing. All areas should be protected from wildfire.

- Class VII: Soils in Class VII have very severe limitations that make them unsuited for cultivation and that restrict their use to woodland or wildlife. Practices required are protection from grazing, protection from wildfire and other practices to increase woodland production and wildlife population.
- Class VIII: This is land that is not suitable for cultivation and not suitable for useful permanent vegetation or woodland. It is land of little or no economic value agriculturally, except for wildlife or recreational purposes. It needs protection from wildfire and restriction from grazing.

LAND CLASSES AND SAFE LAND USES



SOIL TAXONOMY

Soil classification systems of various sorts have been used for hundreds of years. Many of the systems were based on one soil characteristic like color (red, black), elevation (high, low), moisture (wet, dry), fertility (rich, poor), or acidity-alkalinity (sour, sweet). These systems of classfication served a particular purpose for local conditions but were based on opinions which are difficult to reproduce so they had very limited meaning. The Capability Class classification system was an improvement over the older systems because it included rating several soil characteristics by observations and measurements which can be reproduced. The Capability Class system has helped many people recognize the importance of various soil characteristics, however, science and technology have expanded since it was first developed.

A new classification system was begun in 1951, and after several revisions was adopted in 1965. This new system, Soil Taxonomy, is based on physical, chemical and mineralogical properties and can be used anywhere in the world. The taxonomic system recognizes six categories: Order, Suborder, Great Group, Subgroup, Family and Series. Soil Order is the only category which is required in Land Judging Contests. Dominant features of soil orders follows. Percent base saturation will be given information.

<u></u>	
Name of Order	Dominant Feature
Alfisols	Well-developed soils with a finer-textured horizon that has more than 35% base saturation.
Aridisols	Dry soils that occur in arid or semi-arid regions.
Entisols	Soils with little or no horizon development.
Histosols	Soils composed of relatively thick organic materials. (Mucks and Peats)
Inceptisols	Soils of humid regions with weak horizon development.
Mollisols	Soils with thick, dark surfaces that have more than 50% base saturation in subhorizons.
Oxisols	Highly weathered soils of the tropics.
Spodosols	Soils with a spodic horizon (a subhorizon with a mixture of organic matter and aluminum, with or without iron).
Ultisols	Well-developed soils with a finer-textured horizon that has less than 35% base saturation.
Vertisols	Soils with more than 30% clay which appreciably expand upon wetting and contract upon drying.

Dominant Features of Soil Orders



Note: Small areas of contrasting soils would be shown at a larger mapping scale.

10

Conservation Practices

Note: Local conditions may require some modifications of the following recommendations; consult your County Extension Agent, District Conservationist or Vocational Agriculture Teacher.

Vegetative:

Numbers 1, 2, 3 and 4. Use soil conserving and improving crops: Prevent or retard erosion, maintain or improve rather than deplete soil organic matter, improve soil structure--tilth, increase water intake, increase fertility. Use practice No. 1 on Class I every year between cash crops, practice No. 2 on Class II every other year, practice No. 3 on Class III two years out of three and practice No. 4 on Class IV three years out of four.

Number 5. Contour strip cropping: Grow row crops and strips or bands of close growing cover crops in a systematic arrangement on the contour. Use on Classes II through IV where the slope is two percent or more and the surface texture is sandy excepting excessively drained sands.

Number 6. Manage crop residue: Turn in rather than burn off crop residue or provide a protective cover leaving the residue of any previous crops as a mulch on the surface. Use on Classes I through IV.

Number 7. Use sod based rotation: Grow crops in recurring succession on the same land using grass pasture three years out of four or six years out of eight. Use on Class IV.

Number 8. Wind strip cropping: Produce row crops in long, relatively narrow strips between strips of tall growing grasses or legumes, placed across the direction of the prevailing wind. Use on Classes I through IV when a wind erosion problem is indicated on the conditions poster.

Number 9. Use field windbreaks: Use a border of trees and shrubs, usually three or more rows, to reduce or check the force of the wind. Established for the protection of fields, orchards, groves, feedlots, and homesteads. Use on Classes I through IV when a wind erosion problem is indicated on the conditions poster.

Number 10. Control noxious plants: Keep to a minimum undesirable vegetation. Mowing and spraying with chemicals are two methods of control. Use on Classes I through VII.

Number 11. Establish recommended grasses and/or legumes: Establish a protective cover on land not producing suitable permanent vegetation or on unprotected land not suitable for cultivated crops. Use on Classes V and VI. Number 12. Manage pasture or range properly: Apply practices to keep plants growing actively over as long a period as possible and encourage the growth of desirable grasses and legumes through controlled grazing and use of fertilizers and lime. Use on Classes V and VI.

Number 13. Protect from wildfire: Self-explanatory. Use on Classes V through VIII.

Number 14. Plant recommended trees: Use recommended varieties of trees for post lots and woodland plantings. Use on Class VII.

Number 15. Harvest trees selectively: Remove mature or undesirable trees and encourage reproduction under the remaining stand. Use on Class VII.

Number 16. Use for wildlife or recreational area: Protect or develop areas that are not suitable for cultivation, grazing or forestry. Use on Class VIII.

Mechanical:

Number 18. Terrace: Use terraces which are ridges or embankments of soil constructed across the slope to control runoff, minimize erosion and increase percolation of water into the soil. Use on Class II through IV when slope is more than 2 percent but less than 8 percent and surface texture is loamy or clayey.

Number 19. Farm on the contour: Conduct field operations such as plowing, planting, and cultivation on the contour or at right angles to the direction of slope with or without the use of terraces and/or contour strip cropping. Use on Classes II through IV where the slope is 2 percent or more excepting excessively drained sands.

Number 20. Maintain terraces: Keep terraces in shape to work effectively. Do not cultivate across them. Use with practices No. 18 or 21.

Number 21. Construct diversion terraces: These are larger terraces constructed to handle a larger flow of water than a normal field terrace. Use when an overhead water problem is indicated on the conditions poster.

Number 22. Develop waterways: Use natural or constructed courses to accommodate a flow of water. Generally seeded to grass or hard-surfaced. Use with all terraced and contoured land.

Number 23. Install water control system: Control water on land by means of surface or sub-surface drains and structures. Use where the rooting zone is limited by a high water table.

Number 24. Control gullies: Prevent further erosion in gullies. Use where gullies are present. Number 25. Subsoil: Till soil below the normal plow depth. Sometimes referred to as chiseling. The intended purpose is to break or shatter a spodic horizon, claypan or plowpan which has been limiting the rooting depth and/or impeding internal soil drainage. Use where a compaction problem is indicated on the conditions poster.

Fertilizer and Soil Amendments:

Use soil analysis as a basis for fertilizer and soil amendment recommendations. Use limestone where pH is below 6.0.

Number 27. Dolomitic limestone (dolomite): Use dolomitic limestone to adjust the soil pH (reduce soil acidity) and supply calcium and magnesium.

Number 28. High calcic limestone: Apply high calcic limestone to adjust soil pH (reduce soil acidity) and supply calcium.

Number 29. Sulphur: Sulphur can be used to adjust soil pH (increase soil acidity).

Number 30. Manure or Compost: Apply manure or compost whenever available to improve soil conditions, add organic matter and supply some plant foods.

Numbers 31-33. Nitrogen, Phosphorus and Potash: Apply these plant foods to correct soil deficiencies. These are major plant foods.

Number 34. Micronutrients: Apply micronutrients to correct soil deficiencies. These are required by plants in very small quantities. Use where the conditions poster states that one or more of the following is deficient: copper, manganese, boron, iron, zinc, cobalt, molybdenum.

LAND CHARACTERISTICS AND THEIR LIMITATIONS ON CAPABILITY CLASS

Factor	Best Possible
ractor.	Land Class
Surface Texture	
Sandy	······
Loamy	
Organic Matter	
High	
Medium	
Low	····· I
Thickness of rooting zone	
Thick	
Very thick	
Permeability	
Rapid	
Moderate	
•••••	
Slope	
A Nearly level	1
B Gently sloping	
C Moderately sloping	
E Steep	····· IV
F Very steep	VII
Erosion	
None to slight	····· I
Moderate	
Very severe	
Drainage	
Poor	111
Somewhat poor	
Moderately well and well	
LACESSIVE	****** 111

HOW TO USE THE LAND JUDGING SCORE CARD

- 1. Score cards must ALWAYS be identified with Field No. and Name.
- 2. An "X" is used to mark your answers for Part One, Part Two and Soil Order. Land Capability Class should be circled.
- 3. In case the land is in Class 1, the rule is to mark no factors! For other classes, the rule is to mark the factors that keep the land from being Class 1.
- 4. The perfect score of each field is variable depending on the number of conservation practices required.
- 5. Conservation practices are listed on the face of the score card.
- 6. The blank lines on the face of the Land Judging Score Card can be used to write in soil conserving and improving practices not listed. When they are to be used, officials will make this announcement and everyone can write in the practice or practices.
- 7. In selecting conservation practices in Part 2 of the score card consider the most intensive use that could be made of the land based on its limitations.
- If you use more conservation practices than are necessary the judges will give credit for correct practices and penalty points for those which are incorrect.
- 9. Select the number of conservation practices needed for each field. Use number 1 on Class 1, number 2 on Class II, number 3 on Class III, and number 4 on Class IV. Do not use one of the first four practices on Class V, VI, VII or VIII! Practices 1 through 9 should generally be used on Classes 1 through IV. Practice 10 should be used on Classes I through VII. Practices 11 through 16 will generally be used on Classes V through VIII. Practices 27 through 35 are selected on the basis of the assumed soil test. Use practice 30 ONLY when manure or compost is listed as available.

LAND JUDGING SCORE CARD

Name					• •					• •		• •			• •		• •					• •		• •	• •		• •		• •		•		• •		• •			• •	• •	
------	--	--	--	--	-----	--	--	--	--	-----	--	-----	--	--	-----	--	-----	--	--	--	--	-----	--	-----	-----	--	-----	--	-----	--	---	--	-----	--	-----	--	--	-----	-----	--

Indicate your answer by an X in the

LAND CHARACTERISTIC—PART ONE

SURFACE TEXTURE
Sandy
ORGANIC MATTER (SURFACE SOIL)
Medium
Low
THICKNESS OF BOOTING ZONE
Thin
Thick
Very Thick
MOVEMENT OF AIR AND WATER
IN THE SOIL (PERMEABILITY)
Rapid
Moderate
Slow
SLOPE
A Nearly level
B Gently sloping
C Moderately sloping
D Strongly sloping
E Steep
F Very steep
EROSION—WIND AND WATER
None to slight
Moderate
Verv severe
DRAINAGE
Poor
Somewhat poor
Moderately well and well
Excessive
FACTORS DETERMINING LAND CLASS
Texture
Organic matter
Thickness of rooting zone
Erosion
Drainage
LAND CAPADILITY CLASS
OOU ODDED
SOIL ORDER
SOIL ORDER Alfisol Aridisol Qvisol
SOIL ORDER Alfisol Aridisol Oxisol Entisol
SOIL ORDER Alfisol Mollisol Aridisol Oxisol Entisol Spodosol Histosol Ultisol

CONSERVATION PRACTICES—PART TWO

..... Field No.....

VEGETATIVE

Use soil conserving and improving crops:

- □ 1. Evéry year.
- 2. Every other year.
- 3. Two years out of three.
- 4. Three years out of four.
- 5. Contour strip cropping.
- 6. Manage crop residue.
- 7. Use sod-based rotation.
- 8. Wind strip cropping.
 - 9. Use field windbreaks.
- 10. Control noxious plants.
 - 11. Establish recommended grasses and/or legumes.

□ 17.

- □ 12. Manage pasture or range properly.
- □ 13. Protect from wildfire.
- 14. Plant recommended trees.
- 15. Harvest trees selectively.
- 16. Use for wildlife or recreational area.
- MECHANICAL

18. Terrace.

- □ 19. Farm on the contour.
- 20. Maintain terraces.
- 21. Construct diversion terraces.
- 22. Develop waterways.
- 23. Install water control system.
- 24. Control gullies.
- 25. Subsoil.

26.

FERTILIZER & SOIL AMENDMENTS

- 27. Dolomitic Limestone.
- 28. High Calcic Limestone.
- □ 29. Sulfur.
- □ 30. Manure or Compost.
- □ 31. Nitrogen.
- □ 32. Phosphorus.
- 33. Potash.
- 34. Micronutrients.
 35.

SCORE PART I.							
SCORE PART II							
TOTAL SCORE .							

The sign titled <u>Conditions of Fields</u>, posted at each site, will give information useful in judging individual sites.

CONDITIONS OF FIELDS FOR LAND JUDGING

FIELD NO.....

1.	Assumed soil tests show deficiencies in
	a d
	b e
	c f
2.	Pay no attention to practices on the field.
3.	Consider the most intensive use of the land.
4.	Thickness of the surface soil was
5.	Barnyard manure is (), is not () available.
6.	Other conditions are

17

GENERAL RULES FOR LAND JUDGING CONTESTS

- DO NOT USE BULLETINS, BOOKS, NOTES, LEVELS, DRAWINGS, SOIL SAMPLES, or other devices of assistance or information in the contest. It is permissible to carry a small bottle of water to moisten the soil for making a determination of SURFACE TEXTURE.
- DO NOT COPY information from others in the contest.
- Officials ask that there be NO TALKING BETWEEN CON-TESTANTS DURING THE TIME OF CONTEST.
- Twenty minutes will be allowed to make the placings on each field unless otherwise designated.
- Location of the fields for the contest will not be announced before the start of the contest.
- It is very important that you comply with the rules. Your cooperation will be appreciated. Please pay close attention to guides or leaders and be prompt in following instructions.
- Field 1 will be the first tie breaker. Part 1 of field No. 1 will be the first score used to break a tie. If this does not break the tie, Part 2 of field 1 will be considered. The tabulators will continue in this manner with fields No. 2, 3, and 4, if necessary to break a tie.
- Paid agricultural workers are ineligible to compete for prizes.
- Decisions of the judges will be final!

Example	Surface Texture	Organic Matter	Thickness of rooting zone	Permea- bility	Slope	Erosion	Drainage	Class
1.	Sandy I	Low 1	Thick I	Mod. I	B I I	Mod.	well I	
2.	Loamy 1	Medium I	Thick I	Slow 11	C 	Mod. II	Somewhat Poor	١V
3.	Sandy I	Low I	V. Thick I	Rapid 11	C 	. Slight I	Well 	١V
4.	Loamy I	Medium 1	V. Thick I	Mod. I	C 	Mod.	well I	111
5.	Loamy I	Low I	Thin	Slow H	E V I	Mod.	Poor 111	VII
6.	Sandy I	High I	Thick I	Rapid II	A	None I	Poor 	111
7.	Loamy I	Medium 1	Thin	Slow II	D I V	Mod.	Somewhat Poor	V I
8.	Loamy I	Low I	V. Thick	Mod.	C	Severe	well I	IV

THE FOLLOWING EXAMPLES MAY BE HELPFUL IN LEARNING HOW THE FACTORS GO TOGETHER TO MAKE DIFFERENT LAND CAPABILITY CLASSES.

If one factor keeps a site from being Class I, class determination is simple. In cases where two factors are involved, class determination is still relatively simple. Usually the most severe limitation will determine the class. Where several factors (3 or more) are involved, the situation is somewhat more complex. Capability class may be determined by the most limiting factor. More likely the class designation will be penalized by one class if the single most limiting hazard restricts the site to Class III. If the single most limiting hazard restricts the site to Class IV, the class designation may be penalized by two classes and fall into Class VI--particularly if one of the factors is slope.

LAND JUDGING AND HOMESITE EVALUATION

INTRODUCTION

This information is designed to emphasize the importance of soils and their limitations for non-agricultural purposes. While it is restricted to homesites, the importance of a soil's suitability for parks and playgrounds, roads and streets, and other uses should also be stressed.

Many of the features used in judging soils for agricultural use will also be used in evaluating an area for a homesite.

This discussion of individual soil features is related to limitations for a specific use. The limitations are defined as follows:

- Slight Limitations Soils or locations that have properties favorable for the planned use and present few or no problems.
- Moderate Limitations Soils or locations that have properties only moderately favorable for the planned use. Limitations can be overcome or modified with special planning, design or maintenance. Special treatment of the site for the desired use may be necessary.
- Severe Soil Limitations Soils or locations that have properties unfavorable for the planned use. Limitations are difficult and costly to modify or overcome for the use desired.
- Very Severe Limitations The soil or location has features so unfavorable for a particular use that overcoming the limitation is very difficult and expensive. For the most part this kind of soil should not be used for the purpose being rated.

FACTORS AFFECTING SUITABILITY

- TEXTURE. This refers to the texture of the surface soil. Surface texture is not a factor for septic systems because such systems are dug below the surface.
 - SANDY: Generally moderate limitations may require stabilization with organic material and/or loamy topsoil to improve moisture and nutrient holding and supplying capacity for desired plant growth. Washing and blowing may be a problem during construction. Shrink-swell potential is very low.
 - LOAMY: None to slight limitations Care should be exercised during construction to be sure the surface soil is not covered by less desirable material. Shrink-swell potential is low.

CLAYEY: Severe limitations - Soil is sticky when wet, hard when dry, difficult to work when used for lawns, shrubs, and gardens. The soils crack when dry, swell when wet. Clayey soils have a high shrink-swell potential. Special planning and design are required for foundations. May be droughty requiring frequent and low rate of watering for vegetable growth.

PERMEABILITY. This normally refers to the rate of water or air movement through the most restrictive layer in the soil. This may be considered as internal drainage. Laterals for septic systems may be located below such layers in some soils. For that reason this should serve as a warning and final design should be based on the standard post hole method of determining infiltration where soils are slow or very slowly permeable. It is an important factor in deciding between a septic tank system or a community sewage system. Soil percolation tests would be required before making further plans. Special note: For septic systems, consider the permeability below 30 inches.

RAPID PERMEABILITY: Soils generally are not finer than loams to sandy loams throughout. Slight limitations in use for septic system disposal field, or foundations and basement construction. Moderate limitations for lawns and shurbs.

MODERATE PERMEABILITY: Slight limitations for all uses. Soils are generally light silty clay loam, light clay loams and light sandy clay loams and have no severe restrictive layers, with prismatic to granular or soft blocky structure.

SLOW PERMEABILITY: Severe limitations for septic tank systems. Soils generally would be on the fine side of the loamy group such as silty clay loams to heavy clay loams with a structure of subangular blocky to slightly crumbly. The cost of modification or size of filter field necessary would generally be prohibitive. Limitations would be moderate for foundations; lawns, shrubs and gardens.

SOIL DEPTH. This refers to the vertical depth of a soil to bedrock such as limestone or consolidated clays that restrict or prohibit excavations. Severity of limitations, because of depth, vary greatly for different use; therefore, Table 1 is to be used as a guide for evaluation of soil depth for alternate uses.

Adjective	Depth	Foundations	Lawns, Shrubs	Septic
Rating	Inches		and Gardens	Systems
Shallow	0 - 20	Severe	V. Severe	V. Severe
Mod. Deep	20 - 40	Moderate	None to sl.	Severe
Deep	40 - 72	None to Sl.	None to S1.	Moderate

TABLE 1. EFFECT OF SOIL DEPTH ON LAND USE ADAPTATION

SLOPE. This refers to the steepness of the surface or the vertical rise or fall per 100 feet of distance expressed in percent. Table 2 will aid in interpretation of the slope.

TABLE 2. EFFECT OF SLOPE ON LAND USE ADAPTATION

Adjective Rating	Slope %	Foundations	Lawns, Shrubs and Gardens	Septic ⇒ Systems
Nearly Level	0 - 2	None to slight	None to Sl.	None to Sl.
Gently Sloping	2 - 5	None to S1	None to Sl.	None to Sl.
Moderately Sloping	5 - 8	Moderate	Moderate	Moderate
Strongly Sloping	8 - 12	Severe	Severe	Moderate
Steep	12 - 17	V. Severe	V. Severe	Severe
V. Steep	17 +	V. Severe	V. Severe	V. Severe

EROSION. Erosion of the soil can increase the expense of landscaping. Severe gullies will impose additional limitations on septic disposal fields.

NONE TO SLIGHT AND MODERATE EROSION: None to slight limitations for any use.

SEVERE EROSION: Moderate limitation for any use. Modification of surface or bringing in top soil for lawns, shrubs, and gardens.

VERY SEVERE EROSION: Severe limitations; usually severely gullied requiring much filling or leveling, extra cost on septic disposal systems, extensive modification for lawns, shrubs, and gardens. Time of development should be selected for the least erosive time of year.

SHRINK-SWELL. This factor is implied in the permeability and texture of a soil. Because it is important in foundation design it should have special consideration. The most clayey layer in the profile is generally considered in relation to shrink-swell. Shrink-swell potential is not generally a factor for lawns, shrubs and gardens.

LOW SHRINK-SWELL: Coarse, moderately coarse, and medium textured soils. None to slight limitations for any use.

MODERATE SHRINK-SWELL: Moderately fine textured soils. Moderate limitations for foundations and septic systems.

HIGH SHRINK-SWELL: Fine textured soils. Severe limitations for foundations and septic systems.

DRAINAGE. See discussion and definitions on pages 5&6

POOR: Limitations would be severe for foundations, lawns, shrubs and gardens and very severe for septic systems.

SOMEWHAT POOR: Limitations would be none to slight for foundations; moderate for lawns, shrubs and gardens; and severe for septic systems. MODERATELY WELL AND WELL: Limitations are none to slight for foundations, lawns, shrubs and gardens, and moderate for septic systems.

EXCESSIVE: Limitations are none to slight for foundations and septic systems but moderate for lawns, shrubs and gardens.

FLOODING. The occurrence of flooding is a factor frequently overlooked. Flooding may not occur on an area for many years, then a serious flood can occur. Urban development on the watershed of a small stream can increase runoff up to 75% thus greatly increasing flood hazards. Soils can give an indication of flooding but records must be studied to determine the true condition. Position in the landscape and proximity to nearby streams are good indicators of frequency of flooding. In contests this is normally given information.

NO FLOODING: Limitations none to slight for any use.

OCCASIONAL FLOODING: Less frequent than one year in five. Severe limitations for development.

FREQUENT FLOODING: Flooding more frequent than one year in five. Very severe limitations for development.

SUMMARY TABLE

Character	istic	Planned Use and Interpretation								
		Foundations	Lawns, Shrubs, Gardens	Septic Systems						
Texture:	Sandy Loamy Clayey	Moderate Slight Severe	Moderate Slight Severe							
Permeabili	ty: Rapid Moderate Slow	Slight Slight Moderate	Moderate Slight Moderate	Slight Slight Severe						
Depth: SH Mc De	nallow oderately deep eep	Severe Moderate Slight	V. Severe Slight Slight	V. Severe Severe Moderate						
Slope: Ne Ge Mc St St Ve	early level ently sloping oderately sloping crongly sloping ceep ery steep	Slight Slight Moderate Severe V. Severe V. Severe V. Severe	Slight Slight Moderate Severe V. Severe V. Severe V. Severe	Slight Slight Slight Moderate Severe V. Severe						
Erosion:	None to slight Moderate Severe V. Severe	Slight Slight Moderate Severe	Slight Slight Moderate Severe	Slight Slight Moderate Severe						
Shrink-Swe	ell: Low Moderate High	Slight Moderate Severe		Slight Moderate Severe						
Drainage:	Poor Somewhat poor Moderately well and well Excessive	Severe Slight Slight Slight	Severe Moderate Slight Moderate	V. Severe Severe Moderate Slight						
Flooding:	None Occasional Frequent	Slight Severe V. Severe	Slight Severe V. Severe	Slight Severe V. Severe						

HOW TO USE THE HOMESITE EVALUATION SCORE CARD

- 1. The total perfect score on one field is 84 points.
- 2. The total perfect score on Part I is 24 points and 60 points for Part II (20 points for each use).
- 3. Part I of the score card has to do with those factors the contestant must determine about the site. With the exception of shrink-swell and flooding, the factors are similar to those for land judging.
- 4. After Part I is completed, determine the severity of limitations that the existing soil conditions impose on the planned use as listed on Part II of the score card.
- 5. The final evaluation of the site is determined by the worst degree of limitation found for the particular planned use.
- 6. The contestants should be given 15 to 20 minutes to fill in the answers on their score cards on each site.
- 7. In order to insure that the contests are not lengthened too much by the addition of homesite evaluation, and that grading does not become too burdensome, several alternatives are possible. Example:
 - 1. Three land and one or two homesites to judge.
 - 2. Other.

The only concern is to make sure that there are enough interpretative uses required to test the contestants' skills in homesite evaluation.

HOMESITE EVALUATION SCORE CARD

- 1 - 1	-	200	0
1.1	~	111	
	-		~

Site No._____

Ind	icate	your	answer	by an	Х	in	the	
-----	-------	------	--------	-------	---	----	-----	--

-				0		
Ρ	a	r	t.	- (1	n	P
	6		-			~

Part Two

	Planned Use and Interpretation
Characteristic	Foundations Lawns, Shrubs Septic System Gardens
unteris and the party of the	Slight Moderate Severe V. Severe Silight Moderate V. Severe V. Severe Severe V. Severe V. Severe
Surface Texture: Sandy Loamy Clayey	
Permeability: Rapid Moderate Slow	
Depth: Shallow Moderately deep Deep	
Slope: Nearly level Gently sloping Moderately sloping Strongly sloping Steep Very steep	
Erosion: None to slight Moderate Severe Very Severe	
Shrink-Swell: Low Moderate High	
Drainage: Poor Somewhat poor Moderately well and well .Excessive	
Flooding: None Occasional Frequent	
Final Evaluation: Slight Moderate Severe Very Severe	
Score Part One Score Possible 24 P	Part TwoTotal ossible 20 for each use

ACKNOWLEDGMENT

Some of the ideas and material in this booklet have been obtained from several state and federal publications. Suggestions were made by many individuals in the University of Florida, Institute of Food and Agricultural Sciences; USDA, Soil Conservation Service; and the Florida Department of Education, Agribusiness and Natural Resources Education.

Special appreciation is due Dr. V. W. Carlisle, Professor Soil Science, IFAS Agricultural Experiment Station, Department of Soil Science and Mr. Robert W. Johnson, State Soil Scientist, USDA Conservation Service.

This wealth of assistance is gratefully acknowledged.

This publication was promulgated at a cost of \$649.38, or 44 cents per copy, to help the public in land judging and homesite evaluation. 2-1.5M-82

COOPERATIVE EXTENSION SERVICE, UNIVERSITY OF FLORIDA, INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES, K. R. Tefertiller, director, in cooperation with the United States Department of Agriculture, publishes this information to further the purpose of the May 8 and June 30, 1914 Acts of Congress; and is authorized to provide research, educational information and other services only to individuals and institutions that function without regard to race, color, sex or national origin. Single copies of Extension publications (excluding 4-H and Youth publications) are available free to Florida residents from County Extension Offices. Information on bulk rates or copies for out-of-state purchasers is available from C. M. Hinton, Publications Distribution Center, IFAS Building 664, University of Florida, Gainesville, Florida 32611. Before publicizing this



publication, editors should contact this address to determine availability.