

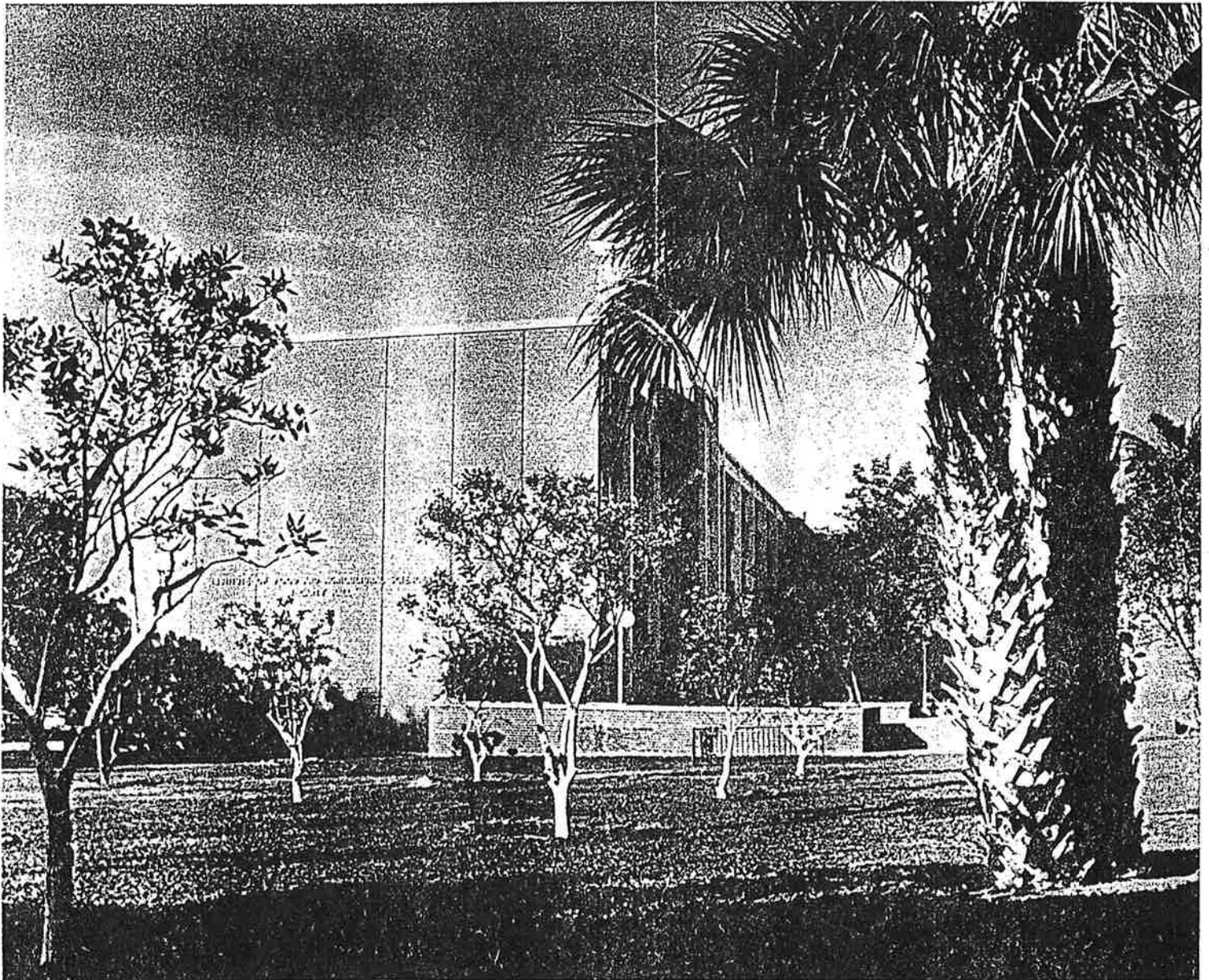
United States  
Department of  
Agriculture

Soil  
Conservation  
Service

In cooperation with  
University of Florida  
Institute of Food and  
Agricultural Sciences,  
Agricultural Experiment  
Stations and Soil Science  
Department, and Florida  
Department of Agriculture  
and Consumer Services

# Soil Survey of Alachua County Florida

EXHIBIT  
S-11





## Millhopper Series

The Millhopper series consists of nearly level to sloping, moderately well drained soils that formed in thick beds of sandy and loamy marine sediment. These soils are in broad areas of the gently rolling uplands and in slightly convex areas of the flatwoods. Slopes range from 0 to 8 percent. The water table is 40 to 60 inches below the surface for 1 to 4 months. It is at a depth of 60 to 72 inches for 2 to 4 months during most years. These soils are loamy, siliceous, hyperthermic Grossarenic Paleudults.

Millhopper soils are geographically associated with Apopka, Arredondo, Bonneau, Fort Meade, Gainesville, Kanapaha, Lochloosa, Oleno, Sparr, and Tavares series. Apopka, Arredondo, Fort Meade, and Gainesville soils are well drained. The Fort Meade and Gainesville soils also are sandy to a depth of 80 inches or more. Bonneau soils are moderately well drained and have a sandy A horizon 20 to 40 inches thick. Kanapaha soils are poorly drained. Lochloosa soils are somewhat poorly drained and have a sandy A horizon 20 to 40 inches thick. Oleno soils are subject to flooding, are poorly drained, and they formed in clayey fluvial sediment. Sparr soils are somewhat poorly drained. Tavares soils are moderately well drained and are sandy to a depth of 80 inches or more.

Typical pedon of Millhopper sand, 0 to 5 percent slopes, 200 feet north of graded road, 0.8 mile west of State Road 121 and about 1 mile east of Devil's Millhopper, NE1/4NE1/4 sec. 23, T. 9 S., R. 19 E.

- Ap—0 to 9 inches; dark grayish brown (10YR 4/2) sand; weak medium granular structure; very friable; many fine and medium roots; medium acid; clear wavy boundary.
- A21—9 to 21 inches; yellowish brown (10YR 5/6) sand; weak fine granular structure; very friable; few fine roots; slightly acid; clear wavy boundary.
- A22—21 to 26 inches; yellowish brown (10YR 5/4) sand; few fine faint brownish yellow mottles; single grained; loose; few fine roots; slightly acid; clear wavy boundary.
- A23—26 to 48 inches; light yellowish brown (10YR 6/4) fine sand; few fine faint pale brown mottles; single grained; loose; few fine roots; slightly acid; clear wavy boundary.
- A24—48 to 58 inches; very pale brown (10YR 7/3) sand; few fine and medium prominent strong brown (7.5YR 5/6) and few fine distinct yellowish brown (10YR 5/8) mottles; single grained; loose; few fine roots; moisture content much greater than in horizon above; medium acid; clear wavy boundary.
- B21t—58 to 64 inches; yellowish brown (10YR 5/6) loamy sand; common medium distinct light gray (10YR 7/1) and few fine distinct strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; very friable; sand grains are coated and

bridged with clay; medium acid; clear wavy boundary.

B22tg—64 to 86 inches; light gray (10YR 7/1) sandy clay loam; common medium distinct very pale brown (10YR 7/3) and few fine prominent strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; thin discontinuous clay fill on faces of peds; strongly acid; clear wavy boundary.

B3g—86 to 89 inches; light gray (N 7/0) sandy loam; medium faint light brownish gray (10YR 6/2) and few fine distinct very pale brown (10YR 7/4) mottles; weak fine subangular blocky structure; friable; sand grains are well coated with clay; strongly acid.

The solum is 80 inches or more thick. Reaction ranges from very strongly acid to slightly acid in the A horizon and very strongly acid to medium acid in the Bt horizon. A few nodules of ironstone and phosphatic limestone about 1 to 15 millimeters in size are in many pedons but are less than 5 percent by volume.

The A1 or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It is 4 to 9 inches thick. The A2 or Ap horizon has value of 3 where it is 4 to 6 inches thick. The A2 horizon has hue of 10YR, value of 5 to 8 and chroma of 3 to 8 in the upper part and value of 6 to 8 and chroma of 2 to 4 in the lower part. Mottles of brown and yellow range from none to common. Small masses and streaks of light gray or white, uncoated sand grains are throughout some pedons. Gray and red or strong brown mottles indicative of wetness usually are below a depth of 40 inches. The A2 horizon is sand or fine sand. It is 36 to 70 inches thick.

The B21t horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6 or value of 7 and chroma of 4 to 6. In places, it has gray, yellow, and brown mottles. The B21t horizon is loamy sand, loamy fine sand, or sandy loam and ranges from 0 to 8 inches in thickness. Some pedons have a B1 horizon that is loamy sand or loamy fine sand. The B1 horizon does not have argillic properties. The B22t horizon has hue of 10YR, value of 5 through 7, and chroma of 1 through 4. Mottles are in shades of gray, yellow, and brown or are a mixture of these colors. In places, this horizon has matrix colors gray. The gray is usually at a depth of more than 55 inches. The B22t horizon is sandy loam or sandy clay loam 18 to 26 inches thick. The B3g horizon is neutral or less. It is generally mottled in various shades of gray, yellow, and brown. The B3g horizon is sandy loam or sandy clay loam.

## Monteocha Series

The Monteocha series consists of very poorly drained soils that formed in thick deposits of sandy and loamy



Pedro soils are geographically associated with Apopka, Candler, and Jonesville soils. Apopka soils have a sandy A horizon 40 to 80 inches thick. Cadillac soils have a sandy textured A horizon 40 or more inches thick. Jonesville soils have a sandy A horizon 20 to 40 inches thick and have soft underlying limestone at a depth of 26 to 59 inches.

Typical pedon of Pedro fine sand, 0 to 5 percent slopes, in an area 0.1 mile south of State Road 26, 0.25 mile east of U.S. Highway 41 at Newberry, NW1/4SW1/4 sec. 3, T. 10 S., R. 17 E.

0 to 5 inches; dark gray (10YR 4/1) fine sand; medium granular structure; very friable; few fine roots; medium acid; clear smooth

6 to 10 inches; light yellowish brown (10YR 6/4) sandy loam; few fine faint very pale brown mottles; medium granular structure; loose; few fine roots; medium acid; clear wavy boundary.

10 to 17 inches; strong brown (7.5YR 5/6) sandy loam; moderate medium subangular blocky structure; friable; few fine roots; sand grains are well rounded and bridged with clay; few fragments of hard limestone 2 to 15 millimeters in diameter and 2 to 5 percent volume in the lower 2 inches; neutral; clear wavy boundary.

IIR—17 to 72 inches; white (10YR 8/1) limestone soft enough to be dug with light power equipment such as a backhoe; few fine and medium fragments of hard limestone; moderately alkaline.

This soil is cyclic. The thickness of the solum and the depth to limestone are 6 to 20 inches. Within the pedon, the thickness ranges to about 60 inches in solution holes. In some pedons, intrusions of hard limestone fragments are at a depth of 6 inches or less below the surface. Reaction of the A horizon ranges from strongly acid to slightly acid, and reaction of the Bt horizon ranges from slightly acid to mildly alkaline. Limestone boulders are on the surface of many pedons.

The A1 or Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 1. It is 4 to 6 inches thick. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4. It is normally 4 to 15 inches, but cyclic thickness is 1 to 44 inches within the pedon. Texture is fine sand or sand.

The Bt horizon has hue of 10YR, value of 5, and chroma of 6 to 8, or value of 6 and chroma of 4 to 8. It also has hue of 7.5YR, value of 5, and chroma of 6 to 8. The Bt horizon is sandy clay loam. The cyclic thickness of the B horizon is 0 to 24 inches. The B horizon is 3 to 12 inches thick and meets the requirements of an argillic horizon in about 55 to 60 percent of the pedon. In about 15 to 25 percent of each pedon, this horizon meets all the requirements for an argillic horizon except for thickness. In about 10 to 15 percent of the pedon, this Bt horizon is absent, and the sandy A horizon is on the

surface of the soft, partially decomposed limestone. In some pedons, the B horizon has few or common, fine and medium fragments of soft and hard limestone. Solution holes, which may extend to a depth of about 60 inches below the surface, comprise about 3 to 10 percent of the pedon. In the deeper solution holes, the lower part of the B horizon usually contains about 15 to 45 percent fine to medium nodules of soft limestone and fragments of hard limestone.

The IIR horizon is limestone soft enough to be dug with light power equipment, such as a backhoe. It is usually white but range includes very pale brown and pale yellow. This horizon extends to a depth of more than 72 inches. The IIR horizon may occasionally have small intrusions of hard limestone fragments and boulders.

## Pelham Series

The Pelham series consists of nearly level, poorly drained soils that formed in thick beds of loamy marine sediment. These soils are in broad areas of the flatwoods. Slopes range from 0 to 2 percent. The water table is less than 10 inches below the surface for 1 to 4 months during most years. During dry periods it recedes to a depth of more than 40 inches. These soils are loamy, siliceous, thermic Arenic Paleaquults.

Pelham soils are geographically associated with Mulat, Pomona, Riviera, Surrency, and Wauchula soils. Mulat soils decrease in clay content in the Btg horizon by 20 percent or more within 60 inches of the surface. Pomona soils have a Bh horizon, and the Btg horizon is below 40 inches. Riviera soils have base saturation of more than 35 percent and have tongues of the A2 leading into the Btg horizon. Surrency soils are very poorly drained and have a thick, dark A1 horizon. Wauchula soils have a Bh horizon above the Btg horizon.

Typical pedon of Pelham sand, about 0.4 mile east of U.S. Highway 441 and 0.4 mile north of Gainesville Livestock Market, NW1/4SE1/4 sec. 8, T. 19 S., R. 20 E.

A11—0 to 4 inches; very dark gray (10YR 3/1) sand; moderate medium granular structure; very friable; common fine roots; very strongly acid; clear smooth boundary.

A12—4 to 7 inches; dark gray (10YR 4/1) sand; moderate medium granular structure; very friable; common fine roots; very strongly acid; clear wavy boundary.

A21—7 to 14 inches; light brownish gray (10YR 6/2) sand; few fine faint gray mottles; single grained; loose; few fine roots; very strongly acid; clear wavy boundary.

A22—14 to 29 inches; gray (10YR 6/1) sand; single grained; loose; few fine roots; very strongly acid; clear wavy boundary.

ham  
series



B21tg—29 to 32 inches; gray (10YR 5/1) sandy loam; weak fine subangular blocky structure; friable; few roots; sand grains are coated and bridged with clay; very strongly acid; clear wavy boundary.

B22tg—32 to 43 inches; gray (10YR 5/1) sandy clay loam; few fine distinct light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; thin discontinuous clay films on ped faces; very strongly acid; clear wavy boundary.

B23tg—43 to 69 inches; gray (10YR 6/1) sandy clay loam; few fine distinct light yellowish brown (10YR 6/4) and yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; thin discontinuous clay films on ped faces; very strongly acid; clear wavy boundary.

Cg—69 to 80 inches; gray (10YR 6/1) sandy loam; few fine and medium faint light brownish gray, few fine distinct very pale brown (10YR 7/4) and yellowish brown (10YR 5/6) mottles; massive; friable; coarse lenses of coarser and finer textured material; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid through strongly acid.

The A1 horizon is neutral or has hue of 10YR, value of 2 to 4, and chroma of 1 or less. The A1 horizon is 4 to 8 inches thick. The A1 horizon is black or very dark gray when it is only 4 to 6 inches thick. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. In places, it has gray, yellow, and brown mottles. The A2 horizon is sand or fine sand 18 to 32 inches thick.

The B2tg horizon has hue of 10YR through 5Y, value of 5 to 7, and chroma of 2 or less. It is sandy loam or sandy clay loam 26 to 40 or more inches thick. Some pedons have a B3g horizon. Where present, it has hue of 10YR, value of 5 to 7, and chroma of 1. It is sandy loam or sandy clay loam. In some pedons the Btg horizon decreases in clay content by 20 percent or more of its maximum within a depth of 60 inches. In these pedons, however, clay content increases for a second time between the depths of 60 and 80 inches.

The Cg horizon has hue of 10YR, value of 5, and chroma of 1, or has value of 6 or 7 and chroma of 1 or 2. It is sandy loam, sandy clay loam, or sandy clay.

### Placid Series

The Placid series consists of nearly level, very poorly drained sandy soils that formed in sandy marine sediment. These soils are in wet depressional areas and along poorly defined drainageways in the flatwoods. Slopes range from 0 to 2 percent. During most years the water table is less than 10 inches below the surface for more than 6 months. Most depressional areas are covered with water for 6 months or more annually. These soils are sandy, siliceous, hyperthermic Typic Humaquepts.

Placid soils are geographically associated with Chipley, Myakka, Pompano, Samsula, and Tavares soils. Chipley, Myakka, Pompano, and Tavares soils all have a thinner A1 horizon. Chipley soils are somewhat poorly drained, and Myakka and Pompano soils are poorly drained. Tavares soils are moderately well drained. Samsula soils are of organic origin.

Typical pedon of Placid sand, depressional, about 200 feet north of State Road 26, 0.4 mile west of junction with State Road 219A, 1.1 miles west of Melrose, SW1/4SE1/4 sec. 14, T. 9 S., R. 22 E.

A11—0 to 8 inches; black (10YR 2/1) sand; moderate medium granular structure; very friable; common fine and few medium roots; organic matter content about 15 percent; very strongly acid; clear smooth boundary.

A12—8 to 15 inches; very dark gray (10YR 3/1) sand; weak medium granular structure; very friable; few fine and medium roots; very strongly acid; clear wavy boundary.

C1—15 to 21 inches; grayish brown (10YR 5/2) sand; common fine faint light brownish gray mottles; single grained; loose; few fine roots; many uncoated sand grains; very strongly acid; gradual wavy boundary.

C2—21 to 47 inches; light brownish gray (10YR 6/2) sand; few fine distinct yellowish brown (10YR 5/6) mottles; single grained; very strongly acid; clear wavy boundary.

C3—47 to 82 inches; light gray (10YR 7/1) sand; few medium faint light brownish gray (10YR 6/2) mottles; single grained; loose; many uncoated sand grains; very strongly acid.

The soil is sand or fine sand to a depth of 80 inches or more. Reaction ranges from extremely acid to strongly acid in all horizons.

The A horizon is neutral or has hue of 10YR, value of 2 or 3, and chroma of 2 or less. Organic matter content is less than 20 percent. The A horizon is 12 to 24 inches thick.

The C horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 2 or less. It is mottled with various shades of red or yellow. The lower part of the C horizon has thin streaks that have value of 3 or 4 and chroma of 3 or less in some pedons. The C horizon is 70 or more inches thick.

### Plummer Series

The Plummer series consists of nearly level, poorly drained soils that formed in thick beds of sandy and loamy marine sediment. These soils are nearly level and are in the broad areas of the flatwoods and along the fringe between the flatwoods and the gently rolling uplands. Slopes are 0 to 2 percent. The water table is at a depth of less than 10 inches for 1 to 3 months and at



## Riviera Series

The Riviera series consists of nearly level, poorly drained soils that formed in stratified, unconsolidated sandy and loamy materials. These soils are in the broad areas of the flatwoods. The water table is at a depth of less than 10 inches for 2 to 4 months during most years and at a depth of 10 to 40 inches for much of the remainder of the year. During dry seasons, it may recede to a depth of more than 40 inches. Slopes are less than 2 percent. These soils are loamy, siliceous, hyperthermic Arenic Glossaqualfs.

Riviera soils are geographically associated with Floridana, Pelham, Pomona, and Wauchula soils. Floridana soils have a thicker A1 horizon and are very poorly drained. Pelham soils have an acid reaction and low base saturation. Pomona and Wauchula soils have a Bh horizon.

Typical pedon of Riviera sand, about 0.3 mile east of U.S Highway 441, and 300 feet north of graded road 0.25 mile north of Gainesville Livestock Market, SE1/4SE1/4 sec. 18, T. 9 S., R. 20 E.

- A1—0 to 5 inches; very dark gray (N 3/0) sand; few fine dark gray streaks; weak medium granular structure; very friable; few fine roots; strongly acid; clear wavy boundary.
- A21—5 to 13 inches; grayish brown (10YR 5/2) sand; common medium faint dark gray (10YR 4/1) mottles; single grained; loose; few fine roots; strongly acid; clear wavy boundary.
- A22—13 to 32 inches; gray (10YR 6/1) sand; single grained; loose; few fine roots; slightly acid; clear wavy boundary.
- B&A—32 to 42 inches; gray (10YR 5/1) sandy clay loam; few fine distinct very pale brown (10YR 7/3) mottles; common coarse distinct gray (10YR 6/1) tongues of A2 horizon; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; neutral; clear wavy boundary.
- B2tg—42 to 53 inches; gray (10YR 5/1) sandy clay loam; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; mildly alkaline; clear wavy boundary.
- Cg—53 to 80 inches; gray (10YR 5/1) and (10YR 6/1) mixed sandy loam, loamy sand, and sand; massive; friable; moderately alkaline.

The solum is generally 40 to 60 inches thick. The A horizon ranges from strongly acid to slightly acid. The A&B and B2tg horizons range from slightly alkaline to moderately alkaline. The C horizon is moderately alkaline. The base saturation is more than 35 percent.

The A1 horizon is neutral or has hue of 10YR, value of 2 to 4, and chroma of 2 or less. It is 3 to 6 inches thick. The A2 horizon has hue of 10YR, value of 5 through 7, and chroma of 1 or 2. It is sand or fine sand. It is 18 to 30 inches thick.

The B&A horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. It is also neutral and has value of 5 or 6. The B part of this horizon is sandy loam or sandy clay loam and has tongues of sand extending into this horizon from the A2 horizon. The B&A horizon is 6 to 18 inches thick.

The B2tg horizon is neutral or has hue of 10YR, value of 4 to 6, and chroma of 2 or less. This horizon has mottles in shades of yellow and brown. It is sandy loam or sandy clay loam 6 to 11 inches thick.

The Cg horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It is usually mixed sand, loamy sand, and sandy loam.

## Samsula Series

The Samsula series consists of nearly level, very poorly drained organic soils that formed mostly from nonwoody, hydrophytic plant remains mixed with some woody material. These soils are in ponded areas and swamps in broad areas of the flatwoods. Slopes range from 0 to 1 percent. The water table is at or above the surface of the soil except during extended dry periods. These soils are sandy or sandy skeletal, siliceous, dysic, hyperthermic Terric Medisaprists.

Samsula soils are geographically associated with Montechoa, Okeechobee, Placid, Pomona, Surrency, Terra Ceia, and Wauchula soils. The Montechoa, Placid, Pomona, Surrency, and Wauchula soils are of mineral origin. Montechoa soils have a B'tg horizon at a depth of 40 to 80 inches and have a Bh horizon. Placid soils are sandy to a depth of 80 inches or more. Pomona soils are poorly drained, have a Bh horizon, and have a B'tg horizon at a depth of 40 to 80 inches. Surrency soils have a Btg horizon at a depth of 20 to 40 inches. Wauchula soils have a Bh horizon, are poorly drained, and have a B'tg horizon at a depth of less than 40 inches. In the Okeechobee and Terra Ceia soils, the organic layer is more than 51 inches deep, and it has a higher range in soil reaction. The Okeechobee soils also have a hemic layer.

Typical pedon of Samsula muck, in a ponded area about 100 feet south of State Road 232, (NE 39th Avenue) and 0.25 mile east on NE 15th Street, in northeastern section of Gainesville, NE1/4NW1/4 sec. 27, T. 9 S., R. 20 E.

- Oa1—0 to 8 inches; very dark brown (10YR 2/2) well decomposed muck; 36 percent fibers, less than 10 percent rubbed; weak medium granular structure; friable; common fine and medium roots; sodium pyrophosphate extract is pale brown (10YR 6/3); very strongly acid (4.5 Hellige-Truog); gradual wavy boundary.
- Oa2—8 to 35 inches; very dark gray (10YR 3/1) well decomposed muck; less than 10 percent fibers unrubbed and rubbed; weak medium granular



The Oa horizon has hue of 5YR or 10YR, value of 2 or 3, and chroma of 1 to 3 or hue of 7.5YR, value of 3, and chroma of 2. It is also neutral and has value of 2 or 3. The fiber content after rubbing is 16 percent or less of the soil volume. The fibers are dominantly those of nonwoody plants. Sodium pyrophosphate extract is in hue of 10YR, value of 3 to 6, and chroma of 3 to 8 or value of 7 and chroma of 4 to 8. The Oa horizon is 16 to 50 inches thick.

The IIC1 horizon is neutral or has hue of 10YR, value of 2 to 4, and chroma of 1 or less. It is sandy clay loam, clay loam, or sandy clay. Clay content is more than 28 percent. The IIC1 horizon is 5 to 10 inches thick.

The IICg horizon is neutral or has hue of 10YR, value of 4 to 7, and chroma of 1 or less. It is sandy clay or clay and is more than 22 inches thick.

### Sparr Series

The Sparr series are nearly level to gently sloping, somewhat poorly drained soils that formed in thick beds of sandy and loamy marine sediment. These soils are in broad areas of the gently rolling uplands and on slightly convex areas of the flatwoods. Slopes range from 0 to 5 percent. The water table is at a depth of 20 to 40 inches or 1 to 4 months during most years. These soils are loamy, siliceous, hyperthermic Grossarenic Paleudults.

Sparr soils are geographically associated with Blichton, Lochloosa, Millhopper, Myakka, Newnan, Plummer, Pomona, Pottsburg, Wauchula, and Zolfo soils. Blichton soils are poorly drained and have a Bt horizon at a depth of 20 to 40 inches. Lochloosa soils have a Bt horizon at a depth of 20 to 40 inches. Millhopper soils are moderately well drained. Myakka, Newnan, Pomona, Pottsburg, and Wauchula soils have a Bh horizon. Also, the Myakka and Pottsburg soils are sandy to a depth of 10 inches or more and are poorly drained. Pomona soils are poorly drained. Wauchula soils are poorly drained and have a Bt horizon at a depth of less than 40 inches. Plummer soils are poorly drained. Zolfo soils have a Bh horizon and are sandy to a depth of 80 or more inches. Typical pedon of Sparr fine sand, 150 feet east of State Road 225 in the southwest corner of the University of Florida's Beef Research Center, SE1/4SE1/4 sec. 2, T3 S., R. 20 E.

0 to 4 inches; dark gray (10YR 4/1) fine sand; moderate medium granular structure; very friable; common grass roots; very strongly acid; clear smooth boundary.

4 to 8 inches; dark grayish brown (10YR 4/2) fine sand; weak fine granular structure; very friable; common grass roots; very strongly acid; clear smooth boundary.

8 to 25 inches; pale brown (10YR 6/3) sand; weak fine granular structure; very friable; common grass roots; strongly acid; gradual wavy boundary.

A22—25 to 32 inches; very pale brown (10YR 7/3) fine sand; common medium faint light gray (10YR 7/2) and few fine faint light yellowish brown (10YR 6/4) mottles; weak fine granular structure; very friable; few grass roots; few fine distinct white streaks of clean sand grains; very strongly acid; gradual wavy boundary.

A23—32 to 48 inches; light gray (10YR 7/1) fine sand; few medium distinct yellowish brown (10YR 5/6) mottles; weak fine granular structure; very friable; few fine roots; very strongly acid; clear wavy boundary.

B1g—48 to 56 inches; light gray (10YR 7/2) loamy sand; few fine prominent yellowish red (5YR 4/6) and common medium faint very pale brown (10YR 7/3) mottles; weak fine subangular blocky structure; friable; few fine roots; sand grains are well coated and bridged with clay; extremely acid; clear wavy boundary.

B2tg—56 to 84 inches; light gray (10YR 7/1) fine sandy loam; common fine distinct pale brown (10YR 6/3), common medium prominent strong brown (7.5YR 5/8) and few medium prominent yellowish red (5YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine roots; extremely acid.

The solum is more than 60 inches thick. Reaction is extremely acid to medium acid in all horizons.

The A horizon is sand or fine sand. The upper part of the surface layer is fine sand. The Ap or A1 horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It is 6 to 10 inches thick. The A21 horizon has hue of 10YR, value of 5 to 7, and chroma of 3 or 4. In places, it has a few fine yellow or brown mottles. It ranges from 11 to 17 inches in thickness. The A22 and A23 horizons have hue of 10YR, value of 6, and chroma of 1 to 3, or value of 7 and chroma of 1 to 4. Mottles are in shades of gray, yellow, and brown. The A22 horizon is 7 to 14 inches thick, and the A23 horizon is 15 to 39 inches thick.

The B1 horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 to 3 or value of 7 and chroma of 1 to 4. It has common to many mottles in shades of gray, yellow, or brown, or it is a mixture of these colors. The B1 horizon is loamy sand or loamy fine sand. It is 0 to 9 inches thick. The B2tg horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 2 or less. Mottles are in shades of gray, yellow, brown, or red. The B2tg horizon is sandy loam, fine sandy loam, or sandy clay loam. Some pedons have a B21t horizon. Where present, the B21t horizon has the same color range as the B1 horizon. It is sandy loam, fine sandy loam, or sandy clay loam 4 to 8 inches thick.

### Surrency Series

The Surrency series are very poorly drained soils that formed in beds of loamy marine deposits. These soils



are in ponds and depressional areas of the flatwoods and on larger prairies of the uplands. Slopes are less than 1 percent. The water table is within 10 inches of the surface for about 6 months or more. Water stands on the surface for about 4 months or more during most years. These soils are loamy, siliceous, thermic Arenic Umbric Paleaquults.

Surrency soils are geographically associated with Montecocha, Pelham, Pomona, Samsula, Wauberg, and Wauchula soils. The Montecocha soils have a Bh horizon, and the B't horizon is at a depth of more than 40 inches. The Pelham soils are poorly drained and do not have an umbric A1 horizon. The Pomona soils are poorly drained and have a B't horizon that is more than 40 inches below the surface. Samsula soils are very poorly drained and have an organic surface layer more than 16 inches thick. The Wauberg soils are poorly drained and do not have an umbric A1 horizon. Wauchula soils are poorly drained, have a Bh horizon, and do not have an umbric A1 horizon.

Typical pedon of Surrency sand, in a cypress pond 775 feet north of NE 53rd Ave. and 1.9 miles east of U.S. 441, SW1/4SE1/4 sec. 16, T. 9 S., R. 20 E.

- A1—0 to 15 inches; black (N 2/0) sand; moderate medium granular structure; very friable; common fine and medium roots, few large roots; extremely acid; clear wavy boundary.
- A2—15 to 28 inches; light gray (10YR 7/2) sand; single grained; loose; few fine, medium, and large roots; very strongly acid; clear wavy boundary.
- B21tg—28 to 44 inches; gray (10YR 6/1) sandy clay loam; common fine prominent reddish brown (5YR 5/4) and few fine prominent strong brown (7.5YR 5/8) streaks along root channels; moderate medium subangular blocky structure; friable; slightly sticky and plastic; few fine roots; few thin discontinuous clay films on faces of peds; few fine pockets of clean white sand grains; extremely acid; clear wavy boundary.
- B22tg—44 to 55 inches; gray (10YR 6/1) sandy clay loam; few fine and medium prominent yellowish red (5YR 4/6) mottles; moderate medium subangular blocky structure; firm, slightly sticky and plastic; few fine roots; few thin discontinuous clay films on faces of peds; few fine and medium pockets of clean white sand grains; extremely acid; gradual wavy boundary.
- B23tg—55 to 80 inches; light gray (5Y 7/1) sandy clay loam; weak fine subangular blocky structure; firm; sticky and plastic; few fine roots; few thin discontinuous clay films on faces of peds; few fine and medium pockets of clean white sand grains; extremely acid.

The solum is more than 60 inches thick. Reaction is extremely acid to strongly acid in all horizons.

The A1 horizon is neutral or has hue of 10YR, value of 2 or 3, and chroma of 1 or less. It is 10 to 16 inches thick. The A2 horizon has hue of 10YR, value of 4 to 6, and chroma of 2 or value of 7 and chroma of 1 or 2. In places, it has mottles in shades of yellow and brown. The A2 horizon is 10 to 24 inches thick.

The B21tg horizon has hue of 10YR, value of 5 or 6, and chroma of 1. It has mottles in shades of yellow, brown, and red. It is 12 to 17 inches thick. The B22tg and B23tg horizons have hue of 10YR or 5Y, value of 5 to 7, and chroma of 1. Mottles are in shades of yellow, brown, and red. The B22tg horizon is 11 to 18 inches thick. The Btg horizon is sandy loam or sandy clay loam. Average clay content of the upper 20 inches ranges from 15 to 23 percent.

### Tavares Series

The Tavares series consists of nearly level to gently sloping, moderately well drained soils that formed in thick beds of sandy marine deposits. These soils are on slight ridges in the flatwoods and along the lower slopes of the deep sandy areas of the uplands. Slopes range from 0 to 5 percent. The water table is between 40 and 72 inches below the surface for cumulative periods of 6 months or more during most years. It recedes to more than 72 inches during droughty periods. These soils are hyperthermic, uncoated Typic Quartzipsamments.

Tavares soils are geographically associated with Apopka, Candler, Chipley, Lake, Millhopper, Myakka, Placid, Pompano, and Zolfo soils. Apopka soils are well drained and have a Bt horizon. Candler and Lake soils are excessively drained. Chipley soils are somewhat poorly drained. Millhopper soils have a Bt horizon. Myakka soils are poorly drained and have a Bh horizon. Placid soils are very poorly drained and have an A1 horizon 10 to 24 inches thick. Pompano soils are poorly drained. Zolfo soils are somewhat poorly drained and have a Bh horizon.

Typical pedon of Tavares sand, about 550 feet south of State Road 26, on the Santa Fe Correctional Institution Farm, NW1/4NE1/4 sec. 36, T. 9 S., R. 20 E.

- Ap—0 to 8 inches; dark gray (10YR 4/1) sand; weak moderate granular structure; very friable; common grass roots; extremely acid; clear smooth boundary.
- C1—8 to 19 inches; pale brown (10YR 6/3) sand; single grained; loose; common grass roots; extremely acid; clear wavy boundary.
- C2—19 to 36 inches; very pale brown (10YR 7/3) sand; single grained; loose; common grass roots; few medium faint streaks of light gray (10YR 7/1) clean sand grains; extremely acid; clear wavy boundary.
- C3—36 to 45 inches; very pale brown (10YR 7/3, 10YR 8/3) sand; common fine and medium distinct yellowish brown (10YR 5/6) mottles; single grained;

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and streaks of gray (10YR 5/1) sandy loam; strongly acid; clear wavy boundary.

B3—50 to 63 inches; gray (N 5/0) sandy clay loam; common medium faint dark gray (N 4/0), common medium faint gray (10YR 5/1), and common fine prominent yellowish red (5YR 5/8) mottles; massive; firm; strongly acid; clear wavy boundary.

C—63 to 81 inches; gray (10YR 6/1) clay; common medium faint gray (10YR 5/1) and few medium faint light gray (10YR 7/1) mottles; massive; firm; few fine soft and firm phosphatic limestone nodules; medium acid.

The solum is 50 to 75 inches thick. Reaction is very strongly acid to slightly acid in the A horizon and strongly acid to neutral in the Btg and Cg horizons.

The A1 horizon is neutral or has hue of 10YR, value of 2 or 3, and chroma of 1 or less. It is 5 to 9 inches thick. In places, the A1 horizon is only 5 or 6 inches thick and is mixed with the A2 horizon to a depth of 7 to 9 inches. This transitional layer is very dark gray. The A2 horizon is neutral or has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 or less. In places, it has mottles of yellow and brown. The A2 horizon is sand, fine sand, loamy sand, or loamy fine sand 15 to 32 inches thick.

The B21tg horizon is neutral or has hue of 10YR, value of 4 to 6, and chroma of 1 or less. In places, it has mottles in various shades of yellow, brown, and red. It is sandy clay loam. Clay content ranges from 24 to 35 percent. The B21tg horizon ranges from 14 to 22 inches in thickness. The B22tg horizon has the same color range as the B21tg horizon. This horizon is sandy clay loam. In places, it has thin streaks and pockets of sandy clay and sandy loam material. It is 6 to 12 inches thick. The B3g horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 1 or less. It has mottles in shades of yellow, brown, and red. The B3g horizon is sandy clay loam, sandy loam, or fine sandy loam. Clay content ranges from 18 to 35 percent. Thin streaks and pockets of finer and coarser textured material are in this horizon in some pedons. This horizon is 8 to 14 inches thick.

The Cg horizon is neutral or has hue of 10YR, value of 5 to 7, and chroma of 1 or less. It has yellow, brown, and red mottles. The Cg horizon is sandy clay or clay and usually has thin streaks and pockets of sandy loam and sandy clay loam.

### Wauchula Series

The Wauchula series consists of nearly level, poorly drained soils that formed in thick beds of sandy and loamy marine deposits. These nearly level soils are in broad areas of the flatwoods. Slopes range from 0 to 2 percent. During most years the water table is at a depth of less than 10 inches for 1 to 4 months and is at a depth of 10 to 40 inches for about 6 months. During the driest seasons, the water table recedes to a depth of

more than 40 inches. These soils are sandy, siliceous, hyperthermic Ultic Haplaquods.

Wauchula soils are geographically associated with Floridana, Montecocha, Mulat, Newnan, Pelham, Pomona, Pottsburg, Riviera, Samsula, Sparr, and Surrency.

Montecocha soils have an A1 horizon 12 to 24 inches thick and are very poorly drained. Mulat soils do not have a Bh horizon. Newnan soils have a B't horizon 40 to 80 inches below the surface and are somewhat poorly drained. Pelham soils do not have a Bh horizon. Pomona soils have a Btg horizon below a depth of 40 inches. Pottsburg soils have a Bh horizon below a depth of 50 inches and are sandy to 80 inches or more. Riviera soils do not have a Bh horizon and are more alkaline. Samsula soils have organic material 16 to 40 inches thick. Sparr soils do not have a Bh horizon, have a Btg horizon below a depth of 40 inches, and are somewhat poorly drained. Surrency soils do not have the Bh horizon and are very poorly drained.

Typical pedon of Wauchula sand, in an area about 250 feet southwest of intersection of two trail roads, 0.4 mile north of Northwest 53rd Avenue, and 1 mile east of U.S. Highway 441, NW1/4SE1/4 sec. 17, T. 9 S., R. 20 E.

A11—0 to 5 inches; black (N 2/0) sand; weak fine granular structure; very friable; many fine and medium roots; very few clean sand grains; extremely acid; clear wavy boundary.

A12—5 to 8 inches; dark gray (10YR 4/1) sand; few fine faint black mottles; weak fine granular structure; very friable; many fine and medium roots; extremely acid; clear wavy boundary.

A2—8 to 14 inches; light brownish gray (10YR 6/2) fine sand; few fine distinct black (N 2/0) streaks along root channels; single grained; loose; common fine roots; few medium nodules of ironstone; very strongly acid; abrupt wavy boundary.

B2h—14 to 18 inches; dark reddish brown (5YR 2/2) loamy sand; few medium faint dark reddish brown (5YR 3/2) mottles; moderate medium granular structure; friable; common fine roots; many sand grains coated with organic matter; extremely acid; gradual wavy boundary.

B3—18 to 23 inches; dark brown (10YR 4/3) sand; few medium distinct dark brown (7.5YR 3/2) mottles; weak medium granular structure; very friable; few fine roots; very strongly acid; clear wavy boundary.

A'2—23 to 28 inches; pale brown (10YR 6/3) fine sand; few medium faint dark brown (10YR 4/3) mottles; single grained; loose; many clean sand grains; strongly acid; clear wavy boundary.

B'2tg—28 to 37 inches; gray (10YR 5/1) fine sandy loam; common fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid; clear wavy boundary.



B'31g—37 to 56 inches; light brownish gray (10YR 6/2) loamy sand; common fine prominent, strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; very friable; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

B'32g—56 to 62 inches; light gray (10YR 7/1) fine sandy loam; few medium and coarse prominent red (10YR 4/8) mottles; many fine prominent strong brown (7.5YR 5/8) and common medium and coarse prominent brownish yellow (10YR 6/8) mottles; weak fine subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid; clear wavy boundary.

Cg—62 to 80 inches; light gray (N 7/0) sandy clay loam; few fine prominent strong brown (7.5YR 5/8) and few fine distinct pale yellow (10YR 7/4) mottles; massive; firm; few fine roots; few fine and medium pockets of sandy loam material; very strongly acid.

The solum is more than 60 inches thick. Reaction is extremely acid through strongly acid throughout.

The A1 horizon is neutral or has hue of 10YR, value of 2 to 4, and chroma of 1 or less. It is 5 to 9 inches thick. The A1 horizon has value of 2 or 3 where it is only 5 or 6 inches thick. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It is sand or fine sand 6 to 19 inches thick.

The Bh horizon has hue of 5YR, value of 2 or 3, and chroma of 1 to 3; hue of 7.5YR, value of 3, and chroma of 2; or hue of 10YR, value of 2, and chroma of 1 or 2. It is sand, fine sand, or loamy sand. The sand grains are well coated with organic matter. The Bh horizon ranges from 4 to 12 inches in thickness. The B3 horizon has hue of 10YR, value of 3 or 4, and chroma of 3 or 4. It is sand or fine sand 0 to 6 inches thick.

The A'2 horizon has hue of 10YR, value of 5, and chroma of 1 or 2, or value of 6 and chroma of 1 to 3 or value of 7 and chroma of 1 to 4. In places, it has mottles in shades of gray, yellow, and brown. The A'2 horizon is sand or fine sand 2 to 6 inches thick.

The B'2tg horizon is neutral or has hue of 10YR, value of 4 to 7, and chroma of 2 or less. Mottles are in shades of gray, yellow, brown, and red. The B'2tg horizon is sandy loam, fine sandy loam, or sandy clay loam 9 to 32 inches thick. The B'3g horizon has the same color range as the B'2tg horizon. It is loamy sand, loamy fine sand, or sandy loam about 9 to 28 inches thick. In some pedons this horizon is absent.

The Cg horizon has hue of 10YR, value of 5 to 7, and chroma of 1; hue of 2.5Y, value of 7, and chroma of 1; hue of 5Y, value of 6 or 7, and chroma of 1 or 2. It is also neutral and has value of 5 to 7.

### Zolfo Series

The Zolfo series consists of nearly level, somewhat poorly drained soils that formed in beds of thick marine

deposits. These soils are on slightly higher, convex areas of the broad flatwoods. Slopes range from 0 to 2 percent. The water table is at a depth of 24 to 40 inches for 2 to 6 months during most years. It may be at a depth of 10 to 24 inches for short durations of about two weeks during periods of high rainfall. These soils are sandy, siliceous, hyperthermic Grossarenic Entic Haplohumods.

Zolfo soils are geographically associated with Chipley, Pottsburg, Sparr, and Tavares soils. Chipley soils do not have a Bh horizon. Pottsburg soils are poorly drained. Sparr soils have a Bt horizon at a depth of 40 to 80 inches and do not have a Bh horizon. Tavares soils are moderately well drained and do not have a Bh horizon.

Typical pedon of Zolfo sand, in an area 375 feet south of a graded road, 2.2 miles west of LaCross and 1 mile east of State Road 239, NE1/4NE1/4 sec. 30, T. 7 S., R. 19E.

Ap—0 to 8 inches; dark gray (10YR 4/1) sand; weak medium granular structure; very friable; few fine roots; very strongly acid; clear wavy boundary.

A21—8 to 14 inches; grayish brown (10YR 5/2) sand; single grained; loose; few fine roots; very strongly acid; clear wavy boundary.

A22—14 to 34 inches; pale brown (10YR 6/3) sand; few fine distinct light gray (10YR 7/1) and few fine faint yellowish brown mottles; single grained; loose; few fine roots; very strongly acid; gradual wavy boundary.

A23—34 to 60 inches; very pale brown (10YR 7/3) sand; few medium distinct gray (10YR 6/1) and few medium distinct brownish yellow (10YR 6/6) mottles; single grained; loose; few fine roots; very strongly acid; abrupt wavy boundary.

B21h—60 to 67 inches; dark brown (10YR 4/3) sand; few medium distinct dark reddish brown (5YR 3/3) mottles; moderate medium granular structure; very friable; few fine roots; many sand grains are coated with organic matter; very strongly acid; clear wavy boundary.

B22h—67 to 82 inches; dark reddish brown (5YR 3/3) sand; moderate medium granular structure; very friable; sand grains are well coated with organic matter; very strongly acid.

The soil is sand or fine sand to a depth of more than 80 inches. The surface layer is sand. Soil reaction ranges from very strongly acid to medium acid in all horizons.

The Ap or A1 horizon has hue of 10YR, value of 2 to 5, and a chroma of 1 or 2. It is 4 to 9 inches thick. The A2 horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 4. It has mottles in various shades of gray, yellow, and brown. The A2 horizon is 46 to 68 inches thick.



TABLE 10.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation]

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
2B----- Candler	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight.
2C----- Candler	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight.
3B----- Arredondo	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight.
3C----- Arredondo	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight.
4B*: Arredondo-----  Urban land.	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight.
5B----- Fort Meade	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight.
6B----- Apopka	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight.
6C----- Apopka	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight.
7B----- Kanapaha	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
→ 8B----- Millhopper	Severe: cutbanks cave.	Slight-----	Moderate: wetness.	Slight-----	Slight.
8C----- Millhopper	Severe: cutbanks cave.	Slight-----	Moderate: wetness.	Moderate: slope.	Slight.
9B*: Millhopper-----  Urban land.	Severe: cutbanks cave.	Slight-----	Moderate: wetness.	Slight-----	Slight.
→ 11----- Riviera	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
→ 13----- Pelham	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
14----- Pomona	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
15----- Pompano	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
→ 16----- Surrency	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.

See footnote at end of table.



TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
17----- Wauchula	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
18*: Wauchula-----  Urban land.	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
19----- Monteocha	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
20B----- Tavares	Severe: cutbanks cave.	Slight-----	Moderate: wetness.	Slight-----	Slight.
21----- Newnan	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
22----- Floridana	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
23----- Mulat	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
25----- Pomona	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
26----- Samsula	Severe: cutbanks cave, excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding.	Severe: ponding, low strength.	Severe: ponding.
27*. Urban land					
28----- Chipley	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
29B----- Lochloosa	Severe: cutbanks cave.	Slight-----	Moderate: wetness.	Slight-----	Slight.
29C----- Lochloosa	Severe: cutbanks cave.	Slight-----	Moderate: wetness.	Moderate: slope.	Slight.
30B----- Kendrick	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight.
30C----- Kendrick	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight.
31A, 31B, 31C----- Blichton	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
32B, 32C----- Bivans	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, wetness, shrink-swell.

See footnote at end of table.