U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS—MILTON WHITNEY, Chief.

IN COOPERATION WITH THE GEORGIA STATE COLLEGE OF AGRICULTURE,
ANDREW M. SOULE, PRESIDENT; DAVID D. LONG,
IN CHARGE SOIL SURVEY.

SOIL SURVEY OF EARLY COUNTY, GEORGIA.

BY

DAVID D. LONG, OF THE GEORGIA STATE COLLEGE OF AGRICULTURE, IN CHARGE, AND E. C. HALL, OF THE U. S. DEPARTMENT OF AGRICULTURE.

W. EDWARD HEARN, INSPECTOR, SOUTHERN DIVISION.

[Advance Sheets—Field Operations of the Bureau of Soils, 1918.]

WASHINGTON:
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1921.

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., March 22, 1920.

SIR: Under the cooperative agreement with the Georgia State College of Agriculture a soil survey of Early County was carried to completion during the field season of 1918.

I have the honor to transmit herewith the manuscript and map covering this work and to recommend their publication as advance sheets of Field Operations of the Bureau of Soils for 1918, as authorized by law.

Respectfully,

MILTON WHITNEY,
Chief of Bureau.

Hon. E. T. MEREDITH,
Secretary of Agriculture.

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SOIL SURVEY OF EARLY COUNTY, GEORGIA.

By DAVID D. LONG, of the Georgia State College of Agriculture, In Charge, and E. C. HALL, of the U. S. Department of Agriculture.—Area Inspected by W. EDWARD HEARN.

DESCRIPTION OF THE AREA.

Early County, Georgia, is situated in the southwestern part of the State. The Florida State line lies approximately 30 miles south of the county, while the Chattahoochee River on the west separates it from Alabama. The maximum dimension from north to south is 30 miles, and from east to west 28 miles. The total area is 490 square miles, or 313,600 acres.

Early County lies in that division of the Coastal Plain known as the Dougherty Plain. The surface in general consists of an undulating plain made up of low ridges and intervening flats marked by numerous sinks or depressions. There are no conspicuous elevations or hills, and in only a few places in the northwestern part of the county are there any steep slopes or broken areas. The whole county lies within a range of about 150 feet in elevation. The elevation at Blakely is given as 300 feet.

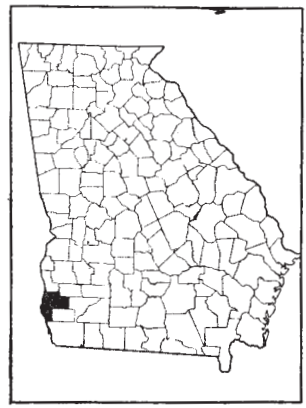


FIG. 1.—Sketch map showing location of the Early County area, Georgia.

The highest and most rolling surface features are found in the northern and western parts of the county. Here the streams have cut relatively deep valleys with steep to rounded slopes, while the interstream areas are undulating. The short lateral streams flowing into the Chattahoochee River have cut deeply into the surface and are bordered by almost vertical slopes. This is also true of the larger streams as they approach the river, within an area 2 or 3 miles wide, extending from the Clay County line south to the Central of Georgia Railroad. The Chattahoochee River within this belt has cut its valley through an anticline in which a rather resistant bed of clay is raised higher than farther eastward. The streams flowing into the river must cut through this bed and in doing so have excavated rather deep valleys whose sides remain steep because of the resistance of the clay to weathering.

Depressed areas are found between Lucile and Jakin, and also in the eastern part of the county between Nicholsville and Douglass

Crossroads. The sink depressions are quite variable in shape and extent. Many of them are circular, but in the low, level areas they are more sinuous and irregular, connecting with one another to form drainageways. In the territory drained by Spring Creek, Lime Branch, Mill Creek, and Blue Creek the depressions are quite numerous and connected.

The Chattahoochee River has built up a high terrace or second bottom along its course. This has a smooth, level topography and is flanked on the east by the upland, forming a distinct bluff. This stream drains about one-half the county. The eastern part is drained by Spring Creek and its tributaries. All the run-off ultimately reaches the Gulf of Mexico through the Chattahoochee River.

The streams in the western part of the county flow in well-defined channels, have swift currents, and are cutting deeper into the surface. Those in the eastern part meander through wide, swampy areas, and it is always difficult to determine the main channel.

Surface drainage is not everywhere well established, as the general relief is not sufficient to produce the cutting of adequate channels. Most of the drainage is subterranean, owing to the solution of the underlying limestone formations. Much of the run-off collects in depressions and sinkholes, from which it slowly passes to underground channels, and later issues as springs to form the main streams. Artificial drainage is necessary for the improvement of the depressed areas.

Early County was established in 1818, the year after the Indians were removed from this territory. The first settlers moved into this section from other parts of Georgia, Alabama, and the Carolinas. Immigration increased materially after the removal of the Indians. The present white population is all American born, but negroes make up about two-thirds of the total. The population in 1910 is given as 18,122, and is all classed as rural. It averages 34.6 persons per square mile. The most thickly populated portions of the county are between Blakely and Colomokee and Blakely and Hilton.

Blakely, the county seat, is centrally located. It had a population in 1910 of 1,833. Arlington is the second town of importance, but is only partly located within this county. Jakin, in the southern part of the county, had a population of 622 in 1910.[1] Damascus is a trading point for the southeastern part of the county.

Transportation facilities for Early County are afforded by a branch of the Central of Georgia Railroad between Albany, Ga., and Lockhart, Ala., which crosses the county in a northeast-southwest direction, passing through Arlington, Blakely, and Hilton. The Georgia,

[1] Since this report was written the preliminary announcement of the population of Early County and its civil divisions in 1920 has been issued by the Bureau of the Census, as follows: Early County, 18,983; rural, 18,983; Blakely, 1,985; Jakin, 430; Kestler, 373, Arlington, total, 1,331, part in Early County, 280.

Florida & Alabama Railroad passes through the eastern extremity of the county, connecting with the Central of Georgia at Arlington. The Atlantic Coast Line between Savannah and Montgomery passes through the southern section of the county. Jakin is the chief shipping point on this line.

An extensive system of public roads leads to all parts of the county. The main roads are maintained in fair condition the entire year. All the public roads are graded and the streams bridged. Rural mail-delivery routes and telephone lines extend to all parts of the county.

CLIMATE.

The climate of Early County is characterized by short, open winters and long, hot summers, with copious rainfall well distributed throughout the growing season.

The winter season is mild, but the relatively high humidity makes the cold more penetrating and consequently more noticeable than in regions farther north. Low temperatures occasionally occur, but the mean winter temperature is 50.6° F. During the winter a few days of cold weather often occur, followed by warm, balmy days, which generally terminate with a rain. In normal winters outdoor farm work can be done without discomfort, and during January and February most of the land is plowed for spring crops.

The summer months are marked by high temperatures, the maximum recorded being 108°. The mean monthly temperature for June, July, and August is over 80°. The heat of the summer days is tempered by Gulf breezes from the south and southwest at night and by the occurrence of thunderstorms.

The mean annual rainfall is 52.14 inches, while the precipitation during the driest year on record (1915) was 39.83 inches, and for the wettest year (1907) 70.94 inches. The rainfall is well distributed. The heaviest precipitation of the year occurs in July and August, and is due partly to the frequency of thunderstorms and partly to subtropical disturbances from the Gulf. The driest months are October and November, in which the weather is especially favorable for the harvesting of crops.

The average date of the last killing frost in the spring as recorded at Blakely is March 18, and the average date of the first in the fall, November 15. This gives a normal growing season of 8 months, or 242 days. The latest recorded killing frost in the spring occurred April 26, and the earliest recorded in the fall, on October 22.

The climate is well suited to the production of a large number of crops. Farming operations may be carried on during the entire year, and open grazing can be maintained for hogs and cattle the year round, making expensive shelter unnecessary. A long list of

crops can be grown during the winter, among which may be mentioned oats, wheat, rye, barley, and clovers and such vegetables as cabbage, lettuce, beets, onions, turnips, and collards. Early vegetables such as beans and potatoes can be planted in February with some assurance that they will not be killed by frost.

The table below gives the normal monthly, seasonal, and annual temperature and precipitation as recorded by the Weather Bureau station at Blakely:

Normal monthly, seasonal, and annual temperature and precipitation at Blakely.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1915).	Total amount for the wettest year (1907).
	°F.	°F.	°F.	Inches.	Inches.	Inches.
December	50.4	89	11	4.09	1.81	9.43
January	49.7	85	14	3.91	5.59	.87
February	51.8	85	−1	6.10	4.52	2.67
Winter	50.6	89	−1	14.10	11.92	12.97
March	62.0	96	24	5.17	3.93	2.12
April	66.9	97	33	3.20	.28	12.57
May	74.2	102	39	2.92	7.83	2.68
Spring	67.4	102	24	11.29	12.04	17.37
June	80.6	108	54	4.50	2.81	2.92
July	81.8	104	58	6.92	2.42	12.77
August	81.1	105	60	6.23	3.45	5.18
Summer	81.2	108	54	17.65	8.68	20.87
September	77.3	103	42	3.62	2.32	13.16
October	67.4	101	29	2.97	4.23	1.51
November	57.8	88	21	2.51	.64	5.06
Fall	67.5	103	21	9.10	7.19	19.73
Year	66.7	108	−1	52.14	39.83	70.94

AGRICULTURE.

The territory now embraced in Early County was originally forested with a luxuriant growth of longleaf yellow pine on the upland and with hardwoods along the stream courses. The agriculture of the early settlers was confined to the production of such crops as were necessary for sustenance, chiefly corn, wheat, rye, buckwheat, and vegetables. Cattle and hogs grazed in the open forests and provided the home supply of meat, as well as an article of commerce. Development in agriculture was retarded by the long distance to markets and

the lack of transportation facilities until boat service on the Chattahoochee River made available a market at Apalachicola, Fla., and later one at Columbus, Ga. Cotton entered into the agriculture before the Civil War, but it did not assume a place of great importance until after the war, when there arose pressing needs for a cash crop.

In 1882 what is now the Central of Georgia Railroad was extended from Albany to Blakely, affording the first facilities for direct rail shipments from the county. The lumber and turpentine industries advanced at once and have continued to be important until the present time. Practically all the merchantable timber has been removed.

The agriculture was marked by a steady increase in the production of cotton and corn until 1917. According to census statistics the area in cotton increased from 20,552 acres in 1879 to 52,569 acres in 1909. Cotton has been the chief crop of the county, and the one cash crop, all the business being centered about the production of this staple. The production in 1909 was 18,731 bales, but it later increased to more than 20,000 bales. The average yield has been 0.35 bale per acre, although yields of 1 bale or more have been produced on farms where up-to-date methods were used. Cotton can not be considered the foremost crop at the present time. In 1915 the boll weevil entered the area and caused considerable damage, while in 1916 the loss was sufficient to change the entire system of cropping. The yield of cotton in 1917 was cut to less than one-third of the normal. Cotton is still grown on a large acreage, but the yields are extremely low, averaging less than 0.25 bale, while on some farms the crop has been a total failure.

At present the agriculture is centered about the production of peanuts, corn, oats, velvet beans, cowpeas, wheat, and rye, and the raising of hogs. There has been such a radical change that it is difficult to give estimates of the acreage and production of each crop. Corn always has been grown extensively and 411,004 bushels were produced in 1909 on a total of 37,716 acres, or an average yield of 11 bushels per acre. Formerly not enough corn was produced for local needs, but at present there is sufficient grown to meet all the demands. The crop is used for stock feed and for food.

Peanuts are one of the chief money crops. They are grown on a large acreage and average about 30 bushels per acre, but yields of 60 to 80 bushels per acre have been reported. Practically all of the crop is shipped to markets where peanut-oil mills have been established. The vines are used for forage. Part of the crop, especially that portion which remains in the soil after harvest, is fed to hogs. The small Spanish variety is preferred.

Oats have been a standard crop since the county was first settled, although the acreage and production have been quite variable. The census for 1909 reported 3,598 acres in oats, yielding 48,128 bushels, or an average of 13 bushels per acre. The acreage and yield have both increased since the advent of the boll weevil. Yields are affected by the climatic conditions during the spring, and consequently oats are considered an uncertain crop. A dry spring generally means almost a failure. The crop is used locally as stock feed, but within the last year a considerable quantity has been shipped from the county. Several varieties are grown, but the Fulghum seems to be the favorite.

Velvet beans are an important crop, both for pasturage and as ground feed for stock. Cowpeas also are grown extensively for pasturage and forage. Both these crops are productive on all the well-drained soils of the county. The velvet bean produces a dense mass of long, tangled vines, which can not be used for hay, but which, during the winter months, affords excellent pasturage for cattle. The seed is picked by hand and ground in local mills. Cowpeas yield one-half to 1½ tons of hay per acre. Wheat and rye are grown to a small extent, and are used locally. Some rye is grown for pasturage.

Sugar cane is produced on most farms for the manufacture of sirup. This is used almost entirely on the farm, though sometimes there is a surplus for market. The sirup made from cane grown on the light-colored soils is superior in quality, having a light color and excellent flavor, while that produced on the red lands has a darker color and less desirable flavor. According to the census in 1909 there were 374 acres of sugar cane, which produced 65,404 gallons of sirup.

Pork production has increased within the last few years to such an extent that there is a surplus for outside markets. Formerly sufficient pork was not produced for local needs. The quality of the stock has been considerably improved, as many herds of improved breeds have been introduced. These breeds are chiefly the Duroc-Jersey, Poland-China, and Berkshire. More attention is being given to the feeding of stock.

The number of cattle is said to be decreasing, although the quality is improving. The open range of broom sedge and wire grass is giving out, while in its place the farmers are feeding a few cattle. Broom sedge and wire grass are not very nutritious, but when they are burned over, the young, succulent growth is readily eaten. Some improved breeds of cattle are being introduced.

There has been little or no recognition of the individual adaptation of the various crops to the different soils of the county. Cotton and corn have been planted indiscriminately on all the well-drained soils. Peanuts have been found more productive on the sandy types.

The prevailing farm methods are similar to those throughout the southern part of the State. The land for cotton is broken with 1-horse plows, and the soil turned to form ridges, upon which the seed is planted. The young plants are barred off with turning plows and chopped out to a desired stand, when the soil is again turned toward the young plants. Subsequent cultivations are performed with "sweeps." Two or three hoeings are necessary to keep the cotton free from weeds and grass. The rows are laid off 3½ to 5 feet apart. On some of the best farms the methods are more advanced, the land being broken with heavy 2-horse plows and harrowed before the rows are laid off. The cultivations are more frequent and done with improved implements.

The seed bed for corn is generally prepared in about the same way as that for cotton. The seed is usually dropped by hand in the water furrows. Corn generally receives two or three cultivations. About the latter part of July and through August the blades of the corn stalks are gathered for fodder, while the corn is harvested in November and December.

Oats are usually seeded broadcast and turned under with small plows. More improved methods are used on some farms, the land being plowed and the seed either sown broadcast and disked under or drilled in. Early fall seeding is most desirable, although in some cases it is November or December before the seed is sown. The crop is harvested in June. No spring oats are sown.

The land for peanuts is generally well prepared and the seed dropped by planters in rows 2½ to 3 feet apart. The crop is cultivated 3 or 4 times.

Velvet beans are seeded in the corn rows at the time of planting the corn, or sometimes a few weeks later. They are often planted between the rows at the last cultivation of the corn.

Cowpeas are sown broadcast on oat land after that crop is removed. They are also planted in corn fields, but have largely given way to velvet beans for this purpose.

The equipment commonly used on the farms consists of light 1-horse turning plows and sweeps for cultivation. Heavier tillage implements are becoming more numerous, and the cultivating machinery is of a more improved type. Labor-saving machinery is not used as extensively as in many sections. This has been due chiefly to cheap labor, but under present conditions modern machinery is bound to become more popular. Mules make up the work stock. The farm buildings are usually small, as under the climatic conditions and the former system of farming there was no need of large barns.

Little or no rotation of crops was followed under the system of cotton and corn farming, and many fields have been continuously in cotton or corn for years. However, with the present diversification

of crops, definite rotations can be readily established to meet the needs of each farm.

Commercial fertilizers formerly were in common use on cotton, and to some extent on corn and oats. The expenditure for fertilizers in 1909 was $148,709, or $70 for each of the 2,141 farms reporting an outlay. The fertilizers consisted chiefly of 9–2–2 to 10–2–2 [2] mixtures, and were applied at the rate of 200 to 400 pounds per acre. The amount of fertilizer used has been reduced about 50 to 60 per cent since the advent of the boll weevil. Very small quantities are used on corn, oats, or peanuts, and in many cases no fertilizers are used. Velvet beans are ground and used for fertilizer by a few farmers. Nitrate of soda is used to some extent as a top dressing for oats.

Most of the farm laborers are colored. There is a general scarcity of labor at present, and this has led to the abandoning of some fields. Wages range from 75 cents to $1.50 a day, depending upon the character of the work. Cotton is picked at 75 cents to $1 a hundred pounds. The labor expenditure for the county is about $75,000 to $80,000 a year.

In 1910 there were 2,509 farms in the county, of which 25.5 per cent were operated by owners, and 74.5 per cent by tenants. Tenancy is generally on a share basis, the landowner supplying the stock, implements, and one-half the fertilizer and receiving one-half the crop. The average size of the farms in 1910 was 76.3 acres, of which 44.3 acres was improved land. There are many holdings of more than 1,000 acres, and owing to this condition much land remains in a cut-over state.

SOILS.

Early County lies entirely within the Coastal Plain region of the State. The soils are derived chiefly from unconsolidated marine sediments. The underlying rock mantle of hard, cherty limestone has no doubt contributed to the formation of these soils to some extent. This formation is described as the Vicksburg in the "Geology of the Coastal Plain of Georgia." [3] Silicified limestone bearing large quantities of fossils outcrops at various points throughout the county, particularly in the southern part. The Vicksburg formation, embracing white limestones, sands, and clays, underlies all of the county with the exception of the northwest corner, where the Wilcox formation occurs, consisting of sands, clays, and shell marls.

Brown to red soils with red subsoils predominate throughout the northern part of the county, and gray soils with yellow subsoils over the southern and eastern parts. The line dividing these classes of soils is irregular, but extends roughly from Arlington to Blakely,

[2] Percentages respectively of phosphoric acid, nitrogen, and potash.

[3] Bull. No. 26, Geological Survey of Georgia.

with long points reaching southward to the Miller County line along Spring Creek, Dry Creek, and its branches. From Blakely the line bends to the northwest and thence runs southwest, following along Cohelee Creek to the Chattahoochee River. The points of red land extending southward lie well below the general level of the gray lands, and this suggests that along these streams erosion has taken place down to the rock from which the red soils develop, which seemingly dip and run beneath the rocks from which the gray soils are developed. Along the upper part of Sowhatchee Creek the red lands occupy a noticeably lower position than the general level of the gray lands.

Along the Chattahoochee River and other large streams there are developed areas of first-bottom and terrace soils. The broad terraces, or second bottoms, along the Chattahoochee River represent old alluvial deposits which have undergone considerable change through drainage, oxidation, and aeration. The recent-alluvial or first-bottom soils are still being modified by the constant overflows of the river and smaller streams.

For the purpose of classification the soils are grouped into series, within which the color, structure, and origin are uniform. Each series includes a number of types, the units of classification and mapping. These are determined on the basis of texture, or the relative percentages of gravel, sand, silt, and clay. Fourteen soil series are recognized in Early County, including 22 types and 5 phases, in addition to Swamp. The upland soils are embraced in the Greenville, Orangeburg, Ruston, Marlboro, Norfolk, Tifton, Blakely, Grady, and Plummer series.

The members of the Greenville series have red surface soils and red to deep-red, friable sandy clay or clay subsoils. They are derived from unconsolidated marine sediments influenced locally by the weathering of impure limestone. They generally occupy high positions and are well drained. Three types, the loamy sand, sandy loam, and clay loam, the latter two each having a pebbly phase, are mapped.

The Orangeburg series is characterized by gray to brownish-gray surface soils and bright-red, friable sandy clay to clay subsoils. This series differs from the Greenville in its lighter colored surface soils. The sandy loam is the only type recognized in this county.

The Ruston series is intermediate in color between the Norfolk and Orangeburg, with gray to brownish-gray soils and reddish-yellow or yellowish-red subsoils. Three types, the loamy sand, sandy loam, and loam, the latter two each having a pebbly phase, are mapped.

The Marlboro series is characterized by its brown to grayish-brown soils and deep-yellow sandy clay subsoil. This series is closely associated with the Norfolk, but differs in its shallow surface soil and

slightly heavier and more sticky subsoil. The Marlboro fine sandy loam and its pebbly phase are identified in Early County.

The Norfolk series is the most extensively developed series in the county. The surface soils of the Norfolk types are gray, and the subsoils are yellow, friable sandy clays or sands. The Norfolk sand, loamy sand, and sandy loam are mapped in this survey.

The members of the Tifton series have gray to grayish-brown surface soils and yellow to slightly reddish yellow sandy clay subsoils. Distributed throughout the soil and subsoil is an abundance of small, brown, rounded ironstone pebbles or concretions, whose presence is the main basis of separation between this soil and the Norfolk. The sandy loam is the only type of the Tifton series mapped in Early County.

The Blakely series is characterized by dark reddish brown soils and dark reddish brown to dark-red, friable subsoils. These soils are closely associated with the Greenville, but differ in being darker colored and more loamy throughout the 3-foot section. Only one type, the Blakely clay loam, is encountered in this county.

The members of the Grady series have gray to dark-gray surface soils and bluish-gray or drab mottled with yellow, brown, and red, heavy, plastic clay subsoils. These soils either are derived from or have been influenced by the underlying limestone formation, and are developed in sinks or depressions throughout the county. The sandy loam and clay loam are the only two members of this series in Early County.

The types included in the Plummer series have blue to bluish-gray soils and bluish-gray to drab subsoils, frequently mottled with gray, yellow, and brown. The Plummer soils differ from the Grady in that they are derived from unconsolidated marine sediments and have friable subsoils. Only one type, the Plummer sandy loam, is mapped in this survey.

On the second bottoms and terraces the Cahaba, Leaf, Kalmia, and Myatt series are mapped. The Cahaba series is distinguished by gray to brown soils and reddish-yellow to yellowish-red subsoils. The fine sand and fine sandy loam are the only types developed in this county.

The Leaf series is characterized by gray to dark-gray surface soils and tough, plastic clay subsoils of a mottled gray, yellow, and red color. The fine sandy loam is the only member of this series mapped in Early County.

The Kalmia series includes types with gray surface soils and yellow subsoils. It corresponds to the Norfolk series of the upland. The sand is the only type mapped in this county.

The Myatt series is distinguished by gray to bluish-gray surface soils and bluish-gray, mottled with yellow and brown, subsoils. It

is developed in poorly-drained areas and corresponds closely to the Plummer of the uplands. Only one type, the Myatt sand, is mapped in this county.

The Congaree silty clay loam is the only first-bottom soil recognized. It is developed along the Chattahoochee River and represents material which has been brought down from the Piedmont Plateau region of the State and deposited at times of overflow.

The areas mapped as Swamp represent soil material so mixed in texture, color, and structure that no definite types could be identified. It is saturated with water or overflowed during the greater part of the year.

In the following pages of this report the various soils of Early County are described in detail, and their relation to agriculture discussed. The distribution of the soils is shown on the accompanying map, and the following table gives the actual and relative extent of each:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Norfolk sandy loam	96,768	30.9	Greenville clay loam	8,640	3.7
Grady sandy loam	26,688	8.5	Pebbly phase	2,752	
Greenville sandy loam	16,768	6.5	Marlboro fine sandy loam	6,400	2.8
Pebbly phase	3,328		Pebbly phase	2,368	
Norfolk loamy sand	19,520	6.2	Ruston loamy sand	8,448	2.7
Ruston sandy loam	16,448	6.1	Orangeburg sandy loam	6,272	2.0
Pebbly phase	2,880		Cahaba fine sandy loam	5,760	1.8
Swamp	14,784	4.7	Grady clay loam	5,248	1.7
Blakely clay loam	13,312	4.2	Plummer sandy loam	2,880	.9
Greenville loamy sand	12,800	4.1	Leaf fine sandy loam	1,664	.5
Tifton sandy loam	12,160	3.9	Cahaba fine sand	1,664	.5
Norfolk sand	12,096	3.9	Congaree silty clay loam	768	.2
Ruston loam	6,336	3.8	Kalmia sand	576	.2
Pebbly phase	5,760		Myatt sand	512	.2
			Total	313,600	

GREENVILLE LOAMY SAND.

The Greenville loamy sand as typically developed consists of a brownish-red, friable, loose loamy sand underlain at an average depth of 7 inches by a deep-red, friable loamy sand which is somewhat heavier than the surface soil, and often becomes heavier as the depth increases.

The type shows considerable variation in color and structure. In the lighter areas the surface soil is more grayish, becoming grayish brown when freshly plowed, and the subsoil is a loamy sand lighter than typical. This variation in places resembles the Orangeburg loamy sand and in places a few small areas of the latter soil are included. Where the type is heavier than typical the soil is a red

loamy sand, as red as the Greenville clay loam, while the subsoil is also a bright-red loamy sand passing into a heavy sandy loam to sticky sand in the lower part. This variation approaches the Greenville sandy loam, except that the subsoil is decidedly lighter in texture and more open in structure. There are small areas, but of appreciable size, scattered throughout the type, in which the surface soil is chocolate brown, while the subsoil is a dark-red to maroon-red, friable loamy sand. These areas resemble the Blakely clay loam, but are differentiated by the lighter subsoil.

The Greenville loamy sand is an extensive soil in the northwestern part of the county. It follows along the upland bordering the Chattahoochee River and extends back from the river along the stream courses. Typical large areas are mapped west and northwest of Pleasant Grove Church, along Gates Branch and Little Colomokee Creek, and south of Grimsley Mill. The type occurs along beds of red sands which underlie the northwestern part of the county and which are exposed through erosion.

The Greenville loamy sand has a generally rolling topography. It is found on broad, undulating ridges with steep slopes to the streams. Some of the slopes are long and smooth, while others are blufflike. The streams have cut valleys 50 to 75 feet in depth. A number of small branches have cut back into the upland as far as the type extends, and their heads are surrounded by steep bluffs. Around the heads of the branches the material caves in, as it is loose and underlain by still more incoherent sands. The surface relief and the permeable nature of the soil afford adequate drainage, and the type is in fact too well drained, as crops suffer during prolonged dry periods. The heavier textured variations are the more retentive of moisture.

The Greenville loamy sand originally supported a growth consisting mainly of oak and longleaf pine, with some shortleaf pine. All areas of the type, except a few slopes, are cleared, but not all are under cultivation. Some fields are covered with broom sedge and young field pine, while others are used as pasture. The advent of the boll weevil has decreased the acreage under cultivation. Prior to its appearance cotton averaged about one-fourth bale per acre and yielded one-half to three-fourths bale under good methods. Corn averages 8 to 10 bushels per acre, oats 10 to 12 bushels, and peanuts about 25 bushels. Very few farmers use commercial fertilizers at present. About 200 pounds per acre of a 9–2–0 grade is in most common use.

The Greenville loamy sand is not heavy enough for best results in general farming, and the loose subsoil permits a too rapid loss of moisture. The productiveness and retentiveness of the type can be increased by adding organic matter through the turning under of

cowpeas or velvet beans. The soil is light enough to be suitable for early truck crops, such as cantaloupes, watermelons, radishes, beans, peas, cucumbers, and Bermuda onions, as these have proved successful on this type at other places. The soil can be plowed and cultivated under a wide range of moisture conditions, and it readily works into a good tilth. The agricultural conditions, however, are rather poor, as most of the type is managed indifferently by tenant farmers.

GREENVILLE SANDY LOAM.

The Greenville sandy loam is somewhat variable, but for the most part the surface soil consists of a dark-red, heavy, friable sandy loam, which contains considerable dark-colored, fine material. As a result it resembles the Blakely clay loam, but is considerably more sandy. The average depth of the soil is about 8 inches, and it rarely exceeds a depth of 10 inches. The subsoil ranges from a dark-red silty clay containing some sand to a lighter red, heavy, compact sandy clay which becomes somewhat sticky when wet. The lower subsoil in places contains faint mottlings of yellowish red.

Over about 40 per cent of the type the surface soil is sandier, and more typical of that mapped in other parts of southwest Georgia, consisting of a reddish-brown to brownish-red, friable loamy sand. The darker colored subsoil is always associated with the darker colored surface material. Included with the type are some small bodies of Blakely clay loam.

A few areas in the northwestern part of the county represent a gradation from the Greenville clay loam to the Greenville loamy sand. In these areas the depth at which the subsoil is encountered may range from a minimum of 8 inches to a maximum of 24 inches within a short horizontal distance. Small rounded ironstone pebbles are found on the surface in some areas, but not in sufficient quantities to warrant their separation as a pebbly phase.

The Greenville sandy loam is confined to the northern and central parts of the county. There are no broad developments of the type, but it occurs in areas ranging from 10 to 600 acres or more, scattered throughout the region of the red lands. The type is most extensive northeast of Blakely, between the Bluffton Road and Spring Creek. Fairly large areas also are found east of Blakely along Blue and Dry Creeks and Lime Branch. Small areas are mapped northwest and southwest of Blakely. The topography is smoothly undulating, and drainage is everywhere well established.

Nearly all of the original forest on this type has been removed. It consisted of hardwoods, chiefly varieties of oak, hickory, and dogwood, and longleaf yellow pine. In some places hardwoods predominated, while in others pine was most abundant. A large part of the type is now under cultivation, all the common crops being

grown, with a wide range in yields. Tenant farmers almost uniformly report low yields, while better farmers operating their own farms obtain some of the highest yields reported in the county. Peanuts ordinarily yield from 20 to 60 bushels per acre, corn 8 to 40 bushels, and oats 10 to 40 bushels. Cotton before the advent of the boll weevil yielded one-fourth to 1 bale per acre with acreage applications of 200 to 400 pounds of an 8–2–2 or 10–2–2 fertilizer.

The Greenville sandy loam is a soil of high agricultural value, though its physical characteristics tend to restrict its use to the production of general-farm crops. It is a good soil for peach growing and the pecan seems to do well on it. Care is required in handling this soil to maintain its productiveness, and it should not be plowed when wet. Subsoiling would be beneficial in improving the tilth and permitting greater absorption of moisture. Deeper plowing should be practiced, and the depth of plowing should be increased gradually each year.

Greenville sandy loam, pebbly phase.—The surface soil of the Greenville sandy loam, pebbly phase, consists of a dark-brown to dark-red, friable sandy loam, 8 to 10 inches deep. The subsoil ranges from a dark-red silty clay to a light-red, heavy, compact sandy clay. Distributed over the surface and throughout the soil section is an abundance of small rounded, brown, iron concretions or pebbles. These do not occur in sufficient abundance to interfere with cultivation. In many places this phase is closely related to the Greenville clay loam, pebbly phase, and in many areas the surface soil is a heavy sandy loam, 3 to 5 inches deep, underlain by the heavy, red clay subsoil.

This phase is developed in the northwestern and west-central parts of the county. The largest areas are situated to the southeast of Pleasant Grove Church and to the southwest of Blakely. Many small patches are scattered throughout this general region. This soil occupies smooth to rolling areas, the more rolling and steeper slopes being found in the vicinity of the drainage ways. Surface drainage is everywhere well established.

Most of this phase is under cultivation, devoted to practically the same crops as the Greenville sandy loam or clay loam. The yields and the methods of cultivation are similar to those on the associated soils.

GREENVILLE CLAY LOAM.

The immediate surface material of the Greenville clay loam is quite variable, consisting of 3 or 4 inches of heavy, brownish-red sandy loam, loamy sand, or dark chocolate-colored loam. This material rests upon a heavy, red sandy clay, and when the land is plowed to a depth of 6 inches sufficient sandy clay is turned and mixed with the lighter material to produce a clay loam texture. The subsoil is a red to very dark red, heavy, somewhat tight and compact sandy clay,

becoming noticeably heavier in the lower part. Where the immediate surface layer is dark brown the type has the general appearance of the Blakely clay loam, patches of which are included. In spots of an acre or two the soil may contain rounded ironstone gravel. There are a few eroded areas where the subsoil is exposed, but these are small. In the western part of the county, near Pleasant Hill and Sardis Church, a few areas are included which approach the characteristics of the Ruston clay loam, their combined area not warranting their separation as a distinct type.

The Greenville clay loam is mapped chiefly in the northern part of the county in widely distributed areas of varying extent. Other areas of importance are found east and southeast of Blakely along Dry Creek and Lime Branch. The type has an undulating topography with a more uneven surface than the loam and sandy loam members of the series. It occupies some pronounced knolls and a few slopes which have more than the usual relief and is everywhere well drained.

This soil was originally covered with various species of oak, hickory, dogwood, and other hardwoods, supplemented by some longleaf and a few shortleaf pine. Practically all of the timber has been removed, and the type is now partly under cultivation, with varying degrees of success. On the heaviest areas peanuts do not succeed as well as on the lighter soils. The average yield is about 25 bushels per acre, without the use of fertilizers. Corn ordinarily yields 8 to 10 bushels, oats 10 to 15 bushels, and cotton, before the arrival of the boll weevil, about one-third bale per acre. The yields of crops on better managed farms are considerably higher. Fertilizers are not generally used except for cotton, which receives acreage applications of 200 to 300 pounds of an 8–2–0 to 9–2–0 mixture.

The Greenville clay loam is naturally suited for general farming crops, especially small grains and forage and fiber crops, but it is too heavy for the production of truck that requires maturity early in the season. It requires more care in handling than most of the types in this county, and the range of moisture conditions under which it can be worked is narrow. If it is plowed when wet, clods form, which are more or less difficult to break down, and when the soil is dry it is too hard to plow. The last statement refers to a proper depth of plowing, namely, 6 to 8 inches, and not to mere shallow skimming. For proper plowing heavy stock and implements are necessary.

Greenville clay loam, pebbly phase.—The surface soil of the pebbly phase of the Greenville clay loam is variable, but in the largest areas it consists of a reddish-brown, friable loam or clay loam which extends to a depth of 4 to 8 inches. The subsoil is a bright-red to dark-red, heavy, friable sandy clay which continues without much change to a depth of 3 feet or more, except that it becomes heavier with depth.

The soil and subsoil contain from 20 to 40 per cent of rounded ironstone pebbles, which range from three-eighths to seven-eighths inch in diameter. Some attain greater size, but they are comparatively few in number. The presence of these pebbles is the distinctive feature of this phase.

In a number of small areas scattered through the northern part of the county from Blakely to the Clay County line, also in a few areas north of Pleasant Grove Church, north of Union School, and along Temple Creek, the surface material is generally a heavy sandy loam or loam to a depth of 2 or 3 inches, underlain by the characteristic heavy, red sandy clay. When the soil is plowed to a proper depth, a sufficient quantity of heavy, red sandy clay is turned up to produce a heavy clay loam surface soil. These areas are typical of the Greenville clay loam, pebbly phase, as the characteristic pebbles are present in abundance.

This phase is found in scattered areas of various size throughout the region of red lands, particularly in the northern end of the county. The most typical and largest areas are found to the northwest and northeast of Blakely. The topography is undulating, and choppy in places where the pebbles seem to outcrop in greater abundance. Drainage is well established.

The forest growth is about the same as on the other Greenville soils. All the timber has been removed and most of the phase is used for general farming. The yields correspond closely to the average obtained on the Greenville loam and clay loam types.

This phase is generally productive, and it is regarded as a strong soil. It is rather difficult to plow properly, especially on the heavier areas, the mixture of gravel with the finer soil seeming to make the mass more compact and harder, so that heavy implements and work stock are required to do the work satisfactorily. The plowed soil is inclined to become compact shortly after heavy rains. The incorporation of large quantities of organic matter would minimize this tendency. This soil is better suited to general farming than for growing special crops. Peaches and pecans, however, have been found profitable.

ORANGEBURG SANDY LOAM.

The surface soil of the Orangeburg sandy loam consists of a gray to brownish-gray, friable, loose sand to loamy sand, 6 to 8 inches in depth. The subsoil usually begins as a heavy, friable, yellowish-red sandy clay, and at a depth of 10 to 14 inches abruptly changes to the characteristic heavy, friable, red sandy clay, which continues to a depth of 3 feet or more. Sometimes the surface soil rests immediately on the heavy, red sandy clay, in which case the soil is usually more brownish. Local small areas have a more reddish-brown color, which is characteristic of the Greenville sandy loam. These areas are too

small to map separately. The type also may include small areas of Ruston sandy loam.

The Orangeburg sandy loam is not an extensive soil. The areas are scattered, but lie chiefly in the eastern part of the county along Spring Creek, four of the largest areas being found on the eastern side of this creek and several smaller areas on the west side. Several areas are mapped southeast of Blakely in close proximity to Blue and Dry Creeks and Lime Branch.

The type generally has a decidedly undulating to gently rolling topography. It is developed most typically where the surface is irregular or uneven, as on the crests of slopes and narrow ridges. Drainage is everywhere well established as a result of the favorable relief.

The greater part of the type is cleared and under cultivation, but considerable areas remain in the native forest. This consists of a quite evenly divided stand of longleaf pine and hardwoods such as post oak, red oak, blackjack oak, hickory, and dogwood.

This soil is used for the staple crops of the county. Yields vary considerably, but are generally low, as the soil is farmed almost entirely by tenants. Peanuts yield 25 to 30 bushels per acre in ordinary seasons without the use of fertilizers. Cotton, fertilized with about 200 pounds per acre of an 8–2–0 to 10–2–1 grade, yields one-fourth to one-half bale. Corn averages about 10 bushels without fertilizer, and oats 12 to 15 bushels. Yields of all crops can be materially increased under more thorough methods of farm management, as is shown by the results obtained on a few farms. This is a productive type when properly handled. Its open, loose top soil is favorably absorptive, while the subsoil is capable of holding much moisture for the use of growing crops. It has a wide crop adaptation, being used throughout the South for general farm crops, truck, peaches, and in places pecans.

RUSTON LOAMY SAND.

The Ruston loamy sand has a surface soil of gray or brownish-gray to brown, loose sand, containing in some places a small amount of fine material, sufficient to render it slightly loamy. The subsoil beginning at an average depth of 7 inches is a yellowish-red to reddish-yellow, loose loamy sand, which continues without much change to an average depth of 36 inches. The type as mapped includes several areas in which the subsoil is more reddish than typical. These represent the Orangeburg loamy sand, which is included on account of its small extent.

The Ruston loamy sand is not an extensive soil. It occurs in areas scattered over the entire county. The largest are mapped at various points along the Chattahoochee River from the Clay County line to the Decatur County line. Other areas are found along Sowhatchee

Creek from Sowhatchee to the terraces of the Chattahoochee River. Here the type comes from a sand formation that also gives rise to the Greenville and Norfolk series. In the eastern part of the county areas are scattered along both sides of Spring Creek and along Mill Creek and Lime Branch.

The type has an undulating to rolling topography. Its position on stream slopes, knolls, and uneven areas, together with the open, loose subsoil, insures good drainage. In some cases the drainage is excessive and crops may suffer in protracted dry spells.

The Ruston loamy sand originally supported a mixed growth of longleaf yellow pine, oak, and hickory. Nearly all of it has been cleared, but only a small percentage is under cultivation. The general farm crops of the county are grown, and give low average yields. Peanuts do almost as well as on better soils, averaging about 20 bushels per acre without the use of fertilizers. Corn averages about 8 bushels per acre, oats 8 to 10 bushels, and cotton about one-fifth bale.

The Ruston loamy sand is not a naturally strong or productive soil. The subsoil is open and loose, and the type is less retentive of moisture than those having a sandy clay subsoil. It could be used for early truck growing if markets and shipping facilities warranted. Organic matter should be incorporated in the soil in liberal amounts.

RUSTON SANDY LOAM.

The Ruston sandy loam has a surface soil of brownish-gray, friable, loamy sand, which averages 7 or 8 inches in depth. The subsoil typically begins as a yellowish or reddish-yellow, heavy, loamy sand and gradually increases in content of silt and clay and also in its reddish color, passing successively through sandy loam and light, sandy clay to an average depth of 15 to 18 inches. Here the typical heavy, friable, yellowish-red to reddish-yellow sandy clay is encountered, which continues to a depth of 3 feet or more.

The type varies considerably even within small areas. Sometimes the sandy upper subsoil extends to a depth of 24 inches, while in other cases the heavy subsoil lies immediately beneath the surface. The subsoil in some cases does not become typical in color above a depth of 24 inches. The type is intermediate in color characteristics between the yellow of the Norfolk series and the red of the Orangeburg, and it often grades from one extreme to the other. Typical areas of each of these series may be included on account of their small extent and intricate association. A few patches contain rounded ironstone pebbles. There are also small areas which have a liberal quantity of rounded waterworn quartz or quartzite gravel on the surface and through the soil mass. The largest area of this gravelly variation is shown by symbol at Sheffield Mill.

The Ruston sandy loam is a fairly extensive soil. It occurs mainly along Spring Creek in the eastern part of the county and southeast of Blakely along Dry Creek and its branches. A few areas are found southwest of Blakely along Sowhatchee Creek. Areas of various sizes are mapped at widely separated points in the northern and northwestern parts of the county. The type is generally found in close association with the Orangeburg and Greenville types on one side and the Norfolk on the other. It is practically confined to undulating or rolling areas characterized by slopes and knolls and is seldom found in low or smooth situations. Areas of several acres are found on the brows of slopes. Thorough aeration and oxidation of the subsoil material may be responsible in part for the characteristic color. All of the type is well drained.

The native forest growth on the Ruston sandy loam is composed of a mixture of longleaf yellow pine and hardwoods, chiefly oak, hickory, and dogwood. In some places pine predominates, while in others the growth consists almost entirely of hardwoods. About 70 per cent of the type is cleared and devoted to the staple crops. It is not cultivated with sufficient thoroughness to develop any marked difference in yield from the associated types. Yields vary with the different methods of crop production. Peanuts ordinarily yield 25 to 30 bushels per acre, corn about 10 bushels, oats about 15 bushels, and cotton about one-third bale. Commercial fertilizers are not commonly used except for cotton, which receives 200 to 400 pounds of an 8–2–0 to 10–2–1 grade per acre. The peanut, corn, and oat crops, when fertilized and well cared for, give 100 per cent higher yields than the average.

The Ruston sandy loam has favorable physical characteristics and is a desirable soil. It is loose and open and tillage operations are performed with ease, light implements and draft stock being sufficient for ordinary cultural operations. The subsoil is strong and retentive of moisture and plant food applied in the form of fertilizers. Subsoiling is not difficult and is very beneficial. Besides the general farm crops grown, the type can be used for a wide range of early truck crops for shipping or canning purposes. It is also well suited to the commercial production of peaches and pecans.

Ruston sandy loam, pebbly phase.—The fine-earth material of the pebbly phase, shown on the map by gravel symbols, is identical in both soil and subsoil with the typical Ruston sandy loam; but the phase carries from 25 to 30 per cent of rounded ironstone pebbles, distributed over the surface and through the soil mass. The quantity of these pebbles materially affects the physical qualities of the soil. In several areas 5 to 6 miles southwest of Blakely the surface soil in places is shallow, as the sandy material has been removed by erosion on the steep slopes. There are here included some patches of clay

loam, pebbly phase, and also small areas of Greenville loam, pebbly phase.

The pebbly phase of the Ruston sandy loam is found in small areas scattered over the southern and western parts of the county. One of the largest areas is situated about 3 miles south of Blakely. Other important areas are found between Blakely and Hilton.

The topographic and drainage characteristics are about the same as in the case of the typical soil. The presence of the pebbles is generally looked upon favorably by the farmers. Yields of all crops are about the same as on the typical Ruston sandy loam, and the phase is devoted to the same farm products.

RUSTON LOAM.

The Ruston loam consists of 4 to 6 inches of grayish-brown to light-brown, heavy, friable fine sandy loam, underlain by reddish-yellow sandy clay, which within a few inches becomes heavier and yellowish red in color. The subsoil throughout is rather heavy and sticky when moist, but contains sufficient sand to cause a friable structure. The lower subsoil, below 18 inches, is especially heavy and sometimes quite tough. The subsoil is decidedly heavier and more compact than that of the Ruston sandy loam. Owing to its shallowness small quantities of the reddish-yellow material are upturned by the plow, even under the prevailing shallow plowing. In consequence, a field when freshly plowed has a rather spotted appearance. The type as mapped is rather uniform, but contains patches of Marlboro fine sandy loam and the pebbly phase of the Ruston loam, which are too small to show separately on the map. The type is intermediate between the Marlboro fine sandy loam and the Greenville loam, and locally grades toward each of these types, in which case the subsoil is more yellowish or more reddish than typical.

The Ruston loam is restricted to the region of red lands, in the northern part of the county. Some of the largest areas are found along the Bluffton Road, beginning northeast of Blakely and continuing to the Clay County line. Important areas are also mapped 1 to 2 miles east of Ferrel Crossroads and north of Union School. Smaller areas are scattered throughout the northern part of the county east of Spring Creek.

This type has a smoothly undulating topography, and is usually found on smooth, even-surfaced divides with practically no steep slopes. Its surface, however, is interrupted by depressed areas of the Grady soils. There is sufficient surface relief to insure good drainage, although the run-off may be slow in some places. Much of the drainage percolates through the subsoil and collects in nearby depressions. Terracing is not required to prevent erosion, except in a few places.

The Ruston loam originally supported a mixed growth of longleaf yellow pine and hardwoods, such as oak and hickory. Practically the entire type has been cleared and is used in the production of the common crops. It includes some of the best farms in the county. Much of it is farmed by tenants, which accounts to a large extent for the wide variation in the yields. Peanuts are grown extensively; the yields range from 20 to 80 bushels per acre, averaging about 30 bushels. Corn yields range from 8 to 40 bushels, with an average of about 10 to 12 bushels. Cowpeas and velvet beans are productive of both forage and seed. Oats yield 12 to 30 or more bushels per acre. Fertilizers are seldom used on these crops, but the best yields of corn and oats are always obtained with the use of 200 to 300 pounds per acre of a commercial fertilizer. Cotton does poorly on account of the boll weevil, which has cut yields in some cases to one-tenth bale per acre. The present average is less than one-fourth bale, with the use of 200 to 300 pounds of 8–2–0 to 10–2–1 fertilizer per acre. Before the arrival of the boll weevil yields ranged from one-fourth to 1 bale per acre, the higher figure being quite commonly reported.

The Ruston loam is a productive soil when properly handled, and is easily cultivated. The subsoil is heavy and retentive of moisture, and by gradually increasing the depth of plowing from year to year and thereby mixing the lighter soil with some of the heavier subsoil a mellow, friable loam will be developed. The soil must be handled within a narrow range of moisture conditions, as plowing when it is too wet is injurious. A hardpan has been formed at many places by the plow sole, and plowing should be done at different depths to remedy this. Subsoiling when the subsoil has the right moisture content will be advantageous.

The Ruston loam is well suited for general farming, and is especially adapted to forage crops and small grains. Trucking crops are productive, but somewhat later than on the lighter-textured soils. This is a good pecan soil.

Ruston loam, pebbly phase.—The pebbly phase of the Ruston loam, indicated on the soil map by gravel symbols, has a surface soil and subsoil identical with that of the typical Ruston loam, except for large quantities of small rounded ironstone pebbles found on the surface and disseminated throughout the entire soil mass. The quantity varies from 20 to 40 per cent.

This phase is mapped in various-sized areas throughout the northern part of the county in the general region of the Ruston, Greenville, and Marlboro soils. Some of the largest areas are mapped north of Blakely and in the vicinity of Union School, Sardis Church, and Pleasant Hill.

The topography is not quite so even as that of the typical Ruston loam, since the phase is developed chiefly on knolls, slopes, and the

brows of slopes. On some of the knolls the surface soil has been removed, leaving the clay exposed. Such areas, however, are small in extent. The phase is everywhere well drained.

Practically all of this phase has been cleared of the native vegetation and is now farmed. It is considered of slightly higher value than the typical Ruston loam, but it gives about the same yields and is devoted to the same crops. A number of good farms are found on this soil.

MARLBORO FINE SANDY LOAM.

The surface soil of the Marlboro fine sandy loam is a friable, mellow, grayish-brown to brown fine sandy loam, which ranges in depth from 5 to 8 inches. There is a district line of demarcation between the soil and subsoil. The subsoil is a yellow to greenish-yellow very heavy and somewhat sticky sandy clay containing sufficient sand to be fairly friable. It continues to a depth of 36 inches without much change, except that in a few places it becomes lighter yellow and in other places reddish-yellow where it grades toward the Ruston loam. Sometimes a few slight mottlings of shades of gray and yellow are found in the lower part of the subsoil. Pebbles are present, but not in sufficient quantities to constitute a pebbly phase.

This type closely resembles the Norfolk sandy loam, but differs in its fine sandy loam surface soil, its brownish surface color, and its decidedly heavier subsoil, which is nearer the surface and lacks the friability of the Norfolk. The two types grade into each other and are separated on the map in some instances by an arbitrary line. This is especially true west and southwest of Blakely, where the Marlboro fine sandy loam from the north grades into the Norfolk sandy loam of the southern part of the county. In this gradational zone the Marlboro sometimes becomes sandy in the surface soil and lighter colored, but the heavy subsoil remains almost typical.

The Marlboro fine sandy loam is developed in the region of red lands in the northern part of the county. It is not an extensive soil, but it occurs in a number of large areas, chiefly northwest of Blakely, near Union School, and 3 miles north of Blakely. Smaller areas are found between Blakely and Freeman School and in the northern part of the county near the Clay County line.

The topography is level to gently undulating. Wherever the surface becomes irregular, the type gives way to other soils, chiefly the Ruston loam. It is well drained, as it occupies high positions and has some relief.

Practically all of this type has been cleared of the mixed longleaf pine and hardwood growth and is now used in the production of the general farm crops. The range in yields is about the same as on the Ruston loam, but the average yields are somewhat higher, as this type supports a larger percentage of more thorough farmers.

This is naturally a strong and productive soil, and with reasonable care it has been made to produce some of the highest yields in the South. It is well suited to a wide range of crops, including small grains, grasses, vetches, and clovers. Truck crops also produce good returns. The type can be used for the growing of peaches, pecans, pears, and plums.

Marlboro fine sandy loam, pebbly phase.—The surface soil of the Marlboro fine sandy loam, pebbly phase, is characteristically a brown, mellow fine sandy loam, containing from 20 to 30 per cent of rounded ironstone pebbles which range from one-half inch to 2 inches in diameter. The subsoil is a yellow, rather heavy and sticky sandy clay, carrying a large quantity of pebbles. The gravelly nature makes the soil and subsoil more open than the typical soil. This phase appears much like the Tifton sandy loam, but is finer textured and heavier in the subsoil. In a few instances it grades close to the Tifton, and may include small areas of that soil.

The Marlboro fine sandy loam, pebbly phase, is mapped principally northwest of Blakely, in two important areas and several smaller ones. The topography and drainage are about the same as in the case of the typical soil. The phase is devoted to the same crops, but is more generally favored on account of the pebbles. There is, however, practically no difference in yields. A number of productive farms are found on this phase.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Marlboro fine sandy loam:

Mechanical analyses of Marlboro fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
255328	Soil	0.8	6.0	6.6	41.4	15.7	17.3	11.9
255329	Subsoil	.0	4.6	4.4	27.3	10.4	15.0	38.2

NORFOLK SAND.

The surface soil of the Norfolk sand in its natural state consists of 3 inches of light-gray sand, while in a cultivated state the surface soil is a gray or yellowish-gray sand to an average depth of 6 inches. The subsoil is a pale or light yellow sand. Both the soil and subsoil are loose, open, and incoherent. In small local areas the lower subsoil becomes somewhat loamy. About 10 per cent of the type consists of coarse sand, but this coarser variation is not separated, as it is found in small, irregular areas.

The Norfolk sand is derived from a deposit of loose marine sands of local development in this county. The type is found in the western

part, in one practically continuous area extending from a point near Hilton south to the junction of the Chattahoochee River and Sowhatchee Creek, interrupted chiefly by low seepage areas of Plummer sandy loam. Small areas are found in the northwestern part of the county, derived from beds of light-colored sands which have been exposed as the streams have cut deep into the surface. Other small areas are scattered over the county, representing greater accumulations of sand than are found in most places.

The main area of the Norfolk sand occupies an undulating to gently rolling ridge, modified by depressions. Only a few drainage ways have been developed, and drainage takes place principally by seepage to open ponds. The type, however, has good surface drainage, and the open, loose subsoil insures thorough underdrainage. Crops suffer from drought readily.

Practically all of the best longleaf pine has been removed, and there remains a scattered growth of pine and a thick growth of oaks, chiefly blackjack oak, but with some water oak, red oak, post oak, and white oak. About 10 per cent of the type has been cleared and is cultivated to the general farm crops. The yields are low. Cotton averaged about one-fifth bale per acre prior to the arrival of the boll weevil. Corn yields about 8 bushels, oats 10 bushels, and peanuts 15 to 20 bushels per acre.

The Norfolk sand is a less productive type, its loose, open structure allowing the ready loss of soil moisture and the leaching of fertilizers. It is naturally low in plant food. For best results only those crops should be grown which mature before the hot, dry midsummer. The soil warms up early in the spring and could well be used for early truck, but liberal applications of fertilizer are required to assure fair returns of all crops. The fertilizer should be applied several times during the growing season, especially when large amounts are used. The greatest need of the type is more organic matter.

NORFOLK LOAMY SAND.

The Norfolk loamy sand in Early County occurs in two variations. One has a surface soil of gray, loose sand to loamy sand, which becomes yellowish gray in the lower part and at an average depth of 7 inches passes into a bright-yellow or rich-yellow loamy sand which continues with practically no change to a depth of 3 feet or more. Over small areas the texture becomes lighter, and in other places the color is more reddish yellow than typical. This variation is the less extensive. Fair sized areas occur along the Chattahoochee River and Sowhatchee Creek. The largest is mapped beginning north of Freeman Branch and terminating with Cohelee Creek. The other areas are found on both sides of Sowhatchee Creek, from a point near Sowhatchee to the junction of Sowhatchee Creek and the Chattahoochee River. The

type in these localities appears to be formed from marine deposits of sand.

Throughout the southern and eastern parts of the county the surface soil typically consists of a gray, loose sand or slightly loamy sand, which in the lower part becomes yellowish gray. The subsoil, beginning at an average depth of 7 inches, is a pale-yellow, loose sand which gradually becomes heavier and brighter in color with depth and passes between 12 and 30 inches into a yellow, friable loamy sand. The latter gradually becomes heavier and slightly sticky at 34 to 36 inches. This soil is intermediate between the Norfolk sand and Norfolk sandy loam, and varies considerably in texture. In places areas of these types may be included, on account of their small extent and intricate association. In the eastern part of the county between Nicholsville and Douglass Crossroads there is a somewhat depressed area in which the soil is a light-gray sand while the subsoil in places is an almost white sand changing to a mottled, yellow loamy sand in the lower part. The type here represents a gradation toward the Grady sandy loam.

The Norfolk loamy sand is extensively developed in areas of various sizes throughout the southern and eastern parts of the county. Large areas are mapped in the vicinity of Lucile and still larger ones within a 3-mile radius of Liberty Hill School; also from Arlington to a point south of Douglass Crossroads.

The topography is generally undulating. The type is found on slopes, knolls, smooth ridges, and level areas which sometimes are slightly lower than the surrounding country. Ample drainage is afforded by the topographic relief and by subsoil percolation. Only a few small areas are not well drained.

The Norfolk loamy sand was originally forested with a good growth of longleaf yellow pine and some hardwoods, especially oak. Most of the timber has been removed and on the uncleared areas there remains a scattering of pine and a growth of scrub oak. Approximately 50 per cent of the type is cleared and under cultivation. The common crops of the county are grown, and yields vary considerably with the fertilization and farm management. Cotton prior to the arrival of the boll weevil yielded one-fourth to three-fourths bale per acre, with 200 to 400 pounds of a 9–2–2 to 10–2–3 fertilizer. Corn averages only 8 to 10 bushels per acre, but as much as 35 bushels has been produced under the best conditions. The average yield of oats is about 12 bushels per acre. This soil has proved very successful for peanuts, yields ranging from 20 to 40 bushels per acre. Velvet beans and cowpeas make good yields.

The Norfolk loamy sand is intermediate in agricultural value between the Norfolk sandy loam and sand, it being less productive than the former, but of more value than the sand. It is well suited

to general farm crops, especially peanuts. It is also well adapted to the production of early truck crops. The soil can be plowed and cultivated under a wide range of moisture conditions. It is easily plowed and put in good tilth and light equipment can be used. The soil is low in moisture-holding capacity, causing crops to suffer during droughts.

The agricultural conditions on this soil are only fair, most of it being cultivated by tenants. The type, however, supports a few good farms.

NORFOLK SANDY LOAM.

The Norfolk sandy loam as typically developed has a surface soil of gray to slightly brownish gray, friable sand to loamy sand, which becomes more yellowish in the lower part. The average depth of the soil is 7 or 8 inches. The subsoil is always found in two sections. The upper part consists of a yellow, friable loamy sand which gradually becomes heavier, passing through a friable sandy loam or light sandy clay and at an average depth of 15 inches giving way to the lower and heavier section composed of bright-yellow, friable, heavy sandy clay which continues to 36 inches without much change in color or texture. The lower section, of sandy clay, varies somewhat in depth below the surface. When found at a lower depth, say 28 to 34 inches, the intermediate section, from the surface soil down, is usually more sandy and paler in color, in which case the type is lighter textured and less desirable. Variations from typical are common in this soil on account of its large extent. In some few patches the soil includes small, rounded ironstone pebbles, but they do not occur in sufficient quantity to warrant mapping as Tifton sandy loam, which they approach in character. Some areas are found which are level and somewhat lower than the surrounding country, and marked by numerous inclusions of the Grady soils. In such areas the yellow sandy clay in the lower part of the subsoil carries slight mottlings of red and gray, representing a gradation toward the Grady types, as the difference in elevation between the Norfolk and Grady soils is not more than 2 feet. This variation of the type toward the Grady soils is less desirable than the typical Norfolk sandy loam, but it occurs only in small areas. The type as mapped between Blakely and Sardis School and between Blakely and Chancy Mill represents a gradation toward the Marlboro fine sandy loam, as the soil and subsoil are heavier than typical. In some places the boundary lines are arbitrarily drawn.

The Norfolk sandy loam is the most extensive type in the county. Large continuous areas are found from Blakely to Jakin, from Blakely to the southeastern part of the county, and from Arlington to Damascus.

The general topography is undulating. The type occupies level areas, gently undulating expanses, and low, broad, undulating ridges. Along a few of the branches of Sowhatchee Creek there are long slopes and the topography becomes more gently rolling. The type is well drained except around some of the depressions occupied by the Grady soils. Drainage is effected chiefly by run-off to nearby depressions or ponds.

The original forest growth on the Norfolk sandy loam consisted of longleaf yellow pine with scattered oak, hickory, and dogwood. A few ridges support a growth of blackjack oak. Nearly all of the commercial timber has been removed. Large areas of cut-over land are used for pasture, while a large acreage supports a scattered growth of longleaf pine which is used for turpentining and pasture.

Less than 50 per cent of the Norfolk sandy loam is cleared and under cultivation, and there are very few fields from which the stumps have been removed. Owing to the wide distribution of the type, all the crops of the county are grown. Yields vary widely with differences in farming methods, fertilization, and cultivation. Peanuts are one of the chief crops. Yields range from 25 to 75 bushels per acre, averaging about 30 bushels. No fertilizers are used with this crop. Cotton, prior to the advent of the boll weevil, was the most important crop, but its acreage has been considerably reduced. Yields range at present from one-half bale to as low as one-tenth bale; under former conditions the yield was from one-fifth to 1 bale, averaging about one-half bale. From 200 to 400 pounds per acre of commercial fertilizer is used, ranging in analysis from 8–2–0 to 10–2–1. Corn averages about 10 bushels per acre without the use of fertilizer, and considerably higher yields are obtained with proper soil management and fertilization. Oats yield from 15 to 40 bushels per acre. Wheat averages about 12 bushels. This soil is capable of producing high yields of the ordinary farm crops when properly managed, as on some of the better farms.

The Norfolk sandy loam is a desirable soil, as it has a wide range of crop adaptation. Besides the general farm crops, it can be used for a varied list of truck crops where markets and shipping facilities warrant their production. Among the truck crops produced commercially for shipment and canning in other parts of the South on this soil may be mentioned cucumbers, asparagus, cantaloupes, watermelons, onions, radishes, cabbage, peas, beans, tomatoes, and lettuce. Peaches, plums, and pears also do well when properly handled. Sugar cane produces a fine-flavored, light-colored sirup.

The type can be easily maintained in a productive state by proper care in handling and by rotating crops. It is plowed and cultivated with ease and can be worked under a wide range of moisture conditions. Tillage does not require especially heavy implements or

draft stock. The agricultural development of the county will be associated chiefly with the more extensive utilization of this type of soil.

TIFTON SANDY LOAM.

The soil of the Tifton sandy loam is a gray to brownish-gray, loose loamy sand which does not exceed 10 inches in depth and averages about 7 inches. The subsoil begins as a yellow, friable loamy sand which gradually becomes heavier with depth, passing through a friable sandy loam and at 15 to 18 inches grading into a bright-yellow, friable, heavy sandy clay. This continues without change to a depth of 3 feet. Rounded ironstone pebbles, ranging from one-fourth to three-fourths inch in diameter, and of accretionary structure, are found on the surface and throughout the soil and subsoil, distinguishing the type from the closely associated Norfolk sandy loam. These pebbles make up 20 to 40 per cent of the soil mass. In uncleared areas their presence is not so noticeable as in cultivated fields.

Small areas of Norfolk sandy loam are included with the Tifton sandy loam as mapped. In several areas, a few miles west of Blakely, the soil resembles the pebbly phase of the Marlboro fine sandy loam, but the color and character of the subsoil show too much variation to allow the areas to be classed with that soil. In a few small patches the subsoil becomes reddish yellow, representing the pebbly phase of the Ruston sandy loam, but these areas were not shown as Ruston on account of their small extent.

The Tifton sandy loam is not an extensive soil in this county. It is chiefly found in several important areas in the southern part, beginning north of Killarney and extending south to the Decatur County line. Smaller areas occur near Cedar Springs and Rock Hill and several miles west of Blakely.

The type in general is smoothly undulating, with a few narrow undulating slightly ridged areas. The surface is marked by depressions occupied by the Grady soils, but drainage is everywhere well established.

The Tifton sandy loam originally supported an excellent growth of longleaf yellow pine, most of which has been removed. About 30 per cent of the type either remains in a cut-over condition or supports a scattered growth of pine which is used for turpentining. The uncleared areas are used as pasture, in which wire grass is the principal growth. This grass is burned over annually to afford a succulent young growth better liked by cattle. The cleared areas are used for general farming, all the common crops of the county being grown and generally giving good yields. The peanut crop is one of chief importance. Yields range from 25 to 60 bushels per acre, and the ordinary yield is about 35 bushels. Corn ranges from

10 to 40 bushels, with an average of about 15 bushels. Oats average about 15 bushels per acre. Cotton, before the advent of the boll weevil, yielded one-third to 1 bale or more per acre, the higher figure being common.. Commercial fertilizers are commonly used for cotton, from 200 to 400 pounds of a low-grade mixture being applied. Stable manure is used to some extent for corn, high yields of which are obtained only with fertilization.

The Tifton sandy loam is universally recognized as a desirable soil. It is productive, the fertility can be easily maintained, and it can be used for a wide range of crops. Plowing and cultivation can be done without heavy implements, but the abundance of stumps in the fields practically prevents the use of improved machinery.

In addition to general farm crops, a large number of truck crops are successfully grown on this type in other counties. It can also be used for peaches and pecans.

BLAKELY CLAY LOAM.

The Blakely clay loam as typically developed consists of a dark reddish brown (chocolate-colored), friable, mellow loam, underlain at an average depth of about 8 inches by a very dark red or maroon-red, friable silty clay to silty clay loam which extends to a depth of 3 feet or more. The type is quite distinctive in color from all the other soils in the county. It is sometimes locally spoken of as "snuff-colored" land.

In a few places the soil carries more fine sand than is typical, while in other places the surface soil is about 5 inches in depth, and consequently heavier, approaching closely the Greenville clay loam. A few knolls, about 1 acre in extent, are included in which the surface soil has been removed. Except for a few patches which contain a small quantity of concretionary pebbles, the Blakely clay loam is free from gravel or rock fragments. In a few areas along Mill Creek, east of Blakely, the type consists of a very dark brown to nearly black, friable clay loam to a depth of 3 feet, with little or no difference between soil and subsoil. Many other areas represent gradations in respect to depth of surface soil and darkness of color between this variation and the typical Blakely clay loam. As a rule the subsoil varies in darkness of color with the depth and color of the surface material.

The Blakely clay loam has been derived from unconsolidated marine deposits. The cause or origin of the dark color of soil and subsoil is not fully understood.[4] The type is restricted to the general region of the red lands. One of the largest areas is found in the northern part of the county at Ferrel Crossroads, while a number of fairly

[4] Lowry, of the Georgia State College of Agriculture, has determined the presence of a large percentage of manganic oxide (Mn_2O_3), which is believed to be the cause of the darker red color of the soil as compared with the Greenville soils.

large areas occur along the line of the Central of Georgia Railroad between Blakely and Spring Creek. A number of areas are found in the western part of the county from Grimsley Mill south to Freeman School, and some important areas are mapped along Sowhatchee Creek north of Sowhatchee.

Practically the entire area of the Blakely clay loam is smooth and level, and there are only a few slight undulations and slopes.

The larger part of the type consists of level tracts along stream courses, interrupted by lower areas of Grady soils and Swamp. Much of the type, however, occupies level interstream uplands, which give way to other soils as the topography becomes more irregular. Drainage of the type is well established, although the surface relief is not great.

The Blakely clay loam originally supported a native growth which was about equally divided between hardwoods, such as oak, hickory, and dogwood, and longleaf pine. Practically all of the type is cleared and under cultivation. All the common crops are grown and give widely varying yields, owing primarily to difference in management. Cotton before the advent of the boll weevil averaged about one-half bale per acre, although yields of 1 bale were common. Fertilizers of a 9–2–2 or 10–2–2 grade were applied, at the rate of 200 to 400 pounds per acre. Corn averages only about 9 bushels per acre without fertilizer, but yields of 25 to 40 bushels are common when the crop is fertilized and well cultivated. Oats yield from 10 to 40 bushels per acre, averaging about 18 bushels. Peanuts average about 20 bushels per acre, although yields of 50 bushels per acre are not unusual. Good yields of forage crops, legumes, and grasses are obtained.

The Blakely clay loam is well suited for general farming and for stock raising, and is looked upon as a valuable soil. One desirable feature is that when the surface soil is thinned or removed the subsoil produces almost as well as the top soil. Although the soil is loose and mellow, it sometimes sticks to the moldboard of the plow, as a result of which the type is sometimes called "push land." This soil is capable of holding large quantities of moisture, but it should not be plowed when wet.

GRADY SANDY LOAM.

The Grady sandy loam has a surface soil of dark-gray to bluish-gray, friable loamy sand to sandy loam which extends to depths of 7 to 12 inches. The subsoil usually is a gray, friable loamy sand to sandy loam which, at a depth of 12 to 20 inches, passes into a heavy, sticky, plastic clay of a gray or drab color, with mottlings of yellow, brown, and red. At 28 to 30 inches the mottlings sometimes become less conspicuous. The type is somewhat variable, but all the variations could not be ascertained, as many areas were covered with

water during the entire course of the survey. In some places the soil is a sand or a fine sandy loam, and in several places a very dark gray to almost black, heavy loam, high in organic matter. The prevailing gray color of the soil is due to poor drainage and consequent poor aeration and low oxidation.

This type is found in all parts of the county, but the areas are more numerous in the eastern and southern parts, or the region of gray soils. The type occurs in areas of various shapes, the small, unconnected areas being circular. It also occurs in winding, narrow areas which serve as seepage ways. The topography is flat, with depressions 2 to 4 feet deep. These are presumably due to the solution and subsequent dropping of the underlying formation of limestone. The soil is poorly drained; except in the driest seasons the areas are covered with water or are too wet for farming. The depressions serve as collecting basins for the run-off of surrounding lands.

The native vegetation is chiefly cypress, gum, slash pine, water oak, live oak, and some May haw. Around the edges of the ponds there is generally a growth of large water oak. Some areas support a mixed growth while others have only one or two species. Areas where the growth is chiefly cypress are usually wettest. Those grown up to slash pine and sweet gum are slightly better drained than the average. Along stream courses there are found live oak, water oak, gum, maple, elm, cypress, tulip poplar, and many other water-loving trees and plants.

None of this type is under cultivation. Artificial drainage is necessary for its best utilization, and in many places this would be difficult to accomplish. If drained this soil could be used for such crops as oats, corn, rice, and sugar cane. Drainage would be more desirable for its effect upon sanitary conditions than for its effect upon agriculture.

GRADY CLAY LOAM.

The soil of the Grady clay loam is a gray to drabbish-gray, heavy clay loam to silty clay, having an average depth of about 5 inches. The subsoil is a light-gray or drab-gray, heavy, sticky, plastic clay, mottled with shades of red, brown, and yellow. Some variations occur in this type, but it is more uniform than the Grady sandy loam. It includes a few areas of Portsmouth loam or clay loam, which have a black, mellow surface soil, high in organic matter, underlain at 7 to 10 inches by dark-drab, heavy, sticky, sandy clay to silty clay.

The Grady clay loam is found in small areas scattered throughout the county. It occurs in typical circular or oval-shaped depressions or sink holes, 2 to 6 feet deep, which are chiefly due to the solution and sinking of the underlying beds of cherty limestones.

All the areas are poorly drained, and some of them hold water continually except in protracted dry seasons. Water from the surrounding lands collects in these basins through run-off and seepage, and remains until it evaporates or slowly passes to subterranean channels. The type is too poorly drained for agricultural use, and most of the areas are pastured.

The native vegetation is mixed. Some areas are free from tree growth and are covered with marsh grass. Others support a few Mayhaw trees, while in others the growth is confined to cypress and some slash pine. Water oak is common around the edges of the areas. The included areas of Portsmouth loam are heavily forested with cypress, gum, magnolia, bay, some slash pine, and an undergrowth of water-loving vegetation.

Where artificially drained this soil could be used for corn, oats, and forage crops, but drainage would not be profitable in the present stage of development of the county.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Grady clay loam:

Mechanical analyses of Grady clay loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
255330	Soil	1.9	6.5	5.0	22.2	8.3	33.2	22.5
255331	Subsoil	.5	3.0	2.1	9.9	5.5	20.2	58.9

PLUMMER SANDY LOAM.

The Plummer sandy loam consists of a gray or bluish-gray sand to loamy sand extending to an average depth of 7 or 8 inches, and underlain by a light-gray or drab sand to loamy sand which gives way at any depth from 15 to 30 inches to a heavy sandy clay of a mottled gray, yellow, and brown color. The depth at which the heavy sandy clay subsoil is encountered varies greatly, but averages about 24 inches. The variation is noted not only in different areas but at different places within the same area. Included with the type are small areas of Plummer sand, in which no heavy subsoil material is found, and a few spots which closely approach the Grady sandy loam.

The characteristic gray, mottled color of the Plummer sandy loam is due to its low-lying position and poor drainage. The areas are chiefly irregular depressions ranging from 2 acres up to several hundred acres. Practically all of the type is mapped in the western part of the county, between the Chattahoochee River and Sowhatchee Creek, beginning at Hilton and terminating about 8 miles farther south at the junction of the above-mentioned streams.

This type is practically the seepage area of the surrounding land, whose run-off sometimes remains on the surface until removed by evaporation. The type in its present condition is unsuitable for cultivation. It remains in the native vegetation, which consists chiefly of water-loving trees such as cypress, water oak, black gum, sweet gum, and some slash pine. In the more open areas there is an undergrowth of gallberry, some saw palmetto, and broom sedge.

CAHABA FINE SAND.

The Cahaba fine sand consists of a grayish-brown to light-brown mellow fine sand, underlain at a depth of 7 inches by a loose, mellow, reddish-yellow to yellowish-red fine sand which continues to a depth of 3 feet or more. In places the subsoil is loamy, and occasionally at 34 to 36 inches it gives way to a heavy fine sandy clay; such areas represent the Cahaba loamy fine sand, but they are not separated on account of their rather intricate association with the fine sand. In one area immediately along the river bank the soil and subsoil are a brown loamy sand, the soil here closely resembling the Congaree fine sand, though it is not subject to overflow.

The Cahaba fine sand occurs on well-drained terraces of the Chattahoochee River. It consists of material laid down during periods of inundation in former times, and now lying above overflow. The type is not extensive, being confined to narrow areas along the river front. Areas are scattered along the entire length of the Chattahoochee River. The position on the terraces is suggestive of natural levees thrown up by the river, as the areas are just a few feet higher than the soils lying back from the river.

All of this type is cleared, but only a small percentage is under cultivation, the greater part being used for pasturage. Cotton is not grown, on account of the severe damage caused by the boll weevil. Corn averages about 8 to 10 bushels and peanuts about 20 bushels per acre. The soil is easy to handle. It is almost too loose and light for general farming.

CAHABA FINE SANDY LOAM.

The surface soil of the Cahaba fine sandy loam varies in color from gray through brownish gray to brown, and is a mellow fine sand extending to an average depth of 8 inches. The subsoil usually begins as a reddish-yellow loamy fine sand which gradually becomes heavier, passing through a fine sandy loam and at an average depth of 15 inches abruptly changing into a heavy, tough, compact, yellowish-red sandy clay to clay. The depth at which the heavy part of the subsoil is found is very irregular. It may be exposed at the surface in small eroded areas or lie immediately below the surface, and a short distance away may be as deep as 24 inches. It is also variable in texture. At different depths it may change from a

heavy clay to a sandy clay, showing the interbedding of different material. Finely divided particles of mica are also common in the subsoil. Small areas of Cahaba fine sand are included with the fine sandy loam in places, on account of the close association of the two types. There are also patches of Cahaba sandy loam and coarse sandy loam, too small to map.

The Cahaba fine sandy loam is the predominant soil of the Chattahoochee River terraces. It occurs along this river, in areas of varying width, from the Clay County line to the Decatur County line. It is most extensive in the northern and southern parts of the county. The type is found on smooth, level to very gently undulating terraces, 40 to 70 feet above the channel and 50 to 70 feet below the uplands. There is a steep descent from the upland to the terraces. In the southern part of the county the topography becomes more undulating, and resembles that of the adjoining uplands. The Cahaba fine sandy loam is made up of old river alluvium, deposited in former times and now lying 5 to 10 feet above the highest water stages. The drainage is prevailingly good.

All the type has been cleared of the mixed pine and hardwood forest, but only a small percentage is now under cultivation. The depredations of the boll weevil have been so severe on this type that cotton is no longer grown. Many fields are now "lying out" or are used for pasture. Peanuts are planted to some extent and yield 20 to 40 bushels per acre. Corn yields 15 to 30 bushels. Fertilizers are seldom used with these crops.

The Cahaba fine sandy loam is well suited for general farming, and it could be used to good advantage for stock raising, as it gives good yields of forage crops.

LEAF FINE SANDY LOAM.

The surface soil of the Leaf fine sandy loam is a light-gray, mellow fine sand to slightly loamy fine sand averaging 7 or 8 inches in depth. The subsoil is made up of two zones. The upper part is a yellowish-gray (or sometimes yellow), friable loamy fine sand which at an average depth of 18 inches abruptly changes to a heavy, sticky silty clay to clay having a mottled yellow, red, and gray color. This heavy lower subsoil is sometimes found as deep as 30 inches and in a few places it is encountered below 3 feet, in which case the soil would be separated as the Kalmia fine sandy loam except for its small extent and relative unimportance.

The Leaf fine sandy loam also includes small, narrow strips of dark-gray to black fine sand to loam, underlain by a very heavy, plastic, mottled red, yellow, and gray clay. These small areas represent seepage places or drainage-way depressions on the terraces, and are mapped chiefly in the northwestern part of the county.

Included with the type are a few small areas and narrow strips of Myatt fine sandy loam. This soil has a gray, loamy fine sand surface soil and a subsoil of gray and yellow or brown, mottled sandy clay. It occupies low, flat situations or depressions at the foot of the uplands on Chattahoochee River terraces south of Columbia Bridge. It is poorly drained and unused for agriculture.

The Leaf fine sandy loam is mapped in the western part of the county, on the second bottoms or terraces of the Chattahoochee River. Several of the largest areas are found 2 to 4 miles south of Columbia Bridge. Small areas are found near Howard and Gilbert Landings. The type consists of old river alluvium now above the reach of overflows. It has a smooth, level topography, but with sufficient relief for drainage. It lies slightly lower than the main soils of the terraces, and after heavy rains the water is removed more slowly.

All the type is cleared and was under cultivation prior to the appearance of the boll weevil. At present some of the fields are "lying out" or are used for pasture. Only fair yields of any crop are obtained without the use of fertilizer. With a small application corn averages 15 to 18 bushels, oats 20 bushels, and peanuts about 25 bushels per acre.

KALMIA SAND.

The Kalmia sand has a surface soil of gray, loose sand, which becomes yellowish gray in the lower part. The average depth of the soil is about 6 inches. The subsoil is a pale yellow, loose, incoherent sand which continues to 3 feet or more without much change. In some places it becomes loamy in the lower part and in others more loose and incoherent. There are mapped with the type several small areas of Kalmia fine sand, which has about the same agricultural value as the sand.

The Kalmia sand is of small extent. It is mapped in several areas in the western part of the county along the Chattahoochee River. The largest area is near Howard Landing.

The type consists of old river alluvium which now occupies the level second bottoms or terraces of the Chattahoochee River. It is no longer subject to overflow and is well drained.

All the type is cleared of the original forest growth, but only a small portion is cultivated. The yields are relatively low. Corn averages about 8 to 10 bushels per acre, and peanuts about 20 bushels. Cotton yields are extremely low, as the weevil has been especially destructive on the river terraces.

MYATT SAND.

The Myatt sand consists of a gray to bluish-gray, loose sand to loamy sand, underlain at 6 to 8 inches by a lighter gray or drabbish-gray sand or loamy sand which continues to a depth of 36 inches or

more. In a few places a friable, mottled yellow and gray sandy clay occurs in the lower part of the subsoil.

The Myatt sand is rather inextensive, being found in narrow strips on the eastern edge of the Chattahoochee River terraces, just below the bluff formed by the upland. It is confined to the northwestern part of the county.

The areas are flat or somewhat depressed, and they are wet and generally poorly drained as a result of seepage from the bluffs of the upland. They occasionally represent drainage areas which drain toward several streams flowing through the terraces.

The type is forested with a heavy growth of slash pine, gum, water oak, cypress, bay, and magnolia. None of it is cleared. Artificial drainage is essential, and under present conditions it would not be profitable, especially since more productive lands are lying out of cultivation.

CONGAREE SILTY CLAY LOAM.

The surface material of the Congaree silty clay loam is a brown to reddish-brown, mellow, friable silty clay loam, averaging about 7 inches in depth. The subsoil is a smooth, friable, heavy, reddish-brown to brownish-red silty clay which continues to 36 inches. The subsoil is sometimes interbedded with sandy material. Both soil and subsoil contain an appreciable amount of finely divided mica particles.

This type is of small extent. It is found immediately along the Chattahoochee River, and represents low areas, which are subject to overflow several times a season, especially during high water in the winter and spring. The areas are low, and in some places represent sloughs and depressions covered by backwater.

About 50 per cent of the type is cultivated. Corn and oats are the chief crops. Each yields an average of 25 to 30 bushels per acre without the use of fertilizer. The uncleared areas are heavily forested with hardwoods and some pine.

This is a strong, productive soil, especially valuable for grain and forage crops. It is naturally high in plant food.

SWAMP.

The alluvial bottom lands along the various streams which are almost constantly overflowed and saturated, and in which the soil varies to such a degree that no definite classification as to color and texture can be made, are mapped as Swamp. The streams spread out over the areas into numerous channels, increasing the variability of the soil and making it difficult to determine the location of the main stream. Generally, the upper soil material is a dark-gray to black sand to clay, while the lower portion is a drab to black, heavy, sticky, plastic clay. Along upper Sowhatchee Creek the type

approaches the Grady clay loam. Along several streams in the northwestern part of the county the material is chiefly sandy, representing Meadow more closely than Swamp.

Swamp is mapped along all the larger creeks and branches of the county. A large area is mapped in the eastern part in Cypress Swamp. Here there are areas of open water which could not be separated on the map on account of their inacessibility. In this area there is some Peat and Mucky peat, but these soils are of little importance.

None of the Swamp is cleared. Its chief use is for hog pasture. The areas are densely forested, chiefly with cypress, ash, gum, bay, magnolia, tulip poplar, swamp maple, and slash pine. The cost of clearing and draining these areas would exceed their value for farming purposes, but would greatly improve health conditions.

SUMMARY.

Early County is situated in the southwestern part of Georgia, and embraces an area of 490 square miles, or 313,600 acres. The topography is undulating, with many lime sinks or depressions scattered over the surface. Drainage is generally well established, although there are few surface streams. Most of the drainage is subterranean.

The population of the county in 1910 is given as 18,122, all of which is classed as rural, and averages 34.6 persons to the square mile. Blakely, the county seat, is given a population of 1,833.[5]

Transportation facilities are afforded by the Central of Georgia, Atlantic Coast Line, and Georgia, Florida & Alabama Railroads. Public roads, rural mail delivery routes, and telephone lines extend to all parts of the county.

The mean annual temperature is 66.7° F., with an extreme range from 1° below zero to 108°. The winters are open, and farm work does not have to be suspended for more than a few days at a time on account of cold. Hardy vegetables can be grown with slight protection during the winter. The average annual rainfall is 52.14 inches.

The county is not well advanced in agriculture. Cotton was the chief crop until 1916, when the effects of the boll weevil became so disastrous that the acreage was reduced rapidly. Peanuts, corn, oats, velvet beans, some wheat and rye, and pork products are the chief sources of income at present.

The prevailing methods of handling crops are not very efficient. The use of improved farm machinery is limited by the large number of stumps in the fields. Light equipment and work stock are used. No systematic rotation of crops is practiced.

[5] See footnote, page 6.

According to the census of 1910 there are 2,509 farms in the county, of an average size of 76.3 acres. An average of 58.1 per cent of the land in farms is improved. Of the total number of farms in 1910 only 25.5 per cent were operated by owners and 74.5 per cent by tenants.

The soils of the county are classified into 22 types, in addition to Swamp. They are grouped in 14 series. Sixteen types are upland soils derived from Coastal Plain deposits of marine origin. Five types represent old alluvium or river-terrace soils. One type and Swamp represent recent alluvium occupying first bottoms and subject to overflow.

The Norfolk sand is a light, loose soil. It is used to a small extent for general farming, but the yields are low.

The Norfolk loamy sand is used for general farming and gives fairly good returns. It is intermediate in value between the Norfolk sand and sandy loam. It is found in large areas.

The Norfolk sandy loam is the most extensive soil in the county. It is used for general farming and gives fair to good yields. It is well suited for general farming and truck growing.

The Orangeburg sandy loam is not an extensive soil. It is well suited for general farm crops and truck.

The Ruston loamy sand is of small extent. Yields of general farm crops on this soil are low, but it could be used for early truck to good advantage.

The Ruston sandy loam is intermediate in agricultural value between the Norfolk and Orangeburg sandy loams. It produces good yields where properly farmed.

The Ruston loam is a strong, productive soil, well suited to general farm crops. The pebbly phase of this type is also productive.

The Greenville loamy sand is an extensive soil in the northwestern part of the county. It is a light soil for general farm crops, and gives only fair yields. It is apt to be droughty in dry periods.

The Greenville sandy loam is a strong, productive soil, easy to handle, and valuable for general farming.

The Greenville clay loam and its pebbly phase are heavy soils, better suited for general farming than for the growing of light truck crops.

The Blakely clay loam is characterized by a dark-chocolate or snuff-colored surface soil. It is a strong, productive type, well suited to general farm crops, especially forage crops.

The Marlboro fine sandy loam and its pebbly phase are especially desirable soils for general farming.

The Tifton sandy loam is a highly prized soil wherever it is found. It is productive and has a wide range in crop adaptation.

The Grady sandy loam and clay loam are found in lime-sink depressions. They are not used for agriculture.

The Plummer sandy loam is of small extent. It is a poorly drained soil, of low agricultural value.

The Cahaba fine sand and fine sandy loam are the most extensive soils on the terraces of the Chattahoochee River. They could be profitably used for the production of forage and grain crops in connection with stock raising.

The Leaf fine sandy loam is a soil of small extent, used chiefly for pasture. It gives good yields of corn and oats when properly farmed.

The Kalmia sand is a soil of small extent, developed on the second bottoms of the Chattahoochee River. It is not a naturally productive type.

The Myatt sand is a poorly drained soil, not used for agriculture at present.

The Congaree silty clay loam is of small extent, but it is a strong, productive soil. It is subject to overflow during high stages of the Chattahoochee River.

Swamp comprises low, wet, densely forested areas along streams where the soil is too wet for agricultural use.

[PUBLIC RESOLUTION—No. 9.]

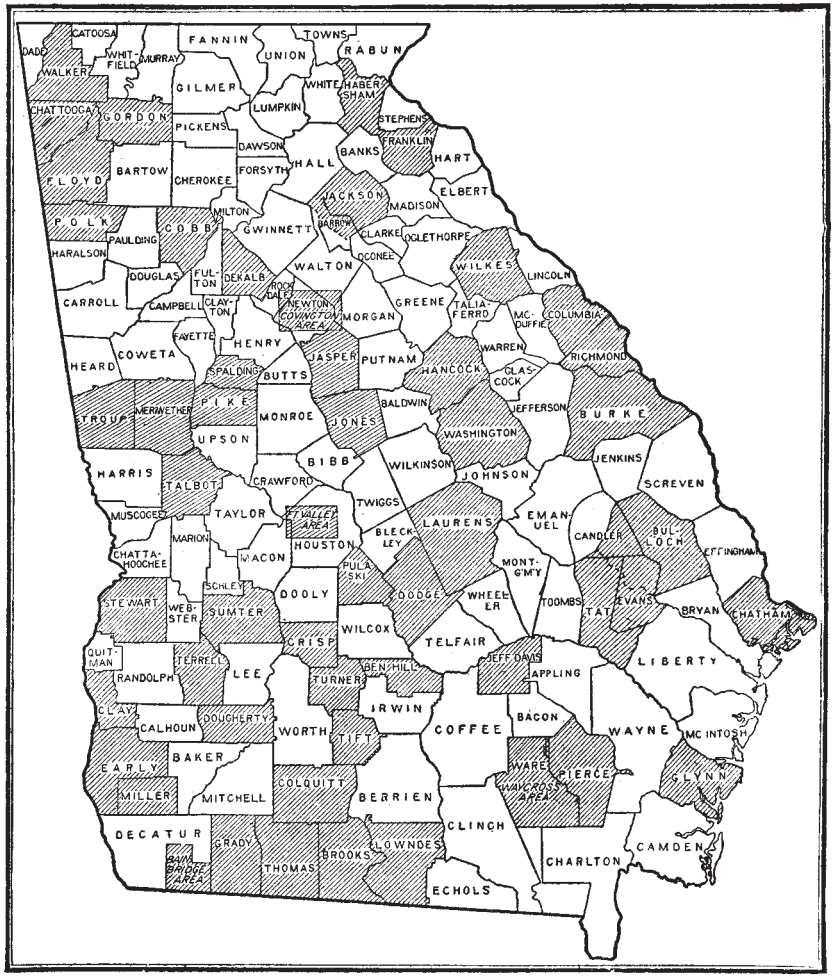
JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided*, That in addition to the number of copies above provided for there shall be printed, as soon as the manuscript can be prepared, with the necessary maps and illustrations to accompany it, a report on each area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved, March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils.]



Areas surveyed in Georgia.

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