

SOIL SURVEY OF CAMP COUNTY, TEXAS.

By W. J. GEIB, E. B. WATSON, THOMAS D. RICE, and CLARENCE LOUNSBURY.

DESCRIPTION OF THE AREA.

Camp County is located in the northeastern part of the State of Texas, in the east Texas timber belt, about 40 miles west of the eastern boundary and 50 miles south of the northern boundary of the State. The ninety-fifth meridian, west longitude, passes through the county a little west of the center, and the thirty-third parallel, north latitude, crosses the county near the center. It is bounded on the north by Titus and Morris counties, on the east by Morris

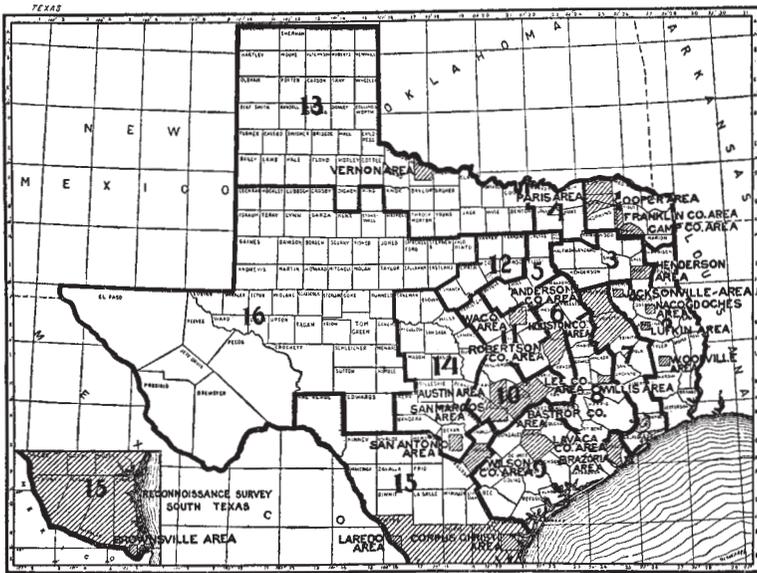


FIG. 25.—Sketch map showing location of the Camp County area, Texas.

County, on the south by Upshur County, and on the west by Wood and Franklin counties. It is one of the smallest counties in the State, containing 129,920 acres or 203 square miles.

The elevation varies from about 200 feet above sea level, in the southeastern corner on the flood plain of Big Cypress Creek, to about 500 feet on the near-by hills. The library building at Pittsburg has an elevation of 398.7 feet. Big Cypress Creek receives most of the drainage and forms about one-half of the boundary of the county. Starting from the western side, it flows first northeast, then east,

and finally southeast to the southern boundary. Prairie and Richland creeks are its principal tributaries. The southwestern portion of the area is drained by Lilly Creek south into Little Cypress Creek, which unites with Big Cypress Creek about 30 miles southeast of the county.

The topography is for the most part gently rolling. There is just enough slope from the uplands to the stream bottoms to insure good drainage, except on the bluff line adjoining the bottoms of Big Cypress Creek, where the fall is so great as to cause rapid erosion, but as a rule this is not sufficient to prevent cultivation. Extensive bottom lands border Big Cypress Creek and extend along its principal tributaries. These are subject to overflow and only a small portion is cultivated. In the southeastern part of the county some rocky hills occur, known locally as "mountains," which are from 250 to 300 feet above the flood plains of the streams at their base. These, however, occupy only a small area and are too steep and rough for cultivation.

The first settlers came to Camp County in 1844 and located on Big Cypress Creek. A few others came in 1850, and quite an inflow occurred in 1855, and another in 1859. Almost all of these immigrants came from the more eastern Southern States, particularly Georgia and Alabama, and took up the greater part of the land that is cultivated to-day. Since the civil war the population has increased steadily, until now it numbers 9,000, about 55 or 60 per cent being native white and the remainder colored. There are practically no foreigners in the county.

The first survey of land was made in 1849, when a number of "headrights" which had been given to veterans of the Mexican war were located. These "headrights," according to old Spanish customs, usually consisted of a league and a labore or 4,605.5 acres. They were located at the option of the holders, and the best land was chosen, but with no regularity or general order. These old grants are the basis of all land titles at the present time, thus making the description of land radically different from that in a sectionized country. Pieces of land left between these original surveys were surveyed later and bought from the State. The last thus secured was some river bottom land that was deeded by the State only last year.

Camp County was originally a part of Upshur County, but in 1876 was organized as a separate county. Pittsburg, situated near the center of the county, is the county seat and only town of any importance. It has a population of about 2,000 and contains a cotton compress, an oil mill, a box factory, and other minor industries. Leesburg has a population of about 200. Pine, Newsome, Harvard, and Faker are shipping points.

Before the advent of the railroad, Jefferson, 40 miles southeast of Pittsburg, was the marketing point for cotton, which was the only export from the county. In 1878 the Missouri, Kansas and Texas Railway was completed, traversing the county from east to west, and soon after the Cotton Belt Route (St. Louis Southwestern Railway) was built, crossing the county from north to south. Both roads pass through Pittsburg and offer excellent transportation and marketing facilities. Almost all the cotton for shipment out of the State goes to Galveston, and that for Japan is sent to Seattle. Potatoes and fruit are shipped to all parts of the country, but principally north. Corn, hay, and forage crops are marketed within the county.

CLIMATE.

The climate of Camp County is mild and pleasant. According to the Weather Bureau station at Paris the average number of days for the ten years ending 1903 on which the temperature exceeded 100° F. was seventeen each year. From the last killing frost in the spring until the first in the fall there is a period of about eight months, thus giving a long growing season. From October until June the weather is delightful, the majority of the days being bright and pleasant and the nights cool. Plowing and all kinds of farm work can be done every month in the year, and live stock needs little protection. An occasional fall of temperature occurs, due to sudden cold waves from the north called "northers," but these rarely last more than two or three days and are not frequent.

The following tables, compiled from the records of the Weather Bureau stations at Paris and Sulphur Springs, give the normal monthly and annual temperature and precipitation at these places, which are only a short distance outside of the area:

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

Month.	Temperature.			Precipitation.			
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.	Snow, average depth.
	° F.	° F.	° F.	Inches.	Inches.	Inches.	Inches.
December.....	46	80	5	2.1	1.9	3.4	0.5
January.....	45	83	8	2.1	3.1	.4	1.8
February.....	44	84	-13	2.0	.3	2.2	1.4
Winter.....	45	.....	.....	6.2	5.3	6.0	3.7
March.....	55	92	18	3.5	.6	4.0	0.0
April.....	65	96	29	2.9	3.2	4.7	0.0
May.....	71	96	38	4.5	2.4	4.3	0.0
Spring.....	64	.....	.....	10.9	6.2	13.0	.0

Normal monthly, seasonal, and annual temperature and precipitation at Paris—Cont'd.

Month.	Temperature.			Precipitation.			
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.	Snow average depth.
	° F.	° F.	° F.	Inches.	Inches.	Inches.	Inches.
June.....	78	104	46	3.3	1.2	2.0	0.0
July.....	83	108	60	3.1	1.5	4.6	0.0
August.....	82	110	57	2.0	Trace.	.1	0.0
Summer.....	81			8.4	2.7	6.7	0.0
September.....	76	106	42	2.8	.6	6.7	0.0
October.....	66	95	33	2.3	3.0	3.8	0.0
November.....	54	85	18	2.7	.6	11.9	0.0
Fall.....	65			7.8	4.2	22.4	0.0
Year.....	64	110	-13	33.3	18.4	48.1	3.7

Normal monthly and annual temperature and precipitation at Sulphur Springs.

Month.	Temperature.	Precipitation.	Month.	Temperature.	Precipitation.
	° F.	Inches.		° F.	Inches.
January.....	47.8	2.51	August.....	83.4	2.51
February.....	45.8	2.30	September.....	78.4	2.93
March.....	57.0	3.90	October.....	67.8	3.16
April.....	66.0	3.15	November.....	53.8	3.39
May.....	70.7	4.84	December.....	46.6	3.10
June.....	80.3	3.01	Year.....	65.3	39.24
July.....	83.1	4.44			

From the table it will be seen that the hottest months—June, July, August, and September—have an average temperature of 80° F., while the coldest months—December, January, and February—have an average of 46° F.

The rainfall is ample, being 33.3 inches at Paris and 39.2 inches at Sulphur Springs, and is well distributed throughout the year. Dry years, however, occur occasionally and cause considerable loss. During the driest year at Paris there was only 18.4 inches of rainfall, and during the four hottest months only 3.3 inches. On the whole the climate is very favorable to the growth of cotton, vegetables, fruit, and a great variety of crops.

AGRICULTURE.

Camp County was originally covered with valuable forests of short-leaf pine and oak. Hickory, ash, birch, willow, bois d'arc, gum, cottonwood, black walnut, loblolly pine, honey locust, box elder,

dogwood, ironwood, persimmon, holly, etc., occurred as minor growths. Lumbering has been an important industry, and there is still much timber left standing, especially on the bottoms. There are now five sawmills in the county with an annual output of products valued at \$20,000.

To clear a piece of land it was the custom of the early settlers to cut out the smaller growth and deaden the large trees, after which cotton or corn was planted among the stumps. Later the large trees were removed and burned. This practice is still followed when a new field is cleared, and much valuable timber has been wasted in this way. The owners of timbered lands would do well to look into the question of a rational system of forestry, for it is probable that no better use will ever be found for the rough hills and a large proportion of the bottom lands than to keep them forested.

The early settlers used the unfenced and uncleared areas as range for stock, especially cattle and hogs. As the population and area of cleared land has increased, laws have been passed in a major part of the county restricting the free range. At present in the more thickly populated districts all stock is restricted, and this has been a factor in improving the quality of farm animals generally. The large bottom areas and some of the rougher land are still free range and afford much valuable pasturage.

The poultry industry is well developed. In addition to supplying the home demand, several cars of chickens and turkeys, besides great quantities of eggs, are shipped out of the county each year.

Cotton has been the leading crop from the first, and to-day the area devoted to it is as large, if not larger, than that of all other crops combined. The short-staple variety is mostly grown, and the grades in 1908 ran from low ordinary to middling fair, averaging about middling. Long-staple cotton, however, is being tried as an experiment, and 10 bales were marketed this year, commanding an advance of $1\frac{1}{2}$ cents a pound over the short-staple variety. If a permanent market were established in the county for this class of cotton, a higher price would undoubtedly be secured, but it is not yet certain that it will prove more profitable on the soils of the area than the short-staple variety.

The method of cultivating cotton has been in the main that followed throughout the cotton-growing States; that is, ridge culture, plowing and cultivating with single mules, and using a large amount of hand work. The early custom was to grow cotton continuously on a field until its productiveness became so low that it no longer produced good yields. It was then abandoned and a new field cleared. The abandoned field was allowed to grow up in old field pine, sweet gum, or other timber of low value, and in the course of time it was again cleared. Fortunately this custom is dying out, though it has not entirely disappeared.

Cotton gins are numerous throughout the county, and the usual toll is from one-sixteenth to one-twentieth of the cotton ginned. The owner of the cotton receives the seed, which for each bale of cotton is worth about \$6.

The boll weevil has been in the county about four years, and has considerably decreased the yield of cotton, but not to such an extent as it has farther south. The farmers are learning to combat it by planting earlier varieties of cotton, adopting cleaner methods of culture, and especially by turning their attention to the introduction of other crops. During the last five years there has been quite an awakening along agricultural lines and new crops and new methods are being tried.

Corn is an important crop and its acreage has increased until it is now about one-half that of cotton. All corn and forage crops not consumed on the farms are marketed within the county. Bermuda grass is now well established, and during the last five years has become a profitable hay crop. On the bottoms it yields from three to four cuttings a year of about 1 ton per acre to the cutting, and on the uplands it gives about half as much. In all probability the acreage devoted to this crop will be extended until the county produces all the hay needed for its live stock.

About ten years ago a large peach orchard was set out, and when it came into bearing it demonstrated the possibilities of fruit growing in the county. During the last five years many peach orchards, containing from 1,000 to 5,000 trees, have been set out, and also a few pear orchards. The soil and climate seem especially suited to the production of fruit. The finest grade of Elberta peach is produced, and failures are very few. There is a local fruit growers association that markets the fruit, but the last season was the first year that they have handled fruit in any great abundance. The fruit was not properly graded and packed and consequently many losses resulted. In some cases the sales did not equal the cost of freight and commission charges. Some growers did well with their fruit, but more of them lost money. If the fruit raisers can be induced to cooperate and master the art of grading, packing, and marketing, results will be far different. Undoubtedly fruit of great excellence can be produced at a small cost. In 1908, 48 carloads of peaches were shipped from Pittsburg and many orchards are not yet of bearing age. Several farmers have secured small canning outfits and can their peaches for market. This has proved quite profitable. Not only do they can peaches, but also sweet potatoes, beans, tomatoes, and other truck. The canning industry bids fair to develop, and it is possible that it will solve the problem of marketing, for the product when canned may be held and sold as the demand arises.

The trucking industry is also receiving increased attention. Of the truck crops, Irish potatoes lead. They are raised for the early northern markets, arriving there long before the northern-grown potatoes mature. The yields are not large, ranging from 25 to 125 bushels per acre, with an average of 50 or possibly 60 bushels per acre. The price is very satisfactory, the growers netting for the last two years a little more than 80 cents a bushel. In 1907, 52 carloads of potatoes were shipped and 64 carloads in 1908. These are dug early enough to allow time for some second crop. This is often potatoes again, grown for next year's seed, sweet potatoes, or corn, all of which do well. Sweet potatoes are mostly grown for home consumption, but 3 or 4 carloads are shipped. Tomatoes, beans, and other truck crops are also grown and shipped to some extent.

Although sugar cane is not given a large acreage, being grown mainly in small areas on sandy bottoms, the yield is so great that the industry is of considerable importance. Several carloads of cane are shipped each year to the western part of the State, where it is retailed for direct consumption. The greater proportion of the crop, however, is made into what is called "ribbon-cane sirup," at the many small cane mills located over the county. In addition to supplying the local demand for sirup, about 4,000 gallons are shipped annually. The average price is 50 cents a gallon.

Other minor crops receiving some attention are peanuts, which are grown for stock feed, and cowpeas, oats, and rye for hay and winter pasturage.

Commercial fertilizers have not been used to any great extent. They were tried and for a while the amount used increased each year, but now it is decreasing. In its stead the farmers are using barnyard manure, which is now being largely saved, and they are beginning to grow cowpeas and other leguminous crops to restore the productiveness of the soil.

Fully half the farms in the county are operated by the owners. The average size of the farms is 69.5 acres.^a Share rent is the universal custom, the usual rent being one-third of the corn and one-fourth of the cotton. Occasionally the landlord furnishes everything—stock, implements, and seed—and in return he receives one-half the crop. Many of the renters are entirely outfitted by the landlord, and by the time the crop is harvested, if not before, they have the value of the crop spent, leaving them destitute at the end of the season. Farm hands receive \$18 a month, with board, but not many are employed. If an owner is unable to cultivate all his land, some of it is rented.

^aThe Census tabulated each tenancy as a farm, and the average size of individual holdings is probably much larger than this figure.

A large proportion of the farm work is performed by negroes, who constitute 40 or 45 per cent of the population. They are industrious and economical, about one-third of them owning the farms which they operate, and most of those who own farms are free from debt. Quite a number own from 100 to 500 acres each.

Over half of the county, possibly as much as 60 per cent, is cleared and improved. This area has a population, not including that of the towns, of about 60 to the square mile. Public schools are numerous and well supported, there being separate schools for white and colored children.

Some of the rougher land in the southeastern part of the county changed hands recently at \$1 an acre, while some of the swamp land is worth but little more than the value of the standing timber. The Susquehanna gravelly loam, on the breaks of Big Cypress Creek, is worth from \$4 to \$8 an acre. The more level and better farming land, especially the Norfolk fine sandy loam, is valued at \$10 to \$20 an acre. Pittsburg land values are somewhat higher.

The farmers of the county are progressive, and their agricultural methods are in advance of those found in many parts of the South; still there is room for improvement. As already stated, cotton is especially suited to the soil and climatic conditions, but a field should not be grown continuously to cotton until worn out, as is too often done in the county. Some systematic rotation can easily be planned that will give a profitable yield each year, and with an occasional dressing of barnyard manure the productiveness of the soil can be maintained indefinitely without the use of commercial fertilizers. A legume should be included in the rotation, and legumes should also be grown as catch crops before or after the main crop of the season. Cowpeas, peanuts, and many other legumes do well here and more attention should be given them.

Level culture should take the place of the ridge culture of cotton. The fields should be cleared of stumps as soon as practicable to facilitate the use of 2-horse tools and improved cultural implements. A field once cleared should never be abandoned, but some system of soil management should be adopted whereby it would continue to produce profitable yields. The first step in this direction is a rotation of crops, as mentioned before. It is also important to maintain the humus content of the soil. Cotton culture exhausts the humus very rapidly, because of the clean culture given the crop, and for this reason fresh organic matter should be added to the soil as frequently as possible. The exclusive use of commercial fertilizers is to be discouraged, and barnyard and green manures should be liberally employed. Cultivation, especially of the cornfields, should be more thorough. The abundance of cockleburrs, as well as numerous other

weeds that go to seed, is quite noticeable, and if not kept down this proves a serious hindrance to the growth and yield of the crop.

More care should be taken to prevent erosion, especially on the Susquehanna soils. This can be done by terracing and running the rows with the contour of the hills.

A proper expansion of the truck and fruit industry is desirable. Lespedeza grows wild here, and it is probable that its culture would be very profitable.

SOILS.

The soils of Camp County fall into four series—the Susquehanna, Caddo, Norfolk, and recent alluvial or meadow soils. Geologically the area lies within the outcrop of the Lower Eocene, known as the Sabine formation, which consists of sands, with laminated clays and some lignite. In places the sands have been indurated into a ferruginous sandstone by the presence of oxide of iron, and the amount of iron at times is sufficient to constitute an iron ore. Where the sandy strata outcrop on the hillsides springs arise, there being a number of very valuable springs in the county.

The Sabine formation, being uncovered, has weathered into the three types of the Susquehanna series. The Caddo fine sandy loam, or the post-oak flats, has probably been derived from the same formation, where for some reason it has never had a covering of the overlying Lafayette, or at best but a very thin one. Its position would preclude the possibility of its being uncovered by erosion, for it occurs on very poorly drained level places.

Resting upon this formation, except on a few of the higher hills, and lower down where removed by recent erosion, is a yellow or gray sand and sandy clay deposit nearly free from gravel, usually not exceeding 5 or 6 feet in thickness, though in places it is 10 to 20 feet. The age of this superficial deposit is not established, but it is thought to be redeposited Lafayette, possibly representing Port Hudson. This formation has given rise to the Norfolk fine sand and fine sandy loam, which are the prevailing types over the level part of the county and constitute the most highly prized farming land. It seems probable that this formation was a water deposit and originally covered, probably to a depth of 10 to 15 feet, the surface of the entire county, with the possible exception of some of the highest hills, and followed the topography of the underlying formation, which already had its drainage well established and was considerably eroded. As was natural on its elevation above the sea, the soil was soon washed off the steeper slopes, but has remained on the uplands and in many cases below the steeper slopes on the bottoms of the smaller streams.

Along the large streams there has been a recent deposit of alluvial material, which is simply a reworking of the other soils of the area, and these constitute the Meadow soils.

The following table gives the names and areas of the several soils, while the accompanying map shows their distribution:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Norfolk fine sandy loam.....	61,184	47.1	Susquehanna stony loam.....	1,024	0.8
Susquehanna fine sandy loam...	23,360	18.0	Caddo fine sandy loam.....	384	.3
Meadow.....	19,776	15.2	Total.....	129,920	.....
Susquehanna gravelly loam.....	19,328	14.9			
Norfolk fine sand.....	4,864	3.7			

NORFOLK FINE SANDY LOAM.

The surface soil of the Norfolk fine sandy loam, to a depth of 12 to 20 inches or more, is a gray fine sandy loam. The subsoil, to a depth of 3 to 10 feet, consists of a yellow sandy clay underlain by a stiff clay. Both soil and subsoil, when typically developed, are free from gravel and very uniform in texture, the only exception being where the formation is quite thin. Here it has become partly mixed with the underlying Susquehanna and the subsoil in this case often becomes reddish or chocolate in color.

The soil is derived from the youngest sea deposit, probably Port Hudson, and with the exception of a few eroded places it is practically unmodified. The topography is usually level or gently rolling. Occasionally the drainage is inadequate.

The original timber growth consisted of pines and hardwoods. When first cleared the soil contains a good proportion of humus and is very productive. It is the leading farming soil of the county and occurs in large bodies over the main uplands and along the upper courses of the small streams in the central and southern portions of the area. It is very easy to cultivate and the subsoil contains enough sand and silt to make it fairly pervious to water. Most of the type is cleared and under cultivation, very little having been abandoned when once cleared. It is not as early a soil as the Susquehanna gravelly loam, but it withstands drought much better.

Cotton and corn are the principal crops grown on this type. Cotton yields from one-fourth bale to 1 bale per acre, averaging before the advent of the boll weevil somewhat more than one-half bale. The weevil has reduced the yield probably one-fourth, possibly one-third. Corn yields from 10 to 40 bushels per acre, averaging about 20 bushels. The greater part of the fruit and truck is grown on this soil. Peanuts, oats, cowpeas, and Bermuda grass all do well.

Level culture and rotation of crops, including legumes, are recommended for this soil. Though it responds well to commercial fertilizers, many of the farmers prefer barnyard manure, which is gradually taking the place of the fertilizers.

Land of this type is worth from \$8 to \$20 an acre, and near Pittsburg it is somewhat higher.

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

Mechanical analyses of Norfolk fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
20029, 20031.....	Soil.....	0.0	0.2	0.9	28.8	43.1	22.4	4.6
20030, 20032.....	Subsoil.....	.1	.1	.8	30.3	29.3	19.2	19.4

NORFOLK FINE SAND.

The soil of the Norfolk fine sand, to a depth of 6 inches, is a gray medium or fine sand containing a small amount of organic matter in the surface when first brought under cultivation. It grades imperceptibly into the subsoil, a gray, uniform, medium sand free from gravel, which extends to a depth of from 3 to 15 feet.

The topography consists of a level or gently rolling surface, the latter often being deeply eroded. Like the Norfolk fine sandy loam, it is derived from the latest Quaternary formation. The original forest growth consisted almost entirely of pine with a few deciduous trees.

The Norfolk fine sand is not an extensive type and is confined to the southwestern part of the county. It is not highly esteemed for agricultural purposes, for it soon declines in productiveness, and does not withstand drought well. Having a loose and porous structure, it is the most easily cultivated soil in the area, and is especially adapted to early truck crops, both fruit and vegetables doing well. Cotton yields from one-fifth to one-half bale per acre, and corn 10 to 18 bushels. Peanuts do well.

Not a large proportion of this type is under cultivation. Some of the once cultivated fields have been abandoned and now support a growth of old-field pine. In many of the fields the organic matter content of the soil has become noticeably deficient. This can best be remedied by growing leguminous crops, preferably in a regular rotation. This soil is valued from \$3 to \$8 an acre.

The results of mechanical analyses, showing the texture of the soil and subsoil, are given in the following table:

Mechanical analyses of Norfolk fine sand.

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.	<i>Per cent.</i>
20,027.....	Soil.....	0.0	1.5	11.4	64.3	15.6	5.1	2.1
20,028.....	Subsoil.....	.0	1.5	11.4	65.8	15.2	3.9	2.3

SUSQUEHANNA FINE SANDY LOAM.

The Susquehanna fine sandy loam, to a depth of 6 to 12 inches, is a gray fine sandy loam, containing a small amount of gravel made up of iron sandstone and iron concretions. The subsoil consists of a tenacious red plastic clay, containing but little sand or gravel, usually mottled with yellow and occasionally blue clay in the lower depths. In certain very small areas the subsoil is yellow. The clay is markedly stratified, and in the lower depths the strata often range from stiff or sandy clay to iron sandstone.

The topography is level to rolling. Where nearly level, the soil sometimes lacks good drainage because of its impervious subsoil. As a rule, the surface drainage is sufficient to carry off the surplus water, but often erosion must be guarded against. A few fields have been abandoned on this account, but by terracing and careful culture this could have been prevented.

This type occurs along the lesser stream courses and on the low divides between them. It is formed by the exposure and weathering of the Sabine formation, where erosion has not been too rapid.

The original forest growth consisted of hardwoods, with a small amount of pine. Most of this forest has been removed and the land brought under cultivation, and while not as highly valued for agricultural purposes as the Norfolk fine sandy loam, still with good management it is quite productive. Its structure is loose and porous and cultivation is easy. Green manuring is found very profitable and is to be advised. If the humus is kept replenished, the soil will withstand continued cultivation.

The Susquehanna fine sandy loam is adapted to a great variety of crops, such as cotton, corn, oats, cowpeas, and Bermuda grass. Cotton usually yields from one-fourth to three-fourths bale per acre, averaging less than one-half bale. Corn produces from 10 to 25 bushels per acre. This soil is worth at present from \$5 to \$15 an acre.

The following table gives the average results of mechanical analyses of fine-earth samples of the soil and subsoil:

Mechanical analyses of Susquehanna 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.	<i>Per cent.</i>
20033, 20035.....	Soil.....	1.1	1.0	0.8	20.2	41.1	30.8	4.8
20034, 20036.....	Subsoil.....	.2	.8	.4	10.8	23.1	24.6	39.9

SUSQUEHANNA GRAVELLY LOAM.

The soil of the Susquehanna gravelly loam, to a depth of 10 to 20 inches, consists of a reddish-gray medium sandy loam, containing a large proportion of gravel made up of iron sandstone and iron concretions. The subsoil consists of a red clay, mottled with yellow or gray, and contains considerable gravel similar to that of the soil. This gravel content renders the clay pervious to water and coupled with the good surface slope gives the soil good drainage, but, on the other hand, the type does not withstand drought very well.

The topography is rolling to steep, occurring along the bluffs of the larger streams where erosion has been rapid. The soil varies a good deal, owing to its topography and occasionally areas of Susquehanna fine sandy loam, too small to be mapped, are found where erosion has not been so rapid. It occurs mostly in the northern part of the county near Big Cypress Creek.

The original timber growth consisted of deciduous trees, mostly hardwoods, and more black-jack oak is found on this soil than on any other in the area. About half the type has been cleared and cultivated.

The Susquehanna gravelly loam is an early soil, adapted to all the staple crops of the county, especially truck and fruit. Cotton and corn are the principal crops. Cotton averages one-third bale per acre, but with good culture it yields 1 bale to the acre. If an early variety is planted the crop is made before the boll weevil becomes very destructive. Corn yields from 10 to 20 bushels per acre. Peaches seem to do well and many of the large peach orchards have been set out on this type. Truck has not been tried extensively, but the soil is undoubtedly suitable. Grapes would probably do well.

Owing to its topography the soil is apt to erode rapidly, and under poor management it quickly declines in productiveness. Some fields have been abandoned. Terracing and careful culture, running the rows around the hills, are most essential. Surface cultivation to conserve the moisture should be practiced, and heavy applications of organic matter should be made, as the soil is deficient in humus. The value of the land varies from \$4 to \$12 an acre.

The following table gives the results of mechanical analyses of fine-earth samples of the soil and subsoil.

Mechanical analyses of Susquehanna gravelly 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.	<i>Per cent.</i>
20039.....	Soil.....	0.5	1.0	0.3	14.8	51.9	26.5	4.7
20040.....	Subsoil.....	1.0	1.4	.5	25.2	32.3	21.7	17.9

SUSQUEHANNA STONY LOAM.

The Susquehanna stony loam is not very uniform in character, but where typically developed it consists of a gray or reddish-gray sandy loam, 6 to 12 inches deep, in which occurs a great number of stones of varying size. The subsoil differs from the soil in that it contains more clay, often red in color, and frequently more rock fragments. These fragments are ferruginous sandstone and consist of sands which have been cemented into a fairly hard stone by iron oxide.

The type is found in the rough, hilly section, locally known as the "mountains," in the southwestern part of the county. A few small areas outside the area just described have been included in this type. They consist of especially rough spots in the Susquehanna gravelly loam, where erosion has been very severe and has left a soil very stony and unfit for cultivation.

The soil is uncultivated because of its stony character and rough topography. It is used for stock pasture or valued for the timber, consisting of shortleaf pine, white, post, and black-jack oak, hickory, and minor growths. The price of this land is very low, \$1 to \$3 an acre.

The following table gives the results of mechanical analyses of fine-earth samples of the soil and subsoil:

Mechanical analyses of Susquehanna stony 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.	<i>Per cent.</i>
20037.....	Soil.....	0.4	1.9	0.8	28.4	37.1	25.6	6.0
20038.....	Subsoil.....	.2	.7	.3	17.2	48.8	23.9	8.7

CADDO FINE SANDY LOAM.

The soil of the Caddo fine sandy loam, to a depth of 3 to 8 inches, and occasionally 12 inches, is a very fine sand containing considerable clay and usually gray in color. The subsoil is a very tenacious, impervious clay of varying color, being usually gray with a few mottles of yellow or red, though sometimes it is brown. Scattered over the surface and covering nearly one-half the type are small, rounded mounds of fine sand or fine sandy loam from 1 to 4 feet high and 2 to 4 rods wide. These resemble small dunes, and probably owe their origin to an accumulation of sand around small tufts of vegetation when the country was in an arid condition.

The general topography of the soil is quite level. It occurs as poorly drained areas in the uplands some distance from the streams and is of very limited extent, only a few small areas being mapped

in the southwestern part of the county. These are locally known as "post-oak flats." The original timber growth consisted mainly of post and black-jack oak.

The soil is quite refractory to handle, because of its large clay content and undrained condition. It is rather unproductive and is cold and backward in the spring. Water remains in depressions until evaporated. It is claimed that if brought under cultivation it will improve with age, finally becoming fair farming land, but as yet little of it has been cleared. The great need of this soil is artificial drainage. When this is secured it should prove a good, durable soil well suited to cotton and corn. In its natural condition it makes good pasture. Cotton yields as high as one-half bale to the acre, and corn in favorable years 20 bushels per acre. Bermuda grass does well. Land of this type is worth from \$5 to \$10 an acre.

The following table gives the results of mechanical analyses of the soil and subsoil:

Mechanical analyses of Caddo 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.	<i>Per cent.</i>
20025.....	Soil.....	0.0	0.9	0.3	13.2	14.0	45.6	25.7
20026.....	Subsoil.....	.0	.3	.2	7.6	11.0	45.9	34.1

MEADOW.

The Meadow varies considerably in texture. It is recent alluvial in origin and has the character of the adjacent soil from which it is derived. That along Big Cypress Creek has a heavier texture than that occurring along the smaller streams, much of which is quite sandy.

Very little of this type is under cultivation, as it is all subject to overflow. Occasionally a small area, a few feet higher than the surrounding bottom, is cleared and cultivated and is very productive. Sugar cane and Bermuda grass are the two main crops, both doing exceedingly well.

This soil was originally covered with a heavy growth of deciduous trees, consisting mostly of oaks of various species, hickory, ash, elm, and gum. The mast from these furnishes valuable feed for hogs.

It is probable the chief value of Meadow is in its timber growth, though Bermuda grass for pasture may be successfully grown, as it is seldom injured by overflow. Meadow land has a value of \$3 an acre and upward, depending on the amount of standing timber.

SUMMARY.

Camp County, one of the smallest in Texas, is located in the east Texas timber belt, in the northeastern part of the State. It has an elevation of 200 to 500 feet above sea level.

The surface features are gently rolling over most of the county, and drainage is well established.

The county was first settled in 1844, the settlers coming almost entirely from southern States east of the Mississippi River. Pittsburg is the county seat and commercial center. Two railroads pass through the town and furnish good shipping facilities.

The climate is mild and healthful, and especially favorable to the growing of cotton, fruit, and truck. The annual rainfall, about 35 inches, is well distributed throughout the year.

The county was originally covered with shortleaf pine and oak. Some timber yet remains, especially in the bottoms, but over half the area is cleared and under cultivation. Cotton is the main crop, with corn second. Both fruit and truck are receiving increased attention. Bermuda grass is also grown for hay. There is a fair supply of live stock of good quality.

Most of the good farming land can be bought for \$5 to \$20 an acre. Agricultural methods are being changed for the better, but more attention should be given to crop rotation, the growing of leguminous crops, the use of barnyard manure, and improved methods of culture.

Seven soils were found in Camp County. These vary in texture from fine sand to heavy loam. They are adapted to a wide range of crops and, for the most part, are easily cultivated.

The Norfolk fine sandy loam is the most extensive soil in the area, as well as the most highly prized. It is suited to the staple crops, fruit, and truck.

The Norfolk fine sand has little agricultural value and is not extensively farmed, although all crops do fairly well for a few years after the land is cleared.

The Susquehanna fine sandy loam, because of its impervious subsoil, is rather difficult to manage, but it is well esteemed and is adapted to a wide range of crops.

The Susquehanna gravelly loam is quite rolling. It is an early soil, and while the staple crops do well, it is especially adapted to fruit and truck.

The Susquehanna stony loam is too rough for cultivation, and is devoted to pasture and forestry.

The Caddo fine sandy loam is of very limited extent. Owing to its impervious nature and poor drainage it is a cold, hard soil to handle.

All the Meadow is subject to overflow. It is valued for pasture and its standing timber.

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