United States
Department of
Agriculture

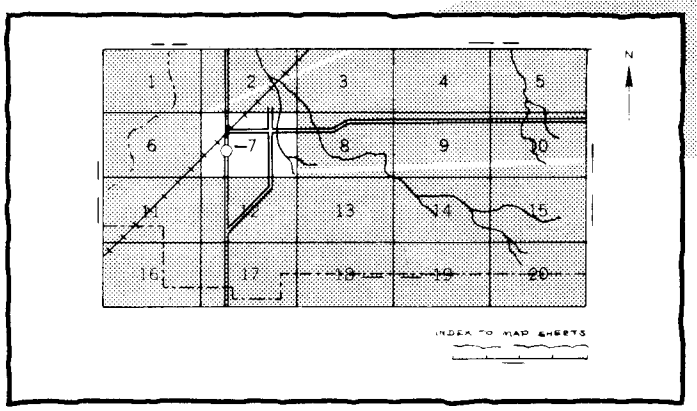
Soil
Conservation
Service

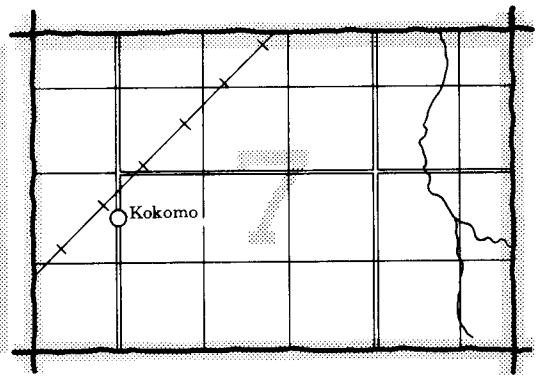
In cooperation with
Louisiana Agricultural
Experiment Station and
Louisiana State
Soil and Water
Conservation Committee

Soil Survey of Lafourche Parish, Louisiana

HOW TO USE

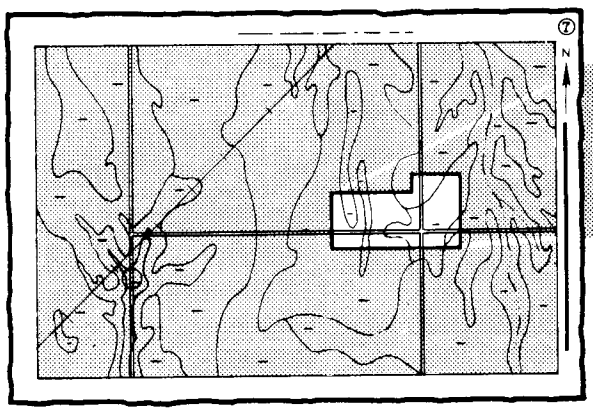
1. Locate your area of interest on the "Index to Map Sheets" (the last page of this publication).

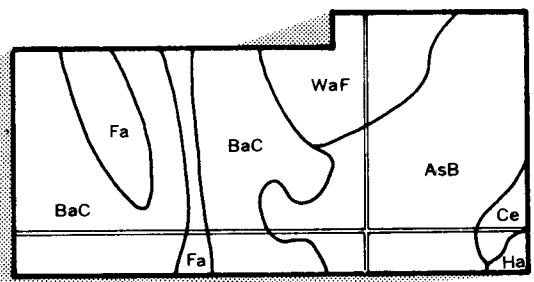




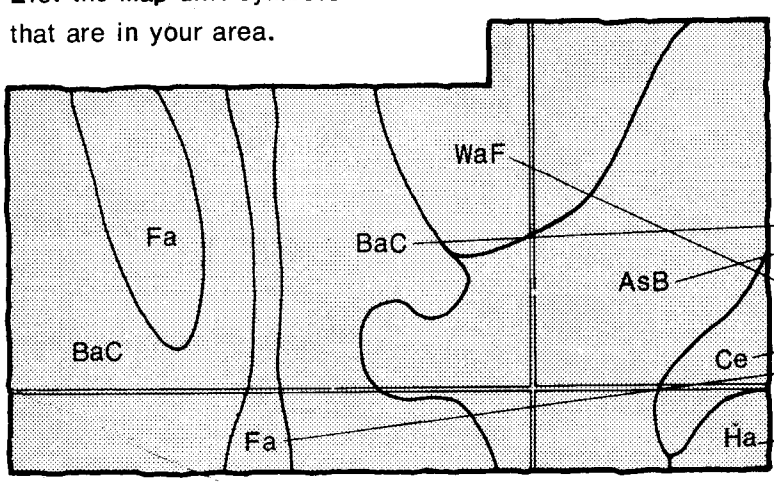
2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.





4. List the map unit symbols that are in your area.



Symbols

AsB
BaC
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Fa
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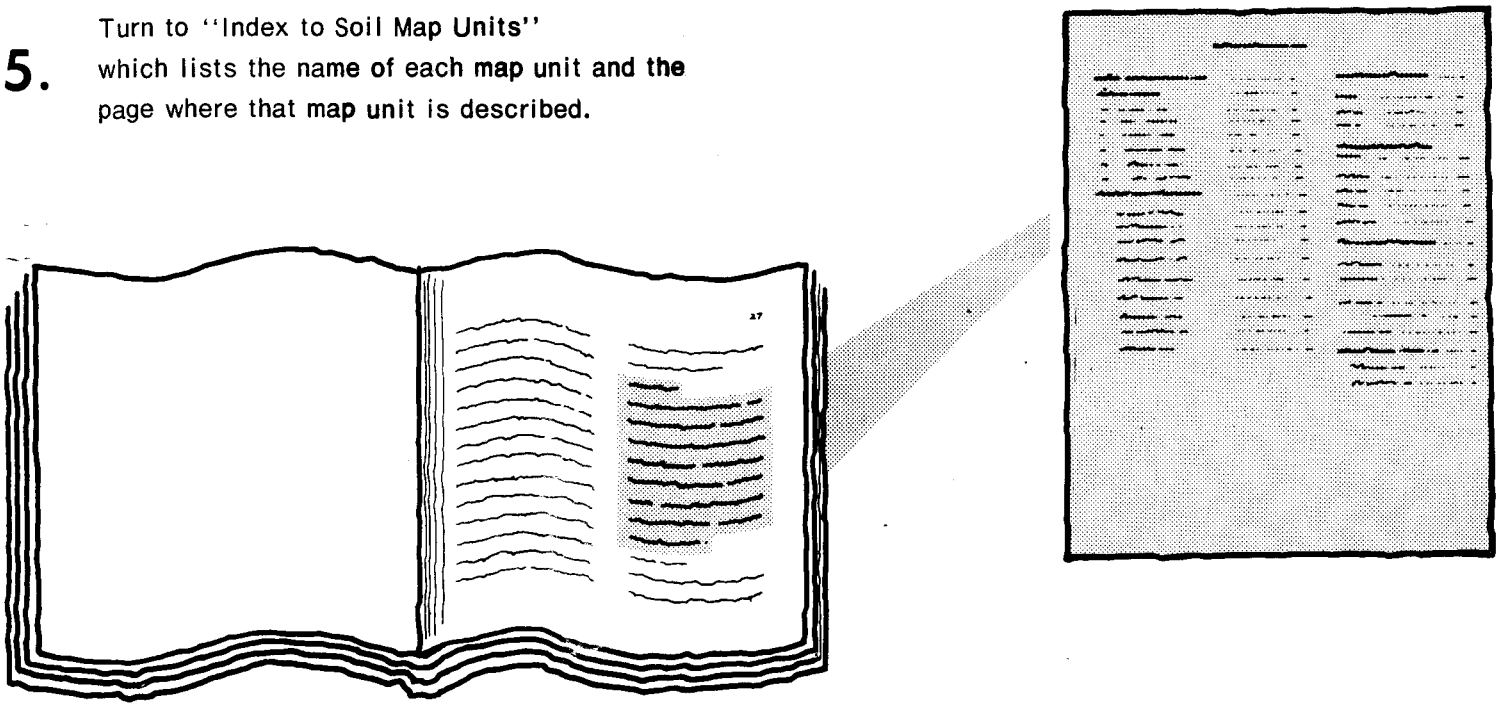
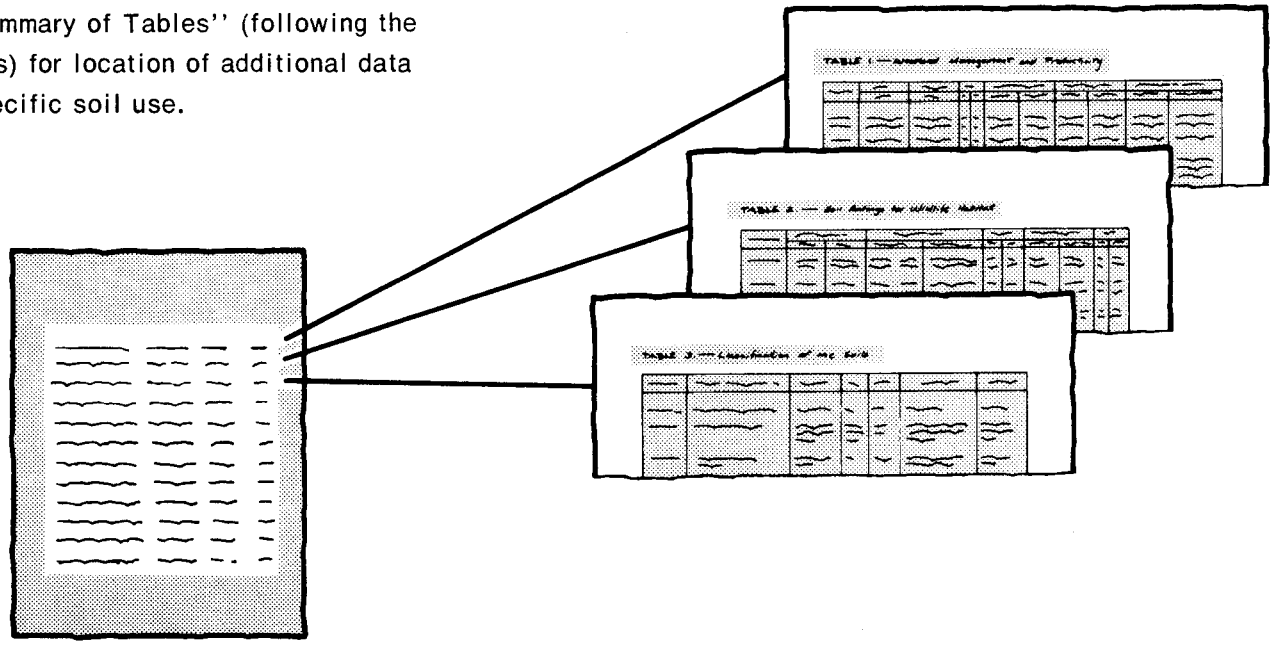
THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was performed in the period 1977-80. Soil names and descriptions were approved in 1981. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1981. This survey was made cooperatively by the Soil Conservation Service, the Louisiana Agricultural Experiment Station, and the Louisiana Soil and Water Conservation Committee. It is part of the technical assistance furnished to the Lafourche-Terrebonne Soil and Water Conservation District.

Cover: Nearly pure stand of bulltongue (Sagittaria lancifolia) in an area of Allemands muck in the freshwater marsh. This soil provides excellent cover and nesting material for wildlife. In the background are baldcypress trees in an area of Barbary-Fausse association.

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soil series

Issued October 1984

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foreword

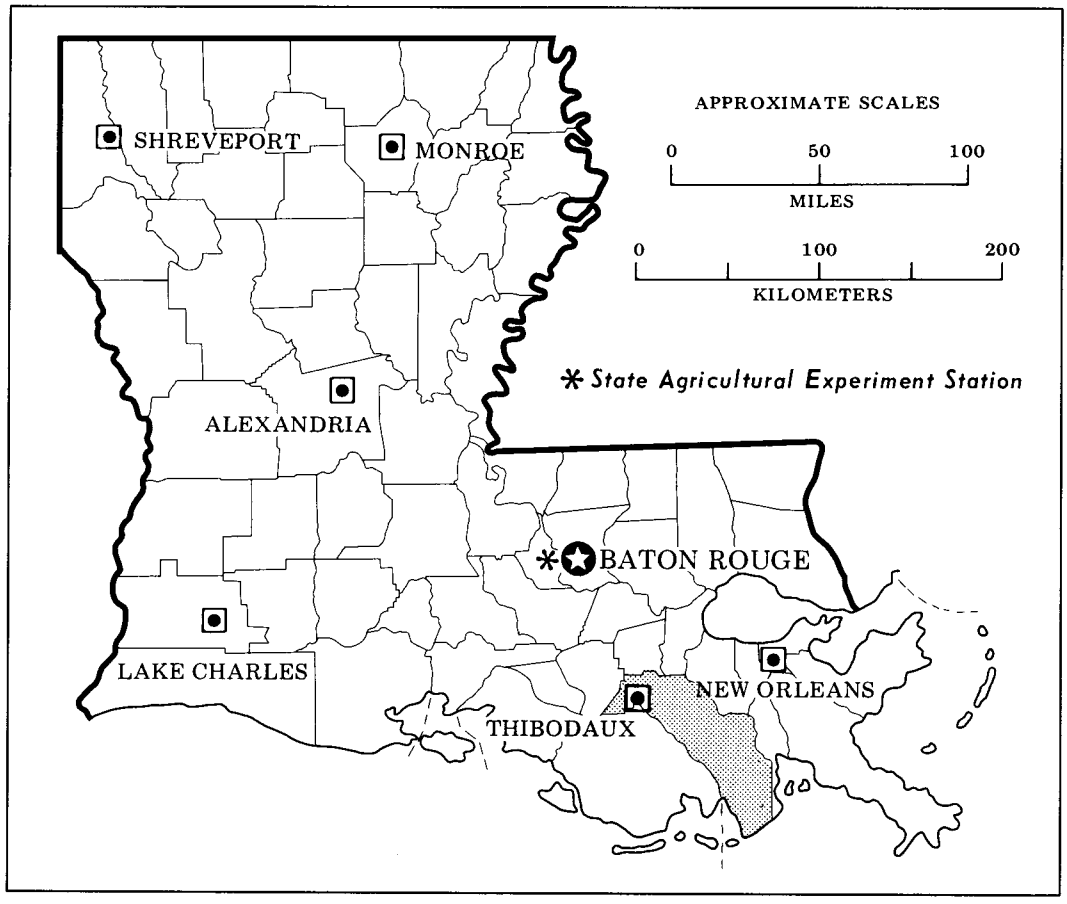
This soil survey contains information that can be used in land-planning programs in Lafourche Parish. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.

Harry A. Rucker
State Conservationist
Soil Conservation Service



Location of Lafourche Parish in Louisiana.

soil survey of
Lafourche Parish, Louisiana

by S. Dayton Matthews, Soil Conservation Service

soils surveyed by S. Dayton Matthews, Dennis J. Daugereaux,
and Karen Wesche, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service
in cooperation with
Louisiana Agricultural Experiment Station and
Louisiana State Soil and water Conservation Committee

LAFOURCHE PARISH is in the southeastern part of Louisiana. Thibodaux, the parish seat, is 68 miles south of Baton Rouge, 58 miles southwest of New Orleans, and 99 miles southeast of Lafayette. The parish is bounded on the north by St. James Parish, on the east by St. Charles and Jefferson Parishes, on the south by the Gulf of Mexico, and on the west by Terrebonne and Assumption Parishes. The total area is 865,920 acres, of which 730,048 acres is land and 135,872 acres is large water areas in the form of lakes, bays, and streams. The population of the parish in 1980 was 82,443.

The parish lies entirely within the Mississippi River Delta. Elevation ranges from about 15 feet above mean sea level along the natural levees of Bayou Lafourche, north of Thibodaux, to sea level near the Gulf of Mexico. Only about 7 percent of the parish is at an elevation of 5 feet or more above sea level. The vast expanses of swamps and marshes in the parish are at sea level. Several areas of marsh, however, are drained and are 2 to 6 feet below sea level.

The soils formed in decomposed plant remains and in alluvium deposited by Bayou Lafourche, which was once a channel of the Mississippi River; the Atchafalaya River; and their distributaries. The main physiographic features are the natural levees along streams and the backswamps, marshes, and sandy ridges along the coast of the Gulf of Mexico. About 64 percent of the total area of the parish consists of swamps and marshes, 18 percent of natural levees, and less than 1/2 percent of sandy ridges. The rest of the area is water. Loamy soils are dominant on the highest positions of the natural levees, and clayey soils are dominant on the low positions of the natural levees and in backswamps. Semifluid, organic soils are dominant in the marshes.

Most of the soils in marshes, swamps, and other frequently flooded areas are in native vegetation and are used for wildlife habitat, recreation, and timber production. Most of the soils on the natural levees are used for cultivated crops, mainly sugarcane. There is no significant trend toward a change in land use.

Descriptions, names, and delineations of soils in this soil survey do not fully agree with those on soil maps for adjacent parishes. Differences are the result of more information about soils, modifications in series concepts, intensity of mapping, or the extent of soils within the survey area.

general nature of the survey area

This section gives general information concerning the parish. It discusses climate, farming, Bayou Lafourche, transportation facilities, water resources, minerals, industry, and history and development.

climate

Prepared by the National Climatic Center, Asheville, North Carolina.

In Lafourche Parish the long summers are hot and humid, but the coast is frequently cooled by sea breezes.

Winters are warm and only occasionally interrupted by incursions of cool air from the north. Rains occur throughout the year, and precipitation is adequate for all crops.

Table 1 gives data on temperature and precipitation for the survey area as recorded at New Orleans, Louisiana in the period 1955 to 1977. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 54 degrees F, and the average daily minimum temperature is 44 degrees. The lowest temperature on record, which occurred at New Orleans on January 24, 1963 is 14 degrees. In summer the average temperature is 81 degrees, and the average daily maximum temperature is 90 degrees. The highest recorded temperature, which occurred at New Orleans on June 27,1967 is 98 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 59.35 inches. Of this, 33 inches, or 60 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 26 inches. The heaviest 1-day rainfall during the period of record was 9.85 inches at New Orleans on May 31,1959. Thunderstorms occur on about 70 days each year, and most occur in summer.

Snowfall is rare. In 50 percent of the winters, there is no measurable snowfall. In 5 percent, the snowfall, usually of short duration, is more than 2 inches. The heaviest 1-day snowfall on record was more than 3 inches.

The average relative humidity in midafternoon is about 65 percent. Humidity is higher at night, and the average at dawn is about 90 percent. The sun shines 60 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the southeast. Average windspeed is highest, 10 miles per hour, in spring.

Every few years a hurricane crosses the area.

farming

The soils of Lafourche Parish have always been used for farming, even during Indian habitation. Probably trappers and traders came to the region first, but farmers soon followed. Cotton, corn, maize, and sweet potatoes were grown on the loamy soils on the natural levees before 1700. Indigo was an important crop for a short time. Cotton was the main crop for many years, but gradually the acreage decreased. No cotton has been planted in recent years.

An increase in the production of sugarcane was the chief reason for decline of the cotton crop. Production became important after sugar granulation procedures were developed successfully in 1794. A few sugarcane plantations were established as early as 1803, but it was not until 1861 that sugarcane became the principal crop in the parish. Since then, most soils in the parish that are not subject to flooding have been used for the production of sugarcane. In 1980, 29,500 acres of sugarcane were planted in the parish.

The trend in agriculture is toward fewer, larger farm units. The total cropland acres has declined slowly. In 1969 there were 519 farms that averaged 394 acres each. In 1974 there were 356 farms that averaged 573 acres each. The acreage of soybeans is increasing, and the acreage in sugarcane is decreasing.

Bayou Lafourche

Bayou Lafourche, an important distributary of the Mississippi River, is the most significant physiographic feature in the parish. It flows southward through the entire length of the parish and empties into the Gulf of Mexico. The wide natural levees of Bayou Lafourche indicate that the bayou was once a channel of the Mississippi River. The highest elevations in the parish are on these natural levees. Bayou Lafourche travels 107 miles from its source near a bend in the Mississippi River just a few miles north of Lafourche Parish to its mouth. It is the source of most of the sediment in which the soils of the parish formed.

In 1903 a large dam was constructed across the bayou near its source to seal off the flows of the Mississippi River. Water is pumped from the Mississippi River into Bayou Lafourche to provide sufficient water for domestic and industrial uses. Bayou Lafourche provides a valuable water transportation route for barges, shrimpers, and other small and medium sized boats.

Louisiana Highway 1, which runs along the west bank of Bayou Lafourche, has been described as the longest street in the world. Houses and structures for commercial and industrial uses are closely spaced along the entire length of the bayou. In 1896 one of the first free mail routes in the United States was established along Bayou Lafourche. This route ran between Thibodaux and Labadieville, and from Thibodaux to Lafourche Crossing along both banks of the bayou.

transportation facilities

Roads in the parish are mostly hard surfaced federal, state, and parish highways. U.S. Highway 90 extends southwest-northeast through Raceland. Louisiana Highway 1 follows the west bank of Bayou Lafourche to Grand Isle in adjoining Jefferson Parish. Louisiana Highway 308 follows the east bank of the bayou and

terminates at Golden Meadow. In addition, several state and hard surfaced roads are in the parish.

The parish is served by the Texas and Pacific Railroad on the east side of Bayou Lafourche as far south as Thibodaux. The east-west mainline of the Southern Pacific Railroad passes through Schriever and Lafourche Crossing and continues to New Orleans. Branch lines of the Southern Pacific Railroad serve the northern part of the parish on the west side of the bayou.

Airports near the towns of Thibodaux and Houma serve small private and commercial aircraft. The New Orleans International Airport is about 50 miles northeast of Thibodaux. Approximately 16 major airlines provide passenger and freight service at this facility.

Bayou Lafourche is the main navigable waterway in the parish. It connects with the Gulf Intracoastal Waterway at Larose and provides an outlet to the Gulf of Mexico. Other less important waterways are Field Lake, Long Lake, Harvey's Canal, Bayou Des Allemands, Lake Little, Caminada Bay, Bayou Paro, and Bayou Timbalier. Many smaller waterways have been constructed throughout the parish to transport oilfield supplies locally.

A large network of pipelines in the parish distributes raw natural gas and oil to major refineries in Louisiana and other states. The largest is a 48-inch pipeline that carries crude oil from the Louisiana Offshore Oil Port (LOOP) to Galliano. The LOOP Superport consists of a platform in the Gulf constructed in 110 feet of water. It is designed to unload large crude oil tankers that cannot navigate to inland waters. The oil from these tankers is distributed to refineries or stored temporarily in the Clovelly salt dome in Lafourche Parish.

water resources

Charles R. Akers, geologist, Soil Conservation Service, prepared this section.

The source of the three public water supplies in Lafourche Parish is the Mississippi River. About 2,950,000 gallons per day are pumped from Bayou Lafourche, and 1,480,000 gallons per day are pumped from the Mississippi River. Bayou Lafourche is supplied by water diverted or pumped from the Mississippi River at Donaldsonville (*14*).

Lac Des Allemands is a potential source of surface water although the chloride concentrations are moderately high and will occasionally exceed standards recommended for domestic usage (*15*).

Other surface water is plentiful, but it is not suitable for domestic use because of the chloride content.

Potable ground water may be found in two general areas in Lafourche Parish, the eastern one-half of the northern two-thirds of the parish and a small area in the most western part of the parish. In these areas, Quaternary deposits contain fresh water which grades downward to saltwater within the same sand unit (*13*). Generally, very little fresh ground water is available in Lafourche Parish because of the presence of saltwater in the aquifers. However, large quantities of saline water are available for some industrial cooling purposes (*9*).

minerals

Many oil- and gasfields are scattered throughout Lafourche Parish. Some of these fields have been producing for more than 40 years. Additional wells are being drilled both within the parish and offshore in the Gulf of Mexico. In addition, two sulphur mines are in operation in the parish, one of which is just a few miles offshore.

During the period 1970 to 1973 the minerals produced in the parish, in order of their value, were petroleum, natural gas, sulphur, and natural gas liquid. In 1970, about 14 percent of the crude oil and 4.4 percent of the natural gas produced in Louisiana were produced in Lafourche Parish.

industry

The oil and gas industry, mainly the exploration for and production of petroleum and natural gas, is the major industry in Lafourche Parish. In addition, several local manufacturers produce tools and material used in the oil and gas industry. In 1976, about 16 percent of the parish employment was energy related.

Although sugarcane processing is declining, this industry still provides employment for many people in the parish. Three cane grinding sugar mills process cane syrup and sugar from locally grown sugarcane. In addition, bagasse, a byproduct of sugar processing, is used in the manufacture of paper products, blackstrap molasses, and alcohol.

The seafood industry also plays an important role in the prosperity of the parish. Both finfish and shellfish are caught and processed in the parish. Finfish are used mainly in the manufacture of catfood, fishmeal, and fertilizer. Shellfish, mainly oysters, crabs, shrimp, and crawfish, are sold commercially.

history and development

Lafourche Parish is one of the oldest parishes in Louisiana. "Lafourche" is a French word meaning "the fork." Bayou Lafourche forms "the fork" where it joins the Mississippi River in adjoining Ascension Parish. The present parish boundaries were established when the much larger area called Lafourche Settlement was divided into Assumption, Lafourche, and Terrebonne Parishes.

The original inhabitants of the parish were members of the Chitmach, Washa, and Chawash Indian Tribes. Early European settlements date to the mid-1700's when the French, Spanish, and Acadians settled along Bayou Lafourche. These early settlers were mainly farmers,

trappers, and fishermen. In 1950 the population of Lafourche Parish was 42,209; in 1980 it was 82,443.

Nicholls State University was established in 1948 in the town of Thibodaux. It began as a one-building school called Francis T. Nicholls Junior College and had an enrollment of 140 students. Today, it is an independent university with more than 6,000 students.

how this survey was made

Soil scientists made this survey to learn what soils are in the survey area, where they are, and how they can be used. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; and the kinds of native plants or crops. They dug many holes to study soil profiles. A profile is the sequence of natural layers, or horizons, in a soil. It extends from the surface down into the parent material, which has been changed very little by leaching or by plant roots.

Pickup trucks were used to gain access to most parts of the survey area. In the marshes and swamps where accessibility was difficult, helicopters provided transportation to the sample sites (fig. 1).

Figure 1.—This helicopter provides convenient access to an area of Allemands muck in the freshwater marsh.

The soil scientists recorded the characteristics of the profiles they studied and compared those profiles with others in nearby parishes and in more distant places. They classified and named the soils according to nationwide uniform procedures. They drew the boundaries of the soils on aerial photographs. These photographs show trees, buildings, fields, roads, and other details that help in drawing boundaries accurately. The soil maps at the back of this publication were prepared from aerial photographs.

The areas shown on a soil map are called map units. Most map units are made up of one kind of soil. Some are made up of two or more kinds. The map units in this survey area are described under "General soil map units" and "Detailed soil map units."

While a soil survey is in progress, samples of some soils are taken for laboratory measurements and for engineering tests. All soils are field tested to determine their characteristics. Interpretations of those characteristics may be modified during the survey. Data are assembled from other sources, such as test results, records, field experience, and state and local specialists. For example, data on crop yields under defined management are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it can be used by farmers, woodland managers, engineers, planners, developers and builders, home buyers, and others.

general soil map units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

The boundaries of the general soil map units in Lafourche Parish were matched, wherever possible, with those of previously published surveys of Assumption, Terrebonne, St. James, and St. John Parishes. In a few places, however, the lines do not join, and the names of the map units differ. These differences resulted mainly because of changes in soil series concepts, differences in map unit design, and changes in soil patterns near survey area boundaries.

The general soil map units in this survey have been grouped into three general kinds of landscapes for interpretative purposes. Each of the broad groups and the soil map units in each group are described in the following pages. The terms for texture used in the title of several map units apply to the texture of the surface layer of the major soils.

Soils of the natural levees that are never flooded, rarely flooded, or occasionally flooded

The two map units in this group consist mainly of level, somewhat poorly drained and poorly drained, loamy and clayey soils that are on the natural levees of Bayou Lafourche. Most areas are above normal flood elevations, but some areas are rarely flooded or occasionally flooded.

These map units make up 16 percent of the land area of the parish. Most of the area is in cultivated crops. Occasionally flooded areas are mainly in woodland. Wetness and poor tilth are the main limitations where the soils are used for cultivated crops. Flooding is an additional limitation in areas of woodland.

1. Commerce

Level, somewhat poorly drained soils that are loamy throughout

This map unit consists of soils on high and intermediate positions on the natural levees of Bayou Lafourche and its distributaries. It is above normal flood elevations. Elevation ranges from about 5 to 15 feet above sea level. Slopes are long and smooth and less than 1 percent.

This map unit makes up about 7 percent of the land area of the parish. It is about 98 percent Commerce soils and 2 percent soils of minor extent.

The Commerce soils have a surface layer of dark grayish brown and dark gray silt loam and silty clay loam and a subsoil and underlying material of grayish brown silty clay loam, silt loam, and very fine sandy loam.

Of minor extent are the somewhat poorly drained Vacherie soils on intermediate positions where the natural levees of streams were breached by former floods.

Most of the soils in this map unit are used for cultivated crops. A small acreage is used for pasture and homesites. Sugarcane, soybeans, corn, small grains, and vegetables are the main crops.

This unit is well suited to cultivated crops and pasture. Wetness is the main limitation. A good surface drainage system and fertilizer are needed for crops and pasture.

This unit is well suited to southern hardwood production. It has few limitations. American sycamore, cherrybark oak, eastern cottonwood, green ash, and pecan are suitable trees.

This unit is moderately well suited to urban development. Wetness and moderate shrink-swell potential are the main limitations.

2. Sharkey

Level, poorly drained soils that have a loamy or clayey surface layer and a clayey subsoil

This map unit consists of soils on low and intermediate positions on the natural levees of Bayou Lafourche and its distributaries. Most of the soils are subject to rare

flooding. Some soils on low positions are occasionally flooded. Elevation ranges from about 1 foot to 5 feet above sea level. Slopes are long and smooth and less than 1 percent.

This map unit makes up about 9 percent of the land area of the parish. It is about 98 percent Sharkey soils and 2 percent soils of minor extent.

The Sharkey soils have a surface layer of very dark gray to very dark grayish brown clay and a subsoil of dark gray and gray clay. In some areas the surface layer is dark gray and very dark grayish brown silty clay loam.

Of minor extent are the somewhat poorly drained Commerce and Vacherie soils on intermediate positions and the poorly drained, frequently flooded Tunica soils on low positions.

Most of the rarely flooded soils in this map unit are used for cultivated crops and pasture. The occasionally flooded soils are mainly in woodland. Sugarcane, soybeans, grain sorghum, and rice are the main crops.

This unit is moderately well suited to cultivated crops and well suited to pasture. Wetness, flooding, and poor tilth are the main limitations. A good drainage system and fertilizer are needed for crops and pasture.

This unit is well suited to southern hardwood production. Wetness and flooding are the main limitations. American sycamore, cherrybark oak, eastern cottonwood, green ash, pecan, and sweetgum are suitable trees.

This unit is poorly suited to urban development. Wetness, flooding, very slow permeability, and very high shrink-swell potential are the main limitations.

Soils of the swamps and marshes that are ponded and frequently flooded

The five map units in this group consist mainly of level, very poorly drained, mucky and clayey soils in swamps and marshes. These soils are ponded and flooded most of the time.

These map units make up about 78 percent of the land area of the parish. Most of the area is in native vegetation and is used as habitat for wetland wildlife and recreation.

3. Barbary-Fausse

Level, very poorly drained soils that have a semifluid, mucky or clayey surface layer and semifluid, clayey underlying material or a clayey subsoil; in swamps

This map unit consists of soils in swamps that are ponded and flooded most of the time. Elevation ranges from sea level to about 3 feet above sea level. Slope is less than 0.1 percent.

This map unit makes up about 16 percent of the land area of the parish. It is about 57 percent Barbary soils, 31 percent Fausse soils, and 12 percent soils of minor extent.

The Barbary soils are in the lowest positions on the map unit. They have a thin surface layer of very dark grayish brown, semifluid muck and underlying material of gray and dark greenish gray, semifluid clay.

The Fausse soils are on low natural levees of distributary channels. They have a surface layer of very dark grayish brown clay and a subsoil and underlying material of gray, dark gray, and greenish gray clay.

Of minor extent are the poorly drained Sharkey soils on narrow, low ridges.

Most of the soils in this map unit are in woodland and are used as habitat for wetland wildlife and for recreation. A small acreage is in oil and gas wells and in crawfish ponds.

This unit is well suited to habitat for wetland wildlife and to recreation. It provides habitat for waterfowl, furbearers, alligators, squirrels, swamp rabbits, and nongame birds. Hunting and other outdoor activities are popular in areas of this unit.

This unit is poorly suited to southern hardwood production. Special equipment is needed to harvest trees because of wetness, flooding, and the low load supporting capacity of the soils.

This unit is not suited to cropland, pasture, or to urban development. The limitations of wetness, flooding, and low strength are too severe for these uses.

4. Allemands-Kenner-Larose

Level, very poorly drained soils that have a semifluid, mucky surface layer and semifluid, mucky and semifluid, clayey underlying material; in freshwater marshes

This map unit consists of soils in freshwater marshes that are ponded and flooded most of the time. Elevation ranges from sea level to about 1 foot above sea level. Slope is less than 0.5 percent.

This map unit makes up about 22 percent of the land area of the parish. It is about 59 percent Allemands soils, 21 percent Kenner soils, 12 percent Larose soils, and 8 percent soils of minor extent.

The Allemands soils are in broad basins. They have a moderately thick surface layer of very dark grayish brown, semifluid muck and underlying material of gray, semifluid clay, muck, and mucky clay.

The Kenner soils are in broad basins. They have a thick surface layer of dark brown, semifluid muck and underlying material of very dark grayish brown, semifluid mucky clay. Thin layers of gray, semifluid clay are within the surface layer.

The Larose soils are on submerged natural levees along waterways. They have a thin surface layer of very dark gray, semifluid muck and underlying material of gray, dark gray, and greenish gray, semifluid clay.

Of minor extent are the very poorly drained Clovelly and Lafitte soils. These soils are in small areas of brackish marsh that intrude into the freshwater marsh. Many small ponds and streams are in most areas.

Most of the soils in this map unit are in native vegetation and are used as habitat for wetland wildlife and for recreation. A small acreage is in oil and gas wells.

This unit is well suited to wetland wildlife habitat. It provides habitat for many species of wetland wildlife and areas for hunting, fishing, and other outdoor activities. The main concerns in managing this unit for wildlife habitat are controlling water levels and preventing intrusions of saltwater.

This unit is not suited to cropland, pasture, woodland, or to urban development. The limitations of flooding, wetness, and low soil strength are too severe for these uses.

5. Lafitte-Clovelly

Level, very poorly drained soils that have a semifluid, mucky surface layer and semifluid, clayey underlying material; in brackish marshes

This map unit consists of soils in brackish marshes that are ponded and flooded most of the time. Elevation ranges from sea level to about 1 foot above sea level. Slope is less than 0.2 percent.

This map unit makes up about 7 percent of the land area of the parish. It is about 49 percent Lafitte soils, 49 percent Clovelly soils, and 2 percent soils of minor extent.

The Lafitte soils are in deep, interlevee basins. They have a thick surface layer of very dark grayish brown and black, semifluid muck and underlying material of gray, semifluid clay.

The Clovelly soils are on submerged, natural levees along waterways. They have a moderately thick surface layer of very dark grayish brown and black, semifluid muck and underlying material of gray and dark gray, semifluid clay.

Of minor extent are the very poorly drained Allemands, Scatlake, and Timbalier soils around the edges of large bodies of water.

Most of the soils in this map unit are in native vegetation and are used as habitat for wetland wildlife and for recreation. A small acreage is in oil and gas wells.

This unit is well suited to habitat for wetland wildlife. It provides suitable habitat for many species of wildlife and areas for hunting, fishing, and other outdoor activities. This unit is part of the estuary that contributes to the support of marine life in the Gulf of Mexico.

This unit is not suited to cropland, pasture, woodland, or to urban development. The limitations of flooding, wetness, salinity, and low strength are too severe for these uses.

6. Timbalier-Bellpass

Level, very poorly drained soils that have a semifluid, mucky surface layer and semifluid, clayey underlying material; in saline marshes

This map unit consists of soils in saline marshes that are ponded and flooded most of the time. Elevation ranges from sea level to 1 foot above sea level. Slope is less than 0.2 percent.

This map unit makes up about 29 percent of the land area of the parish. It is about 55 percent Timbalier soils, 27 percent Bellpass soils, and 18 percent soils of minor extent.

The Timbalier soils are in interlevee basins. They have a thick surface layer of very dark grayish brown and dark brown, semifluid muck and underlying material of dark gray and dark greenish gray, semifluid mucky clay and clay.

The Bellpass soils are on submerged natural levees along waterways. They have a moderately thick surface layer of very dark grayish brown and black, semifluid muck and underlying material of dark greenish gray, semifluid clay.

Of minor extent are the somewhat poorly drained Felicity soils on sandy ridges and the very poorly drained Scatlake soils on submerged natural levees along waterways.

Most of the soils in this map unit are in native vegetation and are used as habitat for wetland wildlife and for recreation. A small acreage is in oil and gas wells.

This unit is well suited to habitat for wetland wildlife. It provides habitat for many species of wetland wildlife and areas for hunting, trapping, fishing, and other outdoor activities. This unit is part of the estuary that contributes to the support of marine life in the Gulf of Mexico.

This unit is not suited to cropland, pasture, woodland, or to urban uses. The limitations of flooding, wetness, salinity, and low strength are too severe for these uses.

7. Scatlake

Level, very poorly drained soils that have a semifluid, clayey surface layer and semifluid, clayey, loamy, and sandy underlying material; in saline marshes

This map unit consists of soils in saline marshes that are ponded and flooded most of the time. Elevation ranges from sea level to 1 foot above sea level. Slope is less than 0.5 percent.

This map unit makes up about 4 percent of the land area of the parish. It is about 93 percent Scatlake soils and 7 percent soils of minor extent.

The Scatlake soils have a surface layer of dark gray, semifluid clay and underlying material of dark greenish gray and dark gray, semifluid clay, fine sandy loam, and fine sand.

Of minor extent are the somewhat poorly drained Felicity soils on sandy ridges and the very poorly drained

Timbalier soils in broad, interlevee basins. Many small ponds and perennial streams are in most areas.

Most of the soils in this map unit are in native vegetation and are used as habitat for wetland wildlife and for recreation. A small acreage is in oil and gas wells.

This unit is well suited to wetland wildlife habitat. It provides habitat for many species of wildlife and areas for hunting, trapping, fishing, and other outdoor activities. This unit is part of an estuary that contributes to the support of marine life in the Gulf of Mexico.

This unit is not suited to cropland, pasture, woodland, or to urban development. The limitations of flooding, wetness, salinity, and low strength are too severe for these uses.

Soils of former marshes that are drained and protected from flooding

The one map unit in this group consists of level, poorly drained, mucky soils that are in former marshes that have been drained and protected from most floods. Flooding is rare but can occur during hurricanes or when protection levees and drainage pumps fail.

This map unit makes up 6 percent of the land area of the parish. Most of the area is in pasture and idle land. A small acreage is developed for urban uses. Flooding and wetness are the main limitations if this unit is used for pasture. Very high shrink-swell potential and low strength are additional limitations if this unit is used for urban development.

8. Rita-Allemands, drained

Level, poorly drained soils that have a mucky surface layer and a clayey subsoil or mucky and clayey underlying material; in former freshwater marshes

This map unit consists of soils in former marshes that are protected from most floods by levees and drained by pumps. Flooding is rare but can occur during hurricanes or when pumps and levees fail. These soils have subsided as a result of drainage. Elevation ranges from 2 to 6 feet below sea level. Slope is less than 0.5 percent.

This map unit makes up about 6 percent of the land area of the parish. It is about 73 percent Rita soils, 23 percent Allemands, drained soils, and 4 percent soils of minor extent.

The Rita soils are on the slightly higher positions. They have a thin surface layer of black muck and a subsoil of gray clay. The subsoil has a network of permanent cracks. The underlying material is dark greenish gray silty clay loam and loamy very fine sand.

The Allemands, drained soils are in low positions and have a moderately thick surface layer of very dark grayish brown muck. This layer has shrunk and cracked as it dried and remains cracked when rewetted. The underlying material is dark gray, semifluid clay.

Of minor extent are the poorly drained Sharkey soils on low ridges.

Most of the soils in this map unit are in pasture and idle land. A small acreage has been developed for urban uses.

This unit is poorly suited to cultivated crops and pasture. Wetness is the main limitation.

This unit is poorly suited to woodland. Wetness and poor trafficability are the main limitations.

This unit is poorly suited to urban development. Flooding, wetness, subsidence, low strength, and very high shrink-swell potential are the main limitations. Adequate water control is needed. Foundations for buildings need to be specially designed and placed on pilings.

broad land use considerations

The soils in Lafourche Parish vary widely in their potential for major land uses. About 7 percent of the total land area in the parish is used for cultivated crops, mainly sugarcane and soybeans. This cropland is mostly along Bayou Lafourche in the Commerce and Sharkey general map units. The map units are well suited and moderately well suited, respectively, to cultivated crops. Wetness is the main limitation. In most areas, however, drainage systems are installed to remove excess water. Flooding precludes the use of other general map units in the parish for cultivated crops, except for the Rita-Allemands, drained unit. The soils in this general map unit are poorly suited to cultivated crops because of wetness, soil acidity, and high subsidence potential.

About 9 percent of the total land area in the parish is used for pasture, including both improved pasture and grazed woodland. Commerce, Sharkey, and Rita-Allemands, drained, general map units are well suited to moderately well suited to pasture. Wetness and occasional flooding are the main limitations. All of the other map units are poorly suited to pasture mainly because of wetness and flooding.

About 20 percent of the total land area in the parish is used for woodland, mainly hardwoods. The productivity is very high in the Commerce map unit, high and moderately high in the Sharkey map unit, and moderate in the Barbary-Fausse map unit. The use of equipment is restricted on all of the soils in wet weather and is severely restricted on the Barbary-Fausse soils at all times. The other general soil map units are generally not suited to woodland because of deep ponding and flooding.

In 1977, about 14,800 acres of land in Lafourche Parish was classified as urban or built-up land. This included all of the cities, towns, and installations associated with the oil and gas industries and commercial properties. In general, the Commerce soils are best suited to urban uses. Wetness and low strength are the main problems. The Sharkey soils are less

desirable because of wetness, low strength, and very high shrink-swell potential of the clayey layers. The Rita and Allemands, drained soils are poorly suited to urban uses because of wetness, very high shrink-swell potential, and high subsidence potential. All of the other general soil map units are not suited to urban uses because of flooding.

About 52 percent of the parish consists of marshes and is used mainly as habitat for wetland wildlife and for extensive forms of recreation. The Allemands-Kenner-Larose, Lafitte-Clovelly, Timbalier-Bellpass, and Scatlake general soil map units are in marsh. They are ponded and flooded most of the time. These map units provide suitable habitat for waterfowl, furbearers, alligators, and many species of nongame birds. In addition, the brackish and saline marshes are used as a nursery by estuarine-dependent fishes and crustaceans, such as sea trout, menhaden, croaker, spot, bay anchovy, blue crab, and shrimp. A large fishing and shrimping industry is dependent upon the fish and shrimp produced in these marshes.

detailed soil map units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and management of the soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Sharkey clay is one of several phases in the Sharkey series.

Some map units are made up of two or more major soils. These map units are called soil associations.

A *soil association* is made up of two or more geographically associated soils that are shown as one unit on the maps. Because of present or anticipated soil uses in the survey area, it was not considered practical or necessary to map the soils separately. The pattern and relative proportion of the soils are somewhat similar. Fausse-Sharkey association is an example.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description.

The boundaries of the map units in Lafourche Parish were matched, wherever possible, with those of the published surveys of Assumption, St. James and St. John the Baptist, and Terrebonne Parishes. In a few places, however, there are some differences in the names of the map units. These differences result mainly from changes in soil series concepts, differences in map unit design, and changes in soil patterns near survey area boundaries.

All of the soils in Lafourche Parish were mapped at the same level of detail, except for those areas within the marshes and swamps. Poor accessibility limited the number of soil observations that could be made in these areas. In addition, wetness from ponding and flooding so limits the use and management of these soils that separating all of the soils in these areas would be of little value to the land user. Therefore, where ponding and flooding are the overriding limitation for expected land uses, fewer onsite observations were made and the soils were not mapped separately.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

AE—Allemands muck. This level, very poorly drained, semifluid, organic soil is in freshwater marshes. It is ponded and flooded most of the time. Areas of this soil range from 200 to several hundred acres. The number of observations made in these areas was fewer than in other areas because of poor accessibility. The detail in mapping, however, is adequate for the expected use of the soil. Slope is less than 0.5 percent.

Typically, the surface layer is very dark grayish brown, slightly acid, semifluid muck about 18 inches thick. The underlying material extends to a depth of about 72 inches. The upper part is gray, neutral, semifluid clay, the middle part is mainly dark grayish brown, mildly alkaline, semifluid, mucky clay, and the lower part is gray, moderately alkaline, semifluid clay.

Included with this soil in mapping are a few large areas of Kenner and Larose soils. Also included are many small ponds and perennial streams. These areas make up about 15 percent of the map unit. Kenner and Larose soils are in positions similar to those of Allemands soil. The Kenner soils have thin stratifications

of mineral material within the organic material in the upper part of the profile. The Larose soils have a thinner organic surface layer than the Allemands soil.

This Allemands soil is flooded with several inches of freshwater most of the time. During storms, floodwaters are as deep as 2 feet. During periods when the soil is not flooded, the water table ranges from 1 foot above the surface to 1/2 foot below the surface. This soil has a low load supporting capacity. Permeability is moderately rapid to rapid in the organic surface layer and very slow in the clayey underlying material. The total subsidence potential is high, and the shrink-swell potential is low in the organic surface layer and very high in the clayey underlying material.

The natural vegetation consists mainly of maidencane, bulltongue, alligatorweed, cattail, common rush, pickerelweed, southern wildrice, and swamp knotweed.

Most of the acreage of this soil is used as habitat for wetland wildlife and for extensive forms of recreation, such as hunting and fishing. A small acreage is used for oil and gas wells.

This Allemands soil is well suited to habitat for wetland wildlife. It provides roosting and feeding areas for ducks and many other types of waterfowl. This soil also provides habitat for crawfish, swamp rabbits, white-tailed deer, American alligators, and furbearers, such as nutria, mink, otters, and raccoons. Water-control structures for intensive wildlife management are difficult to construct and maintain because of the instability of the organic material. The trapping of alligators, crawfish, and furbearers is a major enterprise in this map unit. The small ponds and perennial streams produce large numbers of freshwater fish. Commercial fishing is an important enterprise. Sport fishing is also popular.

This soil is not suited to cultivated crops, pasture, and woodland. Wetness, flooding, and low strength are severe limitations. The soil is generally too soft and boggy for grazing by livestock. Trees suitable for timber production generally do not grow on this soil. Drainage and protection from flooding are possible, but extensive water control structures, such as levees and water pumps, are required. Extreme acidity, subsidence, and low strength are continuing limitations after drainage is installed.

This soil is not suited to urban uses. The limitations of wetness, flooding, and low strength are too severe. Drainage is feasible but only if an extensive system of levees and water pumps is constructed. This soil material is poorly suited to use for the construction of levees. It shrinks and cracks upon drying, and levees fail.

This Allemands soil is in capability subclass VIIw. It is not placed in a woodland group.

Am—Allemands muck, drained. This level, poorly drained, organic soil is in former freshwater marshes that are drained and protected from most floods. Areas of this soil range from about 20 acres to several thousand acres. Slope is less than 0.5 percent.

Typically, the surface layer is very dark grayish brown, strongly acid muck about 20 inches thick. This layer has shrunk and cracked as it dried and remains cracked when rewetted. The underlying material to a depth of about 60 inches is dark gray, semifluid clay. It is slightly acid in the upper part and mildly alkaline in the lower part.

Included with this soil in mapping are a few small areas of soils similar to Allemands, drained soils, except that they have an organic surface layer that is only 5 to 10 inches thick. Also included are a few small areas of Allemands soil that have severely subsided and have a water table at the surface most of the time. These areas make up about 15 percent of this map unit.

This Allemands soil is drained and protected from flooding by a system of levees and water pumps. Under normal conditions, the water table is maintained at a depth of about 2 to 4 feet below the surface. After high intensity rains of long duration, however, the water table is near the surface for short periods. Flooding is rare but can occur during hurricanes or other severe storms. Permeability is rapid in the organic surface layer and in the cracks and very slow in the clayey underlying material. Even if the cracks in the surface layer have been covered with mineral fill material, they remain open in the underlying material. Water and air move freely through these cracks. Natural fertilty is high, and the content of organic matter is very high. Available water capacity is very high. The total subsidence potential is high, and the shrink-swell potential is low in the organic surface layer and very high in the clayey underlying material.

Most of the acreage of this soil is in pasture or idle land. The acreage being developed for urban use and individual homesites is increasing.

This soil is poorly suited to pasture. Common bermudagrass, dallisgrass, ryegrass, and tall fescue are suitable pasture plants. Wetness is the main limitation. After heavy rains the surface layer can become too soft and boggy to support grazing cattle. Applications of fertilizer are generally not needed on this soil, but lime is needed for optimum forage production.

This soil is poorly suited to cultivated crops. Wetness is the main limitation. Acidity in the surface layer and continuing subsidence are additional problems. Levees and ditches are difficult to construct and maintain because of the semifluid nature of the clayey underlying material and subsidence of the organic surface layer. Applications of fertilizer are generally not needed, but lime is needed.

This soil is generally poorly suited to woodland. Wetness and poor trafficability are the main limitations. Few native trees grew on this soil. Where water control is adequate, however, most climatically adapted varieties of ornamental trees and shrubs can be grown.

This soil is poorly suited to urban development and to intensive forms of recreation. Flooding, wetness, subsidence, low strength, and very high shrink-swell potential are the main limitations. Flooding is rare but occurs during hurricanes and if water pumps and protection levees fail. If the water table is lowered, the organic material oxidizes and slowly subsides. In places, buried logs and stumps cause uneven subsidence. The organic layers are subject to burning when dry. If this soil is used for dwellings, specially designed foundations and piling are needed. Removing the organic material and replacing it with suitable mineral material or preloading the surface with mineral material can also help to reduce wetness and improve the load supporting capacity of the soil where buildings, local roads and streets, or playgrounds are constructed. Community sewage systems are needed to prevent contamination of water supplies as a result of seepage. Drainage ditches and levees are difficult to construct and maintain because of the semifluid nature of the underlying mineral material and subsidence of the organic material.

This soil is moderately well suited to openland wildlife habitat and well suited to wetland wildlife habitat. Habitat can be created or improved by establishing desirable plants. Water control structures designed for management of habitat are difficult to construct and maintain because of the subsidence potential and semifluid nature of the underlying material.

This Allemands soil is in capability subclass IVw. It is not placed in a woodland group.

AN—Allemands-Larose association. These level, very poorly drained, semifluid, organic and mineral soils are in freshwater marshes. They are ponded and flooded most of the time. The Allemands soil is in broad basins, and the Larose soil is along the lower edge of distributary ridges and on top of ridges that have subsided below the surface of the marsh. The Allemands soil makes up about 45 percent of the association and the Larose soil about 40 percent. Areas of this association range from 200 to several thousand acres. The number of observations made in these areas was fewer than in other areas because of poor accessibility. The detail in mapping, however, is adequate for the expected use of the soils. Slope is less than 0.5 percent.

Typically, the Allemands soil has a surface layer of very dark grayish brown and black, neutral, semifluid muck about 48 inches thick. The underlying material to a depth of about 84 inches is dark gray and gray, moderately alkaline, semifluid clay.

The Allemands soil is flooded with several inches of freshwater most of the time. During storms, floodwaters are as deep as 3 feet. During periods when the soil is not flooded, the water table ranges from 1 foot above the surface to 1/2 foot below the surface. This soil has low strength. It is saturated with water and is semifluid throughout. The underlying material has very high shrink-swell potential. Permeability is moderately rapid to rapid in the organic surface layer and very slow in the clayey underlying material. The total subsidence potential is high.

Typically, the Larose soil has a surface layer of very dark gray, medium acid, semifluid muck about 5 inches thick. The next layer is dark gray, slightly acid, semifluid clay about 10 inches thick. Below that is about 21 inches of gray, neutral, semifluid clay. The underlying material to a depth of about 84 inches is dark gray and greenish gray, mildly alkaline and moderately alkaline, semifluid clay.

The Larose soil is almost continuously flooded with several inches of water. During storms, floodwaters are as deep as 3 feet. During periods when the soil is not flooded, the water table ranges from 2 feet above the surface to 1/2 foot below the surface. This soil has low strength. It is continuously saturated with water and is semifluid throughout. This soil has very high shrink-swell potential. Permeability is very slow. Natural fertility is high, and the content of organic matter is very high. Available water capacity is high. The total subsidence potential is medium.

Included with these soils in mapping are a few small areas of Kenner soils. Also included are many small ponds and perennial streams. These areas make up about 15 percent of the map unit. The Kenner soils are in positions similar to those of Allemands soils and have thin layers of mineral material within the organic material in the upper part of the profile.

The natural vegetation of the Allemands and Larose soils consists mainly of maidencane, bulltongue, alligatorweed, cattail, common rush, pickerelweed, southern wildrice, and swamp knotweed (fig. 2).

Most of the acreage of these soils is used as wetland wildlife habitat and for extensive forms of recreation. A small acreage is oil- and gasfields.

These soils are well suited to wetland wildlife habitat. They provide habitat for large numbers of ducks and many other types of waterfowl and are also suitable habitat for crawfish, alligators, swamp rabbits, deer, nutria, mink, otters, and raccoons. Water control structures, designed for intensive wildlife management, are difficult to construct because of the instability and semifluid nature of the soil material. The trapping of alligators, crawfish, and furbearers is a major enterprise in this map unit, and the small ponds and perennial streams produce many species of freshwater fish. Sport and commercial fishing and hunting of waterfowl are popular.

These soils are not suited to cultivated crops, pasture, and woodland. Wetness, flooding, and low strength are the main limitations. These soils generally will not support the weight of grazing cattle or machinery. Drainage and protection from flooding are possible, but the construction of an extensive system of levees and the installation of water pumps are needed.

Figure 2.—A thick cover of bulltongue, maidencane, and pickerelweed on an area of Allemands-Larose association.

These soils are not suited to urban uses. Flooding, wetness, subsidence, and low strength are the main limitations. Even if the soils are protected from flooding and drained, low strength is a continuing limitation. In addition, the clayey underlying material shrinks and swells markedly upon wetting and drying. The soils in this map unit are poorly suited to use for the construction of levees. Upon drying, they shrink and crack considerably, and levees fail.

These Allemands and Larose soils are in capability subclass VIIw. They are not placed in a woodland group.

BB—Barbary-Fausse association. These level, very poorly drained soils are in swamps. They are ponded most of the time and frequently flooded. The Barbary soil is in the lowest position. The Fausse soil is on low natural levees of distributary channels. These natural

levees range from 100 to 1,000 feet in width. The Barbary soil makes up about 75 percent of the association and the Fausse soil about 20 percent. Areas of this association range from 200 to several thousand acres. The number of observations made in these areas was fewer than in other areas because of poor accessibility. The detail in mapping, however, is adequate for the expected use of the soils. Slope is less than 0.1 percent.

Typically, the Barbary soil has a surface layer of very dark grayish brown, slightly acid, semifluid muck about 2 inches thick. The next layer is dark gray, neutral, semifluid, mucky clay about 7 inches thick. Below that is gray, neutral, semifluid clay about 29 inches thick. The underlying material to a depth of about 60 inches is greenish gray, moderately alkaline, semifluid clay. Logs, stumps, and wood fragments are common in the underlying material.

The Barbary soil is subject to frequent flooding. Floodwaters range in depth from 1 foot to 3 feet. During periods when the soil is not flooded, the water table fluctuates between a depth of 1/2 foot below the surface and 1 foot above the surface. This soil has low strength and very high shrink-swell potential. Permeability is very slow. The total subsidence potential is medium.

Typically, the Fausse soil has a surface layer of dark grayish brown, slightly acid, firm clay about 5 inches thick. The subsoil to a depth of about 38 inches is dark gray, mottled, firm clay. The underlying material to a depth of about 60 inches is gray, mottled, firm clay.

The Fausse soil is flooded frequently and has a seasonal high water table that ranges from 1 foot above the surface to 1 1/2 feet below the surface. Permeability is very slow. The shrink-swell potential is very high.

Included with these soils in mapping are a few small areas of Allemands, Larose, and Sharkey soils. The Allemands and Larose soils are in small areas of fresh marsh that intrude into the swamp. The Sharkey soil is on higher positions and is poorly drained.

The natural vegetation on both Barbary and Fausse soils consists of water-tolerant trees and understory plants. Baldcypress, black willow, and water tupelo are the main trees. Other trees that grow mainly on the Fausse soil include water hickory and overcup oak. Alligatorweed, butterweed, buttonbush, duckweed, pickerelweed, and water hyacinth are the main understory and aquatic vegetation (fig. 3). These plants grow mainly on the Barbary soil.

Most of the acreage of these soils is in woodland and is used as wetland wildlife habitat and for extensive forms of recreation. A small acreage is in crawfish ponds.

These soils are well suited to wetland wildlife habitat. They provide roosting areas for migratory ducks and both food and nesting sites for wood ducks, squirrels, alligators, wading birds, and other nongame species. White-tailed deer, turkeys, and swamp rabbits utilize these areas when they are dry or not flooded too deeply. This map unit also provides suitable habitat for crawfish and furbearers, such as raccoons, mink, and otters. The trapping of alligators, crawfish, and furbearers is an important enterprise. Timber management that encourages oak and other mast-producing trees improves the habitat for wood ducks, squirrels, deer, and birds. The construction of shallow ponds and the artificial flooding of these areas improves the habitat for waterfowl by providing open water areas for their use.

These soils are poorly suited to the production of bottom land hardwoods. Wetness, flooding, and very poor trafficability are the main limitations. Timber can be harvested only with the use of special equipment. The Barbary soil in this map unit will not support the load of most types of harvesting equipment.

Unless drained and protected from flooding, these soils are not suited to cultivated crops and pasture. They generally are too soft and boggy for livestock grazing.

These soils are not suited to urban uses. The limitations of wetness, flooding, low strength, and very high shrink-swell potential are too severe for these uses. In addition, buried stumps and logs in the Barbary soil make the digging of shallow excavations very difficult. Drainage and protection from flooding are possible, but the construction of levees and use of water pumps to remove excess water are needed.

These Barbary and Fausse soils are in capability subclass VIIw and woodland group 4w6.

BE—Bellpass-Scatlake association. These level, very poorly drained, semifluid, organic and mineral soils are in saline marshes. They are ponded and flooded most of the time. The Bellpass soil is in low lying positions and is most distant from the natural streams. The Scatlake soil is on the natural levees of distributary channels that have subsided below the surface of the marsh. The Bellpass soil makes up about 45 percent of the association and the Scatlake soil about 35 percent. Areas of this association typically are several hundred acres. The number of observations made in these areas was fewer than in other areas because of poor accessibility. The detail in mapping, however, is adequate for the expected use of the soils. Slope is less than 0.2 percent.

Typically, the Bellpass soil is dark grayish brown and very dark gray, moderately alkaline, semifluid muck to a depth of about 30 inches. The underlying material to a depth of about 84 inches is dark gray, moderately alkaline, semifluid clay. In places layers of gray fine sand are in the underlying material.

The Bellpass soil is almost continously flooded with several inches of saltwater. During storms, it is covered by 2 or 3 feet of water. During periods when the soil is

Figure 3.—A good stand of baldcypress and water tupelo trees in an area of Barbary-Fausse association. Duckweed is the main aquatic plant, and buttonbush is the main understory plant in this area.

not flooded, the water table ranges from 1 foot above the surface to 1/2 foot below the surface. This soil has low strength and poor trafficability. Permeability is moderately rapid to rapid in the organic surface layer and very slow in the clayey underlying material. The total subsidence potential is high or very high. The shrink-swell potential is low in the organic material and high and very high in the mineral material.

Typically, the Scatlake soil has a surface layer of dark gray and dark greenish gray, moderately alkaline, semifluid clay about 6 inches thick. The underlying material to a depth of about 44 inches is mainly dark gray, moderately alkaline, semifluid clay. The next layer to a depth of about 84 inches is dark gray, moderately alkaline, semifluid fine sand and fine sandy loam. In places the surface layer is semifluid muck.

The Scatlake soil is almost continuously flooded with several inches of saltwater. During storms, it is covered by tidal waters that range in depth from 1 foot to 3 feet. During periods when the soil is not flooded, the water table ranges from 1 foot above the surface to 1/2 foot below the surface. This semifluid soil has low strength and poor trafficability. Permeability is very slow. Natural fertility and content of organic matter are high. Available water capacity is high. The total subsidence potential is medium. The shrink-swell potential is very high.

Included with these soils in mapping are a few small areas of Timbalier soils and many small ponds and perennial streams. These areas make up less than 20 percent of this map unit. The Timbalier soils have an organic surface layer more than 51 inches thick and are in positions similar to those of the Bellpass soil.

The natural vegetation on the Bellpass and Scatlake soils consists mainly of smooth cordgrass, seashore saltgrass, needlegrass rush, bushy sea-oxeye, marshhay cordgrass, saltwort, and Virginia samphire.

Most of the acreage of these soils is used as wetland wildlife habitat and for extensive forms of recreation. A small acreage is oil- and gasfields.

These soils are well suited to wetland wildlife habitat. They are part of the estuarine complex that contributes to the support of marine life in the Gulf of Mexico. Saltwater species of fish, such as menhaden, croaker, spot, and bay anchovy, and the young of crustaceans, such as shrimp and blue crab, use these areas as part of their nursery grounds. These fish and estuarine larval forms are the basis of a large commercial fishing industry. Many natural and constructed waterways provide access to these areas for fishing and shrimping. In addition, this map unit provides suitable habitat for geese, muskrats, mink, otters, and raccoons. A few ducks, nutria, alligators, and swamp rabbits also live in the area. Hunting and sport fishing are popular.

These soils are not suited to cultivated crops, pasture, and woodland. Wetness, flooding, salinity, low strength, and poor accessibility are the main limitations. Even if these soils are protected from flooding and drained by pumps, the extreme acidity, saltwater from storms, subsidence, and low strength are continuing limitations. Trees suitable for harvest do not grow on these soils.

These soils are not suited to urban uses and to intensive forms of recreation because of flooding and wetness. If the soils are drained and protected from flooding, they subside below sea level. The very high shrink-swell potential of the underlying clays is also a problem in soils that are drained. In addition, this map unit is near the Gulf of Mexico, and the area is susceptible to severe damage from hurricanes.

These Bellpass and Scatlake soils are in capability subclass VIIw. They are not placed in a woodland group.

Cm—Commerce silt loam. This level, somewhat poorly drained, firm, mineral soil is on the highest parts of the natural levees along Bayou Lafourche and its distributaries. Areas of this soil range from 15 to 1,000 acres. Slope is less than 1 percent.

Typically, the surface layer is about 15 inches thick. It is dark grayish brown, neutral silt loam in the upper part and dark gray, neutral silt loam in the lower part. The subsoil to a depth of about 36 inches is grayish brown, mottled silt loam and silty clay loam. It is neutral in the upper part and moderately alkaline in the lower part. The underlying material to a depth of about 60 inches is grayish brown, mottled, moderately alkaline very fine sandy loam.

Included with this soil in mapping are a few small areas of Commerce silty clay loam. These areas make up about 15 percent of the unit, but individual areas generally are less than 3 acres. Commerce silty clay loam is mainly in shallow swales and depressions.

This Commerce soil has high fertility. Permeability is moderately slow, and runoff is slow. The surface layer and subsoil are wet for long periods during winter and spring. A seasonal high water table fluctuates between a depth of 1.5 and 4 feet below the surface from December to April. Available water capacity is very high. The shrink-swell potential is moderate.

Most of the acreage of this soil is used for cultivated crops. A small acreage is in pasture or is used for homesites.

This soil is well suited to cultivated crops, mainly sugarcane, soybeans, corn, small grains, and vegetables. The soil is friable and easy to keep in good tilth. Trafficpans develop easily but can be broken up by chiseling or deep plowing. Wetness is the main limitation. Proper row arrangement, field ditches, and vegetated outlets help to remove excess surface water. Land grading and smoothing also improve surface drainage. Proper management of crop residue helps to maintain tilth and reduce soil losses from erosion. Most crops other than legumes respond well to nitrogen fertilizer. Potassium fertilizer is needed if sugarcane is grown.

This soil is well suited to pasture. Common bermudagrass, improved bermudagrass, bahiagrass, johnsongrass, tall fescue, white clover, vetch, red clover, and southern wild winter peas are suitable pasture plants. Wetness is the main limitation. Proper grazing practices, weed control, and the application of fertilizer are needed for maximum quality of forage. Lime is generally not needed.

This soil is well suited to woodland. The potential for hardwood trees is very high. American sycamore, cherrybark oak, eastern cottonwood, green ash, sweetgum, and pecan are suitable trees.

This soil is moderately well suited to urban uses. Wetness and moderate shrink-swell potential are the main limitations for dwellings without basements. Using shallow ditches and providing the proper grade can remove the excess water. Proper engineering designs can offset the effects of shrinking and swelling.

Moderately slow permeability and the seasonal high water table increase the possibility of failure of septic tank absorption fields. If outlets are available, these limitations can be overcome by providing drainage and by increasing the size of the absorption field. Low strength is a limitation where this soil is used for local roads and streets. Adding sand or other suitable fill material to the road base helps to overcome low strength.

This soil is moderately well suited to intensive use for recreation areas. Wetness is the main limitation. Shallow ditches, land smoothing, and grading help to remove excess surface water in intensively used areas, such as playgrounds. Plant cover can be maintained in these areas by the application of fertilizer and by controlling traffic.

This soil is well suited to openland and woodland wildlife habitat and moderately well suited to wetland wildlife habitat. Habitat for openland and woodland wildlife can be improved by planting appropriate vegetation or by helping the natural establishment of desirable plants. Habitat for wetland wildlife can be improved by excavating shallow water areas for use by waterfowl and furbearers.

This Commerce soil is in capability subclass IIw and woodland group 1w5.

Co—Commerce silty clay loam. This level, somewhat poorly drained, firm, mineral soil is on intermediate positions on the natural levees along Bayou Lafourche and its distributaries. Areas range from 15 to 1,000 acres. Slope is less than 1 percent.

Typically, the surface layer is dark gray, neutral silty clay loam about 11 inches thick. The subsoil to a depth of about 34 inches is grayish brown, mottled, and moderately alkaline. It is silt loam in the upper part and silty clay loam in the lower part. The underlying material to a depth of about 60 inches is gray, mottled, moderately alkaline silty clay loam.

Included with this soil in mapping are a few small areas of Commerce silt loam and Sharkey soils. These areas make up about 15 percent of this map unit, but individual areas generally are less than 3 acres. Commerce silt loam is on slightly higher positions than Commerce silty clay loam. Sharkey soils are in lower positions than Commerce soils and have a clayey subsoil.

This Commerce soil has high fertility. Permeability is moderately slow. Roots penetrate the soil with little difficulty. Runoff is slow, and water ponds in low places for short periods after heavy rains. The upper part of this soil remains wet for much of the winter and spring. A seasonal high water table fluctuates between a depth of 1.5 and 4 feet below the surface from December to April. Available water capacity is very high. The shrink-swell potential is moderate.

Most of the acreage of this soil is used for crops. A small acreage is in pasture or woodland or is used for homesites.

This soil is well suited to cultivated crops, mainly sugarcane, soybeans, corn, and truck crops (fig. 4). The surface layer is somewhat difficult to keep in good tilth. It is slightly sticky when wet and hard when dry and can be worked only within a somewhat narrow range of moisture content. Wetness is a limitation. Land grading and smoothing and constructing field ditches help to remove excess surface water. Proper management of crop residue and minimum tillage improve tilth and reduce soil losses from erosion. Most crops other than legumes respond well to nitrogen fertilizer. Sugarcane also responds well to potassium fertilizer.

This soil is well suited to pasture. Common bermudagrass, improved bermudagrass, bahiagrass, johnsongrass, tall fescue, southern wild winter peas, vetch, red clover, and white clover are suitable pasture plants. Grasses and legumes respond well to fertilizer. Lime is generally not needed. The use of proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture and the soil in good condition.

This soil is well suited to woodland. The potential for hardwood trees is very high. American sycamore, cherrybark oak, eastern cottonwood, green ash, sweetgum, and pecan are suitable trees.

This soil is moderately well suited to urban uses. Wetness and moderate shrink-swell potential are the main limitations for dwellings without basements. Installing a drainage system and using proper engineering designs can overcome these limitations. Moderately slow permeability and the seasonal high water table increase the possibility of failure of septic tank absorption fields. Providing drainage if outlets are available and increasing the size of the absorption field help to overcome these limitations. Where local roads and streets are constructed, the limitation of low strength can be minimized by adding sand or other suitable fill material to the road base.

This soil is moderately well suited to intensive forms of recreation. Wetness is the main limitation. Drainage is needed for intensively used areas, such as playgrounds. Plant cover can be maintained in these areas by the use of fertilizer and by controlling traffic.

This soil is well suited to openland and woodland wildlife habitat and moderately well suited to wetland wildlife habitat. Habitat for openland and woodland wildlife can be improved by providing undisturbed areas of appropriate vegetation. Habitat for wetland wildlife can be improved by constructing shallow water areas for use by waterfowl and furbearers.

This Commerce soil is in capability subclass IIw and woodland group 1w5.

Figure 4—Sugarcane in an area of Commerce silty clay loam. The sugarcane in the foreground was recently planted. The plants in the background are nearly mature and ready to harvest.

FA—Fausse-Sharkey association. The very poorly drained Fausse soil and the poorly drained Sharkey soil are firm, mineral soils and are frequently flooded. In addition, the Fausse soil is ponded most of the time. The Fausse soil is in swamps, and the Sharkey soil is on slightly higher positions on low, natural levees. The Fausse soil makes up about 65 percent of the association and the Sharkey soil about 20 percent. The individual soils are in areas large enough to be mapped separately, but they were not separated because of poor accessibility and low intensity of use. Areas of this association range from 500 to 2,000 acres. Slope is less than 0.5 percent.

Typically, the Fausse soil has a surface layer of very dark grayish brown, slightly acid clay about 5 inches thick. The subsoil to a depth of about 38 inches is dark gray, mottled, neutral clay in the upper part and dark gray, mottled, moderately alkaline clay in the lower part. The underlying material to a depth of about 60 inches is greenish gray, mottled, moderately alkaline clay.

This Fausse soil is flooded for brief to long periods in most years from January to December. Depth of floodwaters ranges from 1 foot to 3 feet. During periods when the soil is not flooded, the water table fluctuates between a depth of 1.5 feet below the surface and 1 foot above the surface. This soil is seldom dry enough to crack. It has very high shrink-swell potential. Permeability is very slow. Natural fertility and content of organic matter are high. Available water capacity is high to very high.

Typically, the Sharkey soil has a surface layer of very dark gray, mottled, slightly acid clay about 6 inches thick. The subsoil to a depth of about 41 inches is gray and dark gray, mottled clay. It is mildly alkaline in the upper part and moderately alkaline in the lower part. The

underlying material to a depth of about 60 inches is gray, mottled, moderately alkaline clay.

This Sharkey soil is flooded frequently for brief to long periods from December to June. The depth of floodwaters is generally less than 1 foot. During periods when the soil is not flooded, the water table fluctuates between the surface and a depth of 2 feet below the surface. This soil has very high shrink-swell potential. When dry, it has cracks that are 1 centimeter or more wide at a depth of 20 inches that extend upward to the surface. Permeability is very slow. Natural fertility is high, and content of organic matter is moderate. Available water capacity is high to very high.

Included with these soils in mapping are a few small areas of very poorly drained Barbary soils in deep depressions. Also included are soils similar to Sharkey soil except that they are not subject to flooding. These soils are on the higher parts of natural levees along distributary channels. The included soils make up about 15 percent of this map unit.

The natural vegetation on the Fausse and Sharkey soils consists mainly of baldcypress, black willow, water hickory, overcup oak, and water tupelo. Eastern cottonwood and green ash are common trees in areas of the Sharkey soils. Buttonbush, duckweed, hibiscus, lizard tail, and swamp-privet are the main understory and aquatic vegetation.

Most of the acreage of these soils is in woodland and is used as wetland and woodland wildlife habitat and for extensive forms of recreation. A small acreage is in crawfish ponds.

These soils are well suited to wetland and woodland wildlife habitat. When the soils are flooded, they provide feeding and roosting areas for ducks and other waterfowl. This map unit also provides habitat for deer, squirrels, alligators, mink, muskrats, and raccoons and are the main natural habitat for deepwater crawfish. Wetland wildlife habitat can be improved by installing structures for controlling water levels. Timber management that encourages oak and other mast-producing trees improves the habitat for wood ducks, squirrels, deer, and nongame birds. Hunting and fishing are popular in some areas of these soils. Commercial crawfishing is an important enterprise.

These soils are poorly suited to the production of bottom land hardwoods. Timber can be harvested only with the use of special equipment. Wetness and flooding are the main limitations. Unless this map unit is drained and protected from flooding, the use of equipment is limited, and seedling mortality is severe.

These soils are not suited to urban uses and to intensive forms of recreation. Wetness, flooding, very slow permeability, low strength, and very high shrink-swell potential are the main limitations. If these soils are drained and protected from flooding, they can be used for local roads and streets and dwellings without basements. However, roads need to be specially designed to overcome the limitations of very high shrink-swell potential and low strength.

Unless drained and protected from flooding, these soils are not suited to cropland or pasture.

These Fausse and Sharkey soils are in capability subclass VIIw. The Fausse soil is in woodland group 4w6, and the Sharkey soil is in woodland group 3w6.

FE—Felicity loamy fine sand, frequently flooded. This very gently sloping, somewhat poorly drained, saline, sandy soil is on low ridges along the coast of the Gulf of Mexico. Elevations range from about 1 foot to 3 feet above sea level. This soil is subject to flooding by saltwater during high storm tides. Areas are long and narrow and range from 100 to 200 acres. The number of observations made in these areas was fewer than in other areas because of poor accessibility. The detail in mapping, however, is adequate for the expected use of the soil. Slope ranges from 0 to 3 percent.

Typically, the surface layer is grayish brown, moderately alkaline loamy fine sand about 13 inches thick. The underlying material to a depth of about 32 inches is dark brown and brown, mottled, moderately alkaline loamy fine sand. The next layer to a depth of about 60 inches is very dark gray, moderately alkaline loamy fine sand.

Included with this soil in mapping are a few small areas of Bellpass and Scatlake soils. Both the organic Bellpass soils and the semifluid, clayey Scatlake soils are in lower positions than the Felicity soils.

This Felicity soil has low fertility and is saline. A water table that fluctuates with the normal tides is within 2 to 3 feet of the surface almost daily. This soil is frequently flooded for brief periods by saltwater from the Gulf of Mexico. Permeability is very rapid. Natural fertility is low, and the content of organic matter is very low. Runoff is slow. Available water capacity is very low or low.

The natural vegetation commonly is sparse and consists mainly of marshhay cordgrass (fig. 5), black-mangrove, bigleaf sumpweed, bitter panicum, seashore saltgrass, saltwort, and smooth cordgrass. Beach morningglory, bushy sea-oxeye, and needlegrass rush are less common species. Some areas are barren of vegetation.

Most of the acreage of this soil is used as wetland wildlife habitat and for extensive forms of recreation. A small acreage is used as sites for summer cottages.

This soil is very poorly suited to use as wetland wildlife habitat. It provides only a limited food supply and is used mainly as a resting area by ducks and shore birds.

This soil is not suited to cultivated crops, pasture, and woodland. Flooding, wetness, and salinity are the main limitations.

This soil is not suited to urban uses and to intensive forms of recreation. Flooding and wetness are the main limitations.

Figure 5.—A sparse cover of marshhay cordgrass on an area of Felicity loamy fine sand, frequently flooded. The Gulf of Mexico is in the background.

This Felicity soil is in capability subclass VIIw. It is not placed in a woodland group.

KE—Kenner muck. This level, very poorly drained, organic soil is in freshwater marshes. It is ponded and flooded most of the time. Areas of this soil are mainly several hundred acres. The number of observations made in these areas was fewer than in other areas because of poor accessibility. The detail in mapping, however, is adequate for the expected use of the soil. Slope is less than 0.5 percent.

Typically, the Kenner soil is dark brown and very dark grayish brown, slightly acid muck to a depth of about 10 inches. The next layers to a depth of about 65 inches are dark brown and very dark grayish brown, neutral and moderately alkaline muck. These layers have thin strata of clay. The underlying material to a depth of about 70 inches is very dark grayish brown, mucky clay.

Included with this soil in mapping are a few small areas of Allemands and Larose soils and many small ponds and perennial streams. These areas make up less than 15 percent of the map unit. Both the Allemands and Larose soils are in positions that are slightly higher than those of Kenner soil and are near distributary channels. The Allemands soils do not have thin layers of semifluid clay within the organic material in the upper part of the profile. The Larose soils are semifluid, clayey soils that have a thin, organic surface layer.

This Kenner soil is almost continuously flooded with several inches of freshwater. During storms, floodwaters are as deep as 2 feet. During periods when the soil is not flooded, the seasonal high water table ranges from 1 foot above the surface to 1/2 foot below the surface. This soil has low strength and poor trafficability. Permeability is moderately rapid to rapid in the organic layers and very slow in the clayey layers. The total subsidence potential is very high.

The natural vegetation consists mainly of cattail, maidencane (fig. 6), alligatorweed, bulltongue, common

rush, pickerelweed, southern wildrice, and swamp knotweed.

Most of the acreage of this soil is used as wetland wildlife habitat and for extensive forms of recreation. A small acreage is oil- and gasfields.

This soil is well suited to wetland wildlife habitat and to extensive forms of recreation. It provides food and roosting areas for ducks, geese, and other waterfowl and habitat for American alligators and furbearers, such as mink, otters, raccoons, and nutria. Fishing, hunting, and trapping are popular. Many waterways that have been constructed during gas and oil exploration activities provide access for hunters, fishermen, and trappers. Many species of freshwater fish are in the small ponds and perennial streams. Intrusion of saltwater is a problem in managing the vegetation for wetland wildlife habitat. Water control structures designed to improve the habitat for wildlife are difficult to construct and maintain because of the instability of the organic material.

This soil is not suited to cultivated crops and pasture. It is too soft and boggy to support grazing livestock. Wetness, flooding, and low strength are the main limitations. Even if the soil is protected from flooding and drained by pumps, extreme acidity, the intrusion of

Figure 6.—A nearly pure stand of maidencane in an area of Kenner muck. This soil provides excellent habitat for wetland wildlife.

saltwater after storms, subsidence, and low strength are continuing problems.

This soil is not suited to woodland. A permanent high water table, flooding, and low strength are the main limitations. Black willow is the main native tree in drained areas.

This soil is not suited to urban uses and to intensive forms of recreation. Flooding, wetness, low strength, and the subsidence potential are the main limitations. If drained and protected from flooding, this soil can subside several feet below sea level.

This Kenner soil is in capability sublcass VIIIw. It is not placed in a woodland group.

LA—Lafitte-Clovelly association. These level, very poorly drained, semifluid, organic soils are in brackish marshes and are ponded and flooded most of the time. The landscape consists of a broad, flat marsh that has many low natural levees of distributary channels. These natural levees have subsided to elevations below sea level. The Lafitte soil is in the deep, interlevee basins, and the Clovelly soil is on the low natural levees along waterways. The Lafitte and Clovelly soils each make up about 48 percent of the association. Areas typically are several hundred acres. The number of observations made in these areas was fewer than in other areas because of poor accessibility. The detail in mapping, however, is adequate for the expected use of the soil. Slope is less than 0.2 percent.

Typically, the Lafitte soil is very dark grayish brown and black, moderately alkaline, semifluid muck to a depth of about 74 inches. The underlying layer to a depth of about 84 inches is gray, moderately alkaline, semifluid clay.

Typically, the Clovelly soil is very dark grayish brown and black, moderately alkaline, semifluid muck to a depth of about 36 inches. The underlying layer to a depth of about 84 inches is gray and dark gray, moderately alkaline, semifluid clay.

Both the Lafitte and Clovelly soils are almost continuously flooded with several inches of saline water. During storms they are covered by as much as 3 feet of water. These soils are saturated with water and are semifluid throughout their profiles. During periods when the soils are not flooded, the water table ranges from about 1 foot above the surface to 1/2 foot below the surface. These soils have low strength and poor trafficability. The shrink-swell potential of the underlying clayey material is very high. Permeability is moderately rapid to rapid in the organic layers and very slow in the clayey layers. The total subsidence potential is high.

Included with these soils in mapping are a few small areas of soils that are similar to the Clovelly soil except that they have a thinner surface layer of muck overlying semifluid, firm clay. The included soils are on some of the narrow, natural levees along distributary channels. Also included are many small ponds and perennial streams. These areas make up about 10 percent of the map unit.

The natural vegetation on the Lafitte and Clovelly soils consists mainly of marshhay cordgrass, coastal waterhyssop, dwarf spikerush, Olney bulrush, and saltmarsh morningglory.

Most of the acreage of these soils is used as wetland wildlife habitat and for extensive forms of recreation. A small acreage is oil- and gasfields.

These soils are well suited to wetland wildlife habitat. They provide habitat for large numbers of geese, alligators, and furbearers, such as mink, muskrats, otters, and raccoons. Water control structures are difficult to construct and maintain because of the instability and semifluid nature of the soil material, and the intrusion of saltwater is a problem in the management of vegetation. Small ponds and streams in this map unit provide areas for sport and commercial fishing, and the trapping of furbearers is a major enterprise. Hunting of geese is popular in some areas.

These soils are not suited to cultivated crops, pasture, and woodland. Wetness, flooding, salinity, low strength, and poor accessibility are the main problems. Even if the soils are protected from flooding and drained by pumps, the extreme acidity, intrusion of saltwater after storms, subsidence, and low strength are continuing limitations. Trees suitable for commercial use generally do not grow on these soils. Black-mangrove is the only tree that grows well.

These soils are not suited to urban uses and to intensive forms of recreation because of flooding and wetness. If the soils are drained and protected from flooding for urban uses, they subside several feet below sea level, and the underlying clays are a problem because of very high shrink-swell potential.

These Lafitte and Clovelly soils are in capability subclass VIIIw. They are not placed in a woodland group.

Ra—Rita muck. This level, poorly drained, firm, mineral soil is in former freshwater marshes that are drained and protected from most floods. Areas are mainly along Bayou Lafourche and are several hundred acres. Slope is less than 0.5 percent.

Typically, the surface layer is black, extremely acid muck about 4 inches thick. The subsoil to a depth of about 30 inches is gray and greenish gray, mottled, firm clay. It is extremely acid in the upper part, medium acid in the middle part, and neutral in the lower part. The subsoil is permanently cracked in the upper part. The underlying material to a depth of about 43 inches is dark greenish gray, semifluid clay. The next layer to a depth of about 68 inches is dark greenish gray loamy very fine sand.

This Rita soil is protected from most floods by levees and drained with pumps. Under normal conditions, the

water table is maintained at a depth of 2 to 3 feet below the surface. After high intensity rains of long duration, however, the water table is near the surface for short periods. Flooding is rare and occurs only during hurricanes or other severe storms. Water and air move very slowly through the soil and rapidly through the network of permanent cracks in the subsoil. The available water capacity is moderate to high. This soil has medium fertility. The content of organic matter is very high. The total subsidence potential is medium. The upper part of the soil typically becomes increasingly acid as the organic matter decomposes. In places where the soil has subsided, the water table is near the surface most of the time.

Included with this soil in mapping are a few small areas of Allemands, drained soils. These soils are in positions similar to that of Rita soil but have a thicker, organic surface layer. The included soil makes up about 20 percent of the map unit.

Most of the acreage of this soil is used for pasture or idle land. A small acreage is developed for urban uses.

This soil is poorly suited to pasture. Common bermudagrass, dallisgrass, tall fescue, and ryegrass are suitable pasture plants. Wetness is the main limitation. Adequate water control is needed. The addition of lime is needed for optimum growth of grasses and legumes, but fertilizer is generally not needed. The use of proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture and soil in good condition.

This soil is poorly suited to cultivated crops. Wetness and acidity are the main limitations. If water is adequately controlled, this soil is suited to some crops, such as soybeans. This soil has limited capacity to support a load of heavy machinery. Applications of lime and fertilizers are generally needed.

This soil is poorly suited to woodland. Native trees did not grow on this soil before it was drained. Wetness is the main limitation. Only water-tolerant and acid-tolerant trees should be planted. Seedling mortality and limited use of equipment are important management concerns.

This soil is poorly suited to urban uses and to intensive forms of recreation. Flooding, wetness, very high shrink-swell potential, and low strength are the main limitations. Flooding is rare, but it can occur during hurricanes and if pumps or protection levees fail. Adequate water control is needed. Support and stability for buildings can be provided by constructing buildings on piers, adding loamy fill material to the soil and by controlling the level of the water table. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential. In areas where housing density is medium to high, community sewage systems are needed to prevent contamination of the ground water.

This soil is well suited to wetland wildlife habitat and moderately well suited to openland wildlife habitat. Habitat for openland wildlife habitat can be improved by maintaining vegetated areas for wildlife cover. Shallow ponds can be constructed to provide open water areas for use by waterfowl and furbearers.

This Rita soil is in capability subclass IIIw. It is not placed in a woodland group.

Rv—Rita Variant muck. This level, poorly drained, firm, mineral soil is in freshwater marshes that are drained and protected from most floods. Areas are mainly along the east side of Bayou Lafourche and range from 200 to 300 acres. Slope is less than 1 percent.

Typically, the surface layer is dark gray, extremely acid muck about 4 inches thick. The next layer to a depth of about 7 inches is very dark grayish brown, extremely acid, mucky clay. The subsoil is gray, extremely acid clay and contains a network of permanent cracks. The underlying material to a depth of about 63 inches is gray, very strongly acid, semifluid silt loam in the upper part and dark gray, neutral, semifluid silt loam in the lower part.

This Rita Variant soil is drained and protected from most floods. The level of the water table is controlled by pumps. Under normal conditions, the water table is maintained at a depth of 2 or 3 feet below the surface. After high intensity rains of long duration, however, the water table is near the surface for short periods. Flooding is rare but occurs during hurricanes or other severe storms. Water and air move very slowly through the soil and rapidly through the network of permanent cracks in the subsoil. The available water capacity is moderate to high. Fertility is medium, and the content of organic matter is very high. Reaction is extremely acid throughout the surface layer and subsoil and becomes increasingly acid as the organic matter decomposes. In places where the soil has subsided, the water table is near the surface most of the time. The total subsidence potential is medium, and the shrink-swell potential is very high.

Included with this soil in mapping are a few small areas of Allemands, drained soils. These soils are in positions similar to that of Rita Variant soil but have a thicker, organic surface layer. The included soil makes up about 20 percent of the map unit.

Most of the acreage of this Rita Variant soil is in pasture, idle land, or it is developed for urban uses.

This soil is poorly suited to pasture. Bahiagrass, common bermudagrass, dallisgrass, and white clover are suitable pasture plants. Wetness is the main limitation. Adequate water control is needed. Applications of fertilizer are generally not needed, but lime is needed for the optimum growth of grasses and legumes. The use of proper stocking rates, pasture rotation, and restricted

grazing during wet periods help to keep the pasture and the soil in good condition.

This soil is poorly suited to cultivated crops. If water is adequately controlled and lime and fertilizers are added, some crops, such as soybeans, can be grown. This soil has limited ability to support heavy machinery.

This soil is poorly suited to woodland. Few native trees grew on this soil before it was drained. Flooding, wetness, and acidity are the main limitations. Seedling mortality and restricted use of equipment are severe limitations. If water is adequately controlled, some species of ornamental shrubs and trees can be planted for landscaping purposes.

This soil is poorly suited to urban uses and to intensive forms of recreation. Flooding, wetness, low strength, and very high shrink-swell potential are the main limitations. Roads and building foundations need to be specially designed to overcome the limitations of low strength and very high shrink-swell potential. Septic tank absorption fields do not function properly in this soil. In areas where housing density is moderate to high, community sewage systems are needed.

Areas of this soil that are not near urban areas are well suited to wetland wildlife habitat and moderately well suited to openland wildlife habitat. Habitat for openland wildlife can be improved by maintaining vegetated areas for wildlife cover. Shallow ponds can be constructed to provide open water areas for use by waterfowl and furbearers.

This Rita Variant soil is in capability subclass IIIW. It is not placed in a woodland group.

SA—Scatlake muck. This level, very poorly drained, semifluid, mineral soil is in saline marshes. It is ponded and flooded most of the time. Areas are long and narrow and are several hundred acres. They generally parallel the natural waterways. The number of observations made in these areas was fewer than in other areas because of poor accessibility. The detail in mapping, however, is adequate for the expected use of the soil. Slope is less than 0.5 percent.

Typically, the surface layer is very dark gray, moderately alkaline, semifluid muck about 2 inches thick. The next layer to a depth of about 17 inches is dark gray, moderately alkaline, semifluid mucky clay. The underlying material to a depth of about 84 inches is dark gray, moderately alkaline, semifluid clay. In places, the underlying material below a depth of about 40 inches is gray, semifluid fine sand or loamy sand.

Included with this soil in mapping are a few small areas of Bellpass soils and many small ponds and perennial streams. These areas make up less than 5 percent of the map unit. The Bellpass soils have a thicker, organic surface layer than Scatlake soil and are in the lowest positions on the landscape.

This Scatlake soil is flooded with several inches of saltwater most of the time. During storms, tides from the Gulf of Mexico cover this soil with 2 or 3 feet of water. During periods when the soil is not flooded, the water table ranges from 1 foot above the surface to 1/2 foot below the surface. This soil has low strength and poor trafficability. The shrink-swell potential is very high. Permeability is very slow. The total subsidence potential is medium.

The natural vegetation consists mainly of marshhay cordgrass, needlegrass rush, seashore saltgrass, smooth cordgrass (fig. 7), bushy sea-oxeye, saltwort, and Virginia samphire.

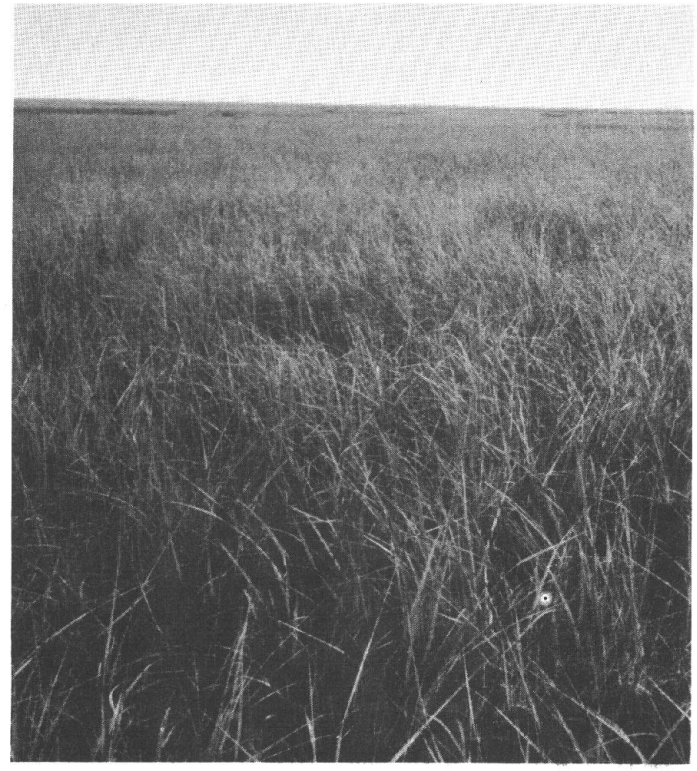


Figure 7.—A pure stand of smooth cordgrass in an area of Scatlake muck. This soil is a major soil in the saline marshes.

Most of the acreage of this soil is used as wetland wildlife habitat and for extensive forms of recreation. A small acreage is oil- and gasfields.

This soil is well suited to wetland wildlife habitat. It provides roosting areas and a fair food supply for ducks, geese, and other waterfowl and is also suitable as habitat for muskrats, mink, otters, raccoons, nutria, and alligators. This soil is part of the estuarine complex that contributes to the support of marine life in the Gulf of Mexico. It is an important nursery for estuarine-dependent fish and crustaceans, such as sea trout, menhaden, croaker, spot, bay anchovy, blue crab, and shrimp. These fish and estuarine larval forms are the basis for a large fishing industry. Many natural ponds and

waterways provide access for fishing, shrimping, hunting, and other outdoor activities.

This soil is not suited to cultivated crops, pasture, and woodland. Wetness, flooding, salinity, low soil strength, and poor accessibility are the main limitations. This soil is too soft and boggy to support the weight of farm machinery or grazing cattle. Even if the soil is drained and protected from flooding, the extreme acidity and subsidence are continuing limitations. Trees generally do not grow on this soil.

This soil is not suited to urban uses and to intensive forms of recreation. Flooding, wetness, very high shrink-swell potential, and low strength are the main limitations. In addition, hurricanes are common on areas of this soil. Even if this soil is drained and protected from flooding, it shrinks, cracks, and subsides to elevations below sea level.

This Scatlake soil is in capability subclass VIIw. It is not placed in a woodland group.

SC—Scatlake-Felicity complex. These level to gently undulating, very poorly drained and somewhat poorly drained, semifluid and firm, mineral soils are in saline marshes along the Gulf coast (fig. 8). They are frequently flooded. These soils are in one area that makes up several hundred acres. The number of observations made in this area was fewer than in other areas because of poor accessibility. The detail in mapping, however, is adequate for the expected use of the soil. The area contains about 55 percent Scatlake soil and about 25 percent Felicity soil. The landscape consists of parallel swales and ridges. The swales are at sea level and are 800 to 1,500 feet wide. The ridges are 1 foot to 3 feet high and 100 to 400 feet wide. The very poorly drained Scatlake soil is in the swales, and the somewhat poorly drained Felicity soil is on the ridges. Slope ranges from less than 0.5 percent in the swales to about 3 percent on the ridges.

Typically, the Scatlake soil has a surface layer of very dark gray, moderately alkaline, semifluid muck about 8 inches thick. The next layer to a depth of about 48 inches is dark gray, moderately alkaline, semifluid, mucky clay. The underlying material to a depth of about 60 inches is dark greenish gray, moderately alkaline, semifluid fine sand.

The Scatlake soil is almost continuously ponded and flooded by several inches of saltwater. During storms it is covered by tidal waters that range in depth from 1 foot to 3 feet. During periods when the soil is not flooded, the water table ranges from 1 foot above the surface to 1/2 foot below the surface. This semifluid soil has low strength and poor trafficability. Permeability is very slow. The total subsidence potential is medium, and shrink-swell potential is very high.

Typically, the Felicity soil has a surface layer of dark grayish brown, moderately alkaline loamy fine sand about 14 inches thick. The next layer to a depth of about 28 inches is yellowish brown, moderately alkaline loamy fine sand. The next layer to a depth of about 60 inches is dark gray, moderately alkaline loamy fine sand. In places thin layers of loam or muck are in the underlying material between a depth of 40 and 60 inches.

Figure 8.—Aerial view of Scatlake-Felicity complex in the saline marsh. The Scatlake soil, which is in the light area of the photograph, has recently been inundated. The Felicity soil is in the dark area.

The Felicity soil is frequently flooded for brief periods by tidal waters from the Gulf of Mexico and is saline. A water table fluctuates with the normal tides and rises to within 2 or 3 feet of the surface during part of each day. This Felicity soil has low fertility. Permeability is very rapid. The content of organic matter is very low. Available water capacity is low.

Included with these soils in mapping are a few small areas of Bellpass and Timbalier soils and many small ponds and perennial streams. These areas make up about 10 percent of the map unit. Both the Bellpass and Timbalier soils are in positions similar to those of the Scatlake soil and have thick, organic surface layers.

The natural vegetation on the Scatlake soil consists mainly of needlegrass rush, seashore saltgrass, saltwort, bushy sea-oxeye, Virginia samphire, marshhay cordgrass, and smooth cordgrass. The natural vegetation on the Felicity soil consists of bigleaf sumpweed, bitter panicum, black-mangrove, saltwort, seashore saltgrass, and smooth cordgrass.

Most of the acreage of these soils is used as wetland wildlife habitat and for extensive forms of recreation. A small acreage is oil- and gasfields.

These soils are well suited to wetland wildlife habitat. The Scatlake soil is part of the estuarine complex that contributes to the support of Gulf marine life. It is an important nursery for estuarine dependent fish and crustaceans, such as sea trout, menhaden, croaker, spot, bay anchovy, blue crab, and shrimp. These fish and estuarine larval forms are the basis for a large commercial fishing industry. In addition, areas of the Scatlake soil provide suitable habitat for ducks, geese, furbearers, and alligators. The Felicity soil is used mainly as a resting area by ducks, geese, and shore birds. Waterfowl hunting and sport fishing are popular in some areas.

These soils are not suited to cultivated crops, pasture, and woodland. Wetness, flooding, salinity, and low strength are the main limitations. Even if the areas are protected from flooding and drained by pumps, the extreme acidity, low strength, and subsidence are continuing problems. In addition, it is difficult to protect the soils from flooding during severe storms. Black-mangrove is the dominant shrub adapted to these soils.

These soils are not suited to urban uses and to intensive forms of recreation. Wetness, flooding, low strength, and potential damage from hurricanes are the main limitations. Even if the soils are drained and protected for urban uses, the very high shrink-swell potential, low strength, wetness, and subsidence are continuing problems.

These Scatlake and Felicity soils are in capability subclass VIIw. They are not placed in a woodland group.

Sh—Sharkey silty clay loam. This level, poorly drained, firm, mineral soil is on low and intermediate positions on the natural levees along Bayou Lafourche and its distributaries. Areas range from 10 to 500 acres. Slope is less than 1 percent.

Typically, the surface layer is neutral silty clay loam about 12 inches thick. It is dark gray in the upper part and very dark grayish brown in the lower part. The subsoil to a depth of about 44 inches is gray, mottled, moderately alkaline clay. The underlying material to a depth of about 60 inches is dark gray, mottled, moderately alkaline clay.

Included with this soil in mapping are a few small areas of Commerce and Sharkey clay soils. These areas make up about 15 percent of the map unit. The somewhat poorly drained Commerce soils are on slightly higher positions than Sharkey silty clay loam. The Sharkey clay soils are in slightly lower positions.

This Sharkey soil has high fertility. Wetness causes poor aeration and restricts root development of many plants. Permeability is very slow. Runoff is slow, and water stands in low places for short periods after heavy rains. Flooding is rare but can occur during hurricanes and other severe storms. The seasonal high water table fluctuates between the surface and a depth of 2 feet from December to April. The shrink-swell potential is very high. The soil cracks when dry and seals over when wet. Available water capacity is high. The content of organic matter is low to moderate.

Most of the acreage of this soil is used for cultivated crops and pasture. A small acreage is in woodland, crawfish ponds, or is used for homesites.

This soil is moderately well suited to cultivated crops, mainly corn, truck crops, grain sorghum, rice, sugarcane, and soybeans. The plow layer of this soil is slightly sticky when wet and hard when dry and becomes somewhat cloddy if worked when too wet or too dry. Wetness delays tillage operations in most years. A drainage system is needed for most crops. Field ditches and land grading or smoothing help to remove excess surface water. Returning crop residue to the soil helps to maintain the content of organic matter, improve tilth, and reduce soil losses from erosion. Most crops other than legumes respond well to nitrogen fertilizer. Lime is generally not needed. Irrigation is needed if rice is grown.

This soil is well suited to pasture. Bahiagrass, improved bermudagrass, common bermudagrass, johnsongrass, dallisgrass, ryegrass, southern wild winter peas, tall fescue, vetch, red clover, and white clover are suitable pasture plants. Applications of nitrogen fertilizer are needed if grasses are grown alone, but lime is generally not needed. The use of proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture and the soil in good condition.

This soil is well suited to woodland. It has high potential for the production of bottom land hardwoods. American sycamore, cherrybark oak, eastern cottonwood, green ash, pecan, and sweetgum are the main suitable trees. Seedling mortality is moderate. Unless drainage is provided, wetness limits the use of equipment. Reforestation after harvesting needs to be carefully managed to reduce competition from undesirable understory plants.

This soil is well suited to woodland and wetland wildlife habitat and moderately well suited to openland wildlife habitat. The habitat for openland and woodland wildlife can be improved by providing undisturbed, vegetated areas. Timber management that favors the production of oaks and other mast-producing trees improves the habitat for squirrels, deer, and birds. The habitat for wetland wildlife can be improved by constructing ponds to provide open water areas for use by waterfowl and furbearers.

This soil is poorly suited to urban uses and to intensive forms of recreation. Wetness, flooding, very slow permeability, and very high shrink-swell potential are the main limitations. Drainage is needed if buildings and roads are constructed. Buildings and roads should be designed to offset the effects of shrinking and swelling and the limited ability of the soil to support a load. Septic tank absorption fields do not function

properly during rainy periods because of wetness and very slow permeability. Using sandy backfill in the trenches and providing long absorption lines help to overcome these limitations. In areas where housing density is moderate to high, community sewage systems are needed. Drainage should be provided for intensively used recreation areas, such as playgrounds. In addition, adding sandy or loamy material to the surface helps to reduce the wetness and stickiness of the surface layer.

This Sharkey soil is in capability subclass IIIw and woodland group 2w6.

Sk or SK—Sharkey clay. This level, poorly drained, firm, mineral soil is on the lower parts of the natural levees along Bayou Lafourche and its distributaries. Areas range from about 10 to more than 1,000 acres. Slope is less than 1 percent.

Typically, the surface layer is slightly acid clay about 9 inches thick. It is very dark grayish brown in the upper part and dark gray in the lower part. The subsoil to a depth of about 60 inches is gray, mottled, mildly alkaline clay.

Included with this soil in mapping are a few small areas of Commerce, Sharkey silty clay loam, and Sharkey clay, occasionally flooded, soils. These areas make up about 15 percent of the map unit. The Commerce and Sharkey silty clay loam soils are on higher positions than Sharkey clay. Commerce soils are loamy throughout, and Sharkey silty clay loam contains less clay in the surface layer than Sharkey clay. Sharkey clay, occasionally flooded, is in low positions that are below flood elevations.

This Sharkey soil has high fertility. Wetness causes poor aeration and restricts root development of many plants. Permeability is very slow. Runoff is slow and water stands in low areas for short periods after heavy rains. Flooding is rare but can occur during hurricanes and other severe storms. The seasonal high water table fluctuates between the surface and a depth of 2 feet below the surface from December to April. The surface layer is wet and sticky for long periods in winter and spring. The shrink-swell potential is very high. The soil cracks when dry and seals over when wet. Available water capacity is high. The content of organic matter is low to moderate.

Most of the acreage of this soil is used for cultivated crops and pasture. A small acreage is in woodland and crawfish ponds, or is used for homesites.

This soil is moderately well suited to cultivated crops, mainly sugarcane, soybeans, grain sorghum, and rice. The plow layer of this soil is sticky when wet and hard when dry and becomes very cloddy if worked when too wet or too dry. This soil is difficult to keep in good tilth. Wetness delays tillage operations in most years. A drainage system is needed for most crops. Field ditches and land grading or smoothing help to remove excess surface water. Returning crop residue to the soil helps to increase the content of organic matter, improve tilth, and reduce soil losses from erosion. Most crops other than legumes respond well to applications of nitrogen fertilizer. Lime is generally not needed. Irrigation is needed if rice is grown.

This soil is well suited to pasture. Bahiagrass, improved bermudagrass, common bermudagrass, dallisgrass, johnsongrass, tall fescue, vetch, red clover, and white clover are suitable pasture plants. Applications of nitrogen fertilizer are needed if grasses are grown alone, but lime is generally not needed. Use of proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture and the soil in good condition.

This soil is well suited to woodland. It has high potential for the production of bottom land hardwoods. American sycamore, cherrybark oak, eastern cottonwood, green ash, pecan, and sweetgum are the main suitable trees. Seedling mortality is moderate. Unless drainage is provided, wetness limits the use of equipment. The surface layer of this soil remains wet and sticky for long periods if once wetted and provides poor trafficability. Reforestation after harvesting needs to be carefully managed to reduce competition from undesirable understory plants.

This soil has good potential for use as woodland and wetland wildlife habitat and fair potential as openland wildlife habitat. The habitat for openland and woodland wildlife can be improved by providing undisturbed areas of permanent vegetation. The habitat for wetland wildlife can be improved by constructing ponds to provide open water areas for use by waterfowl and furbearers.

This soil is poorly suited to urban uses and to intensive forms of recreation. Wetness, flooding, very slow permeability, very high shrink-swell potential, and the clay surface layer are the main limitations. Drainage is needed for most urban uses. In addition, buildings and roads should be designed to offset the effects of shrinking and swelling and the limited ability of the soil to support a load. Septic tank absorption fields do not function properly during rainy periods because of wetness and very slow permeability. Using sandy backfill in the trenches and providing long absorption lines help to overcome these limitations. Good drainage should be provided for intensively used recreation areas, such as playgrounds. Adding sandy or loamy fill material helps to overcome the stickiness of the surface layer.

This Sharkey soil is in capability subclass IIIw and woodland group 2w6.

Sr—Sharkey clay, occasionally flooded. This level, poorly drained, firm, mineral soil is on low positions on the natural levees of distributary streams. Areas range from about 20 to several hundred acres. Slope is less than 0.5 percent.

Typically, the surface layer is very dark gray, medium acid clay about 7 inches thick. The subsoil to a depth of

about 22 inches is dark gray, mottled, neutral clay. The next layer to a depth of about 46 inches is gray, mildly alkaline clay. The lower layer to a depth of about 60 inches is dark gray, moderately alkaline clay.

Included with this soil in mapping are a few small areas of Fausse soils. Also included are a few small areas of Sharkey soils on higher positions that are not subject to flooding. These areas make up about 10 percent of this map unit. The very poorly drained Fausse soils are in depressions.

This Sharkey soil has high fertility. Runoff is very slow. Permeability is very slow. Wetness causes poor aeration and restricts root development of many plants. This soil is subject to occasional flooding. As much as 2 feet of water stands on the surface for brief to very long periods from December to June of some years. If the soil is not flooded, the water table fluctuates between the surface and a depth of 2 feet below the surface. The shrink-swell potential is very high. The soil cracks when dry and seals over when wet. Available water capacity is high. The content of organic matter is low to moderate.

Most of the acreage of this soil is in woodland or idle land and is used as wildlife habitat and for extensive forms of recreation. The idle land is land that was previously cultivated. A small acreage is in crawfish ponds.

This soil is poorly suited to cultivated crops. Flooding and wetness are the main limitations. Only late planted crops, such as soybeans or grain sorghum, can be grown. This soil is difficult to keep in good tilth because it becomes cloddy if plowed when too wet or too dry. It can be worked only within a narrow range of moisture content. A drainage system is needed for most cultivated crops. This soil can be protected from flooding only by constructing an extensive system of levees. Minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improves fertility and helps maintain tilth and the content of organic matter. Crops respond well to the application of fertilizer.

This soil is moderately well suited to pasture. Flooding and wetness are the main limitations. Common bermudagrass, vetch, and southern wild winter peas are the main suitable pasture plants. Applications of nitrogen fertilizer are needed if grasses are grown alone, but lime is generally not needed. The use of proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture and the soil in good condition. During periods of flooding, cattle need to be moved to pasture at a higher elevation.

This soil is moderately well suited to water oak, sweetgum, eastern cottonwood, water hickory, and green ash. Flooding and wetness are the main concerns in producing and harvesting timber. These limitations restrict the use of equipment and cause moderate seedling mortality.

This soil is well suited to wetland and woodland wildlife habitat. It is moderately well suited to openland wildlife habitat. Habitat for wetland wildlife can be improved by excavating shallow water areas for use by waterfowl and furbearers, and habitat for openland and woodland wildlife can be improved by maintaining undisturbed areas of permanent vegatation. The hunting of deer, squirrels, and swamp rabbits and the trapping of furbearers are popular in wooded areas.

This soil is poorly suited to urban uses and to intensive forms of recreation. Flooding, very high shrink-swell potential, and wetness are the main limitations. Drainage and protection from flooding are needed for most urban uses. In addition, buildings and roads should be designed to offset the effects of shrinking and swelling and the limited ability of this soil to support a load.

This Sharkey soil is in capability subclass IVw and woodland group 3w6.

TB—Timbalier-Bellpass association. These level, very poorly drained, semifluid, organic soils are in saline marshes. They are ponded and flooded most of the time. The Timbalier soil is in interlevee basins, and the Bellpass soil is on slightly higher positions on submerged levees along natural waterways. The Timbalier soil makes up about 60 percent of the association, and the Bellpass soil about 25 percent. Areas of this association typically are several hundred acres. The number of observations made in these areas was fewer than in other areas because of poor accessibility. The detail in mapping, however, is adequate for the expected use of the soils. Slope is less than 0.2 percent.

Typically, the Timbalier soil to a depth of about 72 inches is very dark grayish brown, dark brown, and very dark brown, moderately alkaline, semifluid muck. The underlying layers to a depth of about 84 inches are dark gray and dark greenish gray, moderately alkaline, semifluid, mucky clay and clay.

Typically, the Bellpass soil to a depth of about 26 inches is very dark grayish brown and black, moderately alkaline, semifluid muck. The underlying layers to a depth of about 74 inches are very dark gray and dark greenish gray, moderately alkaline, semifluid, mucky clay and clay.

Both the Timbalier and Bellpass soils are almost continuously flooded with several inches of saltwater. During storms they are covered by as much as 3 feet of water. During periods when the soils are not flooded, the water table ranges from 1 foot above the surface to 1/2 foot below the surface. These soils are soft and boggy and have low strength. Permeability is moderately rapid to rapid in the organic material and very slow in the clayey underlying material. The total subsidence potential is very high in the Timbalier soil, and high in the Bellpass soil.

Included with these soils in mapping are a few small areas of Scatlake soils and many small ponds and perennial streams. The Scatlake soils are on the natural

levees of linear distributary channels that have subsided below sea level. These soils are semifluid and clayey throughout the upper part of the profile.

The natural vegetation of the Timbalier and Bellpass soils consists mainly of smooth cordgrass, seashore saltgrass, needlegrass rush, marshhay cordgrass, bushy sea-oxeye, Virginia samphire and saltwort.

Most of the acreage of these soils is used as wetland wildlife habitat and for extensive forms of recreation. A small acreage is oil- and gasfields.

These soils are well suited to wetland wildlife habitat. They are part of the estaurine complex that contributes to the support of Gulf marine life and are an important nursery for estuarine-dependent fish and crustaceans, such as menhaden, croaker, spot, bay anchovy, blue crab, and shrimp. These fish and estuarine larval forms are the basis of a major fishing and shrimping industry. Many natural waterways provide access for fishing and shrimping. These soils also provide habitat for a limited number of alligators, ducks, nutria, and swamp rabbits and moderate numbers of geese, muskrats, mink, otters, and raccoons.

These soils are not suited to cultivated crops, pasture, and woodland. Wetness, flooding, salinity, low strength, and poor accessibility are the main limitations. If these soils are protected from flooding and drained by pumps, the salinity, subsidence, and low strength are continuing limitations. Trees suitable for harvest generally do not grow on these soils.

These soils are not suited to urban uses and to intensive forms of recreation because of the flooding hazard and wetness. If these soils are drained and protected from flooding, they will shrink, crack, and subside below sea level. In addition, these areas are susceptible to severe damage from hurricanes.

These Timbalier and Bellpass soils are in capability subclass VIIIw. They are not placed in a woodland group.

Tn—Tunica clay, frequently flooded. This level, poorly drained, firm, mineral soil is on lower positions on the natural levees along Bayou Lafourche and its distributaries. It is subject to frequent flooding. Areas range from a few acres to several hundred acres. Slope is less than 1 percent.

Typically, the surface layer is very dark grayish brown, slightly acid clay about 5 inches thick. The subsoil to a depth of about 22 inches is dark gray, mottled, mildly alkaline clay. The underlying material to a depth of about 60 inches is grayish brown, mildly alkaline silt loam and silty clay loam.

Included with this soil in mapping are a few small areas of Commerce and Sharkey soils. Also included are some higher lying areas of Sharkey soils that are not subject to frequent flooding. These areas make up about 10 percent of the map unit. The Commerce soils are on slightly higher positions than Tunica soils and have less clay throughout. The Sharkey soils are on slightly lower positions and are clayey throughout.

This Tunica soil has high fertility. Runoff is slow. Permeability is very slow. Wetness causes poor aeration and restricts root development of many plants. This soil is subject to frequent flooding. As much as 2 feet of water stands on the surface for brief to long periods from January to June. The water table fluctuates between a depth of 1 1/2 and 3 feet below the surface from January to April. The shrink-swell potential is high. The soil cracks when dry and seals over when wet. Available water capacity is moderate.

Most the acreage of this soil is used for pasture. A small acreage is in woodland and crawfish ponds.

This soil generally is not suited to cultivated crops because of frequent flooding. If the soil is used as pasture, flooding limits the choice of vegetation and the period of grazing. Common bermudagrass, vetch, and southern wild winter peas are suitable pasture plants. Applications of nitrogen fertilizer are needed if grasses are grown alone, but lime generally is not needed. During flood periods, cattle need to be moved to adjacent, protected areas or to pasture at a higher elevation.

This soil is moderately well suited to hardwood trees, mainly green ash, eastern cottonwood, and Nuttall oak. The severe limitations to use of equipment and moderate seedling mortality are the main concerns in managing and harvesting timber.

This soil is well suited to wetland and woodland wildlife habitat. It is moderately well suited to openland wildlife habitat. The habitat for wetland wildlife can be improved by excavating shallow water areas for use by waterfowl and furbearers. The habitat for openland and woodland wildlife can be improved by maintaining undisturbed areas of permanent vegetation. Hunting of deer, squirrels, and swamp rabbits is popular in wooded areas.

This soil generally is not suited to urban and recreation uses because of frequent flooding and wetness. The high shrink-swell potential is a limitation if the soil is used as construction material.

This Tunica soil is in capability subclass Vw and woodland group 3w6.

Va—Vacherie silt loam. This level, somewhat poorly drained, firm, mineral soil is on intermediate positions on the natural levees along Bayou Lafourche and its distributaries. It is in areas where natural levees have been breeched by former floods. Areas range from 15 to 500 acres. Slope is less than 1 percent.

Typically, the surface layer is dark grayish brown, neutral silt loam about 13 inches thick. The subsoil to a depth of about 22 inches is grayish brown, mottled, mildly alkaline very fine sandy loam. The underlying material is gray, mottled, mildly alkaline clay. In places

the clay underlying material is at a depth ranging from about 10 to 20 inches below the surface.

Included with this soil in mapping are a few small areas of Commerce soils. These areas make up about 15 percent of the map unit, but individual areas generally are less than 3 acres. The Commerce soils are on higher parts of the natural levees than Vacherie soils and are loamy throughout.

This Vacherie soil has high fertility. Permeability is moderate through the loamy upper part of the profile and very slow through the clayey lower part. Runoff is slow. The surface layer and subsoil are wet for long periods during winter and spring. The seasonal high water table fluctuates between a depth of 1 foot and 3 feet below the surface during the months of December to April. Available water capacity is moderate to high. The content of organic matter is low to moderate. The shrink-swell potential is low in the loamy upper part of the profile and very high in the lower part.

Most of the acreage of this soil is used for cultivated crops. A small acreage is in pasture or is used for homesites.

This soil is well suited to cultivated crops, mainly sugarcane, soybeans, corn, small grains, and truck crops. It is friable and easy to keep in good tilth. Trafficpans develop easily but can be broken up by chiseling or deep plowing. Wetness is the main limitation. Proper row arrangement, field ditches, and vegetated outlets help to remove excess surface water. Land smoothing improves surface drainage; however, deep cutting may expose the clayey underlying material. Minimum tillage and leaving crop residue on the soil or adding other organic matter improves fertility and helps maintain tilth and the content of organic matter. Crops respond well to applications of fertilizer. Lime is generally not needed.

This soil is well suited to pasture. Common bermudagrass, improved bermudagrass, johnsongrass, bahiagrass, tall fescue, white clover, vetch, red clover, and southern wild winter peas are the main suitable pasture plants. Excessive water on the surface can be removed by using surface field ditches for drainage. Proper grazing practices, weed control, and applications of fertilizer are needed for maximum quality of forage. Lime is generally not needed.

This soil is well suited to woodland. The potential for hardwood trees is very high. Green ash, eastern cottonwood, sweetgum, pecan, and American sycamore are suitable trees. This soil has few limitations for use and management.

This soil is well suited to openland and woodland wildlife habitat and moderately well suited to wetland wildlife habitat. Habitat for openland and woodland wildlife can be improved by planting appropriate vegetation or by helping the natural establishment of desirable plants. Habitat for wetland wildlife can be improved by excavating shallow water areas for use by waterfowl and furbearers.

This soil is poorly suited to urban uses and to intensive forms of recreation. Wetness, very high shrink-swell potential, low strength, and very slow permeability are the main limitations. Excess surface water can be removed by constructing shallow ditches for drainage and by providing the proper grade. Septic tank absorption fields do not function properly during rainy periods because of wetness and very slow permeability. Using sandy backfill in the trenches and providing long absorption lines help to overcome these limitations. Buildings and roads can be designed to offset the effects of shrinking and swelling. Good drainage should be provided for intensively used recreation areas, such as playgrounds. Plant cover can be maintained by applications of fertilizer and by controlling traffic.

This Vacherie soil is in capability subclass IIw and woodland group 1w5.

prime farmland

Prime farmland is one of several kinds of important farmlands defined by the U.S. Department of Agriculture. It is of major importance in providing the nation's short- and long-range needs for food and fiber. The supply of high quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, state, and federal levels, as well as individuals, must encourage and facilitate the wise use of our nation's prime farmland.

Prime farmland soils, as defined by the U. S. Department of Agricullture, are soils that are best suited to producing food, feed, forage, fiber, and oilseed crops. Such soils have the quality, length of growing season, and moisture supply needed to economically produce high yields of crops. Prime farmland soils produce the highest yields with minimal inputs of energy and economic resources, and farming these soils results in the least damage to the environment.

Prime farmland soils include only those soils that are now in use as cropland, pasture, or woodland. Urban or built-up land and water areas cannot be considered prime farmland.

Prime farmland soils usually get an adequate and dependable supply of moisture from precipitaiton or irrigation. The temperature and growing season length are favorable, and the acidity or alkalinity level of the soil is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and generally are not flooded during the growing season. More information on the criteria for prime farmland soils can be obtained at the local office of the Soil Conservation Service.

About 99,600 acres or nearly 12 percent of Lafourche Parish meets the soil requirements for prime farmland.

Areas are scattered throughout the parish. About 48,000 acres of this prime farmland soil is used for crops.

The trend in land use to urban and related uses has resulted in the loss of some prime farmland. This loss puts pressure on marginal land, which generally is more erodible, droughty, or difficult to cultivate, and usually is less productive than prime farmland.

Urban and built-up land is any contiguous unit of land of 10 acres or more that is used for residential, industrial, commercial, construction, institutional, and public administrative sites, and railroad yards, small parks, cemeteries, airports, golf courses, sanitary landfills, sewage treatment plants, water control structures and spillways, and other uses.

The soils that make up prime farmland in Lafourche Parish are listed in this section. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps in the back of this publication. The soil qualities that affect use and management are described in the section 'Detailed soil map units.' This list does not constitute a recommendation for a particular land use.

Soils that have limitations, such as a seasonal high water table, a hazard of flooding, or inadequate moisture, may qualify as prime farmland if these limitations are overcome by the installation of drainage or by flood control measures. However, only those soils that have few limitations and need no additional improvements to qualify for prime farmland are included.

The following map units meet the soil requirements for prime farmland.

Cm	Commerce silt loam
Co	Commerce silty clay loam
Sh	Sharkey silty clay loam
Sk	Sharkey clay
Va	Vacherie silt loam

use and management of the soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the suitabilities and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

crops and pasture

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed soil map units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

About 113,000 acres in Lafourche Parish was used for crops and pasture in 1980. Of this total, about 48,000 acres was used for crops, mainly sugarcane and soybeans, and more than 65,000 acres was used for improved pasture and grazed woodland pasture. The acreage of sugarcane in the parish decreased by about 200 acres from 1970 to 1980. The average rate of sugarcane production in the parish in 1979 was about 32 tons per acre. The acreage in crops and pasture also has been gradually decreasing as more and more land is used for urban development.

The Commerce, Sharkey, and Vacherie soils in Lafourche Parish are suited to all crops commonly grown in the area, and are well suited to many crops not extensively grown. The Commerce and Vacherie soils along Bayou Lafourche and other streams are well suited to vegetable and fruit crops. These crops are presently grown in small acreages. The Sharkey soils are also suited to rice, but no rice was grown in 1980.

Differences in crop suitability and management needs result from differences in soil characteristics, such as fertility levels, erodibility, organic matter content, availability of water for plant growth, drainage, and the hazard of flooding. Cropping systems and soil tillage are also an important part of management. Each farm has unique management problems because each farm has a unique soil pattern. Some principles of farm management, however, apply to specific soils and certain crops. This section presents the general principles of management that can be applied widely to the soils of Lafourche Parish.

Fertilization and liming. The amount of fertilizer needed depends upon the crop to be grown, past cropping history, the level of yield desired, and the soil phase. The kind and amount of plant nutrients to apply should be based on the results of laboratory analysis of soil samples taken from each field.

A soil sample should be taken from a single soil phase and should represent no more than 10 acres. Agricultural agencies in the parish can supply detailed information and instructions about soil sampling.

The soils in Lafourche Parish that are used for cultivated crops generally range in reaction from medium acid to moderately alkaline in the upper 20 inches. They generally do not require additions of lime. The drained marshes, however, contain highly oxidized organic material and have clayey surface layers that range to extremely acid. Most of these drained marsh soils were once used for row crops but are now in pasture.

Organic matter content. Organic matter is important as a source of nitrogen for crop growth and is also important in increasing the water intake rate, reducing surface crusting and soil loss by erosion, and in providing good tilth. It promotes the growth of larger plants and plants that have more extensive root systems. Most of the soils in Lafourche Parish that are used for cropland are moderately low in organic matter content.

Organic matter can be built up to a limited extent and maintained by leaving plant residue on the soil, adding barnyard manure, and growing perennial grasses and legumes in rotation with other crops. In this parish, the use of sugarcane residue is especially important in helping to maintain the organic matter content.

Soil tillage. Soil tillage prepares the seedbed and controls weeds. Seedbed preparation and cultivating and harvesting operations, however, generally tend to destroy the soil structure. Excessive cultivation of soils should be avoided. Some of the clayey soils in the parish become cloddy if cultivated. A compacted layer develops in loamy soils that are plowed to the same depth for long periods, or in soils that are plowed when wet. This compacted layer is generally known as a trafficpan or plowpan and develops just below the plow depth. The development of this compacted layer can be avoided by not plowing when the soil is wet, by varying the depth of plowing, or by subsoiling or chiseling.

Some tillage implements can be used to stir the surface but leave crop residue as protection from beating rains. Use of such implements helps to control erosion, reduce runoff, and increase infiltration.

Drainage needs and flooding hazard. Many soils in the parish need surface drainage. Early drainage methods involved a complex pattern of main ditches, laterals, and field drains, but more recent methods of drainage combine land leveling and grading with minimum use of open ditches. This approach creates larger and more uniformly shaped fields and is more suitable for the use of modern multirow farm machinery.

The Mississippi River levee system protects most cropland and pastureland from flooding. Nevertheless, some soils at the lower elevations are subject to flooding from runoff from higher areas. Flooding on many of these areas can be controlled only by constructing a ring levee system and using pumps to remove excess water.

Water needed for plant growth. In Lafourche Parish water is commonly available for optimum plant growth without the use of irrigation. The large amounts of rainfall that occur in summer have a distribution pattern that favors the growth of sugarcane. However, this rainfall pattern precludes the economical production of certain crops, for example, cotton, which is better suited to a drier climate. The available water capacity of soils suited to crops is high or very high.

Cropping system. A desirable combinaton of crops in a good cropping system includes a legume to add nitrogen to the soil, a cultivated crop to aid in weed control, a deep-rooted crop to utilize substratum fertility and maintain substratum permeability, and a close-growing crop to help maintain organic matter content. In a good cropping system, the sequence of crops should be such that the soil is covered as much of the year as possible.

In this parish, three crops of sugarcane are generally obtained from each planting. After the third crop, the field is planted to soybeans or more commonly is fallowed for a year. The organic matter content of the soil can be maintained at a desirable level under this system by properly utilizing the sugarcane residue.

A suitable cropping system varies with needs of the farmer as well as needs of the soil. Producers of livestock, for example, generally use cropping systems that have a higher percentage of pasture than producers of cash crops. Additional information on cropping systems can be obtained from the Soil Conservation Service, the Extension Service, or the Louisiana Agricultural Experiment Station.

Control of erosion. Erosion is not a serious problem in Lafourche Parish mainly because of the level or nearly level slope gradient. Nevertheless, sheet erosion is somewhat high on fallow, plowed fields and in newly constructed drainage ditches. Some gully erosion takes place at overfalls in drainage ditches. Sheet erosion can be reduced by maintaining a plant or plant residue cover on the soil, by holding the number of cultivations of a crop to a minimum, and by controlling weeds by methods other than fallow plowing. Newly constructed ditches need to be seeded immediately after construction. Water control structures placed at overfalls in drainage ditches help control gully erosion.

yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby parishes and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting

and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green-manure crops; and harvesting that insures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils.

land capability classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have slight limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class and subclass is shown in table 6. The capability classification of each map unit is given in the section "Detailed soil map units."

woodland management and productivity

Originally about 234,000 acres or 32 percent of the total land area in Lafourche Parish was in trees. Today, southern hardwood trees cover about 127,000 acres or 17 percent of the land area. Most of this acreage is in Barbary-Fausse general soil map unit 3 in areas that are subject to flooding. This map unit is described in the section, "General soil map units.'

A few good stands of commercial trees are in the parish, but their potential value is relatively low. The virgin trees were harvested many years ago, and regeneration has been slow on the flooded Barbary and Fausse soils. Tree stands are better on areas of Sharkey, Tunica, and Commerce soils, but these woodland soils are divided among many owners.

Other woodland uses are for wildlife habitat, recreation, enjoyment of natural beauty, and the conservation of soil and water. This section discusses the effect of soils on the growth and management of trees.

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination (woodland suitability) symbol for each soil. Soils assigned the same ordination symbol

require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *t*, toxic substances in the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; *s*, sandy texture; *f*, high content of coarse fragments in the soil profile; and *r*, steep slopes. The letter *o* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: x, w, t, d, c, s, f, and r.

The third element in the symbol, a numeral, indicates the kind of trees for which the soils in the group are best suited and also indicates the severity of the hazard or limitation. The numerals 1, 2, and 3 indicate slight, moderate, and severe limitations, respectively, and suitability for needleleaf trees. The numerals 4, 5, and 6 indicate slight, moderate, and severe limitations, respectively, and suitability for broadleaf trees. The numerals 7, 8, and 9 indicate slight, moderate, and severe limitations, respectively, and suitability for both needleleaf and broadleaf trees.

In table 7, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or in equipment; and *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree to which the soil affects the mortality of tree seedlings. Plant competition is not considered in the ratings. The ratings apply to seedlings from good stock that are properly planted during a period of sufficient rainfall. A rating of *slight* indicates that the expected mortality is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

Ratings of *windthrow hazard* are based on soil characteristics that affect the development of tree roots and the ability of the soil to hold trees firmly. A rating of *slight* indicates that a few trees may be blown down by normal winds; *moderate*, that some trees will be blown down during periods of excessive soil wetness and strong winds; and *severe*, that many trees are blown down during periods of excessive soil wetness and moderate or strong winds.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. Site index was calculated at age 30 years for eastern cottonwood, 35 years for American sycamore, and 50 years for all other species. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suited to the soils and to commercial wood production.

recreation

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

Camp areas require site preparation such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface absorbs rainfall readily but remains firm, and is not dusty when dry.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, and are not subject to flooding during the period of use.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is firm after rains, and is not dusty when dry.

Paths and trails for hiking, horseback riding, and bicycling should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. The suitability of the soil for tees or greens is not considered in rating the soils.

wildlife habitat

Billy R. Craft, State staff biologist, Soil Conservation Service, prepared this section.

Wildlife plays an important part in the economy and environment of Lafourche Parish. The wildlife in this area is highly varied, and in some areas it is very abundant.

The marshland part of Lafourche Parish is the habitat for many kinds of wildlife. It comprises about 452,000 acres or 52 percent of the total area of the parish. Most species of waterfowl that utilize the Mississippi Flyway either winter in the marsh or stop for food and rest during their migration to the tropics. The mottled duck is a permanent resident. Common furbearers that live in the marshes are nutria, muskrats, raccoons, otters, and mink. The American alligator is very abundant. The highest population currently is in the central part of the parish near Gheens, Louisiana. The marshes also provide habitat for many resident and migratory nongame birds. Large numbers of swamp rabbits and cottontail are in the coastal marshes. The cottontail, however, mainly live on the higher ridges within the marsh. In addition, the marshes are part of the coastal estuarine complex that makes a significant contribution to the support of marine life from the Gulf of Mexico.

Three types of marsh, based on levels of salinity and types of vegetation, are in Lafourche Parish. They are fresh, brackish, and saline marshes, in order of increasing salinity. The kinds and population densities of wildlife utilizing any part of the marsh depend to a large extent upon the levels of salinity and the kind of native plants. The location and extent of the soils in each of these types of marsh is shown on the General Soil Map in the back of this survey.

Native plants in the marshes differ in their tolerance to salt. Therefore, the composition of the plants growing in an area indicates the type of marsh and approximate levels of salinity (*3, 5, 12*). A complete list of native plants growing in the soils of each type of marsh is in table 9.

The saline marsh is adjacent to the Gulf of Mexico and extends inland for about 22 miles. It covers an area of about 353 square miles and comprises about 50 percent of the marshland in the parish. The main soils in the saline marsh are those of the Bellpass, Timbalier, and Scatlake series. These soils are regularly inundated by saltwater from the Gulf. Levels of salinity in the saline marsh range from about 8 to 16 millimhos per centimeter. The native plants growing in these soils are tolerant of high levels of salinity. Smooth cordgrass, seashore saltgrass, needlegrass rush, marshhay cordgrass, bushy sea-oxeye, Virginia samphire, and saltwort (*5, 12*) are the dominant plants.

The saline marsh is part of an estuary that provides a nursery for saltwater fish and crustaceans, such as shrimp, blue crab, menhaden, croaker, spot, bay anchovy, and other forms of life that spawn in the Gulf of Mexico. The population density of ducks, nutria, American alligators, and swamp rabbits is low. Moderate numbers of geese, muskrats, minks, otters, and raccoons utilize the saline marsh. White-tailed deer seldom venture into these saline areas.

The brackish marsh is in an area between the saline marsh and the fresh marsh. It extends northward from Golden Meadow for about 4 miles. A somewhat narrower band of brackish marsh is along the eastern edge of the parish and extends northward to the southeastern corner of Lake Salvador. The brackish marsh covers about 91 square miles and comprises about 13 percent of the marshland in the parish. The main soils in the brackish marsh are those of the Clovelly and Lafitte series. The levels of salinity in soils of the brackish marsh range from about 4 to 8 millimhos per centimeter. The native plants growing in these soils are tolerant of moderate amounts of salt. Marshhay cordgrass, dwarf spikerush, Olney bulrush, coastal waterhyssop, and saltmarsh morningglory (*5, 12*) are the dominant plants.

Soils of the brackish marsh provide habitat for large numbers of geese, muskrats, mink, otters, and raccoons. The muskrat is most abundant (fig. 9). The native plants in the brackish marsh provide a source of food most favored by geese. Moderate numbers of ducks, nutria,

American alligators, and swamp rabbits utilize the brackish marsh. White-tailed deer also use this area. The brackish marsh is part of the estuary that provides a nursery for some species of fish and crustaceans.

The fresh marsh is in the northernmost part of the coastal marsh in Lafourche Parish. It covers an area of about 262 square miles and comprises about 37 percent of the total marshland in the parish. The main soils in the fresh marsh include those of the Allemands, Kenner, and Larose series. The level of salinity in these soils ranges from 0 to about 4 millimhos per centimeter. Native plants are very intolerant of salt. Maidencane, bulltongue, alligatorweed, cattail, southern wildrice, pickerelweed, swamp knotweed, and common rush (*5, 12*) are the dominant plants.

Areas of fresh marsh provide habitat for large numbers of crawfish, ducks, nutria, mink, otters, raccoons, swamp rabbits, white-tailed deer, and American alligators. Moderate numbers of geese also utilize the fresh marsh. The fresh marsh has the lowest muskrat population and the highest nutria population of the three types of marsh. Many species of freshwater fish are in ponds and streams within the fresh marsh.

The swamps of Lafourche Parish are mainly in narrow bands between areas of openland and areas of fresh marsh. They comprise about 117,000 acres or about 12 percent of the total area of the parish. The main soils in the swamps include those of the Barbary, Fausse, and Sharkey series. Most of the acreage of these soils is in trees. The main native trees on these soils are

Figure 9.—A muskrat nest in an area of the brackish marsh. Marshhay cordgrass and Olney bulrush provide food, cover, and nesting material for the muskrat.

listed in table 7. These soils provide habitat for large numbers of mink, otters, raccoons, crawfish, squirrels, wood ducks, and migratory ducks, alligators, wading birds, and other nongame birds. Deer, cottontails, swamp rabbits, and turkeys use these areas when they are dry or not flooded too deeply.

The openland part of Lafourche Parish is mainly on the natural levees along Bayou Lafourche and its distributaries. The main soils are those of the Commerce, Rita, Rita Variant, Sharkey, and Vacherie series and Allemands soils that have been drained. They comprise about 161,000 acres or about 18 percent of the total area of the parish. Some areas of these soils provide habitat for small game species. Bobwhite quail, cottontail rabbits, and doves are the most common game. Lack of good cover and urbanization, however, limit the habitat available. A small acreage is left in fallow each year. If not grazed, the fallowed fields provide good habitat for small game.

The many saline, brackish, and freshwater lakes and perennial streams in Lafourche Parish produce large populations of freshwater and saltwater species of fish. These areas of open water comprise about 136,000 acres or 16 percent of the parish. Sport and commercial fishing are important enterprises in the parish.

More than 10,000 acres in Lafourche Parish is in crawfish ponds, and the acreage is rapidly increasing. These crawfish ponds are mainly in areas of the Barbary, Fausse, Sharkey, and Tunica soils. A small acreage of the Larose soils is also in crawfish ponds.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 10, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn and wheat.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, bahiagrass, bermudagrass, and clover.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, paspalums, switchgrass, panicum, and lespedeza.

Hardwood trees and the woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, poplar, sweetgum, sycamore, pecan, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are red mulberry, dogwood, and mayhaw.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are French mulberry, privet, yaupon, and wax myrtle.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland

plants are smartweed, wild millet, wildrice, saltgrass, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, shore birds, muskrat, mink, and otter.

engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

building site development

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging,

filling, and compacting is affected by a very firm dense layer; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

sanitary facilities

Table 12 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 12 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, and flooding affect absorption of the effluent.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to effectively filter the effluent. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 12 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, flooding, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is

placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation need to be considered.

The ratings in table 12 are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, slope, and flooding affect both types of landfill. Texture, highly organic layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

construction materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a probable or improbable source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by a high water table and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material and low shrink-swell potential. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential. Depth to the water table is 1 foot to 3 feet. Soils rated *poor* have a plasticity index of more than 10 and high shrink-swell potential. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 13, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Acidity and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material needs to be at least 3 feet thick. All other soils are rated as an improbable source.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow

area is affected by slope, a water table, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, or soils that have only 20 to 40 inches of suitable material. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

water management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; and subsidence of organic layers. Excavating and grading and the stability of ditchbanks are affected by slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Wetness and slope affect the construction of grassed waterways. A hazard of low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

soil properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

engineering index properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil series and their morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains particles coarser than sand, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (*1*).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy soils are identified as SM and silty and clayey soils as ML, CL, MH, CH, and OH; and highly organic soils as Pt. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

physical and chemical properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3 bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that

can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 16, the estimated content of organic matter of the plow layer is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

soil and water features

Table 17 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or water in swamps and marshes are not considered flooding.

Table 17 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs on an average of 2 years or less in 5 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-June, for example, means that flooding can occur during the period November through June.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 17 are the depth to the seasonal high water table; the kind of water table—that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 17.

An apparent water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An artesian water table is under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A perched water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage.

Subsidence takes place gradually, usually over a period of several years. Table 17 shows the expected initial subsidence, which usually is a result of drainage, and annual subsidence, which usually is a result of oxidation and consolidation.

Not shown in the table is subsidence caused by an imposed surface load or by the withdrawal of ground water throughout an extensive area as a result of lowering the water table.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

classification of the soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (*11*). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. In table 18, the soils of the survey area are classified according to the system. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Fluvaquents (*Fluvl,* meaning flood plain, plus *aquent*, the suborder of the Entisols that have an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Fluvaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is very fine, montmorillonitic, nonacid, thermic Typic Haplaquents.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

soil series and their morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (*10*). Many of the technical terms used in the descriptions are defined in Soil Taxonomy (*11*). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed soil map units."

Allemands series

The Allemands series consists of poorly drained and very poorly drained, organic soils that formed in moderately thick accumulations of decomposed, herbaceous material overlying clayey alluvium. These soils are in freshwater coastal marshes. Unless drained, they are ponded and flooded most of the time. Elevation ranges from about 1 foot above sea level to 6 feet below sea level. Slope is less than 0.5 percent.

Soils of the Allemands series are clayey, montmorillonitic, euic, thermic Terric Medisaprists.

Allemands soils commonly are near Barbary, Bellpass, Clovelly, Larose, Kenner, and Rita soils. All of these soils except Barbary soils are in positions similar to those of the Allemands soils. The Barbary soils are in swamps and are semifluid, mineral soils. The Larose and Rita soils are mineral soils. The Bellpass and Clovelly soils are more saline than Allemands soils. Kenner soils have thin layers of mineral material in the upper part of the profile.

Typical pedon of Allemands muck, 200 feet north of Bully Camp boat landing, sec. 19, T. 18 S., R. 21 E.

Oa1—0 to 2 inches; very dark grayish brown (10YR 3/2) muck; about 45 percent fiber, 15 percent rubbed; massive; does not flow between fingers when squeezed; dominantly herbaceous material; about 20 percent mineral; slightly acid; clear smooth boundary.

Oa2—2 to 18 inches; very dark grayish brown (10YR 3/2) and dark brown (10YR 3/3) muck; about 30 percent fiber, 3 percent rubbed; massive; flows easily between fingers when squeezed leaving large residue in hand; dominantly herbaceous material; 20 percent mineral; slightly acid; abrupt smooth boundary.

IIC1g—18 to 36 inches; gray (5Y 5/1) clay; about 5 percent root fragments; massive, slightly sticky; flows easily between fingers when squeezed leaving small residue in hand; neutral; clear smooth boundary.

Oa3—36 to 38 inches; very dark gray (10YR 3/1) muck; about 3 percent fiber, 1 percent rubbed; massive; flows easily between fingers when squeezed leaving no residue in hand; dominantly herbaceous material; about 40 percent mineral; neutral; abrupt smooth boundary.

IIC2g—38 to 42 inches; dark grayish brown (10YR 4/2) mucky clay; massive; flows easily between fingers when squeezed leaving small residue in hand; mildly alkaline; clear smooth boundary.

IIC3g—42 to 72 inches, gray (5Y 5/1) clay; massive; flows easily between fingers when squeezed leaving large residue in hand; moderately alkaline.

The thickness of the organic material ranges from 16 to 51 inches. The mineral underlying material is dominantly clay, but thin strata of loamy material are in some pedons.

The surface tier, from 0 to 12 inches, has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. The content of rubbed fiber ranges from 5 to 30 percent. Reaction ranges from strongly acid to neutral in undrained pedons and from extremely acid to strongly acid in pedons that have been drained.

The organic material in the subsurface tier, from 12 to 36 inches, has hue of 10YR or 7.5YR, value of 2 to 4, and chroma of 1 to 3. The content of fiber ranges from 1 to 10 percent after rubbing. Reaction ranges from slightly acid to mildly alkaline in undrained pedons. In drained pedons, reaction ranges from strongly acid to slightly acid.

The IICg horizon has hue of 5Y, 5G, and 5GY, value of 4 or 5, and chroma of 1 or 2. Reaction ranges from slightly acid to moderately alkaline in undrained pedons. In drained pedons, reaction ranges from very strongly acid to slightly acid in that part of the IICg horizion above a depth of 40 inches and from slightly acid to moderately alkaline below a depth of 40 inches.

Barbary series

The Barbary series consists of very poorly drained, very slowly permeable, semifluid, mineral soils that formed in clayey alluvium. These soils are in swamps and are ponded and flooded most of the time. Elevation ranges from sea level to about 3 feet above sea level. Slope is less than 0.1 percent.

Soils of the Barbary series are very-fine, montmorillonitic, nonacid, thermic Typic Hydraquents.

Barbary soils commonly are near Fausse and Sharkey soils and are similar to Larose and Scatlake soils. Both Fausse and Sharkey soils are on slightly higher positions than Barbary soils and have B horizons with n value of 0.7 or less. The Larose and Scatlake soils are in nearby marshes and have fewer logs and stumps than Barbary soils. In addition, Scatlake soils are more saline.

Typical pedon of Barbary muck, in an area of Barbary-Fausse association, 7 miles northwest of Thibodaux, 0.5 mile west of Highway 309, south of main Sun Oil tram, sec. 77, T. 15 N., R. 15 E.

O2—0 to 2 inches; very dark grayish brown (10YR 3/2) muck; massive; few fragments of wood; flows easily between fingers when squeezed leaving a small residue; about 40 percent mineral; slightly acid; clear wavy boundary.

A1—2 to 9 inches; dark gray (10YR 4/1) mucky clay; massive; flows easily between fingers when squeezed leaving hand empty; neutral; clear smooth boundary.

C1g—9 to 38 inches; gray (5Y 5/1) clay; common medium distinct dark yellowish brown (10YR 4/4) mottles; massive; flows easily between fingers when squeezed leaving hand empty; pockets and vertical streaks of dark greenish gray (5BG 4/1); neutral; gradual wavy boundary.

C2g—38 to 62 inches; dark greenish gray (5BG 4/1) clay; few fine distinct dark yellowish brown (10YR 4/4) mottles; massive; flows easily between fingers when squeezed leaving hand empty; few buried large logs and stumps; moderately alkaline.

Depth to firm mineral layers commonly is more than 60 inches. Reaction ranges from slightly acid to mildly alkaline in the O2 horizon, neutral to mildly alkaline in

the A1 horizon, and from neutral to moderately alkaline in the C horizon.

The O2 horizon has hue of 10YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2. It is peat or muck.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. It is mucky clay or clay.

The C horizon has hue of 10YR, 5Y, 2.5Y, 5BG, and 5GY, value of 4 or 5, and chroma of 1. Few to many buried logs, stumps, and wood fragments are in the C horizon.

Bellpass series

The Bellpass series consists of very poorly drained, very slowly permeable, saline, organic soils that formed in moderately thick accumulations of herbaceous plant material overlying semifluid, clayey alluvium. These soils are in saline marshes and are ponded and flooded most of the time. Elevation ranges from sea level to 1 foot above sea level. Slope is less than 0.2 percent.

Soils of the Bellpass series are clayey, montmorillonitic, euic, thermic Terric Medisaprists.

Bellpass soils are similar to Allemands and Clovelly soils, and commonly are near Scatlake and Timbalier soils. Allemands and Clovelly soils are less saline than Bellpass soils. Scatlake soils are mineral soils. The Timbalier soils have thicker organic layers than Bellpass soils.

Typical pedon of Bellpass muck, in an area of Timbalier-Bellpass association, 3.25 miles southeast of Golden Meadow, 1,600 feet east of Bayou Lafourche, on south side of a large canal:

Oa1—0 to 6 inches; very dark grayish brown (10YR 3/2) muck; about 15 percent fiber, 5 percent rubbed; massive; flows easily between fingers when squeezed leaving hand empty; many live roots; dominantly herbaceous fiber; about 50 percent mineral; moderately alkaline; clear smooth boundary.

Oa2—6 to 10 inches; black (10YR 2/1) muck; about 10 percent fiber, 5 percent rubbed; massive; flows easily between fingers when squeezed leaving hand empty; few live roots; dominantly herbaceous fiber; about 70 percent mineral; moderately alkaline; clear smooth boundary.

Oa3—10 to 26 inches; black (10YR 2/1) muck; about 10 percent fiber, trace rubbed; massive; flows easily between fingers when squeezed leaving hand empty; dominantly herbaceous fiber; about 50 percent mineral; moderately alkaline; abrupt smooth boundary.

IIAbg—26 to 32 inches; very dark gray (5Y 3/1) mucky clay; massive; flows easily between fingers when squeezed leaving hand empty; moderately alkaline; abrupt smooth boundary.

IIC1g—32 to 58 inches, dark greenish gray (5BG 4/1) clay; massive; flows easily between fingers when squeezed leaving hand empty; moderately alkaline; clear smooth boundary.

IIC2g—58 to 74 inches; dark greenish gray (5BG 4/1) clay; massive; flows slowly between fingers when squeezed leaving a small residue; moderately alkaline; clear smooth boundary.

The thickness of the organic soil material ranges from 16 to 51 inches. The organic material is dominantly from herbaceous plants. Reaction of the organic layers ranges from neutral to moderately alkaline. Reaction of the mineral layers is mildly alkaline or moderately alkaline. The organic layers are dominantly sapric material. Some pedons have a surface layer of hemic or fibric material, but the accumulated thickness of this layer is less than one-half the total thickness of the organic horizons. The electrical conductivity of the saturation extract ranges from 8 to 16 millimhos per centimeter in all or part of the upper 30 inches.

The O layer has hue of 10YR or 7.5YR, value of 2 to 4, and chroma of 1 or 2, or it is neutral. Mineral content averages 40 to 70 percent.

The IIAbg horizon has hue of 10YR or 5Y, value of 2 to 4, and chroma of 1 or 2, or it is neutral. It is clay or mucky clay.

The IICg horizon has hue of 10YR, 5Y, 5BG, 5GY, and 5G, value of 4 to 6, and chroma of 1, or it is neutral. It is clay or silty clay and has n value of from 0.7 to more than 1.

Clovelly series

The Clovelly series consists of very poorly drained, very slowly permeable, saline, semifluid, organic soils that formed in moderately thick accumulations of herbaceous plant material overlying clayey alluvium. These soils are in brackish coastal marshes that are ponded and flooded most of the time. Elevation ranges from sea level to 1 foot above sea level. Slope is less than 0.2 percent.

Soils of the Clovelly series are clayey, montmorillonitic, euic, thermic Terric Medisaprists.

Clovelly soils are similar to Allemands and Bellpass soils and commonly are near Lafitte and Scatlake soils. Allemands soils are less saline than Clovelly soils, and Bellpass soils are more saline. The Lafitte soils have organic layers that are more than 51 inches thick. Scatlake soils are saline, mineral soils.

Typical pedon of Clovelly muck, in an area of Lafitte-Clovelly association, 3.75 miles east of Golden Meadow, at the end of Yankee Canal, 150 feet north of Shell dam:

Oa1—0 to 12 inches; very dark grayish brown (10YR 3/2) muck; massive; about 20 percent fiber, 5 percent rubbed; about 60 percent mineral; many medium and coarse roots and stems; flows easily between fingers leaving only fiber and roots in hand; moderately alkaline; clear smooth boundary.

Oa2—12 to 36 inches; black (10YR 2/1) muck; about 10 percent fiber, 2 percent rubbed; massive; flows easily between fingers when squeezed leaving hand empty; about 60 percent mineral; few medium and fine roots; moderately alkaline; abrupt smooth boundary.

IIC1g—36 to 74 inches; gray (5Y 5/1) clay; massive; flows easily between fingers when squeezed leaving hand empty; moderately alkaline; clear smooth boundary.

IIC2g—74 to 84 inches; dark gray (5Y 4/1) clay; massive; flows easily between fingers when squeezed leaving hand empty; moderately alkaline.

Thickness of the organic horizons ranges from 16 to 51 inches. The organic fraction is dominantly herbaceous, sapric material. Some pedons have a hemic or fibric surface layer, but the accumulative thickness of these layers is less than one-half of the total thickness of the organic horizons. Reaction of the organic layers ranges from neutral to moderately alkaline. The reaction of the mineral layers is mildly alkaline or moderately alkaline. Electrical conductivity ranges from 4 to 8 millimhos per centimeter throughout.

The O horizon has hue of 10YR or 7.5YR, value of 2 to 4, and chroma of 2 or less. Mineral content ranges from 40 to 70 percent.

A IIAbg horizon is in some pedons. It has hue of 10YR or 5Y, value of 2 to 4, and chroma of 2 or less. The IIAbg horizon is mucky clay, clay, or silty clay. The n value ranges from 0.7 to more than 1.

The IICg horizon has hue of 10YR, 5Y, 5BG, 5GY, or 5G, value of 4 to 6, and chroma of 1, or it is neutral. It is mucky clay, clay, or silty clay. The n value ranges from 0.7 to more than 1 to a depth of 60 inches or more.

Commerce series

The Commerce series consists of somewhat poorly drained, moderately permeable, firm, mineral soils that formed in loamy alluvium. These soils are on high and intermediate positions on the natural levees along Bayou Lafourche and its distributaries. Elevation ranges from about 5 to 15 feet above sea level. Slope is less than 1 percent.

Soils of the Commerce series are fine-silty, mixed, nonacid, thermic Aeric Fluvaquents.

Commerce soils commonly are near Sharkey and Tunica soils. Both of these soils are poorly drained and are on lower positions on the natural levees than Commerce soils.

Typical pedon of Commerce silt loam, 1.5 miles southeast of old Highway 90, 210 feet northeast of Highway 308, 70 feet northeast of field road, sec. 37, T. 16 S., R. 19 E.

Ap1—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; neutral; abrupt wavy boundary.

Ap2—6 to 9 inches; dark gray (10YR 4/1) silt loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; weak thick platy structure; firm; neutral; abrupt wavy boundary.

B21—9 to 16 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct dark yellowish brown (10YR 3/4) mottles; weak medium to coarse subangular blocky structure; firm, plastic and sticky; few patchy clay films in pores and on horizontal surfaces of peds; neutral; clear wavy boundary.

B22—16 to 24 inches; grayish brown (10YR 5/2) silt loam; common fine distinct dark yellowish brown mottles; weak medium subangular blocky structure; friable; common fine pores; few fine roots; neutral; clear smooth boundary.

B23—24 to 29 inches; grayish brown (10YR 5/2) silt loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; weak coarse subangular blocky structure; friable; few fine pores; moderately alkaline; clear wavy boundary.

B3—29 to 36 inches; grayish brown (10YR 5/2) silty clay loam; few fine distinct dark yellowish brown mottles; weak coarse subangular blocky structure; firm; moderately alkaline; abrupt smooth boundary.

C—36 to 60 inches; grayish brown (10YR 5/2) very fine sandy loam; few thin bands of dark yellowish brown (10YR 4/4) very fine sandy loam; weak thick platy structure; friable; moderately alkaline.

The solum thickness ranges from 26 to 40 inches. Reaction ranges from medium acid to mildly alkaline in the A horizon, from slightly acid to moderately alkaline in the B horizon, and from neutral to moderately alkaline in the C horizon.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. It is silt loam or silty clay loam.

The B horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2. It is silt loam, loam, or silty clay loam.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 or 2. It is stratified very fine sandy loam, silt loam, silty clay loam, or silty clay.

Fausse series

The Fausse series consists of very poorly drained, very slowly permeable, firm, mineral soils that formed in clayey alluvium. These soils are in swamps that are adjacent to the natural levees of distributary channels. They are frequently flooded. Elevation ranges from sea

level to about 5 feet above sea level. Slope is less than 0.5 percent.

Soils of the Fausse series are very-fine, montmorillonitic, nonacid, thermic Typic Fluvaquents.

Fausse soils commonly are near Barbary and Sharkey soils. Barbary soils are in lower positions than Fausse soils and have n value of more than 0.7 throughout. Sharkey soils are on higher positions and have vertic properties.

Typical pedon of Fausse clay, in an area of Fausse-Sharkey association, 3.5 miles northwest of Thibodaux, at the end of Leighton Road, across levee opposite landfill, sec. 65, T. 15 S., R. 16 E.

A1—0 to 5 inches; very dark grayish brown (10YR 3/2) clay; massive; slightly acid; abrupt smooth boundary.
B21g—5 to 25 inches; dark gray (5Y 4/1) clay; many medium distinct dark yellowish brown (10YR 4/4) mottles; massive; firm; neutral; gradual wavy boundary.
B22g—25 to 38 inches; dark gray and gray (5Y 4/1, 5/1) clay; few medium distinct dark yellowish brown (10YR 4/4) mottles; massive; firm; moderately alkaline; clear wavy boundary.
Cg—38 to 60 inches; greenish gray (5BG 5/1) clay; few fine distinct dark yellowish brown mottles; massive; firm; many woody fragments; moderately alkaline.

The solum thickness ranges from 25 to 46 inches. The organic surface layer in some pedons is less than 2 inches thick. Reaction ranges from medium acid to neutral in the A horizon and from neutral to moderately alkaline in the B and C horizons.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. Where the A horizon has chroma of 2, it is less than 8 inches thick. The A horizon is clay or mucky clay.

The B and C horizons have hue of 10YR, 5Y, 2.5Y, 5BG, and 5GY, value of 4 or 5, and chroma of 1, or they are neutral. The C horizon is clay, silty clay, or silty clay loam.

Felicity series

The Felicity series consists of somewhat poorly drained, rapidly permeable, saline, firm, mineral soils that formed in sandy, tidal sediment along the Gulf of Mexico. These soils are on ridges and are frequently flooded with saltwater by high storm tides. Elevation ranges from about 1 foot to 3 feet above sea level. Slope ranges from 0 to 3 percent.

Soils of the Felicity series are mixed, thermic Aquic Udipsamments.

Felicity soils commonly are near Bellpass and Scatlake soils. Both of these soils are in marshes. The Bellpass soils are organic soils, and the Scatlake soils are semifluid, mineral soils.

Typical pedon of Felicity loamy fine sand, frequently flooded, 10 miles south of Leeville, 0.3 mile southwest of end of Highway 3090, on beach of the Gulf of Mexico, NW1/4NW1/4, sec. 25, T. 23 N., R. 22 E.

C1—0 to 13 inches; grayish brown (10YR 5/2) loamy fine sand; single grained; loose; about 5 percent shell fragments; moderately alkaline; clear wavy boundary.
C2—13 to 24 inches; dark brown (10YR 4/3) and dark grayish brown (10YR 4/2) loamy fine sand; single grained; loose; about 10 percent shell fragments; moderately alkaline; clear wavy boundary.
C3—24 to 32 inches; brown (10YR 5/3) loamy fine sand; many coarse faint dark yellowish brown (10YR 4/4) mottles; single grained; loose; moderately alkaline; clear wavy boundary.
Ab—32 to 60 inches; very dark gray (10YR 3/1) and dark gray (10YR 4/1) loamy fine sand; massive; friable; moderately alkaline.

Depth to the Ab horizon ranges from 24 to 40 inches below the surface. Conductivity ranges from 8 to 16 millimhos per centimeter throughout the control section. Reaction ranges from neutral to moderately alkaline throughout the profile. Shells and fragments of shells comprise from 0 to 15 percent of the weight of the soil. The texture is sand, loamy sand, or loamy fine sand throughout the profile.

A thin A1 horizon is in some pedons. It has hue of 10YR, value of 2 to 4, and chroma of 1 to 3.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. Mottles that have chroma of 1 or 2 are at a depth of from 10 to 40 inches below the surface.

The Ab horizon has hue of 10YR, 2.5Y, or 5Y, value of 2 to 4, and chroma of 1 to 3. Some pedons are underlain by loamy, clayey, or organic material at a depth of between 40 and 60 inches below the surface.

Kenner series

The Kenner series consists of very poorly drained, rapidly permeable, organic soils. These soils formed in herbaceous material in freshwater marshes. They are ponded and flooded most of the time. Elevation ranges from sea level to about 1 or 2 feet above sea level. Slope is less than 0.5 percent.

Soils of the Kenner series are euic, thermic Fluvaquentic Medisaprists.

Kenner soils commonly are near Allemands, Barbary, Lafitte, Larose, and Timbalier soils. The Allemands, Lafitte, and Timbalier soils are in positions similar to those of the Kenner soils, but they do not have thin strata of clay in the upper part of the profile. Barbary and Larose soils have thin organic surface layers and semifluid, clay underlying material.

Typical pedon of Kenner muck, 4.5 miles northeast of Raceland, 300 feet southwest of the camp on Foret Canal:

Oe1—0 to 10 inches; dark brown (10YR 4/3) mixed with very dark grayish brown (10YR 3/2) muck; about 75 percent fiber, 35 percent rubbed; massive; dominantly live roots; about 40 percent mineral; only water runs between fingers when squeezed; slightly acid; clear wavy boundary.

Oa1—10 to 36 inches; very dark grayish brown (10YR 3/2) muck; 12 percent fiber, 3 percent rubbed; massive; dominantly herbaceous fiber; about 65 percent mineral; neutral; clear wavy boundary.

Oa2—36 to 65 inches; very dark grayish brown (10YR 3/2) muck; 12 percent fiber, 3 percent rubbed; massive; dominantly herbaceous fiber; about 65 percent mineral; few coarse yellowish brown plant fragments; flows easily between fingers when squeezed leaving hand empty; few thin strata of semifluid, gray (5Y 5/1) clay; moderately alkaline; abrupt smooth boundary.

IICg—65 to 70 inches; very dark grayish brown (10YR 3/2) mucky clay; massive; flows easily between fingers when squeezed leaving hand empty; moderately alkaline; abrupt smooth boundary.

Depth to thick mineral layers ranges from 51 inches to more than 100 inches. The organic part of the soil is dominantly herbaceous material, and the mineral part is dominantly clay. Reaction of the organic layers ranges from slightly acid to neutral in the surface tier and from neutral to moderately alkaline in the subsurface and bottom tiers.

The surface tier, from 0 to 12 inches, has hue of 10YR or 7.5YR, value of 2 to 4, and chroma of 1 to 3. The rubbed fiber content ranges from 5 to 60 percent, and mineral content ranges from 40 to 70 percent. Some pedons have a thin clay overwash.

The subsurface and bottom tiers, from 12 to 51 inches have hue of 10YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2, or they are neutral. These layers typically consist of sapric material, but thin strata of hemic material are in some pedons. The mineral strata range in thickness from 1 millimeter to 25 centimeters and are dominantly clay.

The IICg horizon has hue of 5GY or 5Y, value of 4 or 5, and chroma of 1. It is semifluid clay, mucky clay, or silty clay.

Lafitte series

The Lafitte series consists of very poorly drained, rapidly permeable, saline, organic soils that formed in thick, herbaceous plant material. These soils are in brackish marshes. They are ponded and flooded most of the time. Elevation ranges from sea level to about 1 foot above sea level. Slope is less than 0.2 percent.

Soils of the Lafitte series are euic, thermic Typic Medisaprists.

Lafitte soils are similar to Kenner and Timbalier soils and commonly are near Clovelly soils. The Clovelly soils have thinner organic layers over mineral material than Lafitte soils. The Kenner soils are in freshwater marsh, are less saline, and have thin strata of clay within the organic layers. The Timbalier soils are more saline than Lafitte soils.

Typical pedon of Lafitte muck, in an area of Lafitte-Clovelly association, 3.75 miles east of Golden Meadow, 3,000 feet north of the end of Yankee Canal:

Oa1—0 to 11 inches; very dark grayish brown (10YR 3/2) muck; about 40 percent fiber, 15 percent rubbed; dominantly herbaceous fiber; about 50 percent mineral; massive; flows easily between fingers when squeezed leaving only coarse fibers and roots; many live roots; moderately alkaline; abrupt wavy boundary.

Oa2—11 to 55 inches; black (10YR 2/1) muck; about 30 percent fiber, 8 percent rubbed; dominantly herbaceous fibers; about 50 percent mineral; flows easily between fingers when squeezed leaving hand empty; moderately alkaline; clear smooth boundary.

Oa3—55 to 62 inches; very dark grayish brown (10YR 3/2) muck; about 50 percent fiber, 10 percent rubbed; dominantly herbaceous fibers; about 50 percent mineral; flows easily between fingers when squeezed leaving small residue in hand; moderately alkaline; clear wavy boundary.

Oa4—62 to 74 inches; black (10YR 2/1) muck; about 20 percent fiber, 10 percent rubbed; dominantly herbaceous fibers; about 60 percent mineral; flows easily between fingers when squeezed leaving hand empty; moderately alkaline; abrupt wavy boundary.

IICg—74 to 84 inches; gray (5Y 5/1) clay; about 10 percent coarse fibers dispersed in the mass; massive; flows easily between fingers when squeezed leaving hand empty; moderately alkaline.

Depth to mineral layers ranges from 51 inches to more than 100 inches. The organic part of the soil is dominantly herbaceous material, and the mineral part is dominantly clay. Reaction of the organic horizons ranges from neutral to moderately alkaline in the upper 12 inches. It is moderately alkaline below this depth. Conductivity ranges from 4 to 8 millimhos per centimeter throughout the profile.

The O horizon has hue of 7.5YR and 10YR, value of 2 to 4, and chroma of 1 or 2. Fiber content after rubbing is generally less than 10 percent in the subsurface and bottom tiers, but thin strata of hemic or fibric material are in some pedons. Mineral content ranges from 40 to 60 percent.

The IICg horizon has hue of 5Y and 5GY, value of 4 or 5, and chroma of 1. It is semifluid clay or silty clay. Some pedons have thin organic layers within the IICg horizon.

Larose series

The Larose series consists of very poorly drained, very slowly permeable, semifluid, mineral soils that formed in thin, herbaceous muck over clayey alluvium. These soils are in freshwater marshes that are ponded and flooded most of the time. Elevation ranges from sea level to about 1 foot above sea level. Slope is less than 0.2 percent.

Soils of the Larose series are very-fine, montmorillonitic, nonacid, thermic Typic Hydraquents.

Larose soils commonly are near Allemands, Barbary, Fausse, Kenner, Scatlake, and Sharkey soils. The Allemands soils have an organic surface layer that is more than 16 inches thick. Barbary soils are in nearby swamps and have stumps and logs within their profiles. Both Fausse and Sharkey soils are on slightly higher positions than Larose soils and have subsoils of firm, mineral material. The Kenner soils have an organic surface layer more than 51 inches thick. Rita soils are in positions similar to those of Larose soils and have a firm, clayey subsoil.

Typical pedon of Larose muck, in an area of Allemands-Larose association, 2 miles west of Raceland, 0.75 mile north of old Highway 90 on west side of McMahon Canal:

O2—0 to 5 inches; very dark gray (10YR 3/1) muck; about 20 percent fiber, 5 percent rubbed; massive; about 70 percent mineral; flows easily between fingers when squeezed leaving only roots and fiber in hand; medium acid; clear smooth boundary.

A1g—5 to 15 inches; dark gray (5Y 4/1) clay; few fine distinct yellowish brown mottles; massive; flows easily between fingers when squeezed leaving hand empty; many fine roots; slightly acid; clear wavy boundary.

C1g—15 to 36 inches; gray (5Y 5/1) clay; few medium distinct strong brown (7.5YR 5/6) mottles in root channels; massive; flows easily between fingers when squeezed leaving hand empty; few fine roots; neutral; abrupt smooth boundary.

C2g—36 to 47 inches; dark gray (N 4/0) clay; common fine faint olive mottles; massive; flows easily between fingers when squeezed leaving hand empty; 10 percent fiber that is evenly distributed throughout the soil mass; mildly alkaline; clear wavy boundary.

C3g—47 to 60 inches; greenish gray (5GY 5/1) clay; few fine faint olive mottles; massive; flows easily between fingers when squeezed leaving hand empty; moderately alkaline; clear wavy boundary.

C4g—60 to 84 inches; gray (5Y 5/1) clay; massive; flows easily between fingers when squeezed leaving hand empty; moderately alkaline.

All mineral horizons to a depth of 60 inches have an n value of 1 or more. Reaction ranges from medium acid to mildly alkaline in the O and A horizons and from slightly acid to moderately alkaline in the C horizon. Where this soil is drained, reaction of the O and A horizons ranges from extremely acid to medium acid.

The O horizon has hue of 10YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2. It is 2 to 15 inches thick.

The A horizon has hue of 10YR, 2.5Y or 5Y, value of 3 or 4, and chroma of 1 or 2, or it is neutral. It is clay, silty clay, or mucky clay.

The C horizon has hue of 10YR, 5Y, 5GY, or 5BG, value of 3 to 5, and chroma of 1 or 2, or it is neutral. It is clay, silty clay, or mucky clay. In some pedons thin organic layers are within the mineral layers.

Some pedons have a IIC horizon below a depth of 40 inches or more. It is fine sand or loamy sand.

Rita series

The Rita series consists of poorly drained, very slowly permeable, firm, mineral soils that have a subsoil that is permanently cracked in the upper part. These soils formed in thin, herbaceous material over clayey alluvium. They are in freshwater marshes that have been drained and protected from flooding. Elevation ranges from 2 to 6 feet below sea level. Slope is less than 0.5 percent.

Soils of the Rita series are very-fine, montmorillonitic, nonacid, thermic, cracked Hydric Fluvaquents.

Rita soils commonly are near Allemands, drained soils, and Rita Variant, Sharkey, and Tunica soils. Allemands, drained soils have organic layers that comprise more than one-half of the upper 32 inches of the profile. Rita Variant soils are in positions similar to those of the Rita soils and have control sections that are more acid. The Sharkey and Tunica soils are on higher positions than Rita soils and do not have permanent cracks in the subsoil.

Typical pedon of Rita muck, 2.75 miles southwest of Bayou Lafourche at Raceland, 300 feet south of Highway 90, 400 feet east of McMahon Canal, T. 16 S., R. 18 E.

O2—0 to 4 inches; black (10YR 2/1) muck; moderate fine and medium granular structure; friable; extremely acid; clear wavy boundary.

IIB21g—4 to 18 inches; gray (10YR 5/1) clay; common distinct streaks of strong brown (7.5YR 5/6) 2 to 3 millimeters wide along root channels and as patchy coatings on faces of peds; moderate medium subangular blocky structure; firm and plastic; common fine roots concentrated between peds; few fine tubular pores; few vertical cracks as much as 5 millimeters in diameter filled with black muck; extremely acid; clear boundary.

IIB22g—18 to 26 inches; gray (10YR 5/1) clay; many medium and coarse distinct strong brown (7.5YR 5/6) mottles and few coarse distinct dark brown (7.5YR 4/4) mottles on faces of peds; weak coarse subangular blocky structure; sticky and plastic; few fine tubular pores; medium acid; clear wavy boundary.

IIB23g—26 to 30 inches; greenish gray (5BG 5/1) clay; few fine distinct dark yellowish brown (10YR 4/4) mottles along root channels and on faces of peds; weak thick platy structure; firm; few fine tubular pores; polynonal network of cracks 1/2 -inch wide that are water bearing below a depth of 24 inches; surfaces of the cracks are strong brown (7.5YR 5/6) and have pits or craters 2 to 4 millimeters wide (solution cavities); neutral; clear wavy boundary.

IIC1g—30 to 43 inches; dark greenish gray (5GY 4/1) silty clay loam; massive; flows with moderate difficulty between fingers when squeezed leaving small residue; massive; moderately alkaline; gradual wavy boundary.

IIIC2g—43 to 68 inches; dark greenish gray (5GY 4/1) loamy very fine sand; massive; nonsticky; slight effervesence when treated with dilute hydrochloric acid; moderately alkaline.

The solum thickness ranges from 20 to 40 inches. Depth to a loamy or sandy IIC or IIIC horizon ranges from 30 to 60 inches. Depth to layers with n value of more than 0.7 ranges from 18 to 36 inches. The reaction of the A and O2 horizons ranges from extremely acid to slightly acid. The B horizon ranges from extremely acid to neutral, and the C horizon ranges from neutral to moderately alkaline.

The O2 or Ap horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. It is muck, mucky clay, or clay.

The IIBg horizon has hue of 10YR, 5Y, 5BG, 5GY or 5G, value of 3 to 5, and chroma of 1, or it is neutral. It is clay or silty clay. Some subhorizons of the IIBg horizon have vertical cracks that do not close when the soil is wet.

The IICg horizon has a color range similar to that of the IIBg horizon. It is clay, silty clay, or silty clay loam.

The IIICg horizon has hue of 10YR, 5Y, 5BG, 5GY, or 5G, value of 3 to 5, and chroma of 1 or 2, or it is neutral. It is silt loam, very fine sandy loam, fine sandy loam, or loamy very fine sand.

Rita Variant

The Rita Variant consists of poorly drained, very slowly permeable, firm, mineral soils that have permanent cracks in the upper part of the subsoil. These soils formed in thin, organic accumulations over clayey alluvium. They are in freshwater marshes that have been drained and protected from flooding. Elevation ranges from 2 to 3 feet below sea level. Slope is less than 0.5 percent.

Rita Variant differs from Rita soils in having a more acid control section.

Soils of the Rita Variant are very-fine, montmorillonitic, acid, thermic, cracked Hydric Fluvaquents.

Rita Variant soils commonly are near Allemands, drained, Rita, and Sharkey soils. Allemands, drained soils have a thicker organic surface layer than Rita Variant soils. Rita soils are more alkaline in the control section. The Sharkey soils are on higher positions and do not have permanent cracks in the subsoil.

Typical pedon of Rita Variant muck, north of South Lafourche High School in Galliano, at intersection of Avenue B and East 90th Street, on east bank of Bayou Lafourche:

O2p—0 to 4 inches; dark gray (10YR 4/1) muck; common medium faint dark yellowish brown (10YR 4/4) mottles; moderate medium granular structure; friable; extremely acid; abrupt wavy boundary.

A12—4 to 7 inches; very dark grayish brown (10YR 3/2) mucky clay; weak coarse subangular blocky structure; firm; extremely acid; clear wavy boundary.

IIB2g—7 to 3l inches; gray (10YR 5/l) clay; common medium distinct dark yellowish brown (10YR 4/4) clay; weak medium subangular blocky structure; firm; vertical cracks 5 millimeters wide at 30 to 50 centimeter intervals; walls of cracks stained strong brown; extremely acid; clear wavy boundary.

IIC1g—31 to 51 inches; gray (5Y 5/1) silt loam; massive; flows easily between fingers when squeezed leaving small residue; very strongly acid; abrupt wavy boundary.

IIIC2g—51 to 63 inches; dark gray (5Y 4/1) silt loam; massive; flows easily between fingers when squeezed leaving hand empty; neutral.

The solum thickness ranges from 20 to 40 inches. Depth to a loamy or sandy IIC or IIIC horizon ranges from 30 to 60 inches. Depth to layers with n value of more than 0.7 ranges from 18 to 36 inches. Reaction of the A or O horizons ranges from extremely acid to medium acid. The IIB horizon is extremely acid or very strongly acid. The IIC horizon is very strongly acid or strongly acid above a depth of 40 inches and ranges to moderately alkaline below this depth.

The O or A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. It is muck, mucky clay, or clay.

The IIBg horizon has hue of 10YR, 5Y, 5BG, 5GY or 5G, value of 3 to 5, and chroma of 1, or it is neutral. It is clay or silty clay. Vertical cracks in this horizon do not close when the soil is wet.

The IICg horizon has a color range similar to that of the IIBg horizon. It is clay, silty clay, or silty clay loam.

The IIICg horizon has a color range similar to that of the IIBg and IIICg horizons. It is silt loam, very fine sandy loam, fine sandy loam, or loamy very fine sand.

Scatlake series

The Scatlake series consists of very poorly drained, very slowly permeable, saline, semifluid, mineral soils. These soils are in saline marshes that are ponded and flooded most of the time. They formed in unconsolidated, clayey and organic sediment. Elevation ranges from sea level to about 1 foot above sea level. Slope is less than 0.5 percent.

Soils of the Scatlake series are very-fine, montmorillonitic, nonacid, thermic Typic Hydraquents.

Scatlake soils commonly are near Bellpass, Felicity, and Timbalier soils and are similar to Barbary and Larose soils. The Barbary soils are in swamps and are not so saline as Scatlake soils. Bellpass and Timbalier soils are organic soils. The Felicity soils are on coastal beach ridges and are firm and sandy. Larose soils are in freshwater marshes and are not so saline as Scatlake soils.

Typical pedon of Scatlake clay, in an area of Bellpass-Scatlake association, 8.5 miles south of Leeville, 2.7 miles south of Highway 1, 300 feet west of Highway 3090, sec. 13, T. 23 N., R. 22 E.

A1g—0 to 6 inches; dark gray (5Y 4/1) clay; common medium prominent dark yellowish brown (10YR 4/4) mottles; massive; plastic; flows easily between fingers when squeezed leaving moderate amount of residue in the hand; moderately alkaline; clear wavy boundary.

C1g—6 to 10 inches; dark greenish gray (5GY 4/1) clay; massive; few roots and fibers; flows easily between fingers when squeezed leaving hand empty; moderately alkaline; abrupt wavy boundary.

O2—10 to 13 inches; black (10YR 2/1) muck; 60 percent mineral; massive; flows easily between fingers when squeezed leaving hand empty; moderately alkaline; clear wavy boundary.

C2g—13 to 44 inches; dark gray (5Y 4/1) clay; massive; few fine roots and fibers; flows easily between fingers when squeezed leaving hand empty; moderately alkaline; clear wavy boundary.

IIC3g—44 to 84 inches; dark gray (5Y 4/1) fine sand and fine sandy loam; massive; flows easily between fingers when squeezed leaving hand empty; moderately alkaline.

Depth to firm layers commonly is more than 40 inches from the surface. Reaction is mildly alkaline or moderately alkaline throughout the profile. Electrical conductivity ranges from 8 to 16 millimhos per centimeter throughout the profile.

The A horizon has hue of 10YR or 5Y, value of 2 to 4, and chroma of 1, or it is neutral. It is clay or mucky clay. Many pedons have a muck or peat surface layer that is 2 to 8 inches thick.

The C horizon has hue of 5Y, 10YR, 5GB, or 5GY, value of 4 or 5, and chroma of 1, or it is neutral. It is semifluid clay or mucky clay.

Some pedons have a IIC horizon that is fine sand, fine sandy loam, or loamy fine sand. The IIC horizon has hue of 10YR, 2.5Y, or 5Y, and chroma of 1, or it is neutral.

The Scatlake soils in Lafourche Parish are taxadjuncts to the Scatlake series because they have a IIC horizon that contains more sand than is permitted for the defined range of the series. This difference, however, does not affect the use and management of the soils.

Sharkey series

The Sharkey series consists of poorly drained, very slowly permeable, firm, mineral soils that formed in clayey alluvium. These soils are on low and intermediate positions on the natural levees of Bayou Lafourche and its distributaries. Elevation ranges from about 1 foot to 5 feet above sea level. Slope is less than 1 percent.

Soils of the Sharkey series are very-fine, montmorillonitic, nonacid, thermic Vertic Haplaquepts.

Sharkey soils commonly are near Barbary, Commerce, Fausse, and Tunica soils. The Barbary soils are in swamps. They have an O horizon and n value of more than 0.7 in the control section. Commerce soils are on higher positions on the natural levees and are fine-silty. Fausse and Barbary soils do not have vertic properties and are in lower positions than Sharkey soils. The Tunica soils are in positions similar to those of the Sharkey soils and have loamy underlying material.

Typical pedon of Sharkey clay, 0.8 mile east of Highway 308 on Bowie Road, 120 feet north of electric pole number 41, sec. 29, T 15 S., R 18 E.

Ap1—0 to 2 inches; very dark grayish brown (10YR 3/2) clay; moderate medium subangular blocky structure; hard, firm, sticky, and plastic; slightly acid; abrupt wavy boundary.

Ap2—2 to 5 inches; very dark grayish brown (10YR 3/2) clay; massive; firm; gray (10YR 5/1) organic stains between compacted layers; slightly acid; abrupt wavy boundary.

Ap3—5 to 9 inches; dark gray (10YR 4/1) clay; common medium faint dark grayish brown (10YR 4/2) mottles; weak medium platy structure; very firm; dark thin layers of herbaceous residue between peds; mildly alkaline; abrupt wavy boundary.

B21g—9 to 14 inches; gray (10YR 5/1) and dark gray (10YR 4/1) clay; common medium faint dark yellowish brown (10YR 4/4) and common coarse distinct reddish brown (5YR 4/4) mottles; moderate fine angular blocky structure; firm; mildly alkaline; gradual smooth boundary.

B22g—14 to 26 inches; dark gray (5Y 4/1) clay; common medium distinct dark yellowish brown (10YR 4/4) mottles; moderate fine angular blocky structure; firm; plastic; mildly alkaline; gradual smooth boundary.

B23g—26 to 35 inches; dark gray (5Y 4/1) clay; common medium distinct dark brown (7.5YR 4/4) mottles; weak medium angular blocky structure; firm; plastic; mildly alkaline; clear smooth boundary.

B3—35 to 60 inches; dark gray (5Y 4/1) clay; common medium distinct dark brown (7.5YR 4/4) mottles; weak medium subangular blocky structure; firm; plastic; mildly alkaline.

The solum thickness ranges from 36 to 60 inches. Reaction ranges from medium acid to moderately alkaline in the A and B horizons and from neutral to moderately alkaline in the C horizon. Content of clay averages more than 60 percent in the control section. Cracks of 1 to 3 centimeters in width form to a depth of from 20 to 24 inches from the surface in most years.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. It is clay, silty clay, or silty clay loam.

The B and C horizons have hue of 10YR or 5Y, value of 4 or 5, and chroma of 1, or they are neutral. Thin layers of silty clay loam or silt loam are below the control section or within the control section in some pedons.

Timbalier series

The Timbalier series consists of very poorly drained, rapidly permeable, saline, organic soils. These soils formed in thick accumulations of decomposed, herbaceous plant material. They are in saline coastal marshes that are ponded and flooded most of the time. Elevation ranges from sea level to about 1 foot above sea level. Slope is less than 0.2 percent.

Soils of the Timbalier series are euic, thermic Typic Medisaprists.

Timbalier soils commonly are near Bellpass and Scatlake soils, and they are similar to Kenner and Scatlake soils. The organic Bellpass soils are moderately deep to mineral material. Kenner and Lafitte soils are not so saline as Timbalier soils. The Scatlake soils are semifluid, mineral soils.

Typical pedon of Timbalier muck, in an area of Timbalier-Bellpass association, 5 miles south of Golden Meadow, 4 miles east of Bayou Lafourche:

Oa1—0 to 6 inches; very dark grayish brown (10YR 3/2) muck; about 12 percent fiber, 5 percent rubbed; massive; flows easily between fingers when squeezed leaving small residue in the hand; about 60 percent mineral; few fine roots; moderately alkaline; clear smooth boundary.

Oa2—6 to 28 inches; very dark brown (10YR 2/2) muck; about 10 percent fiber, 5 percent rubbed; massive; flows easily between fingers when squeezed leaving hand empty; few fine live roots; dominantly herbaceous material; about 55 percent mineral; moderately alkaline; clear smooth boundary.

Oa3—28 to 48 inches, very dark grayish brown (10YR 3/2) muck; about 20 percent fiber, 8 percent rubbed; massive; flows easily between fingers when squeezed leaving hand empty; dominantly herbaceous material; about 60 percent mineral; moderately alkaline; clear smooth boundary.

Oa4—48 to 72 inches; dark brown (7.5YR 3/2) muck; very dark gray (10YR 3/1) pressed and rubbed; about 10 percent fiber, 6 percent rubbed; massive; flows easily between fingers when squeezed leaving hand empty; dominantly herbaceous material; about 65 percent mineral; moderately alkaline; abrupt smooth boundary.

IIC1g—72 to 78 inches; dark gray (5Y 4/1) mucky clay; massive; flows easily between fingers when squeezed leaving hand empty; moderately alkaline; abrupt smooth boundary.

IIC2g—78 to 84 inches; dark greenish gray (5GY 4/1) clay; massive; flows easily between fingers when squeezed leaving hand empty; moderately alkaline.

Depth to clayey mineral layers ranges from 51 inches to more than 100 inches. Reaction ranges from neutral to moderately alkaline in the surface layer and moderately alkaline below. The organic part of the soil is dominantly herbaceous, and the mineral part is dominantly clay. Conductivity ranges from 8 to 16 millimhos per centimeter in some layers within a depth of 40 inches from the surface.

The surface tier to a depth of 12 inches has hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 1 or 2. Fiber content, after rubbing, ranges from 1 to 35 percent. The average content of mineral material ranges from 30 to 70 percent. Some pedons have a thin overwash of mineral material on the surface that ranges in thickness from 2 to 16 inches.

The organic material in the subsurface tier from a depth of 12 to 36 inches and the bottom tier from a depth of 36 to 51 inches have hue of 7.5YR or 10YR, value of 1 to 3, and chroma of 1 to 3. The content of fiber, after rubbing, ranges from 1 to 10 percent of the organic volume.

The IICg horizon has hue of 5Y, 5G, or 5GY, value of 4 to 6, and chroma of 1, or it is neutral. It is clay or silty clay. Thin layers of silt loam or fine sand are in the IICg

horizon in some pedons. Some pedons have a IIAb horizon.

Tunica series

The Tunica series consists of poorly drained, very slowly permeable, firm, mineral soils that formed in clayey alluvium over loamy alluvium. These soils are on the lower parts of natural levees along Bayou Lafourche and its distributaries. They are flooded frequently. Elevation ranges from 1 foot to 3 feet above sea level. Slope is less than 1 percent.

Soils of the Tunica series are clayey over loamy, montmorillonitic, nonacid, thermic Vertic Haplaquepts.

Tunica soils commonly are near Commerce and Sharkey soils. Commerce soils are on slightly higher positions than Tunica soils and are fine-silty. Sharkey soils are in positions similar to those of the Tunica soils and have a very-fine control section.

Typical pedon of Tunica clay, frequently flooded, at Golden Meadow, 0.5 mile east of Bayou Lafourche, 600 feet north of Yankee Canal:

A1—0 to 5 inches; very dark grayish brown (10YR 3/2) clay; weak medium subangular blocky structure; firm; slightly acid; clear wavy boundary.

B2—5 to 22 inches; dark gray (10YR 4/1) clay; common medium faint dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; firm; mildly alkaline; abrupt smooth boundary.

IIC1—22 to 41 inches; grayish brown (10YR 5/2) silt loam; common fine faint yellowish brown mottles; massive; friable; mildly alkaline; abrupt smooth boundary.

IIC2—41 to 60 inches; dark grayish brown (10YR 4/2) silty clay loam; few fine faint dark yellowish brown mottles; firm; mildly alkaline.

The solum thickness and depth to loamy layers range from 20 to 36 inches. Reaction ranges from medium acid to mildly alkaline in the solum and from medium acid to moderately alkaline in the IIC horizon.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The B2 horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1, or it is neutral. The A and B2 horizons are clay or silty clay.

The IIC horizon has hue of 10YR or 5Y, value of 4 or 5, and chroma of 1 or 2, or it is neutral. It is fine sandy loam, loam, silty clay loam, or silt loam.

Vacherie series

The Vacherie series consists of somewhat poorly drained, very slowly permeable, firm, mineral soils that formed in loamy alluvium over clayey alluvium. These soils are on high and intermediate positions on the natural levees along Bayou Lafourche and its distributaries. Elevation ranges from 1 foot to 10 feet above sea level. Slope is less than 1 percent.

Soils of the Vacherie series are coarse-silty over clayey, mixed, nonacid, thermic Aeric Fluvaquents.

Vacherie soils commonly are near Commerce and Sharkey soils. Commerce soils are in positions similar to those of the Vacherie soils, and they do not have clayey underlying material. The poorly drained Sharkey soils are in lower positions than Vacherie soils and have more clay in the upper part of the profile.

Typical pedon of Vacherie silt loam, 3 miles northwest of Valentine, 800 feet northeast of Highway 308, in a subdivision:

Ap1—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; weak medium subangular blocky structure; very friable; neutral; abrupt wavy boundary.

Ap2—8 to 13 inches; dark grayish brown (10YR 4/2) silt loam; common medium faint brown (10YR 5/3) and dark yellowish brown (10YR 4/4) mottles; weak thick platy structure; very friable; neutral; abrupt wavy boundary.

B21—13 to 22 inches; grayish brown (10YR 5/2) very fine sandy loam; many coarse distinct yellowish brown (10YR 5/4) mottles; weak thick platy structure; very friable; mildly alkaline; abrupt smooth boundary.

IIB22g—22 to 44 inches; gray (10YR 5/1) clay; common medium distinct dark brown (7.5YR 4/4) mottles; weak coarse subangular blocky structure; firm; mildly alkaline; clear smooth boundary.

IIB23g—44 to 54 inches; gray (N 5/0) clay; common medium distinct dark brown (7.5YR 4/4) mottles; weak coarse subangular blocky structure; firm, sticky and plastic; mildly alkaline; clear smooth boundary.

IIB24g—54 to 65 inches; gray (N 5/0) clay; common medium distinct dark yellowish brown (10YR 4/4) and common medium faint greenish gray (5BG 5/1) mottles; weak coarse subangular blocky structure; firm, sticky and plastic; mildly alkaline; clear smooth boundary.

Thickness of the loamy upper part of the solum ranges from 20 to 36 inches. Reaction ranges from neutral to moderately alkaline in the A horizon. It is mildly alkaline or moderately alkaline in the B2 and IIB2g horizons.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. It is silt loam or very fine sandy loam.

The B2 horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2. It is silt loam or very fine sandy loam.

The IIB2g horizon is clay or silty clay. It has hue of 10YR, 2.5Y, or 5Y, value of 4 or 5, and chroma of 1, or it is neutral.

formation of the soils

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This section explains the processes and factors of soil formation and relates them to the soils in the survey area.

processes of soil formation

The processes of soil formation influence the kind and degree of development of soil horizons. The factors of soil formation include climate, living organisms, relief, parent material, and time. These factors determine the rate and relative effectiveness of the different processes.

Important soil forming processes are those that result in (1) additions of organic, mineral, and gaseous materials to the soil; (2) losses of these same materials from the soil; (3) translocation of material from one point to another within the soil; and (4) physical and chemical transformation of mineral and organic material within the soil (*8*).

Many processes occur simultaneously, for example, the accumulation of organic matter, the development of soil structure, and the leaching of bases from some soil horizons. The contribution of a particular process may change over a period of time. The installation of drainage and water control systems, for example, can change the length of time soils are flooded or saturated with water. Some important processes that have contributed to formation of soils in Lafourche Parish are discussed in the following paragraphs.

Organic matter has accumulated and has been partially decomposed and incorporated in all soils. These organic accumulations range from the humus of the Commerce and Sharkey soils to the peats and mucks of the Allemands and Barbary soils of the marshes and swamps. Because most organic matter is produced in and above the surface layer, the surface layer is higher in organic matter content than the deeper horizons. Living organisms decompose, incorporate, and mix organic residue into the soil. Some of the more stable products contribute to darker colors, increased water-holding and cation-exchange capacities, and granulation in the soil.

Processes resulting in the development of soil structure have occurred in most of the mineral soils. Plant roots and other organisms contribute to rearrangement of the soil material into secondary aggregates. The decomposition products of organic residue and the secretions of organisms serve as cementing agents that help to stabilize these structural aggregates. Alternate wetting and drying as well as shrinking and swelling contribute to the development of structural aggregates and particularly effect the soils that have appreciable amounts of clay. Consequently, soil structure is typically most pronounced in clayey B horizons and in surface horizons that contain the most organic matter.

Most of the soils mapped in Lafourche Parish have horizons in which the reduction of iron and manganese compounds is an important process. Reducing conditions prevail for long periods in poorly aerated horizons. Consequently, the relatively soluble reduced forms of iron and manganese predominate over the less soluble oxidized forms. The reduced compounds of these elements result in the gray colors in the Bg and Cg horizons that are characteristic of many of these soils. In the more soluble reduced form, appreciable amounts of iron and manganese can be removed from the soils or translocated from one position to another within the soil by water.

Water moving through the soil has leached many soluble components, including any free carbonates that may have been present initially, from the upper horizons of some of the mineral soils in the parish. The carbonates and other more readily soluble salts have been moved to lower horizons in the better drained, loamy soils, such as Commerce soils. In general, the permanently wet soils of the marshes and swamps have been leached very little. Areas of organic soils, however, are readily leached during unusual and extended dry periods or when they are artificially drained.

factors of soil formation

Soils are natural, three-dimensional bodies that formed on the earth's surface and that have properties resulting from the integrated effect of climate and living matter acting on parent material, as conditioned by relief over periods of time.

The interaction of five main factors influences the processes of soil formation and results in differences among the soils. These factors are the physical and chemical composition of the parent material; the kind of plants and other organisms living in and on the soil; the relief of the land and its effect on runoff and soil temperature and moisture conditions; and the length of time it took the soil to form.

The effect of any one factor can differ from place to place, but the interaction of all of these factors determines the kind of soil that forms. Many of the differences in soils cannot be attributed to differences in the effects of only one factor. For example, the organic matter content in the soils of Lafourche Parish is influenced by several factors including relief, parent material, and living organisms. The following paragraphs describe the factors of soil formation as they relate to soils in the survey area.

climate

Lafourche Parish has the subtropical, humid climate that is characteristic of areas near the Gulf of Mexico. This warm, moist climate has promoted rapid soil

formation. Climate is uniform throughout the parish, although its effect is modified locally by relief. The minor climate differences within the parish are not considered to be of enough significance to create soil differences. More detailed information about the climate is in the climate section "General Nature of the Survey Area.'

living organisms

Living organisms, including plants, bacteria, fungi, and animals, are important in the formation of soils. Among the chemical and physical changes they cause are gains in content of plant nutrients and changes in structure and porosity. Plant roots force openings into the soil and modify porosity. As they grow, they break up and rearrange the soil particles. These plants transfer nutrients from the subsoil to the surface layer and supply humus to the soils when they die. Bacteria decomposes organic matter and helps improve the physical condition of the soil. Animals, such as crawfish and earthworms, also influence soil formation by mixing the soil. When the animals die, they form humus, which is a source of nutrients.

Man's activities, such as cultivation, fertilization, channel construction, harvesting, burning, draining, diking, flooding, and land smoothing, affect the soil. Some soils of Lafourche Parish have been changed significantly by man's activities. The Rita and Rita Variant soils were partly formed as a result of artificial drainage. The native vegetation and the associated complex communities of bacteria and fungi generally have had a greater influence on soil formation in this parish than other living organisms.

The soils of the natural levees along streams formed under forest vegetation.

Soils of the marsh formed under grass and sedge vegetation (*4*). The thick layers of organic material of Lafitte and Kenner soils accumulated in fresh water. As the land surface subsided, the area was flooded with fresh water from rains and runoff. Maidencane, alligatorweed, bulltongue, cattail, and southern wildrice were some of the freshwater plants that formed the organic material. The buildup of organic material kept pace with subsidence. Further land subsidence and sea level rise introduced seawater over the area (*3*). With the change in salinity, brackish marsh types of vegetation became established, namely, marshhay cordgrass, coastal waterhyssop, dwarf spikerush, and Olney bulrush. The Clovelly and Lafitte soils formed in organic material that accumulated in areas that are now brackish.

Further flooding by saline seawater in areas near the Gulf Coast changed the vegetation to the saline marsh type. Saltwort, needlegrass rush, smooth cordgrass, and Virginia samphire are some of the plants of the saline marsh. The Bellpass and Timbalier soils formed in organic material accumulated in areas that are now saline.

parent material

Parent material is the unconsolidated mass in which soil forms. It determines the chemical and mineralogical composition of the soils. It also influences the degree of leaching, the reaction, texture, permeability, and drainage, and the kind and color of the surface and subsoil layers. Textural differences in parent material are accompanied by differences in chemical and mineral composition. In general, soils that form in loamy and sandy parent material have a lower capacity to hold nutrients than those that form in clay.

Soils of Lafourche Parish formed in alluvial and marine sediment and accumulations of organic material.

The alluvium is from distributary streams of a former delta of the Mississippi River (*7*). Bordering the stream channels are low ridges called natural levees. These levees are highest next to the channels and slope gradually away from it. The levees are shaped by the loss of velocity of waters that overspread the streambanks (*6*). When the water slows, it first drops sand, then silt, and finally clay particles. Thus, the soils on the higher parts of natural levees formed in loamy material that has a moderate sand content. These soils are generally lighter colored, more permeable, and better drained than the soils on the lower part and beyond the natural levees. Examples are Commerce and Vacherie soils. On the lower part of the natural levees and beyond the natural levees in the backswamps is the clayey sediment dropped from slowly moving or still water. Sharkey and Fausse soils formed in this type of material. The Larose and Scatlake soils also formed in clayey alluvium, but they contain some marine sediment.

The Felicity soils formed in sandy material on former beach ridges deposited by the wave action of the sea.

The organic material accumulates in areas that are saturated or flooded with water. Water prevents the complete oxidation and decomposition of the plant residue. Water, vegetation, and time coupled to a sea level rise and land subsidence created the conditions from which thick layers of organic material accumulated in the marshes of Lafourche Parish. The buildup of organic material kept pace with land subsidence and sea level rise. The Kenner and Lafitte soils formed in thick accumulations of herbaceous organic material. The Allemands and Clovelly soils formed in moderately thick accumulations of herbaceous organic material over clayey alluvium.

relief

Lafourche Parish, a part of the broad delta of the Mississippi River, is generally level. A large part of the land area is in marshes and swamps on a flat plain lying at about the level of the Gulf of Mexico. This broad plain slopes imperceptibly toward the Gulf. It is broken by low, narrow ridges and by bays and lakes and their slightly elevated shorelines. The higher natural levee ridges and

the lowlands between the ridges are mainly along Bayou Lafourche. These ridges are 1 foot to 15 feet high. They are generally level or have slopes of 1 percent or less. The fine texture of the soils, the flatness of the land, and the low elevations above the Gulf all contribute to the poor drainage that is characteristic of most of the parish.

time

The kinds of horizons and their degree of development within a soil are influenced by the length of time of soil formation. Long periods of time are generally required for soils to form prominent horizons.

In general, the soils of Lafourche Parish are young. Time has been too short for distinct horizons to have developed. However, soils on the natural levees of streams, such as Commerce, Sharkey, Tunica, and Vacherie soils, have been influenced by soil forming processes long enough to have developed faintly differentiated horizons. Evidence of this development is a darkening of the A horizon by organic matter and a weakly developed B horizon. These soils developed in alluvium thought to be about 2,000 years old (*7*).

The youngest soils in the parish have little, if any, profile development. For example, Felicity soils have developed neither a darkened A horizon nor a B horizon. The Allemands and Bellpass soils are also young and show little evidence of profile development. These soils, which are in the marshes, are forming in recent accumulations of herbaceous organic material and alluvium.

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glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	More than 12

Base saturation. The degree to which material having cation exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation exchange capacity.

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

Bottom land. The normal flood plain of a stream, subject to flooding.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Chiseling. Tillage with an implement having one or more soil-penetrating points that loosen the subsoil and bring clods to the surface. A form of emergency tillage to control soil blowing.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Coarse textured soil. Sand or loamy sand.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or arresting grazing for a prescribed period.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grains are grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients in adequate amounts and in proper balance for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fine textured soil. Sandy clay, silty clay, and clay.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark colored, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.20 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Salty water (in tables.) Water that is too salty for consumption by livestock.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and runoff water.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsides. Settlement of organic soils or of soils containing semifluid layers.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1955-77 at New Orleans, Louisiana)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days[1]	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January	61.5	42.6	52.0	81	19	186	4.73	2.06	6.89	6	.0
February	64.8	44.7	54.8	82	25	207	5.23	2.99	7.04	6	.1
March	71.1	51.3	61.2	84	31	361	4.66	1.82	6.96	6	.0
April	78.6	58.8	68.7	88	39	561	3.90	1.29	5.97	5	.0
May	84.4	65.1	74.8	92	50	769	5.01	2.27	7.23	6	.0
June	89.0	70.4	79.7	95	58	891	4.89	2.52	6.83	7	.0
July	90.4	73.1	81.8	97	67	986	6.25	4.42	7.94	10	.0
August	89.5	72.7	81.1	96	64	964	6.19	3.20	8.63	9	.0
September	86.3	69.6	78.0	94	56	840	6.32	2.83	9.16	7	.0
October	79.2	59.0	69.1	90	40	592	2.84	.98	4.34	4	.0
November	70.1	49.9	60.0	84	30	310	3.94	1.15	6.19	6	.0
December	64.2	44.9	54.6	82	23	199	5.39	3.28	7.27	7	.1
Yearly:											
Average	77.4	58.5	68.0	---	---	---	---	---	---	---	---
Extreme	---	---	---	97	19	---	---	---	---	---	---
Total	---	---	---	---	---	6,866	59.35	48.45	69.71	79	.2

[1] A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50° F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1955-77 at New Orleans, Louisiana)

Probability	Temperature		
	24° F or lower	28° F or lower	32 ° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	February 10	February 26	March 25
2 years in 10 later than--	February 1	February 17	March 15
5 years in 10 later than--	January 8	January 30	February 25
First freezing temperature in fall:			
1 year in 10 earlier than--	December 16	November 22	November 13
2 years in 10 earlier than--	December 28	December 2	November 20
5 years in 10 earlier than--	January 31	December 22	December 5

TABLE 3.--GROWING SEASON

(Data recorded in the period 1955-77 at New Orleans, Louisiana)

Probability	Daily minimum temperature during growing season		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	326	281	245
8 years in 10	340	294	258
5 years in 10	>365	322	282
2 years in 10	>365	>365	306
1 year in 10	>365	>365	319

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AE	Allemands muck	73,533	8.5
Am	Allemands muck, drained	10,590	1.2
AN	Allemands-Larose association	49,551	5.7
BB	Barbary-Fausse association	89,295	10.3
BE	Bellpass-Scatlake association	17,357	2.0
Cm	Commerce silt loam	34,875	4.0
Co	Commerce silty clay loam	17,675	2.0
FA	Fausse-Sharkey association	28,305	3.3
FE	Felicity loamy fine sand, frequently flooded	1,104	0.1
KE	Kenner muck	34,387	4.0
LA	Lafitte-Clovelly association	58,250	6.7
Ra	Rita muck	30,725	3.5
Rv	Rita Variant muck	1,490	0.2
SA	Scatlake muck	21,363	2.5
SC	Scatlake-Felicity complex	2,811	0.3
Sh	Sharkey silty clay loam	4,970	0.6
Sk	Sharkey clay	37,540	4.3
Sr	Sharkey clay, occasionally flooded	17,990	2.1
TB	Timbalier-Bellpass association	195,027	22.6
Tn	Tunica clay, frequently flooded	1,660	0.2
Va	Vacherie silt loam	1,550	0.2
	Water	135,872	15.7
	Total	865,920	100.0

TABLE 5.---YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield figure indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Soil name and map symbol	Sugarcane	Soybeans	Corn	Rice	Common bermudagrass	Improved bermudagrass
	Ton	Bu	Bu	Bu	AUM*	AUM*
AE---------- Allemands	---	---	---	---	---	---
Am---------- Allemands	---	---	---	---	10.3	---
AN**: Allemands----------	---	---	---	---	---	---
Larose----------	---	---	---	---	---	---
BB**: Barbary----------	---	---	---	---	---	---
Fausse----------	---	---	---	---	---	---
BE**: Bellpass----------	---	---	---	---	---	---
Scatlake----------	---	---	---	---	---	---
Cm---------- Commerce	35	40	95	---	8.0	12.9
Co---------- Commerce	35	40	85	---	7.5	12.9
FA**: Fausse----------	---	---	---	---	---	---
Sharkey----------	---	---	---	---	5.0	---
FE---------- Felicity	---	---	---	---	---	---
KE---------- Kenner	---	---	---	---	---	---
LA**: Lafitte----------	---	---	---	---	---	---
Clovelly----------	---	---	---	---	---	---
Ra---------- Rita	---	---	---	---	10.3	---
Rv---------- Rita Variant	---	---	---	---	10.3	---
SA---------- Scatlake	---	---	---	---	---	---
SC**: Scatlake----------	---	---	---	---	---	---
Felicity----------	---	---	---	---	---	---
Sh, Sk---------- Sharkey	30	40	---	130	6.5	10.3
Sr---------- Sharkey	---	30	---	---	4.3	---

See footnotes at end of table.

TABLE 5.---YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Sugarcane	Soybeans	Corn	Rice	Common bermudagrass	Improved bermudagrass
	Ton	Bu	Bu	Bu	AUM*	AUM*
TB**: Timbalier	---	---	---	---	---	---
Bellpass	---	---	---	---	---	---
Tn** Tunica	---	---	---	---	4.3	---
Va Vacherie	33	40	85	---	8.0	12.9

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)			
		Erosion (e)	Wetness (w)	Soil problem (s)	Climate (c)
		Acres	Acres	Acres	Acres
I	---	---	---	---	---
II	54,100	---	54,100	---	---
III	73,235	---	73,235	---	---
IV	30,070	---	30,070	---	---
V	8,453	---	8,453	---	---
VI	---	---	---	---	---
VII	333,736	---	333,736	---	---
VIII	230,448	---	230,448	---	---

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Soil name and map symbol	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	
BB*:							
Barbary	4w6	Slight	Severe	Severe	Baldcypress	---	Baldcypress.
					Water tupelo	60	
					Black willow	---	
Fausse	4w6	Slight	Severe	Severe	Baldcypress	---	Baldcypress.
					Water hickory	---	
					Overcup oak	---	
					Water tupelo	---	
Cm, Co	1w5	Slight	Moderate	Slight	Green ash	80	Eastern cottonwood,
Commerce					Eastern cottonwood	120	American sycamore.
					Nuttall oak	90	
					Water oak	110	
					Pecan	---	
					American sycamore	---	
					Sweetgum	---	
FA*:							
Fausse.	4w6	Slight	Severe	Severe	Water tupelo	---	Baldcypress.
					Baldcypress	---	
					Water hickory	---	
					Overcup oak	---	
Sharkey	3w6	Slight	Severe	Severe	Green ash	---	Eastern cottonwood.
					Eastern cottonwood	---	
					Overcup oak	---	
					Black willow	---	
Sh, Sk	2w6	Slight	Severe	Moderate	Green ash	85	Eastern cottonwood,
Sharkey					Eastern cottonwood	100	American sycamore.
					Cherrybark oak	90	
					Sweetgum	90	
					Water oak	---	
					Pecan	---	
					American sycamore	---	
Sr	3w6	Slight	Severe	Severe	Sweetgum	---	Eastern cottonwood.
Sharkey					Green ash	---	
					Eastern cottonwood	---	
					Water oak	---	
					Water hickory	---	
Tn*	3w6	Slight	Severe	Moderate	Cherrybark oak	90	Eastern cottonwood,
Tunica					Eastern cottonwood	105	American sycamore.
					Green ash	100	
					Nuttall oak	105	
					Sweetgum	---	
Va	1w5	Slight	Moderate	Slight	Green ash	---	Eastern cottonwood,
Vacherie					Eastern cottonwood	120	American sycamore.
					Sweetgum	110	
					American sycamore	---	
					Pecan	---	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AE Allemands	Severe: flooding, ponding, percs slowly.	Severe: ponding, excess humus, percs slowly.	Severe: flooding, excess humus, ponding.	Severe: ponding, excess humus.	Severe: flooding, ponding, excess humus.
Am Allemands	Severe: flooding, percs slowly, excess humus.	Severe: excess humus, percs slowly.	Severe: excess humus, percs slowly.	Severe: excess humus.	Severe: excess humus.
AN*: Allemands	Severe: flooding, ponding, percs slowly.	Severe: ponding, excess humus, percs slowly.	Severe: flooding, excess humus, ponding.	Severe: ponding, excess humus.	Severe: flooding, ponding, excess humus.
Larose	Severe: flooding, percs slowly, too clayey.	Severe: flooding, too clayey, percs slowly.	Severe: excess humus, flooding, percs slowly.	Severe: ponding, too clayey, excess humus.	Severe: flooding, ponding, excess humus.
BB*: Barbary	Severe: flooding, ponding, percs slowly.	Severe: ponding, excess humus, percs slowly.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.
Fausse	Severe: flooding, ponding, percs slowly.	Severe: ponding, too clayey, excess humus.	Severe: too clayey, excess humus, ponding.	Severe: ponding, too clayey, excess humus.	Severe: ponding, flooding, too clayey.
BE*: Bellpass	Severe: ponding, percs slowly, flooding.	Severe: ponding, excess humus, percs slowly.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: flooding, excess humus, excess salt.
Scatlake	Severe: flooding, ponding, percs slowly.	Severe: ponding, too clayey, excess humus.	Severe: excess humus, ponding, too clayey.	Severe: ponding, too clayey, excess humus.	Severe: excess salt, ponding, flooding.
Cm Commerce	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Severe: erodes easily.	Moderate: wetness.
Co Commerce	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
FA*: Fausse	Severe: flooding, ponding, percs slowly.	Severe: ponding, too clayey, excess humus.	Severe: too clayey, excess humus, ponding.	Severe: ponding, too clayey, excess humus.	Severe: ponding, flooding, too clayey.
Sharkey	Severe: flooding, wetness, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness, flooding.	Severe: wetness, too clayey.	Severe: wetness, flooding, too clayey.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
FE Felicity	Severe: flooding, too sandy, excess salt.	Severe: too sandy, excess salt.	Severe: too sandy, excess salt, flooding.	Severe: too sandy.	Severe: excess salt, flooding, droughty.
KE Kenner	Severe: flooding, percs slowly, excess humus.	Severe: ponding, excess humus, percs slowly.	Severe: flooding, excess humus, percs slowly.	Severe: ponding, excess humus.	Severe: flooding, ponding, excess humus.
LA*: Lafitte	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus, excess salt.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: excess salt, ponding, flooding.
Clovelly	Severe: flooding, ponding, percs slowly.	Severe: ponding, excess humus, percs slowly.	Severe: flooding, excess humus, ponding.	Severe: ponding, flooding, excess humus.	Severe: flooding, ponding, excess humus.
Ra Rita	Severe: flooding, wetness, percs slowly.	Severe: excess humus, percs slowly.	Severe: excess humus, wetness.	Severe: excess humus.	Severe: excess humus.
Rv Rita Variant	Severe: flooding, wetness, percs slowly.	Severe: excess humus, percs slowly.	Severe: excess humus, wetness, percs slowly.	Severe: excess humus.	Severe: excess humus.
SA Scatlake	Severe: flooding, ponding, percs slowly.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: excess salt, ponding, flooding.
SC*: Scatlake	Severe: flooding, ponding, percs slowly.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: excess salt, ponding, flooding.
Felicity	Severe: flooding, too sandy, excess salt.	Severe: too sandy, excess salt.	Severe: too sandy, excess salt, flooding.	Severe: too sandy.	Severe: excess salt, flooding, droughty.
Sh Sharkey	Severe: flooding, wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Sk Sharkey	Severe: flooding, wetness, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: wetness, too clayey.	Severe: wetness, too clayey.
Sr Sharkey	Severe: flooding, wetness, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: wetness, too clayey.	Severe: wetness, too clayey.
TB*: Timbalier	Severe: ponding, excess humus, excess salt.	Severe: ponding, excess humus, excess salt.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus, flooding.	Severe: excess salt, ponding, excess humus.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
TB*: Bellpass	Severe: ponding, percs slowly, flooding.	Severe: ponding, excess humus, percs slowly.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: flooding, excess humus, excess salt.
Tn* Tunica	Severe: flooding, percs slowly, too clayey.	Severe: too clayey, percs slowly.	Severe: too clayey, flooding, percs slowly.	Severe: too clayey.	Severe: flooding, too clayey.
Va Vacherie	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--NATIVE PLANTS ON SELECTED SOILS IN MARSH

Soil series	Type of marsh	Scientific name	Common name
Bellpass	Saline	Ammannia teres	Ammannia
Scatlake		Avicennia nitida	Black-mangrove
Timbalier		Batis maritima	*Saltwort
		Borrichia frutescens	*Bushy sea-oxeye
		Croton punctatus	Gulf croton
		Distichlis spicata	*Seashore slatgrass
		Ipomocea stolonifera	Beach morningglory
		Iva frutescens	Bigleaf sumpweed
		Juncus roemerianus	*Needlegrass rush
		Salicornia virginica	Virginia samphire
		Spartina alterniflora	*Smooth cordgrass
		Spartina patens	*Marshhay cordgrass
Clovelly	Brackish	Amaranthus cuspidata	Southern waterhemp
Lafitte		Aster tenuifolius	Saline aster
		Bacopa monnieri	*Coastal waterhyssop
		Cuscuta indecora	Bigseed alfalfa dodder
		Cyperus odoratus	Fragrant flatsedge
		Echinochloa walteri	Coast cockspur
		Eleocharis parvula	*Dwarf spikerush
		Eleocharis sp.	Spikesedge
		Heliotropium curassavicum	Salt heliotrope
		Hibiscus lasiocarpus	Woolly rosemallow
		Ipomoea sagittata	*Saltmarsh morningglory
		Kosteletzkya virginica	Virginia saltmarsh mallow
		Leptochloa fasciculatus	Bearded sprangletop
		Lythrum lineare	Wand lythrum
		Myriophyllum spicatum	Water milfoil
		Panicum amarulum	Shoredune panicum
		Paspalum vaginatum	Seashore paspalum
		Phragmites communis	Common reed
		Pluchea camphorata	Camphor pluchea
		Potamogeton pectinatus	Sago pondweed
		Ruppia maritima	Widgeongrass
		Scirpus olneyi	*Olney bulrush

See footnote at end of table.

TABLE 9.--NATIVE PLANTS ON SELECTED SOILS IN MARSHES--Continued

Soil series	Type of marsh	Scientific name	Common name
Clovelly	Brackish	Scirpus robustus	Saltmarsh bulrush
Lafitte		Sesbania exaltata	Hemp sesbania
		Spartina cynosuroides	Big cordgrass
		Spartina patens	*Marshhay cordgrass
		Vigna luteola	Hairypod cowpea
Allemands	Freshwater	Acer rubrum drummondii	Drummond maple
Kenner		Alternanthera philoxeroides	*Alligatorweed
Larose		Ambrosia trifida	Giant ragweed
		Andropogon glomeratus	Bushy bluestem
		Axonopus affinis	Common carpetgrass
		Baccharis halimifolia	Eastern baccharis
		Bacopa caroliniana	Carolina waterhyssop
		Bidens laebis	Smooth beggartick
		Carex sp.	Sedge
		Cephalanthus occidentalis	Common buttonbush
		Cerotophyllum demersum	Coontail
		Cirsium sp.	Thistle
		Cladium jamaicense	Jamaica sawgrass
		Colocasia antiquorom	Elephant ears
		Cyperus iria	Ricefield flatsedge
		Daubentonia punicea	Rattlebox
		Decodon verticillatus	Swamp loosestrife
		Dichromena colorata	Starrush whitetop (white-topped sedge)
		Dryopteris thelypteris	Marshfern
		Echinochloa crusgalli	Barnyardgrass
		Eichhornia crassipes	Water hyacinth
		Eupatorium capillifolium	Dogfennel
		Hydrocotyle ranunculoides	Floating pennywort
		Hypericum virginicum	Virginia St. Johnswort
		Hyptis alata	Bushmint
		Iva ciliata	Seacoast sumpweed
		Juncus effusus	*Common rush
		Lemna minor	Common duckweed
		Magnolia virginiana	Sweetbay

See footnote at end of table.

TABLE 9.--NATIVE PLANTS ON SELECTED SOILS IN MARSHES--Continued

Soil series	Type of marsh	Scientific name	Common name
Allemands	Freshwater	Myrica cerifera	Waxmyrtle
Kenner		Najas quadalupensis	Southern waternymph
Larose		Nuphar advena	Spatterdock cowlily
		Nymphaea odorata	American waterlily
		Osmunda regalis	Royal fern
		Panicum hemitomon	*Maidencane
		Phyla lanceolata	Lanceleaf fogfruit
		Phyla nodiflora	Turkey tangle fogfruit
		Polygonum hydropiperoides	*Swamp knotweed
		Pontederia cordata	*Pickerelweed
		Sabal louisiana	Louisiana palmetto
		Sacciolepis striata	American cupscale
		Sagittaria lancifolia	*Bulltongue
		Sagittaria sp.	Arrowhead
		Salix nigra	Black willow
		Saururus cernuus	Lizard tail
		Scirpus californicus	California bulrush
		Scirpus validus	Softstem bulrush
		Sesbania exaltata	Hemp sesbania
		Setaria geniculata	Knotroot bristlegrass
		Setaria magna	Giant bristlegrass
		Typha sp.	*Cattail
		Wolffiella floridana	Florida mudmidget
		Zizaniopsis miliacea	*Southern wildrice

*Most common plants in each type of marsh.

TABLE 10.--WILDLIFE HABITAT

[See next definitions of "good,""fair," " very poor." Absense of an entry indicates that the soil was not rated.]

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hard-wood trees	Shrubs	Wetland plants	Shallow water areas	Open-land wild-life	Wood-land wild-life	Wetland wild-life
AE---------- Allemands	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Very poor.	Very poor.	Very poor.	Good.
Am---------- Allemands	Poor	Fair	Fair	Fair	Fair	Good	Very poor.	Fair	Fair	Good.
AN*:										
Allemands---------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Very poor.	Very poor.	Very poor.	Good.
Larose----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
BB*:										
Barbary----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Poor	Very poor.	Very poor.	Good.
Fausse----------	Very poor.	Very poor.	Very poor.	Poor	Poor	Good	Good	Very poor.	Poor	Good.
BE*:										
Bellpass----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Scatlake----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Cm, Co---------- Commerce	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
FA*:										
Fausse----------	Very poor.	Very poor.	Very poor.	Poor	Poor	Good	Good	Very poor.	Poor	Good.
Sharkey----------	Poor	Fair	Fair	Good	Good	Fair	Fair	Poor	Fair	Fair.
FE---------- Felicity	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	---	Very poor.	Very poor.	
KE---------- Kenner	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Very poor.	Very poor.	Very poor.	Good.
LA*:										
Lafitte----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Very poor.	Very poor.	Very poor.	Good.
Clovelly----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Ra---------- Rita	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Rv---------- Rita Variant	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Sa---------- Scatlake	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
SC*:										
Scatlake----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.

See footnote at end of table.

TABLE 10.-WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
SC*:										
Felicity	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.
Sh, Sk Sharkey	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good.
Sr Sharkey	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good
TB*:										
Timbalier	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Bellpass	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
TN* Tunica	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Va Vacherie	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AE---------- Allemands	Severe: excess humus, ponding.	Severe: flooding, shrink-swell, low strength.	Severe: flooding, ponding, low strength.	Severe: flooding, low strength, ponding.	Severe: flooding, ponding, excess humus.
Am---------- Allemands	Severe: excess humus.	Severe: flooding, shrink-swell, low strength.	Severe: flooding, low-strength.	Severe: low strength.	Severe: excess humus.
AN*: Allemands--------	Severe: excess humus, ponding.	Severe: flooding, shrink-swell, low strength.	Severe: flooding, ponding, low strength.	Severe: flooding, low strength, ponding.	Severe: flooding, ponding, excess humus.
Larose----------	Severe: too clayey, excess humus, ponding.	Severe: flooding, shrink-swell, low strength.	Severe: flooding, shrink-swell, low strength.	Severe: low strength, ponding, shrink-swell.	Severe: flooding, ponding, excess humus.
BB*: Barbary----------	Severe: excess humus, ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding, excess humus.
Fausse----------	Severe: ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding, too clayey.
BE*: Bellpass---------	Severe: excess humus, ponding.	Severe: flooding, shrink-swell, low strength.	Severe: flooding, ponding, low strength.	Severe: flooding, low strength, ponding.	Severe: flooding, excess humus, excess salt.
Scatlake---------	Severe: excess humus, ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: low strength, ponding, flooding.	Severe: excess salt, ponding, flooding.
Cm, Co---------- Commerce	Severe: wetness.	Moderate: wetness, shrink-swell.	Moderate: wetness, shrink-swell.	Severe: low strength.	Moderate: wetness.
FA*: Fausse----------	Severe: ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding, too clayey.
Sharkey----------	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding, too clayey.
FE---------- Felicity	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: excess salt, flooding, droughty.

See footnote at end of table.

TABLE 11.-BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
KE---------- Kenner	Severe: excess humus, ponding.	Severe: flooding, low strength, ponding.	Severe: flooding, low strength, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding, excess humus.
LA*:					
Lafitte----------	Severe: excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding, low strength.	Severe: ponding, flooding, low strength.	Severe: ponding, flooding.
Clovelly---------	Severe: excess humus, ponding.	Severe: flooding, shrink-swell, low strength.	Severe: flooding, ponding, low strength.	Severe: flooding, low strength, ponding.	Severe: flooding, ponding, excess humus.
Ra---------- Rita	Severe: too clayey, wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: low strength, shrink-swell.	Severe: excess humus.
Rv---------- Rita Variant	Severe: cutbanks cave, wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: low strength, shrink-swell.	Severe: excess humus.
SA---------- Scatlake	Severe: excess humus, ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: low strength, ponding, flooding.	Severe: excess salt, ponding, flooding.
SC*:					
Scatlake---------	Severe: excess humus, ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: low strength, ponding, flooding.	Severe: excess salt, ponding, flooding.
Felicity---------	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: excess salt, flooding, droughty.
Sh---------- Sharkey	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: low strength, wetness.	Severe: wetness.
Sk---------- Sharkey	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: low strength, wetness.	Severe: wetness, too clayey.
Sr---------- Sharkey	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: low strength, wetness, flooding.	Severe: wetness, too clayey.
TB*:					
Timbalier---------	Severe: excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding, low strength.	Severe: low strength, ponding, flooding.	Severe: excess salt, ponding, excess humus.
Bellpass---------	Severe: excess humus, ponding.	Severe: flooding, shrink-swell, low strength.	Severe: flooding, ponding, low strength.	Severe: flooding, low strength, ponding.	Severe: flooding, excess humus, excess salt.

See footnote at end of table.

TABLE 11.-BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Tn*---------- Tunica	Severe: wetness.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: low strength, flooding, shrink-swell.	Severe: flooding, too clayey.
Va---------- Vacherie	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, shrink-swell.	Moderate: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AE Allemands	Severe: flooding, ponding, percs slowly.	Severe: ponding, seepage, excess humus.	Severe: ponding, too clayey, excess humus.	Severe: flooding, seepage, ponding.	Poor: too clayey, ponding, excess humus.
Am Allemands	Severe: percs slowly.	Severe: seepage, excess humus.	Severe: too clayey, excess humus.	Severe: seepage.	Poor: too clayey, excess humus.
AN*: Allemands	Severe: flooding, ponding, percs slowly.	Severe: ponding, seepage, excess humus.	Severe: ponding, too clayey, excess humus.	Severe: flooding, seepage, ponding.	Poor: too clayey, ponding, excess humus.
Larose	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding, excess humus.	Severe: flooding, ponding, excess humus.	Severe: flooding, ponding.	Poor: too clayey, ponding, excess humus.
BB*: Barbary	Severe: flooding, ponding, percs slowly.	Severe: flooding, excess humus, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
Fausse	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
BE*: Bellpass	Severe: flooding, ponding, percs slowly.	Severe: ponding, seepage, excess humus.	Severe: ponding, too clayey, excess humus.	Severe: flooding, seepage, ponding.	Poor: too clayey, ponding, excess humus.
Scatlake	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
Cm, Co Commerce	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: thin layer.
FA*: Fausse	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
Sharkey	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
FE Felicity	Severe: flooding, poor filter, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness, seepage.	Poor: seepage.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
KE---------- Kenner	Severe: flooding, percs slowly.	Severe: flooding, seepage, excess humus.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: ponding, excess humus.
LA*: Lafitte----------	Severe: flooding, ponding.	Severe: seepage, flooding, excess humus.	Severe: flooding, ponding, excess humus.	Severe: flooding, seepage, ponding.	Poor: ponding, excess humus.
Clovelly----------	Severe: flooding, ponding, percs slowly.	Severe: ponding, seepage, excess humus.	Severe: ponding, too clayey, excess humus.	Severe: flooding, seepage, ponding.	Poor: too clayey, ponding, excess humus.
Ra---------- Rita	Severe: wetness, percs slowly.	Severe: flooding, wetness.	Severe: wetness, too clayey.	Severe: seepage, wetness.	Poor: wetness, too clayey, hard to pack.
Rv---------- Rita Variant	Severe: wetness, percs slowly.	Severe: flooding, excess humus, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
SA---------- Scatlake	Severe: flooding, ponding, percs slowly.	Severe: flooding, excess humus, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
SC*: Scatlake----------	Severe: flooding, ponding, percs slowly.	Severe: flooding, excess humus, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
Felicity----------	Severe: flooding, poor filter, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness, seepage.	Poor: seepage.
Sh, Sk---------- Sharkey	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Sr---------- Sharkey	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
TB*: Timbalier----------	Severe: flooding, ponding.	Severe: ponding, seepage, excess humus.	Severe: ponding, excess humus, excess salt.	Severe: flooding, seepage, ponding.	Poor: ponding, excess humus, excess salt.
Bellpass----------	Severe: flooding, ponding, percs slowly.	Severe: ponding, seepage, excess humus.	Severe: ponding, too clayey, excess humus.	Severe: flooding, seepage, ponding.	Poor: too clayey, ponding, excess humus.
Tn*---------- Tunica	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Va---------- Vacherie	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AE, Am---------- Allemands	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
AN*: Allemands----------	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
Larose----------	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess humus, wetness.
BB*: Barbary----------	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
Fausse----------	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
BE*: Bellpass----------	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness, excess salt.
Scatlake----------	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt, wetness.
Cm---------- Commerce	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
Co---------- Commerce	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, thin layer.
FA*: Fausse----------	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Sharkey----------	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
FE---------- Felicity	Fair: wetness.	Probable----------	Improbable: too sandy.	Poor: excess salt.
KE---------- Kenner	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
LA*:				
Lafitte	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, excess salt, wetness.
Clovelly	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
Ra Rita	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus.
Rv Rita Variant	Fair: wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus.
SA Scatlake	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, excess salt, wetness.
SC*:				
Scatlake	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, excess salt, wetness.
Felicity	Fair: wetness.	Probable	Improbable: too sandy.	Poor: excess salt.
Sh Sharkey	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Sk, Sr Sharkey	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
TB*:				
Timbalier	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, excess salt, wetness.
Bellpass	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness, excess salt.
Tn* Tunica	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Va Vacherie	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated]

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
AE---------- Allemands	Slight---------	Severe: piping, ponding, excess humus.	Slight---------	Flooding, percs slowly, subsides.	Flooding, ponding, percs slowly.	Wetness, percs slowly.
Am---------- Allemands	Slight---------	Severe: piping, excess humus.	Slight---------	Percs slowly, subsides.	Fast intake, percs slowly.	Wetness, percs slowly.
AN*: Allemands--------	Slight---------	Severe: piping, ponding, excess humus.	Slight---------	Flooding, percs slowly, subsides.	Flooding, ponding, percs slowly.	Wetness, percs slowly.
Larose----------	Slight---------	Severe: excess humus, hard to pack, ponding.	Severe: slow refill.	Percs slowly, flooding, subsides.	Flooding, percs slowly, ponding.	Wetness, percs slowly.
BB*: Barbary----------	Slight---------	Severe: excess humus, hard to pack, ponding.	Severe: slow refill.	Ponding, percs slowly, subsides.	Ponding, percs slowly, flooding.	Wetness, percs slowly.
Fausse----------	Slight---------	Moderate: hard to pack, ponding.	Severe: slow refill.	Severe: percs slowly, flooding.	Ponding, slow intake, percs slowly.	Wetness, percs slowly.
BE*: Bellpass---------	Slight---------	Severe: piping, ponding, excess humus.	Moderate: salty water.	Flooding, percs slowly, subsides.	Flooding, percs slowly, excess salt.	Wetness, percs slowly, excess salt.
Scatlake---------	Slight---------	Severe: excess humus, hard to pack, ponding.	Severe: slow refill.	Flooding, percs slowly, subsides.	Ponding, percs slowly, excess salt.	Wetness, percs slowly, excess salt.
Cm---------- Commerce	Moderate: seepage.	Severe: thin layer, wetness.	Severe: slow refill.	Favorable------	Wetness, erodes easily.	Erodes easily.
Co---------- Commerce	Moderate: seepage.	Severe: thin layer, wetness.	Severe: slow refill.	Favorable------	Wetness--------	Erodes easily.
FA*: Fausse----------	Slight---------	Severe: hard to pack, ponding.	Severe: slow refill.	Ponding, percs slowly, flooding.	Ponding, slow intake, percs slowly.	Wetness, percs slowly.
Sharkey----------	Slight---------	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, flooding.	Wetness, slow intake, percs slowly.	Wetness, percs slowly.
FE---------- Felicity	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Flooding, cutbanks cave, excess salt.	Wetness, fast intake, droughty.	Excess salt, droughty.
KE---------- Kenner	Severe: seepage.	Severe: excess humus, ponding.	Severe: slow refill.	Flooding, percs slowly, subsides.	Flooding, ponding, percs slowly.	Wetness.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
LA*: Lafitte	Severe: seepage.	Severe: excess humus, ponding.	Severe: slow refill.	Ponding, flooding, subsides.	Ponding, flooding, percs slowly.	Wetness, excess salt.
Clovelly	Slight	Severe: piping, ponding, excess humus.	Slight	Flooding, percs slowly, subsides.	Flooding, ponding, percs slowly.	Wetness, percs slowly, excess salt.
Ra Rita	Slight	Severe: wetness, hard to pack.	Severe: slow refill.	Percs slowly, subsides.	Wetness, fast intake, percs slowly.	Wetness, percs slowly.
Rv Rita Variant	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, subsides.	Wetness, fast intake, percs slowly.	Wetness, percs slowly.
SA Scatlake	Slight	Severe: excess humus, hard to pack, ponding.	Severe: slow refill.	Ponding, percs slowly, subsides.	Ponding, percs slowly, excess salt.	Wetness, excess salt.
SC*: Scatlake	Slight	Severe: excess humus, hard to pack, ponding.	Severe: slow refill.	Ponding, percs slowly, subsides.	Ponding, percs slowly. excess salt.	Wetness, excess salt.
Felicity	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Flooding, cutbanks cave, excess salt.	Wetness, fast intake, droughty.	Excess salt, droughty.
Sh Sharkey	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly	Wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Sk Sharkey	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly	Wetness, slow intake, percs slowly.	Wetness, percs slowly.
Sr Sharkey	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, flooding.	Wetness, slow intake, percs slowly.	Wetness, percs slowly.
TB*: Timbalier	Severe: seepage.	Severe: excess humus, ponding.	Moderate: salty water.	Flooding, subsides, excess salt.	Ponding, flooding, excess salt.	Wetness, excess salt.
Bellpass	Slight	Severe: piping, ponding, excess humus.	Moderate: salty water.	Flooding, percs slowly, subsides.	Flooding, percs slowly, excess salt.	Wetness, percs slowly, excess salt.
Tn* Tunica	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Percs slowly, flooding.	Wetness, slow intake, percs slowly.	Percs slowly.
Va Vacherie	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly	Wetness, percs slowly, erodes easily.	Wetness, erodes easily, percs slowly.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
AE	0-18	Muck	PT	A-8	0	---	---	---	---	---	---
Allemands	18-72	Clay, mucky clay	MH, OH	A-7-5	0	100	100	95-100	80-100	65-90	30-50
Am	0-20	Muck	PT	A-8	0	---	---	---	---	---	---
Allemands	20-60	Clay, mucky clay	MH, OH	A-7-5	0	100	100	95-100	80-100	65-90	30-50
AN*:											
Allemands	0-48	Muck	PT	A-8	0	---	---	---	---	---	---
	48-84	Clay, mucky clay	MH, OH	A-7-5	0	100	100	95-100	80-100	65-90	30-50
Larose	0-5	Muck	PT	A-8	0	---	---	---	---	---	---
	5-15	Clay, silty clay, mucky clay.	OH, MH, CH	A-7-5, A-7-6	0	100	100	100	90-100	60-87	30-52
	15-84	Clay, silty clay, mucky clay.	OH, MH, CH	A-7-5, A-7-6	0	100	100	100	90-100	60-87	30-52
BB*:											
Barbary	0-2	Muck	PT	A-8	0	---	---	---	---	---	---
	2-62	Mucky clay, clay	OH, MH	A-7-5, A-8	0	100	100	100	95-100	70-90	35-45
Fausse	0-5	Clay	CH, OH, MH	A-7-6, A-7-5	0	100	100	100	95-100	50-100	21-71
	5-38	Clay	CH	A-7-6, A-7-5	0	100	100	100	95-100	60-100	31-71
	38-60	Clay, silty clay, silty clay loam.	CH, MH, CL, ML	A-7-6, A-7-5	0	100	100	100	95-100	45-100	16-71
BE*:											
Bellpass	0-30	Muck	PT	A-8	0	---	---	---	---	---	---
	30-74	Clay, silty clay	CH, MH, CL	A-7-6, A-7-5	0	100	100	100	90-100	47-87	30-52
Scatlake	0-6	Clay	OH, MH	A-7-5	0	100	100	100	95-100	55-90	15-45
	6-44	Clay	MH, OH	A-7-5	0	100	100	100	95-100	70-90	35-45
	44-84	Fine sand, fine sandy loam.	SM, SC, SC-SM	A-2,A-4	0	100	100	65-85	30-50	<20	NP-10
Cm	0-9	Silt loam	CL-ML, CL, ML	A-4	0	100	100	100	75-100	<30	NP-10
Commerce	9-36	Silty clay loam, silt loam, loam.	CL	A-6, A-7-6	0	100	100	100	85-100	32-45	11-23
	36-60	Stratified very fine sandy loam to silty clay.	CL-ML, CL, ML	A-4, A-6, A-7-6	0	100	100	100	75-100	23-45	3-23
Co	0-11	Silty clay loam	CL	A-6, A-7-6	0	100	100	100	90-100	32-50	11-25
Commerce	11-60	Silty clay loam, silt loam, loam.	CL	A-6, A-7-6	0	100	100	100	85-100	32-45	11-23
FA*:											
Fausse	0-5	Clay	CH, OH, MH	A-7-6, A-7-5	0	100	100	100	95-100	50-100	21-71
	5-60	Clay	CH	A-7-6, A-7-5	0	100	100	100	95-100	60-100	31-71
Sharkey	0-6	Clay	CH, CL	A-7-6, A-7-5	0	100	100	100	95-100	46-85	22-50
	6-41	Clay	CH	A-7-6, A-7-5	0	100	100	100	95-100	56-85	30-50
	41-60	Clay, silty clay loam, silt loam.	CL, CH	A-6, A-7-6, A-7-5	0	100	100	100	95-100	32-85	11-50

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
FE---------- Felicity	0-60	Loamy fine sand	SP-SM, SM	A-2, A-3	0-10	85-100	75-100	51-80	5-30	<20	NP-4
KE---------- Kenner	0-65	Muck----------	PT	A-8	0	---	---	---	---	---	---
	65-70	Clay, silty clay, mucky clay.	MH, OH	A-7-5	0	100	100	100	95-100	70-100	30-55
LA*:											
Lafitte----------	0-74	Muck----------	PT	A-8	0	---	---	---	---	---	---
	74-84	Clay, silty clay, silty clay loam.	MH, CH, ML, CL	A-7-5, A-7-6	0	100	100	90-100	80-100	45-100	16-60
Clovelly--------	0-36	Muck----------	PT	A-8	0	---	---	---	---	---	---
	36-84	Clay, silty clay, mucky clay.	CH, CL, MH	A-7-6, A-7-5	0	100	100	95-100	85-95	47-87	25-50
Ra---------- Rita	0-4	Muck----------	PT	A-8	---	---	---	---	---	---	---
	4-30	Clay, silty clay	CH, MH	A-7-6, A-7-5	0	100	100	100	95-100	60-90	35-52
	30-43	Clay, silty clay, silty clay loam.	CH, MH	A-7-6, A-7-5	0	100	100	100	95-100	55-85	26-52
	43-68	Silt loam, fine sandy loam, loamy very fine sand.	ML, CL, SM, SC	A-4, A-6	0	100	100	70-95	40-90	<38	NP-20
Rv---------- Rita Variant	0-4	Muck----------	PT	A-8	---	---	---	---	---	---	---
	4-7	Clay, silty clay, mucky clay.	CH, MH	A-7-6, A-7-5	0	100	100	100	95-100	60-90	35-52
	7-31	Clay, silty clay, silty clay loam.	CH, MH	A-7-6, A-7-5	0	100	100	100	95-100	55-85	26-52
	31-63	Silt loam, fine sandy loam, loamy very fine sand.	ML, CL, SM, SC	A-4, A-6	0	100	100	70-95	40-90	<38	NP-20
SA---------- Scatlake	0-2	Muck----------	PT	A-8	0	---	---	---	---	---	---
	2-60	Clay----------	MH, OH	A-7-5	0	100	100	100	95-100	70-90	35-45
SC*:											
Scatlake--------	0-8	Muck----------	PT	A-8	0	---	---	---	---	---	---
	8-48	Mucky clay, clay, mucky silty clay loam.	OH, MH	A-7-5	0	100	100	100	95-100	55-90	15-45
	48-60	Fine sand, fine sandy loam.	SM, SC, SC-SM	A-2, A-4	0	100	100	15-85	30-50	<20	NP-10
Felicity--------	0-60	Loamy fine sand	SP-SM, SM	A-2, A-3	0-10	85-100	75-100	51-80	5-30	<20	NP-4
Sh---------- Sharkey	0-12	Silty clay loam	CL	A-6, A-7-6	0	100	100	100	95-100	32-50	11-25
	12-44	Clay----------	CH	A-7-6, A-7-5	0	100	100	100	95-100	56-85	30-50
	44-60	Clay, silty clay loam, silt loam.	CL, CH	A-6, A-7-6, A-7-5	0	100	100	100	95-100	32-85	11-50
Sk---------- Sharkey	0-9	Clay----------	CH, CL	A-7-6, A-7-5	0	100	100	100	95-100	46-85	22-50
	9-35	Clay----------	CH	A-7-6, A-7-5	0	100	100	100	95-100	56-85	30-50
	35-60	Clay, silty clay loam, silt loam.	CL, CH	A-6, A-7-6, A-7-5	0	100	100	100	95-100	32-85	11-50

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Sr	0-7	Clay	CH, CL	A-7-6, A-7-5	0	100	100	100	95-100	46-85	22-50
Sharkey	7-46	Clay	CH	A-7-6, A-7-5	0	100	100	100	95-100	56-85	30-50
	46-60	Clay, silty clay loam, silt loam.	CL, CH	A-6, A-7-6, A-7-5	0	100	100	100	95-100	32-85	11-50
TB*:											
Timbalier	0-72	Muck	PT	A-8	0	---	---	---	---	---	---
	72-84	Mucky clay, clay, silty clay.	OH, CH, CL	A-7-6, A-7-5	0	100	100	100	90-100	47-87	25-52
Bellpass	0-26	Muck	PT	A-8	0	---	---	---	---	---	---
	26-32	Mucky clay	OH, MH, CH, CL	A-7-5, A-7-6	0	100	100	100	90-100	47-87	30-52
	32-74	Clay, silty clay	CH, MH, CL	A-7-6, A-7-5	0	100	100	100	90-100	47-87	30-52
Tn*	0-5	Clay	CH	A-7	0	100	98-100	95-100	90-100	50-92	25-62
Tunica	5-22	Clay, silty clay	CH	A-7	0	100	98-100	95-100	90-100	50-92	25-62
	22-60	Fine sandy loam, silt loam, silty clay loam.	ML, CL-ML, CL	A-4, A-6	0	100	95-100	65-100	51-100	<40	NP-20
Va	0-22	Silt loam, very fine sandy loam.	ML, CL-ML	A-4	0	100	100	95-100	65-100	<27	NP-7
Vacherie	22-65	Clay, silty clay	CH	A-7-6	0	100	100	100	95-100	51-75	26-45

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Organic matter
									K	T	
	In	Pct	G/cm³	In/hr	In/in	pH	Mmhos/cm				Pct
AE	0-18	---	0.05-0.25	>2.0	0.20-0.50	5.1-7.3	<4	Low	---	---	30-70
Allemands	18-72	60-95	0.25-1.00	<0.06	0.14-0.18	6.1-8.4	<4	Very high	0.32		
Am	0-20	---	0.15-0.50	>6.0	0.20-0.50	3.6-5.5	<4	Low	---	---	30-70
Allemands	20-60	60-95	0.15-1.00	<0.06	0.14-0.18	4.5-8.4	<4	Very high	0.32		
AN*:											
Allemands	0-48	---	0.05-0.25	>2.0	0.20-0.50	5.1-7.3	<4	Low	---	---	30-70
	48-84	60-95	0.15-1.00	<0.06	0.14-0.18	6.1-8.4	<4	Very high	0.32		
Larose	0-5	---	0.05-0.25	>2.0	0.20-0.50	5.6-7.8	<4	Low	---	---	30-70
	5-15	50-80	0.15-1.00	<0.06	0.14-0.18	5.6-7.8	<4	Very high	0.28		
	15-84	50-80	0.15-1.00	<0.06	0.14-0.18	6.1-8.4	<4	Very high	0.28		
BB*:											
Barbary	0-2	45-90	0.05-0.25	2.0-6.0	0.20-0.50	6.1-7.8	<2	Low	---	---	30-70
	2-62	60-95	0.15-1.00	<0.06	0.18-0.20	6.6-8.4	<2	Very high	0.37		
Fausse	0-5	40-95	0.8-1.45	<0.06	0.18-0.20	5.6-7.3	<2	Very high	0.20	5	2-15
	5-38	60-95	1.10-1.45	<0.06	0.18-0.20	6.6-8.4	<2	Very high	0.24		
	38-60	35-95	1.10-1.45	<0.2	0.18-0.22	6.6-8.4	<2	Very high	0.24		
BE*:											
Bellpass	0-30	---	0.15-0.50	>2.0	0.15-0.40	6.6-8.4	8-16	Low	---	---	30-60
	30-74	50-90	0.60-1.35	<0.06	0.10-0.17	7.4-8.4	4-16	Very high	0.28		
Scatlake	0-6	27-60	0.25-1.00	<0.2	0.10-0.17	7.4-8.4	8-16	Very high	0.24	5	2-25
	6-44	60-85	0.25-1.00	<0.06	0.10-0.17	7.4-8.4	8-16	Very high	0.28		
	44-84	4-15	1.50-1.70	2.0-6.0	0.10-0.17	7.4-8.4	8-16	Low	0.20	---	
Cm	0-9	14-27	1.35-1.65	0.6-2.0	0.21-0.23	5.6-7.8	<2	Low	0.43	5	.5-2
Commerce	9-36	14-39	1.35-1.70	0.2-0.6	0.20-0.22	6.1-8.4	<2	Moderate	0.32		
	36-60	14-60	1.35-1.75	0.2-2.0	0.20-0.23	6.6-8.4	<2	Low	0.37		
Co	0-11	27-39	1.35-1.70	0.2-0.6	0.20-0.22	5.6-7.8	<2	Moderate	0.37	5	.5-2
Commerce	11-60	14-39	1.35-1.70	0.2-0.6	0.20-0.22	6.1-8.4	<2	Moderate	0.32		
FA*:											
Fausse	0-5	40-95	0.8-1.45	<0.06	0.18-0.20	5.6-7.3	<2	Very high	0.20	5	2-15
	5-60	60-95	1.10-1.45	<0.06	0.18-0.20	6.6-8.4	<2	Very high	0.24		
Sharkey	0-6	40-60	1.20-1.50	<0.06	0.18-0.20	5.6-8.4	<2	Very high	0.32	5	.5-2
	6-41	60-90	1.20-1.50	<0.06	0.18-0.20	5.6-8.4	<2	Very high	0.28		
	41-60	25-90	1.20-1.75	0.06-0.2	0.18-0.22	6.6-8.4	<2	High	0.28		
FE	0-60	3-10	1.50-1.70	>20	0.03-0.06	6.6-8.4	8-16	Low	0.15	5	<.5
Felicity											
Ke	0-65	---	0.05-0.25	>2.0	0.20-0.50	6.1-8.4	<4	Low	---	---	30-60
Kenner	65-70	45-85	0.15-1.00	<0.06	0.12-0.50	6.6-8.4	<4	High	0.32		
LA*:											
Lafitte	0-74	---	0.05-0.25	2.0-6.0	0.18-0.45	6.6-8.4	4-8	Low	---	---	30-70
	74-84	30-85	0.25-1.00	<0.06	0.11-0.18	6.6-8.4	4-8	High	0.32		
Clovelly	0-36	---	0.05-0.25	>2.0	0.18-0.45	6.6-8.4	4-8	Low	---	---	30-60
	36-84	50-90	0.15-1.00	<0.06	0.11-0.18	7.4-8.4	4-8	Very high	0.28		
Ra	0-4	---	0.15-0.50	2.0-6.0	0.20-0.50	3.6-6.5	<4	High	---	---	30-70
Rita	4-30	60-95	1.20-1.70	<0.06	0.11-0.18	3.6-7.3	<4	High	0.37		
	30-43	60-95	0.25-1.00	<0.06	0.15-0.30	6.6-8.4	<4	Very high	0.37		
	43-68	5-27	0.25-1.00	0.2-2.0	0.11-0.30	6.6-8.4	<4	Moderate	0.32		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Organic matter
									K	T	
	In	Pct	G/cm^3	In/hr	In/in	pH	Mmhos/cm				Pct
Rv	0-4	---	0.15-0.50	2.0-6.0	0.20-0.50	3.6-6.0	<4	High	---	---	30-70
Rita Variant	4-7	60-95	1.20-1.70	<0.06	0.11-0.18	3.6-6.0	<4	High	0.37		
	7-31	60-95	0.25-1.00	<0.06	0.15-0.30	3.6-5.0	<4	Very high	0.37		
	31-63	5-27	0.25-1.00	0.2-2.0	0.11-0.30	4.5-8.4	<4	Moderate	0.32		
SA	0-2	---	0.05-0.25	>2.0	0.15-0.40	7.4-8.4	8-16	---	---	---	30-70
Scatlake	2-60	60-85	0.25-1.00	<0.06	0.10-0.17	7.4-8.4	8-16	Very high	0.28		
SC*:											
Scatlake	0-8	---	0.05-0.25	>2.0	0.15-0.40	7.4-8.4	8-16	---	---	---	30-70
	8-48	27-60	0.25-1.00	<0.2	0.05-0.15	7.4-8.4	8-16	Very high	0.24		
	48-60	4-15	1.50-1.70	2.0-6.0	0.10-0.17	7.4-8.4	8-16	Low			
Felicity	0-60	3-10	1.50-1.70	>20	0.03-0.06	6.6-8.4	8-16	Low	0.15	5	<.5
Sh	0-12	27-35	1.40-1.75	0.2-0.6	0.20-0.22	5.6-8.4	<2	Moderate	0.37	5	.5-2
Sharkey	12-44	60-90	1.20-1.50	<0.06	0.18-0.20	5.6-8.4	<2	Very high	0.28		
	44-60	25-90	1.20-1.75	0.06-0.2	0.18-0.22	6.6-8.4	<2	High	0.28		
Sk	0-9	40-60	1.20-1.50	<0.06	0.18-0.20	5.6-8.4	<2	Very high	0.32	5	.5-2
Sharkey	9-35	60-90	1.20-1.50	<0.06	0.18-0.20	5.6-8.4	<2	Very high	0.28		
	35-60	25-90	1.20-1.75	0.06-0.2	0.18-0.22	6.6-8.4	<2	High	0.28		
Sr	0-7	40-60	1.20-1.50	<0.06	0.18-0.20	5.6-8.4	<2	Very high	0.32	5	.5-2
Sharkey	7-46	60-90	1.20-1.50	<0.06	0.18-0.20	5.6-8.4	<2	Very high	0.28		
	46-60	25-90	1.20-1.75	0.06-0.2	0.18-0.22	6.6-8.4	<2	High	0.28		
TB*:											
Timbalier	0-72	---	0.05-0.25	>2.0	0.15-0.40	6.6-8.4	8-16	Low	---	---	30-70
	72-84	50-80	0.15-1.00	<0.06	0.10-0.17	7.9-8.4	4-16	Very high	0.28		
Bellpass	0-26	---	0.05-0.25	>2.0	0.15-0.40	6.6-8.4	8-16	Low	---	---	30-60
	26-32	50-90	0.15-1.00	<0.06	0.13-0.25	7.4-8.4	8-16	High	0.28		
	32-74	50-90	0.15-1.00	<0.06	0.10-0.17	7.4-8.4	4-16	Very high	0.28		
Tn*	0-5	35-75	1.45-1.55	<0.06	0.15-0.20	5.6-7.8	<2	High	0.32	5	---
Tunica	5-22	35-75	1.45-1.55	<0.06	0.15-0.20	5.6-7.8	<2	High	0.32		
	22-60	10-32	1.40-1.50	0.06-2.0	0.10-0.22	5.6-8.4	<2	Low	0.32		
Va	0-22	10-18	1.35-1.70	0.6-2.0	0.20-0.23	6.6-8.4	<2	Low	0.49	5	.5-2
Vacherie	22-65	40-65	1.10-1.45	<0.06	0.18-0.20	7.4-8.4	<2	Very high	0.32		

* See description of the map unit for composition and behavior characteristics of the map unit

TABLE 17.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than;> means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Initial	Total	Uncoated steel	Concrete
					Ft			In	In		
AE---------- Allemands	D	Frequent----	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	8-25	16-51	High-----	Moderate.
Am---------- Allemands	D	Rare--------	---	---	2-4.0	Apparent	Jan-Dec	8-25	16-51	High-----	High.
AN*:											
Allemands--------	D	Frequent----	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	8-25	16-51	High-----	Moderate.
Larose----------	D	Frequent----	Very long	Jan-Dec	+2-0.5	Apparent	Jan-Dec	2-12	5-15	High-----	Moderate.
BB*:											
Barbary----------	D	Frequent----	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	3-12	6-15	High-----	Moderate.
Fausse----------	D	Frequent----	Very long	Jan-Dec	+1-1.5	Apparent	Jan-Dec	---	---	High-----	Low.
BE*:											
Bellpass---------	D	Frequent----	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	8-25	6-51	High-----	Moderate.
Scatlake---------	D	Frequent	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	3-12	6-15	High-----	Moderate.
Cm, Co---------- Commerce	C	None--------	---	---	1.5-4.0	Apparent	Dec-Apr	---	---	High-----	Low.
FA*:											
Fausse----------	D	Frequent----	Very long	Jan-Dec	+1-1.5	Apparent	Jan-Dec	---	---	High-----	Low.
Sharkey----------	D	Frequent----	Brief to very long.	Dec-Jun	0-2.0	Apparent	Dec-Apr	---	---	High-----	Low.
FE---------- Felicity	A	Frequent----	Brief-----	Jan-Dec	2.0-3.0	Apparent	Jan-Dec	---	---	High-----	Moderate.
KE---------- Kenner	D	Frequent----	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	15-30	>51	High-----	Moderate.
LA*:											
Lafitte----------	D	Frequent----	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	15-30	>51	High-----	Moderate.
Clovelly---------	D	Frequent----	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	8-25	16-51	High-----	Moderate.
Ra---------- Rita	D	Rare--------	---	---	0-3.0	Apparent	Jan-Dec	1-5	4-10	High-----	High.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Initial	Total	Uncoated steel	Concrete
					Ft			In	In		
Rv---------- Rita Variant	D	Rare--------	---	---	0-3.0	Apparent	Jan-Dec	1-5	4-10	High-----	High.
SA---------- Scatlake	D	Frequent----	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	3-12	6-15	High-----	Moderate.
SC*:											
Scatlake----------	D	Frequent----	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	3-12	6-15	High-----	Moderate.
Felicity----------	A	Frequent----	Brief-----	Jan-Dec	2.0-3.0	Apparent	Jan-Dec	---	---	High-----	Moderate.
Sh, Sk---------- Sharkey	D	Rare--------	---	---	0-2.0	Apparent	Dec-Apr	---	---	High-----	Low.
Sr---------- Sharkey	D	Occasional	Brief to very long.	Dec-Jun	0-2.0	Apparent	Dec-Apr	---	---	High-----	Low.
TB*:											
Timbalier--------	D	Frequent----	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	15-30	>51	High-----	Low.
Bellpass----------	D	Frequent----	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	8-25	16-51	High-----	Moderate.
Tn*---------- Tunica	D	Frequent----	Brief to long.	Jan-Jun	1.5-3.0	Apparent	Jan-Apr	---	---	High-----	Moderate.
Va---------- Vacherie	C	None--------	---	---	1.0-3.0	Apparent	Dec-Apr	---	---	High-----	Low.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 18.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Allemands	Clayey, montmorillonitic, euic, thermic Terric Medisaprists
Barbary	Very-fine, montmorillonitic, nonacid, thermic Typic Hydraquents
Bellpass	Clayey, montmorillonitic, euic, thermic Terric Medisaprists
Clovelly	Clayey, montmorillonitic, euic, thermic Terric Medisaprists
Commerce	Fine-silty, mixed, nonacid, thermic Aeric Fluvaquents
Fausse	Very-fine, montmorillonitic, nonacid, thermic Typic Fluvaquents
Felicity	Mixed, thermic Aquic Udipsamments
Kenner	Euic, thermic Fluvaquentic Medisaprists
Lafitte	Euic, thermic Typic Medisaprists
Larose	Very-fine, montmorillonitic, nonacid, thermic Typic Hydraquents
Rita	Very-fine, montmorillonitic, nonacid, thermic, cracked Hydric Fluvaquents
Rita Variant	Very-fine, montmorillonitic, acid, thermic, cracked Hydric Fluvaquents
*Scatlake	Very-fine, montmorillonitic, nonacid, thermic Typic Hydraquents
Sharkey	Very-fine, montmorillonitic, nonacid, thermic Vertic Haplaquepts
Timbalier	Euic, thermic Typic Medisaprists
Tunica	Clayey over loamy, montmorillonitic, nonacid, thermic Vertic Haplaquepts
Vacherie	Coarse-silty over clayey, mixed, nonacid, thermic Aeric Fluvaquents

* The soil is a taxadjunct to the series. See text for description of those characteristics of the soil that are outside the range of the series.

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