The Great Trinity Forest Management Plan

Volume 14

Soils and Archeology Data

GREAT TRINITY FOREST

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Great Trinity Forest Management Plan

Soil

Soil Descriptions

2-Arents, loamy, gently undulating.
This map unit made up of areas that have been mined for gravel and sand. Piles of discarded overburden and remaining soil material have been smoothed, and most pits have been filled with soil material. The areas are lower than the sounding landscape. Slopes range from 1 to 5 percent. The areas are rectangular and range from 20 to several hundred acres.

Because of mixing during mining operations, these soils do not have uniform layers. In places, there are fragments of soil layers. These soils are mainly sandy clay loam, clay loam, loam, or fine sandy loam in the upper 80 inches. Quartz pebbles are few to common throughout.

The organic matter content is low. Permeability is rate. The water table is at a depth of 10 to 25 feet. Most areas are subject to flooding unless protected by levees.

Included in mapping are small areas of Bastsil, Dutek, Silawa, Silstid, and Trinity soils. Also included are areas of water in the deeper pits and areas where the surface is covered with thin layers of gravel or sand.

The soils in this map unit are used as pasture and for urban uses, including light industry, race tracks, golf driving ranges, sanitary landfills, and residential areas.

These soils have medium potential for use as pasture. Because of the low organic matter content, fertilizer is needed for good forage production.

These soils have low potential for urban development. The hazard of flooding in most areas is a limitation, but flooding can be controlled by levees or other flood control structures. Corrosivity to uncoated steel also is a limitation.

This map unit was not assigned to a capability subclass or a range site.

3-Arents, loamy, hilly. This map unit consists of the discarded overburden of mining operations. The overburden has been left in mounds and ridges in the gravel pits. The areas are rectangular and range from 15 to several hundred acres. Slopes range from 10 to 30 percent. The pits contain areas of water that make up 5 to 25 percent of most mapped areas.

Typically, the soil material, to a depth of 80 inches, is moderately alkaline, light yellowish brown gravelly sandy clay loam. There are fragments of soil layers throughout.

Included in mapping are small areas of Bastsil, Dutek, Frio, Silstid, and Trinity soils. Also included are areas where thin layers of gravel or sand are on the surface. The included soils make up less than 15 percent of the mapped areas.

Permeability is moderate, and the available water capacity is medium. Runoff is rapid. The hazard of erosion is severe.

Most areas of this map unit are idle. A few areas are grazed. These soils have medium potential for use as pasture. The hilly slopes and the inaccessibility of the areas to livestock are limitations to use as pasture.

These soils have very low potential for urban development. The hazard of flooding in most areas is a major limitation, but flooding can be controlled by levees or other flood-control structures. The slopes of the ridges and mounds are a limitation; this limitation can be overcome by land leveling and smoothing. The corrosivity to uncoated steel also is a limitation.

This map unit was not assigned to a capability subclass or a range site.

8-Austin-Urban land complex, 0 to 2 percent slopes. This complex is made up of nearly level and gently sloping, well drained soils and areas of Urban land on uplands. The areas are oval to oblong and are as much as several hundred acres in size.

The Austin soil makes up about 50 percent of this complex, and Urban land, which consists of areas covered by buildings and pavement, makes up 40 percent. The rest of the complex is made up of minor soils. These soils and Urban land are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Austin soil is very dark grayish brown, moderately alkaline silty clay about 10 inches thick. To a depth of 32 inches, the soil is moderately alkaline, brown silty clay. The underlying material is white, platy chalk.

Permeability is moderately slow, and the available water capacity is low. Runoff is medium. The hazard of erosion is moderate.

Included in mapping are small areas of Dalco, Eddy, Lewisville, and Stephen soils. The included soils make up less than 10 percent of anyone mapped area.

The soils in this complex have medium potential for urban uses. The high shrink-swell potential, corrosivity, low strength, and moderate depth of the soil are limitations.

This map unit was not assigned to a capability subclass or a range site.

10-Axtell fine sandy loam, 0 to 1 percent slopes.

This is a deep, nearly level, moderately well drained soil on old high stream terraces. The areas are oval or oblong and range from 15 to 100 acres or more.

Typically, the surface layer is slightly acid, dark grayish brown fine sandy loam about 4 inches thick. To a depth of 8 inches, the soil is slightly acid, very pale brown fine sandy loam, and to a depth of 39 inches, it is very strongly acid clay that is mottled in shades of brown, gray, and red. To a depth of 52 inches, the soil is medium acid, grayish brown sandy clay that has prominent red mottles. To a depth of 80 inches, it is moderately alkaline, grayish brown sandy clay that has red mottles.

Permeability is very slow, and the available water capacity is high. Runoff is slow. The hazard of erosion is slight.

Included in mapping are small areas of Crockett, Mabank, Rader, and Wilson soils. The included soils make up less than 20 percent of anyone mapped area.

This soil is used mainly as pasture. About 20 percent of the acreage is cropland. This soil has medium potential for use as pasture. It is well suited to improved bermudagrass. This soil has low potential yield of crops; the yield of crops commonly grown in the county is below average. If this soil is used for crops, crop residue should be left on the surface to help conserve moisture, reduce soil temperature, and maintain tilth and productivity.

This soil has medium potential for urban development. The high shrink-swell potential, corrosivity, and low strength of the soil are limitations to urban uses. These limitations can be overcome through good design and careful installation. Areas that have trees are desirable for residential development.

This soil is in capability subclass IIIs and in the Claypan Savannah range site.

11-Axtell fine sandy loam, 1 to 3 percent slopes.

This is a deep, gently sloping, moderately well drained soil on old high stream terraces. The areas are oval to long and narrow and range from 10 to about 100 acres.

Typically, the surface layer is slightly acid, dark grayish brown fine sandy loam about 4 inches thick. To a depth of 8 inches, the soil is slightly acid, very pale brown fine sandy loam, and to a depth of 39 inches, it is very strongly acid clay that is mottled in shades of brown, red, and gray. To a depth of 52 inches, the soil is medium acid, grayish brown clay that has red and brown mottles. To a depth of 80 inches, it is moderately alkaline, grayish brown sandy clay.

Permeability is very slow, and the available water capacity is high. Runoff is medium, and the hazard of erosion is moderate.

Included in mapping are small areas of Crockett, Mabank, Silawa, and Rader soils. The included soils make up less than 20 percent of anyone mapped area.

This soil is used mainly as pasture, for which it has medium potential. Forage production is high if the pasture is properly managed. This soil is well suited to improved bermudagrass. This soil has low potential for use as cropland. The hazard of erosion and, in most areas, the low fertility of the soil are limitations. Terraces and contour farming help to control erosion. Crop residue should be left on the surface to help conserve moisture and to maintain tilth and productivity.

This soil has medium potential for urban development. The high shrink-swell potential, low strength, and corrosiivity of the soil and the hazard of erosion are limitations, but they can be overcome through good design and careful installation. Areas of this soil that have trees are highly desirable for residential development.

This soil is in capability subclass IIIe and in the Claypan Savannah range site.

12-Axtell fine sandy loam, 2 to 5 percent slopes, eroded. This is a deep, moderately well drained soil on old high stream terraces. The areas are oblong to long and narrow and range from 10 to about 50 acres. Gullies are common in all areas, and subsoil material is exposed in about 30 percent of the areas. Between the gullies, sheet erosion has removed as much as 40 percent of the surface layer.

Typically, the surface layer is medium acid, dark grayish brown fine sandy loam about 4 inches thick. To a depth of 19 inches, the soil is strongly acid, dark brown clay loam. To a depth of 35 inches, it is mottled, light yellowish brown and yellowish red, strongly acid clay. The next layer, to a depth of 80 inches, is medium acid clay that has yellow and gray mottles.

Permeability is very slow, and the available water capacity is high. Runoff is medium, and the hazard of erosion is severe. In most areas, the organic matter content is low because erosion has removed material from the surface layer.

Included in mapping are small areas of Crockett, Rader, and Silawa soils. The included soils make up less than 20 percent of anyone mapped area.

This soil is used mainly as pasture, for which it has medium potential. It is well suited to improved bermudaagrass. This soil has low potential for use as cropland. The low fertility, very slow permeability, and poor tilth of the soil and the hazard of erosion are limitations to crop production. Establishing close-growing crops helps to control erosion. Leaving crop residue on the surface of the soil helps to control erosion, conserve moisture, reduce soil temperature, and maintain tilth and productivvity.

This soil has medium potential for urban uses. The high shrink-swell potential, low strength, and corrosivity of the soil and the hazard of erosion are limitations, but they can be overcome through good design and careful installation.

This soil is in capability subclass IVe and in the Claypan Savannah range site.

13-Axtell-Urban land complex, 1 to 5 percent slopes. This complex is made up of deep, gently slopping, moderately well drained soils and areas of Urban land on uplands. The areas are oblong or oval and range from about 20 to 70 acres.

The Axtell soil makes up about 50 percent of this complex, and Urban land, which consists of areas covered with buildings, streets and pavement, makes up about 25 percent. The rest of the complex is made up of minor soils. These soils and Urban land are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Axtell soil is slightly acid, dark grayish brown fine sandy loam about 4 inches thick. To a depth of 8 inches, the soil is very slightly acid, pale brown fine sandy loam, and to a depth of 39 inches, it is very strongly acid clay that has brown, red, and gray mottles. To a depth of 52 inches, the soil is medium acid, grayish brown clay that has red and brown mottles. To a depth of 80 inches, it is moderately alkaline, grayish brown sandy clay.

Permeability of the Axtell soil is very slow, and the available water capacity is high. Runoff is medium, and the hazard of erosion is moderate.

Included in mapping are small areas of Crockett, Mabank, Rader, Silawa, and Wilson soils. The included soils make up less than 25 percent of anyone mapped area.

The soils in this complex have medium potential for urban uses. The high shrink-swell potential, low strength, and corrosivity of the soil and the hazard of erosion are limitations, but these limitations can be overcome through good design and careful installation.

This map unit was not assigned to a capability subclass or a range site.

14-Bastsil fine sandy loam, 0 to 3 percent slopes.

This is a deep, well drained, nearly level to gently sloping soil. The areas are oval to irregular in shape and range from 15 to 60 acres in size.

Typically, the surface layer is medium· acid, brown fine sandy loam 8 inches thick. To a depth of 12 inches, the soil is medium acid, yellowish red sandy clay loam, and to a depth of 34 inches, it is medium acid, red sandy clay loam. To a depth of 68 inches, it is mottled red, yellowish red, and light gray sandy clay loam.

Runoff is medium. The hazard of erosion is moderate.

Permeability is moderate, and the available water capacity is high.

Included in mapping are small areas of Mabank, Silawa, and Smithville soils. The included soils make up less than 15 percent of anyone mapped area.

This soil is used as cropland and pasture. It has high potential for these uses. Crop and forage yields are high if good management practices are used. Leaving crop residue on the soil helps to conserve moisture, to reduce runoff and soil temperature, and to maintain soil tilth and productivity. This soil is well suited to improved bermudagrass.

This soil has high potential for urban development.

Corrosivity to uncoated steel is a limitation. The low strength of the soil is a limitation for local roads and streets. These limitations can be overcome through good design and careful installation.

This soil is in capability subclass IIe and in the Sandy Loam range site.

15-Bastsil-Urban land complex, 0 to 2 percent slopes. This complex is made up of nearly level to gently sloping, well drained soils and areas of Urban land. The areas are oval to irregular in shape and are dominantly 20 to 50 acres in size.

The Bastsil soil makes up about 40 percent of this complex, and Urban land, which consists of areas covered with buildings and pavement, makes up 35 percent. Minor soils make up the rest. In most yards of the newer residential developments, the soil has been altered by the addition of a thin layer of topsoil and by land leveling. These soils and Urban land are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Bastsil soil is medium acid, brown fine sandy loam about 8 inches thick. To a depth of 12 inches, the soil is medium acid, yellowish red sandy clay loam, and to a depth of 34 inches, it is medium acid, red sandy clay loam. To a depth of 68 inches, the soil is mottled dark red, yellowish red, and light gray sandy clay loam.

Permeability of the Bastsil soil is moderate, and the available water capacity is high. Runoff is medium. The hazard of erosion is moderate.

Included in mapping are small areas of Mabank, Silawa, and Smithville soils. The included soils make less than 25 percent of anyone mapped area.

The soils in this complex have high potential for urban uses. Corrosivity to uncoated steel is a limitation. The low strength of the soil is a limitation for local roads and streets. These limitations can be overcome through good design and careful installation.

This map unit was not assigned to a capability subclass or a range site.

18-Burleson clay, 0 to 1 percent slopes. This is a deep, nearly level, moderately well drained soil on old stream terraces. The areas are oval or oblong and range from 15 to about 150 acres.

Typically, the surface layer is neutral, very dark gray clay about 4 inches thick. To a depth of 46 inches, the soil is slightly acid, very dark gray clay, and to a depth of 64 inches, it is neutral, grayish brown clay. To a depth of 80 inches, the soil is moderately alkaline, grayish brown clay.

Permeability is very slow, and the available water capacity is high. Tilth generally is poor, and the surface tends to crust. Runoff is slow. The hazard of erosion is slight.

Included in mapping are small areas of Branyon, Houston Black, and Wilson soils. The included soils make up less than 15 percent of anyone mapped area.

This soil is used as cropland and pastureland. It has high potential for these uses. If this soil is managed properly, yields are good. The slow runoff and poor tilth are limitations.

This soil has low potential for urban development. The high shrink-swell potential, corrosivity, and low strength of the soil are limitations. In addition, the walls of cuts and excavations tend to cave in or slough. These limitations can be overcome through good design and careful installation. This soil is not suitable for recreation uses because of the clayey texture and very slow permeability, which are difficult to overcome.

This soil is in capability subclass IIw and in the Blackland range site.

19-Burleson clay, 1 to 3 percent slopes. This is a deep, gently sloping, moderately well drained soil on old stream terraces. The areas are oval or oblong and range from 10 to several hundred acres.

Typically, the surface layer is neutral, very dark gray clay about 4 inches thick. To a depth of 37 inches, the soil is slightly acid, very dark gray clay, and to a depth of 55 inches it is neutral, grayish brown clay. To a depth of 80 inches, the soil is moderately alkaline, grayish brown clay.

Permeability is very slow, and the available water capacity is high. Runoff is medium. The hazard of erosion is moderate. Tilth generally is poor, and the surface tends to crust.

Included in mapping are small areas of Heiden, Houston Black, and Wilson soils and a few places where the Burleson soil is eroded. The included soils make up less than 20 percent of anyone mapped area.

This soil is used as cropland and pasture. It has high potential for these uses. The permeability, texture, and tilth of the soil and the hazard of erosion are limitations. Leaving crop residue on the surface helps to control erosion and to improve tilth and productivity. This soil is well suited to improved bermudagrass.

This soil has low potential for urban development. The high shrink-swell potential, low strength and corrosivity of the soil and the hazard of erosion are limitations. In addition, the walls of cuts and excavations tend to cave in or slough. These limitations can be overcome through good design and careful installation. This soil is not suitable for recreation uses because of the clayey texture, the very slow permeability, and the hazard of erosion.

The soil is in capability subclass IIe and in the Blackland range site.

24-Dalco-Urban land complex, 0 to 3 percent slopes. This complex is made up of moderately deep, moderately well drained, nearly level and gently sloping soils and areas of Urban land. The areas are oval and oblong and range from 20 acres to several hundred acres.

The Dalco soil makes up about 50 percent of this complex and Urban land, which consists of areas covered with buildings and pavement, makes up 30 percent. Minor soils make up the rest. Typically, 20 to 45 percent of the residential areas are covered with buildings. The soil in these areas has been altered in constructing the buildings and streets and in excavating for service lines. The Dalco soil and areas of Urban land are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Dalco soil is moderately alkaline, black clay about 26 inches thick. To a depth of 39 inches, the soil is moderately alkaline, dark gray clay. The underlying material is white chalky limestone that is platy to a depth of 45 inches and massive below that.

Permeability is very slow, and the available water capacity is low. Runoff is medium, and the hazard of erosion is moderate.

Included in mapping are small areas of Austin, Houston Black, and Stephen soils. The included soils make up less than 20 percent of anyone mapped area.

The soils in this complex have low potential for urban uses. The very high shrink-swell potential, corrosivity, and low strength of the soil are limitations. In addition, the walls of cuts and excavations tend to cave in or slough. These limitations can be overcome through good design and careful installation. The underlying limestone is a limitation to shallow excavations but can be cut using excavating equipment. The clayey texture of the soil is a limitation to recreation uses.

This map unit was not assigned to a capability subclass or a range site.

25-Dutek loamy fine sand, 1 to 5 percent slopes.

This is a deep, gently sloping, well drained soil on old stream terraces on uplands. The areas are mainly long and narrow and range from 5 to more than 100 acres.

Typically, the surface layer is slightly acid, brown loamy fine sand about 8 inches thick. To a depth of 34 inches, the soil is slightly acid loamy fine sand that is light yellowish brown in the upper part and very pale brown in the lower part. To a depth of 54 inches, it is medium acid, yellowish red sandy clay loam. To a depth of 64 inches, the soil is very strongly acid, yellowish red fine sandy loam, and to depth of 75 inches, it is very strongly acid, reddish yellow loamy fine sand.

Permeability is moderate, and the available water capacity is medium. Runoff is slow. The hazard of water erosion is slight, and the hazard of wind erosion is moderate.

Included in mapping are small areas of Silstid soils. The included soils make up less than 15 percent of any one mapped area.

In most areas, this soil is used as pasture, for which it has medium potential. It is well suited to improved bermudagrass. This soil has low potential for use as cropland. If this soil is used for crops, crop residue should be left on the surface to help conserve moisture, reduce soil temperature, prevent wind erosion, and maintain soil tilth and productivity.

This soil has high potential for urban uses. The corrosivity of the soil is a limitation. This soil is suited to most recreation uses; however, the sandy surface texture restricts some uses.

This soil is in capability subclass Ille and in the Sandy range site.

27-Eddy clay loam, 3 to 8 percent slopes. This is a very shallow to shallow, well drained, gently sloping to sloping soil overlying the Austin Chalk geologic formation. The areas are mainly long and narrow and range from 20 to more than 100 acres.

Typically, the surface layer is moderately alkaline, grayish brown clay loam 4 inches thick. The layer below that, to a depth of 11 inches, consists of platy soft chalky limestone and about 15 percent, by volume, grayish brown clay loam. The underlying material is white soft chalky limestone.

Permeability is moderately slow, and the available water capacity is very low. Runoff is rapid, and the hazard of erosion is severe.

Included in mapping are small areas of Brackett and Stephen soils. The included soils make up less than 20 percent of anyone mapped area.

This soil is used mainly as pasture and rangeland. It has low potential for these uses. Forage production is low. This soil is suited to King Ranch bluestem. The climax vegetation on rangeland consists of tall and mid grasses and some juniper and Texas oak.

This soil has medium potential for urban uses. Corrosivity and the shallowness to rock are limitations; however, the rock is soft and rippable and provides a good footing for foundations. This soil is suited to recreation uses. The moderately slow permeability, shallowness to rock, and small stones on the surface are limitations.

This soil is in capability subclass VIe and in the Chalky Ridge range site.

28-Eddy-Brackett complex, 8 to 20 percent slopes. This complex is made up of strongly sloping to moderately steep, well drained, very shallow and shallow soils overlying the Austin Chalk geologic formation. The areas are long and narrow and range from 20 to several hundred acres.

The Eddy soil makes up about 50 percent of this complex, the Brackett soil makes up 30 percent, and minor soils make up the rest. These soils are so intermingled that it was not practical to separate them in mapping at the scale used. Typically, the Eddy soil is on the upper part of slopes, and the Brackett soil is on the lower part.

Typically, the surface layer of the Eddy soil is moderately alkaline, dark grayish brown clay loam 3 inches thick. To a depth of 6 inches the soil is moderately alkaline, dark grayish brown, very gravely clay loam. The underlying material is platy chalky limestone.

Permeability is moderately slow, and the available water capacity is very low. Runoff is rapid, and the hazard of erosion is severe.

Typically, the surface layer of the Brackett soil is grayish brown, moderately alkaline loam 6 inches thick. To a depth of 16 inches, the soil is brown, moderately alkaline, gravely clay loam, and to a depth of 20 inches, it is brown, moderately alkaline, very gravelly loam. The underlying material is soft, platy chalky limestone.

Permeability is moderately slow, and the available water capacity is very low. Runoff is rapid, and the hazard of erosion is severe.

Included in mapping are small areas of Austin, Frio, Lewisville, and Stephen soils and some rock outcrops. The included soils make up less than 25 percent of any one mapped area.

The soils in this complex are used mainly as rangeland, for which they have low potential. Most areas have a dense cover of trees and shrubs. The climax plant community consists of tall and mid grasses and woody plants, including Texas oak, ash, juniper, buckeye, and woody shrubs. Rangeland management on these soils requires proper stocking and controlled grazing. Because of the steepness of slopes, the erosion hazard, and the shallowness to bedrock, these soils are not suited to use as cropland.

These soils have medium potential for urban uses. The shallowness of the soils, unstable slopes, corrosivity, and the hazard of erosion are limitations. These soils are suitable for some recreation uses, including native study areas and paths and trials. They are suitable for use as wildlife habitat.

This complex is in capability subclass VIe. The Eddy soil is in the Chalky Ridge range site, and the Brackett soil is in the Steep Adobe range site.

29-Eddy-Brackett-Urban land complex, 8 to 15 percent slopes. This complex is made up of strongly sloping and moderately steep, well drained, very shallow and shallow soils and areas of Urban land. The areas generally are long and narrow and range from 15 to several hundred acres.

The Eddy soil makes up about 35 percent of this complex, and the Brackett soil about 20 percent. Urban land, which consists of areas covered with buildings and pavement, makes up 25 percent of the complex, and minor soils make up the rest. The soil in yards has been altered by cutting and filling, by mixing limestone fragments into the soil, and by adding loamy topsoil. These soils and the Urban land are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Eddy soil is moderately alkaline, dark grayish brown loam 3 inches thick. The layer below that, to a depth of 15 inches, consists of platy soft limestone and about 20 percent, by volume, dark grayish brown loam. The underlying material is platy, fractured, soft chalky limestone.

Permeability is moderately slow, and the available water capacity is very low. Runoff is rapid, and the hazard of erosion is severe.

Typically, the surface layer of the Brackett soil is moderately alkaline, grayish brown loam 6 inches thick. To a depth of 16 inches, the soil is moderately alkaline, brown gravelly loam, and to a depth of 20 inches, it is moderately alkaline, brown, very gravelly loam. The underlying material is soft platy chalky limestone.

Permeability is moderately slow, and the available water capacity is very low. Runoff is rapid, and the hazard of erosion is severe.

Included in mapping are small areas of Austin and Stephen soils and areas of limestone outcrops and ledges. These inclusions make up less than 20 percent of anyone mapped area.

The soils in this complex have medium potential for urban uses. The shallowness to rock, the unstable slopes, the corrosivity of the soil, and the hazard of erosion are limitations.

This map unit was not assigned to a capability subclass or a range site.

32- Eddy-Urban land complex, 4 to 8 percent This complex is made up of gently sloping to sloping, shallow and very shallow, well drained soils and

areas of Urban land. The areas generally are oval or and range from 15 to as much as a few hundred acres.

The Eddy soil makes up about 50 percent of this complex , and Urban land, which consists of areas covered with buildings and pavement, makes up 30 percent.

Minor soils make up the rest. The soil in yards has been altered by cutting, filling, and leveling during construction, and limestone fragments have been mixed into the soil. In most yards, a layer of loamy topsoil 2 to 4 inches thick has been added. The Eddy soil and Urban land are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Eddy soil is moderately alkaline, grayish brown clay loam 4 inches thick. The layer below that, to a depth of 11 inches, consists of platy, soft limestone and about 15 percent, by volume, grayish brown clay loam. The underlying material is white, soft chalky limestone.

Permeability is moderately slow, and the available water capacity is very low. Runoff is rapid, and the hazard of erosion is severe.

Included in mapping are small areas of Austin, Brackkett, and Stephen soils. The included soils make up less than 20 percent of anyone mapped area.

The Eddy soil has medium potential for urban uses. The shallowness to rock· and corrosivity are limitations; however, the rock is rippable and provides a good footing for foundations. Erosion is a hazard but can be controlled through careful installation.

This map unit was not assigned to a capability subclass or a range site.

35-Ferris-Urban land complex, 5 to 12 percent slopes. This complex is made up of deep, well drained, sloping and strongly sloping soils and areas of Urban land. The areas are irregular in shape and range from 15 to several hundred acres in size.

Typically, the Ferris soil makes up about 60 percent of this complex, and Urban land, which consists of areas covered with buildings and pavement, makes up 25 percent; minor soils make up the rest. On about 50 percent of the acreage the soil has been altered by cutting, filling, and shaping. In many places, the cutting and shaping have exposed the underlying shaly clay. A thin layer of loamy and sandy topsoil has been added to many yards. The Ferris soil and Urban land are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Ferris soil is moderately alkaline, light yellowish brown clay 3 inches thick. To a depth of 28 inches, the soil is moderately alkaline, olive clay. To a depth of 41 inches, it is moderately alkaline, light brownish gray clay. The layer below that, to a depth of 72 inches, consists of mottled, light brownish gray, light olive brown, and gray shaly clay.

Permeability of the Ferris soil is very slow, and the available water capacity is high. Runoff is rapid, and the hazard of erosion is severe.

Included in mapping are small areas of Heiden and Vertel soils. The included soils make up no more than 15 percent of anyone mapped area.

The Ferris soil has low potential for urban uses. Limitations to urban uses are the very high shrink-swell potential, low strength, and corrosivity of the soil, the unstable slopes, and the severe hazard of erosion. In addition, the walls of excavations tend to cave in or slough. These limitations are difficult to overcome.

This map unit was not assigned to a capability subclass or a range site.

37-Frio silty clay, frequently flooded. This is a deep, well drained, nearly level soil on flood plains. The areas generally are long and narrow and range from 50 to several hundred acres. This soil generally is flooded one or more times each year. The floodwaters are shallow, and the floods are of brief duration.

Typically, the surface layer is moderately alkaline, dark grayish brown silty clay 7 inches thick. To a depth of 46 inches, the soil is moderately alkaline, very dark grayish brown silty clay. To a depth of 74 inches, it is moderately alkaline, brown silty clay loam.

Permeability is moderately slow, and the available water capacity is high. Runoff is slow, and the hazard of erosion is slight.

Included in mapping are small areas of Gowen and Trinity soils. The included soils make up less than 15 percent of the mapped areas.

This soil is used mainly as pasture, for which it has high potential. It is well suited to improved bermudagrass. This soil is not suited to use as cropland because of the frequent flooding.

This soil has very low potential for urban uses because of the frequent flooding and the low strength and corrosivity of the soil. It is limited for recreation uses by the hazard of flooding and the clayey surface texture.

This soil is in capability subclass Vw and in the Loamy Bottomland range site.

38-Frio-Urban land complex. This complex is made up of deep, nearly level, well drained soils and areas of Urban land on the flood plains of small streams. The areas are long and narrow and range from 30 to more than 1,000 acres.

The Frio soil makes up about 70 percent of this complex, and Urban land, which consists of areas covered with buildings and pavement, makes up 15 percent. The rest is minor soils. In some areas, fill material consisting of clay, broken concrete, and pavement has been stacked or spread 2 to 4 feet deep on the surface. The Frio soil and Urban land are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Frio soil is moderately alkaline, dark grayish brown silty clay 7 inches thick. To a depth of 53 inches, the soil is moderately alkaline, very dark grayish brown silty clay. To a depth of 74 inches, it is moderately alkaline, brown silty clay loam.

Permeability is moderately slow, and the available water capacity is high. Runoff is slow, and the hazard of erosion is slight.

Included in mapping are small areas of Gowen and Trinity soils. The included soils make up less than 15 percent of anyone mapped area.

The Frio soil has low potential for urban uses because of the hazard of flooding. In most areas of this complex, however, levees have been constructed to prevent damage by floods. Other limitations to urban uses are the low strength and corrosivity of the soil. The Frio soil has low potential for recreation uses because of the hazard of flooding and the clayey surface texture. Some areas of this complex are used as greenbelts or open space and for city parks.

This map unit was not assigned to a capability subclass or a range site.

39-Gowen loam, occasionally flooded. This is a deep, well drained, nearly level soil on flood plains. The areas are long and narrow to oblong and range from 20 to 100 acres. This soil is subject to occasional flooding; floodwaters are shallow, and the floods are of brief duration.

Typically, the surface layer is a moderately alkaline, dark grayish brown loam 21 inches thick. To a depth of 32 inches, the soil is moderately alkaline, dark grayish brown clay loam, and there are thin strata of brown sandy loam. To a depth of 53 inches, the soil is moderately alkaline, grayish brown sandy clay loam, and there are thin strata of fine sand. To a depth of 80 inches, the soil is mottled, dark gray and dark yellowish brown, moderately alkaline sandy clay.

Permeability is moderate, and the available water capacity is high. Runoff is slow, and the hazard of erosion is slight.

Included in mapping are small areas of Frio and Trinity soils. The included soils make up less than 15 percent of anyone mapped area.

This soil is used mainly as pasture, for which it has high potential. It is well suited to improved bermudagrass. This soil has high potential for crops. If this soil is used for crops, leaving crop residue on the surface will help to conserve moisture and maintain tilth and productivity.

This soil has low potential for urban uses because of the hazard of flooding and the corrosivity of the soil to uncoated steel. The flooding is a limitation that is difficult to overcome. Limitations to recreation uses are the clayey surface texture and the hazard of flooding.

This soil is in capability subclass IIw and in the Loamy Bottomland range site.

40-Gowen loam, frequently flooded. This a deep, well drained, nearly level soil on flood plains. The areas are long and narrow and range from 15 to 40 acres. This soil generally is flooded one or more times each year. The floodwaters are shallow, and the floods are of brief duration.

Typically, the surface layer is neutral, brown clay loam 4 inches thick. To a depth of 35 inches, the soil is moderately alkaline, dark grayish brown loam and there are a few thin strata of brown clay loam. To a depth of 53 inches, the soil is moderately alkaline, grayish brown sandy clay loam, and there are common thin strata of fine sand. To a depth of 80 inches, the soil is moderately alkaline, dark gray and dark yellowish brown sandy clay.

Permeability is moderate, and the available water capacity is high. Runoff is slow, and the hazard of erosion is slight.

Included in mapping are small areas of Frio and Trinity soils. The included soils make up less than 20 percent of anyone mapped area.

This soil is used as pasture, for which it has high potential. The yield of forage is high. This soil is well suited to improved bermudagrass. This soil has low potential for crops, mainly because of the hazard of flooding.

This soil has very low potential for urban and recreation uses. The hazard of flooding and the corrosivity of the soil are the main limitations.

This soil is in capability subclass Vw and in the Loamy Bottomland range site.

41-Heiden clay, 1 to 3 percent slopes. This is a deep, well drained, gently sloping soil on uplands. The areas are oblong and range from 15 to about 200 acres.

Typically, the surface layer is moderately alkaline, dark gray clay 6 inches thick. To a depth of 37 inches, the soil is moderately alkaline, very dark grayish brown clay. To a depth of 56 inches, it is moderately alkaline, grayish brown clay that has gray and yellowish brown mottles. The underlying material, to a depth of 78 inches, is shaly clay mottled in shades of gray and yellow.

Permeability is very slow, and the available water capacity is high. Runoff is medium, and the hazard of erosion is moderate.

Included in mapping are small areas of Normangee, Houston Black, and Wilson soils. The included soils make up less than 10 percent of anyone mapped area.

This soil is used mainly as cropland and pasture. It has high potential for these uses. The yield of forage and crops is high if the soil is properly managed. Crop residue should be left on the surface to help control runoff and erosion and to maintain tilth and productivity. If this soil is used for row crops, terraces and contour farming are needed. This soil is well suited to improved bermudagrass. This soil is well suited to use as rangeland. The climax plant community consists of tall and mid grasses.

This soil has low potential for urban uses. The very high shrink-swell potential, corrosivity, and low strength of the soil are limitations. In addition, the walls of cuts and excavations tend to cave in or slough. These limitations can be overcome through good design and careful installation. This soil has low potential for recreation uses. The clayey surface texture is the main limitation.

This soil is in capability subclass IIe and in the Blackland range site.

46-Lewisville silty clay, 1 to 3 percent slopes. This is a deep, well drained, gently sloping soil on old stream terraces. The areas are oval or irregular in shape and range from 10 to 25 acres in size.

Typically, the surface layer is moderately alkaline, dark grayish brown silty clay 17 inches thick. To a depth of 27 inches, the soil is moderately alkaline, grayish brown silty clay. To a depth of 42 inches, it is moderately alkaline, light yellowish brown silty clay. Below that, to a depth of 52 inches, the soil is moderately alkaline, light brownish gray silty clay that has brownish mottles. To a depth of 75 inches, it is moderately alkaline, light yellowish brown silty clay that has fine, gray and brown mottles.

Permeability is moderate, and the available water capacity is high. Runoff is medium, and the hazard of erosion is moderate.

Included in mapping are small areas of Heiden and Houston Black soils. The included soils make up as much as 15 percent of some mapped areas.

This soil is used mainly as cropland, for which it has high potential. The yield of crops commonly grown in the county is good if the soil is properly managed. Leaving crop residue on or near the surface helps to control erosion and to maintain tilth and productivity. This soil has high potential for use as pasture. It is well suited to improved bermudagrass. This soil also is well suited to pecan trees.

This soil has medium potential for urban uses. The high shrink-swell potential, corrosivity, and low strength of the soil are limitations, but they can be overcome through good design and careful installation. The clayey surface texture is the main limitation to recreation uses.

This soil is in capability subclass IIe and in the Clay Loam range site.

47-Lewisville silty clay, 3 to 5 percent slopes. This is a deep, well drained, gently sloping soil on old stream terraces. The areas mainly are long and narrow and range from 10 to 40 acres.

Typically, the surface layer is moderately alkaline, dark grayish brown silty clay. To a depth of 23 inches, the soil is moderately alkaline, grayish brown silty clay, and to a depth of 41 inches, it is moderately alkaline, light yellowish brown silty clay. Below that, to a depth of 54 inches, the soil is moderately alkaline, light brownish gray silty clay that has common fine brownish mottles. To a depth of 75 inches, it is moderately alkaline, light yellowish brown silty clay that has gray and brown mottles.

Permeability is moderate, and the available water capacity is high. Runoff is medium, and the hazard of erosion is moderate.

Included in mapping are small areas of Heiden and Houston Black soils. The included soils make up less than 15 percent of anyone mapped area.

This soil is used mainly as pasture, for which it has high potential. It is well suited to improved bermudagrass. The yield of forage is high if the soil is properly managed. This soil has high potential for use as cropland. If this soil is used for crops, terraces and contour farming are needed to control erosion and conserve moisture. Leaving crop residue on the surface helps to control erosion and to maintain tilth and productivity. This soil is well suited to pecan trees, which grow naturally in most pastures.

This soil has medium potential for urban uses. The high shrink-swell potential, low strength, and corrosivity of the soil and the hazard of erosion are limitations, but they can be overcome through good design and careful installation. This soil is suited to recreation uses. The clayey surface texture is the main limitation.

This soil is in capability subclass IIIe and in the Clay Loam range site.

48-Lewisville silty clay, 5 to 8 percent slopes. This is a deep, well drained, sloping soil on old stream terraces. The areas generally are oval and range from 10 to 30 acres.

Typically, the surface layer is moderately alkaline, dark grayish brown silty clay about 13 inches thick. To a depth of 28 inches, the soil is moderately alkaline, light olive brown silty clay, and to a depth of 47 inches, it is moderately alkaline, light yellowish brown silty clay. To a depth of 80 inches, the soil is moderately alkaline, light yellowish brown silty clay that has common, fine, light gray mottles.

Permeability is moderate, and the available water capacity is high. Runoff is medium, and the hazard of erosion is severe.

Included in mapping are small areas of Altoga soils and a few areas where gullies have formed because of erosion. These included areas make up less than 15 percent of anyone mapped area.

This soil is used as pasture, for which it has high potential. The yield of forage is high if the soil is properly managed. This soil is well suited to improved bermudagrass. It also is well suited to pecan trees, which grow naturally in most pastures. This soil has low potential for use as cropland, mainly because erosion is a severe hazard.

This soil has medium potential for urban uses. The high shrink-swell potential, low strength, and corrosivity of the soil and the hazard of erosion are limitations, but they can be overcome through good design and careful installation. This soil is suited to recreation uses. The clayey surface texture and the slope are limitations.

This soil is in capability subclass IVe and in the Clay Loam range site.

49-Lewisville-Urban land complex, 0 to 4 percent slopes. This complex is made up of deep, well drained, nearly level and gently sloping soils and areas of Urban land. The areas generally are oblong and range from 10 to more than 200 acres.

The Lewisville soil makes up about 55 percent of this complex, and Urban land, which consists of areas covered with buildings and pavement, makes up 30 percent. Minor soils make up the rest. In many places, the soil has been altered by excavation, cutting and filling, and land leveling. In some yards, a layer of loamy and sandy topsoil 2 to 4 inches thick has been spread over the surface. This Lewisville soil and Urban land are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Lewisville soil is moderately alkaline, dark grayish brown silty clay 17 inches thick. To a depth of 27 inches, the soil is moderately alkaline, grayish brown silty clay, and to a depth of 42 inches, it is moderately alkaline, light yellowish brown silty clay. To a depth of 55 inches, the soil is moderately alkaline, light brownish gray silty clay that has brownish mottles, and to a depth of 75 inches, it is moderately alkaline, light yellowish brown silty clay that has fine, gray and brown mottles.

Included in mapping are small areas of Heiden and Houston Black soils. The included soils make up less than 15 percent of anyone mapped area.

Permeability is moderate, and the available water capacity is high. Runoff is slow to medium, and the hazard of erosion is moderate.

The Lewisville soil has medium potential for urban uses. The high shrink-swell potential, corrosivity, and low strength of the soil are limitations, but they can be overcome through good design and careful installation. The Lewisville soil is suited to recreation uses. The clayey surface texture is the main limitation.

This map unit was not assigned to a capability subclass or a range site.

50-Lewisville-Urban land complex, 4 to 8 percent slopes. This complex is made up of deep, well drained, gently sloping and sloping soils and areas of Urban land. The areas are irregular in shape and range from 15 to 100 acres in size.

The Lewisville soil makes up about 60 percent of this complex, and Urban land, which consists of areas covered with buildings and pavement, makes up 30 percent. Minor soils make up the rest. The soil in areas of Urban land has been altered by street grading and shaping, by land leveling for lots and streets, and by excavating for water and sewer lines. The Lewisville soil and Urban land are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Lewisville soil is moderately alkaline, dark grayish brown silty clay 13 inches thick. To a depth of 28 inches, the soil is moderately alkaline, light olive brown silty clay. To a depth of 47 inches, it is moderately alkaline, light yellowish brown silty clay. Below that, to a depth of 80 inches, the soil is moderately alkaline, light yellowish brown silty clay that has common fine, light gray mottles.

Permeability is moderate, and the available water capacity is high. Runoff is medium, and the hazard of erosion is severe.

Included in mapping are small areas of Altoga and Sunev soils and areas of Lewisville soils that are slightly more sloping than the Lewisville soil in this complex. The included soils make up as much as 10 percent of any one mapped area.

The Lewisville soil has medium potential for urban uses. The high shrink-swell potential, low strength, and corrosivity of the soil and the hazard of erosion are limitations, but they can be overcome through good design and careful installation. The Lewisville soil is suitable for recreation uses; the clayey surface texture and the slopes are limitations.

This map unit was not assigned to a capability subclass or a range site.

51-Mabank fine sandy loam, 0 to 1 percent slopes. This is a deep, nearly level, somewhat poorly drained soil in slight depressions on uplands. The areas are oval to oblong and range from 10 to 150 acres. In winter, a perched water table generally is at a depth of 0.6 to 1 foot.

Typically, the surface layer is neutral, grayish brown fine sandy loam 5 inches thick. To a depth of 12 inches, the soil is slightly acid, gray clay loam. To a depth of 16 inches, it is strongly acid, dark gray clay. And to a depth of 65 inches, the soil is strongly acid to medium acid gray clay.

Permeability is very slow, and the available water capacity is high. Runoff is very slow, and the hazard of erosion is slight.

Included in mapping are small areas of Crockett and Wilson soils. The included soils make up less than 15 percent of anyone mapped area.

This soil is used mainly as pasture, for which it has medium potential. It is well suited to improved bermudagrass. This soil has medium potential for crops. The yield of forage and the crops commonly grown in the county is good if the soil is properly managed. If this soil is used as cropland, leaving crop residue on the surface helps to modify the soil temperature and to maintain soil tilth and productivity. In some areas, drainage ditches are needed to improve runoff.

The soil has medium potential for urban uses. The high shrink-swell potential, low strength, corrosivity, and wetness of the soil are limitations, but they can be overcome through good design and careful installation. Wetness is the main limitation for recreation uses.

This soil is in capability subclass IIIw and in the Claypan Prairie range site.

52-Mabank fine sandy loam, 1 to 3 percent slopes. This is a deep, somewhat poorly drained, gently sloping soil on uplands. The areas are irregular in shape and range from 10 to about 40 acres in size. In winter, this soil has a perched water table at a depth of 0.6 to 1.0 foot.

Typically, the surface layer is neutral, grayish brown fine sandy loam 5 inches thick. To a depth of 12 inches, the soil is slightly acid, gray clay. To a depth of 16 inches, it is strongly acid, dark gray clay. And to a depth of 65 inches, the soil is strongly acid to medium acid gray clay.

Permeability is very slow, and the available water capacity is high. Runoff is medium, and the hazard of erosion is moderate.

Included in mapping are small areas of Crockett and Heiden soils. The included soils make up less than 10 percent of anyone mapped area.

This soil is used as cropland and pasture. It has medium potential for these uses. If this soil is used for crops, crop residue should be left on the surface to help control erosion, modify the soil temperature, and mainntain tilth and productivity. Terraces and contour farming are needed for row crops. This soil is well suited to improved bermudagrass.

This soil has medium potential for urban uses. The high shrink-swell potential, low strength, wetness, and corrosivity of the soil and the hazard of erosion are limitations, but they can be overcome through good design and careful installation. Wetness and the hazard of erosion are the main limitations to recreation uses.

This soil is in capability subclass IIIe and in the Claypan Prairie range site.

56-Pits and Dumps. This map unit consists of areas from which limestone or shale have been removed. The pits are several feet deep, and the mounds of rubble or shale are several to many feet high. Water stands in the low parts of some pits. Little or no vegetation grows in most of these areas. The areas generally are 8 to 75 feet below the original surface.

Most areas provide small amounts of forage and are in pasture. A few areas have been smoothed for use as building sites.

This map unit was not assigned to a capability subclass or a range site.

57-Rader-Mabank complex, 0 to 2 percent slopes.

This complex is made up of deep, moderately well drained and somewhat poorly drained, nearly level and gently sloping soils on uplands. The areas are irregular in shape and range from 30 to several hundred acres in size. In winter, the Mabank soil has a perched water table at a depth of 0.6 to 1.0 foot.

The Rader soil makes up about 65 percent of this complex, the Mabank soil makes up 20 percent, and minor soils make up the rest. The Rader soil is on mounds and in high areas, and the Mabank soil is in low areas. These soils are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Rader soil is slightly acid, dark grayish brown fine sandy loam 8 inches thick. To a depth of 16 inches, the soil is medium acid, yellowish brown sandy clay. To a depth of 30 inches, it is strongly acid, mottled red, brown, and gray clay loam and clay. To a depth of 38 inches, the soil is mottled, moderately alkaline, brown and gray clay. To a depth of 64 inches, it is moderately alkaline, brown clay that has yellowish brown, brown, and gray mottles.

Runoff is slow, and the hazard of erosion is slight.

Permeability is very slow, and the available water capacity is high.

Typically, the surface layer of the Mabank soil is neutral, grayish brown fine sandy loam 5 inches thick. To a depth of 12 inches, the soil is slightly acid, gray clay loam. To a depth of 31 inches, it is strongly acid, gray and dark gray clay, and to a depth of 65 inches, it is medium acid, gray clay.

Runoff is very slow, and the hazard of erosion is slight.

Permeability is very slow. The available water capacity is high.

Included in mapping are small areas of Axtell, Crockkett, and Wilson soils, and areas of a soil that is similar to this Mabank soil except that it has lighter colored lower layers. The included soils make up less than 15 percent of anyone mapped area.

The soils in this complex are used mainly as pasture.

In some areas, they are used as rangeland. These soils have medium potential for use as pasture, rangeland, and cropland. They are suited to improved bermudagrass. If these soils are used for crops, the surface needs to be smoothed and drainage improved. Crop residue should be left on or near the surface to help modify the soil temperature and to maintain tilth and productivity.

These soils have medium potential for urban uses. The high shrink-swell potential, low strength, corrosivity, and wetness of these soils are limitations to urban development, but

they can be overcome through good design and careful installation. The wetness and very slow permeability of these soils are limitations to recreation uses.

This complex is in capability subclass IIIe. The Rader soil is in the Sandy Loam range site, and the Mabank soil is in the Claypan Prairie range site.

58-Rader-Urban land complex, 0 to 2 percent slopes. This complex is made up of deep, moderately well drained, nearly level to gently sloping soils and areas of Urban land. The areas of this complex are irregular in shape and as much as several hundred acres in size.

Typically, the Rader soil makes up about 50 percent of this complex, and Urban land, which consists of areas covered with buildings and pavement, makes up 20 percent. Minor soils make up the rest. Many areas of this complex have been used for low-density residential development; in many yards and gardens, the surface has been smoothed. Mounds of the Rader soil have been used as fill in many low areas. In some areas, the soil has been disturbed by shallow excavations for service lines. This Rader soil and areas of Urban land are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Rader soil is slightly acid, dark grayish brown fine sandy loam 8 inches thick. To a depth of 16 inches, the soil is medium acid, yellowish brown sandy clay loam. To a depth of 30 inches, it is strongly acid, mottled red, brown, and gray clay loam and clay. Below that, to a depth of 38 inches, the soil is moderately alkaline, mottled brown and gray clay. To a depth of 64 inches, it is moderately alkaline, brown clay that has yellowish brown, brown, and gray mottles.

Permeability is very slow, and the available water capacity is high. Runoff is slow, and the hazard of erosion is slight.

Included in mapping are small areas of Axtell, Crockett, Mabank, and Wilson soils. The included soils make up as much as 30 percent of some mapped areas.

The Rader soil has medium potential for urban uses. The high shrink-swell potential, low strength, corrosivity, and wetness of the soil are limitations to urban development, but they can be overcome through good design and careful installation.

This map unit was not assigned to a capability subclass or a range site.

60-Silawa fine sandy loam, 1 to 3 percent slopes.

This is a deep, well drained, gently sloping soil on uplands. The areas are oblong or irregular in shape and range from 10 to 50 acres in size.

Typically, the surface layer is neutral, brown fine sandy loam 10 inches thick. To a depth of 19 inches, the soil is slightly acid, yellowish red sandy clay loam. To a depth of 34 inches, it is medium acid, reddish yellow sandy clay loam. To a depth of 44 inches, the soil is strongly acid, reddish yellow fine sandy loam, and to a depth of 80 inches, it is medium acid, reddish yellow loamy fine sand.

Permeability is moderate, and the available water capacity is medium. Runoff is slow. Water and wind erosion are moderate hazards.

Included in mapping are small areas of Bastsil and Dutek soils. The included soils make up less than 10 percent of anyone mapped area.

This soil is used mainly as pasture, for which it has high potential. It is suited to improved bermudagrass. This soil has medium potential for use as cropland. Leaving crop residue on the surface helps to control erosion, modify the soil temperature, and maintain the organic matter content and productivity of the soil. The yield of crops and forage is good if this soil is properly managed.

This soil has high potential for urban uses. The low strength of the soil is a limitation to local roads and streets but can be easily overcome through good design and careful installation. The corrosivity of the soil also is a limitation but can be overcome by taking measures to protect installations. This soil is well suited to recreation uses.

This soil is in capability subclass IIe and in the Sandy Loam range site.

61-Silawa fine sandy loam, 3 to 8 percent slopes.

This is a deep, well drained, gently sloping to sloping soil on uplands. The areas are oblong to irregular in shape and range from 10 to 40 acres in size.

Typically, the surface layer is neutral, brown fine sandy loam 2 inches thick. To a depth of 6 inches, the soil is slightly acid, grayish brown fine sandy loam, and to a depth of 12 inches, it is medium acid, reddish brown sandy clay loam. To a depth of 26 inches, the soil is strongly acid, yellowish red sandy clay loam, and to a depth of 43 inches, it is strongly acid, reddish yellow fine sandy loam. Below that, to a depth of 80 inches, the soil is strongly acid, reddish yellow loamy fine sand.

Permeability is moderate, and the available water capacity is medium. Runoff is medium. Water erosion is a severe hazard, and wind erosion is a moderate hazard.

Included in mapping and making up less than 5 percent of this map unit are small areas of Bastsil soils.

This soil is used mainly as pasture, for which it has medium potential. It is suited to improved bermudagrass. In some areas, this soil is used as cropland, for which it has low potential. Establishing close-growing crops and leaving crop residue on the surface or working it into the surface layer help to control erosion, modify the soil temperature, and maintain the organic matter content and productivity of the soil. In some areas, terraces and grassed waterways are needed to control runoff and erosion.

This soil has high potential for urban uses. The main limitations are the slope and the hazard of erosion. The low strength of the soil is a limitation to local roads and streets, and corrosivity is a limitation unless installations are protected. The slope and the hazard of erosion are the main limitations to recreation uses.

This soil is in capability subclass IVe and in the Sandy Loam range site.

62-Silawa fine sandy loam, 2 to 8 percent slopes, eroded. This is a deep, gently sloping to sloping, well drained soil on uplands. The areas are oblong to irregular in shape and are 10 to 40 acres in size. Most areas are dissected by shallow gullies and an occasional deep gully. The surface layer has been washed away from about 30 percent of the areas, and the subsoil is exposed.

Typically, the surface layer is neutral, grayish brown fine sandy loam 5 inches thick. To a depth of 12 inches, the soil is medium acid, reddish brown sandy clay loam. To a depth of 41 inches, it is strongly acid, yellowish red sandy clay loam. Below that, to a depth of 80 inches, the soil is strongly acid, reddish yellow loamy fine sand.

Permeability is moderate, and the available water capacity is medium. Runoff is medium. Water erosion is a severe hazard, and wind erosion is a moderate hazard.

Included in mapping are small areas of Bastsil and Dutek soils. The included soils make up less than 5 percent of anyone mapped area.

The Silawa soil is used mainly as pasture, for which it has medium potential. It is well suited to improved bermudagrass. This soil has low potential for use as cropland, mainly because erosion is a severe hazard. If this soil is used for crops, establishing close-growing crops and leaving crop residue on the surface or working it into the surface layer help to control erosion and maintain productivity.

This soil has high potential for urban uses. The slope, corrosivity, and the severe hazard of erosion are the main limitations. The slope is a limitation for playgrounds.

This soil is in capability subclass IVe and in the Sandy Loam range site.

63-Silawa-Urban land complex, 2 to 6 percent slopes. This complex is made up of deep, well drained, gently sloping and sloping soils and areas of Urban land. Typically, the areas are long and narrow and range from 25 to more than 100 acres.

The Silawa soil makes up about 50 percent of this complex. Urban land, which consists of areas covered with buildings and pavement, makes up 25 percent. Minor soils make up the rest. In most areas, the soil has not been extensively disturbed by cutting and filling or excavating. This soil and Urban land are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Silawa soil is slightly acid, grayish brown fine sandy loam 6 inches thick. To a depth of 13 inches, the soil is medium acid, reddish brown sandy clay loam. To a depth of 44 inches, it is strongly acid, yellowish red sandy clay loam. And to a depth of 80 inches, the soil is strongly acid, reddish yellow loamy fine sand.

Permeability is moderate, and the available water capacity is medium. Runoff is medium. Water and wind erosion are moderate hazards.

Included in mapping are small areas of Bastsil and Dutek soils. Also included is a soil that is similar to the Silawa soil except that it has yellowish lower layers. The included soils make up less than 25 percent of anyone mapped area.

The Silawa soil has high potential for urban uses. The erosion hazard and the corrosivity and low strength of the soil are limitations, but they can be easily overcome through good design and careful installation. There are few limitations to recreation uses. The slope is a limitation for playgrounds.

This map unit was not assigned to a capability subclass or a range site.

64-Silstid loamy fine sand, 0 to 3 percent slopes.

This is a deep, well drained, nearly level to gently sloping soil on uplands. The areas are irregular in shape and range from 20 to about 2,500 acres in size.

Typically, the surface layer is neutral, brown loamy fine sand 10 inches thick. To a depth of 27 inches, the soil is neutral, light yellowish brown loamy fine sand. To a depth of 44 inches, it is slightly acid to medium acid, yellowish brown sandy clay loam. Below that, to a depth of 80 inches, the soil is strongly acid, reddish yellow loamy fine sand.

Permeability is moderate, and the available water capacity is low. Runoff is slow, and water erosion is a slight hazard. Wind erosion is a severe hazard if the surface is bare.

Included in mapping are small areas of Bastsil, Dutek, Eufaula, Mabank, and Silawa soils. The included soils make up less than 15 percent of anyone mapped area.

The Silstid soil is used mainly as pasture, for which it has medium potential. It is suited to improved bermudagrass. This soil has low potential for use as cropland. If this soil is used for crops, crop residue should be left on the surface or worked into the surface layer to help conserve moisture, modify the soil temperature, and maintain productivity.

This soil has high potential for urban uses. The corrosivity of the soil is a hazard to underground installations. The sandy texture of this soil is a limitation to recreation uses.

This soil is in capability subclass IIIs and in the Sandy range site.

65-Silstid-Urban land complex, 0 to 6 percent slopes. This complex is made up of nearly level, gently sloping, and sloping soils and areas of Urban land. The areas are oval or oblong and range from 30 to a few hundred acres.

The Silstid soil makes up about 60 percent of this complex. Urban land, which consists of areas covered with buildings and pavement, makes up about 25 percent. Minor soils make up the rest. The soil has been slightly altered during development. The Silstid soil and Urban land are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Silstid soil is neutral, brown loamy fine sand 10 inches thick. To a depth of 27 inches, the soil is neutral, light yellowish brown loamy fine sand, and to a depth of 65 inches, it is slightly acid to medium acid, yellowish brown sandy clay loam. Below that, to a depth of 80 inches, the soil is strongly acid, reddish yellow loamy fine sand.

Permeability is moderate, and the available water capacity is low. Runoff is slow to medium, and water erosion is a slight to moderate hazard. Wind erosion is a severe hazard if the surface is bare.

Included in mapping are small areas of Dutek, Bastsil, Mabank, and Silawa soils. The included soils make up less than 15 percent of anyone mapped area.

The Silstid soil has high potential for urban uses. The corrosivity of the soil is a hazard to underground installations. The sandy texture is a limitation to recreation uses.

This map unit was not assigned to a capability subclass or a range site.

69-Stephen-Urban land complex, 1 to 4 percent slopes. This complex is made up of shallow, well drained, gently sloping soils and areas of Urban land overlying the Austin Chalk geologic formation. The areas are oval or oblong and range from 15 to several hundred acres.

The Stephen soil makes up about 60 percent of this complex. Urban land, which consists of areas covered with buildings and pavement, makes up 30 percent. Minor soils make up the rest. In the more recent residential developments, the upper layers of the soil have been disturbed extensively by building and street construction. In the older developments, the soil has been disturbed only by street shaping and by excavating for service lines. In some areas, a layer of loamy topsoil 2 to 4 inches thick has been spread over the surface. The Stephen soil and Urban land are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Stephen soil is moderately alkaline, very dark brown silty clay 14 inches thick. The underlying material is white, platy and massive chalky limestone.

Permeability is moderately slow, and the available water capacity is very low. Runoff is medium, and the hazard of erosion is moderate.

Included in mapping are small areas of Austin, Brackkett, and Eddy soils. Also included are small areas of sloping Stephen soils. The included soils make up less than 10 percent of anyone mapped area.

The Stephen soil has medium potential for urban uses. The shallowness to rock is the main limitation; however, the rock is rippable and provides a good footing for foundations. The corrosivity of the soil is a limitation to underground installations. The clayey texture is a limitation to recreation uses.

This map unit was not assigned to a capability subclass or a range site.

71-Sunev clay loam, 3 to 8 percent slopes. This is a deep, well drained, gently sloping soil on uplands. The areas are mainly long and narrow and range from 10 to 30 acres.

Typically, the surface layer is moderately alkaline, dark grayish brown clay loam 12 inches thick. To a depth of 19 inches, the soil is moderately alkaline, brown clay loam. To a depth of 30 inches, it is moderately alkaline, yellowish brown clay loam. And to a depth of 65 inches, the soil is moderately alkaline, very pale brown clay loam.

Permeability is moderate, and the available water capacity is medium. Runoff is medium, and the hazard of erosion is severe.

Included in mapping are small areas of Altoga soils and small areas of eroded Sunev clay loam. The included soils make up less than 15 percent of anyone mapped area.

This soil is used mainly as pasture, for which it has medium potential. It is suited to improved bermudagrass. This soil has medium potential for use as cropland. The medium runoff and the severe hazard of erosion are limitations for crops. Establishing close-growing crops and leaving crop residue on the surface or working it into the surface layer help to control runoff and erosion and to maintain tilth and productivity.

This soil has high potential for urban uses. The corrosivity and low strength of the soil are limitations, but they can be overcome through good design and careful installation.

The soil is in capability subclass IVe and in the Clay Loam range site.

72-Trinity clay, occasionally flooded. This is a deep, somewhat poorly drained, nearly level soil on flood plains. The areas are long and range from 25 to as much as several thousand acres in size. This soil is subject to flooding during major storms unless levees are constructed to protect the areas.

Typically, the surface layer is moderately alkaline, very dark grayish brown clay 5 inches thick. To a depth of 31 inches, the soil is moderately alkaline, very dark gray clay. To a depth of 48 inches, it is moderately alkaline, black clay. Below that, to a depth of 68 inches, the soil is moderately alkaline, black clay that has brownish mottles.

Permeability is very slow, and the available water capacity is high. Runoff is very slow, and the hazard of erosion is slight.

Included in mapping are small areas of Ovan and Seagoville soils and small sloughlike areas of Trinity soils that are frequently flooded. The included soils make up less than 20 percent of anyone mapped area.

The Trinity soil is used mainly as cropland, for which it has high potential. If the soil is properly managed, the yield of the crops commonly grown in the county is good. Leaving crop residue on or near the surface helps to maintain the tilth and productivity of the soil. In places, drainage outlets are needed. This soil has high potential for use as pasture. It is well suited to improved bermudagrass.

This soil has very low potential for urban uses. The hazard of flooding and the wetness, corrosivity, and very high shrink-swell potential of the soil are limitations. In addition, the walls of cuts and excavations tend to cave in or slough. The hazard of flooding and clayey texture and wetness of the soil are the main limitations to recreation uses.

This soil is in capability subclass IIw and in Clayey Bottomland range site.

73- Trinity clay, frequently flooded. This is a deep, nearly level, somewhat poorly drained soil on flood plains. The areas are long and narrow and range from 30 to as much as several thousand acres. This soil is flooded two or three times in most years. The floodwater is shallow to moderately deep.

Typically, the surface layer is moderately alkaline, dark gray clay 7 inches thick. To a depth of 20 inches, the soil is moderately alkaline, dark grayish brown clay. To a depth of 45 inches, it is moderately alkaline, very dark gray clay. Below that, to a depth of 68 inches, the soil is moderately alkaline, dark grayish brown clay.

Permeability is very slow, and the available water capacity is high. Runoff is slow, and the hazard of erosion is ·slight.

Included in mapping are small areas of Ovan and Seagoville soils and island-like areas of Trinity soils that are occasionally flooded. The included soils make up less than 20 percent of anyone mapped area.

The Trinity soil is used mainly as pasture, for which it has high potential. It is well suited to improved bermudagrass. This soil is not used for crops because of the frequent flooding.

This soil has very low potential for urban uses and low potential for recreation uses. The frequent flooding and the wetness, corrosivity, very high shrink-swell potential, and clayey texture of the soil are limitations to these uses. In addition, the walls of cuts and excavations tend to cave in or slough.

This soil is in capability subclass Vw and in the Clayey Bottomland range site.

74- Trinity-Urban land complex. This complex is made up of deep, nearly level, somewhat poorly drained soils and areas of Urban land on flood plains. The areas generally are long and narrow and range from 40 to as much as several hundred acres.

The Trinity soil makes up about 60 percent of this complex, and Urban land, which consists of areas covered with pavement and buildings, makes up 20 percent. Minor soils make up the rest. In some areas, fill material consisting of soil, rock, broken pavement, and trash has been stacked 2 to 4 feet deep on the surface. In some areas, clayey material, accumulated during the straightening of some stream channels, has been spread 1 to 3 feet deep on the flood plains. The Trinity soil and Urban land are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Trinity soil is moderately alkaline, very dark gray clay 30 inches thick. To a depth of 48 inches, the soil is moderately alkaline, black clay. Below that, to a depth of 80 inches, it is moderately alkaline, dark grayish brown clay.

Permeability is very slow, and the available water capacity is high. Runoff is very slow, and the hazard of erosion is slight.

Included in mapping are small areas of Frio, Gowen, and Ovan soils. The included soils make up less than 20 percent of anyone mapped area.

The soils in this complex have very low potential for urban uses, mainly because of the hazard of flooding. In most areas of Urban land, levees have been constructed to prevent damage by flooding. Other limitations to urban development are the very high shrink-swell potential, corrosivity, low strength, and wetness of the soil. The walls of cuts and excavations tend to cave in or slough. Wetness and the hazard of flooding are the main limitations to recreation uses.

This map unit was not assigned to a capability subclass or a range site.

75-Urban land. This map unit consists of extensively built up areas where 75 percent or more of the surface is covered with buildings and pavement. The soils in these areas have been altered or covered during urban development; therefore, it was not feasible to identify and separate them in mapping. The areas range from 40 to as much as several hundred acres in size. Residential areas make up about 1 0 percent of this complex.

Included in mapping are small areas where buildings and other structures cover 40 to 60 percent of the surface.

This map unit was not assigned to a capability subclass or a range site.

76-Ustorthents, undulating. This map unit is made up of areas where loamy and sandy soil material has been removed. In these areas, the surface is 2 to 6 feet lower than in the surrounding areas. The slopes are nearly level to undulating. The areas are irregular in shape and range from 15 to 50 acres in size.

The soil material in this unit is dominantly loamy.

There are a few mounds of sand and a few low areas of clayey material. The soil material varies widely in color. In a few areas, there are small, deep pits that are partly filled with water.

The areas of this unit mainly are idle and are covered with weeds and grasses. A few areas are used as building sites.

This map unit was not assigned to a capability subclass or a range site.

78-Wilson clay loam, 0 to 1 percent slopes. This is a deep, nearly level, somewhat poorly drained soil on uplands. The areas are irregular in shape and range from 10 to as much as several hundred acres in size.

Typically, the surface layer is mildly alkaline, dark grayish brown clay loam 5 inches thick. To a depth of 13 inches, the soil is mildly alkaline, dark gray clay. To a depth of 42 inches, it is neutral, dark gray clay. To a depth of 56 inches, the soil is mottled, very dark gray and olive brown, neutral clay, and to a depth of 64 inches, it is moderately alkaline, light olive clay. .

Permeability is very slow, and the available water capacity is high. Runoff is very slow, and the hazard of erosion is slight.

Included in mapping are small areas of Burleson, Crockett, Houston Black, and Mabank soils. The included soils make up less than 10 percent of any mapped area.

The Wilson soil is used mainly as cropland, for which it has medium potential. Leaving crop residue on or near the surface of the soil helps to maintain tilth and productivity. In some areas, this soil is used as pasture, for which it has medium potential. It is well suited to improved bermudagrass.

This soil has low potential for urban uses. The high shrink-swell potential, corrosivity, and low strength of the soil are limitations, but they can be overcome through good design and careful installation. Wetness also is a limitation to urban uses, and it is more difficult to overcome. Wetness and the very slow permeability of the soil are the main limitations to recreation uses.

This soil is in capability subclass IIIw and in the Claypan Prairie range site.

79-Wilson clay loam, 1 to 3 percent slopes. This is a deep, gently undulating, somewhat poorly drained soil on uplands. The areas are oblong and range from 10 to 100 acres.

Typically, the surface layer is mildly alkaline, dark grayish brown clay loam 4 inches thick. To a depth of 11 inches, the soil is mildly alkaline, dark gray clay. To a depth of 42 inches, it is neutral, dark gray clay. Below that, to a depth of 56 inches, the soil is mottled, dark gray and olive brown, neutral clay, and to a depth of 64 inches, it is moderately alkaline, light olive brown clay.

Permeability is very slow, and the available water capacity is high. Runoff is medium, and the hazard of erosion is moderate.

Included in mapping are small areas of Burleson, Crockett, Houston Black, and Mabank soils. The included soils make up less than 10 percent of any mapped area.

The Wilson soil is used mainly as pasture, for which it has medium potential. It is suited to improved bermudagrass. In a few areas, this soil is used as cropland, for which it has low potential. The hazard of erosion and the very slow permeability and low fertility of the soil are the main limitations to crops. Leaving crop residue on the surface or working it into the surface layer helps to maintain the tilth and productivity of this soil. Terraces and grassed waterways can help to control runoff.

This soil has low potential for urban uses. The hazard of erosion and the high shrink-swell potential, corrosivity, and low strength of the soil are limitations to urban development, but they can be overcome through good design and careful installation. Wetness also is a limitation to urban uses, and it is more difficult to overcome. The very slow permeability and wetness of this soil are the main limitations to recreation uses.

This soil is in capability subclass IIIe and in the Claypan Prairie range site.

80-Wilson-Urban land complex, 0 to 2 percent slopes. This complex is made up of nearly level to gently sloping, deep, somewhat poorly drained soils and areas of Urban land. The areas are oblong and range from 15 to as much as a few hundred acres.

The Wilson soil makes up about 60 percent of this complex, and Urban land, which consists of areas covered with buildings and pavement, makes up 30 percent. Minor soils make up the rest. In the more recent residential developments, the upper layers of the soil have been disturbed extensively by building and street construction. In the older developments, the soil has been disturbed only by street shaping and by excavating for service lines. In some yards, a layer of loamy topsoil 2 to 4 inches thick has been spread over the surface. The Wilson soil and Urban land are so intermingled that it was not practical to separate them in mapping at the scale used.

Typically, the surface layer of the Wilson soil is mildly alkaline, dark grayish brown clay loam 5 inches thick. To a depth of 42 inches, the soil is neutral, dark gray clay. To a depth of 56 inches, it is mottled, very dark gray and olive brown, neutral clay. Below that, to a depth of 64 inches, the soil is moderately alkaline, light olive brown clay.

Permeability is very slow, and the available water capacity is high. Runoff is slow, and the hazard of erosion is slight.

Included in mapping are small areas of Burleson, Crockett, Houston Black, and Mabank soils. The included soils make up less than 10 percent of anyone mapped area.

The Wilson soil has medium potential for urban uses. The high shrink-swell potential, corrosivity, and low strength of the soil are the main limitations to urban uses, but they can be overcome through good design and careful installation. Wetness also is a limitation to urban uses, and it is more difficult to overcome. The wetness and very slow permeability of the soil are the main limitations to recreation uses.

This map unit was not assigned to a capability subclass or a range site.

Great Trinity Forest Management Plan

Soil

Soil Series

LOCATION AUSTIN TX
Established Series
Rev. CLN:GLL
12/89

AUSTIN SERIES

The Austin series consists of moderately deep, well drained, moderately slowly permeable soils that formed in chalk and interbedded marl. These soils are on nearly level to sloping erosional uplands. Slopes range from 0 to 8 percent.

TAXONOMIC CLASS: Fine-silty, carbonatic, thermic Udorthentic Haplustolls

TYPICAL PEDON: Austin silty clay--cropland. (Colors are for dry soil unless otherwise stated.)

Ap--0 to 6 inches; dark grayish brown (10YR 4/2) silty clay, very dark grayish brown (10YR 3/2) moist; weak fine granular and subangular blocky structure; hard, firm but crumbly, sticky, plastic; many fine roots; many fine and very fine pores; many wormcasts; few fine calcium carbonate concretions; calcareous, moderately alkaline; clear smooth boundary. (4 to 8 inches thick)

A--6 to 15 inches; dark brown (10YR 4/3) silty clay, dark brown (10YR 3/3) moist; moderate very fine subangular blocky and granular structure; hard, firm but crumbly, sticky, plastic; many fine roots; many fine and very fine pores; many wormcasts; common fine calcium carbonate concretions; calcareous, moderately alkaline; gradual smooth boundary. (4 to 12 inches thick)

Bw1--15 to 27 inches; brown (10YR 5/3) silty clay, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, firm, crumbly, sticky, plastic; few fine roots; many fine pores; many light yellowish brown (2.5Y 6/4) wormcasts; common fine calcium carbonate concretions; few fine fragments of chalk; calcareous, moderately alkaline; clear smooth boundary. (10 to 20 inches thick)

Bw2--27 to 30 inches; brown (10YR 5/3) silty clay, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, firm, sticky, plastic; few fine roots; common wormcasts; about 30 percent platy fragments of chalk less than 3 inches in the axis; calcareous, moderately alkaline; clear irregular boundary. (0 to 10 inches thick)

Cr--30 to 36 inches; white (10YR 8/2) and very pale brown (10YR 8/4) platy chalk that is less hard than 3, Mohs scale; few thin tongues of brown silty clay in crevices between chalk plates.

TYPE LOCATION: McLennan County, Texas; 0.4 mile northeast of the intersection of Robinson Road and Interstate 35, which is 2 miles northeast of Lorena, 150 feet southeast of Robinson Road and 200 feet south of a metal barn.

RANGE IN CHARACTERISTICS: The solum ranges from 20 to 40 inches thick. It is silty clay loam, silty clay, or clay, with clay contents of 35 to 55 percent. Silicate clay content ranges from 20 to 35 percent. Below the A horizon, the soil ranges from 40 to 70 percent calcium carbonate equivalent. Some pedons have few to common fragments of chalk on the surface and within the sola.

The A horizon is brown, dark grayish brown, grayish brown or very dark grayish brown with hue of 7.5YR, 10YR, or 2.5Y, moist value of 3.5 or less and chroma of 2 or 3. It is 8 to 20 inches thick.

The B horizon has colors in shades of brown or gray with hue of 7.5YR, 10YR or 2.5Y, value of 5 to 7, chroma of 2 to 4.

The substrata are platy chalk, interbedded chalk and marl, or soft limestone bedrock.

COMPETING SERIES: These are the Lott series in the same family and the Altoga, Bolar, Brackett, Denton, Krum, Lewisville, Nuvalde, Patrick, Somervell, Stephen, and Valera series. Altoga and Brackett soils lack mollic epipedons, and Brackett soils have sola less than 20 inches thick. Bolar soils have more than 15 percent coarser than very fine sand in the control section. Denton and Krum soils have cracks 0.4-inch wide at depths of 20 inches when dry. Lewisville soils have less than 40 percent calcium carbonate within depths of 40 inches and are not underlain by chalk. Lott soils have sola more than 40 inches deep and are underlain by marl. Nuvalde soils have more than 35 percent noncarbonate clay in the control section. Patrick soils are sandy in the lower part of the control section. Somervell soils contain more than 35 percent coarse fragments. Stephen soils lack B horizons and are less than 20 inches thick. Valera soils have petrocalcic horizons.

GEOGRAPHIC SETTING: Austin soils are on uplands. Slope gradients are mainly less than 5 percent but range from 0 to 8 percent. The soil formed in mainly chalk or interbedded marl and chalk and is mostly of the Austin Formation. In places, the soil formed in soft limestone. The climate is warm subhumid. Mean annual precipitation ranges from 30 to 45 inches, mean annual temperature from 63 degrees to 70 degrees F, and Thornthwaite P-E indices from 44 to 66.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the competing Stephen series and the Eddy, Dalco, Fairlie, Houston Black, Howe, and Whitewright series. Eddy and Whitewright soils have sola less than 20 inches deep and in addition they have ochric epipedons. Dalco, Fairlie and Houston Black soils have intersecting slickensides. Howe soils have ochric epipedons. Eddy and Stephen soils occupy similar positions to Austin soils. Dalco, Fairlie and Houston Black soils occupy lower positions in the landscape. Howe and Whitewright soils occupy adjacent sideslopes.

DRAINAGE AND PERMEABILITY: Well drained; medium to rapid runoff; moderately slow permeability.

USE AND VEGETATION: Mainly cultivated. Principal crops are small grains, cotton, and grain sorghums. Some areas are used for native range. Original vegetation was mid and tall grasses such as little bluestem, indiangrass, and sideoats grama. Grasses now are mainly gramas and buffalograss.

DISTRIBUTION AND EXTENT: The Blackland Prairies of Texas. The series is extensive.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Travis County, Texas; 1904.

REMARKS: Classification was changed 11/89 from fine-silty, carbonatic, thermic Entic Haplustolls to fine-silty, carbonatic, thermic Udorthentic Haplustolls.

Diagnostic horizons and features recognized in this pedon are:

Mollic epipedon - 0 to 15 inches, the Ap and A horizons.

Cambic horizon - 15 to 30 inches, the Bw1 and Bw2 horizons.

Paralithic contact of platy chalk at a depth of 30 inches.

Calcium carbonate equivalent in the control section of more than 40 percent.

National Cooperative Soil Survey
U.S.A.

LOCATION AXTELL TX+OK
Established Series
Rev. GLL-CLN-ACT
10/97

AXTELL SERIES

The Axtell series consists of very deep, moderately well drained, very slowly permeable soils on Pleistocene terraces. The soil formed in slightly acid to alkaline clayey sediments. Slopes are dominantly 0 to 5 percent, but range up to 12 percent.

TAXONOMIC CLASS: Fine, smectitic, thermic Udertic Paleustalfs

TYPICAL PEDON: Axtell very fine sandy loam - post oak savannah. (Colors are for dry soil unless otherwise stated.)

A--0 to 3 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; very hard, very friable; many fine and coarse roots; common fine pores; slightly acid; clear smooth boundary. (3 to 10 inches thick)

E--3 to 8 inches; very pale brown (10YR 7/3) very fine sandy loam, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; hard, very friable; many fine and coarse roots; common fine pores; strongly acid; clear smooth boundary. (0 to 9 inches thick)

Bt--8 to 21 inches; reddish yellow (5YR 6/6) clay loam, yellowish red (5YR 5/6) moist; weak medium and coarse angular blocky structure; extremely hard, very firm; sticky and plastic; many fine and coarse roots between peds; few fine pores; few pressure faces; common medium distinct light brownish gray (10YR 6/2) iron depletions and few medium distinct strong brown (10YR 5/6) masses of iron accumulation; very strongly acid; clear wavy boundary. (6 to 15 inches thick)

Btss1--21 to 29 inches; light gray (10YR 7/2) clay, light brownish gray (10YR 6/2) moist; moderate medium and coarse angular blocky structure; few wedge-shaped peds; extremely hard, very firm; sticky and plastic; common fine, medium, and few coarse roots; few fine pores; thin patchy clay films on surface of peds; common pressure faces; few slickensides; few fine iron-manganese concretions; common medium and coarse distinct yellowish red (5YR 5/6) and few fine distinct strong brown (7.5YR 5/6) masses of iron accumulation; strongly acid; gradual wavy boundary.

Btss2--29 to 37 inches; grayish brown (10YR 5/2) clay loam, dark grayish brown (10YR 4/2) moist; moderate medium and coarse angular blocky structure; few wedge-shaped peds; extremely hard, very firm; sticky and plastic; common fine and medium roots; few fine pores; common medium pressure faces; few small slickensides; few fine iron-manganese concretions; few medium faint dark yellowish brown (10YR 4/4) masses of

iron accumulation; moderately acid; clear wavy boundary. (combined thickness of Btss horizons is 15 t o45 inches)

Btk1--37 to 53 inches; light brownish gray (10YR 6/2) clay loam, grayish brown (10YR 5/2) moist; moderate medium and coarse prismatic structure parting to moderate coarse angular blocky; extremely hard, very firm; sticky and plastic; common fine and medium roots; nearly continuous clay films along surfaces of prisms; few fine pressure faces; 7 percent coatings and masses of calcium carbonate along surfaces of peds; few fine streaks of gypsum; few fine iron-manganese concretions; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; neutral; gradual wavy boundary. (0 to 20 inches thick)

Btk2--53 to 75 inches; light gray (2.5Y 7/2) clay loam, light brownish gray (2.5Y 6/2) moist; moderate medium and coarse prismatic structure parting to moderate coarse angular blocky; extremely hard, very firm, sticky and plastic; common fine and medium roots; few pressure faces; about 3 percent coatings and masses of calcium carbonate along surfaces of peds; few fine streaks of gypsum; few vertical streaks of dark yellowish brown soil materials; few fine iron-manganese concretions; common medium and coarse distinct brownish yellow (10YR 6/8) and few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; moderately alkaline; gradual wavy boundary. (0 to 26 inches thick)

B't--75 to 80 inches; distinctly and coarsely mottled light gray (2.5Y 7/2), brownish yellow (10YR 6/8) and yellowish brown (10YR 5/4) clay loam; moderate medium and coarse prismatic structure parting to moderate medium and coarse angular blocky; extremely hard, very firm, sticky and platic; few fine roots; few small slickensides; few coats of calcium carbonate on surfaces of some peds; few streaks of gypsum; few fine and coarse siliceous pebbles; few fine iron-manganese concretions; slightly alkaline.

TYPE LOCATION: Navarro County, Texas; from the intersection of State Highway 22 and Farm Road 55 in Blooming Grove; 1.1 miles south on Farm Road 55; 3.8 miles west-southwest on county road to flood prevention structure; 250 feet west of the west channel below flood prevention structure; 100 feet north in post oak timber. Latitude 32 degrees, 02 minutes 33 seconds N, Longitude 96 degrees, 43 minutes 57 seconds W.

RANGE IN CHARACTERISTICS: Solum thickness is more than 80 inches. The boundary between the A and Bt horizons is abrupt over the subsoil crests and clear over the subsoil troughs, and the texture change is abrupt. The solum contains 0 to 5 percent siliceous pebbles, with some pedons containing up to 35 percent pebbles on and in the surface layer. Depth to secondary carbonates ranges from 30 to 65 inches in most pedons. The 10- to 40- inch particle size control section is clayey with average clay content ranging from 35 to 50 percent. COLE ranges from 0.07 to 0.10 in the upper 20 inches of the Bt horizon and the potential linear extensibility is greater than 2.5 inches in the upper 50 inches of the soil.

The A and E horizons average less than 10 inches thick in more than 50 percent of the pedon, but they are as much as 15 inches thick over subsoil troughs. The A horizon has hue of 10YR, value of 4 to 7, and chroma of 2 to 4. The E horizon has value 1 to 3 units more than the A horizon. The A and E horizons are fine sandy loam, very fine sandy loam, loam, or their gravelly counterparts. Reaction ranges from strongly acid to slightly acid.

The upper part of the Bt horizon has hue of 2.5YR, 5YR or 7.5YR, value of 4 to 6, and chroma of 3 to 8. Redoximorphic features in shades of red, brown or gray are in most pedons or the matrix is mottled with these colors. Texture is clay loam or clay. Reaction is very strongly acid or strongly acid, and the base saturation ranges from 50 to 75 percent.

The lower part of the argillic horizon is mottled in hue of 2.5YR to 10YR and are in shades of red, brown, yellow, and gray. In some pedons, the lower Bt horizons have hue of 2.5Y or 5Y. Texture is clay loam or clay. Reaction ranges from strongly acid to slightly acid.

The Btk horizon, where present, has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 6. Redoximorphic features are in shades of brown or yellow. Texture is clay loam or clay. Reaction ranges from neutral to moderately alkaline. Visible carbonates range from less than 2 to about 10 percent by volume and are in the form of concretions, masses and coatings on the surface of peds.

The B't and BCk horizons, where present, have colors mainly in shades of gray or brown. They are sandy clay loam, clay loam, or clay. Reaction ranges from moderately acid to moderately alkaline and they are calcareous in some pedons. Calcium carbonate concretions and gypsum crystals range from none to common.

COMPETING SERIES: These are the Bremond, Crockett, Crosstell, Kurten, Navo, Tabor and Zulch series. Similar soils are the Annona, Edge, Gredge, Normangee, Payne, Tabor, and Woodtell series. Bremond soils are moderately acid to neutral in the upper Bt horizon and formed in alkaline clayey sediments. Crockett soils are moderately acid to neutral in the upper Bt horizon, have base saturation of 75 to 100 percent, and formed in alkaline marine clays and shales under prairie vegetation. Crosstell soils have solum thickness of 40 to 60 inches and are underlain by weathered shale and sandstone of the Cretaceous Woodbine formation. Kurten soils have solum thickness of 40 to 60 inches. Navo, Normangee and Payne soils do not have an abrupt textural change between the A and Bt horizon and in addition, Payne soils have COLE of less than 0.07. Tabor soils have A horizons more than 10 inches thick in more than half the pedon and have matrix colors in hue yellower than 7.5YR in the Bt1 horizon. Zulch soils have solum thickness from 30 to 40 inches and are underlain by weathered shale of the Yegua formation. The Annona and Woodtell soils are not dry in any part of the moisture control section for 90 cumulative days in most years. The Edge and Gredge soils do not have vertic properties, have a significant decrease in clay within 35 inches of the surface and Edge soils are less than 60 inches thick.

GEOGRAPHIC SETTING: Axtell soils are on broad, nearly level to strongly sloping stream terraces and terrace remnants about 50 to 300 feet above the present streams. Also included are terrace remnants on stream divides in erosional uplands. These sediments are mainly of Pleistocene Age. Slopes are mainly between 0 and 5 percent, but range to 12 percent. The soil formed in clayey alluvium. The mean annual temperature ranges from about 64 to 70 degrees F., and mean annual precipitation ranges from from 32 to 42 inches. Frost free days range from 240 to 270 days and elevation ranges from 200 to 600 feet. Thornthwaite P-E indices ranges from 54 to 66.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the competing Crockett and Tabor series and the Lufkin, Rader, and Wilson series. Crockett soils are on slightly higher upland positions. Lufkin and Wilson soils are in similar or slightly lower terrace positions and are dominated by colors with chroma 2 or less. Tabor soils are on positions similar Axtell. Rader soils are on similar or slightly lower positions, and have fine-loamy control sections.

DRAINAGE AND PERMEABILITY: Moderately well drained. Permeability is very slow. Runoff is low on slopes less than 1 percent, medium on 1 to 3 percent slopes, and high on 3 to 5 percent slopes.

USE AND VEGETATION: Mostly cultivated in the past, but now in pasture. Some areas are farmed to corn, grain sorghum, or small grains. Native vegetation is post oak, blackjack oak, hickory, red cedar, greenbriar; grasses include mid and tall grasses such as little bluestem, big bluestem, indiangrass, panicum and paspalum.

DISTRIBUTION AND EXTENT: Mainly in east-central Texas, but small areas are in Oklahoma. This soil is of moderate extent.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: McLennan County, Texas; 1947.

REMARKS: The Axtell soils were formerly included in the Crockett series. More recently the Edge, Gredge, and Kurten series have been separated out of the Axtell series because they have thinner sola with less clay in the lower Bt horizons. This revision confines the Axtell series to stream terraces or terrace remnants in upland positions. This will reduce the total acres of the series. However, it will still be moderately extensive. Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon - 0 to 8 inches. (A and E horizons)

Abrupt textural change - occurs at 8 inches depth (between E and Bt horizon).

Argillic horizon - 8 to 80 inches. (Bt horizons)

Vertic properties - COLE is 0.07 to 0.10. Slickensides and pressure faces in argillic horizon.

ADDITIONAL DATA: McLennan County, Texas: Soil Survey Laboratory Memo 2; 1954; Profiles 53, 54, 55, and Typical Pedon: Navarro County, Texas: S84TX-349-1.

Soil Interpretation Record Number: TX0328

National Cooperative Soil Survey
U.S.A.

LOCATION BASTSIL TX
Established Series
Rev. GLL-CLN
04/2007

BASTSIL SERIES

The Bastsil series consist of very deep, well drained moderately permeable soils that formed in loamy alluvial sediments. These nearly level to gently sloping soils are on stream terraces. Slopes range from 0 to 5 percent.

TAXONOMIC CLASS: Fine-loamy, siliceous, active, thermic Udic Paleustalfs

TYPICAL PEDON: Bastsil loamy fine sand--cropland. (Colors are for dry soil unless otherwise stated.)

A--0 to 6 inches; light brown (7.5YR 6/4) loamy fine sand, brown (7.5YR 4/4) moist; single grained; loose, very friable; many very fine and fine roots; few siliceous pebbles; slightly acid; clear smooth boundary. (4 to 8 inches thick)

E--6 to 16 inches; light brown (7.5YR 6/4) loamy fine sand, brown (7.5YR 5/4) moist; single grained; loose, very friable; many very fine and fine roots; few coarse roots; few siliceous pebbles; slightly acid; abrupt smooth boundary. (0 to 12 inches thick)

Bt1--16 to 31 inches; red (2.5YR 4/6) sandy clay loam, dark red (2.5YR 3/6) moist; common medium faint to coarse yellowish red (5YR 4/6) mottles; weak coarse prismatic structure parting to moderate medium and coarse subangular blocky; very hard, friable; common fine roots; many fine pores; few wormcasts; common thin patchy clay films on faces of peds and bridging sand grains; few siliceous pebbles; slightly acid; gradual wavy boundary. (12 to 25 inches thick)

Bt2--31 to 43 inches; strong brown (7.5YR 5/6) sandy clay loam, strong brown (7.5YR 5/6) moist; common fine and medium faint yellowish red (5YR 5/6, 5/8) mottles; moderate coarse prismatic structure parting to weak and moderate medium and coarse subangular blocky; very hard, friable; common fine roots; many fine and very fine pores; few wormcasts; common clay films on faces of peds and bridging sand grains; few siliceous pebbles; few black masses up to 1 cm in diameter; slightly acid; gradual wavy boundary. (10 to 26 inches thick)

Bt3--43 to 52 inches; strong brown (7.5YR 5/6) sandy clay loam, strong brown (7.5YR 5/6) moist; common medium distinct dark red (2.5YR 3/6) mottles in interior of peds; moderate coarse prismatic structure parting to weak and moderate medium and coarse subangular blocky; extremely hard, friable; common fine roots and many fine and very fine pores in strong brown part; common thin patchy clay films on faces of prisms and

bridging sand grains; few smooth, rounded siliceous pebbles; slightly acid; gradual irregular boundary. (0 to 15 inches thick)

Bt/E--52 to 80 inches; red (2.5YR 4/6) sandy clay loam, red (2.5YR 4/6) moist (Bt part); common faint medium and coarse red (10R 4/6) and few medium distinct strong brown (7.5YR 6/6) mottles in interiors of peds; moderate and strong coarse prismatic structure parting to medium prismatic and coarse blocky; extremely hard, firm; coarse prisms coated with light gray (10YR 7/2) sand grains l mm thick (E part); medium prisms and coarse blocks coated with light gray (10YR 7/2) clay films; common fine roots in light gray areas; common very fine pores in light gray areas; few siliceous pebbles; slightly acid.

TYPE LOCATION: Hill County, Texas, about 17 miles west of Hillsboro in coastal bermudagrass field. North from Whitney on Farm Road 933 for 5 miles, west on Farm Road 1713 for 5.5 miles into McCown Park, south on sand road for 0.5 mile, east 0.15 mile, south 0.25 mile, west 0.25 mile and south 0.15 mile. Site is 375 feet west of road and 75 feet south of wooded area.

RANGE IN CHARACTERISTICS: Solum thickness ranges from 60 to more than 80 inches. The average clay content of the control section ranges from 20 to 30 percent. Most pedons contain a few siliceous pebbles and they range up to 15 percent by volume in some horizons. Beds of siliceous gravel and sand are typically within a depth of 5 to 12 feet. The gravel are mainly smooth, rounded, and less than three inches across.

The A horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 2 to 6. It is loamy fine sand or fine sandy loam. The reaction ranges from medium acid to neutral unless limed.

The E horizon has colors with 1 to 2 value or more than the A horizon. The chroma however are typically 4 or less. It is loamy fine sand or fine sandy loam. Reaction ranges from strongly acid to slightly acid unless limed. The E horizon is absent in some pedons as a result of being mixed with the A horizon by cultivation.

The Bt horizon has colors in shades of red or brown with hue of 2.5YR, 5YR, or 7.5YR, value of 4 to 6, and chroma of 4 to 8. Typically there are mottles of these colors or in other shades of red and yellow. The texture is mainly sandy clay loam, but the range includes fine sandy loam, loam, and clay loam. The reaction ranges from medium acid to mildly alkaline. In some pedons the reaction increases with depth.

The Bt/E horizon has reddish or brownish matrix colors. Grayish uncoated sand and silt particles are on the surface of peds and in streaks or pockets. These soil materials (E) range from a few coatings between peds to about 15 percent by volume. The texture is most commonly sandy clay loam but ranges from sandy loam to clay loam. The reaction ranges from medium acid to mildly alkaline. However, parts or spots in this horizon of some pedons are strongly acid.

Some pedons have a 2C horizon below a depth of 60 inches. It is loamy fine sand, loamy sand or stratified beds of sand and gravel. The reaction is variable and ranges from medium acid to moderately alkaline. Some pedons are calcareous.

COMPETING SERIES: These include the Duffau and the Flynn series. Other similar soils include Bastrop, Delwin, Gasil, Gholson Konawa, and Silawa series. Bastrop, Delwin, and Konawa soils have mixed mineralogy. Duffau soils are on uplands formed in the cretaceous Paluxy sand and does not have B/E horizons and does not have sandy or gravelly sediments below the solum. Flynn soils have fragments of weathered glaucontic materials in the lower argillic horizon. Gasil soils have control sections with hue of 7.5YR or 10YR and base saturation less than 75 percent throughout the argillic horizon. Gholson soils have a clay decrease of more than 20 percent of the maximum within 60 inches. Silawa soils are more acid throughout the argillic horizon and have less clay in the lower part.

GEOGRAPHIC SETTING: Bastsil soils are on nearly level or gently sloping stream terraces. Slopes are typically 1 to 3 percent but range from 0 to 5 percent. The soil formed in loamy, alluvial sediments. The climate is subhumid. The normal annual precipitation ranges from 28 to 36 inches. Mean annual temperature ranges from 64 to 68 degrees F. The average summer moisture deficit is 7 to 9 inches. Frost free period is 220 to 250 days and elevation ranges from 350 to 1000 feet. Thornthwaite PE indices are 44 to 62.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the competing Gasil series and Aquilla, Desan, Minwells, and Silstid series. Aquilla soils have a sandy control section and are on similar terrace positions. Desan soils have sandy grossarenic surfaces. Gasil and Silstid soils are on higher lying upland positions. Minwells soils have a clayey control section. Silstid soils have sandy arenic surfaces. These soils are on similar or slightly higher terrace positions.

DRAINAGE AND PERMEABILITY: Well drained; medium runoff; moderate permeability. There is a water table for short periods of less than 30 days below a depth of 48 inches in most years.

USE AND VEGETATION: Used mainly for crops and improved pastures. Crops include peanuts, grain sorghum, small grain, and truck crops. Pastures of improved bermudagrass or kleingrass are common. Native vegetation is mainly little bluestem with other perennial grasses and grape, greenbriar, low shrubs, with post oak and blackjack oak trees.

DISTRIBUTION AND EXTENT: Central Texas, mainly along terraces of the Brazos and Trinity Rivers or other rivers that have watersheds primarily with soils of Cretaceous age. The series is of moderate extent.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Hill County, Texas, 1975.

REMARKS: The soils were formerly included with Bastrop series.

Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon - the zone from the surface of the soil to a depth of 16 inches. (A & E horizons)

Argillic horizon - the zone from 16 to 80 inches.

Paleustalf feature - clay content does not decrease by more than 20 percent of the maximum content within 60 inches from the soil surface.

ADDITIONAL DATA: NSSL: S73TX-109-1; S74TX-113-1 & 2; S80TX-099-1 & 2; S80TX-099-6 & 7 & 8; S80TX-193-1 & 2. All are mineralogy determination or mineralogy and particle-size.

National Cooperative Soil Survey
U.S.A.

LOCATION BURLESON TX+OK
Established Series
Rev. ELG
03/2001

BURLESON SERIES

The Burleson series consists of very deep, moderately well drained, very slowly permeable soils that formed in alkaline clayey sediments. These soils are on nearly level to gently sloping Pleistocene terraces. Slopes range from 0 to 5 percent.

TAXONOMIC CLASS: Fine, smectitic, thermic Udic Haplusterts

TYPICAL PEDON: Burleson clay--native pasture; in a pit midway between center of microdepression and microknoll. (Colors are for moist soil unless otherwise stated).

A1--0 to 6 inches; black (10YR 2/1) clay, very dark gray (10YR 3/1) dry; moderate medium subangular blocky structure parting to moderate very fine angular blocky; very hard, very firm, very sticky and very plastic; many fine roots; cracks from 1/2 to 1 1/2 inches wide extend through the horizon; few snail shell fragments; few fine siliceous pebbles; slightly alkaline; gradual smooth boundary. (4 to 12 inches thick)

A2--6 to 12 inches; black (10YR 2/1) clay, very dark gray (10YR 3/1) dry; moderate medium angular blocky structure parting to moderate very fine angular blocky; very hard, very firm, very sticky and very plastic; many fine roots; cracks from 1/2 to 1 1/2 inches wide extend through the horizon; common distinct pressure faces; few fine siliceous pebbles; slightly alkaline. (0 to 12 inches thick)

Bss1--12 to 24 inches; very dark gray (10YR 3/1) clay; moderate medium and coarse angular blocky structure; few wedge-shaped peds: very hard, very firm, very sticky and very plastic; few fine roots; many large grooved slickensides tilted from horizontal 30 to 60 degrees; few fine siliceous pebbles; few fine iron-manganese concretions and masses; moderately alkaline; gradual wavy boundary. (8 to 30 inches thick)

Bss2--24 to 39 inches; very dark gray (10YR 3/1) clay; moderate medium and coarse angular blocky structure; common wedge-shaped peds: very hard, very firm, very sticky and very plastic; few fine roots; cracks from 1/2 to 1 inch wide extend through the horizon; many large grooved slickensides tilted from horizontal 30 to 60 degrees; few fine iron-manganese concretions and masses; few fine concretions and masses of calcium carbonate; few fine siliceous pebbles; very slightly effervescent; moderately alkaline; gradual wavy boundary. (8 to 30 inches thick)

Bss3--39 to 51 inches; dark gray (10YR 4/1) clay; few fine and medium streaks and spots of pink (5YR 7/4); moderate medium and coarse angular blocky structure; many wedge-shaped peds; very hard, very firm, very sticky and very plastic; few fine roots; many

large grooved slickensides tilted from horizontal 30 to 60 degrees; few fine iron-manganese concretions and masses; few fine concretions of calcium carbonate; few fine siliceous pebbles; slightly effervescent; moderately alkaline; clear irregular boundary. (0 to 20 inches thick)

Bss4--51 to 76 inches; dark gray (10YR 4/1) clay; common reddish brown (5YR 4/3) streaks and spots of; moderate medium and coarse angular blocky structure; common wedge- shaped peds; very hard, very firm, very sticky and very plastic; few fine roots; many large grooved slickensides tilted from horizontal 30 to 60 degrees; few very dark gray crack fillings; few iron-manganese concretions; few concretions and masses of calcium carbonate; slightly effervescent; moderately alkaline. (0 to 36 inches thick)

2BCkss--76 to 80 inches; yellowish red (5YR 4/6) silty clay; few streaks of light gray (10YR 6/1); moderate coarse angular blocky structure; common wedge shaped peds; very hard, very firm, very sticky and very plastic; few fine roots; many large grooved slickensides tilted from horizontal 30 to 60 degrees; few dark gray crack fillings; common concretions and masses of calcium carbonate; strongly effervescent; moderately alkaline.

TYPE LOCATION: Burleson County, Texas; from intersection of Farm Road 2155 and Farm Road 60 in northwest edge of Snook, Texas; 0.7 mile southwest on Farm Road 60; 220 feet south in native pasture. (Latitude: 30 degrees, 29 minutes, 18 seconds north; Longitude: 96 degrees, 28 minutes, 50 seconds west)

RANGE IN CHARACTERISTICS: The solum is 60 to more than 80 inches thick. The control section has 40 to 60 percent clay and more than 28 percent silt. Iron-manganese concretions and masses range from none to few throughout. This is a cyclic soil and undisturbed areas have gilgai microrelief with microknolls 6 to about 12 inches higher than microdepressions. Distance between the center of the microknoll and the center of the microdepression is about 5 to 15 feet. The microknoll makes up about 20 percent, the intermediate, or area between the knoll and depression, about 50 percent, and the microdepression about 30 percent. When dry, cracks 1 to 3 inches wide extend from the surface to a depth of 40 inches or more. The cracks remain open for 90 to 150 cumulative days during most years. Slickensides begin at a depth of 8 to 24 inches.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or less. Texture is clay, silty clay, or gravelly clay. Some pedons have loamy Ap horizons containing more than 35 percent clay. Gravelly layers are less than 20 inches thick and contain 15 to 35 percent siliceous pebbles. Reaction ranges from moderately acid to slightly alkaline. However, on microknolls some pedons are moderately alkaline.

The upper Bss horizons have hue of 10YR, value of 2 to 4 and chroma of 1 or less. Texture is silty clay or clay. Redoximorphic features range from none to few in shades of brown or gray. Siliceous pebbles range from none to few. Hard pitted concretions of calcium carbonate range from none to few. Reaction ranges from moderately acid to moderately alkaline and typically is noneffervescent.

The lower Bss or Bkss horizons have hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2. Matrix chroma of 2 are below a depth of 40 inches, if encountered. Redoximorphic features in shades of yellow, brown, or gray range from none to common. Streaks or spots in shades of pink or red range from none to common. Texture is silty clay or clay. Siliceous pebbles range from none to about 5 percent. Reaction is slightly alkaline or moderately alkaline. It ranges from noneffervescent to strongly effervescent. Concretions and masses of calcium carbonate range from none to common.

The 2BCkss horizon, or 2CBkss horizon where present, has colors in shades of red, yellow, pink, or brown. Texture is clay loam, silty clay loam, or silty clay. Siliceous pebbles range from none to about 5 percent. Concretions and masses of calcium carbonate range from few to many. The reaction is moderately alkaline and effervescence ranges from slight to violent. The 2C horizon is not present in all pedons. It is mainly in soils on the Brazos River terrace. Burleson soils on other terrace systems commonly have colors in shades of gray or brown. Texture is typically clay. Some pedons have sandy or loamy textures with or without strata of gravel below a depth of 80 inches and most pedons have these materials below a depth of 12 feet.

COMPETING SERIES: These include the Bleiblerville, Branyon, Clarita, Dimebox, Ellis, Fairlie, Heiden, Houston Black, Leson, Luling, Ovan, Sanger, Slidell, Tamford, and Watonga series. Bleiblerville, Heiden, Houston Black, and Sanger soils are calcareous throughout, and have more amplitude of waviness. Branyon and Slidell soils are calcareous at depths of less than 12 inches in over half the pedon. Clarita soils have subsoils in hue of 7.5YR or redder. Ellis soils have sola less than 60 inches. Fairlie soils have a paralithic contact with chalk at a depth of 40 to 60 inches. Dimebox soils contain ironstone fragments in the surface layer, have more amplitude of waviness, and are on uplands. Leson soils have more amplitude of waviness and typically have chroma of 2 or more within 40 inches of the surface. Luling soils have chroma of 2 throughout and are on uplands. Ovan soils have chroma of 2 throughout and are on flood plains. Tamford soils have red or reddish brown C horizons and have mean annual temperature less than 65 degrees F. Watonga soils have sola less than 60 inches thick and are on flood plains.

GEOGRAPHIC SETTING: Burleson soils are on stream terraces and Pleistocene Age terraces. These are associated mainly with upland soils. Slope gradients are mainly less than 2 percent, but range to 5 percent. The soil formed in alkaline, clayey, alluvial sediments. Mean annual precipitation ranges from 32 to 40 inches, and mean annual temperature ranges from about 65 to 70 degrees F. Frost free days range from 220 to 270, and elevation ranges from 300 to 800 feet. Thornthwaite annual P-E indices range from 48 to 68.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the competing Heiden, Houston Black and Leson series and the Kaufman, Ships, and Wilson series. Kaufman and Ships soils have very-fine control sections, and Ships soils have hue redder than 10YR. Heiden, Houston Black, and Leson soils are on slightly higher uplands. Kaufman and Ships soils are on slightly lower flood plains. Wilson soils have argillic horizons, and are on similar positions.

DRAINAGE AND PERMEABILITY: Moderately well drained. Very slow permeability. Runoff is low on 0 to 1 percent slopes, medium on 1 to 3 percent slopes, and high on 3 to 5 percent slopes. Water enters the soil rapidly when it is dry and cracked, and very slowly when it is moist.

USE AND VEGETATION: Cultivated crops are mainly cotton, sorghum, corn and small grains. Areas in native rangeland produce little bluestem, big bluestem, Indiangrass, eastern gamma, and switchgrass in excellent condition. Pasture grasses include improved bermudagrass, common bermudagrass, and kleingrass.

DISTRIBUTION AND EXTENT: The Blackland Prairies of Texas (MLRA 86A and 86B). The series is extensive.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Brazos County, Texas; 1951.

REMARKS: Diagnostic horizons and features recognized in this pedon are:

Mollic epipedon - 0 to 39 inches (A1, A2, Bss1, Bss2).

Vertisol features: Deep wide cracks that are open 90 to 150 cumulative days.

Large slickensides below the A horizon and throughout the soil.

ADDITIONAL DATA: National Soil Survey Laboratory: S62TX-43-3(LSL17746-17752), S62TX-43-4(LSL17753-17759), S77TX-051-5(78P0039-78P0047), and S77TX-051-6(78P0048-78P0056).

Soil Interpretation Record: TX0017

National Cooperative Soil Survey
U.S.A.

LOCATION DALCO TX
Established Series
Rev. CMT-DRC-GLL
02/97

DALCO SERIES

The Dalco series consists of moderately deep, moderately well drained, very slowly permeable soils. These soils are on nearly level to gently sloping uplands. Slopes range from 0 to 5 percent.

TAXONOMIC CLASS: Fine, smectitic, thermic Leptic Udic Haplusterts

TYPICAL PEDON: Dalco clay--cropland - described at center of microdepression. (Colors are for dry soil unless otherwise stated.)

Ap--0 to 9 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; weak very fine angular and subangular blocky structure; very hard, very firm, very sticky and plastic; few fine roots; few fine chalk fragments and siliceous pebbles; slight effervescence; slightly alkaline; gradual smooth boundary. (4 to 10 inches thick)

Bss1--9 to 26 inches; black (10YR 2/1) clay, black (10YR 2/1) moist; moderate; very fine angular blocky structure; extremely hard, very firm, very sticky and plastic; few fine roots; common pressure faces; few grooved slickensides; slight effervescence; slightly alkaline; gradual wavy boundary.

Bss2--26 to 35 inches; dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; fine and very fine angular blocky structure; extremely hard, very firm, very sticky and plastic; few fine roots; common pressure faces; common grooved slickensides; few fine fragments of chalk in lower part; strong effervescence; moderately alkaline, abrupt wavy boundary. (combined Bss subhorizons are 18 to 34 inches thick)

Cr--35 to 60 inches; white (10YR 8/2) chalk that is platy in the upper 6 inches and massive below; few crevices between plates of chalk filled with marly soil material; hardness of chalk is less than 3 on Mohs scale.

TYPE LOCATION: Dallas County, Texas; 3.2 miles north of Garland. About 100 feet west of Galaxy Road and 1000 feet south of the intersection of Galaxy and Arapaho Roads.

RANGE IN CHARACTERISTICS: The solum and depth to a paralithic contact with chalk is 24 to 40 inches. It is silty clay or clay throughout. The weighted average clay content of the particle-size control section ranges from 40 to 50 percent. In undisturbed areas, gilgai microrelief consists of knolls 4 to 8 inches higher than depressions; distance

between center of knoll and center of depression is 5 to 12 feet. When dry, cracks 1/2 to 2 inches wide extend from the surface to depths of 12 inches or more. Cracks remain open for 90 to 150 cumulative days during most years. Slickensides and/or wedge shaped peds begin at a depth of 8 to 18 inches. The effervescence ranges from very slight to strong. The reaction is slightly alkaline or moderately alkaline throughout.

The A horizon is black or very dark gray in hue of 10YR to 5Y, value of 2 or 3, and chroma of 1.

The Bss horizon has colors in hue of 10YR to 5Y, value of 2 to 5, and chroma of 1 or 2. Most pedons contain a few iron-manganese concretions. Calcium carbonate films, masses, and concretions and/or fragments of chalk range fron few to common in most pedons.

The Cr layer is massive chalk bedrock or stratified chalk and marl. The bedrock is platy in the upper part of some pedons and commonly becomes massive within a depth of 6 to 18 inches. It is white, light gray, or very pale brown with or without streaks or coatings in shades of yellow or brown. The hardness is less than 3 on Mohs scale.

COMPETING SERIES: These include the Crawford, Greenvine, San Saba, and the similar Anhalt, Austin, Fairlie, and Vertel series. Crawford and Anhalt soils have subsoils with hue redder than 10YR. Greenvine soils have a paralithic contact with tuffaceous siltstone or shale. San Saba soils have a lithic contact of limestone. Anhalt and Vertel soils have a very-fine particle-size control section and are noneffervescent in the upper part. Austin soils have carbonatic mineralogy and do not have large slickensides. Fairlie soils are 40 to 60 inches deep to a paralithic contact of chalk.

GEOGRAPHIC SETTING: Dalco soils are on nearly level to gently sloping uplands underlain by chalk. These soils formed mainly in the Austin Chalk of Upper Cretaceous Age. Slope gradients are generally less than 3 percent but range from 0 to 5 percent. The climate is warm subhumid. Average annual precipitation ranges from 30 to 42 inches, mean annual temperature from 64 to 68 degrees F. Frost free days range from 230 to 260. Elevation ranges from 550 to 850 above sea level. Thornthwaite P-E indices from from 54 to 70.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the competing Austin and Fairlie series and the Eddy, Heiden, Houston Black, and Stephen series. The Austin soils are on slightly higher positions. Fairlie soils are on similar positions. Eddy and Stephen soils are shallow to chalk and are on similar to slightly lower positions. Heiden and Houston Black soils are very deep and are on similar positions of adjacent areas with different parent material.

DRAINAGE AND PERMEABILITY: Moderately well drained with very slow permeability. Water enters the soil rapidly when it is dry and very slow when it is moist. Runoff is low on 0 to 1 percent slopes; medium on 1 to 3 percent slopes; and high on 3 to 5 percent slopes.

USE AND VEGETATION: Mostly cultivated, some areas are used for pastures with bermudagrass or kleingrass. The main crops are cotton, grain sorghum, corn, and small grain. Native vegetation consists of tall and mid grass prairies of little bluestem, big bluestem, indiangrass, switchgrass, sideoats grama and annual grasses.

DISTRIBUTION AND EXTENT: The Blackland Prairies of Texas (MLRA 86A). The series is moderately extensive.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Dallas County, Texas; 1974.

REMARKS: The Dalco series were previously included with the Austin, Houston Black, or San Saba series. Classification changed from Udic Pellusterts to Leptic Udic Haplusterts (2/94) based on issue 16, a revision to Soil Taxonomy.

Diagnostic horizons and features recognized in this pedon are:

Mollic epipedon--0 to 35 inches, the A, and Bss horizons.

Vertisol features--Cracks when dry, slickensides in Bss subhorizons.

Paralithic contact of chalk at a depth of 35 inches.

SOIL INTERPRETAAION RECORD NUMBER: TX0158

National Cooperative Soil Survey
U.S.A.

LOCATION DUTEK TX
Established Series
Rev. CLN-SEB-ACT
10/97

DUTEK SERIES

The Dutek series consists of very deep, well drained, moderately permeable soils formed in loamy and sandy alluvial material. These soils are on gently sloping to strongly sloping high stream terraces of the uplands. Slopes range from 1 to 12 percent.

TAXONOMIC CLASS: Loamy, siliceous, active, thermic Arenic Haplustalfs

TYPICAL PEDON: Dutek loamy fine sand--wooded pasture. (Colors are for dry soil unless otherwise stated.)

A--0 to 8 inches; brown, (10YR 5/3) loamy fine sand, dark brown (10YR 4/3) moist; weak fine granular structure; loose, very friable; few roots; slightly acid; gradual smooth boundary. (4 to 20 inches thick)

E1--8 to 26 inches; light yellowish brown (10YR 6/4) loamy fine sand, yellowish brown (10YR 5/4) moist; single grained; loose, very friable; few roots; slightly acid; gradual smooth boundary. (10 to 30 inches thick)

E2--26 to 34 inches; very pale brown (10YR 7/4) loamy fine sand, brownish yellow (10YR 6/6) moist; single grained, loose, very friable; slightly acid; clear smooth boundary. (0 to 20 inches thick)

Bt1--34 to 54 inches; yellowish red (5YR 5/6) sandy clay loam, yellowish red (5YR 4/8) moist; weak coarse prismatic structure parting to weak medium subangular blocky; hard, friable; few fine pores; few clay films on surface of peds; moderately acid; gradual smooth boundary. (8 to 40 inches thick)

Bt2--54 to 64 inches; yellowish red (5YR 5/8) fine sandy loam, yellowish red (5YR 5/6) moist; weak coarse prismatic structure parting to weak fine subangular blocky; slightly hard, friable; few fine pores; few clay films on surface of peds; very strongly acid; gradual wavy boundary. (0 to 15 inches thick)

2C--64 to 75 inches; reddish yellow (7.5YR 6/6) loamy fine sand, strong brown (7.5YR 5/6) moist; slightly hard, very friable; very strongly acid.

TYPE LOCATION: Dallas County, Texas; in southeast part of Irving, Texas; 500 feet south of intersection of Belt Line Road and Shady Grove Road, then 300 feet east of Belt

Line Road in wooded pasture. (Latitude: 32 degrees, 48 minutes, 00 seconds North; Longitude: 96 degrees, 59 minutes, 00 seconds West).

RANGE IN CHARACTERISTICS: Solum thickness is 60 to more than 80 inches. Thickness of the A and E horizons is 20 to 40 inches.

The A horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 3 to 6. The E horizon has hue of 7.5YR or 10YR, value of 6 to 8, and chroma of 3 to 6. Texture is fine sand, loamy sand or loamy fine sand. Reaction is moderately acid to neutral.

The Bt horizon has hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 6 or 8. The Bt1 horizon is sandy clay loam, clay loam, or sandy clay. Clay content in the upper 20 inches averages 18 to 35 percent. Reaction is strongly acid or moderately acid. The Bt2 horizon is loam, fine sandy loam, or sandy clay loam. Reaction ranges from slightly acid to very strongly acid. Some pedons have redoximorphic features in shades of red or yellow.

Some pedons have a loam or fine sandy loam BCt horizon with color and reaction similar to the lower Bt horizons.

The 2C horizon, where present, is yellowish red, reddish yellow, strong brown, or brown in hues of 2.5YR, 5YR or 7.5YR. Some pedons are yellow in hue of 10YR. Texture is loamy fine sand or fine sandy loam.

COMPETING SERIES: There are no competing series in the same family. Similar soils are the Dougherty, Galey, Gasil, Heatly, Heaton, Konawa, Konsil, Milby, Nimrod, Patilo, Silawa, Silstid, Stephenville, Stidham and Tremona series. Dougherty, Galey, Heatly, Konawa, and Stidham soils have mixed mineralogy. In addition, Galey and Konawa soils have A horizons less than 20 inches thick. Gasil, Konsil, Silawa, and Stephenville soils have A horizons less than 20 inches thick. In addition, Gasil and Konsil soils do not decrease in clay content significantly within 60 inches and Stephenville soils are underlain by sandstone at depths of 20 to 40 inches. Heaton, Milby, Silstid and Tremona soils do not decrease in clay content significantly within 60 inches. Heaton soils also occur in drier climates. Nimrod soils have grayish zones of iron depletion in the upper Bt horizon due to wetness. Patilo soils have grossarenic surface layers.

GEOGRAPHIC SETTING: Dutek soils occupy gently sloping to strongly sloping uplands. Slopes are mainly 1 to 4 percent, but range from 1 to 12 percent. The soil formed in loamy and sandy alluvial materials of high stream terraces. Mean annual temperature ranges from 64 to 70 degrees F., and mean annual precipitation ranges from 32 to 42 inches. Frost free days range from 240 to 270 days, and elevation ranges from 150 to 500 feet. Thornthwaite P-E indices are 52 to 64.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the competing Gasil, Konsil and Silstid soils in the northern areas and Catilla, Kuy, Milby and Straber soils in the southern areas. These soils occur in similar positions.

DRAINAGE AND PERMEABILITY: Well drained. Permeability is moderate. Runoff is very low on 1 to 3 percent slopes, low on 3 to 5 percent slopes, medium on 5 to 12 percent slopes.

USE AND VEGETATION: Most areas are in improved pasture. A few areas are used for truck crops. Native vegetation is mainly post oak and blackjack oak with an understory of mid and tall grasses and briers.

DISTRIBUTION AND EXTENT: Mainly in the East Cross Timbers area of north-central Texas and the Texas Claypan. The series is of moderate extent.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Dallas County, Texas; 1975.

REMARKS: Active cation exchange activity class. Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon - 0 to 34 inches (A, E1 and E2 horizons).

Arenic feature - 0 to 34 inches (A, E1 and E2 horizons).

Argillic horizon - 34 to 64 inches (Bt horizons).

Decrease in clay content within 60 inches.

ADDITIONAL DATA: Lincoln Laboratory data available on mechanical analysis and mineralogy - Sample No. 74L186, 76P0035-76P0040. Sand mineralogy test of the Bt horizon indicate 97 percent non-weatherable minerals.

Soil Interpretation Record No.: TX0583

National Cooperative Soil Survey
U.S.A.

LOCATION EDDY TX
Established Series
Rev. GLL:CLN
12/89

EDDY SERIES

The Eddy series consists of shallow to very shallow, well drained, moderately permeable soils that formed in chalky limestone. These soils are on gently sloping to moderately steep uplands. Slopes range from 1 to 20 percent.

TAXONOMIC CLASS: Loamy-skeletal, carbonatic, thermic, shallow Typic Ustorthents

TYPICAL PEDON: Eddy gravelly clay loam--native pasture. (Colors are for dry soil unless otherwise stated.)

A1--0 to 6 inches; light brownish gray (10YR 6/2) very gravelly clay loam, dark grayish brown (10YR 4/2) moist; strong fine granular structure; hard, firm; many fine roots; common fine pores; about 35 percent by volume of platy fragments of chalk, mostly 0.1 to 3 inches in diameter; calcareous; moderately alkaline; abrupt irregular boundary. (2 to 10 inches thick)

A2--6 to 10 inches; light brownish gray (10YR 6/2) extremely gravelly clay loam, dark grayish brown (10YR 4/2) moist; strong fine granular structure; chalk fragments range from 60 percent at top of horizon to 85 percent at bottom; many roots in upper part and few roots in the lower part; calcareous; moderately alkaline; abrupt wavy boundary. (0 to 9 inches thick)

Cr--10 to 60 inches; white (10YR 8/2) level-bedded partially cemented marine chalky limestone; about 2 on Mohs scale in the upper part grading to 3 or more on Mohs scale in the lower part.

TYPE LOCATION: Collin County, Texas; 14 miles southwest of McKinney on Texas Highway 121, and 1.3 miles by road west of its junction with Texas Highway 289, 400 feet north in pasture.

RANGE IN CHARACTERISTICS: The solum ranges from 3 to 14 inches thick over chalky limestone. The whole soil contains 35 to 60 percent by volume of chalky limestone fragments. The fragments range from very weakly cemented to strongly cemented. They are mostly 1/10 inch to 3 inches in the long axis, but some are as much as 10 inches. Some of the coarse fragments slake in water upon repeated tumbling.

The A horizon has color with hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 2 to 6. Where moist color values and chromas are less than 3.5, the A horizon is less than 4 inches thick. The A1 horizon is very gravelly loam, very gravelly clay loam, gravelly loam, gravelly clay loam, and in some horizons thinner than 5 inches, loam and clay loam. The A2 horizon is extremely gravelly loam or extremely gravelly clay loam.

The chalky limestone C horizon ranges in hardness from about 1 to slightly less than 3 on Mohs scale, but in some pedons, it increases in hardness with depth to more than 3 on Mohs scale.

COMPETING SERIES: There are no soils in the same family. Similar soils are the Brackett, Cottonwood, Maloterre, Potter, Stephen, Talpa, and Tarrant series. Brackett soils have sola containing less than 35 percent coarse fragments and B horizons having evident soil structure, segregated calcium carbonate, and mixing by earthworms. Cottonwood and Potter soils are are in drier climates. Cottonwood soils developed in gypsum beds. Maloterre, Talpa, and Tarrant soils are all underlain by limestone having hardness exceeding 3 on Mohs scale. Talpa and Tarrant soils have mollic epipedons. Stephen soils also have mollic epipedons.

GEOGRAPHIC SETTING: These soils are on gently sloping to moderately steep uplands. Underlying rocks are predominantly of the Austin chalk geologic formation. Slope gradients are dominantly 3 to 5 percent but they range from 1 to 20 percent. The climate is moist subhumid and humid; mean annual precipitation ranges from 31 to 39 inches, Thornthwaite annual P-E indices from 48 to 76, and mean annual temperature from 64 degrees to 69 degrees F.

GEOGRAPHICALLY ASSOCIATED SOILS: These are mainly the competing Brackett and Stephen series and the Austin series. Austin soils have mollic epipedons, and sola 20 to 40 inches thick. Brackett soils occur on similar surfaces. Austin and Stephen soils occur at lower elevations.

DRAINAGE AND PERMEABILITY: Well drained; rapid to medium runoff; moderately slow permeability.

USE AND VEGETATION: Small areas are cultivated, mainly to small grains. Most of the soil is in native pastures of buffalograss, Texas grama, and annuals. Shrubs and trees, especially juniper, are common in many places.

DISTRIBUTION AND EXTENT: The known areas are in a narrow band along the western edge of the Blackland Prairie of Texas and in small areas on outcrops of marine chalks other than those of the Austin Formation. The soil is of moderate extent.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: McLennan County, Texas; 1944.

REMARKS: Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon - 0 to 10 inches.

Paralithic content - occurs at 10 inches, interface of soil and chalky limestone.

National Cooperative Soil Survey
U.S.A.

LOCATION FERRIS TX+OK
Established Series
Rev. CLN-ACT
02/97

FERRIS SERIES

The Ferris series consists of soils that are deep to weathered shale. They are well drained, very slowly permeable soils that formed from weakly consolidated calcareous dense clays and shales. These soils are on sloping or moderately steep uplands. Slopes range from 1 to 20 percent.

TAXONOMIC CLASS: Fine, smectitic, thermic Chromic Udic Haplusterts

TYPICAL PEDON: Ferris clay--pasture. Pedon described above is an equal distance between its deep and shallow extremes. (Colors are for dry soil unless otherwise stated.)

Ap--0 to 8 inches; olive (5Y 5/3) clay, olive (5Y 4/3) moist; weak medium and fine angular blocky structure; extremely hard, very firm, very sticky and very plastic; surface has a mulch about 1/2 inch thick of fine extremely hard discrete aggregates; many fine roots; few fine calcium carbonate concretions; strongly effervescent; moderately alkaline; gradual smooth boundary. (3 to 12 inches thick)

Bw--8 to 24 inches; pale olive (5Y 6/3) clay; olive (5Y 5/3) moist; moderate fine angular blocky structure; extremely hard, very firm, very sticky and very plastic; few fine roots; common shiny pressure faces; few fine calcium carbonate concretions and masses; strongly effervescent; moderately alkaline. (6 to 20 inches thick)

Bss--24 to 40 inches; pale olive (5Y 6/3) clay; olive (5Y 5/3) moist; common fine faint brownish yellow mottles; moderate fine angular blocky structure forming wedge shaped peds having long axes tilted up to 45 degrees from the horizontal; extremely hard, very firm, very sticky and very plastic; few fine roots; few fine pores; common coarse slickensides; pressure faces are shiny; vertical cracks 1 to 5 cm wide and 18 inches apart extend to 40 inches; few fine calcium carbonate concretions and few fine powdery masses of calcium carbonate; violently effervescent; moderately alkaline; diffuse wavy boundary. (18 to 30 inches thick)

Ck--40 to 80 inches; coarsely and prominently mottled pale olive (5Y 6/3) and yellow (2.5Y 7/8) weakly consolidated shale that has clay texture; weak coarse angular blocky structure mixed with coarse blocky rock (shale) structure; extremely hard, very firm; few fine roots between blocks of rock structure; few slickensides; common fine masses and concretions of calcium carbonate; violently effervescent; moderately alkaline.

TYPE LOCATION: Navarro County, Texas; about 15 miles west of Corsicana on Texas Highway 22; from the northeast part of Blooming Grove, 3.3 miles northward on a county road; then 190 feet east in a pasture. This location is 1.2 miles north-northwest of FP site 105B.

RANGE IN CHARACTERISTICS: The solum ranges from 40 to 60 inches thick. Texture is clay or silty clay, with clay content ranging from 40 to 60 percent. Water worn siliceous pebbles are on the surface of some pedons. When dry, cracks 1/2 to 3 inches wide extend from the surface to a depth of more than 12 inches. Cracks remain open 120 to 150 cumulative days in most years. Calcium carbonate equivalent in the control section ranges from 2 to about 30 percent.

The A horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 2 to 4. The lower values and chromas occur where A horizons are thickest in the pedon. In pedons where the moist color value of the A horizon is less than 3.5, the horizon is less than 12 inches thick.

The Bw and Bss horizons have hue of 10YR to 5Y, value of 4 to 7, and chroma of 2 to 6. Some pedons do not have mottles in the upper part of the Bw. Gray mottles are inherited from the shale (lithochromic). Calcium carbonate concretions range from few to many in the Bw and Bss horizons, with total carbonates ranging from 2 to 30 percent.

The C horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 to 8. Most pedons are coarsely and prominently mottled. It is strongly weathered calcareous clay, weakly consolidated shale that has clay texture or shales. Gypsum crystals occur in the Ck horizon of some pedons.

COMPETING SERIES: These are the Depalt, Deport, Frelsburg, Latium, and Medlin series. Similar soils are the Ellis and Heiden series. Depalt and Deport soils are non calcareous in the surface layer and, in addition, Depalt soils have dominant hue of 7.5YR or redder, and Deport soils have chroma of less than 2 in the surface horizon. Frelsburg soils have sola 60 to 80 inches thick, and formed in Tertiary Age materials. Latium soils are in slightly more moist climates and have cracks that remain open for longer periods (120 to 150 days). In addition, Latium soils are on Tertiary Age materials. Medlin soils have more than 30 percent calcium carbonate equivalent, and are dry for longer periods of time. Ellis soils have sola 20 to 40 inches thick. Heiden soils have moist color value of 3.5 or less and chroma of 2.5 or less in the upper 12 inches in most pedons.

GEOGRAPHIC SETTING: Ferris soils are on uplands. The surfaces are convex to plane with slope gradients mostly between 5 and 12 percent, but ranging from 1 to 20 percent. Uncultivated areas often have narrow microridges and microvalleys that extend up and down the slope. The soil formed in weakly consolidated mostly Upper Cretaceous formations of calcareous marine sediments, high in montmorillonitic clays. Mean annual precipitation ranges from 28 to 42 inches, and mean annual temperature ranges from 64 to 70 degrees

F. Frost free days range from 230 to 260 days and elevation ranges from 400 to 1,000 feet. The Thornthwaite P-E index is 44 to 66.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the similar Ellis and Heiden series and the Altoga, Houston Black, Lamar and McLennan series. Altoga, Lamar and McLennan soils have fine-silty control sections and are on similar positions. Houston Black soils have moist value of less than 3.5 and chroma of less than 1.5 throughout the upper 12 inches. Altoga, Ellis, and Lamar soils are on similar positions with Ferris. Heiden and Houston Black soils are on smoother slightly higher positions.

DRAINAGE AND PERMEABILITY: Well drained. Permeability is very slow. Runoff is medium on 1 to 3 percent slopes, high on 3 to 5 percent slopes, and very high on slopes greater than 5 percent. Infiltration is rapid when the soil is dry and cracked, but very slow when the soil is wet.

USE AND VEGETATION: Used mainly for pasture and production of hay. Most areas have been cultivated, eroded and are now in grass. Vegetation is mainly bluestems, buffalograss and threeawn grasses and scattered mesquite trees.

DISTRIBUTION AND EXTENT: Central and eastern Texas Blacklands (MLRA 86A). The series is of large extent, comprising more than 100,000 acres.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Travis County, Texas; 1969.

REMARKS: Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon - the A horizon from 0 to 8 inches. (Ap horizon)

Cambic horizon - 8 to 40 inches. (Bw and Bss horizon)

Vertic properties - Slickensides at a depth of 24 to 40 inches. High shrink-swell potential and cracks that are 1/2 to 3 inches wide at a depth of 12 inches or more.

ADDITIONAL DATA: NSSL Data: Hopkins County, TX S68-223-001 (68L895-68L899).

Soil Interpretation Record Number: TX0296 , TX1150 (COOL)

National Cooperative Soil Survey
U.S.A.

LOCATION FRIO TX
Established Series
Rev. GLL:CLN
02/97

FRIO SERIES

The Frio series consists of very deep, well drained, moderately slowly permeable soils that formed in loamy and clayey calcareous alluvium. These flood plain soils have slopes ranging from 0 to 2 percent.

TAXONOMIC CLASS: Fine, smectitic, thermic Cumulic Haplustolls

TYPICAL PEDON: Frio silty clay--wooded (Colors are for dry soils unless otherwise stated.)

A1--0 to 8 inches; dark grayish brown (10YR 4/2) silty clay, very dark grayish brown (10YR 3/2) moist; moderate fine and medium granular structure; hard, firm; many fine, medium, few coarse roots; strong effervescence; moderately alkaline; clear smooth boundary.

A2--8 to 22 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium and coarse subangular blocky structure parting to moderate fine subangular blocky; hard, firm; many fine, medium, and few coarse roots; few fine shell fragments; strong effervescence; moderately alkaline; clear smooth boundary.

A3--22 to 29 inches; dark grayish brown (10YR 4/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium prismatic structure parting to moderate fine and medium subangular blocky; hard, firm; common fine, medium, and few coarse roots; common fine films and threads of calcium carbonate; few fine shell fragments; strong effervescence; moderately alkaline; gradual smooth boundary.

A4--29 to 40 inches; dark grayish brown (10YR 4/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium prismatic structure parting to moderate medium and coarse subangular blocky; hard, firm; common fine, medium, and few coarse roots; common fine films and threads of calcium carbonate; strong effervescence; moderately alkaline; gradual smooth boundary. (Combined A horizons are 20 to 60 inches thick)

Bk--40 to 80 inches thick; grayish brown (10YR 5/2) silty clay, dark grayish brown (10YR 4/2) moist; moderate medium and coarse prismatic structure parting to weak coarse blocky; hard, firm; few fine, medium, and coarse roots; many fine films and threads and a few soft masses of calcium carbonate; strong effervescence; moderately alkaline.

TYPE LOCATION: Coryell County, Texas; approximately 18 miles southeast of Gatesville, Texas. About 5.2 miles northeast of the intersection of Texas Highways 36 and 236, along Texas Highway 236; then 100 feet west of pavement in wooded area. This site is about 0.28 mile northeast of the north end of the Leon River bridge in Mother Neff State Park.

RANGE IN CHARACTERISTICS: Depth to sand, gravel, or limestone ranges from 6 to about 30 feet. The clay content ranges from 30 to about 50 percent but the control section averages 35 to 42 percent clay. The calcium carbonate equivalent ranges from 15 to 40 percent. The COLE ranges from about .04 to .09 in the upper 50 inches but lacks a layer 20 inches or more thick with COLE OF .07 or more. Some pedons contain limestone and chert pebbles or cobbles that make up less than 15 percent by volume.

The A horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3. Texture is silty clay, silty clay loam, or clay loam. Some pedons have light colored discontinuous loamy strata less than 3 inches thick.

Most pedons have a B horizon with greater value or chroma than the A horizon. It is below a depth of 22 inches and typically below the control section. However, some pedons have buried A horizons at these depths. The soil material above the buried A horizon is probably post-settlement alluvium.

COMPETING SERIES: There are no competing series in the family. Other competing soils are Bosque, DeLeon, Lewisville, Oakalla, Port, and Rioconcho series. Bosque, Lewisville, Oakalla, and Port soils have control sections with less than 35 percent silicate clay. In addition, Lewisville soils have a mollic epipedon less than 20 inches thick. Oakalla soils have a mollic epipedon less than 20 inches thick and have carbonatic mineralogy. DeLeon and Rioconcho soils have vertic properties. Also, Rioconcho soils are dry for longer periods.

GEOGRAPHIC SETTING: Frio soils are on flood plains of major streams. These soils formed in calcareous loamy and clayey alluvium. The alluvium derived mainly from soils that formed in limestone of Cretaceous age. The slopes are commonly less than 1 percent but range to 2 percent. The climate is moist subhumid. Mean annual precipitation ranges from 25 to 36 inches; mean annual temperature is 64 to 68 degrees F.; Frost free days range from 220 to 260 and elevation ranges from 400 to 1700 feet above sea level. The Thornthwaite P-E indices range from 38 to 56.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the competing Bosque, DeLeon, and Lewisville series. Adjacent upland series include the Denton, Doss, Real, and Slidell. Bosque and DeLeon soils are on similar positions. Lewisville soils are on terraces above the Frio soils. Denton and Slidell soils are clayey, cracking soils. Doss and Real soils are shallow, loamy soils.

DRAINAGE AND PERMEABILITY: Well drained; slow runoff; moderately slow permeability. Most areas have ground water within a depth of 20 feet. The soil floods

unless protected, as seldom as once in about 10 years and as often as one to three times a year.

USE AND VEGETATION: Used for pasture, cropland, and range. Principal crops are small grain, corn, and grain sorghum. In the western part it is used mostly for rangeland. In the eastern part, native vegetation is mainly an open-canopied deciduous forest of pecan, elm, and oak; in the western part open prairie with a few pecan and elm trees near the stream channel. The main grasses are big and little bluestem, switchgrass, indiangrass, Texas wintergrass, and Virginia wildrye.

DISTRIBUTION AND EXTENT: Mainly in Texas, occurring primarily in the Grand Prairie, and eastern part of the Edwards Plateau and to a lesser extent in the Blackland Prairies and Cross Timbers LRA's The series is of large extent.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Reconnaissance Survey of Southwest Texas; 1911.

REMARKS: The control section averages 34.1 percent silicate clay and 35.6 percent total clay. We elect to classify this series in a fine family.

Diagnostic horizons and features recognized in this pedon are:

Mollic epipedon - 0 - 40 inch zone.

Cambic horizon - 40 - 80 inch zone.

ADDITIONAL DATA: NSSL-Coryell County, Texas S80TX-99-003 (81P510-515).

National Cooperative Soil Survey
U.S.A.

LOCATION GOWEN TX OK
Established Series
Rev. CLN-ACT-WJG
10/2002

GOWEN SERIES

The Gowen series consists of very deep, well drained, moderately permeable soils that formed in loamy Holocene alluvium. These soils are on nearly level flood plains. Slopes are dominantly less than 1 percent, but range up to 2 percent.

TAXONOMIC CLASS: Fine-loamy, mixed, superactive, thermic Cumulic Haplustolls

TYPICAL PEDON: Gowen clay loam--pasture. (Colors are for dry soil unless otherwise stated).

A1--0 to 15 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; hard, firm, many fine roots; common fine and medium pores; neutral; clear smooth boundary. (10 to 30 inches thick)

A2--15 to 30 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; hard, firm; many fine roots; common fine and medium pores; common wormcasts; neutral; clear smooth boundary. (0 to 25 inches thick)

Bw--30 to 60 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; thin strata and lenses of pale brown fine sandy loam, and thin strata of grayish brown clay in the lower part; weak medium subangular blocky structure; very hard, firm; common fine roots; few very dark brown organic stains; neutral.

TYPE LOCATION: Erath County, Texas; from the county courthouse in Stephenville, Texas, 21 miles northwest on Texas Highway 108; east on county road 1.6 miles; south on county road 0.2 mile; 100 feet east of road in pasture.

RANGE IN CHARACTERISTICS: Solum thickness is greater than 80 inches. Surface horizons having moist color values of less than 3.5 and evident structure, range in thickness from 24 to about 60 inches. Clay content of the 10- to 40-inch particle-size control section ranges from 20 and 35 percent, and more than 15 percent is coarser than very fine sand. Reaction ranges from neutral to moderately alkaline. The soil is noncalcareous above 50 inches.

The A horizons have hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 1 to 3. Texture of the A1 horizon is loam, sandy clay loam, or clay loam, with minor areas of fine sandy loam. The A2, horizon is loam, clay loam, or sandy clay loam with in the Bk or Bw horizons.

The Bw or Bk horizons have hue of 10YR or 2.5Y, value of 3 to 7, and chroma of 2 to 6. Texture is loam, clay loam, or sandy clay loam. Thin strata of fine sandy loam, silt loam, and clay are common. Some pedons have buried A horizons that are very dark grayish brown or dark brown.

COMPETING SERIES: These are the Bippus (TX), Bosque (TX), Gageby (TX), Kaski (KS), and Whitesboro (TX) series. Similar soils are the Bergstrom, Deleon, Frio, Port, and Sinton series. Bippus soils are calcareous above 50 inches and receive less precipitation. Bosque and Gageby soils are calcareous throughout in the majority of pedons. Kaski soils have mean annual soil temperature less than 64 degrees F. Whitesboro soils are moderately well drained and contain redoximorphic features associated with wetness within 40 inches of the surface. Bergstrom and Port soils have fine-silty control sections. Deleon and Frio
have fine textured control sections, and the Frio soils have montmorillonitic mineralogy. Sinton soils are in the hyperthermic family.

GEOGRAPHIC SETTING: These soils are on nearly level and gently sloping flood plains. Slopes range from 0 to 2 percent. They formed in loamy alluvium derived dominantly from noncalcareous soils. Flooding occurs at intervals ranging from one or more times a year to once in about every five years unless protected. Mean annual temperature ranges from 64 to 70 degrees F., and mean annual precipitation ranges from 28 to 40 inches. Frost free days range from 230 to 270 days and elevation ranges from 200 to 950 feet. The Thornthwaite indices range from 30 to about 60.

GEOGRAPHICALLY ASSOCIATED SOILS: These include the Bosque, Bunyan, and Frio series. Bunyan soils do not have mollic epipedons. All of these series are in similar landscape postions.

DRAINAGE AND PERMEABILITY: Well drained. Permeability is moderate. Runoff is neglibible; In some areas during the winter months a water table is at a depth of 4 to 7 feet.

USE AND VEGETATION: Most of the soil is farmed to peanuts, sorghums, cotton, and pecan orchards. Areas that flood frequently are used mainly for bermudagrass pastures and pecan orchards. Scattered hackberry, elm, and pecan trees occur in most areas.

DISTRIBUTION AND EXTENT: The soil is mainly in the mixed post oak and prairie areas of central Texas and in adjoining areas of Oklahoma. The series is of moderate extent.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Noble County, Oklahoma; 1947.

REMARKS: Diagnostic horizons and features recognized in this pedon are:

Mollic epipedon - 0 to 30 inches (A horizons).

Cumulic feature - irregular distribution of organic carbon.

ADDITIONAL DATA: SDHPT data from Caldwell County, Texas (S69TX-028-002). National Soil Survey Laboratory data from Young County (S92TX-503-004).

National Cooperative Soil Survey
U.S.A.

LOCATION HEIDEN TX+OK
Established Series
Rev. GLL:CLN:JMG
02/97

HEIDEN SERIES

The Heiden series consists of soils that are well drained and very slowly permeable ..They are deep to weathered shale. These soils are on nearly level to moderately steep uplands. Slopes are mainly 3 to 8 percent but range from 0.5 to 20 percent.

TAXONOMIC CLASS: Fine, smectitic, thermic Udic Haplusterts

TYPICAL PEDON: Heiden clay--cropland. Pedon described near its deepest part. (Colors are for dry soil unless otherwise stated.)

Ap--0 to 6 inches; dark grayish brown (10YR 4/2) clay, very dark grayish brown (10YR 3/2) moist; weak angular blocky structure; very hard, very firm, very sticky and very plastic; many fine roots; few wormcasts; few fragments of snail shells; strongly effervescent; moderately alkaline; abrupt boundary. (4 to 8 inches thick)

A--6 to 18 inches; dark grayish brown (10YR 4/2) clay, very dark grayish brown (10YR 3/2) moist; moderate fine angular blocky structure; few wedge shaped peds in lower part; extremely hard, very firm ,very sticky and very plastic; few fine roots; shiny faces on peds; strongly effervescent; moderately alkaline; diffuse wavy boundary. (8 to 22 inches thick)

Bssk1--18 to 36 inches; dark grayish brown (10YR 4/2) clay, very dark grayish brown (10YR 3/2) moist; moderate medium and coarse angular blocky structure, wedge shaped peds are about 1 to 3 inches long and axis tilted 10 to 60 degrees from the horizontal; extremely hard, very firm, very sticky and very plastic; many slickensides; common fine calcium carbonate concretions; strongly effervescent; moderately alkaline; diffuse wavy boundary. (0 to 20 inches thick)

Bssk2--36 to 58 inches; olive gray (5Y 5/2) clay, olive gray (5Y 4/2) moist; few fine faint olive mottles and streaks; weak coarse angular blocky structure, wedge shaped peds are about 1 to 3 inches long and axis tilted 10 to 60 degrees from the horizontal; extremely hard, very firm, very sticky and very plastic; many distinct slickensides; common fine calcium carbonate concretions; violently effervescent; moderately alkaline; diffuse wavy boundary. (12 to 40 inches thick)

C--58 to 70 inches; prominently and coarsely mottled olive (5Y 5/3) moist; and yellow (5Y 7/6) moist, clay and weakly consolidated shale; few fine olive and yellow mottles; massive, with a few slickensides in the upper part; extremely hard, very firm and very plastic; violently effervescent; moderately alkaline.

TYPE LOCATION: Bell County, Texas; From the intersection of Texas Highway 36 and Farm Road 436 in Heidenheimer; 0.57 miles southeast on Texas Highway 36; 1 5 feet southwest of fence in cropland.

RANGE IN CHARACTERISTICS: Solum thickness ranges from about 40 to 65 inches. They are thinnest in microknolls or microridges and thickest in centers of microdepressions or microvalleys. Texture throughout the soil is clay or silty clay Weighted average clay content ranges from 40 to 60 percent. Cracks remain open 90 to 150 cumulative days in most years. Slickensides and wedge-shaped peds begin at a depth of 10 to 24 inches. Undisturbed areas have gilgai microrelief with microknolls about 4 to 10 inches above microdepressions. On slopes above 5 percent gilgai are linear with slope.

The A horizons have hue of 10YR, 2.5Y or 5Y, value of 3 to 5, and chroma of 1 to 3. Moist color values range from 2 to slightly less than 3.5. Where chromas are less than 1.5, the surface layer is less than 12 inches thick in more than one-half of the pedon. The A horizons are dominantly calcareous, but range to noncalcareous and slightly alkaline in the upper 12 inches. Smooth siliceous pebbles or limestone fragments less than 10 inches across are on and in the surface layers of some pedons.

The Bss horizons have hue of 10YR, 2.5Y or 5Y; value of 4 to 7; and chroma of 2 to 4. They are typically mottled with these colors. Calcium carbonate in the form of masses, threads and concretions range from none in the upper part to many in the lower part with total carbonates ranging from 2 to 35 percent. Gypsum crystals are in the lower part of some pedons.

The C horizon varies from clay, strongly weathered shale, to slightly weathered calcareous shales, with an intermingling of soil and rock structure.

COMPETING SERIES: These include the Bleiblerville, Branyon, Burleson, Clarita, Dimebox, Fairlie, Houston Black, Leson, Luling, Ovan, Sanger, Slidell, Tamford and Watonga. Bleiblerville, Branyon, Burleson, Dimebox, Fairlie, Houston Black, Leson and Slidell have moist chroma of 1 throughout. Clarita and Tamford soils have hue of 7.5YR or redder in the subsoil.. Fairlie soils are underlain by chalk below 40 inches. Burleson, Dimebox, Leson and Luling are non- calcareous in the surface. Sanger and Slidell soils contain more calcium carbonate in the control section and are underlain by marl. Watonga soils have mean temperature cooler than 64 degrees. Ovan soils have sola over 80 inches thick and are in flood plains.

GEOGRAPHIC SETTING: Heiden soils are on erosional uplands. Slopes are mostly 3 to 8 percent, but range from 0 percent to 20 percent. Surfaces are dominantly convex but plane surfaces occur in some areas of low gradients. Most untilled areas have a microrelief of microvalleys 4 to 12 feet wide and 3 to about 12 inches deep, and microridges about 4 to 12 feet wide that extend up and down slope. The soils formed, mainly, in weakly consolidated Upper Cretaceous formations of calcareous marine sediments, high in montmorillonite clays. The climate is moist subhumid. The mean annual precipitation ranges from 28 to 42 inches and the mean annual temperature ranges

from 64 to 70 degrees F. Frost free days range from 225 to 275 days and elevation ranges form 400 to 1000 feet. Thornthwaite annual P-E indices range from 44 to 66.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the competing Branyon, Burleson, Crockett, Ellis, Fairlie, Ferris, Houston Black, Lott, McLennan, Ovan and Wilson series. Crockett and Wilson soils have argillic horizons. Ferris Ellis and McLennan soils have color values higher than 3.5 in the upper 12 inches. Lott and McLennan soils have fine silty control sections. Ferris, Ellis, Lott and McLennan soils are on lower more sloping positions. Branyon, Burleson, Crockett, Wilson and Ovan are on lower positions. Houston Black is on similar positions. Fairlie and Lott soils are on slightly higher positions.

DRAINAGE AND PERMEABILITY: Well drained. Permeability is very slow. Runoff is low on 0 to 1 percent slopes, medium on 1 to 3 percent slopes, high on 3 to 5 percent slopes and very high on 5 to 20 percent slopes. Infiltration is rapid when the soil is dry and cracked, but very slow when the soil is wet.

USE AND VEGETATION: Used mainly for pasture and hay. Many areas have been cultivated but are now in grass. Some areas are used for growing grain sorghum and cotton. Grasses are mainly bluestem, buffalograss, and threeawn grass. Scattered mesquite trees occur in places.

DISTRIBUTION AND EXTENT: Central and eastern Texas in the Blackland MLRA (86A). The series is extensive.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Travis County, Texas, 1969

REMARKS: These soils formerly were included with the Houston series.

Diagnostic horizons and features recognized in this pedon are:

Mollic epipedon - the A horizons from 0 to 18 inches.

Vertic Properties - slickensides.at a depth of 18 to 58 inches. High shrink-swell potential and cracks that are 1/2 to 3 inches wide at a depth of 12 inches during dry periods

SIR Number.- TX0151, TX0152 (Stony), TX1149 (Cool), TX1151 (Stony, Cool).

National Cooperative Soil Survey
U.S.A.

LOCATION LEWISVILLE TX
Established Series
Rev. CLN:GLL
02/2006

LEWISVILLE SERIES

The Lewisville series consists of very deep, well drained, moderately permeable soils that formed in ancient loamy and calcareous sediments. These upland soils have slopes of 0 to 10 percent.

TAXONOMIC CLASS: Fine-silty, mixed, active, thermic Udic Calciustolls

TYPICAL PEDON: Lewisville silty clay--pasture. (Colors are for dry soil unless otherwise stated.)

Ap--0 to 6 inches; dark grayish brown (10YR 4/2) silty clay; very dark grayish brown (10YR 3/2) moist; moderate very fine subangular blocky and granular structure; hard, friable; contains a few strongly cemented calcium carbonate concretions; calcareous; moderately alkaline; abrupt smooth boundary. (0 to 7 inches thick)

A--6 to 16 inches; dark grayish brown (10YR 4/2) silty clay, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; hard, firm; few root channels; common strongly cemented calcium carbonate concretions about 2 to 5 mm in diameter; calcareous; moderately alkaline; gradual smooth boundary. (7 to 15 inches thick)

Bk1--16 to 34 inches; grayish brown (10YR 5/2) silty clay, dark grayish brown (10YR 4/2) moist; moderate fine subangular blocky structure; very hard, firm; common strongly cemented calcium carbonate concretions 2 to 5 mm in diameter; a few threads of soft calcium carbonate; calcareous; moderately alkaline; gradual smooth boundary. (13 to 30 inches thick)

Bk2--34 to 62 inches; pale brown (10YR 6/3) silty clay; brown (10YR 5/3) moist; weak subangular blocky structure; hard, firm; common soft masses of segregated calcium carbonate, few small, strongly cemented calcium carbonate concretions; calcareous; moderately alkaline.

TYPE LOCATION: Collin County, Texas; from the intersection of Farm Road 546 and Texas Highway 75 in McKinney, 5 miles southeast on Farm Road 546, 1.2 miles south on county road, 60 feet east in pasture.

RANGE IN CHARACTERISTICS: Solum thickness ranges from 60 to about 80 inches. It is clay loam, silty clay loam, or silty clay with silicate clay content ranging

from 24 to 35 percent. Calcium carbonate equivalent in the 10- to 40-inch control section ranges from about 20 to 40 percent.

The A horizon has color in hue of 7.5YR and 10YR, value of 3 to 5, and chroma of 2 and 3. Thickness is 10 to 20 inches.

The Bk1 horizon is grayish, brownish, or yellowish in hue of 2.5Y to 7.5YR, value of 4 to 6, and chroma of 2 to 4. Some pedons in hue of 10YR and 7.5YR have chroma of 6. Soft bodies, concretions, films, and threads of calcium carbonate comprise about 3 to 8 percent by volume.

The Bk2 horizon has colors similar to the Bk1 horizon except they have values about 1 or 2 units higher. Some pedons have hue of 5YR and chroma of 6. Secondary forms of calcium carbonate comprise 5 to about 15 percent by volume.

Some pedons are underlain at depths of 3 to 15 feet by sediments containing 15 to 50 percent gravel.

COMPETING SERIES: There are no other series in this family. Similar series are the Altoga, Austin, Nuvalde, Quanah, Venus, and Volente series. Nuvalde and Quanah soils are dry in the moisture control section for longer periods. Altoga and Austin soils have more than 40 percent calcium carbonate equivalent in the control section. In addition, Altoga soils lack mollic epipedons. Venus soils have fine-loamy control sections. Volente soils have more than 35 percent silicate clay content in the control section.

GEOGRAPHIC SETTING: Nearly level to rolling landscapes having plane to convex surfaces. Slopes range from 0 to 10 percent, but they are mostly 2 to 6 percent. The soil formed in ancient loamy and limy alluvium assumed to have originated in areas underlain by limestone. The climate is moist subhumid with an annual mean precipitation of about 28 to 38 inches and the Thornthwaite P-E index of 44 to 66. At the type location the mean annual temperature is 66 degrees F.

GEOGRAPHICALLY ASSOCIATED SOILS: These include the competing Altoga, Venus, and Volente series and Eddy, Krum, and Stephen series. Altoga, Eddy, and Stephen soils occur on erosional surfaces at higher elevations. Eddy and Stephen soils are less than 20 inches thick and are underlain by chalk or weakly cemented limestone. In addition, Eddy soils contain more than 35 percent by volume of coarse fragments. Krum, Venus, and Volente soils occur at lower elevations as stream terraces or lower portions of narrow valleys. In addition, Krum soils have clayey control sections and vertic features of cracking widely and deeply when dry.

DRAINAGE AND PERMEABILITY: Well drained; runoff is slow to medium; permeability is moderate.

USE AND VEGETATION: Mostly cultivated, mainly to small grains. Originally vegetation was mid and tall grasses and a few widely separated elm, hackberry, and mesquite trees.

DISTRIBUTION AND EXTENT: Mainly in Texas, along major streams in the Blackland Prairies and the Grand Prairie; possibly in Oklahoma. The series is of moderate extent.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Denton County, Texas; 1918.

REMARKS: Diagnostic horizons and features recognized in this pedon are:

Mollic epipedon - 0 to 16 inches, the Ap and A horizons.
Calcic horizon - 16 to 62 inches, the Bk horizons.

National Cooperative Soil Survey
U.S.A.

LOCATION MABANK TX
Established Series
Rev. CLN-ACT
11/2001

MABANK SERIES

The Mabank series consists of very deep, moderately well drained, very slowly permeable soils that formed in alkaline clays. These soils are on nearly level to gently sloping terraces or remnants of terraces associated with uplands. Slopes are mainly less than 1 percent but range from 0 to 5
percent.

TAXONOMIC CLASS: Fine, smectitic, thermic Oxyaquic Vertic Paleustalfs

TYPICAL PEDON: Mabank fine sandy loam--pasture. (Colors are for moist soil unless otherwise stated).

Ap--0 to 7 inches; dark grayish brown (10YR 4/2) fine sandy loam, grayish brown (10YR 5/2) dry; massive; very hard, friable; many fine roots; few fine iron-manganese concretions; slightly acid; abrupt wavy boundary. (4 to 11 inches thick)

Btg--7 to 24 inches; black (10YR 2/1) clay, very dark gray (10YR 3/1) dry; moderate medium angular blocky structure, extremely hard, very firm; few fine roots; patchy clay films; cracks 1/2 inch wide extend through the horizon; few pressure faces; few gypsum crystals; slightly alkaline; gradual smooth boundary. (8 to 20 inches thick)

Btssg1--24 to 32 inches; dark gray (10YR 4/1) clay, gray (10YR 5/1) dry; moderate medium angular blocky structure; extremely hard, very firm; few fine roots; few slickensides; common clay films; cracks 1/4 inche wide extend through the horizon; few iron-manganese concretions; 5 percent strongly cemented calcium carbonate concretions; 5 percent masses of gypsum crystals; moderately alkaline; gradual smooth boundary.

Btssg2--32 to 50 inches; grayish brown (10YR 5/2) clay, light brownish gray (10YR 6/2) dry; weak medium angular blocky structure; extremely hard, very firm; few fine roots; few large slickensides; common clay films; 5 percent strongly cemented calcium carbonate concretions; common gypsum crystals; few iron-manganese concretions; few fine distinct light olive brown (2.5Y 5/6) masses of iron accumulation; moderately alkaline; gradual smooth boundary. (combined thickness of Btssg subhorizons is 10 to 30 inches)

Btyg1--50 to 74 inches; light brownish gray (10YR 6/2) clay, light gray (10YR 7/2) dry; weak medium angular blocky structure; extremely hard, very firm; few fine roots; few pressure faces; common clay films; 5 percent cemented calcium carbonate concretions; many gypsum crystals; few iron-manganese concretions; moderately alkaline.

Btyg2--74 to 80 inches; light brownish gray (2.5Y 6/2) clay, light gray (2.5Y 7/2) dry; weak medium angular blocky structure; extremely hard, very firm; few fine roots; few pressure faces; common clay films; 3 percent cemented calcium carbonate concretions; few gypsum crystals; few iron-manganese concretions; moderately alkaline. (combined thickness of Btg subhorizons is 54 to more than 80 inches)

TYPE LOCATION: From the junction of Farm Road 986 and Griffith Road in Terrell, 2.5 miles north on Farm Road 986, 0.7 mile west on County Road, 250 feet south in pasture.

RANGE IN CHARACTERISTICS: Solum thickness ranges from 60 to more than 80 inches. Weighted average clay content of the upper 20 inches of the argillic horizon ranges from 35 to 50 percent. When dry, cracks at least 1/4 inch wide extend from the top of the argillic horizon through a thickness of 12 inches or more within the upper 50 inches of the soil. Slickensides and/or wedge-shaped aggregates and pressure faces range from few to common and occur throughout the argillic horizon. Linear extensibility is greater than 2.5 inches (6.0 cm) in the upper 40 inches (100 cm) of the soil. COLE ranges from 0.07 to 0.10 inches in the upper 50 inches of the argillic. Siliceous and/or ironstone pebbles range from few to about 3 percent of some subhorizons. Redox features are both relic and contemporary. The soil does not have aquic soil conditions in most years.

The A horizon averages less than 10 inches thick in more than 50 percent of the pedon, but it is as much as 15 inches thick in some subsoil troughs. It has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2. Texture is fine sandy loam, very fine sandy loam, silt loam, or loam. It is massive
and hard or very hard when dry. The boundary between the A and Btg horizon is abrupt and smooth to wavy. Reaction ranges from moderately acid to neutral. Redoximorphic features in shades of brown, yellow and red range from none to common.

The upper part of the Btg horizon has hue of 10YR, value of 2 or 3, and chroma of 1. Texture is clay loam or clay. The reaction ranges from moderately acid to slightly alkaline. Redoximorphic features in shades of brown, yellow, and red range from none to few.

The middle and lower part of the Btg horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 or 2. Redoximorphic features in shades of brown, yellow, or gray range from few to common in some subhorizons. Texture is clay loam or clay. Concretions or masses of calcium carbonate range from few to common in some subhorizons. Gypsum crystals range from a few to about 20 percent of some subhorizons. Reaction ranges from moderately acid to moderately alkaline.

A 2C horizon is present below a depth of 60 inches in some pedons. It is shale, mudstone, marl or is stratified with these loamy and clayey geologic materials.

COMPETING SERIES: These are the Lufkin (TX) and Tabor (TX) series. Similar soils are the Axtell, Derly, Edna, Herty, Oakhurst, and Wilson series. Lufkin soils are more

acid in the upper part of the argillic horizon. Tabor soils have an epipedon that is thicker than 10 inches in more than half of the pedons. Axtell soils have reddish matrix colors in the upper part of the Bt horizon. Derly soils have glossic horizons, and have aquic conditions within 20 inches of the surface. Edna soils are in the udic moisture regime and they formed in the Lissie and Beaumont geologic formations. Herty soils are more acid in the upper part of the argillic horizon, and are in the udic moisture regime. Oakhurst soils are in the udic moisture regime. Wilson soils do not have an abrupt textural change between the A and Bt horizon.

GEOGRAPHIC SETTING: Mabank soils are on nearly level to gently sloping high terraces or remnants of terraces associated with uplands. Slopes are mainly less than 1 percent, but range from 0 to 5 percent. The soil formed in alkaline clayey sediments. Mean annual temperature ranges from 64 to 70 degrees F., and mean annual precipitation ranges from 32 to 40 inches. Frost free days range from 220 to 280 days and elevation ranges from 225 to 675 feet. Thornthwaite annual P-E indices range from 50 to 70.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Axtell, Bremond, Burleson, Crockett, and Wilson soils. Axtell and Bremond soils are on slightly higher terrace positions. Bremond soils have higher chroma in the upper part of the argillic horizon. Burleson and Wilson soils are on similar positions. Burleson soils are clayey throughout. Crockett are on higher upland positions.

DRAINAGE AND PERMEABILITY: Moderately well drained. Permeability is very slow. Runoff is low on 0 to 1 percent slopes, medium on 1 to 3 percent slopes, and high on 3 to 5 percent slopes. Very slow internal drainage. The soil is seasonally wet and is saturated in the surface layer and upper part of the Bt horizon during the winter and spring seasons for periods of 10 to 30 days.

USE AND VEGETATION: Used for growing corn, cotton, grain sorghums, and small grain, but much of the acreage is now idle or in improved bermudagrass pastures. Native vegetation is tall prairie grasses such as little bluestem, indiangrass, switchgrass, and gramas; and scattered elm, hackberry, mesquite, and honey locust trees.

DISTRIBUTION AND EXTENT: Mainly in the Blackland Prairies (MLRA 86A, 86B) and Texas Claypan (MLRA 87A) areas of Central Texas. The series is of moderately extent.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Caldwell County, Texas; 1972.

REMARKS: Classification change Udertic Paleustalfs to Oxyaquic Vertic Paleustalfs based on knowledge that these soils are saturated for 2 to 4 weeks in most years. This period of time is within the definition of saturation for one month or more if rules of rounding are applied, i.e., 2 to 6 weeks saturation is considered inclusive. The soil would

classify in the Epioxyaquic subgroup if provided for by SOIL TAXONOMY.

Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon - 0 to 7 inches. (Ap horizon; very hard and massive when dry)

Argillic horizon - 7 to 80 inches. (Bt horizons)

Pale feature - Abrupt textural change at 7 inches.

Vertic feature - Cracks in the upper part of the argillic horizon (7 to 32 inches); few slickensides between 24 and 50 inches; and linear extensibility greater than 6.0 cm.

ADDITIONAL DATA: Texas Agricultural Experiment Station Laboratory S82TX-161-19

National Cooperative Soil Survey
U.S.A.

LOCATION RADER TX
Established Series
Rev. GLL-CLN-ACT
02/97

RADER SERIES

The Rader series consists of very deep, moderately well drained, very slowly permeable soils that formed in slightly acid to alkaline clayey sediments interbedded with loamy materials. These soils are on nearly level to gently sloping stream terraces and terrace remnants on uplands. Slopes range from 0 to 3 percent.

TAXONOMIC CLASS: Fine-loamy, mixed, semiactive, thermic Aquic Paleustalfs

TYPICAL PEDON: Rader fine sandy loam--wooded pasture. (Colors are dry soil unless otherwise stated.)

A--0 to 6 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common roots; few pores; strongly acid; gradual smooth boundary. (4 to 12 inches thick)

E1--6 to 19 inches; light gray (10YR 7/2) fine sandy loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common roots; few pores; strongly acid; gradual smooth boundary. (6 to 15 inches thick)

E2--19 to 25 inches; very pale brown (10YR 7/3) fine sandy loam, yellowish brown (10YR 5/4) moist; weak medium angular blocky structure; slightly hard, very friable, sticky and slightly plastic; few roots; few pores; very strongly acid; clear wavy boundary. (0 to 10 inches thick)

Bt/E--25 to 32 inches; discrete masses of light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; the majority of which are coated with light gray (10YR 7/1) fine sandy loam; weak medium subangular blocky structure; hard, friable, sticky and plastic; (Bt part) common pockets of friable, structureless, light gray (10YR 7/1) fine sandy loam (E part); common fine faint and distinct yellowish brown (10YR 5/6) and dark red (2.5YR 3/6) masses of iron accumulation; and few faint grayish brown (10YR5/2) iron depletions in ped interiors; very strongly acid; clear wavy boundary. (4 to 18 inches thick)

Bt1--32 to 39 inches; light brownish gray (10YR 6/2) sandy clay, grayish brown (10YR 5/2) moist; moderate coarse prismatic structure parting to moderate coarse angular blocky; extremely hard, very firm, very sticky and very plastic; few prism faces in upper

part coated with light gray (10YR 7/1) fine sandy loam; few roots on prism faces; common clay films; very strongly acid; gradual smooth boundary. (6 to 12 inches thick)

Bt2--39 to 52 inches; light gray (2.5Y 7/2) sandy clay, light brownish gray (2.5Y 6/2) moist; moderate coarse prismatic structure parting to moderate coarse angular blocky; extremely hard, very firm, very sticky and very plastic; few roots on prism faces; common clay films; few pressure faces 1 to 3 inches across; few black concretions; common fine and medium distinct of strong brown (7.5YR 5/6) and olive yellow (2.5Y 6/6) masses of iron accumulation; strongly acid; gradual smooth boundary. (12 to 24 inches thick)

Bt3--52 to 67 inches; distinctly mottled yellowish brown (10YR 5/8), strong brown (7.5YR 5/6), and light gray (2.5Y 7/2) sandy clay loam; coatings of gray (10YR 6/1) and pale olive (5Y 6/3) on ped faces; moderate coarse prismatic structure parting to weak coarse angular blocky; extremely hard, very firm, sticky and plastic; few roots on prism faces; common clay films; common black stains along root channels; few threads and films of neutral salts; neutral; gradual smooth boundary. (10 to 20 inches thick)

BC--67 to 80 inches; distinctly mottled light brownish gray (2.5Y 6/2), olive yellow (2.5Y 6/6), and yellowish brown (10YR 5/6) sandy clay loam; coatings of grayish brown (10YR 5/2) on ped faces; moderate coarse prismatic structure parting to weak coarse angular blocky; very hard, firm, sticky and plastic; few roots along prism faces; few black concretions; few threads and films on neutral salts; common black stains along roots channels; moderately alkaline.

TYPE LOCATION: Kaufman County, Texas; 100 feet west of private road; 0.25 mile south of county road which is 2.65 miles southwest and 0.3 mile west of Texas Highway 34 at a point 3.15 miles north of its junction with Farm Road 2728; 3.0 miles north of Kaufman.

RANGE IN CHARACTERISTICS: Solum thickness is 60 to over 80 inches. Clay content of the control section ranges from 28 to 35 percent.

The A horizon has hue of 10YR, value of 4 to 6 and chroma of 2 to 4. Textures of the A and E horizons are loamy fine sand, fine sandy loam, very fine sandy loam or loam. It is very strongly to slightly acid. Pedons with textures of loamy fine sand are less than 20 inches thick.

The E horizon has hue of 10YR, with value of 6 to 8, and chroma of 2 to 4.

The Bt/E horizon is 70 to 85 percent Bt materials. The Bt portion of this horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. Texture is sandy clay loam, clay loam, or loam. The E portion of this horizon is uncoated sand and silt with hue of 10YR, value of 6 to 8, and chroma of 1 to 4. It is skeletans, coatings on peds and pockets that decrease with depth.

The Bt1 and Bt2 horizons have hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 1 to 4. Redoximorphic features are few to many and they are reddish, grayish, brownish, or yellowish. These horizons are mainly sandy clay but range to clay or clay loam with a clay content of 35 to 50 percent. They are very strongly acid or strongly acid.

The Bt3 and BC horizons are dominated by redoximorphic features in shades of gray, yellow, brown, and olive. They are sandy clay loam, sandy clay, or clay that are strongly acid to moderately alkaline. The BC horizon of some pedons contain a few masses and concretions of calcium carbonate. Pressure faces that are 1 inch to 3 inches across are few to common in the Bt horizon.

COMPETING SERIES: This is the Rutersville series in the same family. Similar series are the Chaney, Demona, Nimrod, Raino, Rodessa, Selden, and Tabor. Rutersville soils have weathered bedrock between 40 to 60 inches. All of the other competitors, except Raino and Rodessa, do not have Bt horizons that exhibit evidence of degradation in the upper part. In addition, Chaney, Demona, and Tabor soils, as well as Rodessa soils contain more than 35 percent clay in the control section. Nimrod soils have arenic epipedons, and Selden soils have siliceous mineralogy. Raino soils have contrasting textures in the control section and contain tongues of E material in the B2 horizon.

GEOGRAPHIC SETTING: Rader soils are on nearly level to gently sloping old terraces. Slopes range from 0 to 3 percent. The soils formed in slightly acid to alkaline clay sediments interbedded with sandier materials. They normally occupy mounds 30 to 200 feet in diameter and 1 to 3 feet above the intermound areas. Mean annual precipitation ranges from 32 to 42 inches, and mean annual temperature ranges from 62 to 69 degrees F. Frost free days range from 230 to 270 days, and elevation ranges from 350 to 700 feet. Thornthwaite P-E indices ranges from 52 to 66.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Axtell, Crockett, and Lufkin series, all of which have fine-textured control section and smectitic mineralogy.

DRAINAGE AND PERMEABILITY: Moderately well drained. Permeability is very slow. Runoff is low on slopes less than 1 percent, and medium on 1 to 3 percent slopes. These soils have a perched water table above the Bt horizon during periods of prolonged rainfall.

USE AND VEGETATION: Mainly used for pasture. Bermudagrass, Pensacola bahiagrass, and dallisgrass are the dominant tame pasture plants. Post oak, blackjack oak, hickory, and elm are the dominant trees. Some areas are farmed to cotton and grain sorghum.

DISTRIBUTION AND EXTENT: Mainly in the Texas claypan area. The series is of moderate extent.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Kaufman County, Texas; 1973.

REMARKS: These soils were formerly included in the Tabor series.

Semiactive cation exchange activity class. Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon - 0 to 25 inches (A, E1 and E2 horizons)

Argillic horizon - 25 to 67 inches (Bt/E, Bt1, Bt2 and Bt3 horizons).

Aquic feature - Iron depletions due to wetness at 25 inches and below.

Pale Features - clay content does not decrease by as much as 20 percent of the maximum within 60 inches of the surface, and there are mottles which qualify as common and coarse with chroma more than 5 in the lower part of the argillic horizon.

Degraded upper Bt - interfingers of E materials penetrating Bt.

Soil Interpretation Record No.: TX0663

National Cooperative Soil Survey
U.S.A.

LOCATION SILAWA TX
Established Series
Rev. GLL-ACT
02/97

SILAWA SERIES

The Silawa series consists of very deep, well drained, moderately permeable soils that formed in sandy and loamy sediments. These soils are on nearly level to strongly sloping terraces. Slopes range from 0 to 12 percent.

TAXONOMIC CLASS: Fine-loamy, siliceous, semiactive, thermic Ultic Haplustalfs

TYPICAL PEDON: Silawa fine sandy loam--pasture. (Colors are for dry soil unless otherwise stated.)

Ap--0 to 6 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; slightly hard, very friable, sticky and slightly plastic; many fine and very fine roots; slightly acid; clear smooth boundary. (4 to 10 inches thick)

E--6 to 13 inches; light yellowish brown (10YR 6/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, sticky and slightly plastic; many fine and very fine roots; common fine and very fine pores; slightly acid; clear smooth boundary. (0 to 10 inches thick)

Bt--13 to 38 inches; red (2.5YR 5/6) sandy clay loam, red (2.5YR 4/6) moist; weak coarse prismatic structure parting to weak medium subangular blocky; very hard, firm, sticky and plastic; common very fine roots; common fine pores; common clay films on surfaces of peds; sand grains bridged and coated; few fine siliceous pebbles; moderately acid; diffuse smooth boundary. (20 to 44 inches thick)

BCt--38 to 59 inches; red (2.5YR 5/8) fine sandy loam, red (2.5YR 4/8) moist; weak coarse prismatic structure parting to weak fine subangular blocky; hard, firm, sticky and plastic; few fine and very fine roots; few fine pores; few patchy clay films on surfaces of peds; few fine siliceous pebbles; moderately acid; diffuse smooth boundary. (10 to 25 inches thick)

C--59 to 70 inches; red (2.5YR 5/8) loamy fine sand, red (2.5YR 4/8) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; moderately acid.

TYPE LOCATION: Falls County, Texas; from the intersection of Farm Road 2027 and Farm Road 1048 in the Pleasant Grove Community, 2.5 miles north on Farm Road 2027, then 1.9 miles east on a county road and 75 yards south in a pasture.

RANGE IN CHARACTERISTICS: Solum thickness ranges from 40 to 60 inches. The percent clay decreases by 20 percent or more of the maximum at a depth of 30 to 60 inches. Clay content of the particle size control section ranges from 18 to 35 percent. Siliceous pebbles range from 0 to 10 percent throughout the A, E, and Bt horizons. Base saturation throughout the argillic varies from 35 to 70 percent.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 4 to 6, chroma of 2 to 4. Mollic colored horizons are less than 10 inches thick. The E horizon has colors with value or chroma 1 to 2 units higher than the A horizons. Texture of these horizons is loamy fine sand or fine sandy loam. Reaction ranges from strongly acid to slightly acid.

The Bt horizon has hue of 2.5YR, 5YR or 7.5YR, value 4 to 6, chroma of 4 to 8. Some pedons have a few reddish or brownish masses of iron accumulation. Texture is commonly sandy clay loam and less commonly fine sandy loam or clay loam. Reaction ranges from very strongly acid to moderately acid.

The BC horizon has colors in shades of red, brown, or yellow. Texture is fine sandy loam, sandy clay loam or their gravelly counterparts. Siliceous pebbles range from 0 to 35 percent by volume. Reaction ranges from very strongly acid to moderately acid.

The C horizon has colors in shades of brown, yellow, or red. Texture is loamy sand, loamy fine sand, fine sandy loam, or their gravelly counterparts. Some pedons have stratified beds or thin layers of sand and gravel. Reaction ranges from very strongly acid to slightly acid.

COMPETING SERIES: These are the Knolle (TX), Littleaxe (OK), Minerva (TX), Stephenville (OK), and Weatherford (TX) series. Similar soils are the Cisco, Dutek, Gasil, Hye, Konawa, Konsil, Styx and Travis series. Knolle soils have slightly browner hue, contain brown masses of iron accumulation, and contain more coarse sand and less silt. Littleaxe, Stephenville, and Weatherford soils have sandstone bedrock at depths of less than 60 inches. Minerva soils are very similar to Silawa soils. They are on uplands and have formed in sediments of Eocene age. They tend to have thicker sola and finer textured, less stratified C horizons. Cisco soils have argillic horizons with more than 75 percent base saturation in some part. Dutek and Styx soils have sandy A horizons more than 20 inches thick. Gasil and Konsil soils do not decrease in clay content by as much as 20 percent from the maximum within a depth of 60 inches. They also formed in sandstone of Miocene Age. Hye and Konawa soils have mixed mineralogy. In addition, Hye soils have sandstone bedrock within 20 to 40 inches of the surface. Travis soils have control sections with more than 35 percent clay.

GEOGRAPHIC SETTING: Silawa soils occupy nearly level to strongly sloping Pleistocene stream terraces. Slopes are mainly between 0 to 8 percent but range to 12 percent. The soils formed in sandy and loamy sediments. Mean annual temperature ranges from 63 to 70 degrees F., and mean annual precipitation ranges from 30 to 42 inches. Frost free days range from 220 to 270 days, and elevation ranges from 350 to 800 feet. Thornthwaite P-E indices ranges from 44 to 64.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the competing Dutek and Styx series and the Axtell, Desan, and Silstid series. Axtell soils have mottled clayey Bt horizons. Desan soils have sandy A horizons more than 40 inches thick. Dutek, Silstid, and Styx soils have sandy A horizons more than 20 inches thick. Axtell, Dutek, and Styx soils are on slightly lower positions. Desan and Silstid soils are typically on slightly higher positions than Silawa.

DRAINAGE AND PERMEABILITY: Well drained. Permeability is moderate. Runoff is negligible on slopes less than 1 percent, very low of 1 to 3 percent slopes, low on 3 to 5 percent slopes, and medium on 5 to 12 percent slopes.

USE AND VEGETATION: Most areas are used for tame pasture or native range. A few areas are used for truck crops. Native vegetation is mainly post oak and blackjack oak with an understory of mid and tall grasses.

DISTRIBUTION AND EXTENT: Central Texas and possibly southern Oklahoma. The series is moderately extensive.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Falls County, Texas, 1975.

REMARKS: These soils were formerly included with the Konawa series.

Semiactive cation exchagne activity class. Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon - 0 to 13 inches (Ap and E horizons)

Argillic horizon - 13 to 38 inches (Bt horizon)

Ultic feature - base saturation less than 75 percent throughout the argillic horizon.

ADDITIONAL DATA: National Soil Survey Laboratory: Falls County, S74TX-145-2 (74L345); and Henderson County, S76TX-213-2 (76P0041-76P0047).

Soil Interpretation Record No.: TX0346

LOCATION SILSTID TX
Established Series
Rev. GLL-CLN-ACT
02/97

SILSTID SERIES

The Silstid series consists of very deep, well drained, moderately permeable soils that formed in residuum weathered from beds of sandy or loamy materials and interbedded sandstones. These nearly level to sloping soils are on uplands. Slopes range from 0 to 8 percent.

TAXONOMIC CLASS: Loamy, siliceous, semiactive, thermic Arenic Paleustalfs

TYPICAL PEDON: Silstid fine sand--rangeland. (Colors are for dry soil unless otherwise stated.)

A--0 to 25 inches; pale brown (10YR 6/3) fine sand, brown (10YR 5/3) moist; single grain; loose; common fine roots; slightly acid; clear smooth boundary. (5 to 25 inches thick)

E--25 to 37 inches; very pale brown (10YR 7/4) fine sand, light yellowish brown (10YR 6/4) moist; single grain; loose; common fine roots; slightly acid; clear smooth boundary. (10 to 25 inches thick)

Bt1--37 to 42 inches; brownish yellow (10YR 6/6) sandy clay loam, yellowish brown (10YR 5/6) moist; moderate fine and medium subangular blocky structure; very hard, friable, sticky and plastic; few fine roots; few fine pores; thin patchy clay films on vertical surfaces of peds; few fine distinct red (2.5YR 4/8) masses of iron accumulation; moderately acid; clear smooth boundary. (4 to 20 inches thick)

Bt2--42 to 52 inches; reddish yellow (5YR 6/8) sandy clay loam, yellowish red (5YR 5/8) moist; moderate medium subangular blocky structure; very hard, friable, sticky and plastic; few fine roots; few fine pores; thin patchy clay films on surfaces of peds; many coarse distinct red (2.5YR 4/8) masses of iron accumulation; moderately acid; gradual wavy boundary. (6 to 20 inches thick)

Bt3--52 to 84 inches; reddish yellow (5YR 6/8) sandy clay loam, yellowish red (5YR 5/8) moist; moderate medium granular and moderate fine subangular blocky structure; hard, friable, sticky and plastic; few fine roots; few fine pores; thick patchy grayish brown (10YR 5/2) clay films; common medium white (10YR 8/2) pockets of uncoated sand in lower part; few fine roots; many medium distinct brown (10YR 5/3) and a few fine distinct red (2.5YR 4/6) masses of iron accumulation; moderately acid.

TYPE LOCATION: Caldwell County, Texas; 3.1 miles south of Delhi on Texas Highway 304 to the intersection with a gravel road; 0.5 mile south on gravel road to intersection with another gravel road; 1.5 miles in a westerly direction; 1.8 miles southeast in wooded pasture adjacent to a petroleum pipeline.

RANGE IN CHARACTERISTICS: Solum thickness is 60 to more than 80 inches. There are a few ironstone or sandstone pebbles throughout the solum in some pedons; pebbles comprise less than 15 percent by volume.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 7 and chroma of 2 to 4. The E horizon is usually 1 to 3 units of value greater than the A1 horizon. Texture of the A and E horizons is loamy fine sand or fine sand and the combined thickness is 20 to 40 inches. Reaction ranges from moderately acid to neutral.

The Bt horizon has hue of 5YR, 7.5YR or 10YR, value of 5 to 7, and chroma of 6 to 8. Redoximorphic features of these colors and reddish masses of iron accumulation are throughout the horizon. The lower Bt horizons has a matrix that is dominated by redoximorphic features in some pedons. Texture is sandy clay loam, loam or fine sandy loam with clay content of 18 to 32 percent. Streaks or pockets of uncoated sand are in the lower part of most pedons. Reaction ranges from strongly acid to slightly acid.

Some pedons have a C horizon below a depth of 60 inches with brownish, reddish or yellowish colors. Texture is fine sandy loam, sandy clay loam or weakly cemented sandstone. Reaction ranges from strongly acid through slightly acid.

COMPETING SERIES: These are the Heaton, Loneoak, and Styx series. Similar soils are the Coving, Dougherty, Dutek, Heatly, Nimrod, Nobscot, and Stidham series. Heaton series typically have redder colors, and do not have redoximorphic features in the upper Bt horizon. Styx soils have iron depletions with chroma of 2 or less in the lower Bt horizon with a perched water table. Coving and Nimrod soils have iron depletions with chroma of 2 or less within 30 inches of soil surface. Dougherty, Heatly, and Stidham have mixed mineralogy. Dutek soils have a 20 percent decrease in clay from the maximum within a depth of 60 inches. Nobscot soils have less than 18 percent clay in the control section and mixed mineralogy.

GEOGRAPHIC SETTING: Silstid soils occur on uplands. Slope gradients range from 0 to 8 percent. The soil formed in beds of sandy or loamy materials and interbedded sandstones. Mean annual temperature ranges from 64 to 69 degrees F., and mean annual precipitation ranges from 28 to 38 inches. Frost free days range from 225 to 270 days, and elevation ranges from 300 to 800 feet. The Thornthwaite P-E indices are 44 to 64.

GEOGRAPHICALLY ASSOCIATED SOILS: These include the competing Nimrod soil and the Birome, Gasil, Konsil, Padina and Patilo soils. Nimrod soils are slightly lower in the landscape. Birome soils have a clayey argillic horizon and are above on low hills or ridges. Gasil and Konsil soils have epipedons less than 20 inches thick and are on

similar positions. Patilo and Padina soils have sandy epipedons more than 40 inches thick and are on slightly higher positions in the landscape.

DRAINAGE AND PERMEABILITY: Well drained. Permeability is moderate. Runoff is negligible on slopes less than 3 percent, very low on 3 to 5 percent slopes, and low on 5 to 8 percent slopes.

USE AND VEGETATION: Largely in rangeland. Small areas are cropped to peanuts or grain sorghum, or they are used as improved pasture. Native vegetation is blackjack oak, post oak, and yaupon with an understory of mid and tall grasses.

DISTRIBUTION AND EXTENT: Central and north central Texas. The series is moderately extensive.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Caldwell County, Texas; 1972.

REMARKS: Silstid soils were formerly included in the Stidham series.

Semiactive cation exchange activity class. Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon - 0 to 37 inches. (A and E horizon)

Arenic feature - fine sand texture to 37 inches.

Argillic horizon - 37 to 84 inches. (Bt1, Bt2 and Bt3 horizon)

ADDITIONAL DATA: S80TX-145-001, Falls County, TX; S86TX-287-001, Lee County, TX.

Soil Interpretation Record No.: TX0085

National Cooperative Soil Survey
U.S.A.

LOCATION STEPHEN TX
Established Series
Rev. CLG:CLN
04/2007

STEPHEN SERIES

The Stephen series consists of shallow, well drained, moderately slowly permeable soils formed in interbedded marl and chalky limestone. These soils are on gently sloping to sloping uplands. Slopes are mainly 1 to 5 percent but range from 1 to 8 percent.

TAXONOMIC CLASS: Clayey, mixed, active, thermic, shallow Udorthentic Haplustolls

TYPICAL PEDON: Stephen silty clay--cropland. (Colors are for dry soil unless otherwise stated.)

Ap--0 to 8 inches; dark brown (7.5YR 4/2) silty clay, dark brown (7.5YR 3/2) moist; moderate fine subangular blocky and granular structure parting to very fine subangular blocky structure; hard, firm, sticky, plastic; many fine roots; few fine chalk fragments; calcareous, moderately alkaline; abrupt wavy boundary. (7 to 20 inches thick)

C/A--8 to 12 inches; about 65 percent platy chalk fragments and platy chalk in place and about 35 percent dark brown (7.5YR 3/3) moist silty clay in the horizontal and vertical crevices and between the loose chalk fragments; few to strongly cemented cobblestones and limestone; few fine roots; few fine pores; calcareous, moderately alkaline; abrupt irregular boundary. (0 to 6 inches thick)

Cr--12 to 28 inches; pink (5YR 8/3) and white (10YR 8/2) platy chalk this is less hard than 3, Mohs scale; few thin tongues of dark brown calcareous silty clay in crevices between some chalk plates.

TYPE LOCATION: McLennan County, Texas; from the intersection of Farm Road 1695 and Farm Road 2837 in Lorena, 0.6 mile northwest on Farm Road 2837 to intersection with county road, 300 feet west and 100 feet north of intersection in cropland.

RANGE IN CHARACTERISTICS: Solum thickness to chalky limestone ranges from 7 to 20 inches. The chalky limestone, when moist, can be cut with a spade. The layer below the A horizon ranges from 40 to 80 percent or more calcium carbonate equivalent.

The A horizon has hue of 7.5YR or 10YR; value of 3 to 5, and chroma of 1 to 3. It is clay, silty clay, silty clay loam, or clay loam with 35 to 55 percent clay. Chalk fragments in the A horizon range from 2 to 15 percent by volume. Olive mottles or streaks range

from none to common in the lower part to the A horizon. The lower boundary of the A horizon ranges from wavy to irregular.

The C/A or A/C horizons, where present, have color and texture similar to those of the A and Cr horizons.

The Cr horizon is interbedded chalk and limy earths or soft limestone and limy earths. It has hue of 5YR to 10YR in shades of pink, white, and gray.

COMPETING SERIES: There are no series in the same family. Similar soils are Brackett, Castephen, Doss, Eckrant, Purves, Real, and Whitewright series. Brackett and Whitewright soils lack a mollic epipedon. Brackett, Castephen, Doss, Real, and Whitewright soils have carbonatic mineralogy and contain less than 35 percent silicate clay. Eckrant and Purves soils have a Lithic contact with indurated limestone. In addition, Eckrant and Real soils contain more than 35 percent coarse fragments.

GEOGRAPHIC SETTING: Stephen soils are on uplands. Surfaces are plane to convex, with gradients mainly less than 5 percent, but range from 1 to 8 percent. The soils formed in interbedded chalk, marl, or soft limestone rubble, mainly of the Austin Formation. The climate is warm and subhumid; mean annual precipitation ranges from 30 to 42 inches, mean annual temperature from 63 to 69 degrees F., and the Thornthwaite annual P-E indices from 44 to 66.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Altoga, Austin, Brackett, Eddy, and Lott series. All of these soils have carbonatic

mineralogy and less than 35 percent clay in the control section. In addition; Altoga, Brackett, and Eddy do not have mollic epipedons.

DRAINAGE AND PERMEABILITY: Well drained; medium to rapid runoff; medium internal drainage; moderately slow permeability.

USE AND VEGETATION: Mainly in cultivation and used for growing small grains. A few areas are in native range. Native grasses are little bluestem, sideoats grama, hairy grama, and buffalograss.

DISTRIBUTION AND EXTENT: The Blackland Prairie of Texas. The series is extensive.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Ellis County, Texas; 1962.

REMARKS: Classification was changed 11/89 from clayey, mixed, thermic, shallow Entic Haplustolls to clayey, mixed, thermic, shallow Udorthentic Haplustolls.

Diagnostic horizons and features recognized in this pedon are:

Mollic epipedon - 0 to 8 inches, the Ap horizon.

Paralithic contact of chalk at a depth of 12 inches.

National Cooperative Soil Survey
U.S.A.

LOCATION SUNEV TX
Established Series
Rev. CLG:CLN
1/90

SUNEV SERIES

The Sunev series consists of very deep, well drained moderately permeable soils that formed in loamy soil materials. These soils are on nearly level to moderately steep terraces or colluvial footslopes. Slopes range from 0 to 15 percent.

TAXONOMIC CLASS: Fine-loamy, carbonatic, thermic Udic Calciustolls

TYPICAL PEDON: Sunev loam--cropland. (Colors are for dry soil unless otherwise stated.)

Ap--0 to 6 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; thin light brownish gray surface crust; moderate fine and medium granular structure; hard, friable; common wormcasts; few fine fragments of snail shells; calcareous; moderately alkaline; abrupt smooth boundary. (5 to 10 inches thick)

A--6 to 12 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; strong fine and medium granular structure; hard, friable; common wormcasts and holes; common fine fragments of snail shells; few films of calcium carbonate; calcium carbonate equivalent about 35 percent; calcareous; moderately alkaline; gradual smooth boundary. (4 to 14 inches thick)

Bk1--12 to 21 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; strong medium granular and very fine subangular blocky structure; hard, friable; common wormcasts and holes; many films and threads of calcium carbonate; few fine fragments of snail shells; calcium carbonate equivalent about 50 percent; calcareous; moderately alkaline; gradual smooth boundary. (9 to 36 inches thick)

Bk2--21 to 60 inches; very pale brown (10YR 7/4) loam, light yellowish brown (10YR 6/4) moist; strong very fine and fine granular structure; slightly hard, very friable; few wormcasts and holes; many films and threads of calcium carbonate; few fine fragments of snail shells; calcium carbonate equivalent about 65 percent; calcareous; moderately alkaline; diffuse smooth boundary. (0 to 44 inches thick)

Bk3--60 to 72 inches; very pale brown (10YR 7/4) loam, light yellowish brown (10YR 6/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable; many films and threads of calcium carbonate; few fine fragments of snail shells; calcium carbonate equivalent about 65 percent; calcareous; moderately alkaline.

TYPE LOCATION: Guadalupe County, Texas; 4 miles northwest of McQueeney on Farm Road 725; 0.8 mile east on gravel road; 300 feet south into field.

RANGE IN CHARACTERISTICS: Solum thickness ranges from 40 to 70 inches. Calcium carbonate equivalent in the 10- to 40-inch control section ranges from 40 to 70 percent. Fine fragments of snail shells are in all horizons. Films and threads of calcium carbonate are evident in all horizons and increase with depth. The silicate clay content ranges from 18 to 35 percent and carbonate clay from 2 to 10 percent. Siliceous and limestone pebble content ranges from 0 to 15 percent.

The A horizon has color with hue of 10YR, value of 3 to 5 and chroma of 2 or 3. It is fine sandy loam, loam, clay loam, or silty clay loam.

The Bk horizons have color with hue of 10YR, value of 4 to 7, and chroma of 2 to 4; hue of 7.5YR, value of 4 to 7, and chroma of 4 or 6; or hue of 5YR, value of 5, and chroma of 4. In some pedons, these horizons contain few to common brownish and yellowish mottles. Texture is loam, clay loam, or silty clay loam. In some pedons the lower part of the horizon contains up to 50 percent by volume of limestone pebbles and calcium carbonate concretions. Weakly cemented limestone occurs below 40 inches in some pedons.

COMPETING SERIES: These include Bolar, Carbengle, Rumley, and Topsey series in the same family and the similar Lewisville, Nuvalde, Oakalla, Seawillow, and Venus series. Bolar soils have a lithic contact with limestone at depths of 20 to 40 inches. Carbengle soils have a paralithic contact with sandstone at depths of 20 to 40 inches. Rumley soils contain less finely divided lime and more concretions of calcium carbonate in the upper Bk, and have a more distinct and contrasting calcic horizon. Topsey soils have sola less than 40 inches thick over shaly and marly sediments. Lewisville, Nuvalde, and Venus soils have calcium carbonate equivalents less than 40 percent in the 10- to 40-inch control section. Oakalla soils have mollic epipedons more than 20 inches thick and have an irregular distribution of organic matter in a vertical section. Seawillow soils do not have mollic epipedons.

GEOGRAPHIC SETTING: Sunev soils are on low stream terraces or colluvial foot slopes. Slope gradients range from 0 to 15 percent. The soil formed in loamy alluvial sediments that are high in calcium carbonate. Climate is dry subhumid. Mean annual rainfall ranges from 28 to 34 inches. Mean annual temperature ranges from 62 to 69 degrees F. Thornthwaite P-E indices range from 40 to 56.

GEOGRAPHICALLY ASSOCIATED SOILS: These include the competing Lewisville, and Rumley series and Altoga, Bosque, and Karnes, Seguin, and Venus series. Lewisville and Rumley are on slightly higher positions. Altoga and Karnes soils have ochric epipedons. In addition, Altoga soils have fine-silty control sections and are on higher positions. Karnes soils have coarse-loamy control sections and are on similar positions. Bosque and Sequin soils are on flood plains and have thicker mollic epipedons.

Venus soils contain less than 40 percent calcium carbonate equivalent and are on nearby areas.

DRAINAGE AND PERMEABILITY: Well drained; slow to medium runoff; moderate permeability.

USE AND VEGETATION: Mostly cropped to cotton, grain sorghums, and oats. Native vegetation is mainly big bluestem, little bluestem, switchgrass, and indiangrass, with scattered hackberry and pecan trees.

DISTRIBUTION AND EXTENT: Central Texas, along stream terraces draining the Edwards Plateau. The soils are of minor extent.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Guadalupe County, Texas; 1973.

REMARKS: These soils were formerly included with the Venus series.

Classification was changed 11/89 from Typic Calciustolls to Udic Calciustolls.

Diagnostic horizons and features recognized in this pedon are:

Mollic epipedon - 0 to 12 inches.

Calcic horizon - 12 to 60 inches.

National Cooperative Soil Survey
U.S.A.

LOCATION TRINITY TX+AL AR OK
Established Series
Rev. GLL-SEB-ACT
10/97

TRINITY SERIES

The Trinity series consists of very deep, moderately well drained, very slowly permeable soils on flood plains. They formed in alkaline clayey alluvium. Slopes are typically less than 1 percent, but range from 0 to 3 percent.

TAXONOMIC CLASS: Very-fine, smectitic, thermic Typic Hapluderts

TYPICAL PEDON: Trinity clay--pasture. (Colors are for moist soil unless otherwise stated.)

Ap--0 to 6 inches; very dark gray (5Y 3/1) clay, dark gray (5Y 4/1) dry; moderate fine and medium granular and moderate fine subangular blocky structure; very hard, firm, sticky, very plastic; many fine roots; common fine pores; strongly effervescent; moderately alkaline; clear smooth boundary. (0 to 8 inches thick)

A--6 to 16 inches; very dark gray (5Y 3/1) clay, dark gray (5Y 4/1) dry; moderate medium subangular blocky structure parting to very fine subangular blocky; very hard, firm, sticky, very plastic; common fine roots; common fine pores; many prominent pressure faces; few very fine concretions of calcium carbonate; strongly effervescent, moderately alkaline; gradual wavy boundary. (8 to 24 inches thick)

Bss1--16 to 36 inches; very dark gray (5Y 3/1) clay, dark gray (5Y 4/1) dry; weak fine and very fine subangular blocky structure; very hard, firm, sticky, very plastic; few fine roots; few fine pores; many prominent pressure faces; common prominent grooved slickensides that increase with depth; few very fine and fine concretions of calcium carbonate; strongly effervescent; moderately alkaline; diffuse wavy boundary.

Bss2--36 to 64 inches; very dark gray (5Y 3/1) clay, dark gray (5Y 4/1) dry; weak coarse blocky structure; very hard, very firm; few fine roots and pores; many prominent grooved slickensides; common fine and medium distinct olive yellow (5Y 6/6) and yellowish brown (10YR 5/8) redox concentrations; common fine and medium concretions of calcium carbonate; few hard black concretions; strongly effervescent; moderately alkaline; diffuse wavy boundary.

Bss3--64 to 75 inches; dark olive gray (5Y 3/2) clay, olive gray (5Y 4/2) dry; weak coarse angular blocky structure; very hard, very firm; common fine and medium distinct olive yellow (2.5Y 6/6; 5Y 6/8) and few coarse distinct light olive brown (2.5Y 5/4) redox concentrations; few prominent slickensides; common very fine and medium

concretions of calcium carbonate; common fine black concretions; strongly effervescent, moderately alkaline. (combined thickness of Bss horizons is 40 to 70 inches)

TYPE LOCATION: Kaufman County, Texas; from intersection of old U.S. Hwy. 80 and Farm Road 740 in Forney; 6.1 miles south on Farm Road 740; 0.45 mile south on oil top road which is an extension of Farm Road 740; 54 feet east of fence.

RANGE IN CHARACTERISTICS: Solum thickness is more than 80 inches. Gilgai microrelief is present in undisturbed areas but is subdued with the micro highs 2 to 6 inches higher than the micro lows. When dry, cracks 1/4 to more than 1 inch wide extend to a depth of 20 inches or more for less than 90 cumulative days. Grooved slickensides typically begin at a depth of 12 to 24 inches and increase in number and size with depth. Clay content of the control section ranges from 60 to 80 percent. The soil is slightly alkaline or moderately alkaline and slightly or strongly effervescent throughout.

The A horizon has hue of 10YR, 2.5Y, or 5Y, with values of 2 to 3 and chroma of 1.

The Bss or Bkss horizons have hue of 10YR, 2.5Y, or 5Y, value of 2 to 5, and chroma of 2 or less. Few to common masses of redox concentrations in shades of yellow, brown, or olive are in the lower part. Calcium carbonate in the form of masses, concretions, and threads range from none to common.

COMPETING SERIES: These are the Billyhaw, Kaufman, and Wiergate series in the same family and the Hallsbluff, Kaman, Pledger, Texark, Tinn, and Zilaboy series in similar families. The Billyhaw soils have a solum less than 60 inches thick and colors with hue redder than 10YR. Kaman, Kaufman, Texark, and Wiergate soils are noncalcareous in the A horizon. Hallsbluff, Kaman, Tinn, and Zilaboy soils average less than 60 percent clay in the particle-size control section. Kaman and Zilaboy soils are wet for longer periods. Pledger soils have a hyperthermic temperature regime and, in addition, Pledger soils have sola less than 60 inches thick and colors with hue redder than 10YR.

GEOGRAPHIC SETTING: Trinity soils are on nearly level, wide flood plains of major rivers and streams. Slopes are mainly less than 1 percent but range up to 3 percent. The soil formed in calcareous clayey alluvium. The climate is warm and humid to subhumid. The mean annual precipitation ranges from 34 to 52 inches and mean annual temperatures range from 62 to 70 degrees F. Frost free days range from 230 to 280 days and elevation ranges from 100 to 550 feet. Thornthwaite P-E indices range from 52 to about 70.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the competing Kaufman, Tinn, and Zilaboy series and the Gladewater and Ovan series. Ovan soils have less than 60 percent clay in the particle-size control section, have colors with chroma of 2 or 3 in the A horizon, and have cracks that stay open longer than 90 cumulative days. Gladewater soils have aquic soil conditions within a depth of 20 inches. Gladewater and

Zilaboy soils are on slightly lower and wetter positions. Kaufman, Tinn, and Ovan soils are on similar flood plain positions.

DRAINAGE AND PERMEABILITY: Moderately well drained. Runoff is low on 0 to 1 percent slopes and medium on 1 to 3 percent slopes. Permeability is very slow. Flooding is common except where the soil is protected.

USE AND VEGETATION: Most areas are in pasture or planted to crops such as cotton, corn, sorghums, or small grains. Native vegetation is hardwood forest of elm, hackberry, oak, and ash.

DISTRIBUTION AND EXTENT: North Central, Central, and South Central Texas. The series is extensive.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Monroe County, Mississippi; 1908.

REMARKS: Diagnostic horizons and features recognized in this pedon are:

Mollic epipedon - the A horizon from 0 to 16 inches.
Cambic horizon - the Bss horizon from 16 to 75 inches.
Vertic properties - gilgai microrelief in undisturbed areas, slickensides at a depth of 16 to 75 inches, and cracks that remain open less than 90 cumulative days.

ADDITIONAL DATA: National Soil Survey Laboratory: S77TX-175-(78P068).

Soil Interpretation Record - Trinity (TX0101), commonly flooded (TX1189), frequently flooded (TX1124), depressional (TX0919).

National Cooperative Soil Survey
U.S.A.

LOCATION WILSON TX+OK
Established Series
Rev. CLN-SEB-ACT
11/2001

WILSON SERIES

The Wilson series consists of very deep, moderately well drained, very slowly permeable soils that formed in alkaline clayey sediments. These soils are on nearly level to gently sloping stream terraces or terrace remnants on uplands. Slopes are mainly less than 1 percent but range from 0 to 5 percent.

TAXONOMIC CLASS: Fine, smectitic, thermic Oxyaquic Vertic Haplustalfs

TYPICAL PEDON: Wilson silt loam--cropland. (Colors are for moist soil unless otherwise stated.)

Ap--0 to 5 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; weak fine granular structure; massive when dry; very hard, firm, sticky and plastic; common fine roots; moderately acid; abrupt wavy boundary. (3 to 10 inches thick)

Bt--5 to 20 inches; very dark gray (10YR 3/1) silty clay, gray (10YR 5/1) dry; moderate medium angular blocky structure; extremely hard, very firm, very sticky and very plastic; few fine roots; few fine pores; thin continuous clay films 1/2 unit of value darker than interior of peds; vertical cracks 1/2 inch wide are filled with material from the Ap horizon; slightly acid; gradual wavy boundary. (10 to 20 inches thick)

Btssg1--20 to 32 inches; grayish brown (2.5Y 5/2) silty clay, light brownish gray (2.5Y 6/2) dry; moderate medium angular blocky structure; extremely hard, very firm, very sticky and very plastic; few fine roots; few fine pores; few slickensides; few medium pressure faces; thin continuous clay films on surface of peds; vertical cracks 1/4 inch wide partly filled with material from above; few fine crystals of gypsum; few fine calcium carbonate concretions; slightly alkaline; diffuse wavy boundary.

Btssg2--32 to 65 inches; grayish brown (2.5Y 5/2) silty clay, light brownish gray (2.5Y 6/2) dry; weak coarse angular blocky structure; extremely hard, very firm, very sticky and very plastic; few fine roots; few fine pores; few slickensides; patchy clay films on surface of peds; common fine crystals of gypsum; few fine masses of calcium carbonate; slightly alkaline; gradual smooth boundary. (combined Btss subhorizons are 25 to 60 inches thick)

BCkss--65 to 80 inches; olive gray (5Y 5/2) silty clay, light gray (5Y 7/2) dry; weak coarse angular blocky structure; extremely hard, very firm, very sticky and very plastic; few fine roots; few fine pores; few slickensides;

few coarse masses of calcium carbonate; few small fragments of clay; very slightly effervescent; moderately alkaline.

TYPE LOCATION: Kaufman County, Texas; 4 miles southeast of the intersection of Texas Highway 34 and U. S. Highway 175 in Kaufman, 0.15 mile northeast and 0.2 mile southeast of intersection of county road and U. S. Highway 175, 150 feet southwest in field.

RANGE IN CHARACTERISTICS: Solum thickness ranges from 60 to more than 80 inches. The weighted average clay content of the upper 20 inches of the argillic horizon ranges from 35 to 50 percent. When dry, cracks at least 1/4 inch wide extend from the top of the argillic horizon through a thickness of 12 inches or more within the upper 50 inches of the soil. Slickensides and/or wedged-shaped aggregates and pressure faces range from few to common and begin at a depth of 14 to 26 inches. Linear extensibility is greater than 2.5 inches (6 cm) within 40 inches (100 cm) of the soil surface. COLE ranges from 0.07 to 0.10 in the upper 50 inches of the argillic horizon. The surface layer is variable in thickness with a series of micro crests and troughs in the Bt horizon that range from 4 to about 20 feet apart. Redoximorphic features are contemporary in the upper Bt1 horizon and are mainly relic in the lower part of the Bt horizon. The soil does not have aquic soil conditions in the upper 20 inches in most years.

The A horizon is less than 10 inches thick in more than 50 percent of the pedon, but it is as much as 15 inches thick in some subsoil troughs. It has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 or 2. Texture is loam, silt loam, silty clay loam, clay loam or their gravelly counterparts. Siliceous pebbles and small cobbles range from 0 to 35 percent. It is massive and hard or very hard when dry but is soft or friable with structure when moist. Some pedons have a thin E horizon in subsoil troughs. Reaction ranges from moderately acid to neutral.

The Bt horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or less. Texture is clay loam, silty clay loam, silty clay, or clay. Some pedons have iron concentrations in shades of brown or yellow that range from few to common. Siliceous pebbles range from 0 to about 15 percent by
volume. Reaction ranges from slightly acid to slightly alkaline.

The Btss horizon has hue of 10YR to 5Y, value of 3 to 7, and chroma of 2 or less. Iron concentrations in shades of yellow, brown or olive range from none to common. Texture is commonly silty clay or clay and less commonly silty clay loam or clay loam. Reaction ranges from moderately acid to slightly alkaline and is typically noncalcareous.

The BCk or BC horizon has colors in shades of gray or brown. Redoximorphic features of these colors and in other shades of yellow, red or olive range from few to many. Texture is clay loam, silty clay loam, silty clay, or clay. Some pedons have fragments or thin strata of shale or marl. These materials make up less than 35 percent of the matrix. Reaction ranges from neutral to moderately alkaline. Concretions and masses of calcium carbonate range from none to common.

The C horizon, where encountered, is shale or marl or stratified layers of shale, marl and clay.

COMPETING SERIES: There are no competing series. Similar soils are the Dacosta, Herty, Lufkin, Mabank, and Steedham series. Dacosta soils have a mollic epipedon and are members of the hyperthermic family. Herty, Lufkin and Mabank soils have an abrupt texture change between the A and Bt horizon. In addition, Herty soils are in the udic moisture regime. Steedham soils have sola from 20 to 40 inches thick, and are well drained.

GEOGRAPHIC SETTING: Wilson soils are on nearly level to gently sloping terraces or remnants of terraces. Slope gradients are 0 to 5 percent but dominantly less than 1 percent. The soil formed in alkaline clayey alluvium. Mean annual temperature ranges from 64 to 70 degrees F., and mean annual precipitation ranges from 32 to 45 inches. Frost free days range from 220 to 270 days and elevation ranges from 250 to 700 feet. Thornthwaite P-E indices from 50 to 70.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Bonham, Burleson, Crockett, Houston Black, Lufkin, Mabank, and Normangee series. Bonham soils have mollic epipedons. Burleson soils are on similar positions. Burleson and Houston Black soils are clayey to the surface and have slickensides (Vertisols). Crockett and Normangee soils have Bt horizons with chroma of more than 2. Bonham, Houston Black, Crockett and Normangee soils are on slightly higher positions above Wilson. Lufkin soils are on similar or slightly lower concave positions. Mabank soils are on similar positions.

DRAINAGE AND PERMEABILITY: Moderately well drained. Permeability is very slow. Runoff is low on 0 to 1 percent slopes, medium on 1 to 3 percent slopes, and high on 3 to 5 percent slopes. Very slow internal drainage. The soil is seasonally wet and is saturated in the surface layer and upper part of the Bt horizon during the winter and spring seasons for periods of 10 to 30 days.

USE AND VEGETATION: Wilson soils are cropped to cotton, sorghums, small grain, and corn. Many areas are now idle or are used for unimproved pasture. Original vegetation was tall prairie grasses, mainly andropogon species, and widely spaced motts of elm and oak trees. Most areas that are not cropped have few to many mesquite trees.

DISTRIBUTION AND EXTENT: Mainly in the Blackland Prairies of Texas, with small areas in Oklahoma. The soil is extensive, probably exceeding 1,000,000 acres.

MLRA OFFICE RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Wilson County, Texas; 1907.

REMARKS: Classification change from Udertic Haplustalfs to Oxyaquic Vertic Haplustalfs based on knowledge that these soils are saturated for 2 to 4 weeks in most

years. This period of time is within the definition of saturation for one month or more if rules of rounding are applied, i.e., 2 to 6 weeks saturation is considered inclusive.

Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon - 0 to 5 inches. (A horizon; very hard and massive when dry).

Argillic horizon - 5 to 65 inches. (Bt horizons)

Vertic feature - Cracks in the upper part of the argillic horizon (5 to 32 inches), few slickensides between 20 and 77 inches, and linear extensibility greater than 6.0 cm.

ADDITIONAL DATA: Type location pedon NSSL S62TX-(129)257-2 Kaufman County, Texas. Texas Ag. Exp. Station Lab. S63TX-145-1; S82TX-289-32

National Cooperative Soil Survey
U.S.A.

Great Trinity Forest Management Plan

Soil

Soil Names

SOIL_ID	Soil name	Description
2	Arents	loamy, gently undulating
3	Arents	loamy, hilly
8	Austin-Urban land complex	0 to 2 percent slopes
10	Axtell fine sandy loam	0 to 1 percent slopes
11	Axtell fine sandy loam	1 to 3 percent slopes
12	Axtell fine sandy loam	2 to 5 percent slopes, eroded
13	Axtell-Urban land complex	1 to 5 percent slopes
14	Bastsil fine sandy loam	0 to 3 percent slopes
15	Bastsil-Urban land complex	0 to 2 percent slopes
18	Burleson clay	0 to 1 percent slopes
19	Burleson clay	1 to 3 percent slopes
24	Dalco-Urban land complex	0 to 3 percent slopes
25	Dutek loamy fine sand	1 to 5 percent slopes
27	Eddy clay loam	3 to 8 percent slopes
28	Eddy-Brackett complex	8 to 20 percent slopes
29	Eddy-Brackett Urban land complex	8 to 15 percent slopes
32	Eddy-Urban land complex	4 to 8 percent slopes
35	Ferris-Urban land complex	5 to 12 percent slopes
37	Frio siltly clay	frequently flooded
38	Frio-Urban Land Complex	--
39	Gowen loam	occasionally flooded
40	Gowen loam	frequently flooded
41	Heiden clay	1 to 3 percent slopes
46	Lewisville silty clay	1 to 3 percent slopes
47	Lewisville silty clay	3 to 5 percent slopes
48	Lewisville silty clay	5 to 8 percent slopes
49	Lewisville-Urban land complex	0 to 4 percent slopes
50	Lewisville-Urban land complex	4 to 8 percent slopes
51	Mabank fine sandy loam	0 to 1 percent slopes
52	Mabank fine sandy loam	1 to 3 percent slopes
56	pits and dumps	--
57	Rader-Mabank complex	0 to 2 percent slopes
58	Rader-Urban land complex	0 to 2 percent slopes
60	Silwa fine sandy loam	1 to 3 percent slopes
61	Silwa fine sandy loam	3 to 8 percent slopes
62	Silwa fine sandy loam	2 to 8 percent slopes, eroded
63	Silwa-Urban land complex	2 to 6 percent slopes
64	Silstid loamy fine sand	0 to 3 percent slopes
65	Silstid-Uraban land complex	0 to 6 percent slopes
69	Stephen-Urban land complex	1 to 4 percent slopes
71	Sunev clay loam	1 to 3 percent slopes
72	Trinity clay	occasionally flooded
73	Trinity clay	frequently flooded
74	Trinity-Urban land complex	--
75	Urban land	--
76	Ustorthents	undulating
78	Wilson clay loam	0 to 1 percent slopes
79	Wilson clay loam	1 to 3 percent slopes
80	Wilson-Urban land complex	0 to 2 percent slopes
99	Water	--

Great Trinity Forest Management Plan

Soil

Suitable Trees

SOIL_ID	Suitable Trees
2	deodar cedar, sweet gum, magnolia, pine, chinese pistache, oak, cedar elm, callery pear, pecan , mountain laurel
3	deodar cedar, sweet gum, magnolia, pine, chinese pistache, oak, cedar elm, callery pear, pecan , mountain laurel
8	hackberry, japanese black pine, ginkgo, chinese pistache, oaks, cedar elm, redbud, crabapple
10	mulberry, oaks, bald cypress, sycamore, maple, chinese tallow, cedar elm, chinese pistache, cottonwood, yellow poplar
11	mulberry, oaks, bald cypress, sycamore, maple, chinese tallow, cedar elm, chinese pistache, cottonwood, yellow poplar
12	mulberry, oaks, bald cypress, sycamore, maple, chinese tallow, cedar elm, chinese pistache, cottonwood, yellow poplar
13	mulberry, oaks, bald cypress, sycamore, maple, chinese tallow, cedar elm, chinese pistache, cottonwood, yellow poplar
14	deodar cedar, sweet gum, magnolia, pine, chinese pistache, oak, cedar elm, callery pear, pecan , mountain laurel
15	deodar cedar, sweet gum, magnolia, pine, chinese pistache, oak, cedar elm, callery pear, pecan , mountain laurel
18	pecan, sweetgum, japanese black pine, oaks, cedar elm, redbud, crabapple, ginkgo, chinese pistache, hackberry
19	pecan, sweetgum, japanese black pine, oaks, cedar elm, redbud, crabapple, ginkgo, chinese pistache, hackberry
24	pecan, sweetgum, japanese black pine, oaks, cedar elm, redbud, crabapple, ginkgo, chinese pistache
25	deodar cedar, sweet gum, magnolia, pine, chinese pistache, oak, cedar elm, callery pear, pecan , mountain laurel
27	cedar elm, redbud, redcedar, mexican plum, texas oak
28	cedar elm, redbud, redcedar, mexican plum, texas oak
29	cedar elm, redbud, redcedar, mexican plum, texas oak
32	cedar elm, redbud, redcedar, mexican plum, texas oak
35	hackberry, mulberry, japanese black pine, cedar elm, crabapple, mexican plum, redcedar
37	pecan, sweetgum, japanese black pine, oaks, cedar elm, redbud, crabapple, hackberry, ginkgo, chinese pistache
38	pecan, sweetgum, japanese black pine, oaks, cedar elm, redbud, crabapple, hackberry, ginkgo, chinese pistache
39	sycamore, cottonless cottonwood, bur oak, sweetgum, water oak, bald cypress, mountain laurel, live oak, magnolia, pecan, tulip poplar
40	sycamore, cottonless cottonwood, bur oak, sweetgum, water oak, bald cypress, mountain laurel, live oak, magnolia, pecan, tulip poplar
41	pecan, sweetgum, japanese black pine, oaks, cedar elm, redbud, crabapple, hackberry, ginkgo, chinese pistache

SOIL_ID	Suitable Trees Continued
46	pecan, sweetgum, japanese black pine, oaks, cedar elm, redbud, crabapple, hackberry, ginkgo, chinese pistache
47	pecan, sweetgum, japanese black pine, oaks, cedar elm, redbud, crabapple, hackberry, ginkgo, chinese pistache
48	pecan, sweetgum, japanese black pine, oaks, cedar elm, redbud, crabapple, hackberry, ginkgo, chinese pistache
49	pecan, sweetgum, japanese black pine, oaks, cedar elm, redbud, crabapple, hackberry, ginkgo, chinese pistache
50	pecan, sweetgum, japanese black pine, oaks, cedar elm, redbud, crabapple, hackberry, ginkgo, chinese pistache
51	hackberry, sweetgum, yellow poplar, mulberry, chinese pistache, sycamore, bur oak, water oak, chinese tallow, cedar elm, redbud, weeping willow, bald cypress, redcedar
52	hackberry, sweetgum, yellow poplar, mulberry, chinese pistache, sycamore, bur oak, water oak, chinese tallow, cedar elm, redbud, weeping willow, bald cypress, redcedar
56	--
57	mulberry, oaks, bald cypress, sycamore, maple, chinese tallow, cedar elm, chinese pistache, cottonwood, yellow poplar
58	mulberry, oaks, bald cypress, sycamore, maple, chinese tallow, cedar elm, chinese pistache, cottonwood, yellow poplar
60	deodar cedar, sweet gum, magnolia, pine, chinese pistache, oak, cedar elm, callery pear, pecan , mountain laurel
61	deodar cedar, sweet gum, magnolia, pine, chinese pistache, oak, cedar elm, callery pear, pecan , mountain laurel
62	deodar cedar, sweet gum, magnolia, pine, chinese pistache, oak, cedar elm, callery pear, pecan , mountain laurel
63	deodar cedar, sweet gum, magnolia, pine, chinese pistache, oak, cedar elm, callery pear, pecan , mountain laurel
64	deodar cedar, sweet gum, magnolia, pine, chinese pistache, oak, cedar elm, callery pear, pecan , mountain laurel
65	deodar cedar, sweet gum, magnolia, pine, chinese pistache, oak, cedar elm, callery pear, pecan , mountain laurel
69	hackberry, japanese black pine, ginkgo, chinese pistache, oaks, cedar elm, redbud, crabapple
71	pecan, sweetgum, japanese black pine, oaks, cedar elm, redbud, crabapple, hackberry, ginkgo, chinese pistache
72	pecan, sweetgum, japanese black pine, oaks, cedar elm, redbud, crabapple, hackberry, ginkgo, chinese pistache
73	pecan, sweetgum, japanese black pine, oaks, cedar elm, redbud, crabapple, hackberry, ginkgo, chinese pistache
74	pecan, sweetgum, japanese black pine, oaks, cedar elm, redbud, crabapple, hackberry, ginkgo, chinese pistache
75	--
76	--
78	hackberry, sweetgum, yellow poplar, mulberry, chinese pistache, sycamore, bur oak, water oak, chinese tallow, cedar elm, redbud, weeping willow, bald cypress, redcedar
79	hackberry, sweetgum, yellow poplar, mulberry, chinese pistache, sycamore, bur oak, water oak, chinese tallow, cedar elm, redbud, weeping willow, bald cypress, redcedar
80	hackberry, sweetgum, yellow poplar, mulberry, chinese pistache, sycamore, bur oak, water oak, chinese tallow, cedar elm, redbud, weeping willow, bald cypress, redcedar

Great Trinity Forest Management Plan

Soil

Suitable Shrubs

SOIL_ID	Suitable Shrubs
2	acuba, barberry, elaegnus, gardenia, azalea, camellia, mahonia, holly, pittosporum, crepe myrtle, rose, pomegranate
3	acuba, barberry, elaegnus, gardenia, azalea, camellia, mahonia, holly, pittosporum, crepe myrtle, rose, pomegranate
8	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
10	quince, gardenia, ligustrum, oleander, texas sage, hydrangea, pomegranate
11	quince, gardenia, ligustrum, oleander, texas sage, hydrangea, pomegranate
12	quince, gardenia, ligustrum, oleander, texas sage, hydrangea, pomegranate
13	quince, gardenia, ligustrum, oleander, texas sage, hydrangea, pomegranate
14	acuba, barberry, elaegnus, gardenia, azalea, camellia, mahonia, holly, pittosporum, crepe myrtle, rose, pomegranate
15	acuba, barberry, elaegnus, gardenia, azalea, camellia, mahonia, holly, pittosporum, crepe myrtle, rose, pomegranate
18	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
19	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
24	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
25	acuba, barberry, elaegnus, gardenia, azalea, camellia, mahonia, holly, pittosporum, crepe myrtle, rose, pomegranate
27	quince, japanese ligustrum, nandina, yucca, texas sage
28	quince, japanese ligustrum, nandina, yucca, texas sage
29	quince, japanese ligustrum, nandina, yucca, texas sage
32	quince, japanese ligustrum, nandina, yucca, texas sage
35	abelia, quince, cotoneaster, texas sage, yucca, japanese ligustrum, nandina
37	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
38	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
39	indiana hawthorn, roses, althea, texas laurel, pomegranate, texas sage, loquat, boxwood, abelia, acuba, barberry, azalea, camellia, mahonia
40	indiana hawthorn, roses, althea, texas laurel, pomegranate, texas sage, loquat, boxwood, abelia, acuba, barberry, azalea, camellia, mahonia
41	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
46	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
47	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
48	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
49	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
50	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
51	quince, ligustrum, forsythia, deutzia, hydrangea, pomegranate, oleander, american holly
52	quince, ligustrum, forsythia, deutzia, hydrangea, pomegranate, oleander, american holly
56	--
57	quince, gardenia, ligustrum, oleander, texas sage, hydrangea, pomegranate
58	quince, gardenia, ligustrum, oleander, texas sage, hydrangea, pomegranate
60	acuba, barberry, elaegnus, gardenia, azalea, camellia, mahonia, holly, pittosporum, crepe myrtle, rose, pomegranate
61	acuba, barberry, elaegnus, gardenia, azalea, camellia, mahonia, holly, pittosporum, crepe myrtle, rose, pomegranate
62	acuba, barberry, elaegnus, gardenia, azalea, camellia, mahonia, holly, pittosporum, crepe myrtle, rose, pomegranate
63	acuba, barberry, elaegnus, gardenia, azalea, camellia, mahonia, holly, pittosporum, crepe myrtle, rose, pomegranate
64	acuba, barberry, elaegnus, gardenia, azalea, camellia, mahonia, holly, pittosporum, crepe myrtle, rose, pomegranate
65	acuba, barberry, elaegnus, gardenia, azalea, camellia, mahonia, holly, pittosporum, crepe myrtle, rose, pomegranate
69	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
71	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
72	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
73	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
74	pittosporum, loquat, oleander, texas sage, texas laurel, ableia, acuba, mahonia, fatsia, pomegranate
75	--
76	--
78	quince, ligustrum, forsythia, deutzia, hydrangea, pomegranate, oleander, american holly
79	quince, ligustrum, forsythia, deutzia, hydrangea, pomegranate, oleander, american holly
80	quince, ligustrum, forsythia, deutzia, hydrangea, pomegranate, oleander, american holly

Great Trinity Forest Management Plan

Soil

Wildlife Habitat Potential

Wildlife Habitat Potentials

SOIL_ID	Grain Seeds	Grass Legumes	Herbaceous	Hardwood	Coniferous	Shrubs	Wetland Plants	Shallow Water
2	poor	fair	fair	--	--	fair	poor	poor
3	poor	fair	fair	--	--	fair	poor	poor
8	fair	good	fair	--	--	fair	poor	very poor
10	fair	fair	good	good	--	good	poor	very poor
11	fair	fair	good	good	--	good	poor	very poor
12	fair	fair	good	good	--	good	poor	very poor
13	fair	fair	good	good	--	good	poor	very poor
14	good	fair	good	--	--	good	poor	very poor
15	good	fair	good	--	--	good	poor	very poor
18	good	good	poor	--	--	poor	very poor	very poor
19	good	good	poor	--	--	poor	very poor	very poor
24	fair	fair	fair	--	--	fair	poor	poor
25	poor	fair	good	fair	--	good	very poor	very poor
27	poor	poor	poor	--	--	fair	very poor	very poor
28	poor	poor	poor	--	--	fair	very poor	very poor
29	poor	poor	poor	--	--	fair	very poor	very poor
32	poor	poor	poor	--	--	fair	very poor	very poor
35	poor	fair	fair	--	--	fair	very poor	very poor
37	very poor	poor	fair	--	--	good	poor	very poor
38	very poor	poor	fair	--	--	good	poor	very poor
39	good	good	fair	--	--	good	poor	very poor
40	very poor	poor	fair	--	--	good	poor	very poor
41	good	good	fair	--	--	fair	poor	very poor
46	fair	fair	fair	--	--	fair	poor	very poor
47	fair	fair	fair	--	--	fair	poor	very poor
48	fair	fair	fair	--	--	fair	poor	very poor
49	fair	fair	fair	--	--	fair	poor	very poor
50	fair	fair	fair	--	--	fair	poor	very poor
51	fair	good	good	good	--	fair	fair	fair
52	fair	good	good	good	--	fair	fair	fair
56	--	--	--	--	--	--	--	--
57	fair	good	good	good	--	good	poor	poor
58	fair	good	good	good	--	good	poor	poor
60	good	good	good	--	--	good	poor	very poor
61	fair	good	good	--	--	good	poor	very poor
62	fair	good	good	--	--	good	poor	very poor
63	fair	good	good	--	--	good	poor	very poor
64	poor	poor	fair	poor	poor	good	poor	very poor
65	poor	poor	fair	poor	poor	good	poor	very poor
69	fair	good	fair	--	--	fair	poor	very poor
71	fair	good	good	--	--	good	poor	very poor
72	fair	good	fair	good	--	--	poor	fair
73	poor	fair	fair	good	--	--	poor	fair
74	fair	good	fair	good	--	--	poor	fair
75	--	--	--	--	--	--	--	--
76	--	--	--	--	--	--	--	--
78	fair	fair	good	--	--	fair	fair	fair
79	fair	fair	good	--	--	fair	fair	fair
80	fair	fair	good	--	--	fair	fair	fair

Wildlife Habitat Potentials Continued

SOIL_ID	Open Land	Woodland	Wetland	Rangeland
2	fair	--	poor	fair
3	fair	--	poor	fair
8	fair	--	very poor	fair
10	fair	good	very poor	good
11	fair	good	very poor	good
12	fair	good	very poor	good
13	fair	good	very poor	good
14	good	--	very poor	good
15	good	--	very poor	good
18	fair	--	very poor	poor
19	fair	--	very poor	poor
24	fair	--	poor	fair
25	fair	fair	very poor	good
27	poor	--	very poor	poor
28	poor	--	very poor	poor
29	poor	--	very poor	poor
32	poor	--	very poor	poor
35	fair	--	very poor	fair
37	poor	--	very poor	fair
38	poor	--	very poor	fair
39	good	--	very poor	fair
40	poor	--	very poor	fair
41	good	--	very poor	fair
46	fair	--	very poor	fair
47	fair	--	very poor	fair
48	fair	--	very poor	fair
49	fair	--	very poor	fair
50	fair	--	very poor	fair
51	good	--	fair	fair
52	good	--	fair	fair
56	--	--	--	--
57	good	--	poor	good
58	good	--	poor	good
60	good	--	very poor	good
61	good	--	very poor	good
62	good	--	very poor	good
63	good	--	very poor	good
64	poor	poor	very poor	fair
65	poor	poor	very poor	fair
69	fair	--	very poor	fair
71	good	--	very poor	good
72	fair	good	poor	--
73	fair	fair	poor	--
74	fair	good	poor	--
75	--	--	--	--
76	--	--	--	--
78	fair	--	fair	fair
79	fair	--	fair	fair
80	fair	--	fair	fair

Great Trinity Forest Management Plan

Soil

Recreational Development

	Recreational Development			
SOIL_ID	Camp areas	Picnic Areas	Playgrounds	Paths and Trails
2	severe; floods	moderate; floods	moderate; floods	moderate; too clayey
3	severe; slope	severe; slope	severe; slope	moderate; slope, too clayey
8	severe; too clayey	severe; too clayey	severe; too clayey	severe; too clayey
10	severe; percs slowly	slight	severe; percs slowly	slight
11	severe; percs slowly	slight	severe; percs slowly	slight
12	severe; percs slowly	slight	severe; percs slowly	slight
13	severe; percs slowly	slight	severe; percs slowly	slight
14	slight	slight	slight	slight
15	slight	slight	slight	slight
18	severe; percs slowly, too clayey	severe; too clayey	severe; percs slowly, too clayey	severe; too clayey
19	severe; percs slowly, too clayey	severe; too clayey	severe; percs slowly, too clayey	severe; too clayey
24	severe; percs slowly, too clayey	severe; too clayey	severe; percs slowly, too clayey	severe; too clayey
25	severe; percs slowly, too clayey	severe; too sandy	severe; too sandy	severe; too sandy
27	moderate; percs slowly, small stones	moderate; small stones	severe; depth to rock	moderate; small stones, too clayey
28	moderate; percs slowly, slope	moderate; small stones, slope	severe; depth to rock, slope	moderate; small stones, too clayey
29	moderate; percs slowly, slope	moderate; small stones, slope	severe; depth to rock, slope	moderate; small stones, too clayey
32	moderate; percs slowly, small stones	moderate; small stones	severe; depth to rock, slope	moderate to severe; small stones, too clayey
35	severe; too clayey, percs slowly	severe; too clayey	severe; percs slowly, too clayey, slope	severe; too clayey
37	severe; floods	severe; too clayey	severe; floods	severe; too clayey
38	severe; floods	severe; too clayey	severe; floods	severe; too clayey
39	severe; floods	moderate; floods	moderate; too clayey, floods	moderate; too clayey
40	severe; floods	moderate; floods	severe; floods	moderate; too clayey, floods
41	severe; too clayey, percs slowly	severe; too clayey	severe; percs slowly, too clayey	moderate; too clayey

	Recreational Development Continued			
SOIL_ID	Camp areas	Picnic Areas	Playgrounds	Paths and Trails
46	moderate; too clayey	moderate; too clayey	moderate; too clayey	moderate; too clayey
47	moderate; too clayey	moderate; too clayey	moderate; too clayey	moderate; too clayey
48	moderate; too clayey	moderate; too clayey	severe; slope	moderate; too clayey
49	moderate; too clayey	moderate; too clayey	moderate; too clayey	moderate; too clayey
50	moderate; too clayey	moderate; too clayey	severe; slope	moderate; too clayey
51	severe; wetness	moderate; wetness	severe; percs slowly, wetness	moderate; wetness
52	severe; wetness	moderate; wetness	severe; percs slowly, wetness	moderate; wetness
56	pits and dumps	pits and dumps	pits and dumps	pits and dumps
57	severe; percs slowly, wetness	slight	severe; percs slowly, wetness	slight
58	severe; percs slowly, wetness	slight	severe; percs slowly, wetness	slight
60	slight	slight	moderate; slope	slight
61	slight	slight	moderate; slope	slight
62	slight	slight	moderate; slope	slight
63	slight	slight	moderate; slope	slight
64	severe; too sandy	severe; too sandy	severe; too sandy	severe; too sandy
65	severe; too sandy	severe; too sandy	severe; too sandy	severe; too sandy
69	severe; too clayey	severe; too clayey	severe; depth to rock, too clayey	severe; too clayey
71	moderate; too clayey	moderate; too clayey	moderate; too clayey, slope	moderate; too clayey
72	severe; wetness, floods, percs slowly	severe; too clayey	severe; wetness, too clayey	severe; too clayey
73	severe; wetness, floods, percs slowly	severe; floods, too clayey	severe; wetness, floods, percs slowly	severe; floods, too clayey
74	severe; wetness, floods, percs slowly	severe; too clayey	severe; wetness, too clayey	severe; too clayey
75	urban	urban	urban	urban
76	ustorthents	ustorthents	ustorthents	ustorthents
78	severe; percs slowly, wetness	moderate; wetness	severe; percs slowly, wetness	moderate; wetness
79	severe; percs slowly, wetness	moderate; wetness	severe; percs slowly, wetness	moderate; wetness
80	severe; percs slowly, wetness	moderate; wetness	severe; percs slowly, wetness	moderate; wetness

Great Trinity Forest Management Plan

Soil

Sanitary Facilities

		Sanitary Facilities	
SOIL_ID	Septic Tank Absorption Field	Sewage Lagoon	Trench Sanitary Landfill
2	Severe; floods	severe; floods	severe; floods
3	severe; slope	severe; floods	severe; floods
8	severe; percs slowly, depth to rock	severe; depth to rock	severe; depth to rock, clayey
10	severe; percs slowly	slight	severe; too clayey
11	severe; percs slowly	moderate; slope	severe; too clayey
12	severe; percs slowly	moderate; slope	severe; too clayey
13	severe; percs slowly	moderate; slope	severe; too clayey
14	moderate; percs slowy	moderate; seepage	slight
15	moderate; percs slowy	moderate; seepage	slight
18	severe; percs slowly	slight	severe; too clayey
19	severe; percs slowly	moderate; slope	severe; too clayey
24	severe; percs slowly	severe; depth to rock	severe; depth to rock, clayey
25	slight	moderate; seepage, slope	severe; depth to rock, too sandy
27	severe; depth to rock	severe; depth to rock	severe; depth to rock
28	severe; depth to rock, percs slowly	severe; depth to rock, slope	severe; depth to rock
29	severe; depth to rock, percs slowly	severe; depth to rock, slope	severe; depth to rock
32	severe; depth to rock	severe; depth to rock	severe; depth to rock
35	severe; percs slowly	severe; slope	severe; too clayey
37	severe; floods, percs slowly	severe; floods	severe; floods
38	severe; floods, percs slowly	severe; floods	severe; floods
39	severe; floods	severe; floods	severe; floods
40	severe; floods	severe; floods	severe; floods
41	severe; percs slowly	moderate; slope	severe; too clayey
46	moderate; percs slowy	moderate; seepage	severe; too clayey
47	moderate; percs slowy	moderate; seepage	severe; too clayey
48	moderate; percs slowy	moderate; seepage	severe; too clayey
49	moderate; percs slowy	moderate; seepage	severe; too clayey
50	moderate; percs slowy	moderate; seepage	severe; too clayey
51	severe; percs slowly, wetness	slight	severe; too clayey
52	severe; percs slowly, wetness	moderate; slope	severe; too clayey
56	pits and dumps	pits and dumps	pits and dumps
57	severe; percs slowly, wetness	severe; wetness	severe; wetness
58	severe; percs slowly, wetness	severe; wetness	severe; wetness, too clayey
60	slight	severe; seepage	severe; seepage
61	slight	severe; seepage	severe; seepage
62	slight	severe; seepage	severe; seepage
63	slight	severe; seepage	severe; seepage
64	slight	slight	slight
65	slight	slight	slight
69	severe; depth to rock	severe; depth to rock	severe; depth to rock
71	slight	severe; seepage	slight
72	severe; wetness, floods, percs slowly	severe; wetness	severe; floods, too clayey, wetness
73	severe; wetness, floods, percs slowly	severe; wetness, floods	severe; floods, too clayey, wetness
74	severe; wetness, floods, percs slowly	severe; wetness	severe; floods, too clayey, wetness
75	urban	urban	urban
76	ustorthents	ustorthents	ustorthents
78	severe; percs slowly	slight	severe; too clayey
79	severe; percs slowly	moderate; slope	severe; too clayey
80	severe; percs slowly	slight	severe; too clayey
99	water	water	water

	Sanitary Facilities Continued	
SOIL_ID	Area Sanitary Landfill	Daily Cover for landfill
2	severe; floods	good
3	severe; floods	poor; slope
8	slight	poor; too clayey
10	slight	poor; too clayey
11	slight	poor; too clayey
12	slight	poor; too clayey
13	slight	poor; too clayey
14	slight	good
15	slight	good
18	slight	poor; too clayey
19	slight	poor; too clayey
24	slight	poor; too clayey
25	slight	fair; too sandy
27	slight	fair; too sandy
28	slight	poor; thin layer
29	moderate; slope	poor; thin layer
32	slight	poor; thin layer
35	moderate; slope	poor; too clayey
37	severe; floods	poor; too clayey
38	severe; floods	poor; too clayey
39	severe; floods	good
40	severe; floods	good
41	slight	poor; too clayey
46	slight	fair; too clayey
47	slight	fair; too clayey
48	slight	fair; too clayey
49	slight	fair; too clayey
50	slight	fair; too clayey
51	severe; wetness	poor; too clayey
52	severe; wetness	poor; too clayey
56	pits and dumps	pits and dumps
57	severe; wetness	poor; too clayey
58	severe; wetness	fair; too clayey
60	slight	good
61	slight	good
62	slight	good
63	slight	good
64	slight	poor; sandy
65	slight	poor; sandy
69	slight	poor; thin layer, too clayey
71	slight	fair; excess lime
72	severe; floods, wetness	poor; too clayey
73	severe; floods, wetness	poor; too clayey
74	severe; floods, wetness	poor; too clayey
75	urban	urban
76	ustorthents	ustorthents
78	moderate; wetness	poor; too clayey
79	moderate; wetness	poor; too clayey
80	moderate; wetness	poor; too clayey
99	water	water

Great Trinity Forest Management Plan

Soil

Water Managment

		Water Management			
SOIL_ID	Pond and reservoir limitations	Embankments, dike and levee limitations	Drainage	Terraces and diversions	Grassed waterways
2	severe; seepage	moderate; unstable fill	floods	complex slope	favorable
3	severe; seepage	moderate; low strength	slope	slope	slope
8	severe; depth to rock	not needed	not needed	favorable	favorable
10	slight	moderate; unstable fill	complex slope; percs slowly	percs slowly, erodes easily	percs slowly, erodes easily
11	slight	moderate; unstable fill	complex slope; percs slowly	percs slowly, erodes easily	percs slowly, erodes easily
12	slight	moderate; unstable fill	complex slope; percs slowly	percs slowly, erodes easily	percs slowly, erodes easily
13	slight	moderate; unstable fill	complex slope; percs slowly	percs slowly, erodes easily	percs slowly, erodes easily
14	moderate; seepage	moderate; piping	not needed	favorable	favorable
15	moderate; seepage	moderate; piping	not needed	favorable	favorable
18	slight	moderate; unstable fill, hard to pack	percs slowly	percs slowly	percs slowly
19	slight	moderate; unstable fill, hard to pack	percs slowly	percs slowly	percs slowly
24	severe; depth to rock	moderate; unstable fill	percs slowly	percs slowly, erodes easily	percs slowly
25	moderate; seepage	moderate; piping	not needed	percs slowly, erodes easily	erodes easily
27	severe; depth to rock	severe; thin layer	not needed	percs slowly, erodes easily	droughty, rooting depth
28	severe; depth to rock, seepage	severe; thin layer	not needed to depth to rock	depth to rock, rooting depth	droughty, rooting depth
29	severe; depth to rock, seepage	severe; thin layer	not needed to depth to rock	depth to rock, rooting depth	droughty, rooting depth
32	severe; depth to rock	severe; thin layer	not needed	depth to rock, rooting depth	droughty, rooting depth
35	slight	moderate; unstable fill	not needed	percs slowly, erodes easily	percs slowly, erodes easily
37	moderate; seepage	moderate; compressible	not needed	favorable	favorable
38	moderate; seepage	moderate; compressible	not needed	favorable	favorable
39	moderate; seepage	moderate; compressible	not needed	favorable	favorable
40	moderate; seepage	moderate; compressible	not needed	wetness	favorable
41	slight	moderate; unstable fill, shrink-swell	not needed	percs slowly	percs slowly

		Water Management Continued			
SOIL_ID	Pond and reservoir limitations	Embankments, dike and levee limitations	Drainage	Terraces and diversions	Grassed waterways
46	moderate; seepage	moderate; unstable fill	favorable	favorable	favorable
47	moderate; seepage	moderate; unstable fill	favorable	favorable	favorable
48	moderate; seepage	moderate; unstable fill	favorable	favorable	favorable
49	moderate; seepage	moderate; unstable fill	favorable	favorable	favorable
50	moderate; seepage	moderate; unstable fill	favorable	favorable	favorable
51	slight	moderate; unstable fill	percs slowly	percs slowly	percs slowly
52	slight	moderate; unstable fill	percs slowly	percs slowly	percs slowly
56	pits and dumps	pits and dumps	pits and dumps	pits and dumps	pits and dumps
57	slight	moderate; unstable fill	complex slope, percs slowly	wetness, percs slowly	wetness, percs slowly
58	slight	moderate; unstable fill	complex slope	wetness, percs slowly	wetness, percs slowly
60	severe; seepage	moderate; piping, erodes easily	not needed	erodes easily	erodes easily
61	severe; seepage	moderate; piping, erodes easily	not needed	erodes easily	erodes easily
62	severe; seepage	moderate; piping, erodes easily	not needed	erodes easily	erodes easily
63	severe; seepage	moderate; piping, erodes easily	not needed	erodes easily	erodes easily
64	moderate; seepage	moderate; piping	not needed	too sandy	erodes easily
65	moderate; seepage	moderate; piping	not needed	too sandy	erodes easily
69	severe; depth to rock	severe; thin layer	not needed	depth to rock, rooting depth	droughty, rooting depth
71	severe; seepage	moderate; compressible, unstable fill	not needed	favorable	favorable
72	slight	moderate; compressible, unstable fill	percs slowly, floods	floods, wetness, percs slowly	wetness, percs slowly
73	slight	moderate; compressible, unstable fill	percs slowly, floods	floods, wetness, percs slowly	floods, wetness, percs slowly
74	slight	moderate; compressible, unstable fill	percs slowly, floods	floods, wetness, percs slowly	floods, wetness, percs slowly
75	urban	urban	urban	urban	urban
76	ustorthents	ustorthents	ustorthents	ustorthents	ustorthents
78	slight	moderate; unstable fill	moderate; unstable fill	percs slowly	percs slowly
79	slight	moderate; unstable fill	moderate; unstable fill	percs slowly	percs slowly
80	slight	moderate; unstable fill	moderate; unstable fill	percs slowly	percs slowly

Literature Cited

USDA Natural Resources Conservation Service. 2004. Official Soil Series Descriptions. <http://soils.usda.gov/technical/classification/osd/index.html> Accessed 1 Aug 2007.

USDA-Soil Conservation Service and Texas Agricultural Experiment Station. 1975. Soil Survey of Dallas County, Texas. National Cooperative Soil Survey.

Archeology Data

Great Trinity Forest Management Plan

Archeology Data

DL-65

37 sites known in area

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

DL 65

SITES SURVEY REPORT

DL 65

SITE No. 27A-5-1 (OLD No. K18) Dallas COUNTY December 22 1940

GEOGRAPHICAL LOCATION In Lego Park in southeast Dallas

LAT. AND LONG. 32°46'30" - 96°44'20"

OWNER'S NAME AND ADDRESS

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY Exploration DATE April 21, 1940

TYPE OF SITE Surface camp MAPPED BY Forrest Kirkland PHOTO NOS.

DIMENSIONS AND DESCRIPTION 100 x 250 yds. Camp on east bank of creek at large spring

PROBABLE CULTURAL CLASSIFICATION OF SITE Caddoan

LOCAL TOPOGRAPHY Level land near White Rock creek bottom

RELATION TO WATER SUPPLY Large spring at edge of camp

BUILDINGS ON OR NEAR SITE Negro school in one end of site

RELATION TO NEARBY SITES about one mile north of 27A-5-2

TYPE OF SOIL Deep sand CULTIVATION no EROSION none

VEGETATION ON AND NEAR SITE Grove of oak trees on part of site.

PREVIOUS EXCAVATION none PITTING

EVIDENCES OF FOOD none

SURFACE MATERIAL REPORTED AS BELONGING TO SITE: Have heard of bird points being found on site when it was a private park

OWNER OF MATERIAL ADDRESS

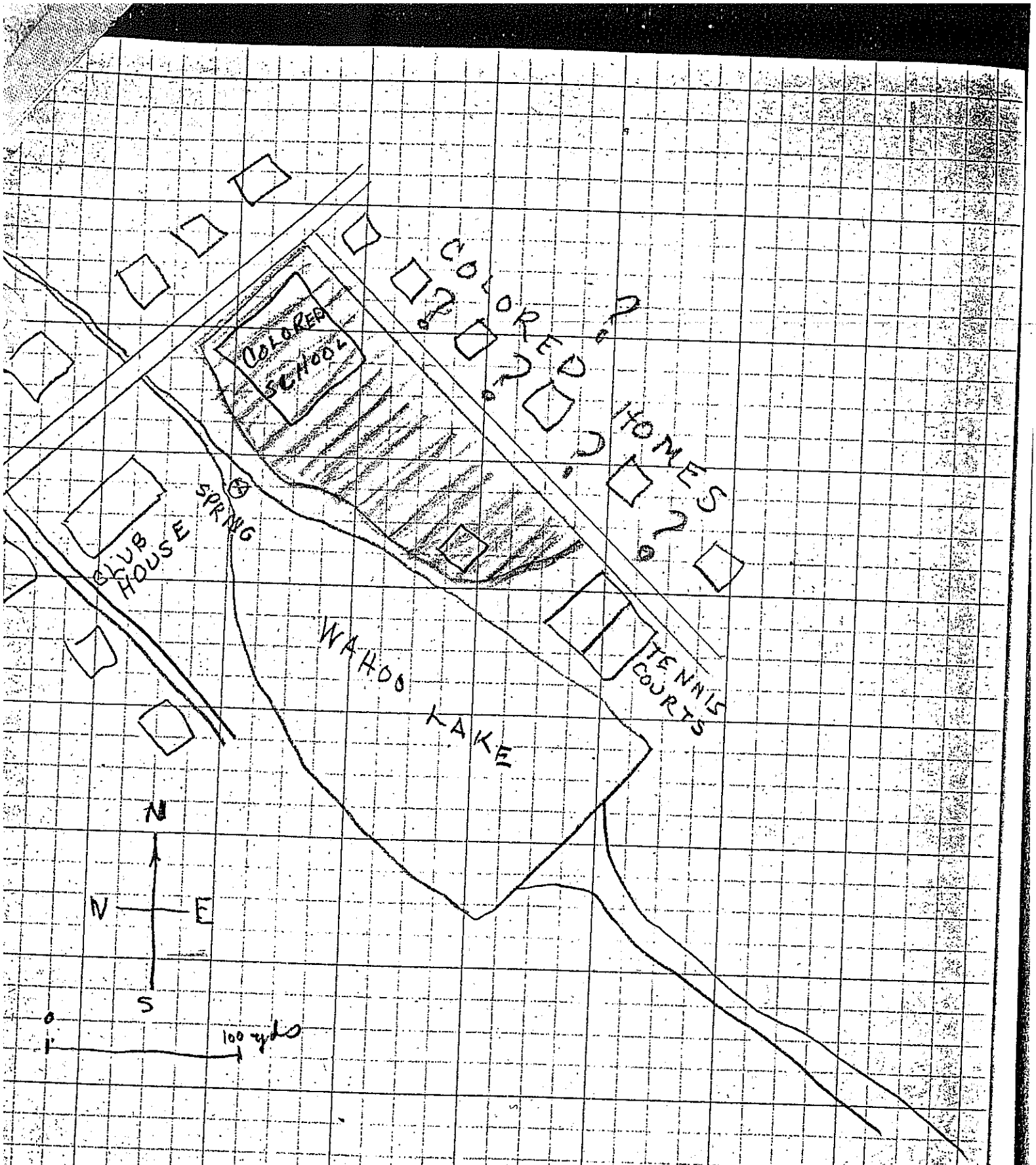
SURFACE MATERIAL FOUND: Much flint flakes.

No potsherds

BIBLIOGRAPHY

REMARKS This was probably once an extensive camp but since the site has been a park for many years, all artifacts on the surface have long since been picked up. Flakes are plentiful all over the school grounds and on much of the picnic grounds of the park.

Forrest Kirkland


COLORED SCHOOL
COLORED HOMES
SPRING
CLUB HOUSE
WAHOO LAKE
TENNIS COURTS
N
N
E
S
0
1
100 yds

27A-VT-1
(K18)

Great Trinity Forest Management Plan

Archeology Data

DL-74

Kilburn's copy

Site revisited 10/10/79 by James Redmond

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

41 DL 74

DL 74

SITE No. 27A-5-10 (OLD No. K33) Dallas COUNTY December 29 1940

GEOGRAPHICAL LOCATION Two miles west of Elam and one mile north of the Trinity River

LAT. AND LONG. 32°44'45" - 96°48'45"

OWNER'S NAME AND ADDRESS

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY Lou Dament DATE May 19, 1940

TYPE OF SITE Surface camp MAPPED BY Forrest Kirkland PHOTO Nos.

DIMENSIONS AND DESCRIPTION 150 x 200 yds. Camp on sandy ridge by small spring creek

PROBABLE CULTURAL CLASSIFICATION OF SITE Caddoan

LOCAL TOPOGRAPHY Sand covered clay hills just out of the river bottom

RELATION TO WATER SUPPLY Spring creek by site

BUILDINGS ON OR NEAR SITE None

RELATION TO NEARBY SITES One mile west of 27A-5-11

TYPE OF SOIL Deep sand CULTIVATION Old field EROSION none

VEGETATION ON AND NEAR SITE Grass and weeds

PREVIOUS EXCAVATION none PITTING

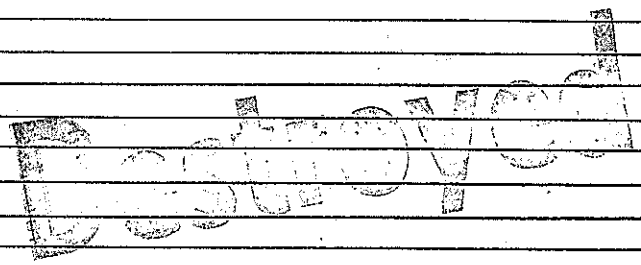
EVIDENCES OF FOOD none

SURFACE MATERIAL REPORTED AS BELONGING TO SITE: arrowheads, one thin triangular flaked and notched flint ax

OWNER OF MATERIAL Boy in community ADDRESS

SURFACE MATERIAL FOUND: arrowheads, scrapers

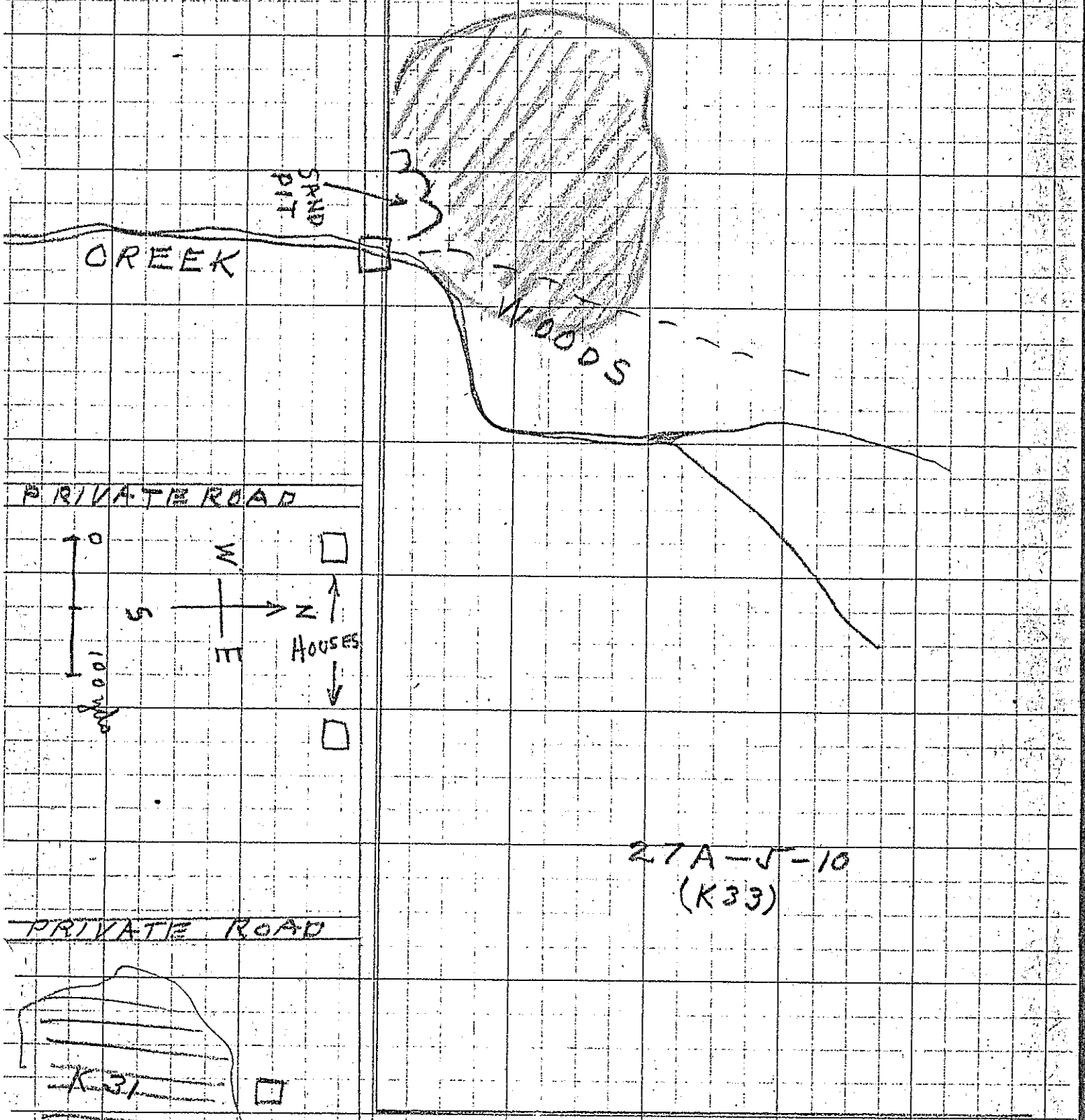
no pottery



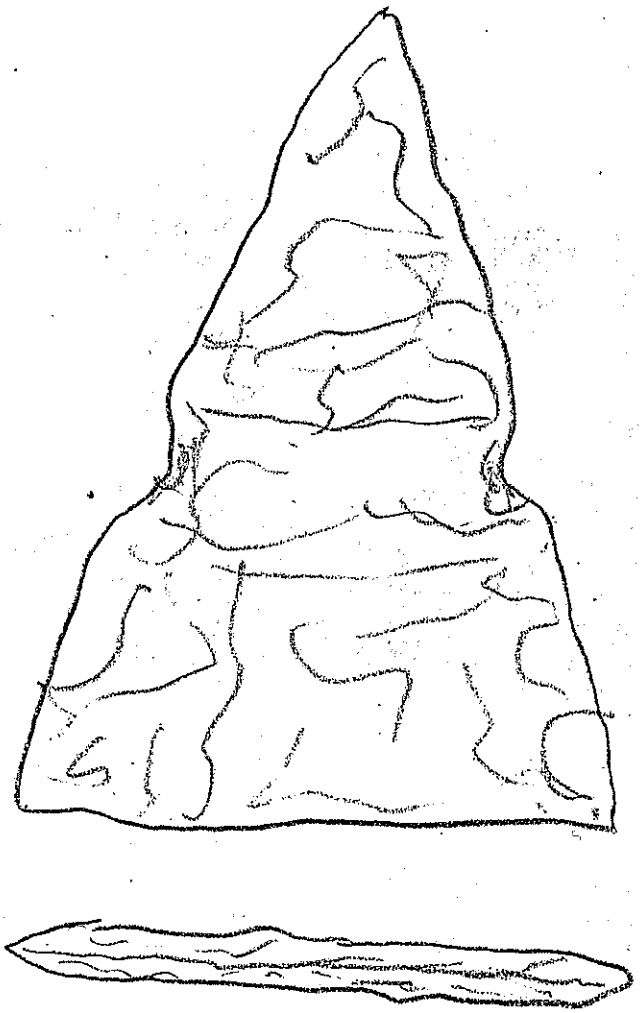
BIBLIOGRAPHY

REMARKS

Forrest Kirkland


SAND PIT
CREEK
WOODS
PRIVATE ROAD
N
S
E
W
HOUSES
100'
27A-J-10
(K33)
PRIVATE ROAD
K31

27A-V-10



CHIPPED AXE OF GRAY FLINT

ACTUAL SIZE

Great Trinity Forest Management Plan

Archeology Data

41-DL-72

Killough's copy

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

41DL72 DK72

SITE No. 27A-5-8 (CLD No. K22) Dallas COUNTY December 29 194 0

GEOGRAPHICAL LOCATION One mile north-east of the Trinity river at the mouth of White Rock creek LAT. AND LONG. 32°43'50" - 96°43'30"

OWNER'S NAME AND ADDRESS

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY Lou Dement DATE April 21, 1940

TYPE OF SITE Surface camp MAPPED BY Forrest Kirkland PHOTO Nos.

DIMENSIONS AND DESCRIPTION 300 x 400 yds. camp on end of hill on two sides of large spring

PROBABLE CULTURAL CLASSIFICATION OF SITE Caddoan

LOCAL TOPOGRAPHY Low hills reaching to edge of river overflow land.

RELATION TO WATER SUPPLY Large spring in center of site

BUILDINGS ON OR NEAR SITE Farm house on part of site

RELATION TO NEARBY SITES Half mile north-east of 27A-5-9

TYPE OF SOIL Sand and clay CULTIVATION Part EROSION Some

VEGETATION ON AND NEAR SITE Grass and grain

PREVIOUS EXCAVATION None PITTING

EVIDENCES OF FOOD None

SURFACE MATERIAL REPORTED AS BELONGING TO SITE: Many arrowheads and other flint artifacts collected over long period of time

OWNER OF MATERIAL Different people in district ADDRESS

SURFACE MATERIAL FOUND: Arrowheads, bird points, blades, flakes

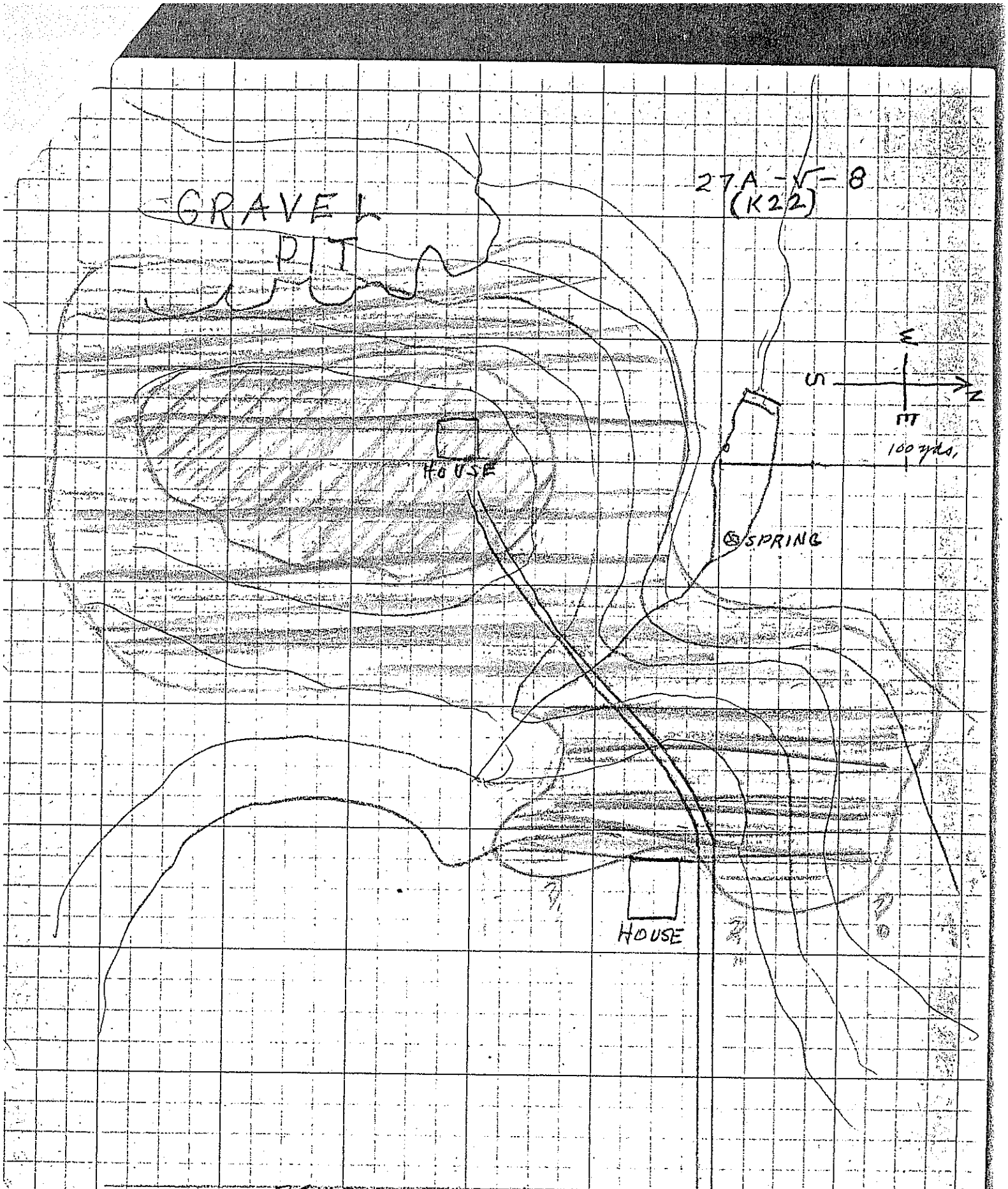
One potsherd

BIBLIOGRAPHY

REMARKS This was an extensively used site but since people have lived on it for more than fifty years, most of the artifacts have already been collected. The farmer said he once plowed into a grave on the edge of the site but no pots or other artifacts accompanied the burial.

Forrest Kirkland

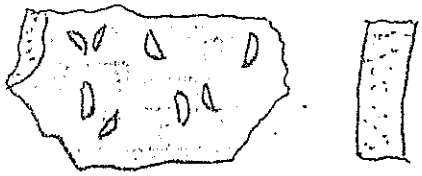
THC


GRAVEL PIT
27A-V-8
(K22)
E
W
N
100 yds.
HOUSE
SPRING
HOUSE
PEMBERTON HILL ROAD

27A-V-8

No. of Sherds	1 (K22)
Thickness in Inches	3/8"
Tempering Material: Shell	
Tempering Material: Grit	
Tempering Material: Shell and Grit	✓
Plain	
Black inside Buff outside	
Black inside Tan outside	
Grayish brown sherd	
Black sherd	
Incised before firing	✓
Incised after firing	
Straight line	
Reddish Brown inside & outside black center	✓
Semi conical punctuate made with end of cane & stick held at angle to wall of vessel	✓

27 A - V - 8



Great Trinity Forest Management Plan

Archeology Data

41-DL-92

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

41DL 92

SITE No. 27A-5-28 (OLD No. K69) Dallas COUNTY April 28 1941

GEOGRAPHICAL LOCATION On east bank of Trinity River three miles west of Rylie

LAT. AND LONG. 32°41'30" - 96°41'20"

OWNER'S NAME AND ADDRESS

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION O.K.

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY exploration DATE March 30, 1941

TYPE OF SITE MAPPED BY PHOTO Nos.

DIMENSIONS AND DESCRIPTION 100 x 600 yds. Camp along a sandy bluff on the bank of the Trinity River.

PROBABLE CULTURAL CLASSIFICATION OF SITE

LOCAL TOPOGRAPHY Hills reaching to the river bank.

RELATION TO WATER SUPPLY River beside the camp.

BUILDINGS ON OR NEAR SITE House at south end

RELATION TO NEARBY SITES Half-mile South of 27A-5-27

TYPE OF SOIL Sand and clay CULTIVATION No EROSION Little

VEGETATION ON AND NEAR SITE Grass and woods

PREVIOUS EXCAVATION None PITTING

EVIDENCES OF FOOD Mussel shells

SURFACE MATERIAL REPORTED AS BELONGING TO SITE:

OWNER OF MATERIAL ADDRESS

SURFACE MATERIAL FOUND: Flakes, broken arrowheads

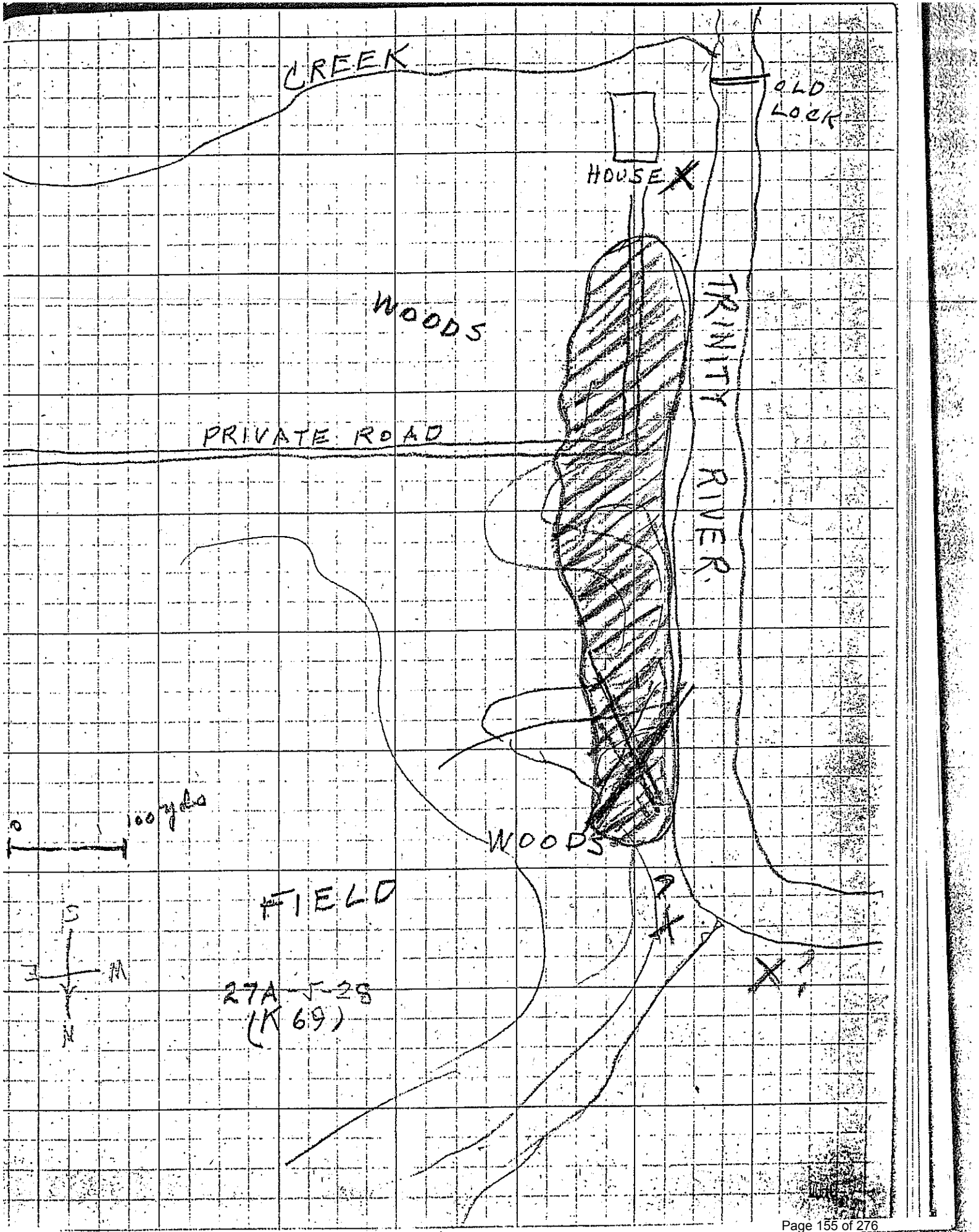
No potsherds

BIBLIOGRAPHY

REMARKS Signs of camping were found for half a mile along the river bank, but the woods and grass made it impossible to determine the location of the greatest concentration.

Forrest Kirkland

JHC


CREEK
OLD LOCK
HOUSE
WOODS
TRINITY RIVER
PRIVATE ROAD
0
100 yds
WOODS
FIELD
27A-T-28
(K 69)

Field Notes: Oct. 11, 1978 D.T. Connors

Left SMU @ 9:20 am enroute to south Dallas via Mockingbird to NW Hi-way (east becomes Buckner). Intersected I175 and continued east. Found area of sites after some difficulties; finally resorted to Dallas City map in conjunction with Hutchins (1958) USGS. Most of the street names are no longer the same and the gravel pits indicated on the USGS are no longer located at those locations.

Sites: DL 105: Destroyed. Area torn up for land fill and dumping. No indications of prehistoric artifacts visable. This whole area has considerable disturbance.

DL 99: Site originally recorded from the memory of King Harris (local collector & amateur archaeologist). He found an arrowhead in a local garden. Based on conversations with Mrs. John B. Cooke (present resident at the house on site DL 92) who remembers King Harris' visit, this site is actually part of the extent of DL 92 and located too far south on the USGS. The garden plot where Mrs. Cooke remembers King Harris picking up the point was a plot circa 100-200 meters south of the house site indicated on the USGS, within the spatial configuration of DL 92.

DL 91: Examined area designated as site, however no artifacts were observed due to ground cover and local disturbance. It seems likely, based on the impression of material recovered from the vicinity of DL 92, that concentrations

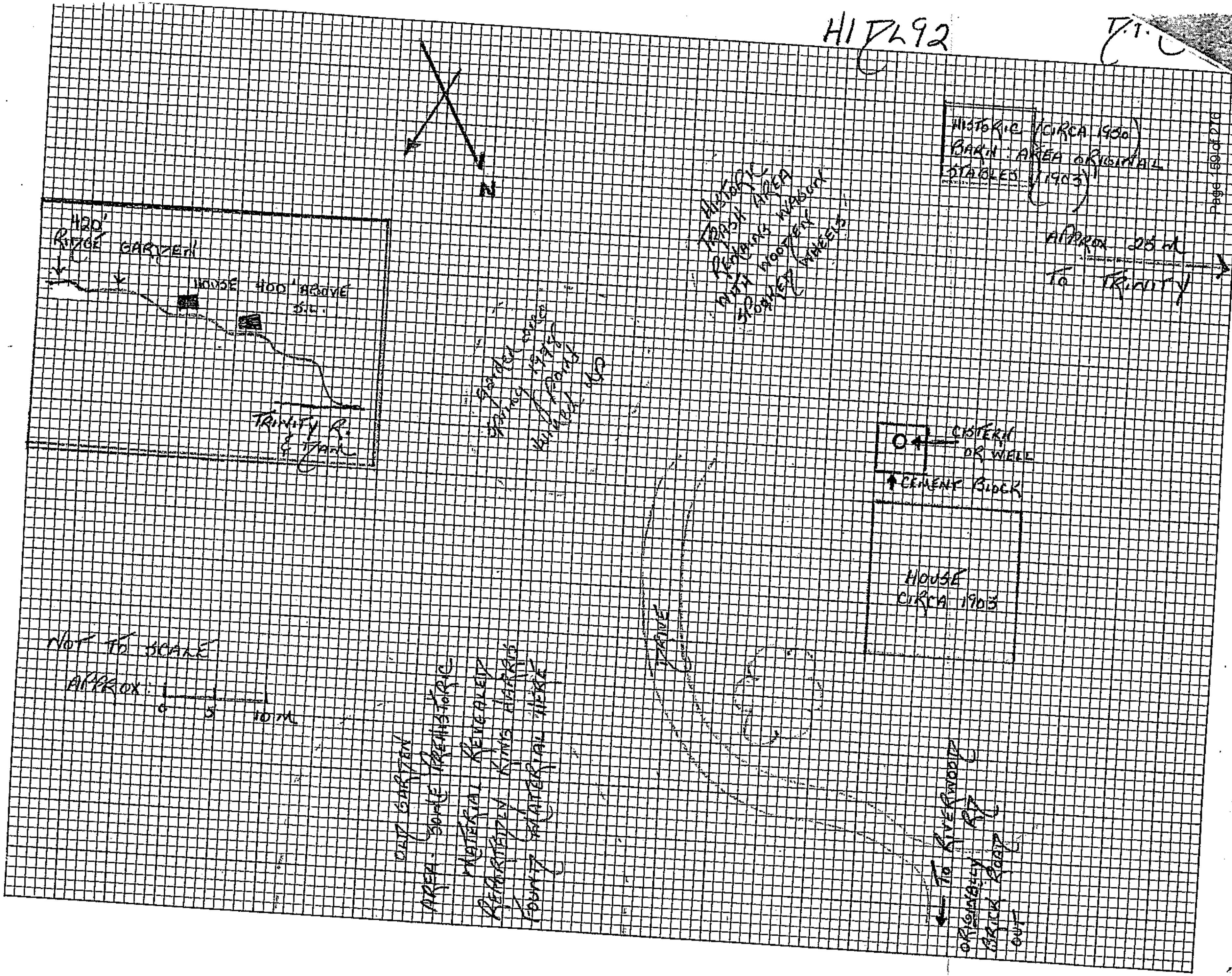
DHC

DL 91: of materials could have extended into this area. Only testing of this area can provide information about the present configuration of the prehistoric profile; however it seems very likely (given the local disturbance) that this site could have been destroyed.

DL 92: Re-examination of this site confirmed it as an actual site. Prehistoric chipping material has been found along the entire ridge that runs parallel to the Trinity at this location. Two points have been found off the site (to the knowledge of the resident of the house on the site, Mrs. John B. Cooke). In addition, the Cooke's are personal fiends of Don Henry (archaeologist with the University of Tulsa) and Don's father owns the land adjacent upstream to the Cooke's. Mrs. Cooke reported that Don has walked the entire ridge and found repeated evidences of prehistoric materials, in addition to possible (very tenuous, by my estimate) mounds. This locality is the highest point for miles along the edge of the river and would have provided an excellent area for a prehistoric settlement. At present the ridge is in heavy ground cover and deciduous growth, and no visable traces of material were observed. In addition to the prehistoric component at this site, there is a historic component as well. The house and out-buildings indicated on the USGS represent the remains of a government checking station for boats leaving Ennis and traveling

DL 92: up the Trinity. The house was the orginal government checking station, and Mrs. Cooke feels it was built about 1903 based on her inquiries with local inhabitants (Mr. Elam). In addition excursion boats were run along the Trinity in this vicinity and it may have had some connection with them, dating from the turn of the century. The boat lock located on the original site map is part of the government check point, as was reported by Mrs. Cooke to have an original wooden prototype (the remains of which are not visable). The Cooke's purchased this property in the name of their church and the church actually controls the land. The previous owner was a Dr. Hamitur (sp. ?) who was a local veternarian, and whose son owned a traveling circus and boarded an elephant and baboons in the stables that originally went with the house. The foundation of those stables is still visable underneath the raised foundation of the present barn. In addition, there was a rotary pump on the well or cistern adjacent to the house (now a cement block) that was of local interest during W.W, I and people used to come to the house to see the pump in action. The pumb is no longer there. The remains of an old wagon with wooden spooked wheels can be seen dumped in an old garden area. The drive into the house, a spur off what is now Riverwood Rd, used to to paved in bricks. The remains of those are still visable in some areas; but the drive has been torn up.

HIDL92


N
420'
RIDGE GARDEN
HOUSE 400' ABOVE S.L.
TRINITY R. & TRAIL
NOT TO SCALE
APPROX: 0 5 10 M
OLD GARDEN AREA: SOME PREHISTORIC MATERIAL REVEALED
REPORTEDLY KING HARRIS FOUND MATERIAL HERE
garden area Spring 1998 plowed up
HISTORIC TRASH AREA REMAINS WAGON WITH WOODEN SPOKED WHEELS
HISTORIC (CIRCA 1930) BARN AREA ORIGINAL STABLES (1903)
APPROX 25 M
TO TRINITY
CISTERN OR WELL
CEMENT BLOCK
HOUSE CIRCA 1903
DRIVE
TO RIVERWOOD RD
ORIGINALLY BRICK ROAD OUT

Great Trinity Forest Management Plan

Archeology Data

DL-66

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

DLW66

SITE No. 27A-5-2 (OLD No. K19) Dallas COUNTY December 22 1940

GEOGRAPHICAL LOCATION On White Rock creek bank just south of the Seyene Road

LAT. AND LONG. 32°45'5.0" - 96°44'0"

OWNER'S NAME AND ADDRESS

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY Exploration DATE April 21, 1940

TYPE OF SITE Surface camp MAPPED BY Forrest Kirkland PHOTO NOS.

DIMENSIONS AND DESCRIPTION 150 yds x 400 yds. Camp on Sandy ridge on west bank of White Rock creek

PROBABLE CULTURAL CLASSIFICATION OF SITE Caddoan

LOCAL TOPOGRAPHY Sandy ridges reaching down into the creek bottom

RELATION TO WATER SUPPLY Creek on edge of camp

BUILDINGS ON OR NEAR SITE House on north end of site

RELATION TO NEARBY SITES One mile south of 27A-5-1

TYPE OF SOIL sand CULTIVATION EROSION none

VEGETATION ON AND NEAR SITE none

PREVIOUS EXCAVATION none PITTING

EVIDENCES OF FOOD many mussel shells

SURFACE MATERIAL REPORTED AS BELONGING TO SITE: polished stone ax said to have been found on site.

OWNER OF MATERIAL ADDRESS

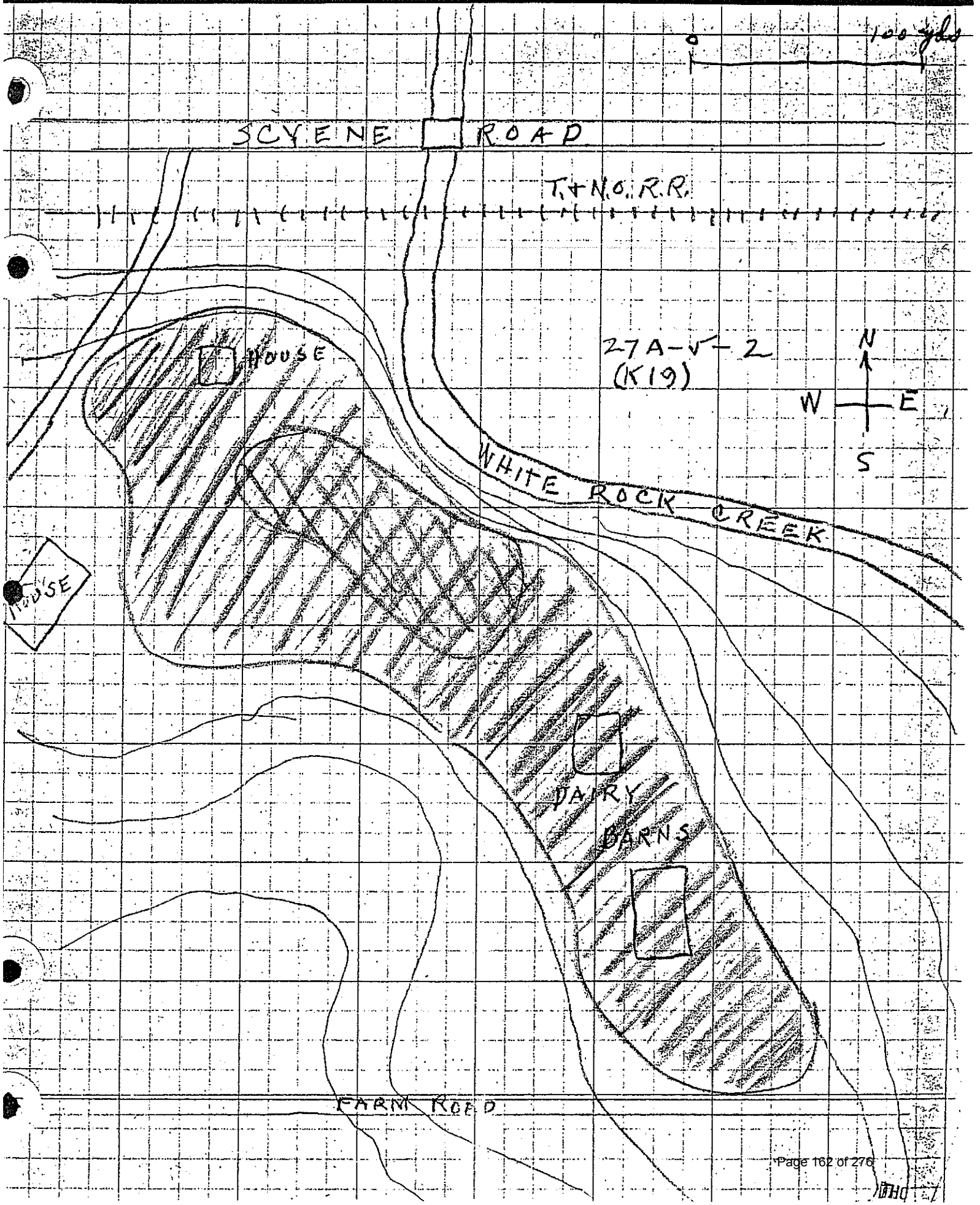
SURFACE MATERIAL FOUND: Bird points, rough blades, flint flakes

Potsherds

BIBLIOGRAPHY

REMARKS

Forrest Kirkland


0
100 yds
SCYENE ROAD
T. & N. O. R. R.
27A-V-2
(K19)
N
W
E
S
HOUSE
WHITE ROCK CREEK
HOUSE
DAIRY
BARNS
FARM ROAD

27A-V-2

No. of Sherds (K19)	1	1	1	1			
Thickness in Inches	3/16	5/16	3/16	1/4	1/4	3/16	
Tempering Material: Shell							
Tempering Material: Grit		1	1	1	1	1	
Tempering Material: Shell and Grit	1	1					
Plain	1	1	1	1	1	1	
Black inside Buff outside							
Black inside Tan outside							
~~Straight~~ brown sherd	1	1	1	1	1	1	
Black sherd							
Incised before firing							
Incised after firing							
Straight line							

Great Trinity Forest Management Plan

Archeology Data

41-DL-67

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

41DL67

SITE No. 27A-5-3 (OLD No. K41) Dallas COUNTY December 22 1940

GEOGRAPHICAL LOCATION About one mile west of the Trinity River and two miles south of Forest Ave. Bridge LAT. AND LONG. 32°44'0" - 96°46'30"

OWNER'S NAME AND ADDRESS

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY Perry Overton DATE May 26, 1940

TYPE OF SITE Surface camp MAPPED BY Forrest Kirkland PHOTO NOS.

DIMENSIONS AND DESCRIPTION 150 x 150 yds. Camp on deep sand bed

PROBABLE CULTURAL CLASSIFICATION OF SITE Caddoan

LOCAL TOPOGRAPHY Deep sand bed in the river bottom

RELATION TO WATER SUPPLY Creek about 300 yds. north

BUILDINGS ON OR NEAR SITE Dallas sewerage disposal plant on edge of site.

RELATION TO NEARBY SITES About one mile north of 27A-5-4

TYPE OF SOIL Deep sand CULTIVATION no EROSION Wind

VEGETATION ON AND NEAR SITE Weeds and grass

PREVIOUS EXCAVATION None PITTING

EVIDENCES OF FOOD Mussel shells

SURFACE MATERIAL REPORTED AS BELONGING TO SITE: Many arrowheads and bird points.

OWNER OF MATERIAL Perry Overton ADDRESS Dallas, Texas

SURFACE MATERIAL FOUND: Scraper much flint flakes

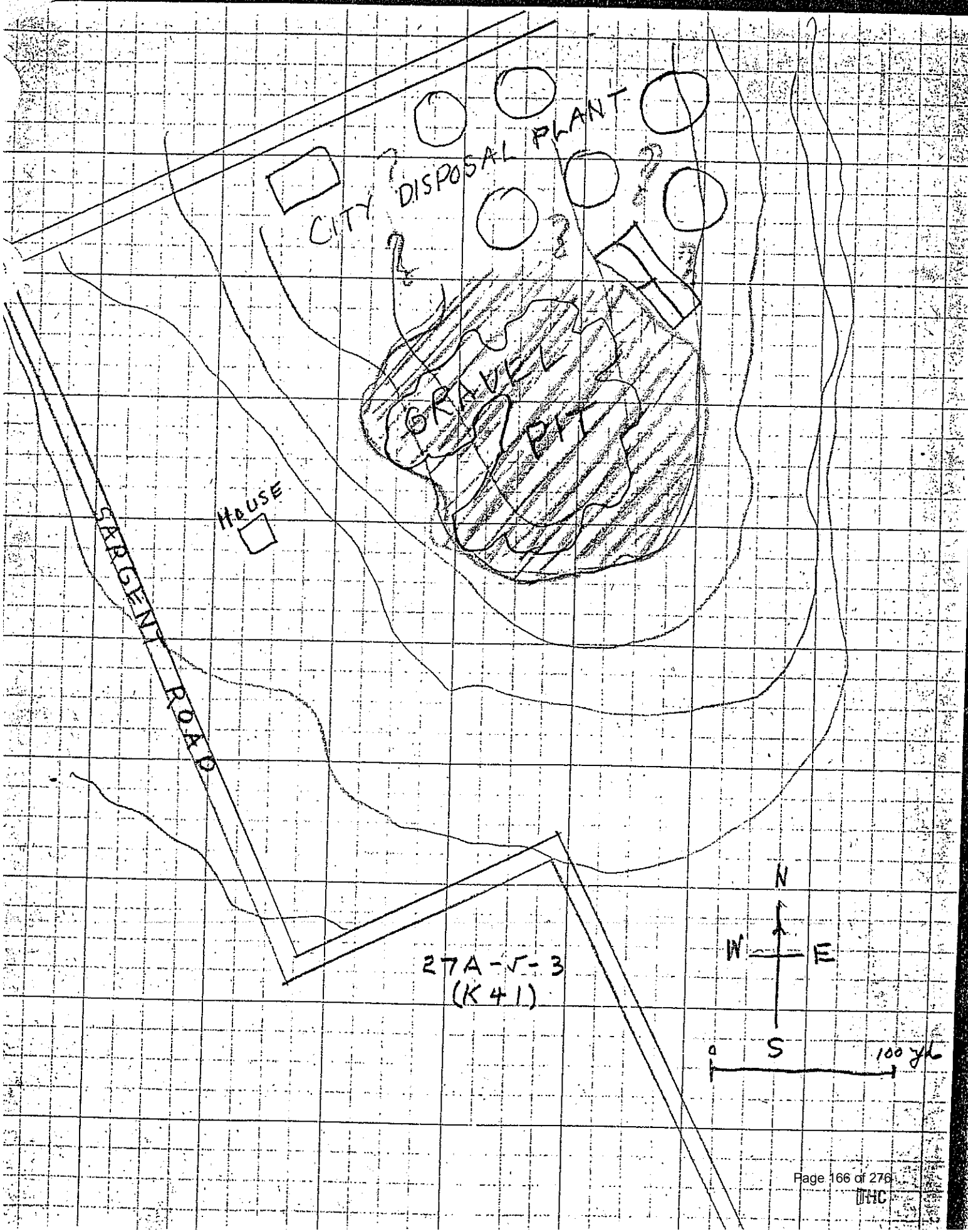
No potsherds

BIBLIOGRAPHY

REMARKS This site has been dug almost completely over by a sand and gravel company, and the city sewerage plant covers part of the area that no doubt was a part of the camp. Only banks around the gravel pit could be examined. Perry Overton who lives near the site had collected there before the sand pit was dug.

Forrest Kirkland

EHC


CITY DISPOSAL PLANT
GRAVEL PIT
HOUSE
SARGENT ROAD
27A-V-3
(K41)
N
W
E
S
0
100 yds

Great Trinity Forest Management Plan

Archeology Data

DL-79

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

DL-79

SITE No. 27A-5-15 (OLD No K34) Dallas COUNTY December 29 1940

GEOGRAPHICAL LOCATION At south end of Trinity Rod & Gun Club Lake

LAT. AND LONG.

OWNER'S NAME AND ADDRESS

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY Exploration DATE May 25, 1940

TYPE OF SITE Surface camp MAPPED BY Forrest Kirkland PHOTO NOS.

DIMENSIONS AND DESCRIPTION 150 x 200 yds. Camp on sand bed at end of lake

PROBABLE CULTURAL CLASSIFICATION OF SITE Caddoan

LOCAL TOPOGRAPHY Flat sand beds at edge of river bottom

RELATION TO WATER SUPPLY Lake at edge of site

BUILDINGS ON OR NEAR SITE none

RELATION TO NEARBY SITES One mile south of 27A-5-14

TYPE OF SOIL Deep sand CULTIVATION yes EROSION Wind

VEGETATION ON AND NEAR SITE None

PREVIOUS EXCAVATION None PITTING

EVIDENCES OF FOOD None

SURFACE MATERIAL REPORTED AS BELONGING TO SITE: Bird points collected

OWNER OF MATERIAL Claude Davis ADDRESS Dallas, Texas

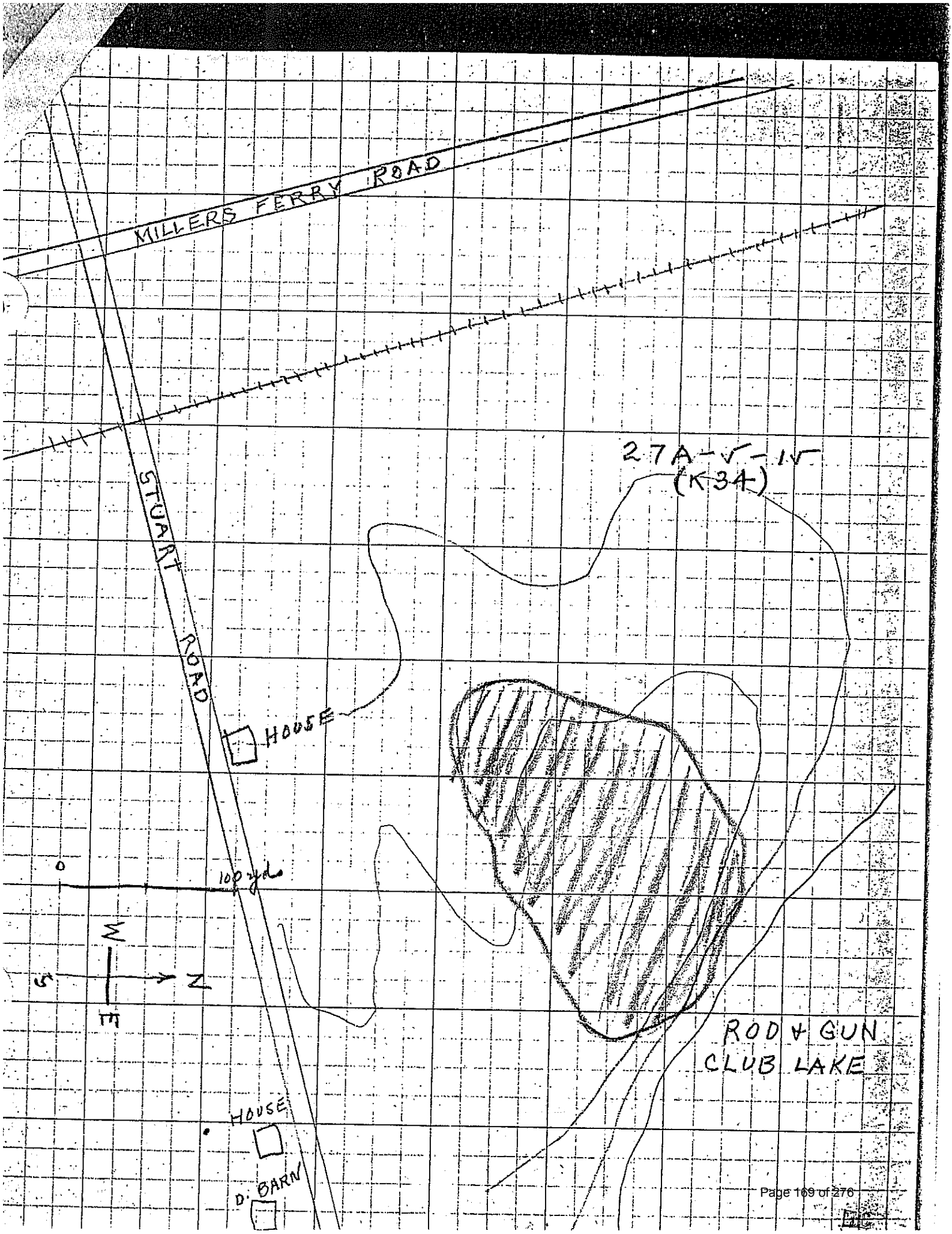
SURFACE MATERIAL FOUND: Bird point, flakes

No potsherds

BIBLIOGRAPHY

REMARKS

Forrest Kirkland


MILLERS FERRY ROAD
STUART ROAD
27A-V-1V
(K34)
HOUSE
0
100 yds
W
S
N
E
ROD & GUN
CLUB LAKE
HOUSE
BARN

Great Trinity Forest Management Plan

Archeology Data

DL-83

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

DL 83

SITE No. 27A-5-19 (OLD N392-D5) Dallas COUNTY 4-15 1940

GEOGRAPHICAL LOCATION White Rock Creek drainage

LAT. AND LONG 32°48'55" - 96°43'40"

OWNER'S NAME AND ADDRESS City of Dallas

ATTITUDE TOWARD SURVEY OR EXCAVATION Yes PERMISSION Yes

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY Fred Kenamacher DATE Aug. 1932

TYPE OF SITE village MAPPED BY R.K.Harris PHOTO Nos.

DIMENSIONS AND DESCRIPTION 390 Ft. x 315 ft. Site located on east side of White Rock Creek. Site is now mostly destroyed by the lake spillway

PROBABLE CULTURAL CLASSIFICATION OF SITE Caddoan

LOCAL TOPOGRAPHY Hills and small rises breaking off to creek

RELATION TO WATER SUPPLY White Rock Dreek channel 50 feet.

BUILDINGS ON OR NEAR SITE None

RELATION TO NEARBY SITES

TYPE OF SOIL Black and brown clay CULTIVATION no EROSION yes

VEGETATION ON AND NEAR SITE trees and grass

PREVIOUS EXCAVATION see below PITTING no

EVIDENCES OF FOOD deer, buffalo, and small animal bones, mussel shells

SURFACE MATERIAL REPORTED AS BELONGING TO SITE: R.K.Harris and Robt. Hatzenbuhler collections

OWNER OF MATERIAL see above ADDRESS Dallas, Texas

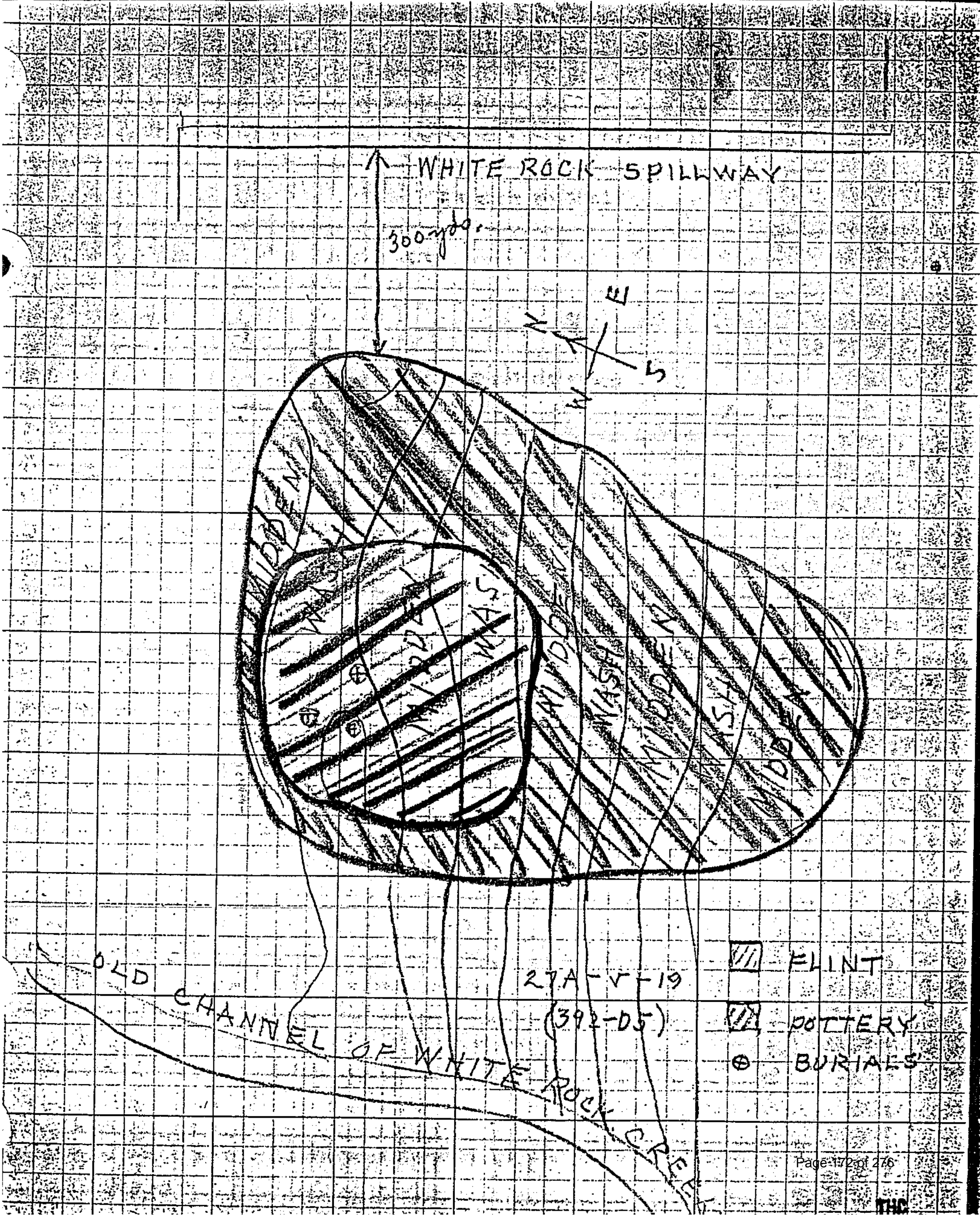
SURFACE MATERIAL FOUND: arrowheads, birdpoint, scrapers, pottery fragments, and animal bones

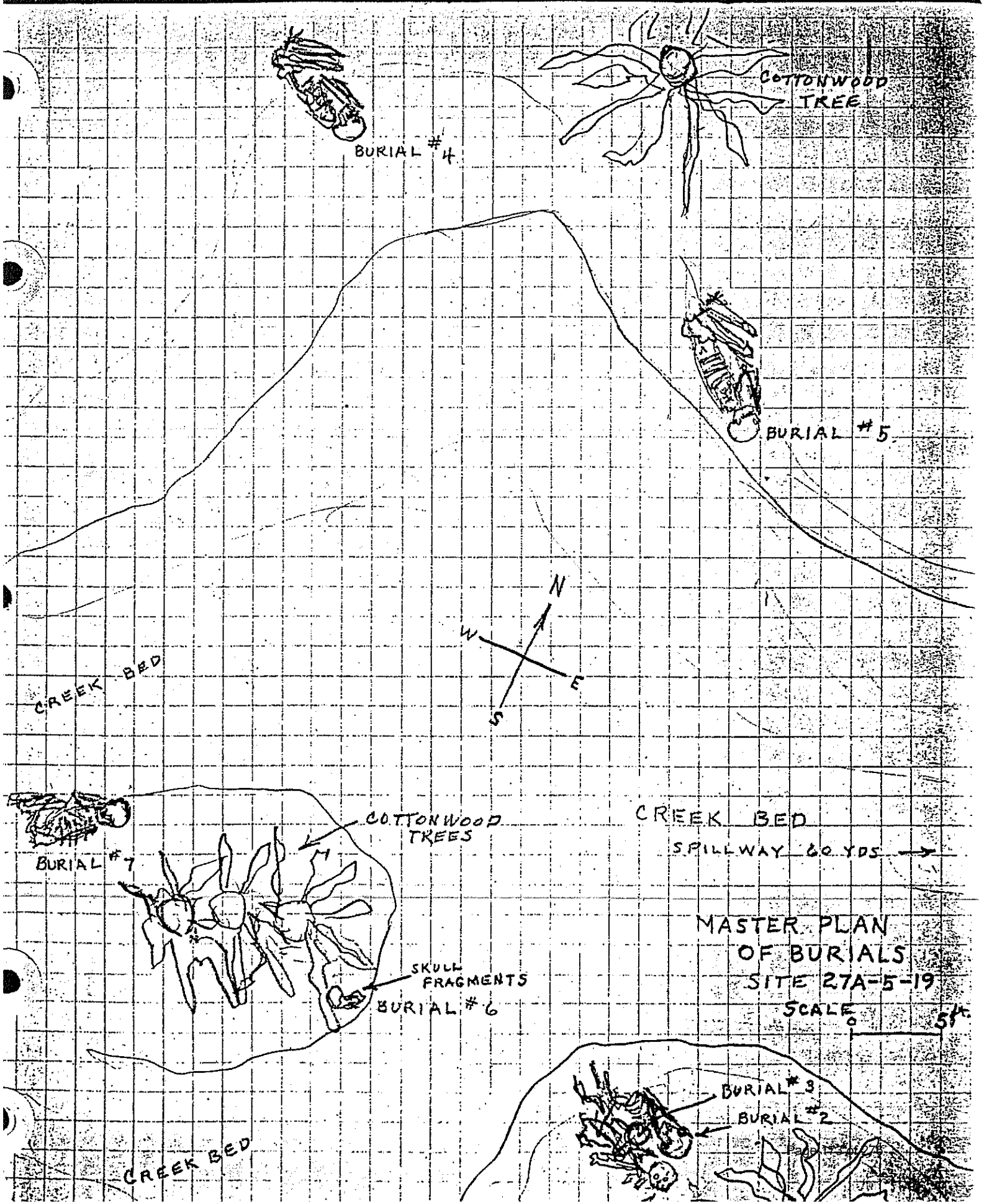
Three burials in one grave excavated 1- 6-41
One burial in one grave excavated 1-6-41
Part of skull excavated from hearth 5-24-41
All excavation work done by Forrest Kirkland, R. K. Harris, Robert Hatzenbuehler and R. L. Gowin.

BIBLIOGRAPHY

REMARKS

R. K. Harris


WHITE ROCK SPILLWAY
300 yds.
N
E
S
W
MIDDEN
WASH
MIDDEN
WASH
MIDDEN
WASH
MIDDEN
OLD CHANNEL OF WHITE ROCK CREEK
27A-V-19
(392-D5)
FLINT
POTTERY
BURIALS


BURIAL #4
COTTONWOOD TREE
BURIAL #5
N
W
E
S
CREEK BED
BURIAL #7
COTTONWOOD TREES
CREEK BED
SPILLWAY 60 YDS
SKULL FRAGMENTS
BURIAL #6
MASTER PLAN
OF BURIALS
SITE 27A-5-19
SCALE 0 5ft.
BURIAL #3
BURIAL #2
CREEK BED

BURIALS * 1, * 2, AND * 3 SITE 27A-5-19 Scale ¼" to 1'

INDIAN BURIAL AT WHITE ROCK LAKE SPILLWAY

EXCAVATED 1-4 AND 5-1941

By FORREST KIRKLAND

R.K. HARRIS

Assisted by ROBT. C. HATZENBUEHLER

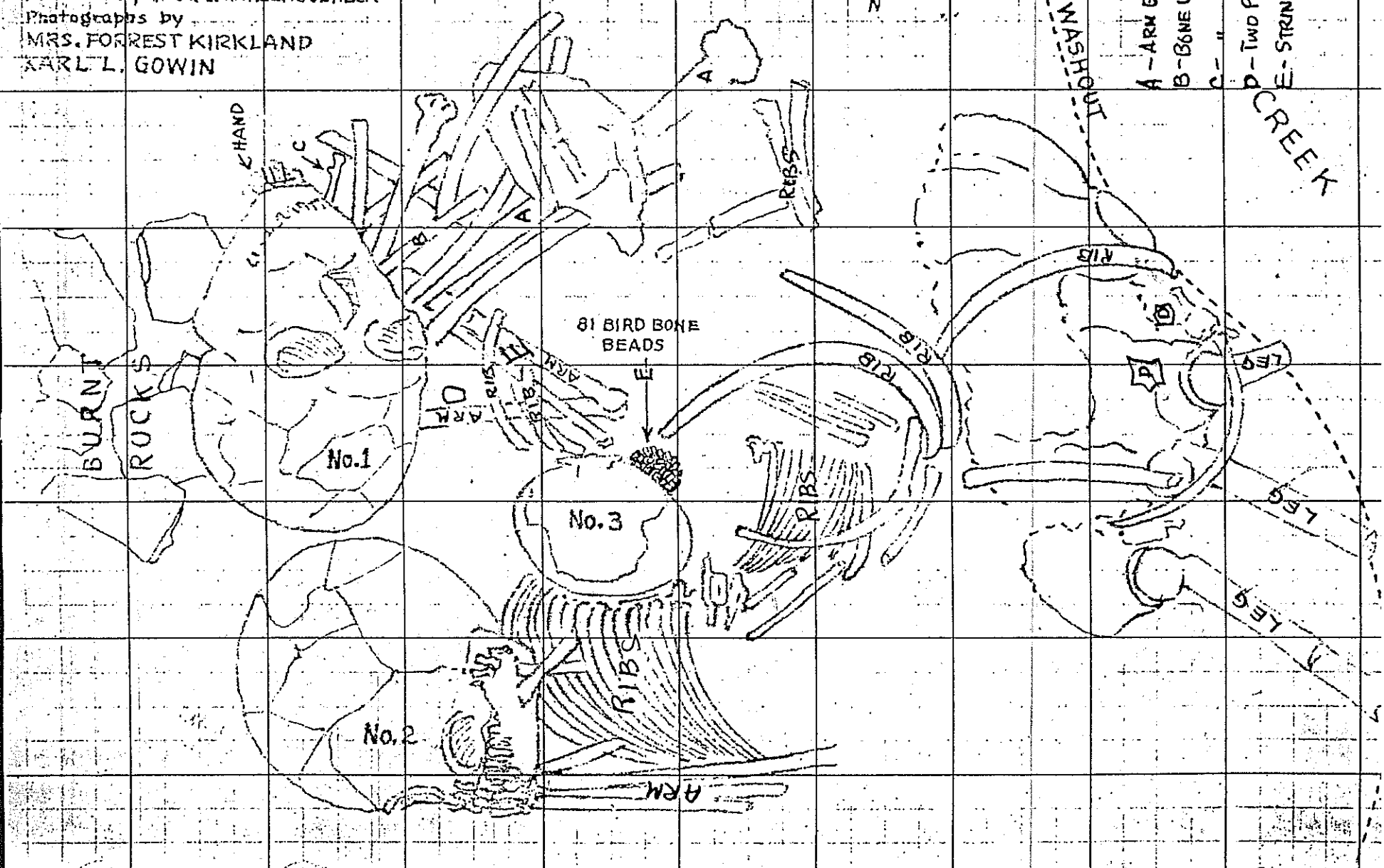
Photographs by MRS. FORREST KIRKLAND

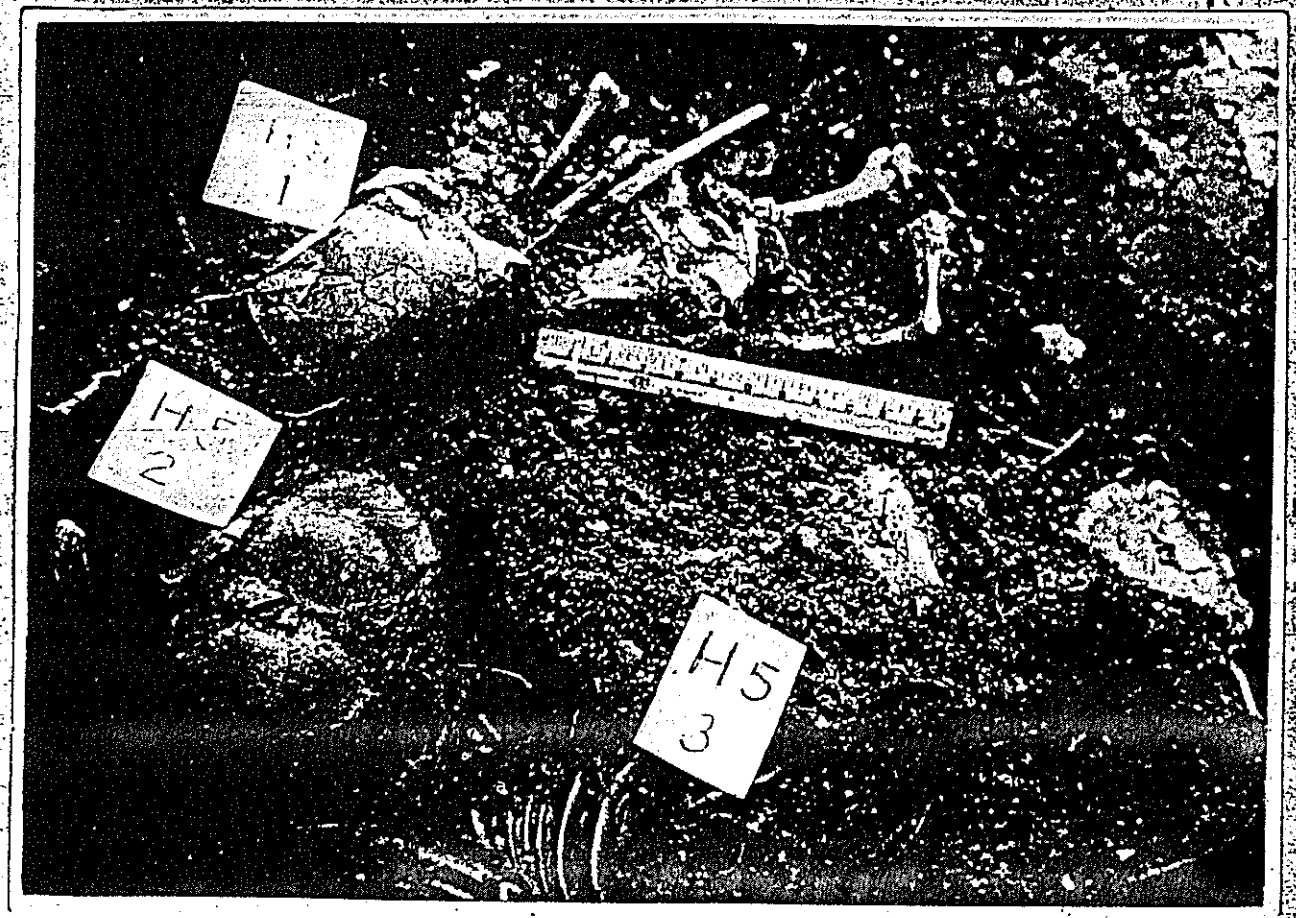
KARL L. GOWIN

SITE STATE NO. 27A-5-19

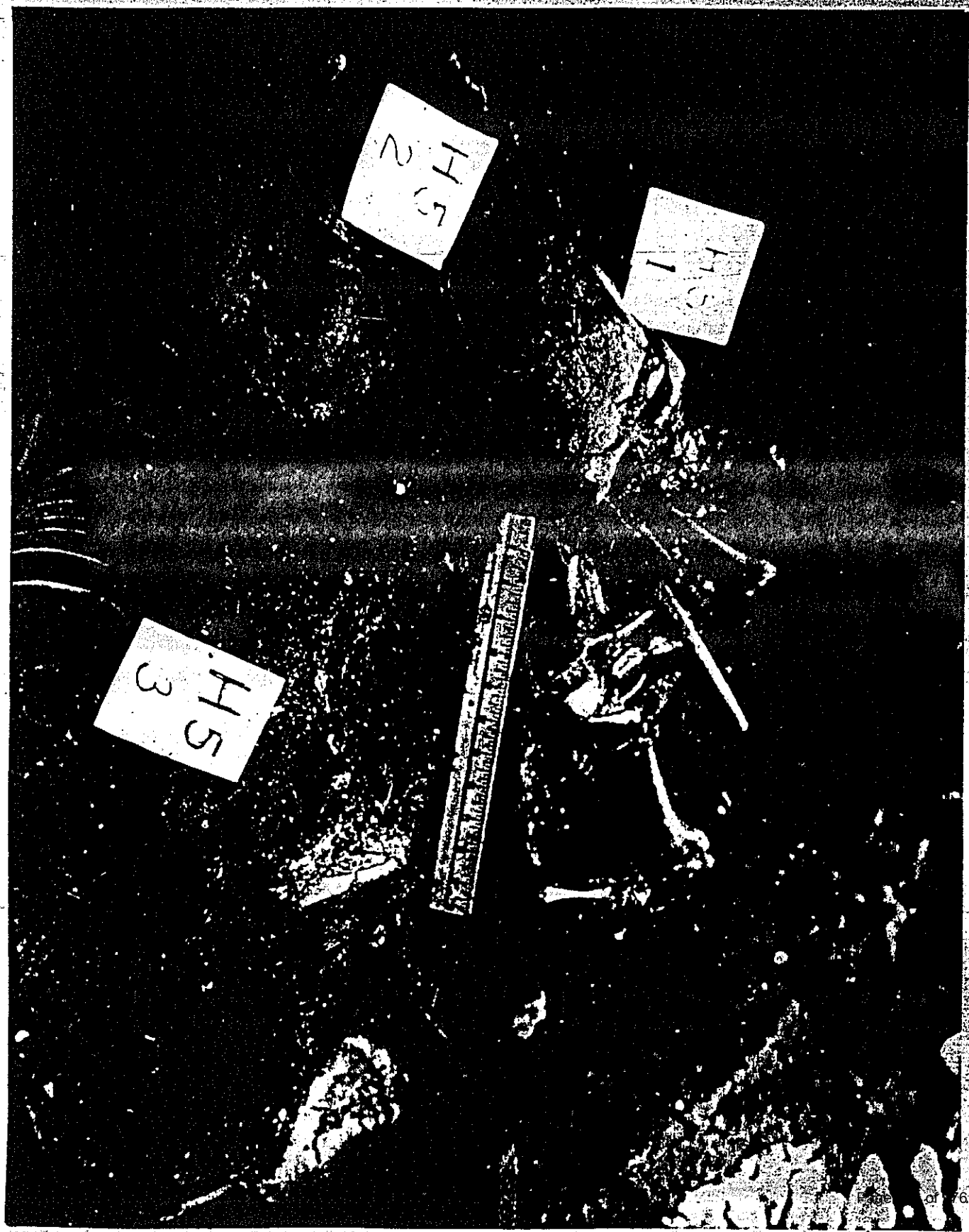
LOCAL NO. H5

S
E W
N





Burials 1, 2, and 3.


H 2
H 1
H 3

Work Projects Administration
State-wide Archeological Survey
Laboratory of Physical Anthropology
601 East 19th Street
Austin, Texas

January 8, 1941.

Mr. R. K. Harris,
Dallas Historical Society,
Hall of State,
Dallas, Texas.

Dear Mr. Harris:

Mr. A. T. Jackson informs me that you have uncovered several Indian skeletons and that you would like us to examine them. I shall be glad to do so and to report the results to you, but will require a month or two for the job since I am overwhelmed with work at the moment. The material may be sent directly to the laboratory as is; cleaning and mending will be done by us.

Sincerely yours,

Marcus S. Goldstein

Marcus S. Goldstein
Physical Anthropologist

MSG:nw

1-20-41

DR. MARCUS S. GOLDSTEIN
LABORATORY OF PHYSICAL ANTHROPOLOGY
601 EAST 19TH STREET
AUSTIN, TEXAS

DEAR DR. GOLDSTEIN:

I AM SHIPPING TO YOU BY RAILWAY EXPRESS TODAY THE REMAINS FROM THE BURIALS AT WHITE ROCK SPILLWAY, WHICH YOU SAID YOU WOULD GIVE US A REPORT ON.

I HAVE PREPARED A DIAGRAM OF THE MULTIPLE BURIAL OF THREE SKELETONS, WHICH WAS LOCATED IN ONE GRAVE. THIS DIAGRAM SHOWS BURIALS 1, 2, & 3. THIS GROUP BURIAL WAS MADE ON A BED OF ASHES ABOUT ½ TO 1 INCH THICK. THERE WERE SEVEN BURNT ROCKS LOCATED TO ONESIDE AND THE SKULL OF BURIAL # 1 AS YOU WILL SEE ON THE DIAGRAM. BONES B AND C ON THE DIAGRAM WERE NOT BROKEN BUT WERE CUT WHEN THE BURIAL WAS MADE. HERE IS MY THEORY ABOUT THE BURIAL- NUMBER 1 DIED FIRST AND WAS PUT ON A SCAFFOLD , THEN NUMBER 2 AND 3 DIED AND WERE DISMENBERED AND BURIED. AT THIS TIME NUMBER 1 WAS TAKEN FROM THE SCAFFOLD AND BURIED WITH 2 AND 3. I BASE THIS THEORY ON THE FACT THAT NUMBER 2 AND 3 WERE BURIED WITH THE FLESH STILL ON THE BONES AND NUMBER ONE SEAMS TO HAVE BURIED AFTER THE FLESH HAD DECAYED. NOTE THAT THE RIBS OF 2 AND 3 ARE INTACT AND THE RIBS OF NUMBER 1 ARE SCATTERED ALL OVER THE GRAVE. THIS IS JUST MY THEORY AND IS PROBABLY NO GOOD. WHAT DO YOU THINK ABOUT IT.

BURIAL NUMBER 6 WAS DISTURBED BY A GROUP OF BOYS AND THE CREEK HAD WASHED MOST OF IT AWAY WHEN THEY FOUND IT. IN THE BONES FROM THIS BURIAL WE YOU WILL NOTE ONE TOOTH. IT APPEARS TO BE AN AMIMAL TOOTH.

WHEN YOU HAVE FINISHED WITH THE MATERIAL YOU MAY RETURN IT TO ME. HOPING FOR YOU EVERY GOOD WISH FOR 1941 , I AM,

SINCERELY YOURS,

R. K. HARRIS

P. S. INCLOSED FIND DIAGRAM AND IN TWO OR THREE DAYS I WILL SEND YOU SOME PHOTOS OF THE BURIALS.

Work Projects Administration
State-wide Archeological Survey
Laboratory of Physical Anthropology
601 East 19th Street
Austin, Texas

January 22, 1941.

Mr. R. K. Harris,
Dallas Historical Society,
Hall of State,
Dallas, Texas.

Dear Mr. Harris:

Your letter, and the material enumerated below, were both received yesterday. I might mention that the packing was uncommonly well done, as is also the diagram accompanying the letter. The bones will be cleaned and mended at once, and examined as soon as feasible, probably some time in February when I shall write you the results of the examination and also return the material. The string of bone beads has been submitted to Mr. Jackson for study.

Burial No. 1 — skull, mandible, and skeleton.
" 2 — very fragmentary skull and skeleton.
" 3 — mud cast of endocranium (an attempt will be made to get a plaster cast of this).
" 4 — fragmentary skull, mandible, and skeleton.
Exhibits A, B, C, and D — fragments of long bones.
String of 81 bone beads.

Thanking you for your good wishes for the new year, in which I cordially reciprocate,

Very sincerely yours,

Marcus S. Goldstein

Marcus S. Goldstein

MSG:nw

THE UNIVERSITY OF TEXAS
AUSTIN

DEPARTMENT OF ANTHROPOLOGY

January 27, 1941

Mr. R. K. Harris
% Dallas Historical Society
Hall of State
Dallas, Texas

Dear Mr. Harris:

The string of bone beads you included in the shipment to Dr. Goldstein has been turned over to this office. I have just requested our photographer to photograph the specimens and will send you a print within the next week or two.

Before returning the beads to you we shall attempt to have them identified. At that time you will hear further from us regarding them.

I have just read your discussion in the recent issue of THE RECORD with regard to the burial in which the beads were found. It seems particularly significant that the skeletons were extended with the heads to the east and that the graves contained charcoal and ashes. These traits suggest influence from the East Texas Indians.

Sincerely yours,

A. T. Jackson

ATJ:mr

THE UNIVERSITY OF TEXAS
AUSTIN

DEPARTMENT OF ANTHROPOLOGY

February 1, 1941

Mr. R. K. Harris
% Dallas Historical Society
Hall of State
Dallas, Texas

Dear Mr. Harris:

We have been unable to get the exact identification of the bones from which the beads you recently submitted were made. Apparently they are from the bones of some small bird, but our specialists do not care to commit themselves on the basis of such short sections of the bones. If you care to submit a sample of the beads to Dr. A. Wetmore, U. S. National Museum, Washington D. C., he may be able to give you more definite information.

The specimens were photographed before being returned and a print will be mailed you in the near future.

Sincerely yours,

A. T. Jackson

ATJ:mr

State-Wide Archeological Survey
Laboratory of Physical Anthropology
601 East 19th Street
Austin, Texas

February 3, 1941.

R. K. Harris, Vice-President,
Dallas Archeological Society,
Dallas, Texas.

Dear Mr. Harris:

The skeletal material you sent to me has been examined, with the following results.

Burial 1 (skull and skeleton): Definitely a male, about 40 years of age at death. The skull is mesocephalic (76.0) and quite high vaulted. There is no deformation.

Skull Measurements

Maximum Length	183 mm.	Height of Symphisis	(41 mm.)
Maximum Breadth	139 "	Gonion-menton	97 "
Basion-bregma Height	(150 mm.)[1]	Bigonial	103 "
Minimum Frontal	90 "	Ht. Ascending Ramus	70 "
Bizygomatic Diameter	145 mm.	Minim. Ramus Width	34 "
Bicondylar	120 "	Angle of Lower Jaw	118°

Cranial Index 76.0

Cranial contour is pentagonal; vault is slightly keeled; coronal and lambdoid sutures show no synostosis; sagittal suture is completely synostosed (closed). Glabella region is slight but supraorbital ridges are moderate. Mastoids are large. There are no wormian bones. The lower jaw is large; chin is square; there is no mandibular torus.

The teeth exhibit considerable wear. All of the teeth are in place, and in excellent condition except the upper right and left first molars which show carious cavities (decay).

Skeleton

The skeleton is incomplete and also fragmentary, preventing reconstruction of stature. Nevertheless, the bones appear heavy and of good size, and the individual must have been at least of medium height. The sciatic notch of the pelvis is narrow, indicative of the male sex. A very pronounced third trochanter occurs on each

femur. The only measurements feasible were the subtrochanteric on the left femur: Lateral, 35 mm.; Antero-Posterior, 25; Index 71.4, indicating considerable flattening, an Indian characteristic.

Mixed with this adult were several bones of a child.

Burial 2 (skull and skeleton): Representing a child of 10 or 11 years, probably a male. The fragmentary condition of the skull and skeleton precluded measurements. The child bones in Burial #1 belong with the bones of Burial #2. The head of the femur of an adult was found in Burial #2 which actually belongs with the left femur of Burial #1.

Burial 3 — Mud endocranium. Nothing could be done with this.

Burial 4 (skull and skeleton): The bones were so few and fragmentary that no measurements were possible. The material indicates a probable female, 25-35 years of age. The left lower first molar was lost not very long before death.

Exhibit A: A lower half of the humerus manifests a septal aperture in olecranon fossa; no supracondyloid process. Bone may belong with humerus of Burial #1.

As for your theory about manner of burial, I shall be frank about the matter: I don't know enough about the ethnology of the region to give any opinion.

The skeletal material conforms with the general type found throughout central Texas.

Your material will be returned within the next few days. Nothing has been changed; that is, the parts in Burial 2 that go with Burial 1 have been left with Burial 2, but these are placed in separate bags so that you can rearrange it all if you wish.

Trusting the above will be of some use to you, I am,

Very sincerely yours,

Marcus S. Goldstein

Marcus S. Goldstein

MSG:nw

THE UNIVERSITY OF TEXAS
AUSTIN

February 3, 1941

DEPARTMENT OF ANTHROPOLOGY

Mr. R. K. Harris
C/oDallas Historical Society
Hall of State
Dallas, Texas

Dear Mr. Harris:

Many thanks for your kindness in sending the sketch and photographs of the burials excavated by you and Mr. Kirkland.

Due to the fact that the fragmentary leg bones of burials No. 2 and 3 are intermixed, it is impossible to determine from the sketch which set of femurs belong to burial No. 2; if the ones to the south, then it would seem that the body was in an extended position. But if the leg bones to the north belong with skeleton No. 2, then it would seem that the burial possibly may have been in a semi-flexed position.

Apparently burial No. 2 was on the right side, with the arms flexed and the hands on the chin. Burials on the side with hands in this position frequently are found with fully flexed and semi-flexed burials. These features, however, do not prove in themselves that this was a semi-flexed burial.

It seems that the question of whether No. 2 was an extended or a semi-flexed burial depends on whether or not you fellows were able to unscramble the mixture of leg bones with sufficient certainty to assign them to their respective skeletons. Unfortunately parts of the bones were destroyed by the washout.

There seems to be little doubt that No. 1 was a bundle burial. Your guess regarding this burial is as good as that of anyone else.

Sincerely yours

A. T. Jackson

A. T. Jackson

ATJ:mr

THE UNIVERSITY OF TEXAS
AUSTIN

DEPARTMENT OF ANTHROPOLOGY

February 8, 1941

Mr. R. K. Harris
% Dallas Historical Society
Hall of State
Dallas, Texas

Dear Mr. Harris:

In accordance with our promise there is enclosed herewith our photograph No. 709 of the bone beads found by you in a grave near Dallas. The beads are illustrated natural size.

Sincerely yours,

A. T. Jackson

ATJ:mr

Encl.No.2011

SMITHSONIAN INSTITUTION

UNITED STATES NATIONAL MUSEUM

WASHINGTON, D.C.

March 6, 1941.

Mr. R. K. Harris, Staff, Archaeologist,
Dallas Historical Society,
Hall of State,
Dallas, Texas.

My dear Mr. Harris:

In reply to your letter of February 24th, I may say that the four beads which you forwarded separately have been examined by our archeologists. So far as we are able to judge without detailed chemical or microscopic analysis, the material of which the beads were made is bone. Similar types, made from the bones of birds or small mammals, are very widely distributed throughout the United States.

Under separate cover, your beads are being returned. Upon their receipt, kindly sign the white copy of the shipping invoice and return it to us in the accompanying envelope which requires no postage.

Very truly yours,

J. E. Graf

J. E. Graf
Associate Director.

tter has, has not, been written.

SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM
WASHINGTON, D. C., U. S. A.

No. 159162

SHIPPING INVOICE

Date March 6, 1941.

To Mr. R. K. Harris, Staff Archaeologist,
Dallas Historical Society, Hall of State,
Dallas, Texas.

105813

Approved _____
Head Curator

Authorized _____
Assistant Secretary or Associate Director

Shipped _____ by frank
Express, Collector, Messenger

On the recommendation of Neil M. Judd, Curator of Archeology
the material listed below contained in package is transmitted as—

(1) a gift. (3) in exchange. (5) return of material borrowed. (7) _____
(2) a loan at your request. (4) for examination at our request. (6) return of material sent for identification. (6) (8) _____

LIST OF SPECIMENS

Name of Object	Locality	Collector	Catalog No.	Number of Specimens
Bone beads				4

U. S. National Museum
Enclosure
No. 2011

Note.—Loans are made for 2 months unless otherwise stipulated.
In connection with material sent out for identification all types and uniques must be returned.
Retention of any other material is permitted only

Received the above in good order (date) _____

THE UNIVERSITY OF TEXAS
AUSTIN

DEPARTMENT OF ANTHROPOLOGY

May 24, 1941

Mr. R. K. Harris
Dallas Historical Society
Hall of State
Dallas, Texas

Dear Mr. Harris:

We find that there is on hand only one available print of photograph No. 709 of your bone beads. We are mailing this print herewith. There is no charge. We are pleased to reciprocate for the many courtesies you have shown us.

Normally we would be able to have additional prints made within a few days. It so happens, however, that at this time our WPA archaeological project is about to terminate, due to not being essential to national defense. We, therefore, have our photographer swamped with work, much of which he probably will not be able to complete. I am sorry that for these reasons we are unable to send you the number of prints you requested.

Sincerely yours,

A. T. Jackson

A. T. Jackson

ATJ:mr

BURIAL #5 [redacted] below White Rock Lake spillway,

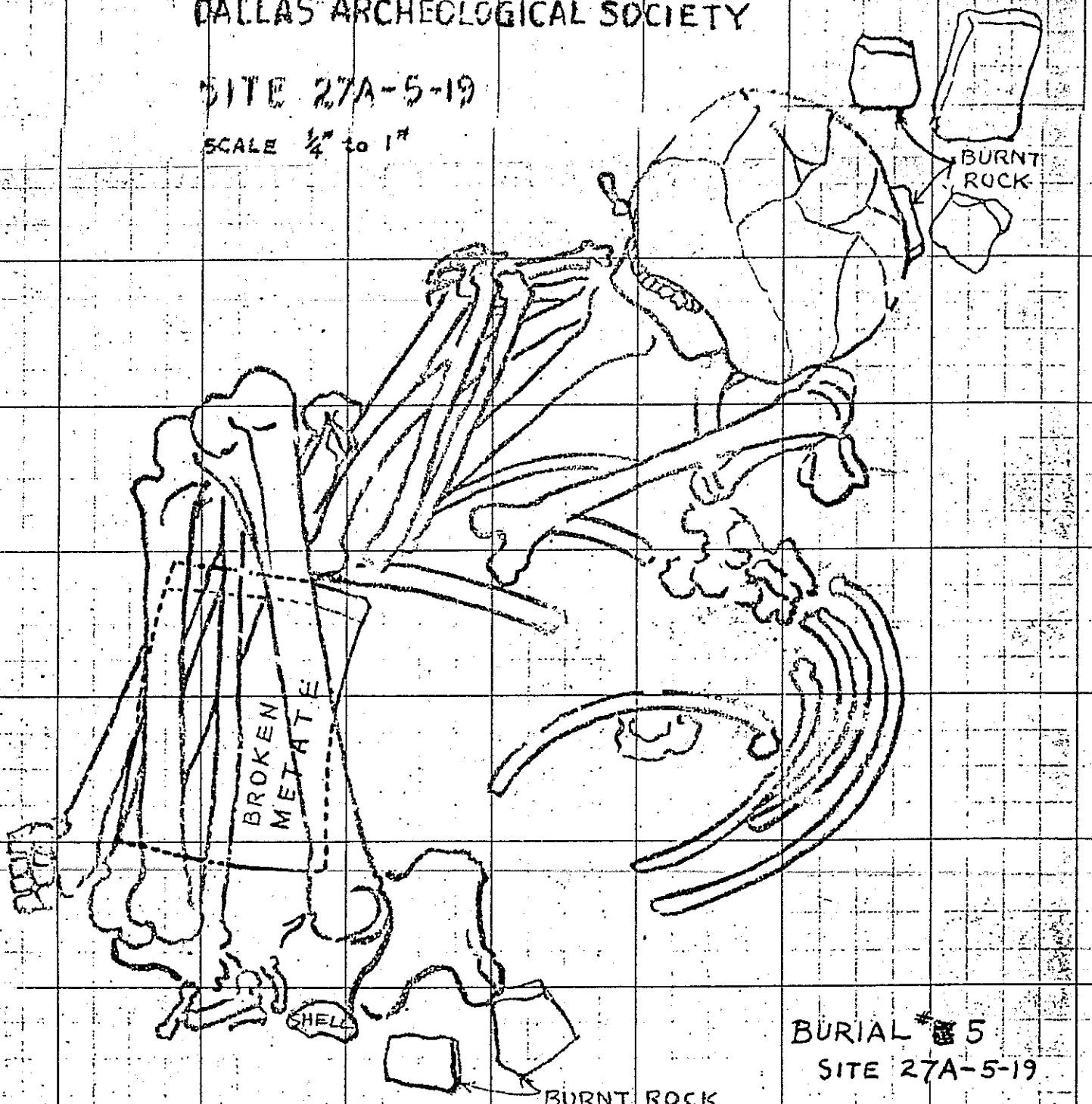
EXCAVATED AUGUST 2, 3, 1941

by members of

DALLAS ARCHEOLOGICAL SOCIETY

SITE 27A-5-19

SCALE ¼" to 1"



BURIAL #5
SITE 27A-5-19

E
N

BURIAL #5 below White Rock Lake spillway.

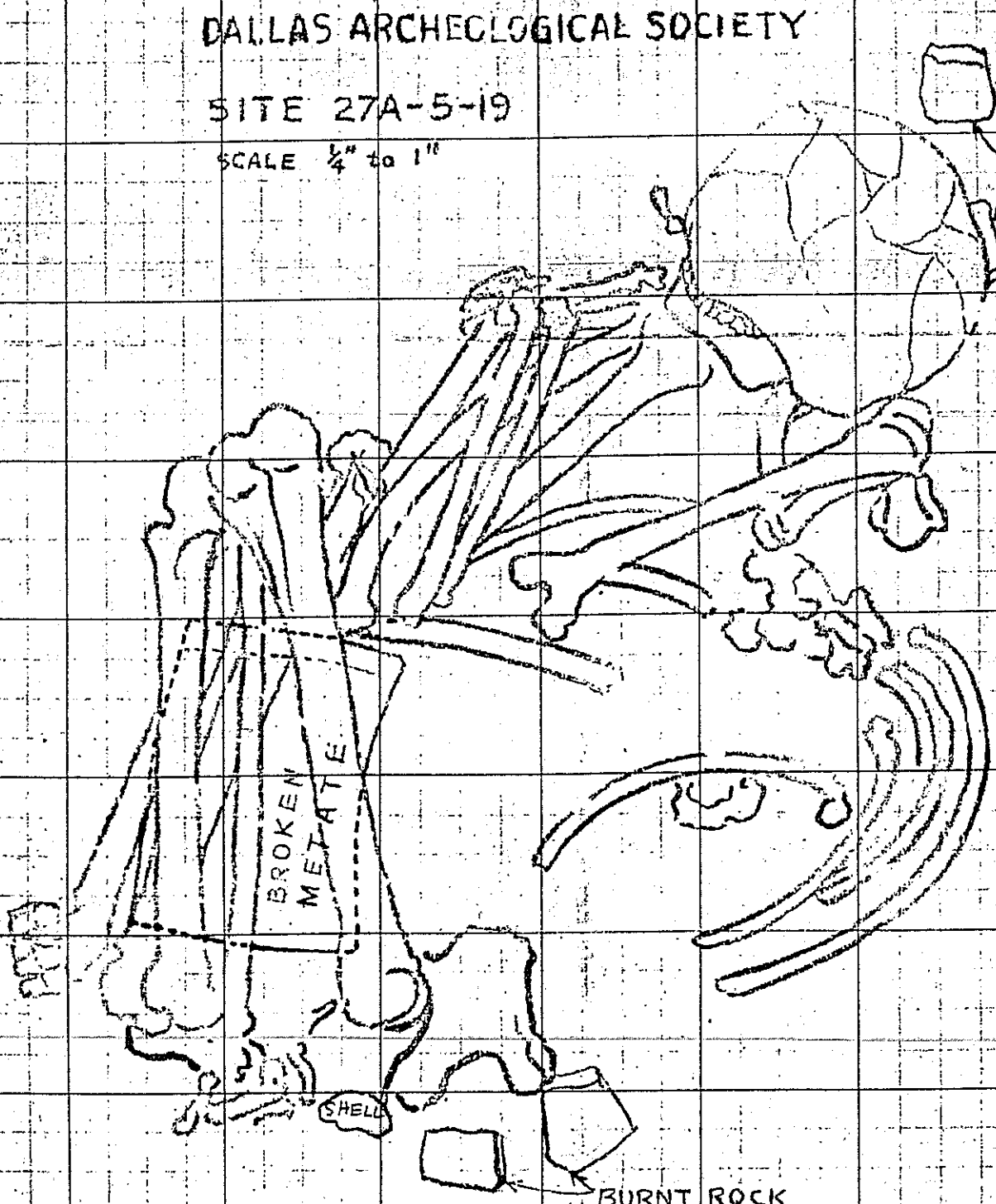
EXCAVATED AUGUST 2, 3, 1941

by members of

DALLAS ARCHEOLOGICAL SOCIETY

SITE 27A-5-19

SCALE ¼" to 1"



N

E

S

W

BURIAL "B"

Burial 5

Burial 5

THE UNIVERSITY OF TEXAS
AUSTIN

September 10, 1941

DEPARTMENT OF ANTHROPOLOGY

Mr. R. K. Harris
C/o Dallas Historical Society
Dallas, Texas

Dear Mr. Harris:

Thanks for your letter of September 8, with which you enclosed photographs and sketch of a flexed burial excavated by the Dallas Archaeological Society at Site 27A-5-19. We are glad to receive the information and shall place it on file.

#1

Dr. Goldstein is no longer with us. He is now in San Antonio and will, I understand, soon go to Mexico in connection with a project on which he is now working.

I am referring to Dr. McAllister for reply, as chairman of our department, the kind and generous offer of your society to place all of the skeletal material from the above numbered site with the University of Texas.

Yes, the Dallas County survey forms were the first to reach the Council. We appreciate your cooperation.

Sincerely yours

A. T. Jackson

A. T. Jackson

THE UNIVERSITY OF TEXAS
AUSTIN

DEPARTMENT OF ANTHROPOLOGY

October 2, 1941

Mr. R. K. Harris
% Dallas Historical Society
Hall of State
Dallas, Texas

Dear Mr. Harris:

I apologize for my delay in responding to your letter concerning the disposition of the skeletal material excavated by your organization.

We will be very happy to have this material placed here and will, of course, give proper credit to your society.

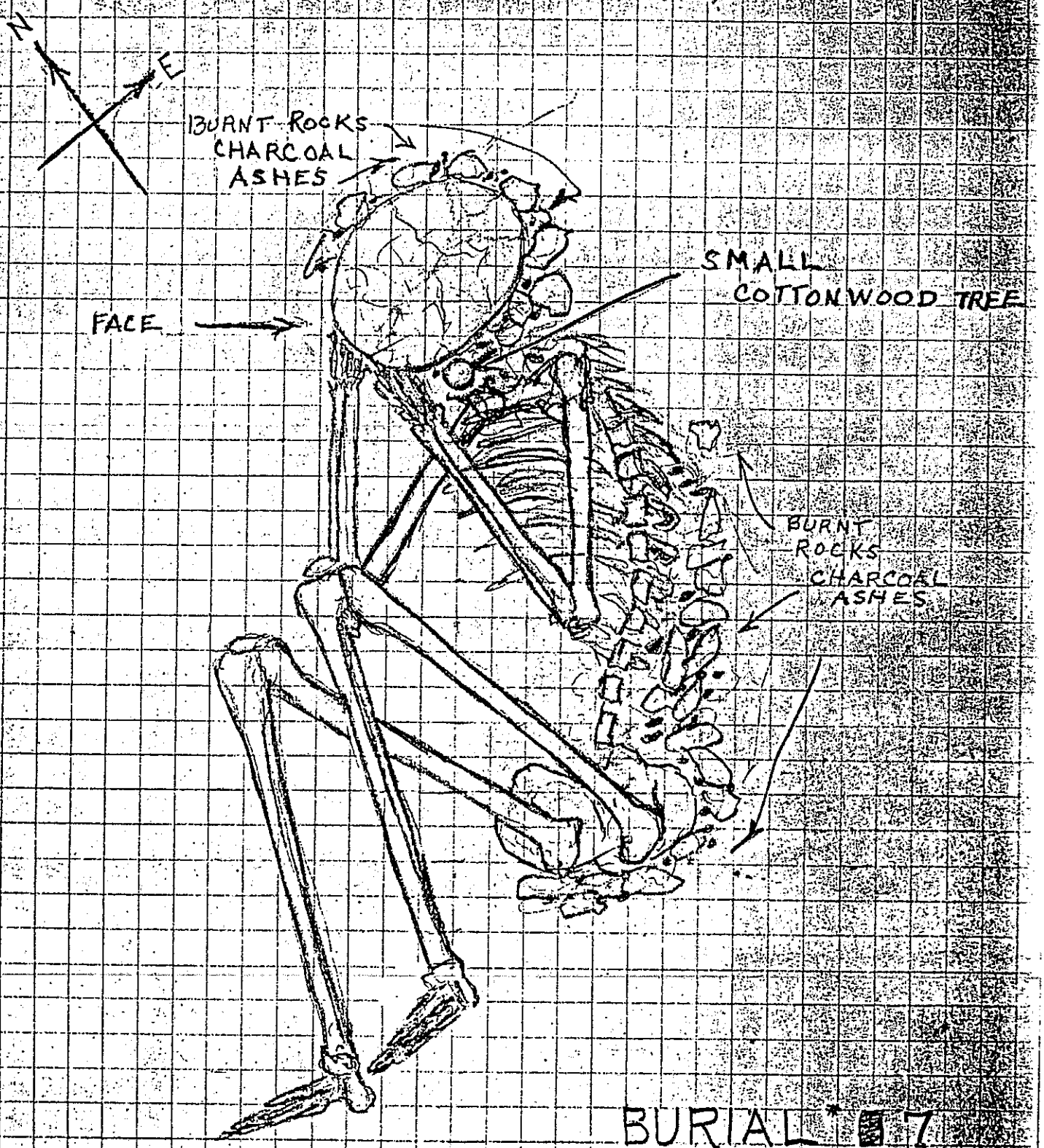
As Mr. Jackson indicated, Dr. Goldstein is no longer with us. He does, however, occasionally return for a few hours, and we might prevail upon him to examine your material and make a report to you concerning it. We will make every effort to obtain his cooperation.

Again thank you for giving us your consideration.

Sincerely,

J. Gilbert McAllister
Chairman

JGM:mr



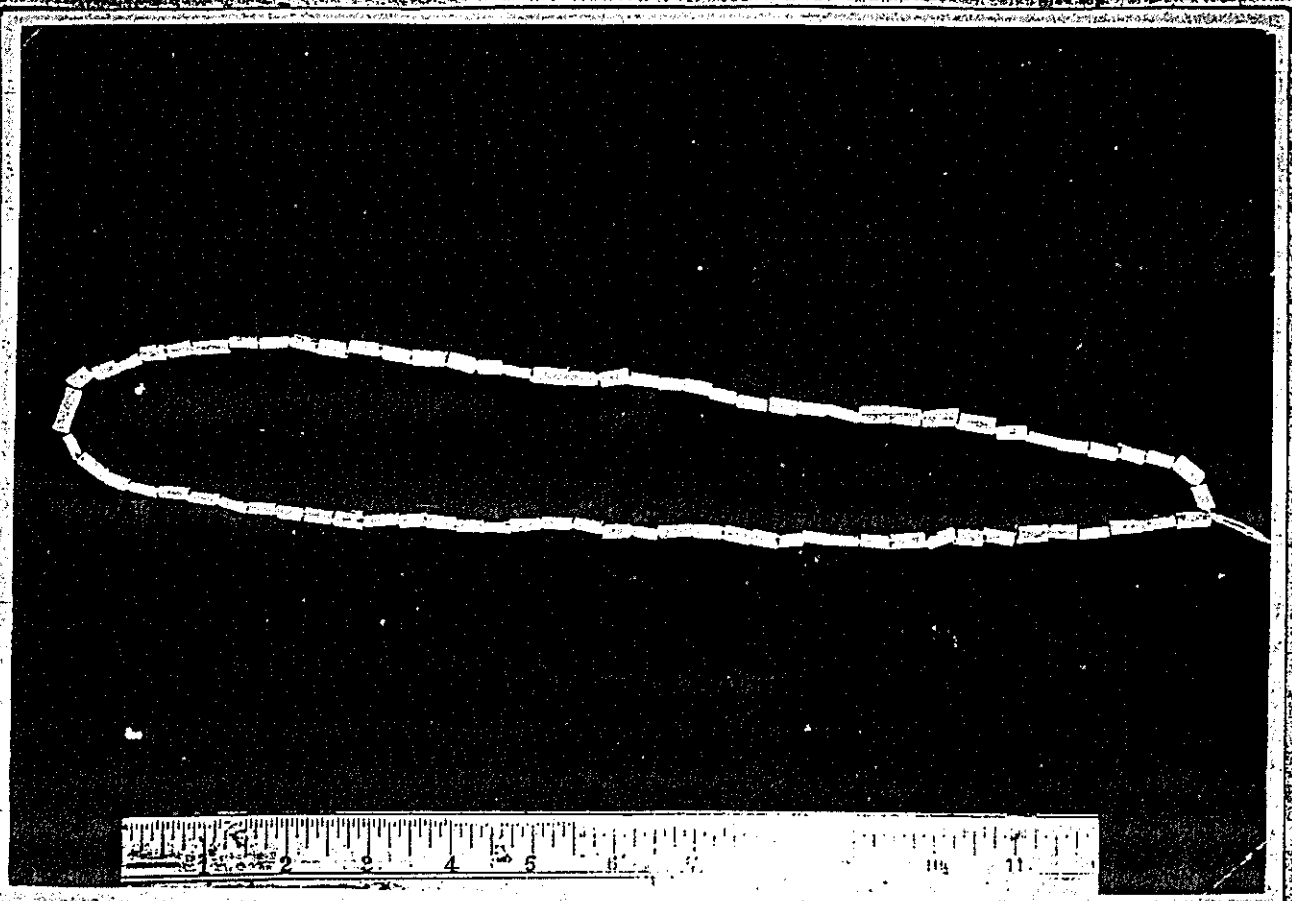
BURIAL # 7

SITE 27A-5-19

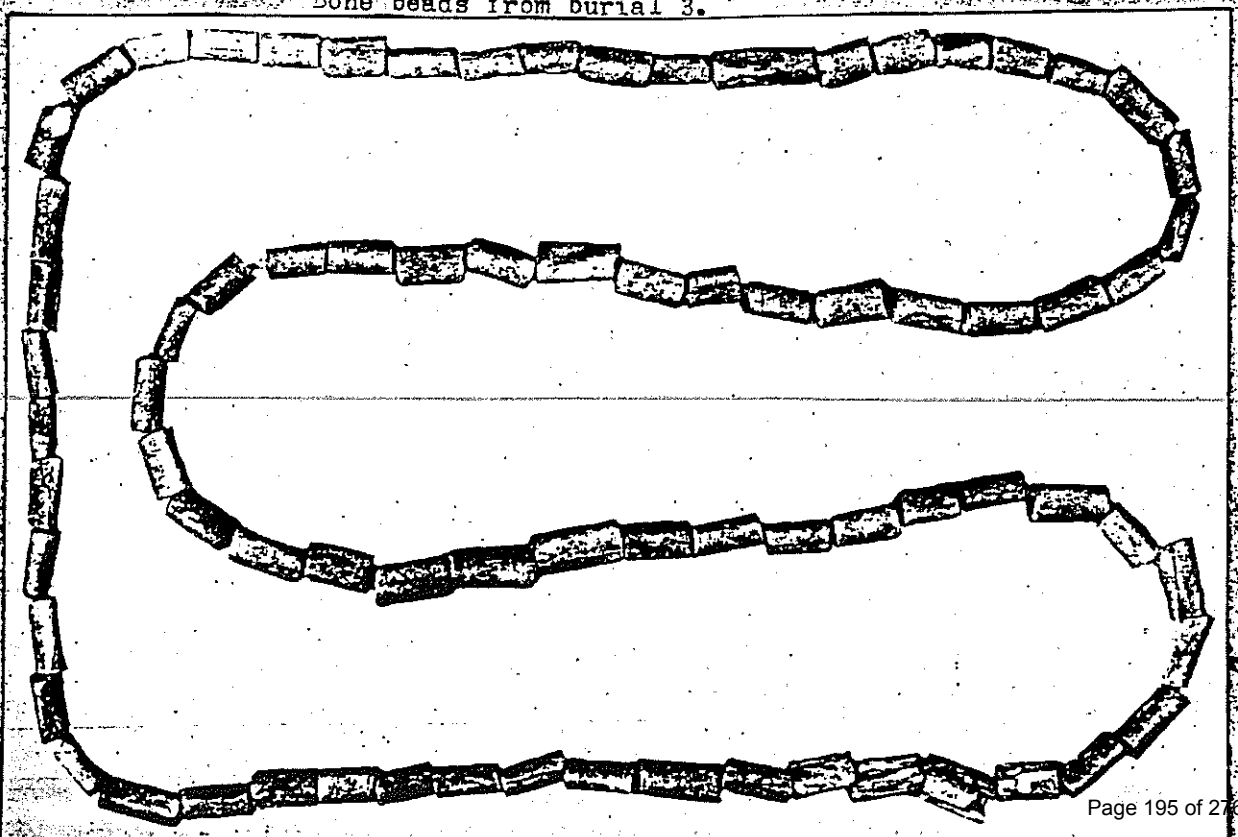
WHITE ROCK SPILLWAY

1-27-46

SCALE 0" 1" 2" 3"



Bone beads from burial 3.



THE UNIVERSITY OF TEXAS
AUSTIN

DEPARTMENT OF ANTHROPOLOGY

October 2, 1941

Mr. R. K. Harris
% Dallas Historical Society
Hall of State
Dallas, Texas

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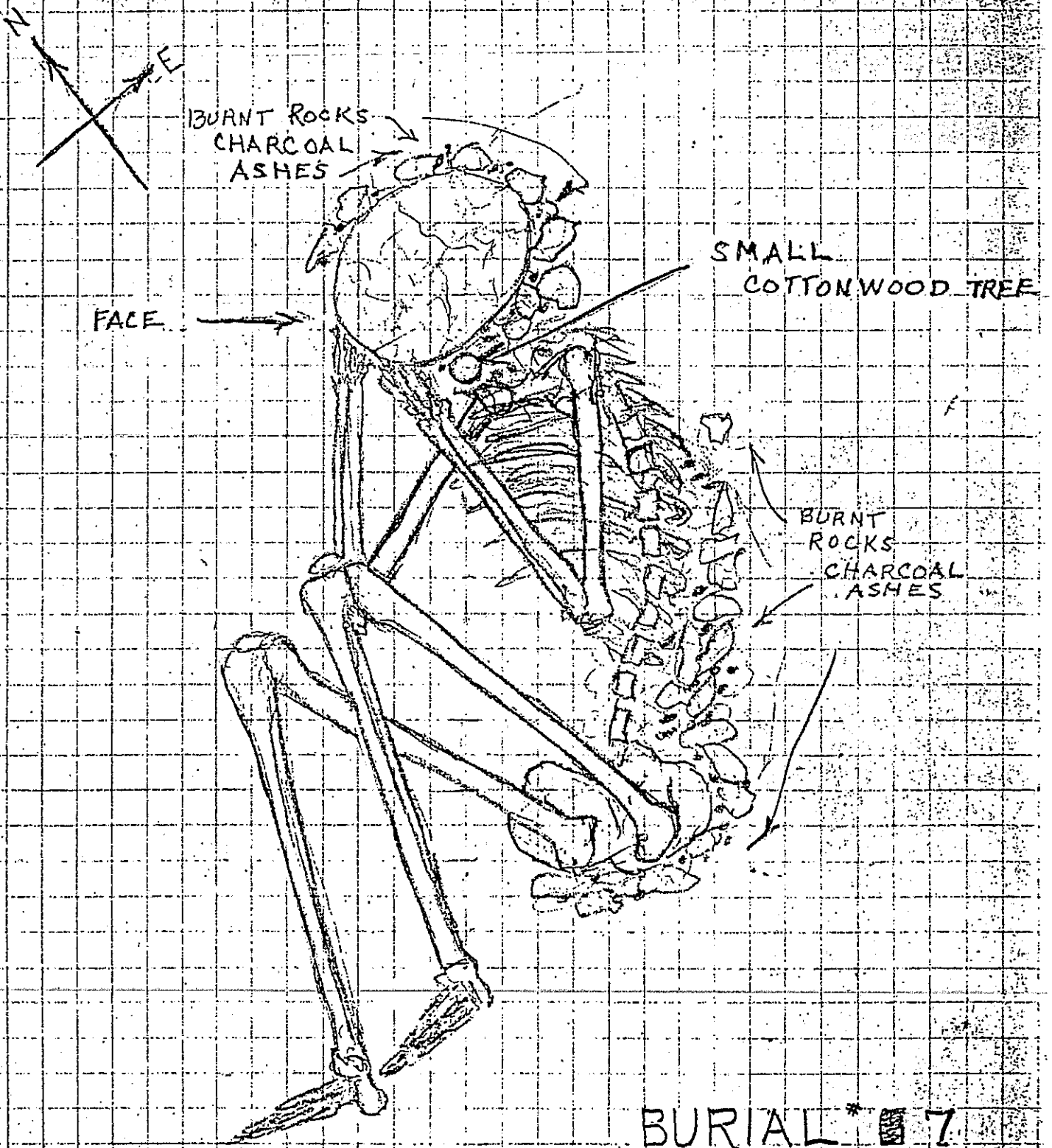
As Mr. Jackson indicated, Dr. Goldstein is no longer with us. He does, however, occasionally return for a few hours, and we might prevail upon him to examine your material and make a report to you concerning it. We will make every effort to obtain his cooperation.

Again thank you for giving us your consideration.

Sincerely,

J. Gilbert McAllister
Chairman

JGM:mr



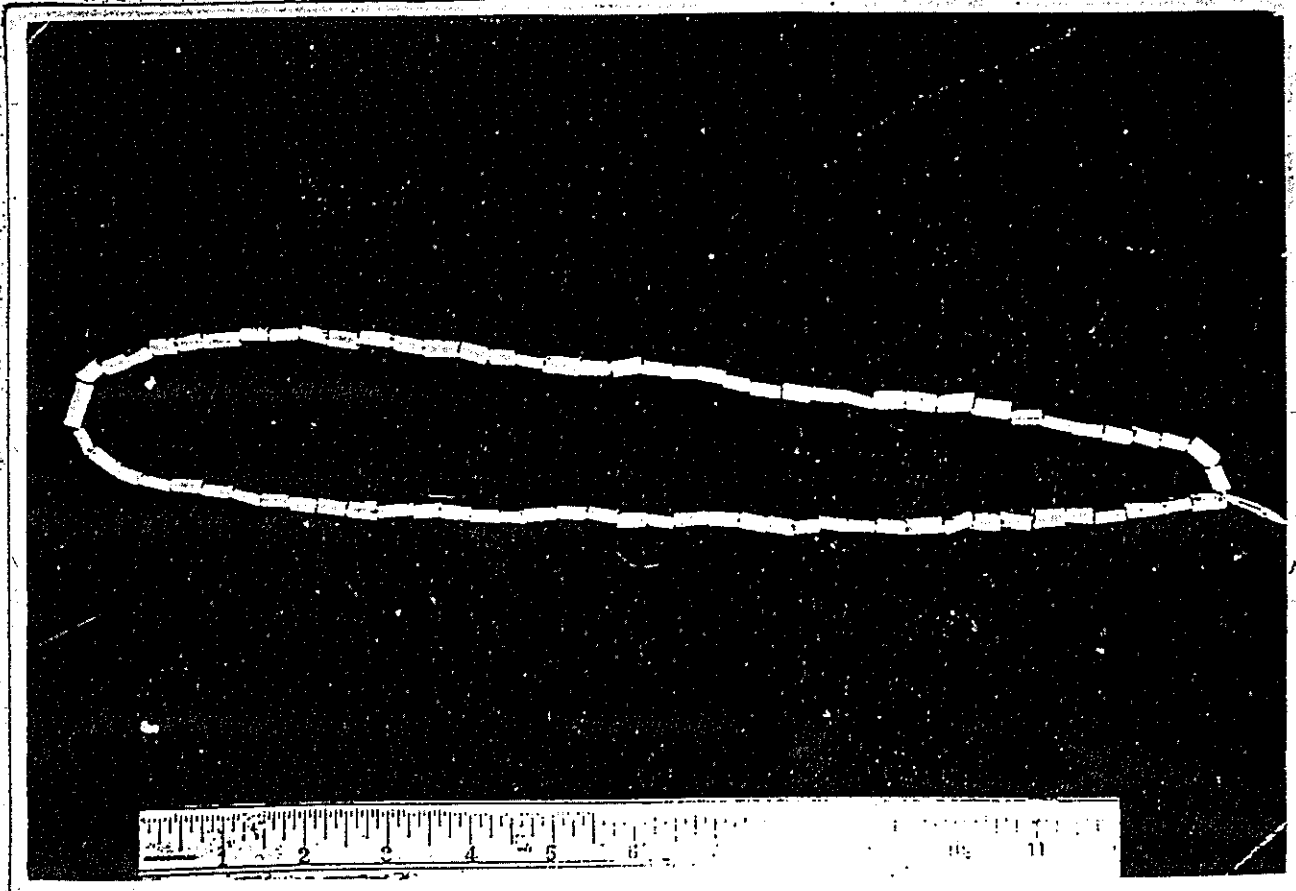
BURIAL # 7

SITE 27A-5-19

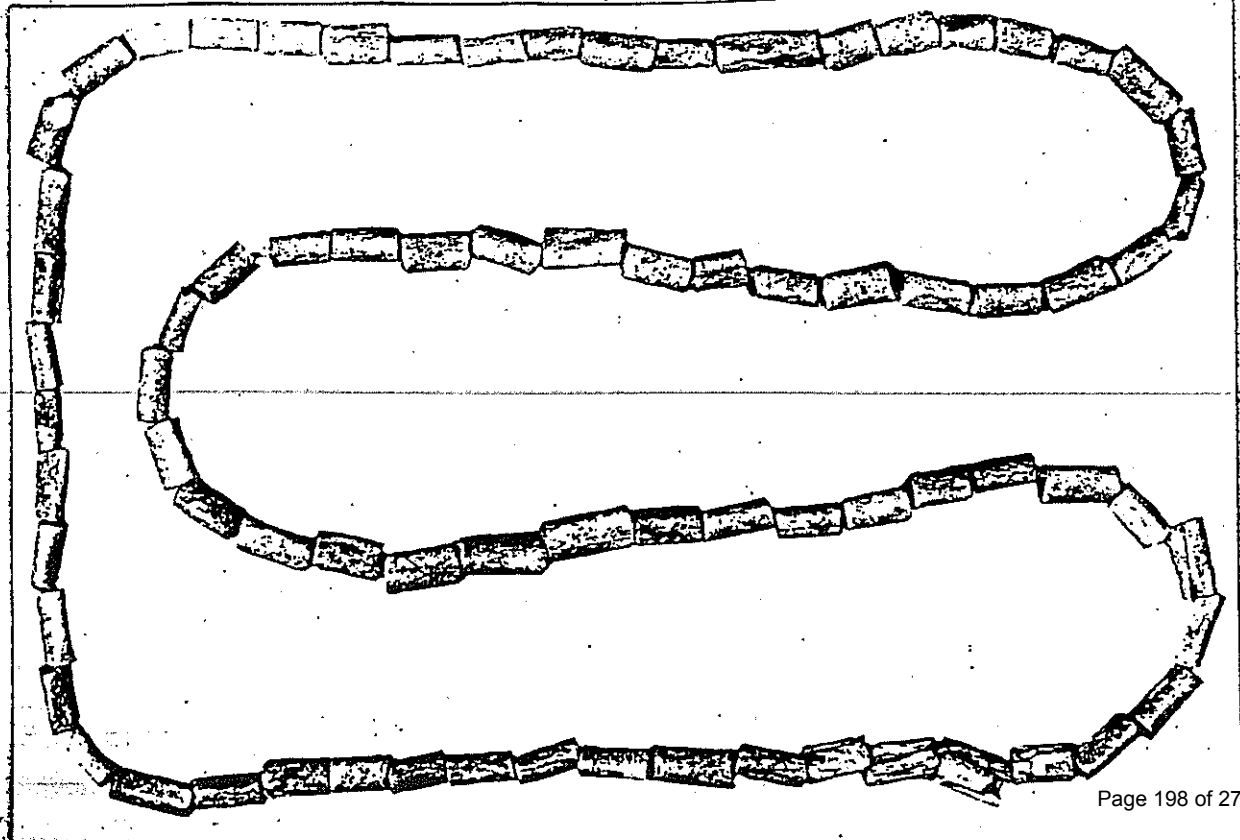
WHITE ROCK SPILLWAY

1-27-46

SCALE 0" 1 2 3



Bone beads from burial 3.



Great Trinity Forest Management Plan

Archeology Data

DL-84

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

DL-84

SITE No. 27A-5-20 (OLD No. K40) Dallas COUNTY February 2 1941

GEOGRAPHICAL LOCATION On west bank of Trinity River one and one-half miles below the Holmes St. bridge LAT. AND LONG. 32°43'15" - 96°44'20"

OWNER'S NAME AND ADDRESS

ATTITUDE TOWARD SURVEY OR EXCAVATION

PREVIOUS OWNERS PERMISSION

DIRECTED TO SITE BY Exploration PRESENT TENANT

TYPE OF SITE Surface camp MAPPED BY Forrest Kirkland DATE May 26, 1940 PHOTO NOS.

DIMENSIONS AND DESCRIPTION 400 x 500 yds. Camp on sandy bluff on bank of river

PROBABLE CULTURAL CLASSIFICATION OF SITE

LOCAL TOPOGRAPHY Sand ridges at edge of river bottom

RELATION TO WATER SUPPLY River 200 yds.

BUILDINGS ON OR NEAR SITE Two farm houses

RELATION TO NEARBY SITES One and one-half miles east of 27A-5-7

TYPE OF SOIL Deep sand CULTIVATION no EROSION some

VEGETATION ON AND NEAR SITE Weeds and grass

PREVIOUS EXCAVATION None PITTING

EVIDENCES OF FOOD None

SURFACE MATERIAL REPORTED AS BELONGING TO SITE: Arrowheads were collected off of the site by Perry Overton for several years until it was dug over for gravel.

OWNER OF MATERIAL Perry Overton ADDRESS Dallas, Texas

SURFACE MATERIAL FOUND: Flakes only

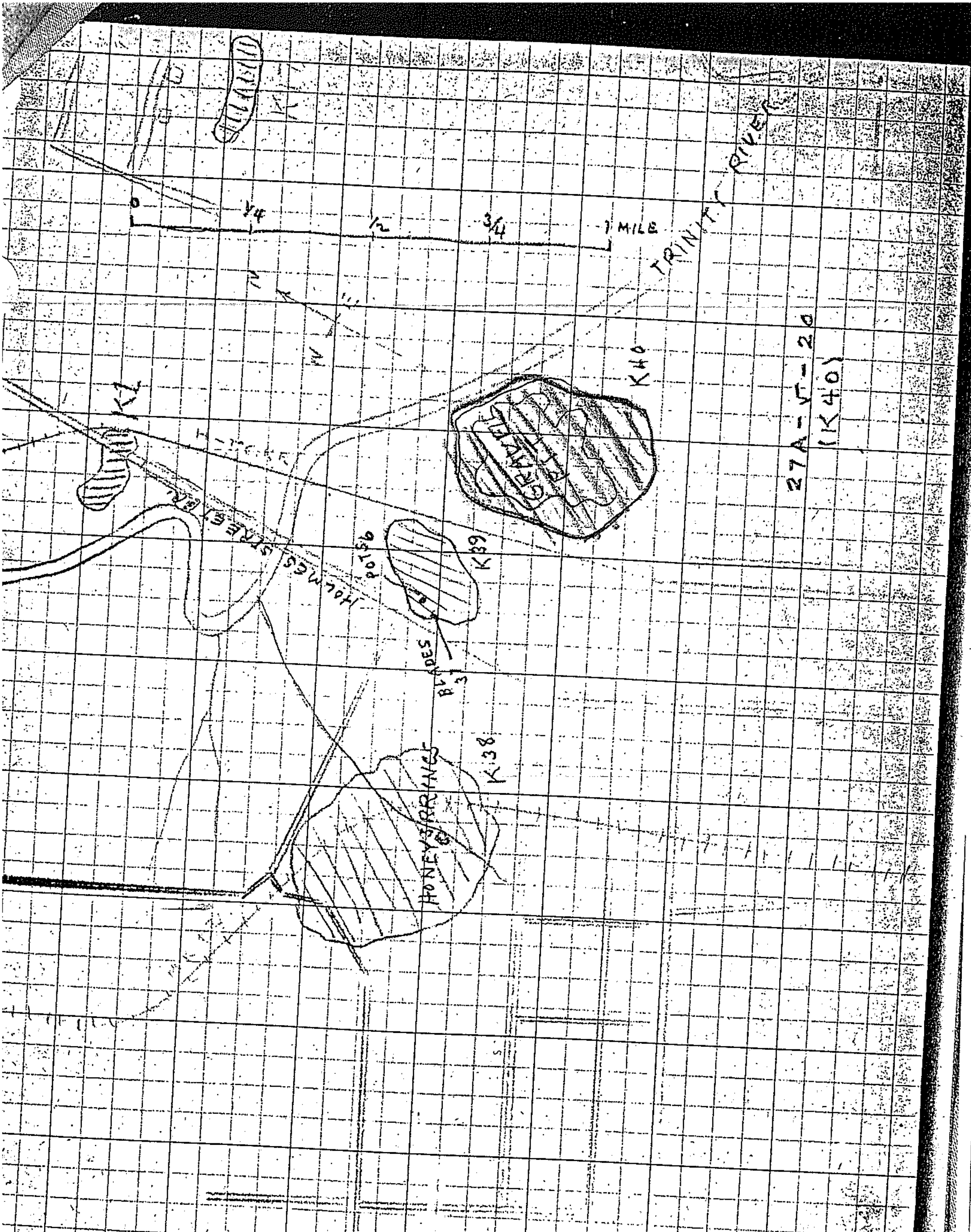
No potsherds

BIBLIOGRAPHY

REMARKS It was impossible to tell much about the original size and condition of the site because most of the area has been dug over for sand and gravel. Flakes were observed on several ledges of the pit. The site was mapped on the information of Perry Overton who had worked the site before it was completely dug over.

Forrest Kirkland

THC


27A-VT-20
(K40)
TRINITY RIVER
0
1/4
1/2
3/4
1 MILE
N
K40
K39
K38
K1
HOLMES STREET
POTS 6
BLADES 37
HONEY SPRINGS

Great Trinity Forest Management Plan

Archeology Data

41-DL-85

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

41DL85

SITES SURVEY REPORT

DL 5

SITE No. 27A-5-21 (OLD No. K46) Dallas COUNTY January 18 1941

GEOGRAPHICAL LOCATION One-fourth mile south of White Rock Lake spillway on west bank of creek LAT. AND LONG.

OWNER'S NAME AND ADDRESS Robert F. Cole

ATTITUDE TOWARD SURVEY OR EXCAVATION Favorable PERMISSION Yes

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY Robert F. Cole DATE January 12, 1941

TYPE OF SITE Surface camp MAPPED BY Forrest Kirkland PHOTO NOS.

DIMENSIONS AND DESCRIPTION 100 x 150 yds. Small camp on low ridge in edge of creek bottom just below in large spring

PROBABLE CULTURAL CLASSIFICATION OF SITE Caddoan

LOCAL TOPOGRAPHY Hills at edge of creek bottom

RELATION TO WATER SUPPLY Spring 100 yds. up slope from site.

BUILDINGS ON OR NEAR SITE Farm house just off site.

RELATION TO NEARBY SITES Quarter of a mile south of 27A-5-19

TYPE OF SOIL Light loam CULTIVATION Yes EROSION Little

VEGETATION ON AND NEAR SITE None

PREVIOUS EXCAVATION None PITTING

EVIDENCES OF FOOD None

SURFACE MATERIAL REPORTED AS BELONGING TO SITE: Mano and several arrowheads.

OWNER OF MATERIAL Robt. Cole ADDRESS

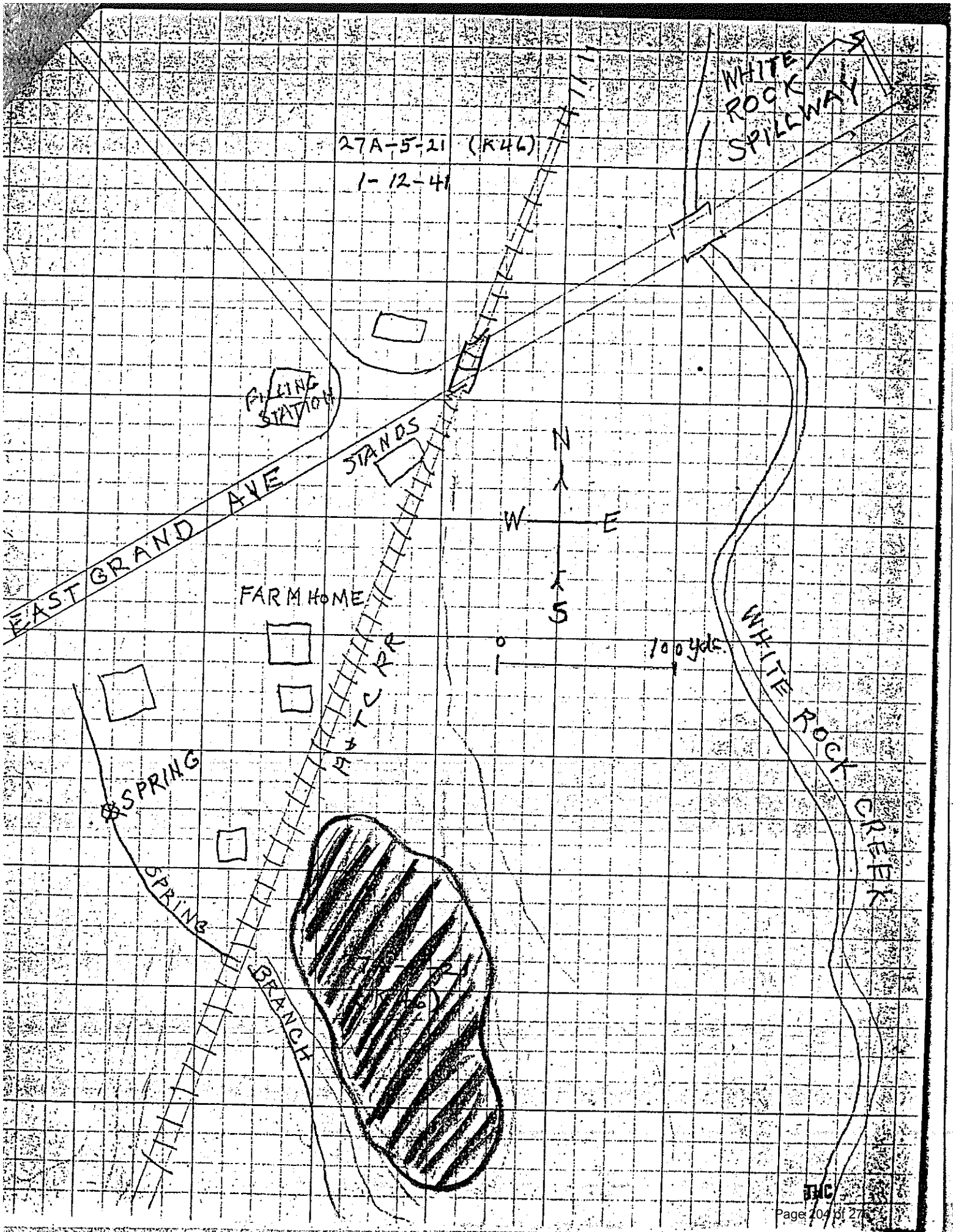
SURFACE MATERIAL FOUND: Flakes

Few potsherds

BIBLIOGRAPHY

REMARKS Small site only a short way from the large village 27A-5-19

Forrest Kirkland


27A-5-21 (K46)
1-12-41
WHITE ROCK SPILLWAY
FILLING STATION
STANDS
EAST GRAND AVE
FARM HOME
SPRING
SPRING BRANCH
WHITE ROCK CREEK
N
W
E
S
100 yds.
THC

27A-V-21 (K-46)

Category						
No. of Sherds	1	1	1	1	1	7
Thickness in Inches	1/4	1/4	7/16	7/16	7/16	1/4 to 5/16
Tempering Material: Shell						
Tempering Material: Grit	✓	✓	✓	✓	✓	✓
Tempering Material: Shell and Grit						
Plain	✓	✓	✓	✓	✓	✓
Black inside Buff outside						
Black inside Tan outside						
Grayish brown sherd	✓	✓	✓	✓	✓	
Black sherd						
Incised before firing						
Incised after firing						
Straight line						
Brown paste. Various shade of brown from outside to inside.						✓

Great Trinity Forest Management Plan

Archeology Data

DL-88

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

DL 88

SITE No. 27A-5-24 (OLD No. 392-D32) Dallas COUNTY Jan 15 194 1

GEOGRAPHICAL LOCATION White Rock Creek drainage

LAT. AND LONG. 32°48'35" - 96°43'0"

OWNER'S NAME AND ADDRESS Forrest Hills addition City of Dallas

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY R. K. Harris DATE Jan. 15, 1941

TYPE OF SITE Quarry MAPPED BY Harris PHOTO NOS.

DIMENSIONS AND DESCRIPTION 185 ft. x 50 ft.

PROBABLE CULTURAL CLASSIFICATION OF SITE ?

LOCAL TOPOGRAPHY Hills breaking off to White Rock Creek

RELATION TO WATER SUPPLY None

BUILDINGS ON OR NEAR SITE None

RELATION TO NEARBY SITES

TYPE OF SOIL sandy loam CULTIVATION no EROSION some

VEGETATION ON AND NEAR SITE grass and trees

PREVIOUS EXCAVATION none PITTING none

EVIDENCES OF FOOD none

SURFACE MATERIAL REPORTED AS BELONGING TO SITE: quartsite boulders, some broken and some in unbroken state.

OWNER OF MATERIAL Harris ADDRESS Dallas

SURFACE MATERIAL FOUND:

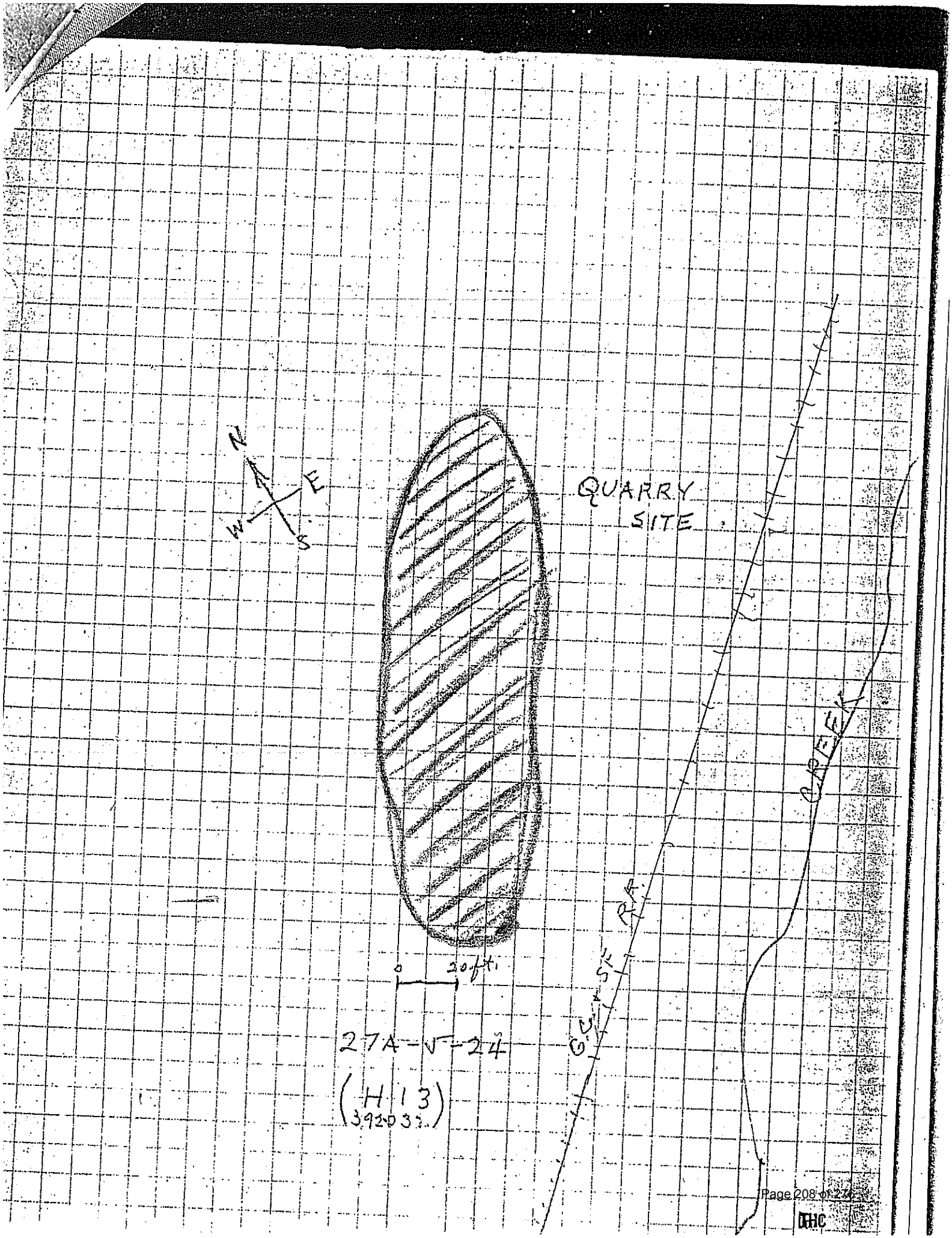
Quartsite boulders, some broken and some in unbroken state.

No pottery

BIBLIOGRAPHY

REMARKS

R. K. Harris


N
E
W
S
QUARRY
SITE
CREEK
0
20 ft.
27A-V-24
(H 13
3920 3.

Great Trinity Forest Management Plan

Archeology Data

DL-87

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

DL 87

SITE No. 27A-5-23 (OLD No. 392-D14) Dallas COUNTY Jan. 15 41
GEOGRAPHICAL LOCATION White Rock Creek drainage 194

LAT. AND LONG. 32°48'10" - 96°44'0"

OWNER'S NAME AND ADDRESS City of Dallas, Tennison Golf and Park

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY R. K. Harris DATE Jan. 15, 1941

TYPE OF SITE village MAPPED BY Harris PHOTO NOS.

DIMENSIONS AND DESCRIPTION The dimensions of this site cannot be determined as the golf course fairways cover most of it. The map shows the part of site not covered by fairways.

PROBABLE CULTURAL CLASSIFICATION OF SITE ?

LOCAL TOPOGRAPHY High hills breaking off to White Rock Creek

RELATION TO WATER SUPPLY probably a spring on north side, otherwise ---- ?

BUILDINGS ON OR NEAR SITE none

RELATION TO NEARBY SITES

TYPE OF SOIL white rock and clay CULTIVATION no EROSION some

VEGETATION ON AND NEAR SITE grass fairways

PREVIOUS EXCAVATION none PITTING none

EVIDENCES OF FOOD none

SURFACE MATERIAL REPORTED AS BELONGING TO SITE: projectile points.

OWNER OF MATERIAL R. K. Harris ADDRESS Dallas

SURFACE MATERIAL FOUND:

Projectile points

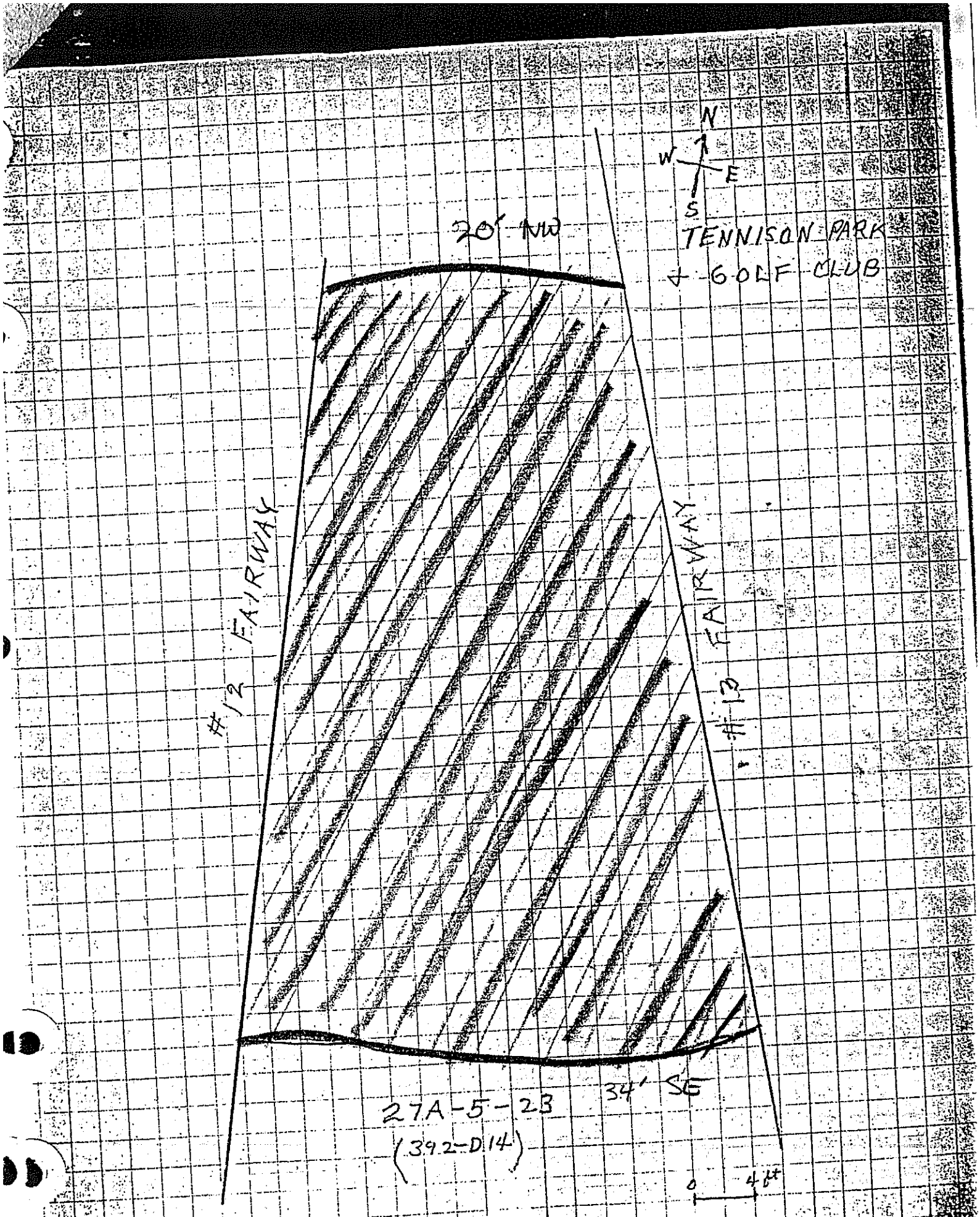
No pottery

BIBLIOGRAPHY

REMARKS

R. K. Harris

THC


N
W
E
S
20' NW
TENNISON PARK
+ GOLF CLUB
#12 FAIRWAY
#12 FAIRWAY
34' SE
27A-5-23
(39.2-D14)
0
40ft

Great Trinity Forest Management Plan

Archeology Data

DL-89

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

DL 89
H 15

SITE No. 27A-5-25 (OLD No. 392-D19) Dallas COUNTY Feb. 17 194 1

GEOGRAPHICAL LOCATION White Rock Creek drainage

LAT. AND LONG. 32°47'50" - 96°43'30"

OWNER'S NAME AND ADDRESS D. K. Woods, Route 3, Dallas

ATTITUDE TOWARD SURVEY OR EXCAVATION Yes PERMISSION Yes

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY R.K.Harris DATE Feb. 17, 1941

TYPE OF SITE village MAPPED BY Harris PHOTO NOS.

DIMENSIONS AND DESCRIPTION 165 ft.x 125 ft. Site is located on rise on east bank of White Rock Creek

PROBABLE CULTURAL CLASSIFICATION OF SITE ?

LOCAL TOPOGRAPHY hills breaking off to White Rock Creek

RELATION TO WATER SUPPLY White Rock Creek about 100 ft. west.

BUILDINGS ON OR NEAR SITE none

RELATION TO NEARBY SITES

TYPE OF SOIL white rock and loam CULTIVATION no EROSION yes

VEGETATION ON AND NEAR SITE grass and trees

PREVIOUS EXCAVATION PITTING

EVIDENCES OF FOOD mussel shells

SURFACE MATERIAL REPORTED AS BELONGING TO SITE: projectile points

OWNER OF MATERIAL R. K. Harris ADDRESS Dallas

SURFACE MATERIAL FOUND: Projectile points

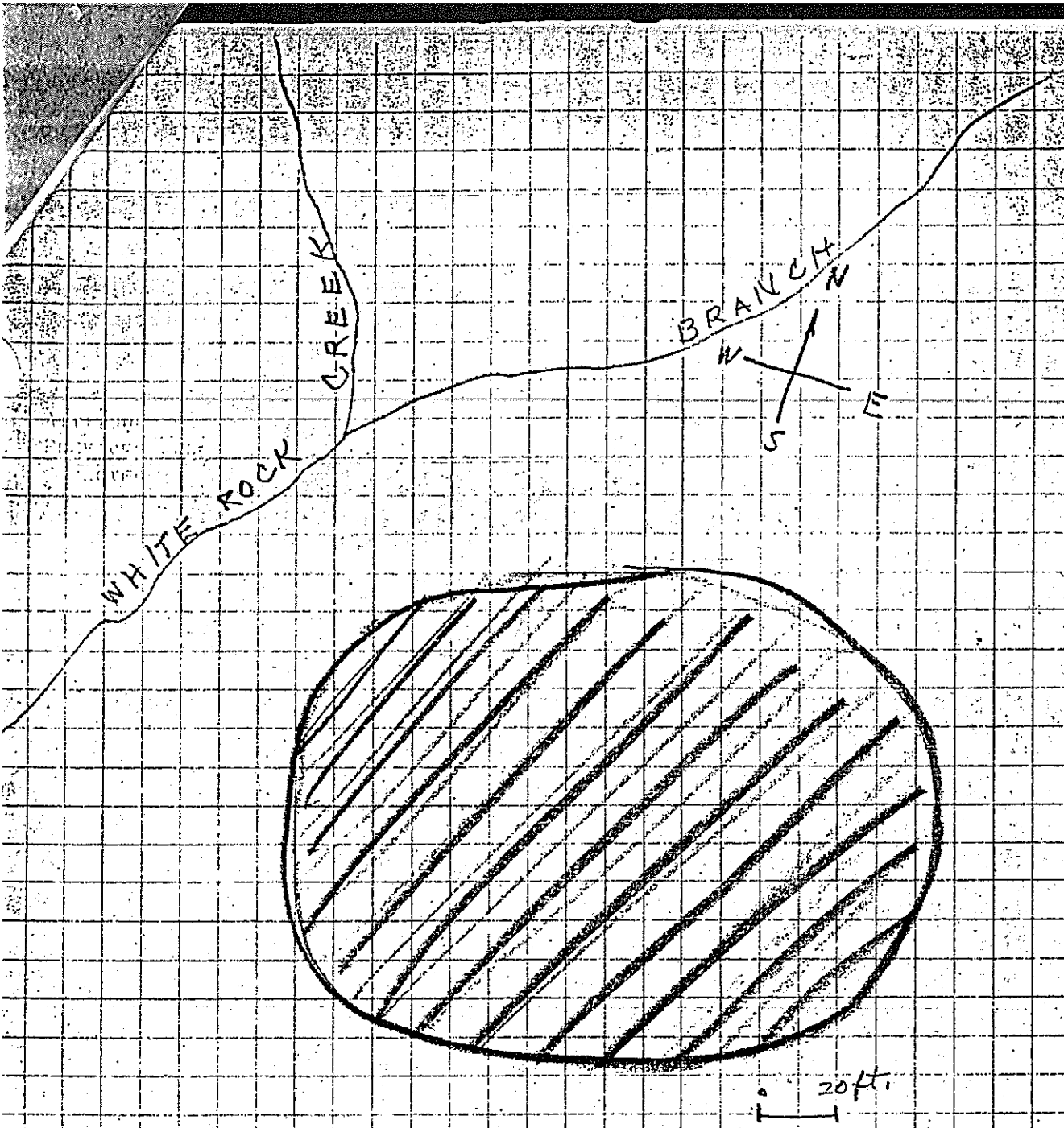
No pottery

BIBLIOGRAPHY

REMARKS

R. K. Harris

UHC



27A - √ - 2√

(392 - 019)

14 15

Great Trinity Forest Management Plan

Archeology Data

41-DL-91

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

41DL91

SITE No. 27A-5-27 (OLD No. K-~~63~~ 70) Dallas COUNTY April 1941

GEOGRAPHICAL LOCATION On the Trinity River 3 miles west of Rylie

LAT. AND LONG. 32°41'30" - 96°41'10"

OWNER'S NAME AND ADDRESS

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY Exploration DATE March 30, 1941

TYPE OF SITE surface camp MAPPED BY Kirkland PHOTO Nos.

DIMENSIONS AND DESCRIPTION 100 x 100 yds. Small camp on sandy point in edge of river bottom

PROBABLE CULTURAL CLASSIFICATION OF SITE Caddoan

LOCAL TOPOGRAPHY Sandy hills at edge of bottom

RELATION TO WATER SUPPLY River ½ mile west

BUILDINGS ON OR NEAR SITE None

RELATION TO NEARBY SITES Half mile ~~South~~ North of 27A-5-28

TYPE OF SOIL sand and clay CULTIVATION old field EROSION yes

VEGETATION ON AND NEAR SITE weeds and grass

PREVIOUS EXCAVATION None PITTING

EVIDENCES OF FOOD shells

SURFACE MATERIAL REPORTED AS BELONGING TO SITE:

OWNER OF MATERIAL ADDRESS

SURFACE MATERIAL FOUND: blades, hand ax, flakes

One potsherds

BIBLIOGRAPHY

REMARKS This site is badly dug into by a gravel pit and part of it evidently extends into a heavy woods. It was in poor shape for examining.

Forrest Kirkland

GRAVEL PIT
FAIRY ROAD
WOODS
N
E
100
27AVT-27
(K70)
FIELD
CEMETERY
HOUSE
COUNTY ROAD

(K70)

1	No. of Sherds	
3/16	Thickness in Inches	
✓	Shell	Tempering Material
	Grit	
	Shell and Grit	
✓	Plain	
	Black inside Buff outside	
	Black inside Tan outside	
✓	Grayish brown sherd	
	Black sherd	
	Incised before firing	
	Incised after firing	
	Straight line	

Field Notes: Oct. 11, 1978 D.T. Connors

Left SMU @ 9:20 am enroute to south Dallas via Mockingbird to NW Hi-way (east becomes Buckner). Intersected I175 and continued east. Found area of sites after some difficulties; finally resorted to Dallas City map in conjunction with Hutchins (1958) USGS. Most of the street names are no longer the same and the gravel pits indicated on the USGS are no longer located at those locations.

Sites: DL 105: Destroyed. Area torn up for land fill and dumping. No indications of prehistoric artifacts visable. This whole area has considerable disturbance.

DL 99: Site originally recorded from the memory of King Harris (local collector & amateur archaeologist). He found an arrowhead in a local garden. Based on conversations with Mrs. John B. Cooke (present resident at the house on site DL 92) who remembers King Harris' visit, this site is actually part of the extent of DL 92 and located too far south on the USGS. The garden plot where Mrs. Cooke remembers King Harris picking up the point was a plot circa 100-200 meters south of the house site indicated on the USGS, within the spatial configuration of DL-92.

DL 91: Examined area designated as site, however no artifacts were observed due to ground cover and local disturbance. It seems likely, based on the impression of material recovered from the vicinity of DL 92, that concentrations

THC

DL 91: of materials could have extended into this area. Only testing of this area can provide information about the present configuration of the prehistoric profile; however it seems very likely (given the local disturbance) that this site could have been destroyed.

DL 92: Re-examination of this site confirmed it as an actual site. Prehistoric chipping material has been found along the entire ridge that runs parallel to the Trinity at this location. Two points have been found off the site (to the knowledge of the resident of the house on the site, Mrs. John B. Cooke). In addition, the Cooke's are personal fiends of Don Henry (archaeologist with the University of Tulsa) and Don's father owns the land adjacent upstream to the Cooke's. Mrs. Cooke reported that Don has walked the entire ridge and found repeated evidences of prehistoric materials, in addition to possible (very tenuous, by my estimate) mounds. This locality is the highest point for miles along the edge of the river and would have provided an excellent area for a prehistoric settlement. At present the ridge is in heavy ground cover and deciduous growth, and no visable traces of material were observed. In addition to the prehistoric component at this site, there is a historic component as well. The house and out-buildings indicated on the USGS represent the remains of a government checking station for boats leaving Ennis and traveling

DL 92: up the Trinity. The house was the orginal government checking station, and Mrs. Cooke feels it was built about 1903 based on her ~~inquiries with local inhabitants.~~ (Mr. Elam) In addition excursion boats were run along the Trinity in this vicinity and it may have had some connection with them, dating from the turn of the century. The boat lock located on the original site map is part of the government check point, as was reported by Mrs. Cooke to have an original wooden prototype (the remains of which are not visable). The Cooke's purchased this property in the name of their church and the church actually controls the land. The previous owner was a Dr. Hamitur (sp. ?) who was a local veternarian, and whose son owned a traveling circus and boarded an elephant and baboons in the stables that originally went with the house. The foundation of those stables is still visable underneath the raised foundation of the present barn. In addition, there was a rotary pump on the well or cistern adjacent to the house (now a cement block) that was of local interest during W.W, I and people used to come to the house to see the pump in action. The pumb is no longer there. The remains of an old wagon with wooden spooked wheels can be seen dumped in an old garden area. The drive into the house, a spur off what is now Riverwood Rd, used to to paved in bricks. The remains of those are still visable in some areas; but the drive has been torn up.

THC

Great Trinity Forest Management Plan

Archeology Data

DL-77

Site Revisited 10/10/78 by James Rebello

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

DL 77

SITE No. 27A-5-13 (Old No. K21) Dallas COUNTY December 29 1940

GEOGRAPHICAL LOCATION One mile and one-half south of Elam

LAT. AND LONG. 32°42'10" - 96°41'45"

OWNER'S NAME AND ADDRESS

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY Lou Dement DATE April 21, 1940

TYPE OF SITE Surface camp MAPPED BY Forrest Kirkland PHOTO NOS.

DIMENSIONS AND DESCRIPTION 250 yds. x 400 yds. Camp on both sides of small drain that enters creek near its mouth.

PROBABLE CULTURAL CLASSIFICATION OF SITE Caddoan

LOCAL TOPOGRAPHY Low sand covered hills at edge of river bottom

RELATION TO WATER SUPPLY Spring creek at end of site

BUILDINGS ON OR NEAR SITE House on one edge of site

RELATION TO NEARBY SITES Across creek east of 27A-5-12

TYPE OF SOIL Deep sand CULTIVATION Old field EROSION wind

VEGETATION ON AND NEAR SITE Grass and weeds

PREVIOUS EXCAVATION None PITTING

EVIDENCES OF FOOD

SURFACE MATERIAL REPORTED AS BELONGING TO SITE:

Destroyed

OWNER OF MATERIAL ADDRESS

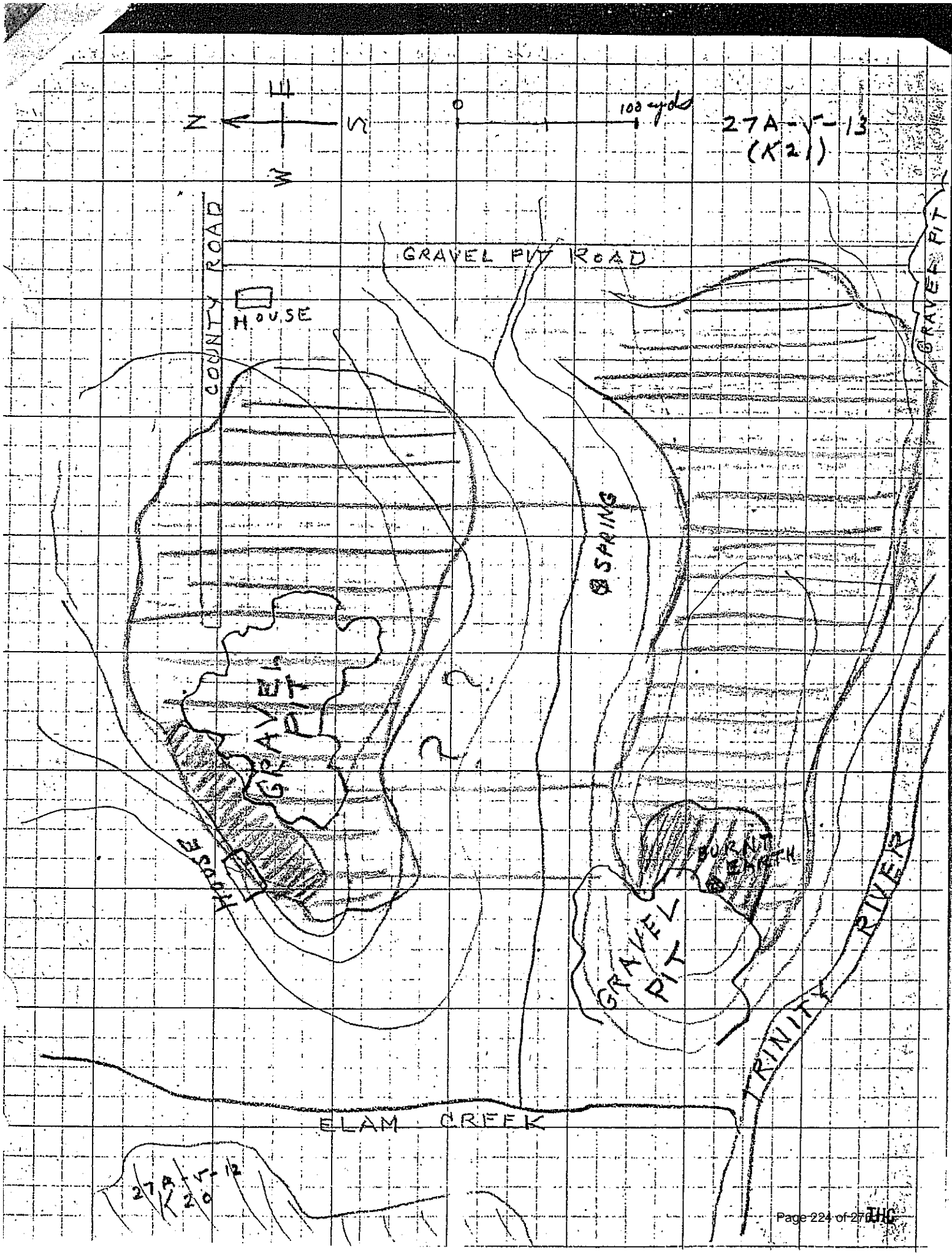
SURFACE MATERIAL FOUND: Arrowheads, scrapers, metate, flakes

potsherds

BIBLIOGRAPHY

REMARKS This site is badly cut up by two large gravel pits.

Forrest Kirkland


N
W
E
S
0
100 yds
27A-V-13
(K21)
GRAVEL PIT ROAD
COUNTY ROAD
HOUSE
GRAVEL PIT
SPRING
GRAVEL PIT
BURNT CREEK
TRINITY RIVER
ELAM CREEK
27A-V-12
K20

SOUTHERN METHODIST UNIVERSITY

SITE SURVEY FORM

SITE NO. 27A-5-13(1940) DL77(1978

NAME

MAJOR DRAINAGE

FIELD NO. K21(1940) DL77(1978

COUNTY DALLAS STATE TX

ELEV. LONG. 96° 41' 45" LATID. 32° 45' 10"

T. R. SEC. ¼ ¼ MAP. REF.

PHOTO DATE 10/11/78 INVEST. Jim Lockards

1. Modern location: 50 yds north of the Trinity River and 140 yds east of Elam Sprink Creek

2. Environment: Trees and weeds prevail the site area with Oak along Elam Sprink Creek and the Trinity

3. Site situation: Destroyed: Burrowing in gravel pits

4. Site description: —

5. Area and depth of deposit: NONE

6. Condition, character of fill: Tan Sand and Gravel mixture w/ clay

7. Temporal-Functional Placement: NONE

8. Reference: (Owner, address, attitude, prev. work): Privately owned by

9. Research potential: NONE

DHC

Great Trinity Forest Management Plan

Archeology Data

41-DL-73

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

41DL13 DL-13

SITE No. 27A-5-9 (OLD No. K30) Dallas COUNTY December 29 1940

GEOGRAPHICAL LOCATION Half mile east of Trinity river at the mouth of White Rock creek

LAT. AND LONG. 32°43'20" - 96°43'35"

OWNER'S NAME AND ADDRESS

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY Lou Dement DATE May 5, 1940

TYPE OF SITE Surface camp MAPPED BY Forrest Kirkland PHOTO Nos.

DIMENSIONS AND DESCRIPTION 200 x 3000 yds. Camping area along an extended sand bar in the river bottom

PROBABLE CULTURAL CLASSIFICATION OF SITE Caddoan

LOCAL TOPOGRAPHY River overflow bottom

RELATION TO WATER SUPPLY River half mi. west. Probable springs

BUILDINGS ON OR NEAR SITE none

RELATION TO NEARBY SITES between river and 27A-5-8

TYPE OF SOIL Deep sand CULTIVATION no EROSION Washed

VEGETATION ON AND NEAR SITE Deep weeds and bushes

PREVIOUS EXCAVATION none PITTING

EVIDENCES OF FOOD none

SURFACE MATERIAL REPORTED AS BELONGING TO SITE: Many arrowheads and bird points.

OWNER OF MATERIAL ADDRESS

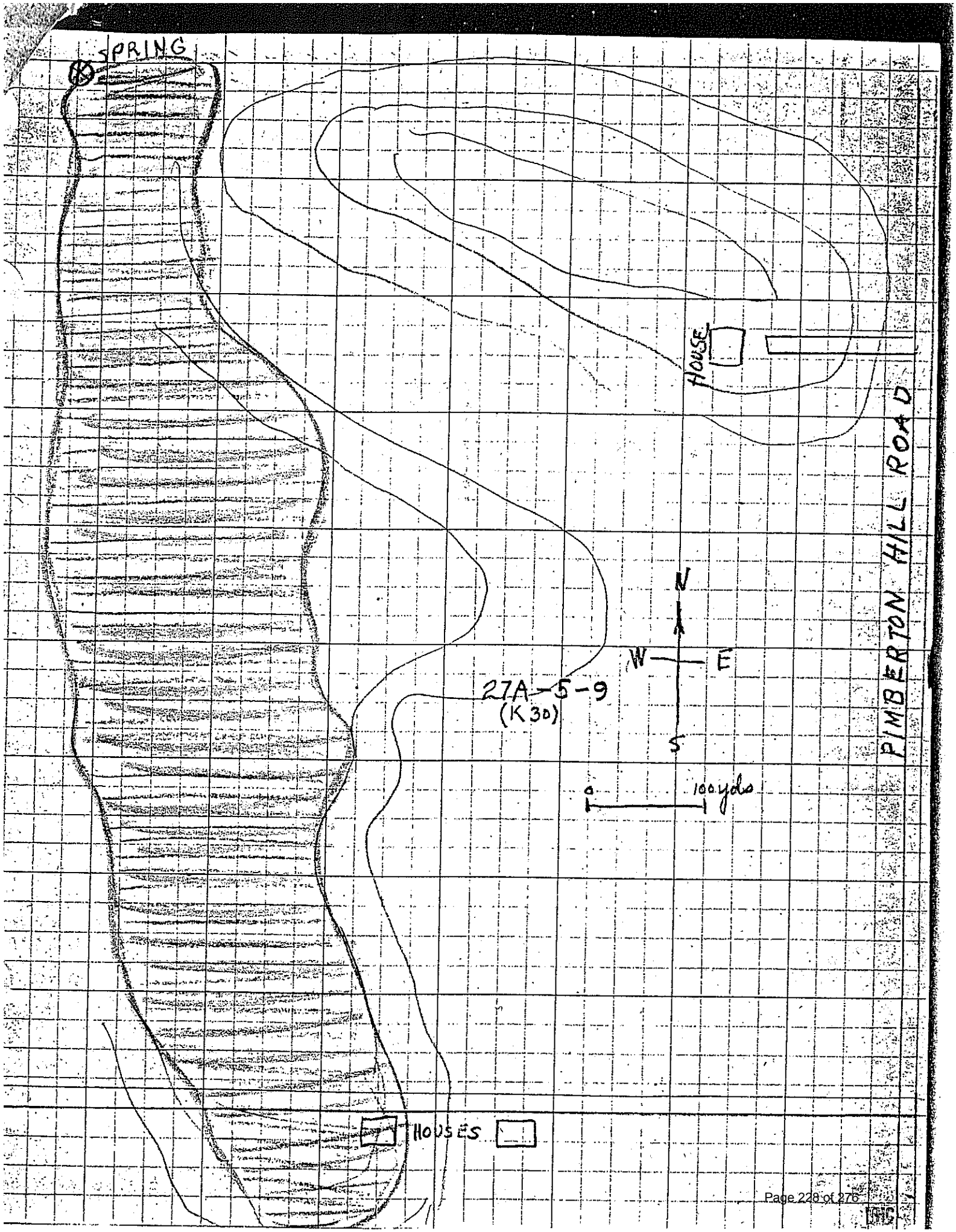
SURFACE MATERIAL FOUND: Arrowheads, blades, scrapers, metates, one notched flaked x

No potsherds

BIBLIOGRAPHY

REMARKS This camping area was in poor shape to examine. Only holes washed out by recent overflows could be searched. It was evidently extensively used.

Forrest Kirkland


SPRING
HOUSE
PIMBERTON HILL ROAD
N
W
E
S
27A-5-9
(K30)
0
100 yds
HOUSES

Great Trinity Forest Management Plan

Archeology Data

DL-75

Destroyed

Site Punched 10/10/78 by Forrest Kirkland

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

DK-75

SITE No. 27A-5-11 (OLD No. K31) Dallas COUNTY December 29 1940

GEOGRAPHICAL LOCATION One Mile southwest of Elam

LAT. AND LONG. 32°42'30" - 96°42'0"

OWNER'S NAME AND ADDRESS

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY Lou Dement DATE May 5, 1940

TYPE OF SITE Surface Camp MAPPED BY Forrest Kirkland PHOTO NOS.

DIMENSIONS AND DESCRIPTION 100 x 300 yds. Camp along bank of spring creek

PROBABLE CULTURAL CLASSIFICATION OF SITE Caddoan

LOCAL TOPOGRAPHY Sand covered hills just out of the river bottom

RELATION TO WATER SUPPLY Spring at one end of site

BUILDINGS ON OR NEAR SITE Farm house on one end of site

RELATION TO NEARBY SITES Half mile north of 27A-5-12 and 27A-5-13

TYPE OF SOIL sand and clay CULTIVATION Part EROSION some

VEGETATION ON AND NEAR SITE Part of site covered with small oaks

PREVIOUS EXCAVATION None PITTING

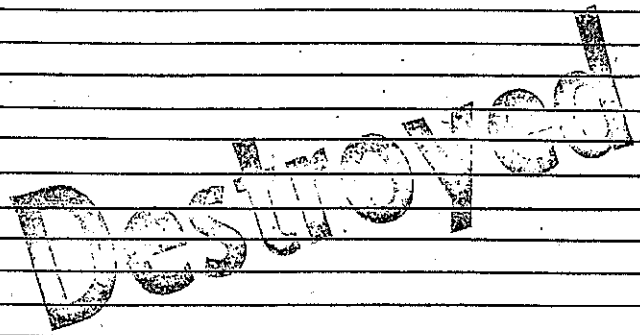
EVIDENCES OF FOOD None

SURFACE MATERIAL REPORTED AS BELONGING TO SITE:

OWNER OF MATERIAL ADDRESS

SURFACE MATERIAL FOUND: Arrowheads, scrapers, blades, flakes

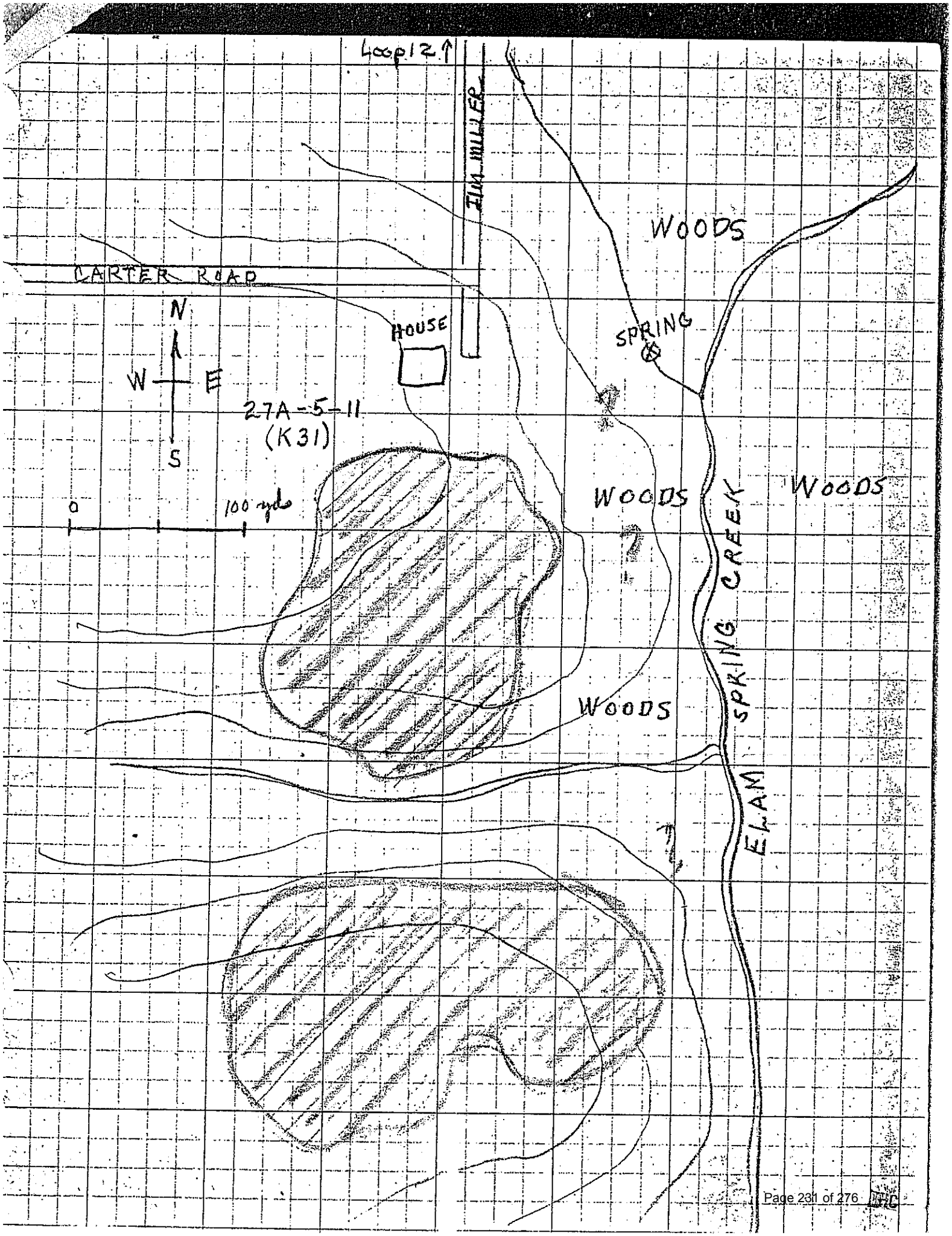
No Potsherds



BIBLIOGRAPHY

REMARKS

Forrest Kirkland


Loop 12
ELM MILLER
WOODS
CARTER ROAD
N
W
E
S
HOUSE
SPRING
27A-5-11
(K31)
0
100 yds
WOODS
WOODS
WOODS
ELAM SPRING CREEK

SOUTHERN METHODIST UNIVERSITY

SITE SURVEY FORM

SITE NO. 27A-5-11(1940) DL75(1978)

NAME

MAJOR DRAINAGE

FIELD NO. K31(1940) DL75(1978)

COUNTY DALLAS STATE TX

ELEV. LONG. 96° 42' 0" LATID. 32° 42' 30"

T. R. SEC. ¼ ¼ MAP. REF.

PHOTO DATE 10/11/78 INVEST. Jim Lockard

1. Modern location: 100 yds west of Elam Spring Creek and 120 yds south of Crater Road

2. Environment: Covered with grass and weeds with oaks along Elam Spring Creek

3. Site situation: Destroyed during unusual fills

4. Site description: ——

5. Area and depth of deposit: NONE

6. Condition, character of fill: Gravel and sand, marly grey clay

7. Temporal-Functional Placement: NONE

8. Reference: (Owner, address, attitude, prev. work): Privately owned land

9. Research potential: NONE

Great Trinity Forest Management Plan

Archeology Data

DL-76

Site revisited 10/10/78 by James A. Word

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

SITE No. 27A-5-12 (OLD No. DL 74 K20) Dallas COUNTY December 29 1940

GEOGRAPHICAL LOCATION One and one-half miles south of Elam

LAT. AND LONG. 32°42'10" - 96°42'0"

OWNER'S NAME AND ADDRESS

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY Lou Dement DATE April 21, 1940

TYPE OF SITE Surface camp MAPPED BY Forrest Kirkland PHOTO Nos.

DIMENSIONS AND DESCRIPTION 400 x 800 yds. Camp on end of two nolls

PROBABLE CULTURAL CLASSIFICATION OF SITE Caddoan

LOCAL TOPOGRAPHY hills at edge of river bottom

RELATION TO WATER SUPPLY Springs at edge of camp

BUILDINGS ON OR NEAR SITE Farm house on one edge of site

RELATION TO NEARBY SITES Across creek from 27A-5-13

TYPE OF SOIL Sand and clay CULTIVATION Yes EROSION some

VEGETATION ON AND NEAR SITE None

PREVIOUS EXCAVATION None PITTING

EVIDENCES OF FOOD Many mussel shells

SURFACE MATERIAL REPORTED AS BELONGING TO SITE: Many artifacts gathered by residents over long period of time.

OWNER OF MATERIAL Farmers in community ADDRESS

SURFACE MATERIAL FOUND: Arrowheads, bird points, metate and mano, broken bone gorget, flakes

BIBLIOGRAPHY

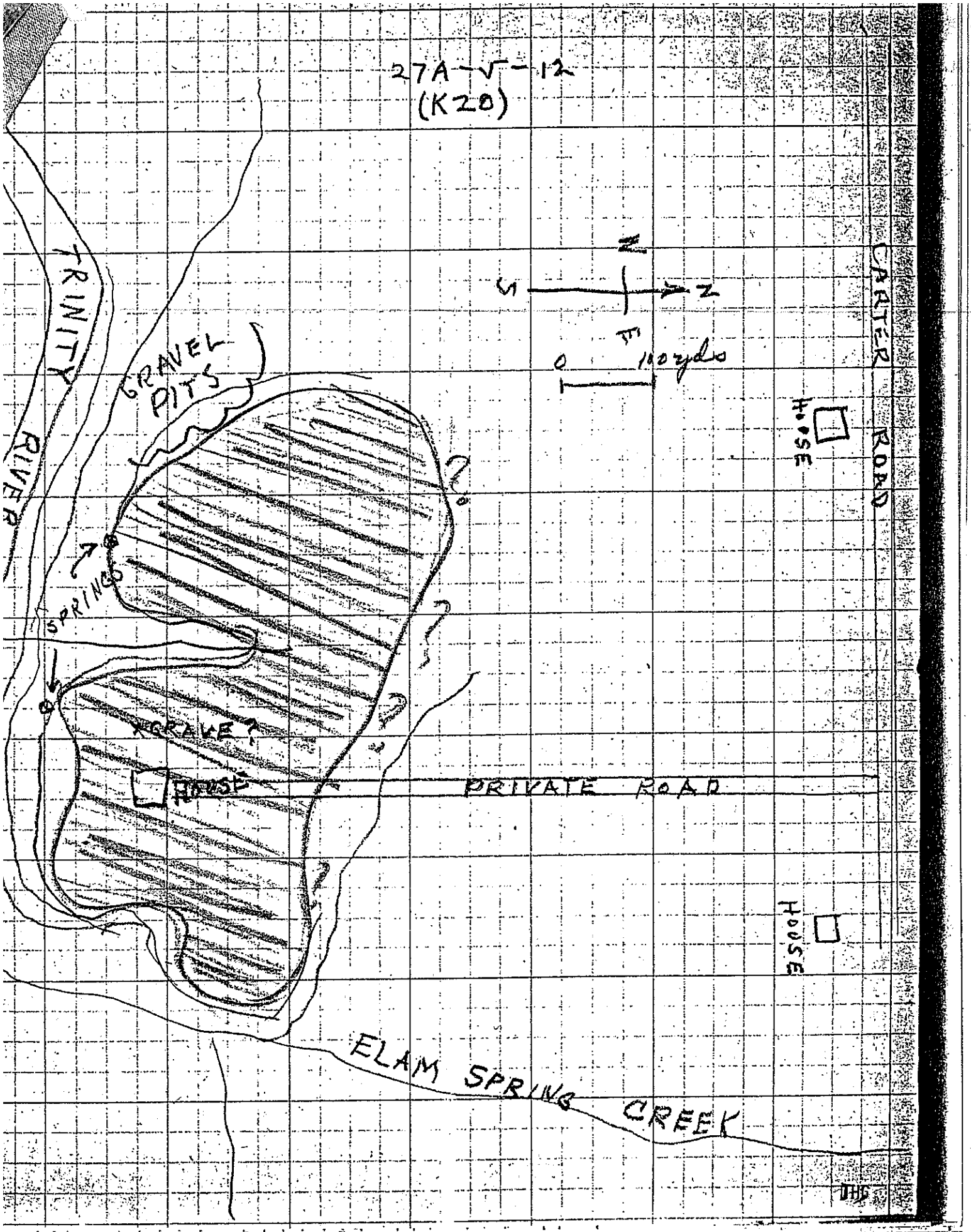
REMARKS This was a well used site. Lou Dement had recently dug a burial in the center of the site. The bones were in very bad condition and no information about the position of the skeleton was obtained. Potsherds (possibly a broken pot) and a bone gorget were in the grave.

I examined the grave and obtained the gorget.

Destroyed

Forrest Kirkland

THC

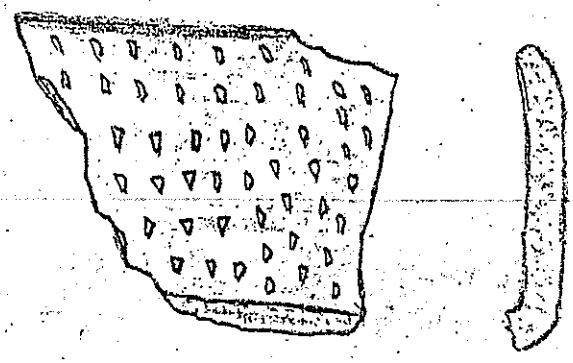

27A-V-12
(K20)
N
Z
0
110 yds
CARTER ROAD
HOUSE
TRINITY RIVER
GRAVEL PITS
SPRING
GRAVEL
HOUSE
PRIVATE ROAD
HOUSE
ELAM SPRING CREEK
JHG

27A-V-12

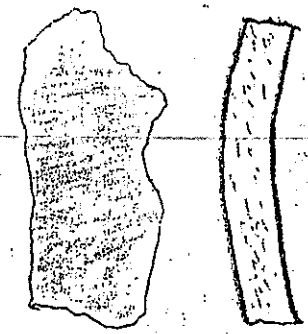
K 20

	1/4	3/16	1/4	1/4
No. of Sherds				
Thickness in Inches				
Tempering Material: Shell				
Tempering Material: Grit	2	2	2	2
Tempering Material: Shell and Grit				
Plain		2	2	
Black inside Buff outside				
Black inside Tan outside				
Grayish brown sherd		2		
Black sherd				
Incised before firing	2	2		
Incised after firing				
Straight line 3/8" apart	2			
Tan slip outside, black inside + center		2		
Punctuates made with sharp stick held at acute angle with vessel wall	2			

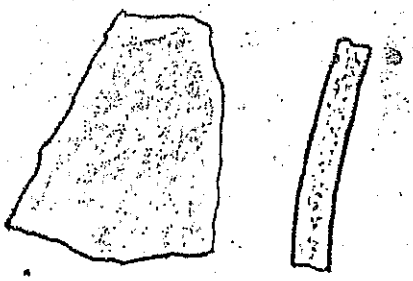
27A-V-12



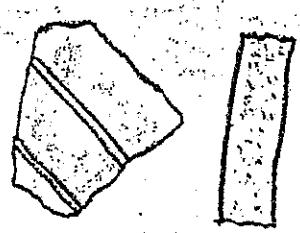
G.T. BROWN
LIP SHERD
PUNCTATE DECORATION



G.T. GRAYISH BROWN
SHERD



G.T. BROWN
SHERD



G.T. BROWN
SHERD
PARALLEL INCISED LINES

SOUTHERN METHODIST UNIVERSITY

SITE SURVEY FORM

SITE NO. 27A-5-12 (1940) D-76 (1978)

NAME Dallas

MAJOR DRAINAGE

FIELD NO. K-20 (1940) D-76 (1976)

COUNTY DALLAS STATE TX

ELEV. LONG. 96° 42' 0" LATID. 32° 42' 10"

T. R. SEC. ¼ ¼ MAP. REF.

PHOTO DATE 10/11/78 INVEST. Jim Leckwood

1. Modern location: 250 yds north of Trinity River and 75 yds west of Elam Sprink creek

2. Environment: Grass and weeds with Oaks along Elam Spring Creek

3. Site situation: Destroyed

4. Site description: Destroyed

5. Area and depth of deposit: NONE

6. Condition, character of fill: Gravel and sand overlying grey clay

7. Temporal-Functional Placement: NONE

8. Reference: (Owner, address, attitude, prev. work): Privately owned lot

9. Research potential: NONE

State of Texas

ARCHEOLOGICAL SITE DATA FORM

Instructions: Answer all questions. Be specific in distinguishing between "none" and "none observed" or "unknown"; if in doubt, enter "unknown." Where question is followed by (Yes) (No), simply circle answer. Enter measurements in metric. Attachments may be used to complete any question: at question, write "See Attachment ____;" and number attachments consecutively. List all attachments at end of this form.

GENERAL INFORMATION

Temporary Site No. ____

Permanent Site No. 41DL348

Site Name ____

Project Name Seyene Park

Project Funding Source(s) NA

Owner and Address Unknown Developer

Informant and Address Bill McCord 2810 Cliffside Dallas Texas 75227

Additional Sources of Information NA

Previous Investigations

Who NA

What NA

When NA

Why NA

Name of Original Recorder of Site ____

RECORDING INFORMATION

Name of Recorder David Jurney

Institutional Affiliation, if any Southern Methodist University

Date 21 December 1992

LOCATIONAL INFORMATION

County Dallas

USGS Map Name & No. White Rock Lake N3245 - W9637.5

Elevation 430 to 470 Ft AMSL

UTM: Zone 14

Easting 715900

Northing 3627100

Latitude 32°45'35"

Longitude 96°47'40"

Description of Location (include nearby USGS topographic landmarks as well as on-site references; note mileages, distances, etc.)

Take I30 East From Dallas to Jim Miller, South 3 miles to Intersection of Seyene, Site is in bottom SE of intersection

Permanent Site No. 1102

WORK PERFORMED BY FIELD PERSONNEL

Survey (Yes) (No)

Testing (Yes) (No)

Method

Excavation (Yes) (No)

Method

Notes (Yes) (No)

Where Housed SMU

Photographs

Slides—Color (Yes) (No)

Black & White (Yes) (No)

Prints—Color (Yes) (No)

Black & White (Yes) (No)

Where Housed

Collections (Yes) (No)

Where Housed ? Dallas Arch. Society

Collection Techniques (e.g., controlled, noncontrolled, select, random, arbitrary; describe)

select

Kinds of Materials Collected 1 chert Cobble, 1 Ogalla Quartzite Plate, 1 Edwards Chert Flake, 1 Comanche Biface, 1 FCR, 1 Pottery Sherd

Special Samples (e.g., carbon, archeomagnetic, plant; list and describe)

NA

ENVIRONMENTAL LOCATION

Nearest Natural Water Source Creek through SU

Distance immediate

Drainage Basin Trinity

Drainage Type (e.g., riverine, playa, marine) riverine

Soil Origins (may be multiple)

Colluvial (Yes) (No) Alluvial (Yes) (No)

Eolian (Yes) (No) Marine (Yes) (No)

Soil Type (e.g., clay loam, sand)

Eddy gravelly loam

Vegetation (list dominant, others if known)

Red Oak, Bur Oak, hackberries, white cedar

Ground Surface Visibility 100% in graded areas, over ca 60% of bottom and slopes

Environmental Setting of Site (include pertinent landforms slope, visible landmarks, etc.)

Upland slope, small valley bottom

Additional Comments

Permanent Site No. 41DL348

CULTURAL MANIFESTATIONS

Site Size (estimate if necessary)

At Present 6000 m^2?

At Original Occupation

Basis for Determination Estimate

Circumstances of Observation Survey

Depth of Cultural Deposit Unknown

Basis for Determination

Time Periods of Occupation (e.g., Prehistoric-Early Archaic; may be multiple)

Late Prehistoric (Pottery)

Historic mid 19th to late 19th

Components (refers to discreet occupations)

Single (Yes) (No) Multiple (Yes) (No)

Unknown (Yes) (No)

Basis for Determination

Diagnostic Artifacts, Surface Features

Site Type (e.g., open campsite, military post, rockshelter)

Old Sycene Trail

Prehistoric debris in Creek gravel bar

Isolated Ceramic on slope

Cultural Features (If present, describe; e.g., burned rock midden, hearth, structural remains; how do they relate to components, time periods, physiography; how many are there, spatial distribution, size, contents, etc.)

Appears to be old eroded road bed through valley bottom

Artifactual Materials Present (kinds of materials, distribution across site, relationship to features, etc.)

chert debitage

chert & quartzite gravels

Grog-Grit Pottery Ironstuck

Discussion of Site (comments, observations, impressions)

Great Potential for deeply buried deposits.

Possible Old Historic Roadbed

Excellent setting for Prehistoric exploitation, Resource Procurement area

Additional Comments

Permanent Site No. _____

SITE CONDITION AND RECOMMENDATIONS

Approximate percentage of site remaining intact 90%?

Natural Impacts (include erosion, spalling, sloughing, etc.)

Erosion

Artificial Impacts (include construction, plowing, etc.)

Blading For Land improvement
Sewer and Water Lines
High Tension power line

Known or Perceived Future Impacts

Development, Additional Utilities
- Dallas County Park??

Potential for State Archeological Landmark

(Yes) (No)

Potential for National Register of Historic Places

(Yes) (No)

Submitted? _____

Uncertain/Unknown? Uncertain

Current Registration

State Archeological Landmark (Yes) (No)

National Register of Historic Places (Yes) (No)

Other _____

Recommended Actions (regional and project specific research, management, preservation)

Detailed 100% Survey, shovel test, deep test

LIST ALL ATTACHMENTS (Where applicable, refer to question that is being supplemented)

1. USGS Map
2. Project Map
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____

Other (give numbers) _____

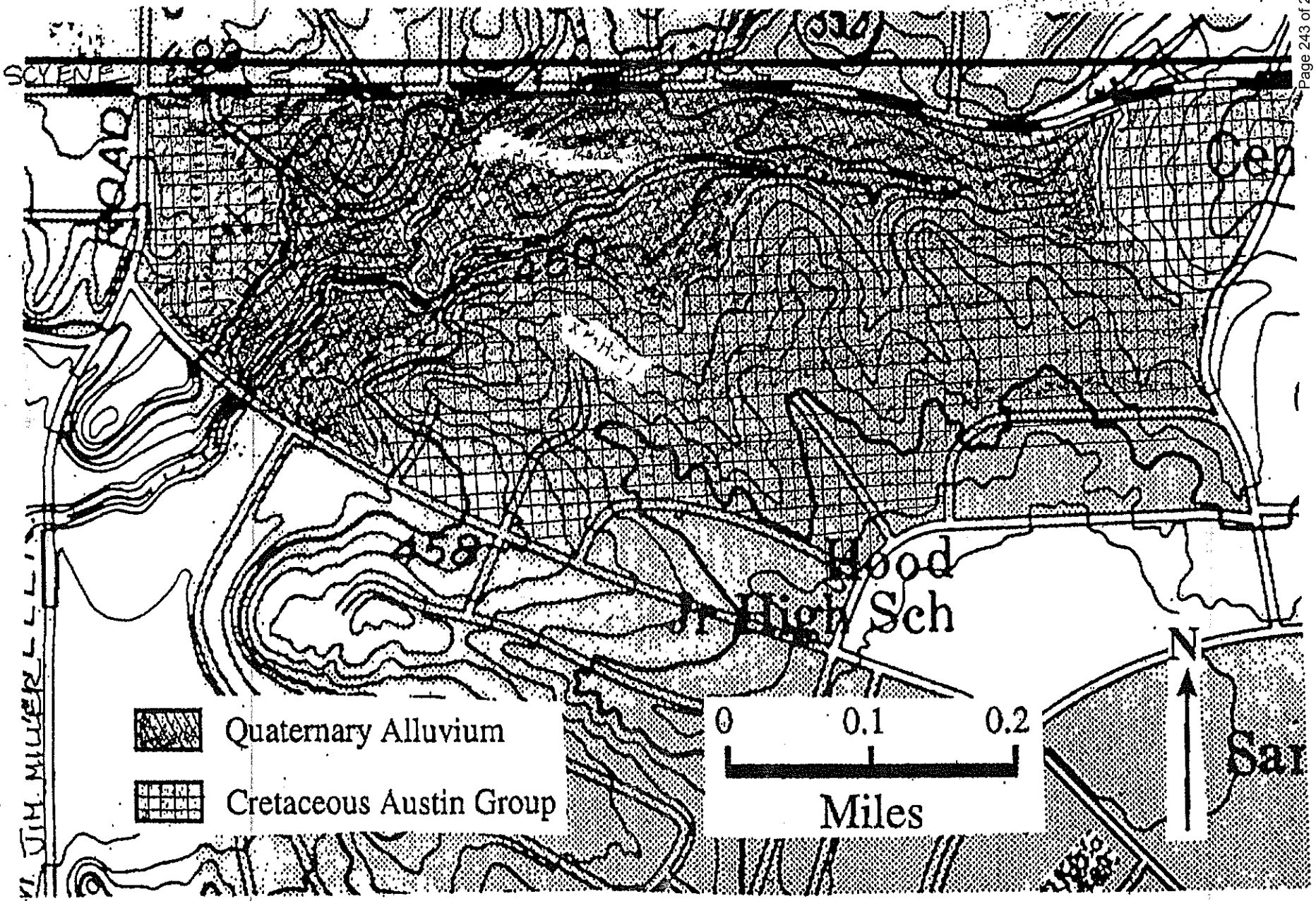


Figure 1: Geology and location map of "Scyene Park" located in southeast Dallas.

DL 105 37A-5-41 Watkins

Just south of Elm Creek -

Little light shell on the ridge - very small comp - Archaic ? so far as can be determined -

Probably destroyed

DHC

Field Notes: Oct. 11, 1978 D.T. Connors

Left SMU @ 9:20 am enroute to south Dallas via Mockingbird to NW Hi-way (east becomes Buckner). Intersected I175 and continued east. Found area of sites after some difficulties; finally resorted to Dallas City map in conjunction with Hutchins (1958) USGS. Most of the street names are no longer the same and the gravel pits indicated on the USGS are no longer located at those locations.

Sites: DL 105: Destroyed. Area torn up for land fill and dumping. No indications of prehistoric artifacts visable. This whole area has considerable disturbance.

DL 99: Site originally recorded from the memory of King Harris (local collector & amateur archaeologist). He found an arrowhead in a local garden. Based on conversations with Mrs. John B. Cooke (present resident at the house on site DL 92) who remembers King Harris' visit, this site is actually part of the extent of DL 92 and located too far south on the USGS. The garden plot where Mrs. Cooke remembers King Harris picking up the point was a plot circa 100-200 meters south of the house site indicated on the USGS, within the spatial configuration of DL 92.

DL 91: Examined area designated as site, however no artifacts were observed due to ground cover and local disturbance. It seems likely, based on the impression of material recovered from the vicinity of DL 92, that concentrations

THC

DL 91: of materials could have extended into this area. Only testing of this area can provide information about the present configuration of the prehistoric profile; however it seems very likely (given the local disturbance) that this site could have been destroyed.

DL 92: Re-examination of this site confirmed it as an actual site. Prehistoric chipping material has been found along the entire ridge that runs parallel to the Trinity at this location. Two points have been found off the site (to the knowledge of the resident of the house on the site, Mrs. John B. Cooke). In addition, the Cooke's are personal fiends of Don Henry (archaeologist with the University of Tulsa) and Don's father owns the land adjacent upstream to the Cooke's. Mrs. Cooke reported that Don has walked the entire ridge and found repeated evidences of prehistoric materials, in addition to possible (very tenuous, by my estimate) mounds. This locality is the highest point for miles along the edge of the river and would have provided an excellent area for a prehistoric settlement. At present the ridge is in heavy ground cover and deciduous growth, and no visable traces of material were observed. In addition to the prehistoric component at this site, there is a historic component as well. The house and out-buildings indicated on the USGS represent the remains of a government checking station for boats leaving Ennis and traveling

DL 92: up the Trinity. The house was the orginal government checking station, and Mrs. Cooke feels it was built about 1903 based on her inquiries with local inhabitants. (Mr. Elam) In addition excursion boats were run along the Trinity in this vicinity and it may have had some connection with them, dating from the turn of the century. The boat lock located on the original site map is part of the government check point, as was reported by Mrs. Cooke to have an original wooden prototype (the remains of which are not visable). The Cooke's purchased this property in the name of their church and the church actually controls the land. The previous owner was a Dr. Hamitur (sp. ?) who was a local veternarian, and whose son owned a traveling circus and boarded an elephant and baboons in the stables that originally went with the house. The foundation of those stables is still visable underneath the raised foundation of the present barn. In addition, there was a rotary pump on the well or cistern adjacent to the house (now a cement block) that was of local interest during W.W, I and people used to come to the house to see the pump in action. The pumb is no longer there. The remains of an old wagon with wooden spooked wheels can be seen dumped in an old garden area. The drive into the house, a spur off what is now Riverwood Rd, used to to paved in bricks. The remains of those are still visable in some areas; but the drive has been torn up.

THC

Archeology

Search Options

41DL104

- Site Location Map
- TARL Key Site Card
- Site Digitization Data

41DL104

Site Number: 41DL104
Other Designations:
County: Dallas
Site/Project Name(s): Harris' 27A5-40; THC-004432
Map Reference: Bound county map; Harris' County map; Hutchins 7.5 minute USGS
Location: W side of Trinity River and N Trinity Road and Gun Club Lake. Just S of 27A5-20
Investigations: R.K. Harris survey
Description/Remarks: Small site- destroeyd by gravel operation
Survey Form: NO
Specimen Cat:
Field Notes:
Maps/Plans:
Slides:
Correspondence:
Pub/Ms: See: Archaeological Research Potential, Skinner,
Collections: Harris has collections
Gen:
Assoc Mat:
Special:
Vessel:
Human Osteo:

Archeology

Search Options

41DL104

- Site Location Map
- TARL Key Site Card
- Site Digitization Data

41DL104

Trinomial: 41DL104
ID: TARL_HUN-IND-209
Map: 3296-313
UTM Zone: 14
UTM Northing: 3621850
UTM Easting: 712392
Latitude: 32.715699999999998
Longitude: 96.733900000000006
Digitizer: VICTORIA

DL 104 27A-5-40 Hutchins

Small archaic site on a bluff above the river —

Site possibly destroyed by house building

Archeology

Search Options

41DL103

- Site Location Map
- TARL Key Site Card
- Site Digitization Data

41DL103

Site Number: 41DL103
Other Designations:
County: Dallas
Site/Project Name(s): Harris' 27A5-39; THC-004431
Map Reference: Bound county map; Harris' county map; Hutchins 7.5 USGS
Location: Slightly W and between 27A5-11 and 27A5-12
Investigations: Survey by R.K. Harris- mainly checked walls of pit
Description/Remarks: Gravel pit. Has Pleistoncene fauna- including sabretooth cat. Carrolton focus above Pleistocene fauna. Site now destroyed- 2 Scottsbluff points for Carrolton levels.
Survey Form: NO
Specimen Cat:
Field Notes:
Maps/Plans:
Slides:
Correspondence:
Pub/Ms: See Archaeological Research Potential; Skinner,
Collections: Harris has collections.
Gen:
Assoc Mat:
Special:
Vessel:
Human Osteo:

Archeology

Search Options

41DL103

- Site Location Map
- TARL Key Site Card
- Site Digitization Data

41DL103

Trinomial: 41DL103
ID: TARL_HUN-IND-208
Map: 3296-313
UTM Zone: 14
UTM Northing: 3620996
UTM Easting: 714957
Latitude: 32.707500000000003
Longitude: 96.706800000000001
Digitizer: VICTORIA

DC 103 27A-5-29 Lutahina

Large Gravel Pit - west of Wood Pit site -

Destroyed wood site —
2 scattered pits - Carrollton focus
plus other Carrollton

41-DA-6 MTS

DL 102 27A-5-28 Hutchins

Destroyed by Gravel Quarries
At McCommas Bluff Landfill / under it most likely
Terrace

Archeology

Search Options

41DL100

- Site Location Map
- TARL Key Site Card
- Site Digitization Data

41DL100

Site Number: 41DL100
Other Designations:
County: Dallas
Site/Project Name(s): Harris' 27A5-36; THC-004428
Map Reference: Bound county map; Harris County map; Hutchins 7.5 minute USGS quad.
Location: Immediately E of 27A5-10; on E side of Elam Creek.
Investigations: R.K. Harris survey
Description/Remarks: Surface scatter of stone artifacts; appears to be a small archaic site.
Survey Form: No
Specimen Cat:
Field Notes:
Maps/Plans:
Slides:
Correspondence:
Pub/Ms: See Archaeological Research Potential;
Collections: Harris has collections
Gen:
Assoc Mat:
Special:
Vessel:
Human Osteo:

Archeology

Search Options

41DL100

- Site Location Map
- TARL Key Site Card
- Site Digitization Data

41DL100

Trinomial: 41DL100
ID: TARL_HUN-IND-213
Map: 3296-313
UTM Zone: 14
UTM Northing: 3621643
UTM Easting: 714714
Latitude: 32.7134
Longitude: 96.709199999999996
Digitizer: VICTORIA

DL 100 27A-5-36 Hutchins

Detail of 2 artifacts - Bypass + Unid section
of Non descript pieces
Destroyed by bending of Loop 12

DL 99 41A-5-35 Hutchins

Show of flint – [illegible] [illegible] –
Not in floodplain – Not a Black Clay site

Trinity River

THC

Field Notes: Oct. 11, 1978 D.T. Connors

Left SMU @ 9:20 am enroute to south Dallas via Mockingbird to NW Hi-way (east becomes Buckner). Intersected I175 and continued east. Found area of sites after some difficulties; finally resorted to Dallas City map in conjunction with Hutchins (1958) USGS. Most of the street names are no longer the same and the gravel pits indicated on the USGS are no longer located at those locations.

Sites: DL 105: Destroyed. Area torn up for land fill and dumping. No indications of prehistoric artifacts visable. This whole area has considerable disturbance.

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DL 91: Examined area designated as site, however no artifacts were observed due to ground cover and local disturbance. It seems likely, based on the impression of material recovered from the vicinity of DL 92, that concentrations

DHC

DL 91: of materials could have extended into this area. Only testing of this area can provide information about the present configuration of the prehistoric profile; however it seems very likely (given the local disturbance) that this site could have been destroyed.

DL 92: Re-examination of this site confirmed it as an actual site. Prehistoric chipping material has been found along the entire ridge that runs parallel to the Trinity at this location. Two points have been found off the site (to the knowledge of the resident of the house on the site, Mrs. John B. Cooke). In addition, the Cooke's are personal fiends of Don Henry (archaeologist with the University of Tulsa) and Don's father owns the land adjacent upstream to the Cooke's. Mrs. Cooke reported that Don has walked the entire ridge and found repeated evidences of prehistoric materials, in addition to possible (very tenuous, by my estimate) mounds. This locality is the highest point for miles along the edge of the river and would have provided an excellent area for a prehistoric settlement. At present the ridge is in heavy ground cover and deciduous growth, and no visable traces of material were observed. In addition to the prehistoric component at this site, there is a historic component as well. The house and out-buildings indicated on the USGS represent the remains of a government checking station for boats leaving Ennis and traveling

DL 92: up the Trinity. The house was the orginal government checking station, and Mrs. Cooke feels it was built about 1903 based on her inquiries with local inhabitants (Mr. Elam). In addition excursion boats were run along the Trinity in this vicinity and it may have had some connection with them, dating from the turn of the century. The boat lock located on the original site map is part of the government check point, as was reported by Mrs. Cooke to have an original wooden prototype (the remains of which are not visable). The Cooke's purchased this property in the name of their church and the church actually controls the land. The previous owner was a Dr. Hamitur (sp. ?) who was a local veternarian, and whose son owned a traveling circus and boarded an elephant and baboons in the stables that originally went with the house. The foundation of those stables is still visable underneath the raised foundation of the present barn. In addition, there was a rotary pump on the well or cistern adjacent to the house (now a cement block) that was of local interest during W.W. I and people used to come to the house to see the pump in action. The pumb is no longer there. The remains of an old wagon with wooden spooked wheels can be seen dumped in an old garden area. The drive into the house, a spur off what is now Riverwood Rd, used to to paved in bricks. The remains of those are still visable in some areas; but the drive has been torn up.

THC

Archeology

Search Options

41DL98

- TARL Key Site Card
- Site Digitization Data

41DL98

Site Number: 41DL98
Other Designations:
County: Dallas
Site/Project Name(s): Harris' 27A5-34; THC-004426
Map Reference: Bound county map, Harris County map; White Rock Lake 7.5 minute USGS.
Location: Just N of 27A5-33; W of Jim Miller Road
Investigations: R.K. Harris surface survey
Description/Remarks: On high bluff, has archaic and later material.
Survey Form: NO
Specimen Cat:
Field Notes:
Maps/Plans:
Slides:
Correspondence:
Pub/Ms: See Archaeological Research Potential;
Collections: Harris has collection from site.
Gen:
Assoc Mat:
Special:
Vessel:
Human Osteo:

Archeology

Search Options

41DL98

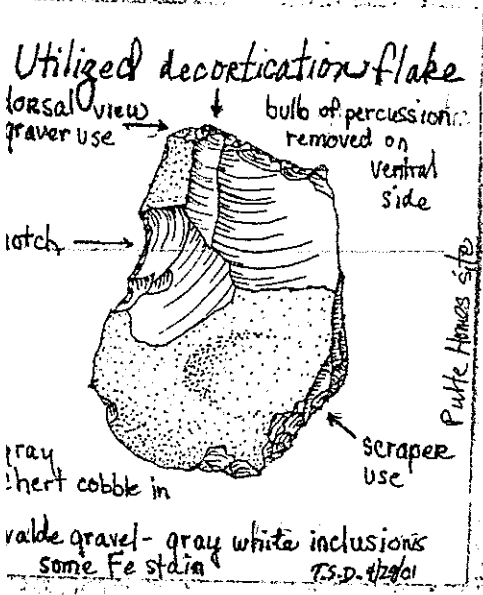
- TARL Key Site Card
- Site Digitization Data

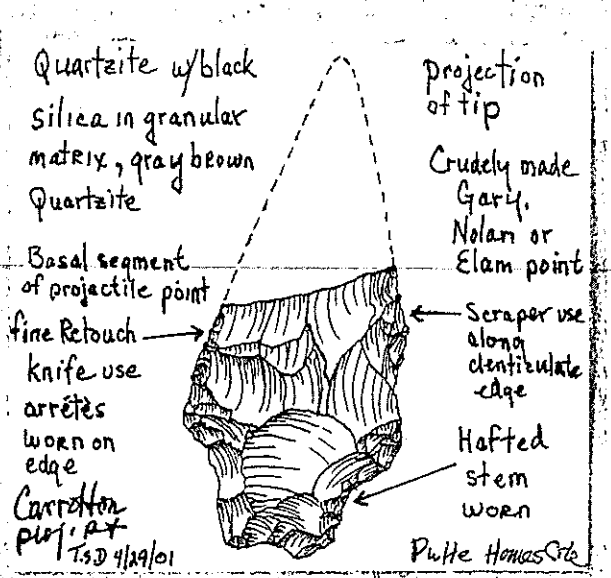
41DL98

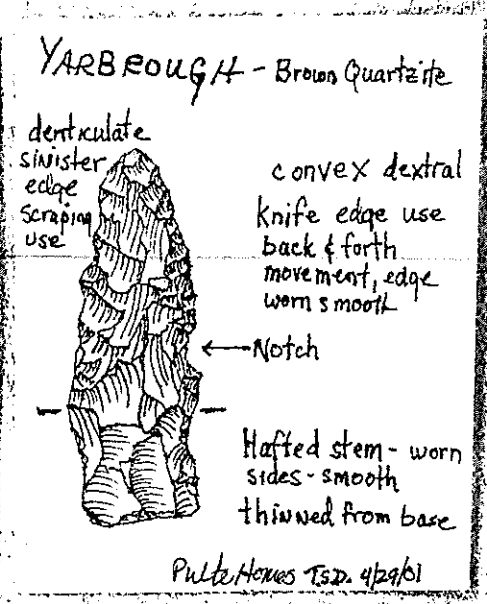
Trinomial: 41DL98
ID: TARL_WES-WHI-203
Map: 3296-342
UTM Zone: 14
UTM Northing: 3625887
UTM Easting: 715275
Latitude: 32.7515
Longitude: 96.702200000000005
Digitizer: VICTORIA

DL 98 27A-5-34 White Rock
Lake Quad

Located in a Mesquite Thicket - not
cultivated — along Jim Miller Rd.
Pottery — Red site







Illustrated artifacts from Pulte Homes site South of DL98. On bluff overlooking WRC valley. Site was unrecorded on SW corner of Brinton - Jim Mills! From collection of Dennis Pavageau - Site was unrecorded & destroyed by Pulte b/f I could get to T.S.D. it. Land was suppose to go into park lands, but was usurped by Pulte when Max. T. Reese replaced Duncan on council. Similar artifacts found on DL98

Great Trinity Forest Management Plan

Archeology Data

41-DL-94

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

41DL94

SITE No. 27A-5-30 (Old No. 35) Dallas COUNTY April 6 1941

GEOGRAPHICAL LOCATION about one quarter of a mile Southeast of Santa Fe R.R. on Highland Road LAT. AND LONG. 32° 8' 0" - 96° 43' 0"

OWNER'S NAME AND ADDRESS

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY Homer Moore DATE April 6, 1941

TYPE OF SITE Quarry MAPPED BY Hatzenbuehler PHOTO NOS.

DIMENSIONS AND DESCRIPTION 250 yds. by 100 yds

PROBABLE CULTURAL CLASSIFICATION OF SITE

LOCAL TOPOGRAPHY Rugged hillside with a few white rock gullies

RELATION TO WATER SUPPLY about 150 yds. from Ash Creek

BUILDINGS ON OR NEAR SITE house

RELATION TO NEARBY SITES [illegible]

TYPE OF SOIL brown clay, white rock CULTIVATION small part EROSION some

VEGETATION ON AND NEAR SITE grass

PREVIOUS EXCAVATION PITTING

EVIDENCES OF FOOD

SURFACE MATERIAL REPORTED AS BELONGING TO SITE:

OWNER OF MATERIAL ADDRESS

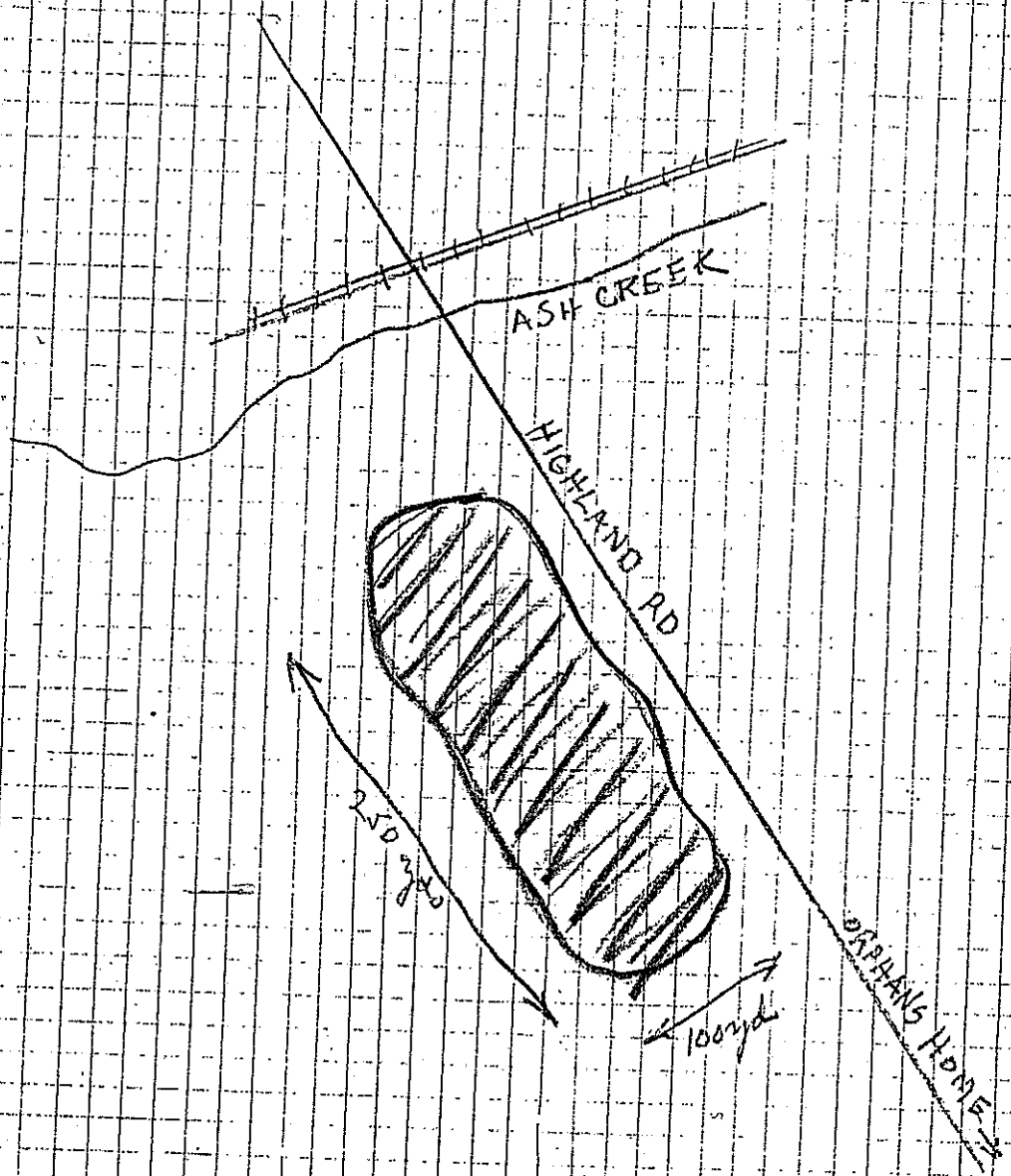
SURFACE MATERIAL FOUND: broken rocks, very few chips of flint.

No pottery

BIBLIOGRAPHY

REMARKS

Robert C. Hatzenbuehler



N
W E
S

27A-V-30
(HZ 3V)

Great Trinity Forest Management Plan

Archeology Data

41-DL-93

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

41DL93

SITE No. 37A-5-29 (OLD No. Dz 34) Dallas COUNTY April 6, 1941 194

GEOGRAPHICAL LOCATION about 300 yds. S.E. of T. & N. O. R.R. underpass on Lawther Drive at White Rock Lake LAT. AND LONG. 32°49'0" - 96°47'0"

OWNER'S NAME AND ADDRESS

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY Homer Leade DATE April 6, 1941

TYPE OF SITE camp MAPPED BY Hatzenbuehler PHOTO Nos.

DIMENSIONS AND DESCRIPTION about 100 yds. by 50 yds. On hillside overlooking a branch on north. Bordered on east by a small branch and Pasture addition

PROBABLE CULTURAL CLASSIFICATION OF SITE

LOCAL TOPOGRAPHY Pasture land with a bunch of trees at edge of site

RELATION TO WATER SUPPLY 125 yds. to a branch of White Rock Creek.

BUILDINGS ON OR NEAR SITE

RELATION TO NEARBY SITES

TYPE OF SOIL Black land, white rock CULTIVATION none EROSION little

VEGETATION ON AND NEAR SITE grass and a small bunch of trees

PREVIOUS EXCAVATION PITTING

EVIDENCES OF FOOD

SURFACE MATERIAL REPORTED AS BELONGING TO SITE:

OWNER OF MATERIAL ADDRESS

SURFACE MATERIAL FOUND: an arrowhead, broken end chips of flint.

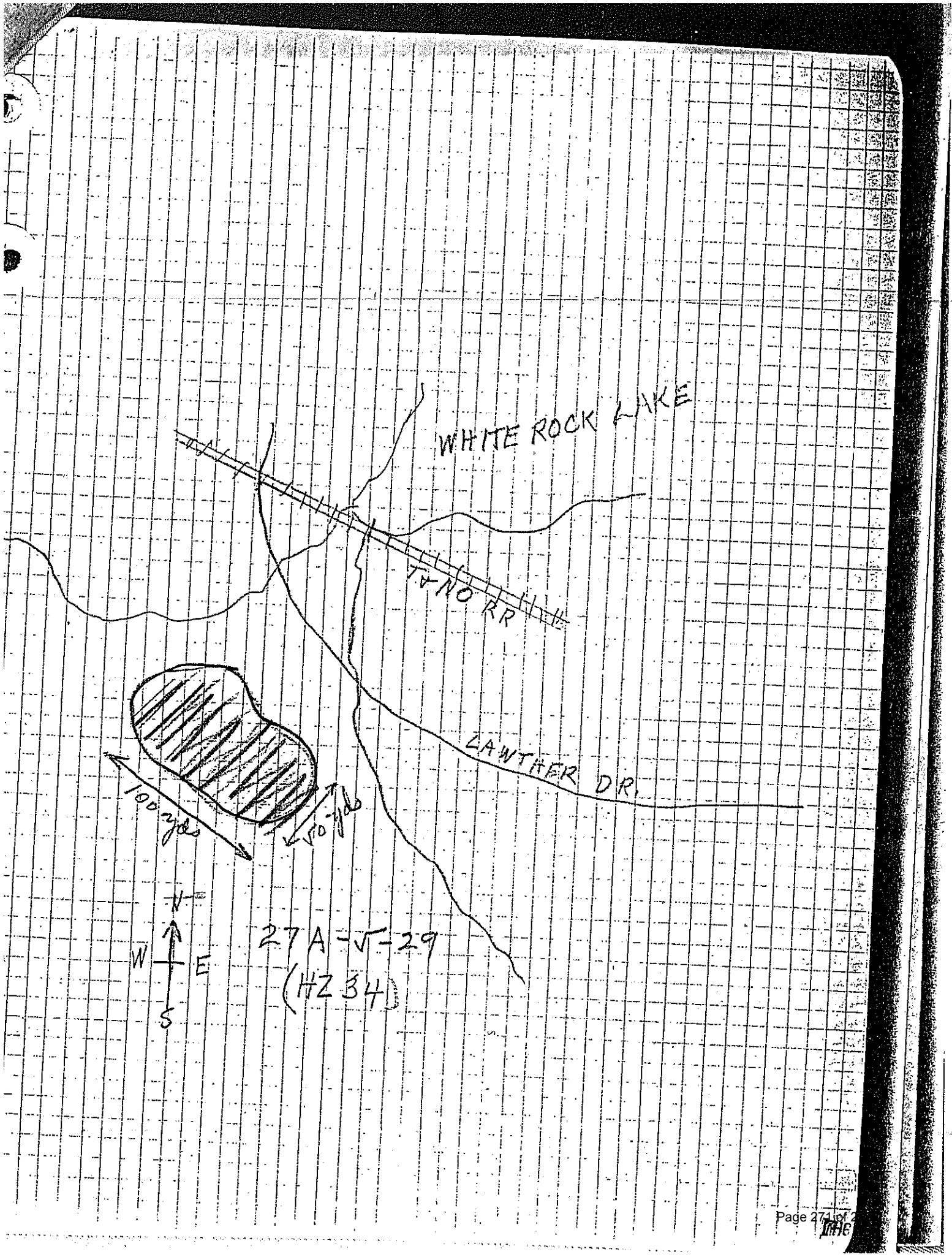
No potsherds

BIBLIOGRAPHY

REMARKS The site was well covered with grass and showed no signs of having been in cultivation recently

No pottery sherds were found

Robert C. Hatzenbuehler



27A-√-29
(HZ34)

Great Trinity Forest Management Plan

Archeology Data

DL-78

ARCHAEOLOGICAL SURVEY, STATE OF TEXAS

SITES SURVEY REPORT

DL 78

SITE No. 27A-5-14 (OLD No. K42) Dallas COUNTY. December 29 194 40

GEOGRAPHICAL LOCATION West bank of Trinity Rod & Gun Club Lake

LAT. AND LONG. 32°42'0" - 96°44'20

OWNER'S NAME AND ADDRESS

ATTITUDE TOWARD SURVEY OR EXCAVATION PERMISSION

PREVIOUS OWNERS PRESENT TENANT

DIRECTED TO SITE BY Exploration DATE November 3, 1940

TYPE OF SITE Surface camp MAPPED BY Forrest Kirkland PHOTO NOS.

DIMENSIONS AND DESCRIPTION 150 x 150 yds. Small site on sand bank where five mile creek run into the lake

PROBABLE CULTURAL CLASSIFICATION OF SITE Caddoan

LOCAL TOPOGRAPHY Flat sand beds near the river bottoms

RELATION TO WATER SUPPLY Creek and lake at side of site.

BUILDINGS ON OR NEAR SITE None

RELATION TO NEARBY SITES One mile up the lake from 27A-5-15

TYPE OF SOIL Deep sand CULTIVATION yes EROSION wind

VEGETATION ON AND NEAR SITE Weeds

PREVIOUS EXCAVATION None PITTING

EVIDENCES OF FOOD Mussel shells

SURFACE MATERIAL REPORTED AS BELONGING TO SITE:

OWNER OF MATERIAL ADDRESS

SURFACE MATERIAL FOUND: Arrowheads, scraper, blades, flakes

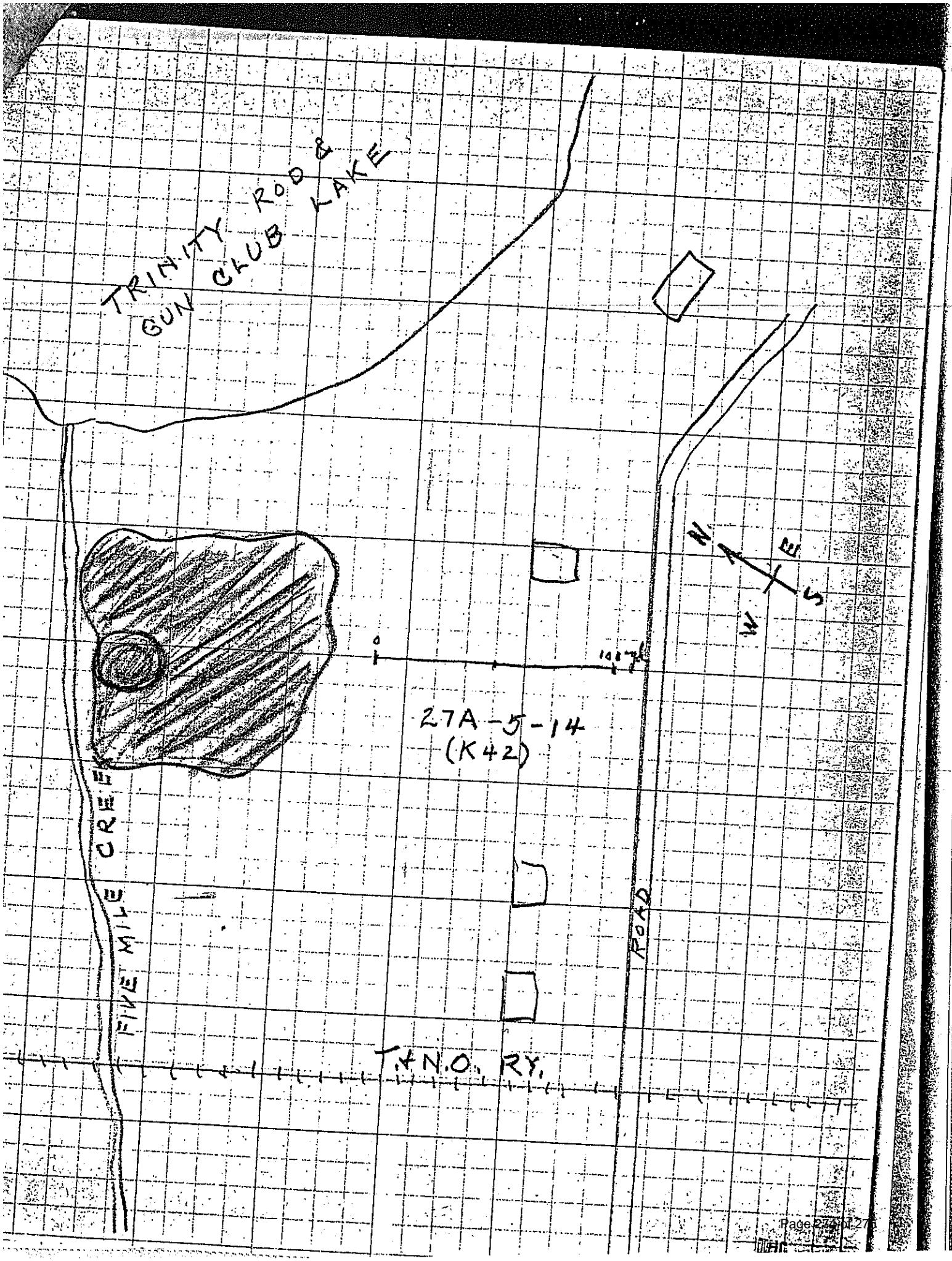
Few potsherds

BIBLIOGRAPHY

REMARKS

Forrest Kirkland

THC

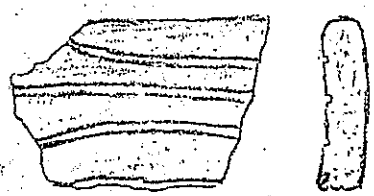

TRINITY GUN CLUB LAKE
ROAD
N
E
S
W
0
10
27A-5-14
(K42)
FIVE MILE CREEK
T.&N.O. RY.

27A-V-14

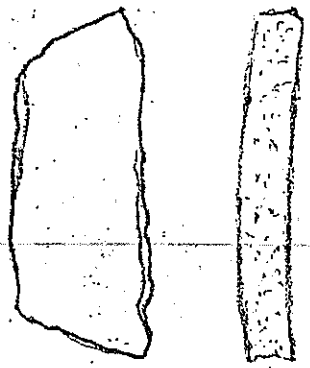
(K42)

	1	1/4	1/16
No. of Sherds			
Thickness in Inches			
Tempering Material: Shell			
Tempering Material: Grit			
Tempering Material: Shell and Grit		7	7
Plain		7	7
Black inside Buff outside			
Black inside Tan outside			
Grayish ~~brown~~ sherd			7
Black sherd			
Incised before firing			7
Incised after firing			
Straight lines			
Tan sherd		7	7
lines 1/16" wide made with blunt stick or cane while paste was still soft leaving rough edges			7

27A-V-14



G.S.T.
GRAY LIP SHERD
FOUR INCISED
LINES MADE
BEFORE POT WAS
FIRED.



G.S.T.
TAN
SHERD

G.S.T.
TAN
SHERD

Literature Cited

Archeology Data was provided in October 2007 by Bryan Kilburn, the Forester for the Trinity River Corridor Project.