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DEPARTMENT OF THE INTERIOR  
U.S. GEOLOGICAL SURVEY



Characteristics of Soils  
Developed in the Pine Mountain Area  
of the Piedmont Province of Georgia:  
SSSA Geomorphology Field Trip, Dec., 1987

by

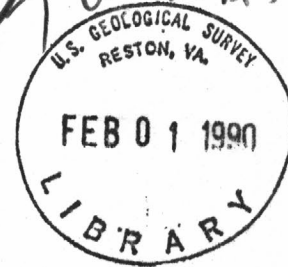
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Open-File Report 87-645



Open-file report  
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(U.S.))

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This report is preliminary and has not been reviewed for conformity with U.S.  
Geological Survey editorial standards (and stratigraphic nomenclature).

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1987



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## 1. INTRODUCTION

The Piedmont Province of Georgia is a geologically complex area characterized by:

- 1) numerous topographic highs underlain by quartzite or quartz-rich schist.
- 2) several large (>500 gal/min) and numerous small springs with water temperatures ranging between 55 and 90 degrees fahrenheit; and
- 3) large fan deposits present at the base of many of the high ridges.

Data presented in this report include field observations and results from laboratory analyses of soils developed on quartzite, schists, and the quartzite-rich fan deposits. The initial stops will focus on:

- 1) the mineralogical and chemical alterations that have occurred during conversion of rock to soil;
- 2) the geomorphic form and composition of the mountain fans and the Fragic Paleudults developed on the fans; and
- 3) some of the geologic problems of interpreting the tectonic history of the area.

At several of the localities we will view evidence for, and discuss the possibility of, large-scale mass-gravity movements affecting the present topography of the region.



## 2. CLIMATE AND ENVIRONMENTAL SETTING

The West Georgia Piedmont is an area of warm/humid climate. Hewett and Crickmay (1937, p. 4) stated:

"According to the records of the United States Weather Bureau, the average air temperature at West Point, 28 miles west of Warm Springs, is 63.3°F, and at Talbotton, 17 miles southeast, 64.1°F. The average temperature of the water in 36 wells in the lowland adjacent to Pine Mountain area is 62.1°F."

Hewett and Crickmay (1937, p. 22) reported that rainfall at 6 stations within 35 miles of Warm Springs ranged between 46 and 58 inches a year for the year 1934. Wharton (1977, p. 159-161) discussed the botanical complexity related to microclimates created by substrate and elevation in this warm/humid region. He subdivided the forests into:

### a) Pine-Broadleaf Deciduous Subcanopy Xeric Forests:

"There appear to be two subtypes of this forest. The most spectacular is on the Hollis Quartzite on the high ridges of Pine Mountain. It is similar to the Broadleaf Deciduous Subcanopy Forest of the Coastal Plain. Another type has a more diverse understory of deciduous trees and shrubs and occurs on dry ridges throughout the western Piedmont north of Pine Mountain. The Pine Mountain localities have typically a longleaf pine overstory and a blackjack oak understory, instead of turkey oak as in Coastal Plain environments. The common sandhill sticky foxglove (Aureolaria pectinata) is common. (Loblolly pine and sourwood seedlings will seed in on the highway right of way). On ridges and west-facing bluffs along the Flint River there are still some good stands of longleaf pine. The Hollis quartzite apparently does not appear to weather into a sand, but strata overlying the Manchester schist do, resulting in sandy soils on top of Pine Mountain ridges. Somewhat surprisingly, this soil is an adequate habitat for the burrowing coral snake. It is quite unusual to find coral snakes this far north in the Piedmont. Most have come from the narrow sandy Flint River floodplain from 1/4 mile above Dripping Rock, south."

### b) Pine-Hardwood Xeric Ridge and Slope Forests:

"This type of dry forest occupies much of Pine Mountain. Some of these ridges should seemingly grow longleaf pine but for some reason (soil, infrequent fire, lack of seed source) they maintain other species of pine along with oaks and hickories. Sometimes shortleaf or loblolly pines completely dominate the ridge tops. In rocky situations chestnut oak



(Quercus prinus) tends to dominate. The forest of Dowdell's Knob (Pine Mountain) consists of shortleaf pine, much hickory, blackjack oak, chestnut oak, and black oak. Jones (1974) records the Georgia oak (Quercus georgiana) from "chestnut-oak mixed hardwood" forest. For shrubs he records red buckeye (Aesculus pavia), dwarf paw paw, Piedmont azalea (Rhododendron canescens), sparkleberry, blueberry (Vaccinium pallidum) and squaw huckleberry (V. stamineum)."

c) Ravine Forest of Mixed Affinities:

"The ravines, slopes, and bluffs of the Pine Mountain area (Meriwether and Harris counties) support classic examples of these environments with their curious mixture of mountain and Coastal Plain plant life, as well as mixtures of Piedmont and Coastal Plain animal life. Ravines are cool and moist, with small streams and steep sides. In one Harris County ravine the principal trees were northern red oak, beech, chalk maple, Florida maple, and an ash. The understory contained both silver bells (Halesia caroliniana, H. diptera) and hop hornbeam as dominants. The principal shrubs were black haw (Viburnum prunifolium), buckthorn (Rhamnus sp.), sweet shrub, and mulberry. This is the most northern area where I have found the needlepalm (Rapidophyllum). Herbs of note were hepatica, alumroot (Heuchera americana), doll's eyes (Actaea), black cohosh (Cimicifuga), Jack-in-the-pulpit, and ginseng (Panax quinquefolia), the latter being a new record this far south. A north-facing river bluff bore a forest of white oak, buckeye, red elm, poplar, Florida maple, and mockernut hickory. The shrub layer had red bay, witch hazel, Amorpha fruticosa, and mountain laurel. It is quite odd to see mountain laurel side by side with Coastal Plain red bay. Radford and Martin (1975) recommended almost the entire area where the Flint flows through Pine Mountain as a Natural Landmark called "Flint River Water Gap Wilderness Area," and list it as one of the three most outstanding sites in the Piedmont of eastern America when the following criteria are considered: community and species diversity; endemic, rare and disjunct species; edaphics, topography, and geology."

3. GEOLOGIC SETTING

The Pine Mountain area is located in west-central Georgia, in the outer part of the Atlantic Piedmont physiographic province (hence referred to as the Piedmont) extending 100 miles east northeastward from Nostalsulga, AL to Barnesville, GA. The Piedmont is composed of crystalline metasediments, metavolcanics, melange sequences and younger granitic intrusives. The Pine Mountain area is composed dominantly of Cambrian/Precambrian (?)



metasediments, but a few isolated remnants of early Cenozoic fluvial sediments have been preserved in structurally low positions. Younger Cenozoic sediments comprise much of the surface materials and are expressed as alluvial fans, terraces, and colluvium.

In the 1920's Warm Springs, at Warm Springs, Georgia (fig. 1) (water temperatures about 88°F) was improved from a public spa with a nearby hotel to the Georgia Warm Springs Foundation rehabilitation facility. This is the facility that was used by Franklin Delano Roosevelt and is the location of the Little White House, which he had built for his use while staying at Warm Springs. These springs, and others in the region, were the center of geologic interest by the U.S. Geological Survey in the 1930's (Hewett and Crickmay, 1937).

The crystalline rocks (specifically the Hollis Quartzite) exposed in the Pine Mountain terrane of Alabama and Georgia had been first studied by Adams (1926, 1930) as part of state-wide mapping project of the Alabama Geological Survey. While Franklin D. Roosevelt was president, the U.S. Geological Survey undertook a project to study the politically renown Warm Springs area of Georgia (Hewett and Crickmay, 1937). Hewett and Crickmay established a stratigraphic sequence for the area and formalized the name "Pine Mountain Group." Since then, there have been several proposed changes in the names of the formations and members that comprise the Pine Mountain Group as well as discussions as to the particular rocks that should be included in the Group.

As summarized by Higgins and others (in press) the Pine Mountain Group in the Pine Mountain anticlinorium is a sequence of schists, biotite gneisses



(metagraywackes) quartzites, and lesser amounts of marble, without volcanic components. The schists and gneisses are lithically identical to parts of the Great Smokey Group to the north. The Hollis quartzite is commonly a massive, pure quartzite that locally contains schistose partings and varies compositionally from an orthoquartzite to a muscovite conglomerate. Locally the Hollis is a variety of "itacolumite", a flexible schistose quartzite. The Manchester Schist is a unit of graphitic sillimanite schist that overlies the Hollis quartzite.

In the 1940's, geologic interest centered on the origin and economic potential of a bauxite deposit on the north side of Pine Mountain, a few miles west of the town of Warm Springs. In the late 1970's and early 80's, attention was again drawn to the area around Warm Springs, Georgia; this time the bauxite beds were dated (Christopher and others, 1980) and evidence was found that indicated tectonic movement on local faults sometime in the late Cenozoic (Reinhardt and others, 1984). Data indicating late Cenozoic movement on at least one fault in the Pine Mountain area has renewed interest in determining the age(s) of the surficial deposits in the area. If these deposits could be dated, a minimum age of faulting could be established.

#### 4 THE SPRINGS

Springs are numerous along the north side of Pine Mountain. Warm Springs is the only known spring of warm water (87°F) that emanates from a crack in the Hollis Quartzite. Other warm springs in the area rise from either the Manchester Schist or surficial units.



Hewett and Crickmay (1937) measured the temperature and volume of water of Warm Springs at the source where it is controlled for use at the rehabilitation center; other springs were measured as access allowed. The following excerpt from Hewett and Crickmay (p. 5) is included to show the detail of work that they attempted in the area. Table 1 is a summary of their measurements for springs in the area. They stated that:

"From December 14, 1933, to June 30, 1935, the discharge under control ranged from 594 to 678 gallons a minute. Measurements of the discharge of all the minor sources during the same period ranged from 233 to 294 gallons a minute. The total discharge of all sources, therefore, ranged from 844 to 914 gallons a minute.

Precise measurements of the temperature of the Warm Springs water as it issues from the ground at its main east and west sources were made of seven different in 1933, 1934, and 1935 by using a platinum resistance thermometer. At the east source the temperature on different days ranged from 87.7° to 88.2°F, and at the west source from 87.1° to 87.5°F."

Water chemistry is given in Table 2, reproduced from Hewett and Crickmay (p. 17, 18, and 21). Recent data from the National Fish Hatchery at Warm Springs, GA is given in Table 3.

## 5. ANALYTICAL METHODS

Table 1 presents the analyses, SCS methods (method codes refer to methods found in Soil Staff, 1972) and units of expression for analyses. In addition, <2u fractions of samples were analyzed by XRD to determine the clay-size phases present in the various soil horizons.

Table 5 gives a summary of site locations, altitudes and settings. Data obtained from the soils are presented on tables 6-12, in the same order as figures 6-12. For convenience the figures and tables for each pedon are juxtaposed. A brief discussion of each pedon is included with its tabular



data. The field trip sites will be in the order: mountain sites (tables 6-9), fan sites (tables 10 & 11), and piedmont site (table 12).

#### 6. SOILS OF THE WARM SPRINGS/PINE MOUNTAIN AREA

The soils to be discussed fall into three groups:

a) residual soils developed from the Hollis quartzite or from a stacked sequence of thin colluvium underlain by the quartzite. Unnamed pedons for which we have data are numbered: 84 GA-231-001, -002, -003, and -004. The locations of these pedons on Indian Grave Mountain on the Thomaston and Zebulon 7.5' quadrangles are shown on figures 1 and 3.

b) soils developed on fan deposits. Pedons for which we have data are numbered: 84 GA-293-001 and 84 GA-199-002. The locations of these pedons on the Sunset Village and Warm Springs 7.5' quadrangle are shown on figures 1 and 4.

c) soils developed on residual saprolite weathered from schistose, mixed-mineralogy, meta-sedimentary rocks. The pedon for which we have data is numbered 84 GA-199-001, and its location on the Woodbury 7.5' quadrangle is shown on figures 1 and 5.

#### 7. DISCUSSION

Due to the continuing study of this field area, the written discussion is restricted to suggesting topics for discussion. We will present some interpretations of data orally at each of the field trip stops.



## Mountain Soils

The mountain soils we sampled are quite variable in thickness and profile development. The least developed is a dystrocrept; the most an utisol. We do not know if these pedons represent the extremes of soil development, but they do illustrate the problem of drawing a simple relation between pedogenesis and mountain landscape position where physical transport processes significantly effect pedogenesis.

There are many important pedogenic features exhibited by the pedons. We will highlight the following:

- a) genesis of Bt horizons with 40-60 percent clay that is predominantly kaolinitic in composition ( see figures 6a, 6b, 7a, 8a, and 9a).
- b) processes involved in zonation of coarse and fine material producing a lag gravel at the surface underlain by clay-rich B horizons underlain by saprolitized quartzite ( see Table 6a).
- c) chemical alteration that removes silica from the Bt horizons.

## Fan Soils

The soils developed on the fan deposits derived from the Hollis Quartzite exhibit fragic, Bx horizons. We do not know the cause of fan deposition in the Pine Mountain area. Accelerated erosion of the quartzite ridges resulting in accretion of quartz gravel and sand into fan deposits could have resulted from climate change (e.g. analogous to periglacial colluvial deposits of the Piedmont suggested by Whitehead and Barghoorn, 1962) or due to tectonically accelerated uplift, or both.



Whatever the cause, the fan deposits became a unique environment for soil formation due to its combination of pre-weathered parent material and poor drainage. It is not significant that soils with fragic horizons are restricted to these deposits. It is a challenge to discern how these particular horizons formed and how they influenced the subsequent evolution of the landscape.

Some topics for consideration include:

- a) downward transport of colloids into C horizons
- b) leaching of silica from Bt to Bx horizons and silica cementing of the Bx ( see figures 10a, 10b, 11a, 11b, and Tables 10a, 10b, 11a, and 11b)
- c) methods of study of fragic horizons and the accompanying difficulties
- d) mineralogical and chemical analyses

Mineral alterations in these soils are of interest for two reasons:

- a) the mineral alteration reactions are kinetically slow since silica is only slightly soluble in acidic solutions such as rainwater. Thus the soils have probably developed over long time periods and can provide information about the geochemical stability of clay minerals in acidic-siliceous soils.
- b) the chemical system is relatively simple (e.g.  $\text{Fe}_2\text{O}_3$ - $\text{Al}_2\text{O}_3$ - $\text{SiO}_2$ - $\text{H}_2\text{O}$  dominant). This may allow for simple phase diagram modeling of the expected equilibrium assemblages of clay phases.

The significance of the Bx horizons of fan soils in the geomorphic evolution of the Pine Mountain area is an important issue under



investigation. Soils with Fragic properties comprise a small percentage of the soils of the southeastern U.S. Their genesis may be related to age and/or climate. Ruhe and others (1975, p. 125) stated:

"In the southeastern states the fragisols are mainly on older geomorphic surfaces (Daniels, et al., 1966), hence they may be relicts of older environments (Grossmann and Carlisle, 1969). However, their geographic distribution approximately coincides with a similar geographic band of stabilized sand dunes (Thorp and Smith, 1952) that reflect a relatively dry climatic episode during the Pleistocene (Whitehead, 1973)."

The data presented here show that soils with Fragic horizons from the Piedmont of Georgia that are not associated with sand dunes (like those of the inner Coastal Plain) but are associated with old constructional morphostratigraphic units (e.g. fan deposits) derived from resistant quartzite lithologies.

The fragic horizons may have had a critical influence on the geomorphic evolution of this area by protecting the fans from erosion. This protection could involve both mechanical cementing and hydrologic control of shallow groundwater drainage.

#### Piedmont Soils

We have sampled one soil on the Piedmont crystalline schists adjacent to the toe of one of the Pine Mountain fans. At that site topics for discussion include:

- a) processes of development of saprolite into soil by physical and chemical alterations (Pavich, 1985).
- b) mineralogical and chemical alterations which lead to mass loss in the solum ( see figures 12a and 12b, and Tables 12a and 12b).
- c) erosion at the soil surface.



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Figure 1. Generalized geologic map at 1:100,000 scale in parts of the Thomaston and Griffin, Ga. 1° x 2° maps. ~~Geology taken from Higgins and others (in press).~~ The ridges exceeding 300 m altitude underlain by Hollis Quartzite, the major faults, fans, towns, roads, and the Flint River are shown. Locations of field trip stops are indicated by numbered open triangles. Locations of studied pedons are indicated by numbered open circles. Geographic data for the stops are provided in table 5. Pedologic data are provided in tables 6-12.



# EXPLANATION

- △ FIELD TRIP STOPS
- NUMBERED PEDONS
- ⬢ RIDGES EXCEEDING 300m ELEVATION
- ⬢ FAN DEPOSITS
- MAJOR FAULTS

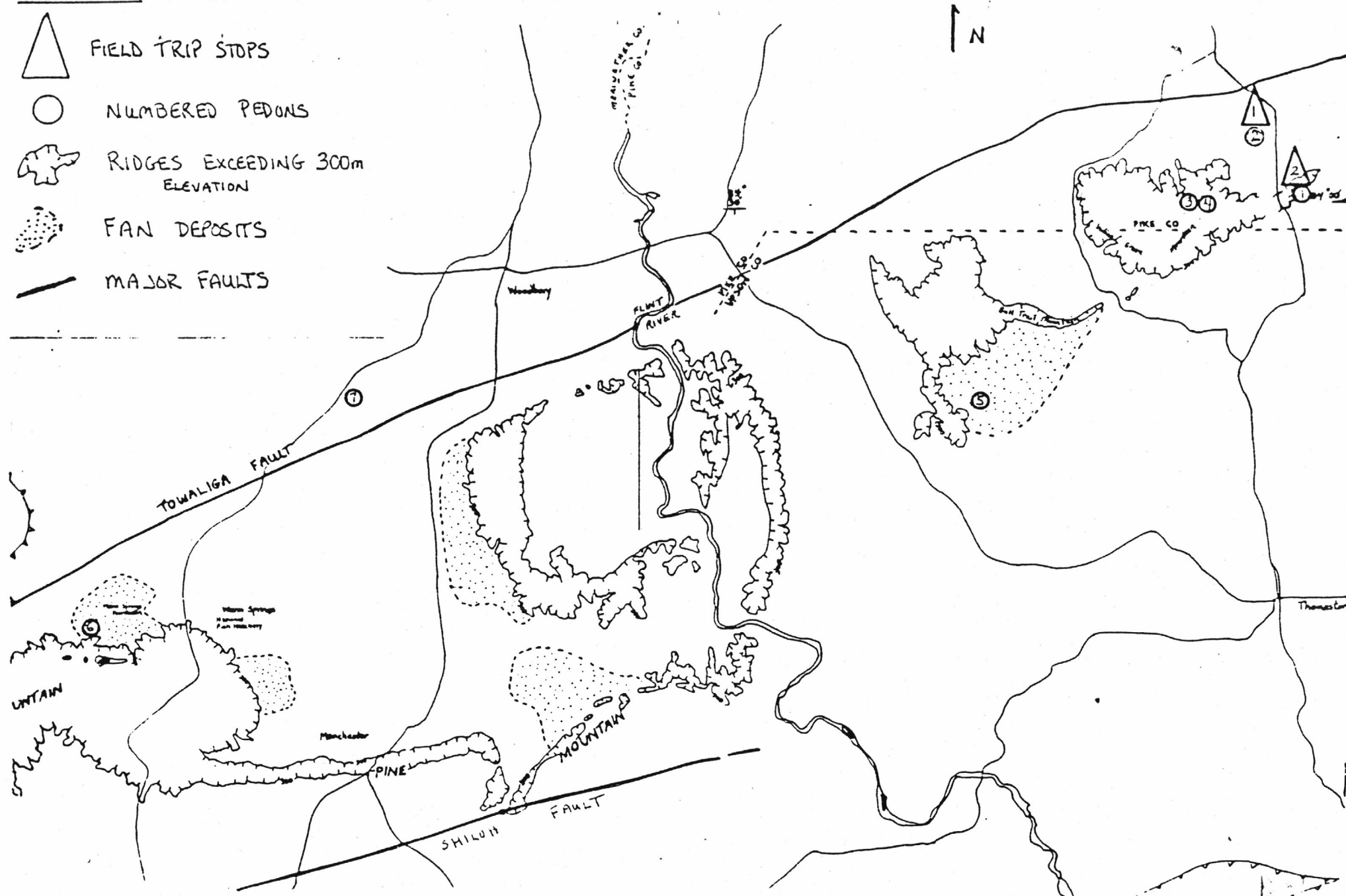
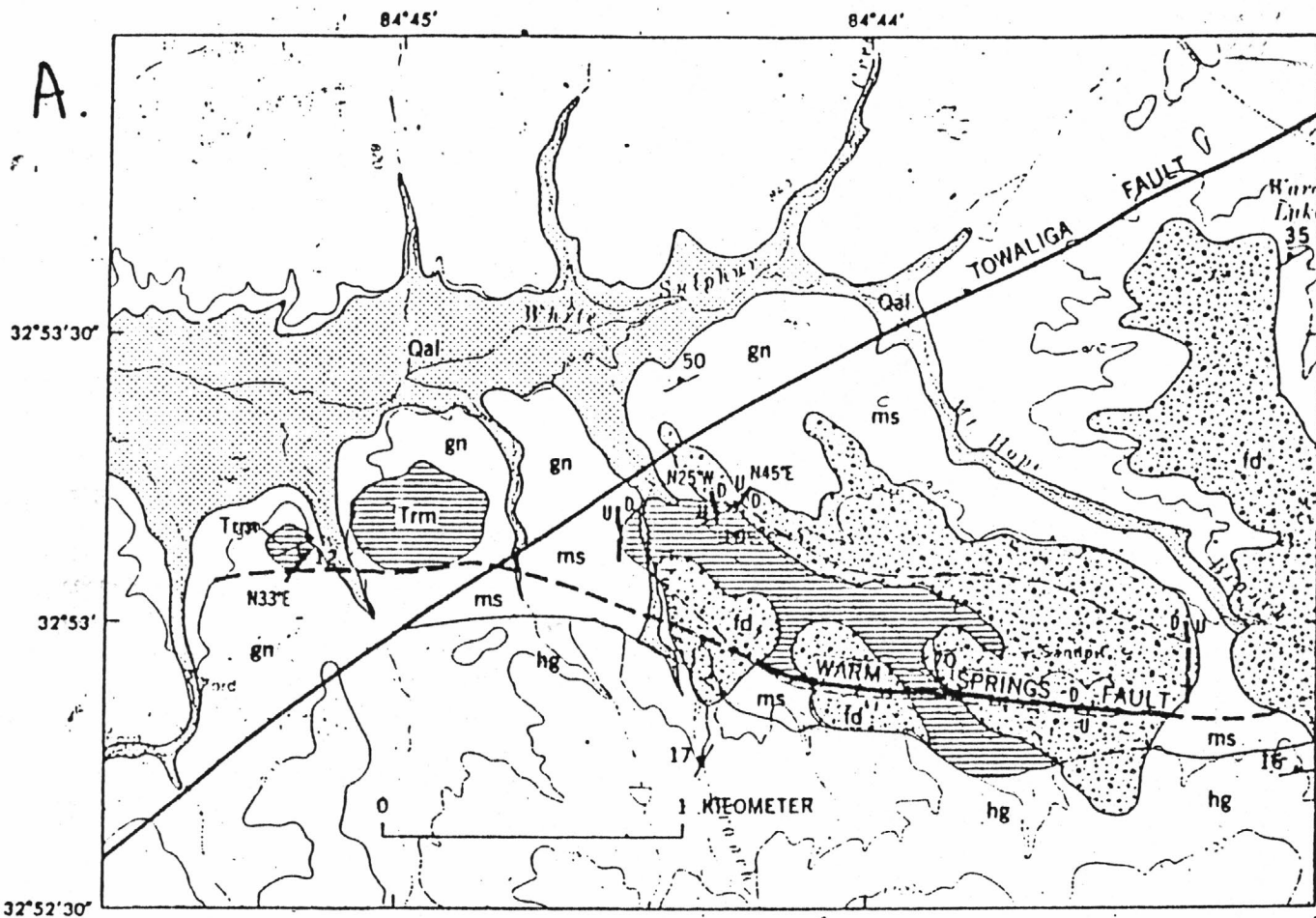


FIG. 1



Figure 2. 2a) Detailed geologic map of the area surrounding Warm Springs, Ga.  
(reprinted from Reinhardt and others, 1984). 2b) Geologic cross section  
along line A-A' of figure 2a (reprinted from Reinhardt and others, 1984).

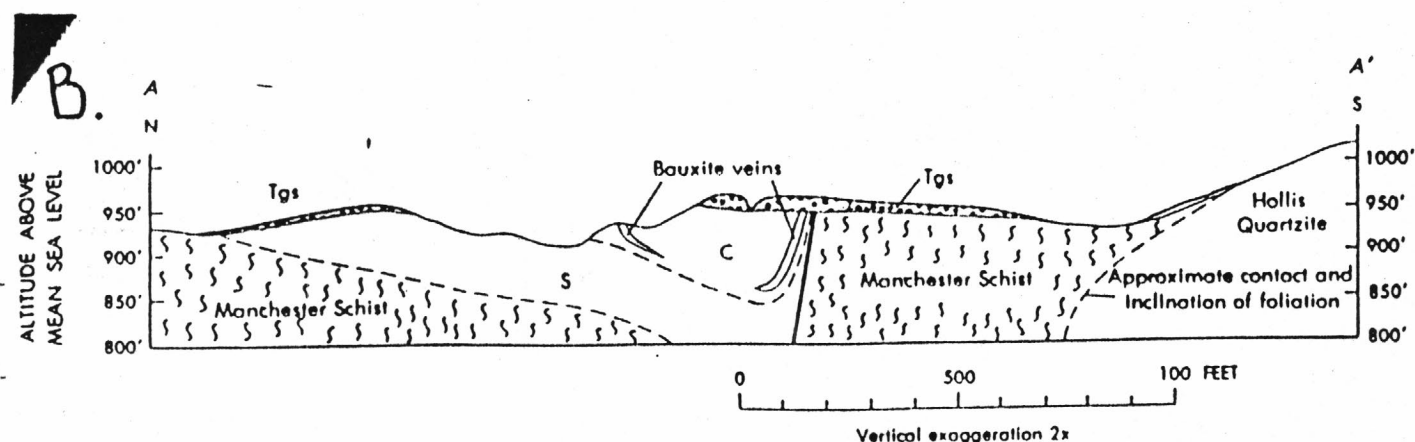




(FROM REINHARDT and others, 1984)

EXPLANATION

- |  |   |
|--|---|
| Qal - Alluvium                         | — Contact; dashed where covered or inferred |
| fd - Fan deposits (undivided)          | — Fault; dashed where projected             |
| Trm - Republic Mine beds               | 10 — Strike and dip                         |
| ms - Manchester Schist                 | 17 — Foliation                              |
| hg - Hollis Quartzite                  |   |
| gn - Gneissic rocks, locally schistose |   |



Cross section A-A' modified from White (1965, Pl. 1, section C-C'). Interpreted structure of the Republic Mine beds, based in part on mapping in bauxite prospects and previous descriptions by Shearer (1917) and Smith (1929).

(FROM REINHARDT and others, 1984)

EXPLANATION

- |                               |
|-------------------------------|
| C - Upper clay                |
| S - Lower clay and sand       |
| Tgs - Terrace gravel and sand |



Figure 3. Locations of pedons S84-GA-231-001, -002, -003, and -004 on the  
Thomaston, Ga. and Zebulon, Ga. 7.5' quadrangles. Scale 1:24,000.



FIGURE 3

FIG. 3-

S846A-231-003

S846A-231-004

S846A-231-002

S846A-231-001

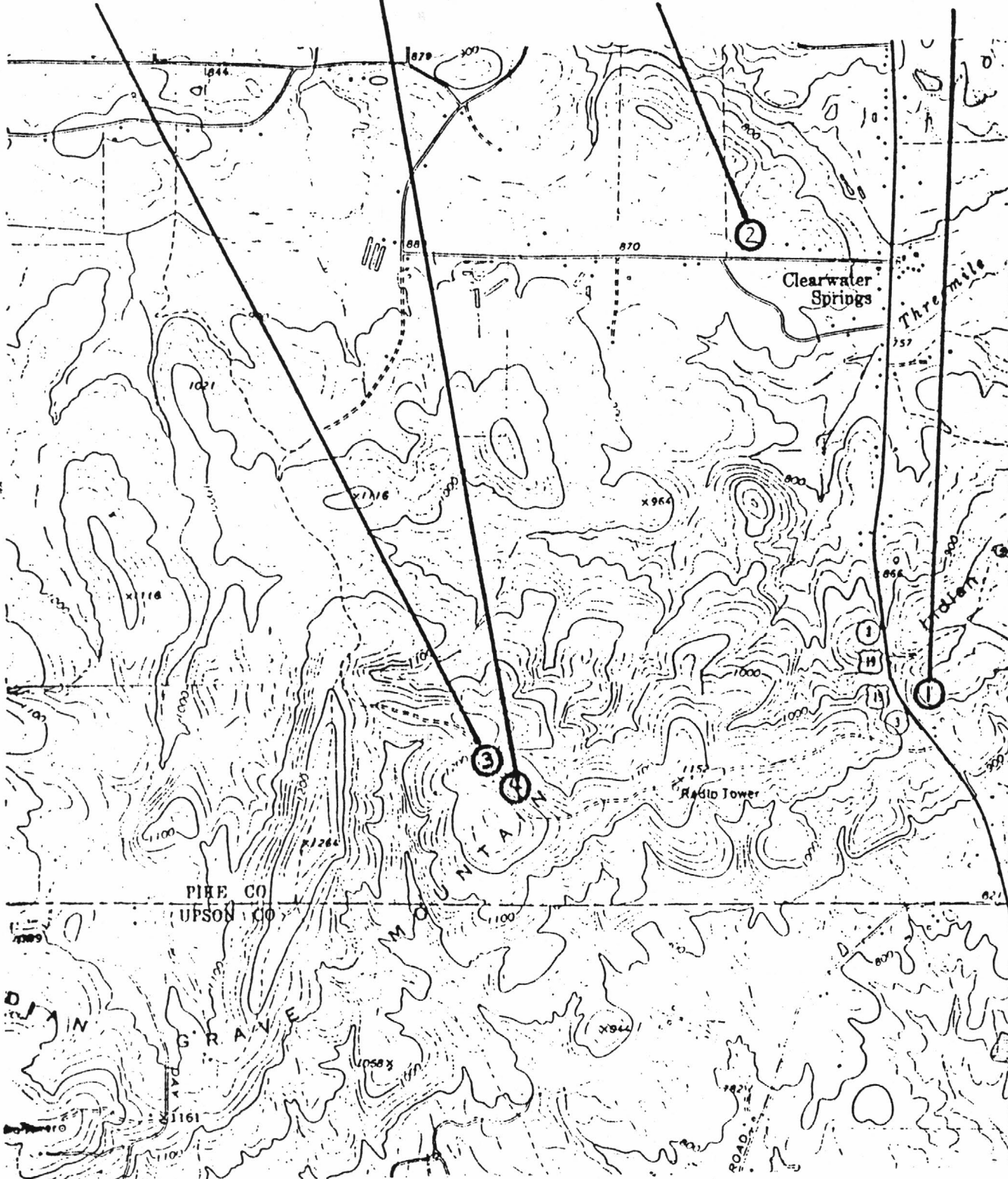


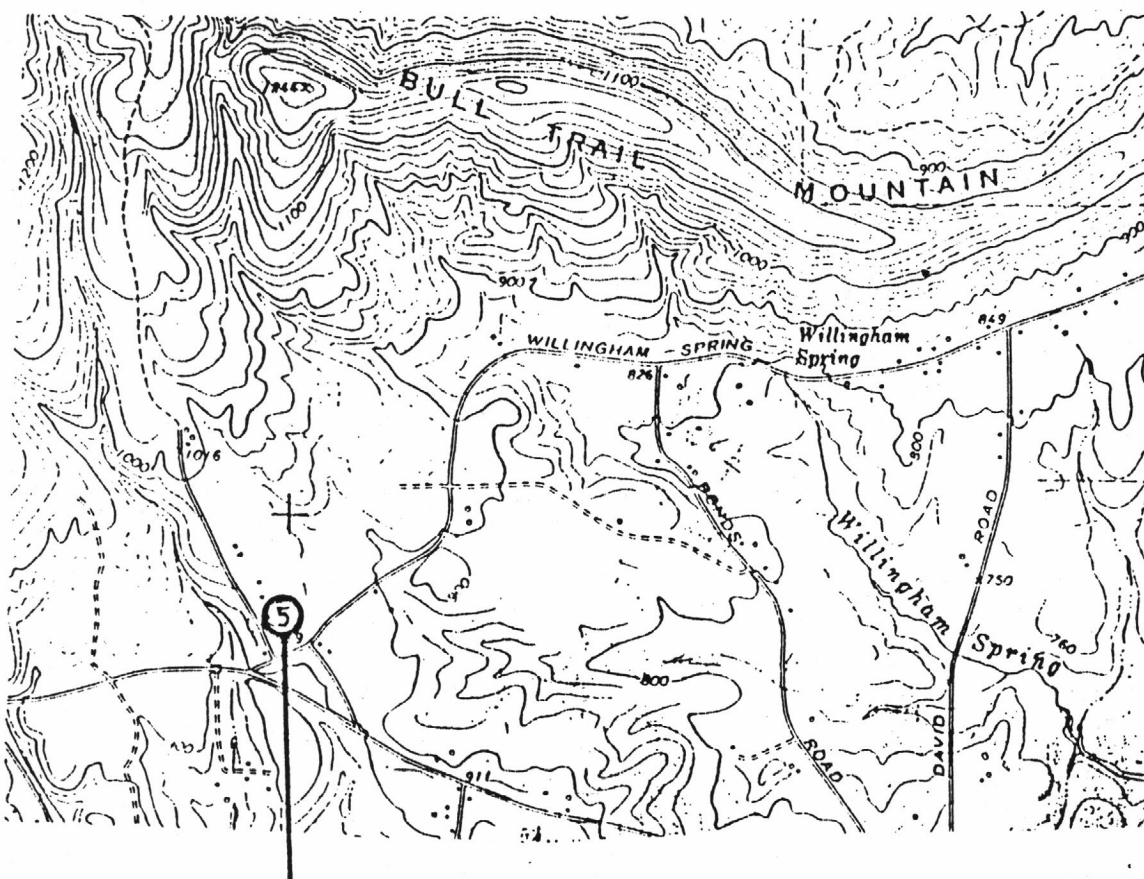


Figure 4. Locations of pedons S84-GA-293-001 on the Sunset Village, GA 7.5' quadrangle and S84-199-002 on the Warm Springs, GA 7.5' quadrangle.

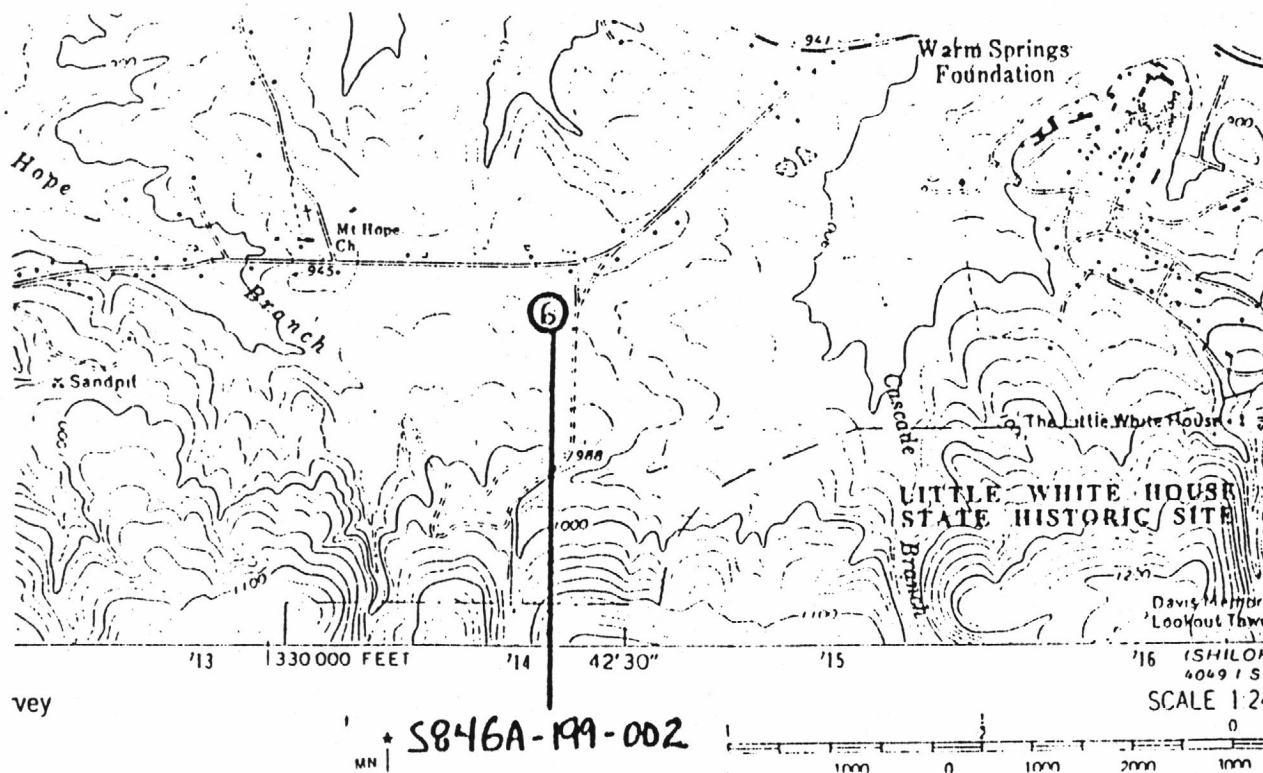


FIGURE 7.

FIG. 4



S846A-293-001



S846A-199-002



Figure 5. Location of pedon S84-GA-199-001 on the Woodbury, GA 7.5' quadrangle.



FIGURE 5

FIG. 5

346A-199-001

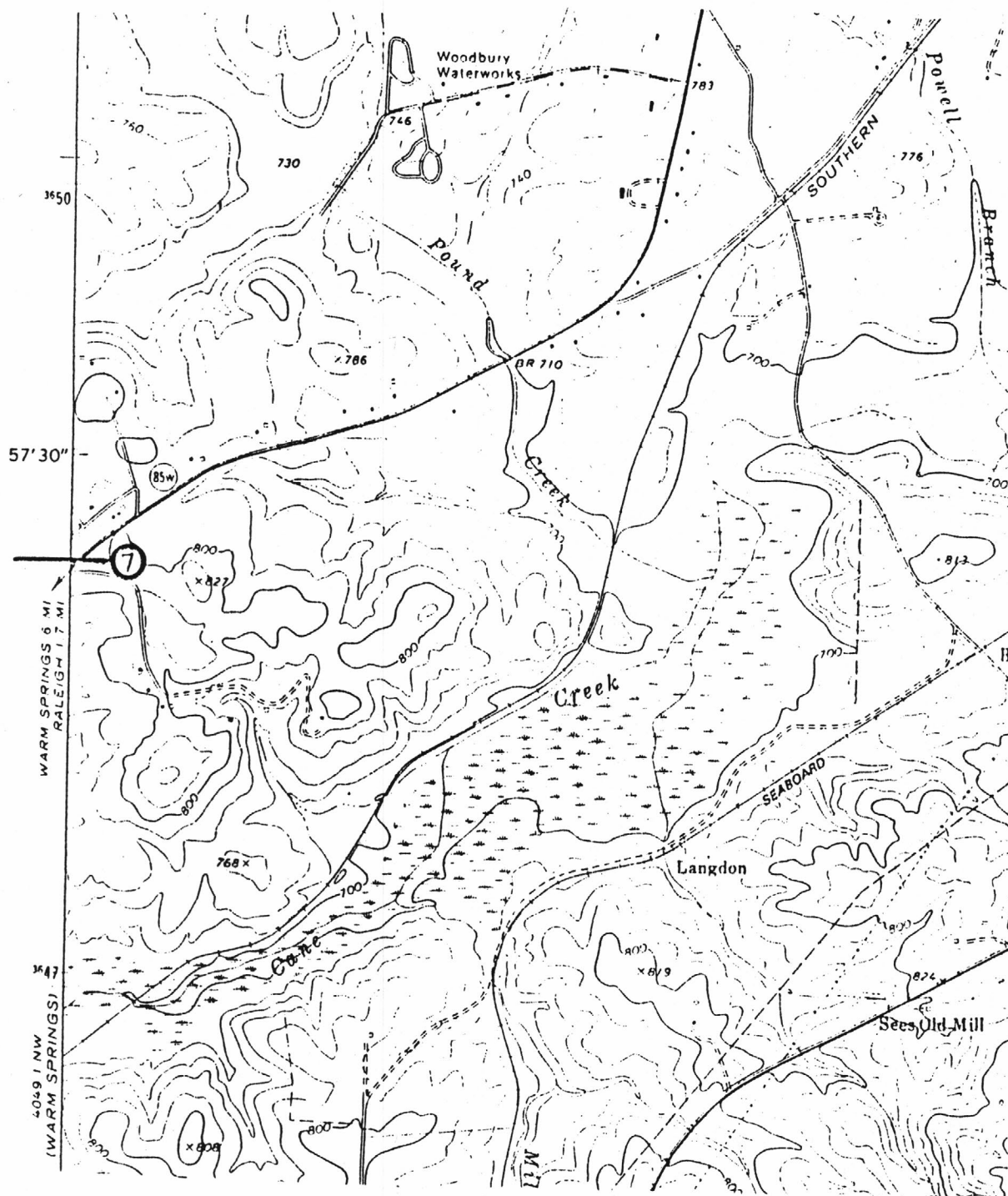


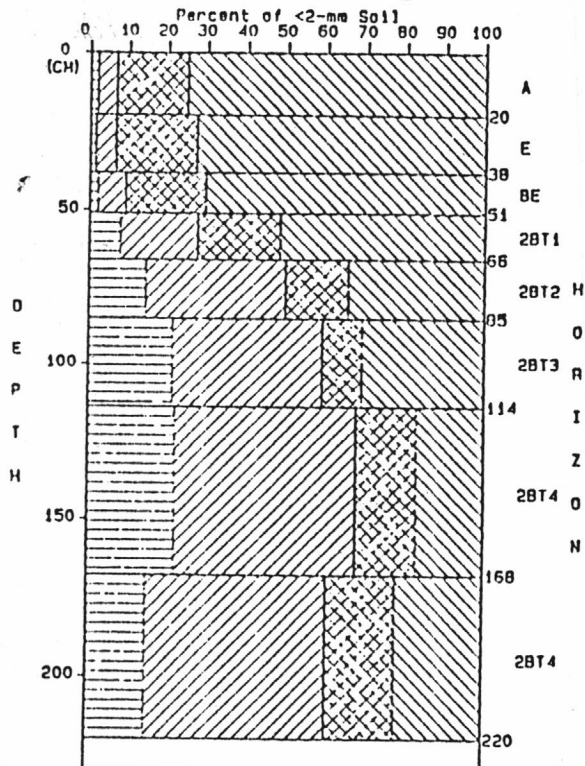


Figure 6-12. Graphs of data from pedons showing: a) Particle size distribution, clay free particle size distribution, cation exchange capacity, and volume percent of soil water, pores and solids. b) x-ray diffraction patterns of untreated  $<2$   $\mu\text{m}$  samples for selected pedons.



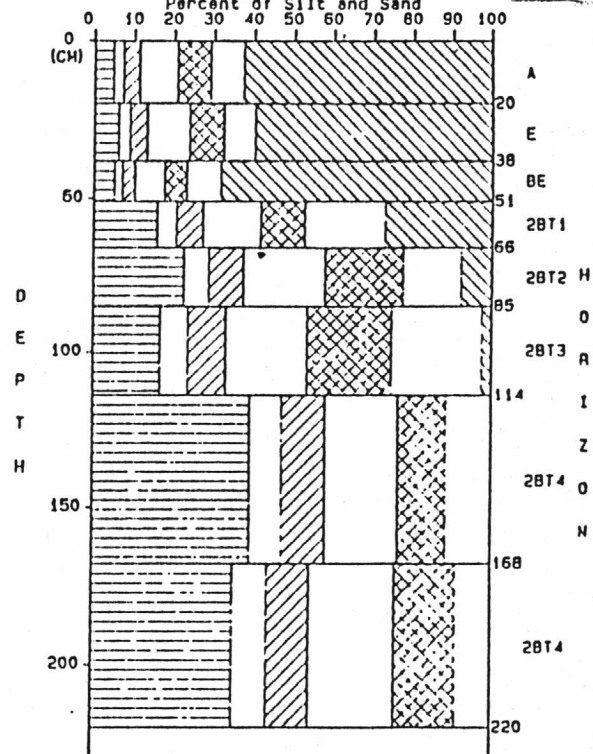
NATIONAL SOIL SURVEY LABORATORY  
Particle Size Distribution  
SND : S84GA231-001

Fine Clay: <.002  
Coarse Clay  
Total Silt  
Total Sand: 0.05-2.0mm



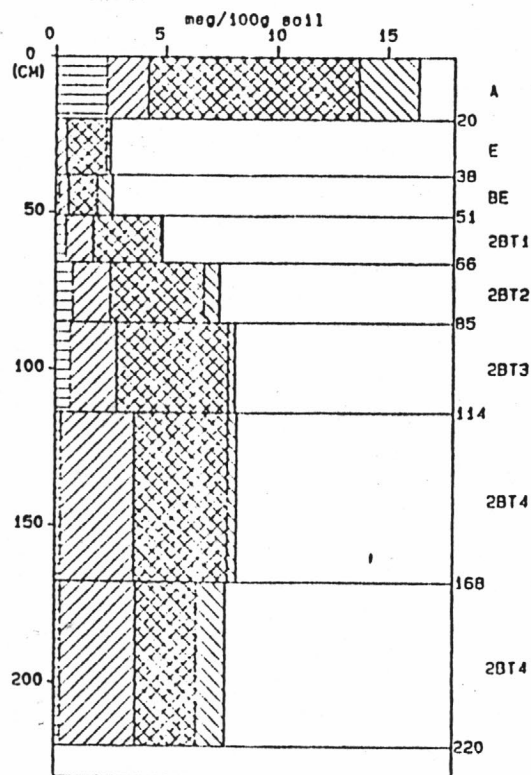
NATIONAL SOIL SURVEY LABORATORY  
Clay-free Particle Size Distribution  
SND S84GA231-001

<-silt--> <--sand-->  
fine co v.f. fine med co+vc 2-75mm  
Percent of Silt and Sand



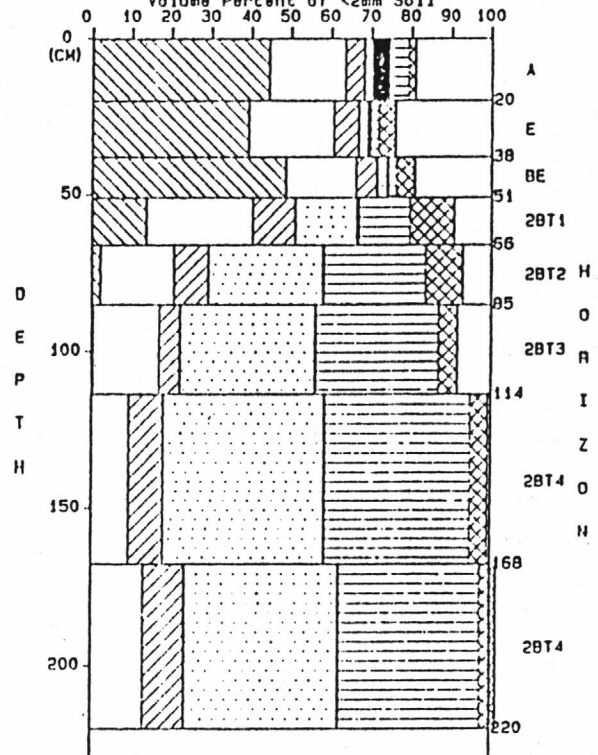
NATIONAL SOIL SURVEY LABORATORY  
Cation Exchange  
SND S84GA231-001

Bases  
Bases+Al  
Cec-7  
Cec-8.2



NATIONAL SOIL SURVEY LABORATORY  
Soil Water, Pores and Solids  
SND S84GA231-001

>2 Sand Silt Clay OH 15 BarHRO AIR  
Volume Percent of <2mm Soil





# FIGURE 6B

Pure and  
5446A 231-001

231-001

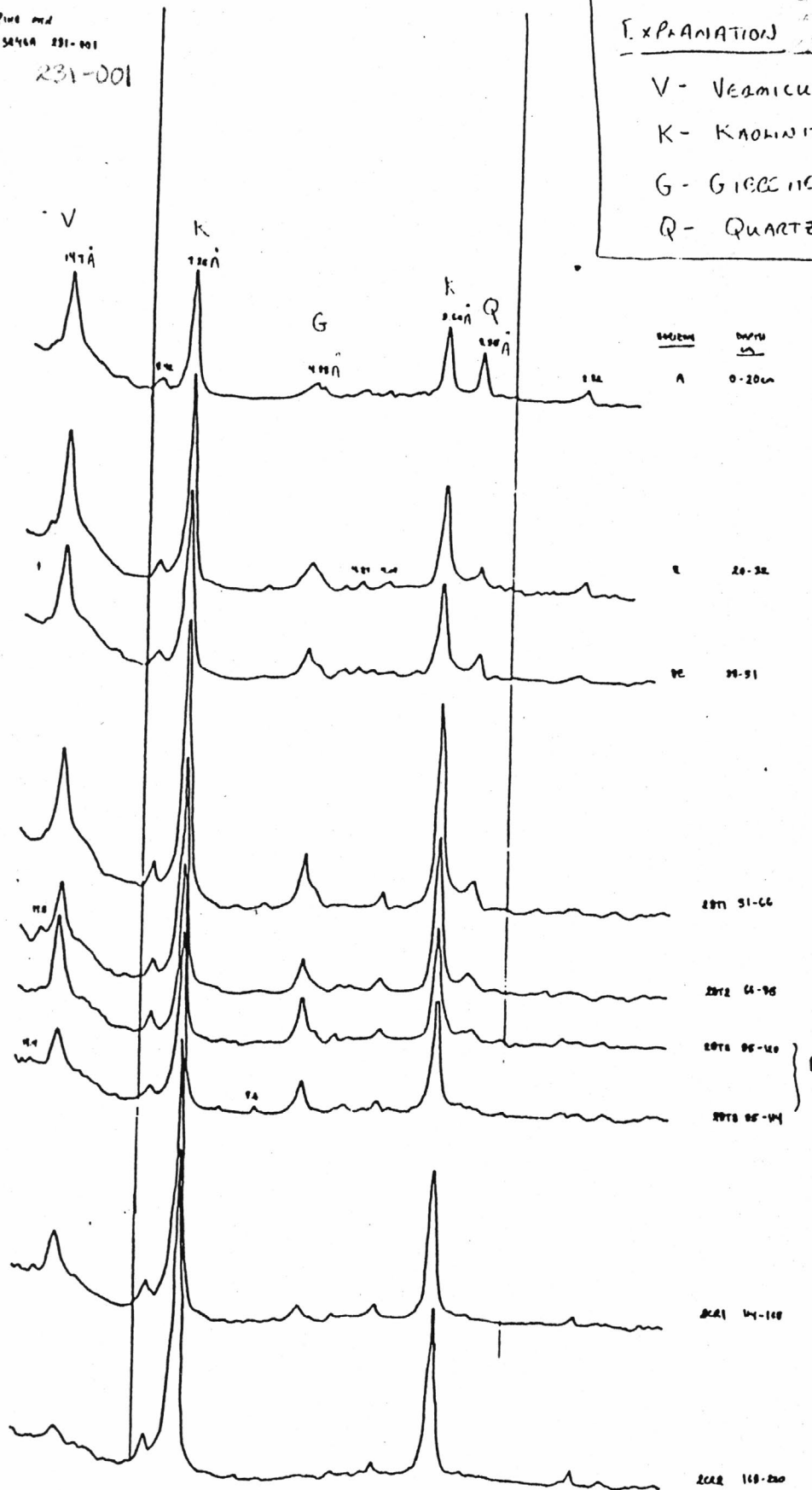
## EXPLANATION

V - VERMICULITE

K - KAOLINITE

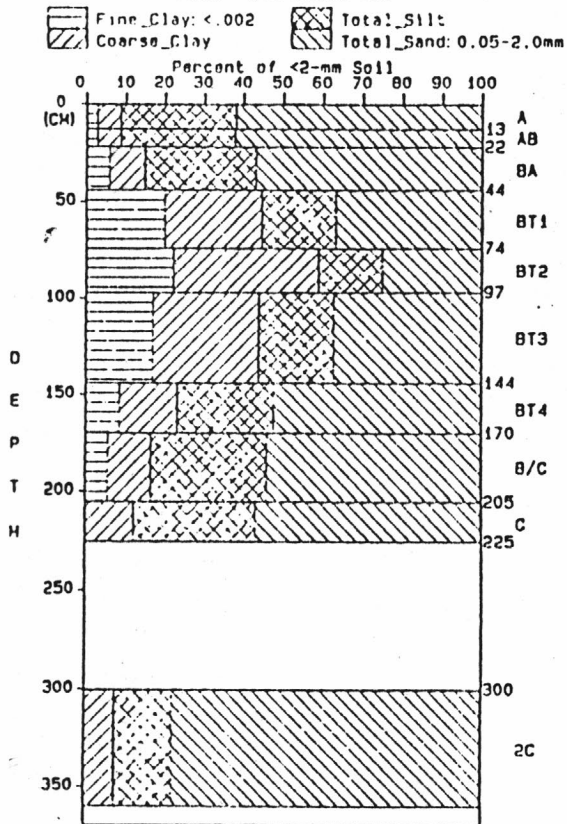
G - GIBBSITE

Q - QUARTZ

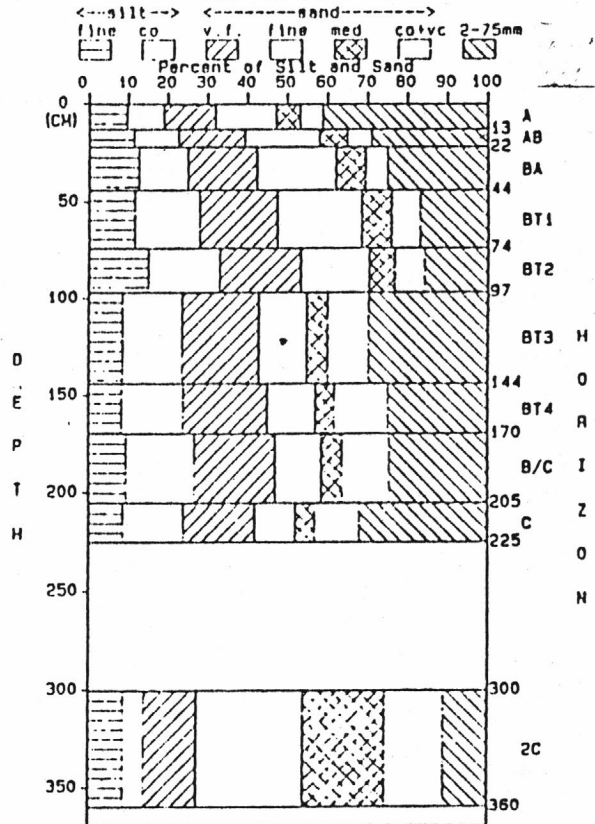




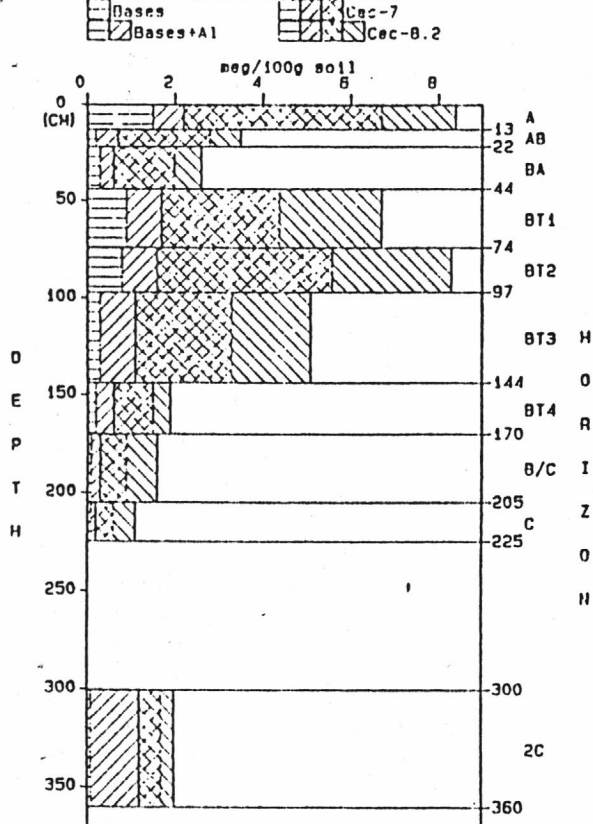
NATIONAL SOIL SURVEY LABORATORY  
Particle Size Distribution  
ALLEN : S846A231-002



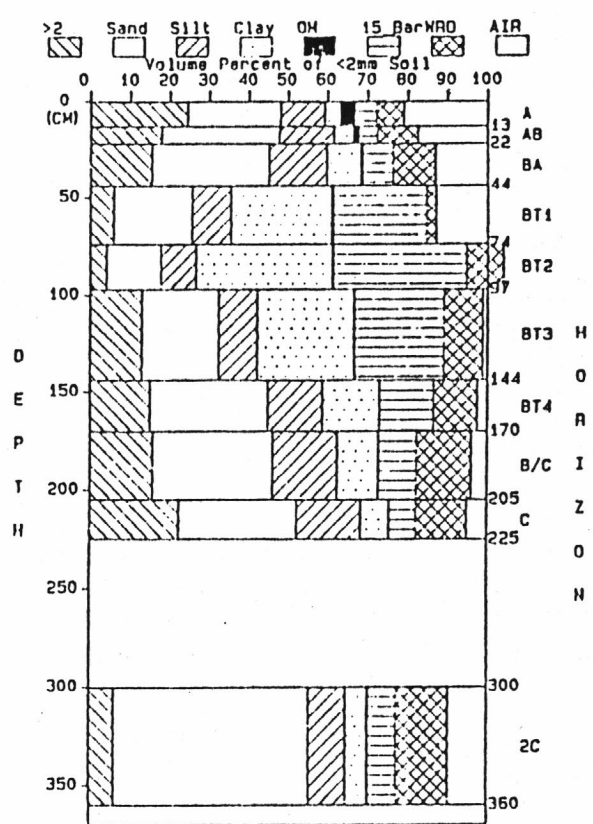
NATIONAL SOIL SURVEY LABORATORY  
Clay-free Particle Size Distribution  
ALLEN : S846A231-002



NATIONAL SOIL SURVEY LABORATORY  
Cation Exchange  
ALLEN : S846A231-002



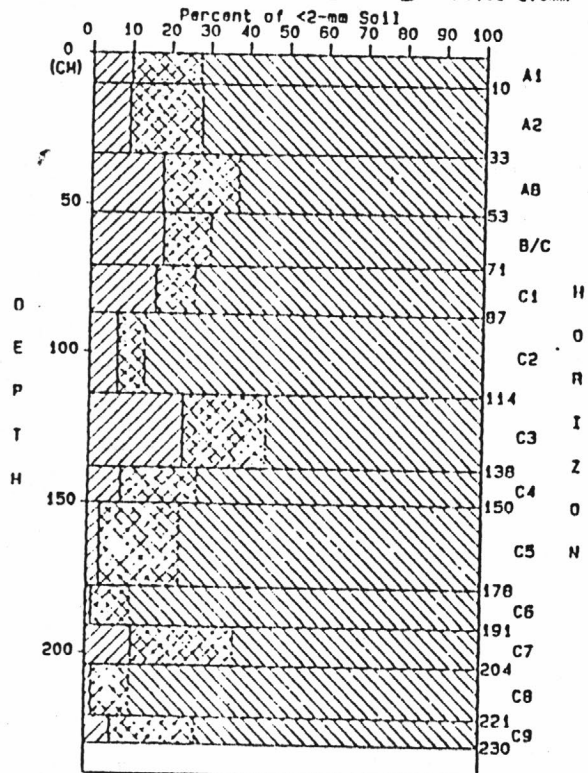
NATIONAL SOIL SURVEY LABORATORY  
Soil Water, Pores and Solids  
ALLEN : S846A231-002





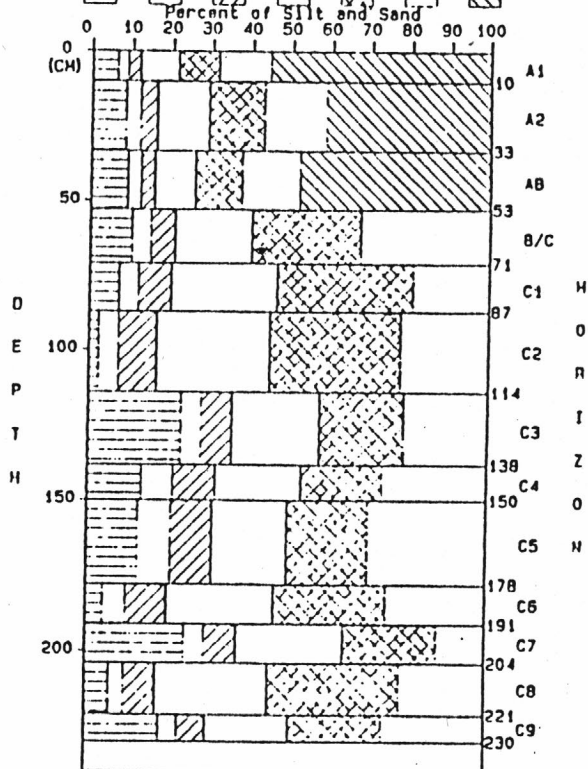
NATIONAL SOIL SURVEY LABORATORY  
Particle Size Distribution  
SND : S04GA231-003

Legend:  
Fine Clay: <.002  
Coarse Clay  
Total Silt  
Total Sand: 0.05-2.0mm



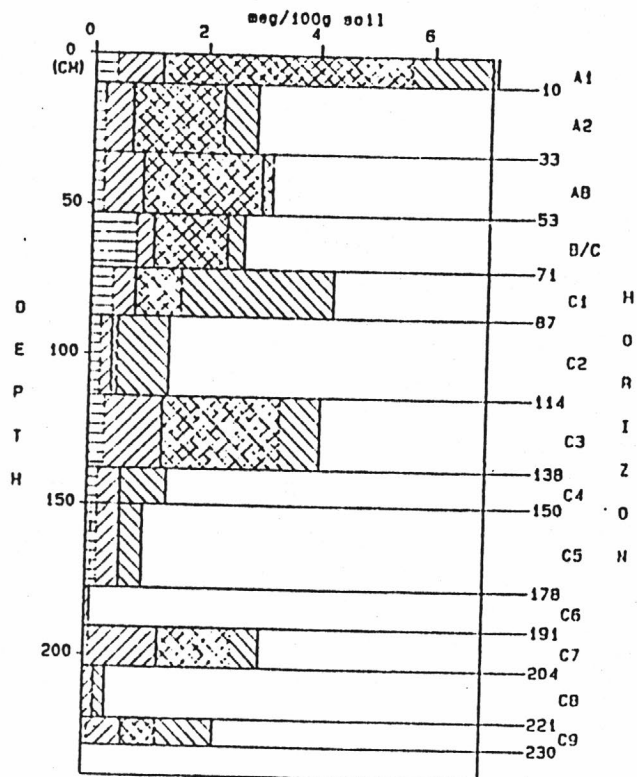
NATIONAL SOIL SURVEY LABORATORY  
Clay-free Particle Size Distribution  
SND S04GA231-003

Legend:  
Silt: <.075mm  
Sand: 0.075-2.0mm  
Fine sand, medium sand, coarse sand



NATIONAL SOIL SURVEY LABORATORY  
Cation Exchange  
SND S04GA231-003

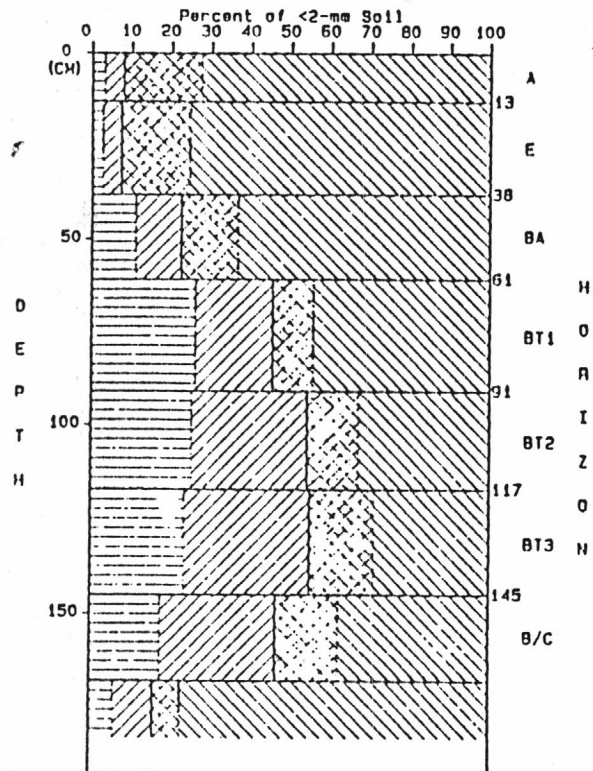
Legend:  
Bases  
Bases+A1  
Cec-7  
Cec-8.2





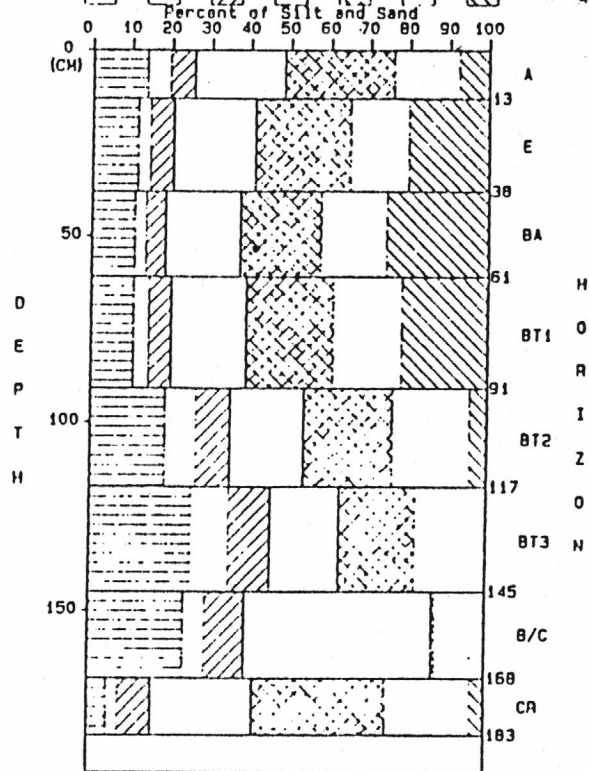
NATIONAL SOIL SURVEY LABORATORY  
Particle Size Distribution  
SND : SB4GA231-004

Fine Clay: <.002  
Coarse Clay  
Total Silt  
Total Sand: 0.05-2.0mm



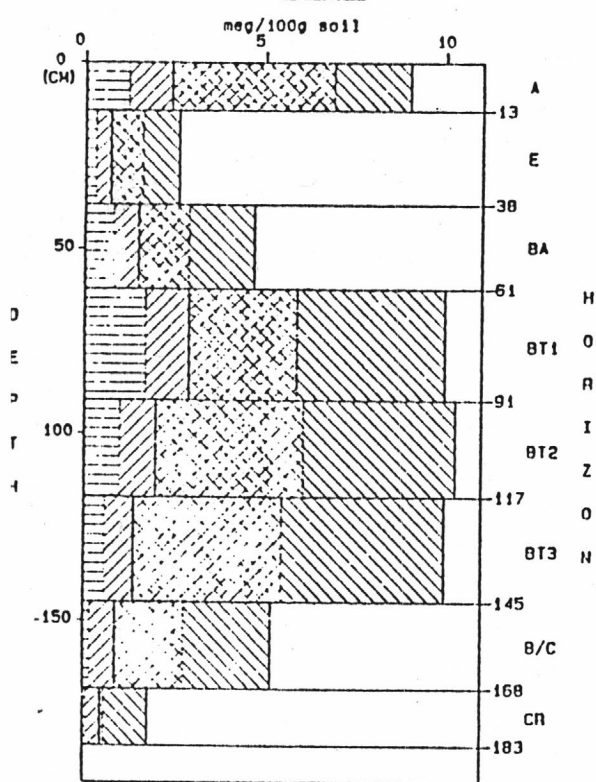
NATIONAL SOIL SURVEY LABORATORY  
Clay-free Particle Size Distribution  
SND SB4GA231-004

<---silt---> <---sand--->  
fine co v.f. fine mud co v.c 2-75mm



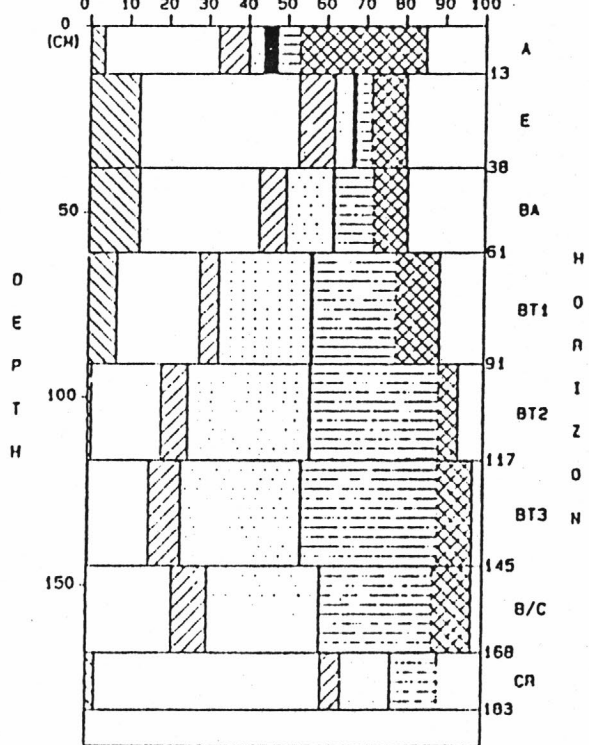
NATIONAL SOIL SURVEY LABORATORY  
Cation Exchange  
SND SB4GA231-004

Bases  
Bases+A1  
Cec-7  
Cec-8.2



NATIONAL SOIL SURVEY LABORATORY  
Soil Water, Pores and Solids  
SND SB4GA231-004

>2 Sand Silt Clay OH 15 Bar WRO AIR  
Volume Percent of <2mm Soil

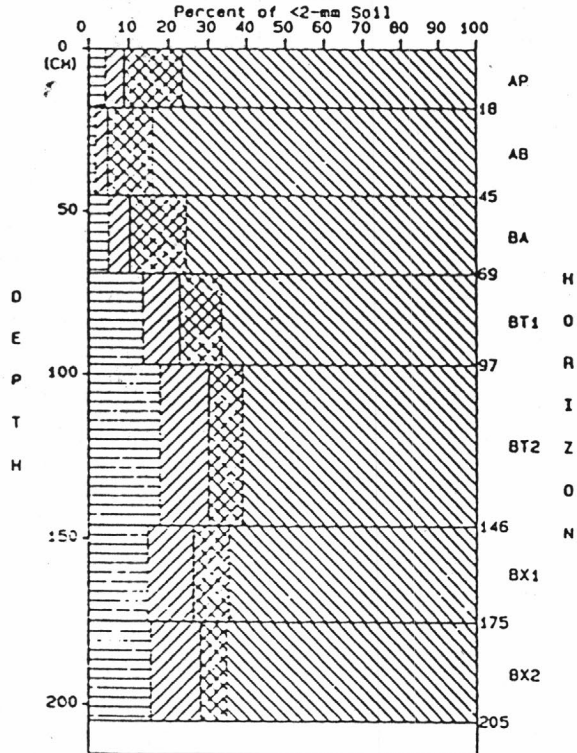




# FIGURE 10A

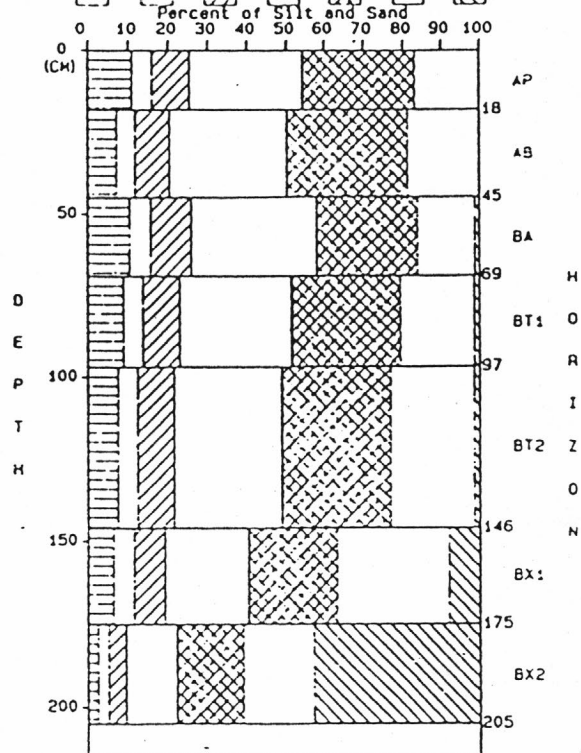
## NATIONAL SOIL SURVEY LABORATORY Particle Size Distribution SND : S84GA293-001

Fine Clay: <.002  
 Coarse Clay  
 Total Silt  
 Total Sand: 0.05-2.0mm



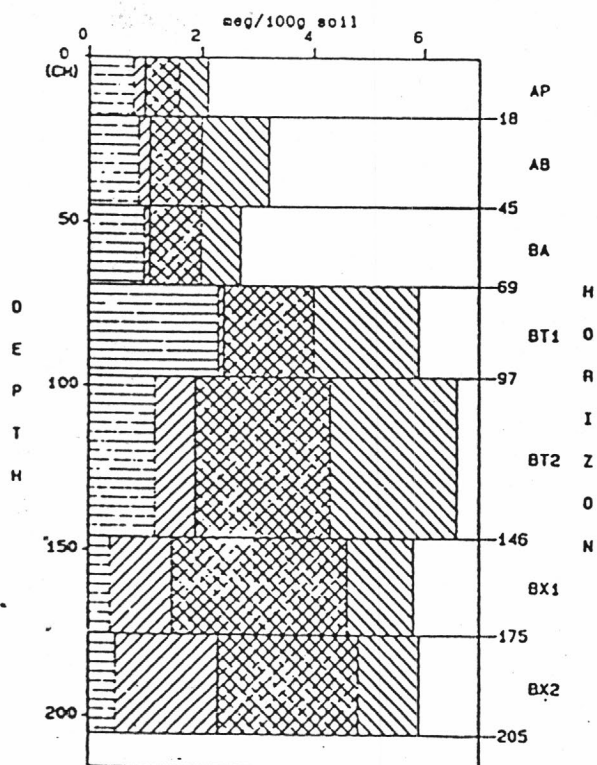
## NATIONAL SOIL SURVEY LABORATORY Clay-free Particle Size Distribution SND S84GA293-001

<--silt--> <--sand-->  
 fine co v.f. fine med co+vc 2-75mm  
 Percent of Silt and Sand



## NATIONAL SOIL SURVEY LABORATORY Cation Exchange SND S84GA293-001

Bases  
 Bases+A1  
 CEC-7  
 CEC-8.2



## NATIONAL SOIL SURVEY LABORATORY Soil Water, Pores and Solids SND S84GA293-001

>2 Sand Silt Clay OM 15 Bar WRO AIR  
 Volume Percent of <2mm Soil

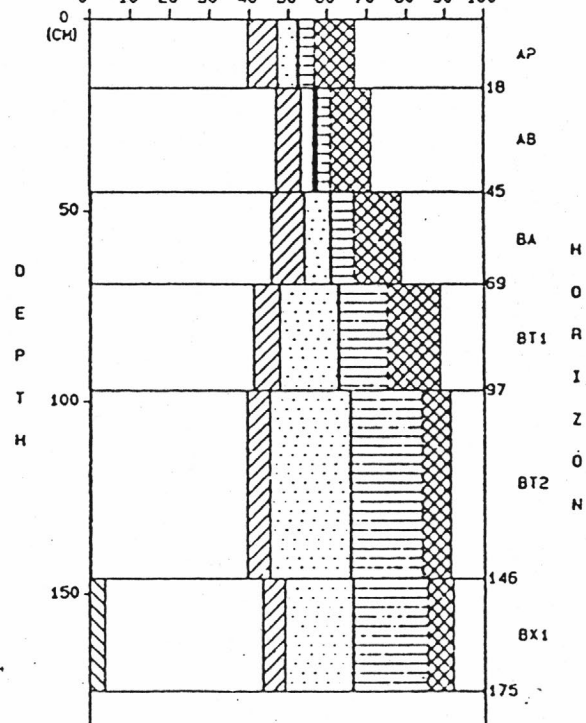
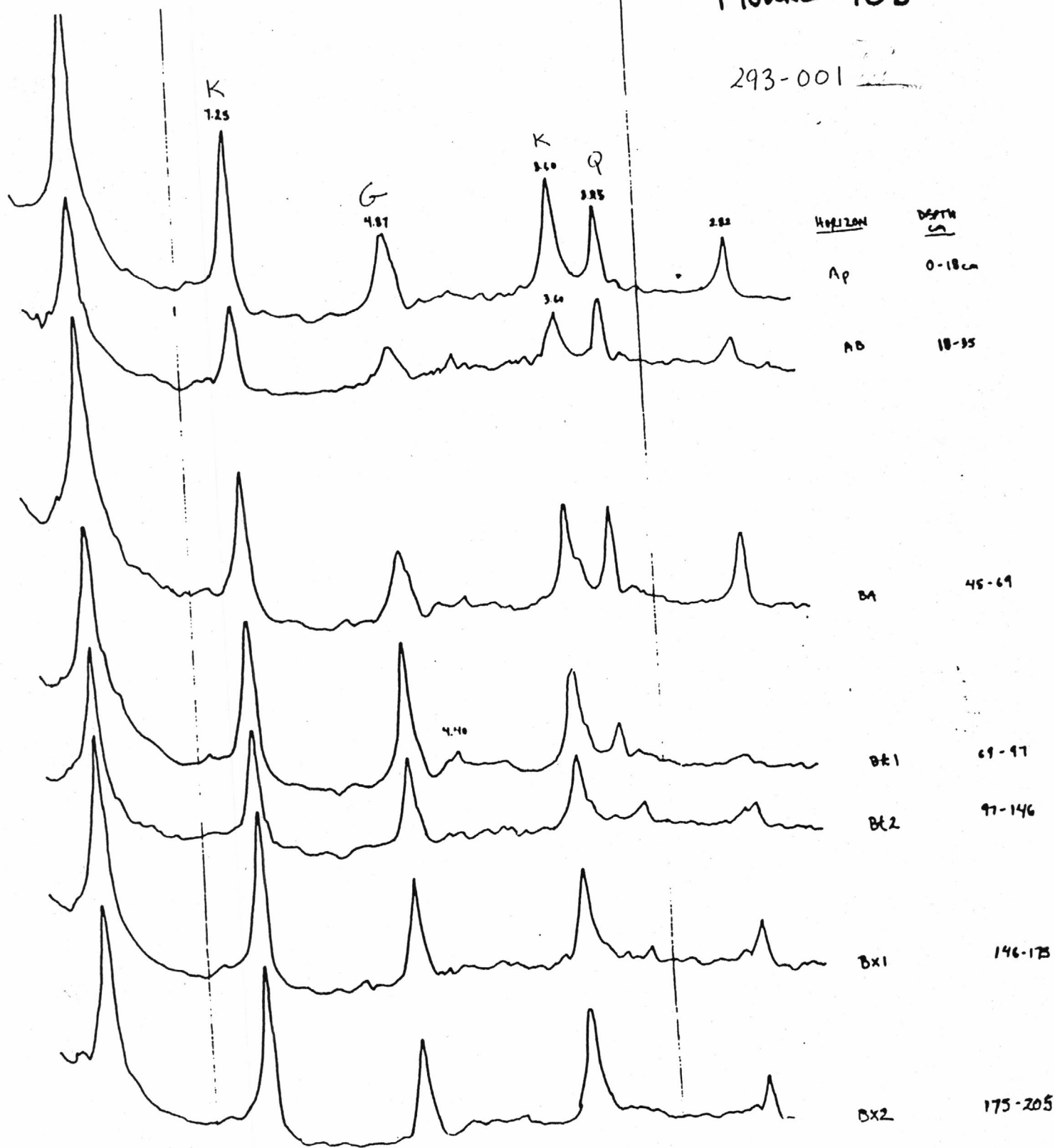




FIGURE 106

293-001

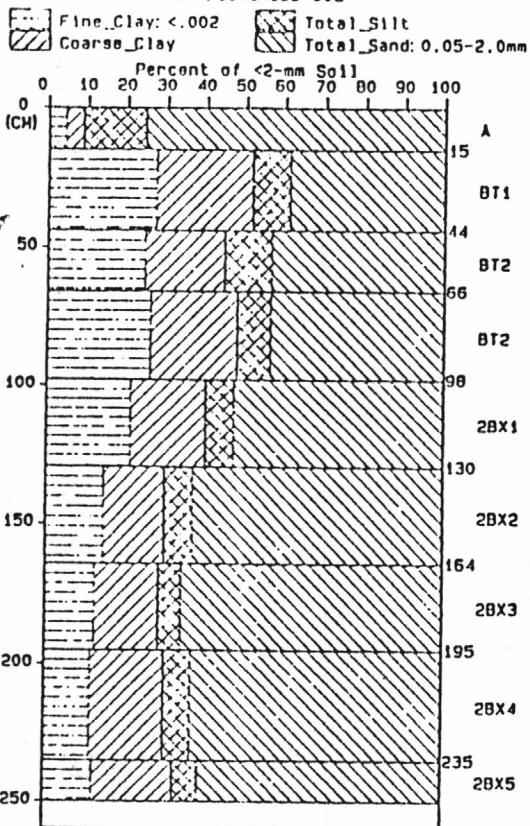


EXPLANATION

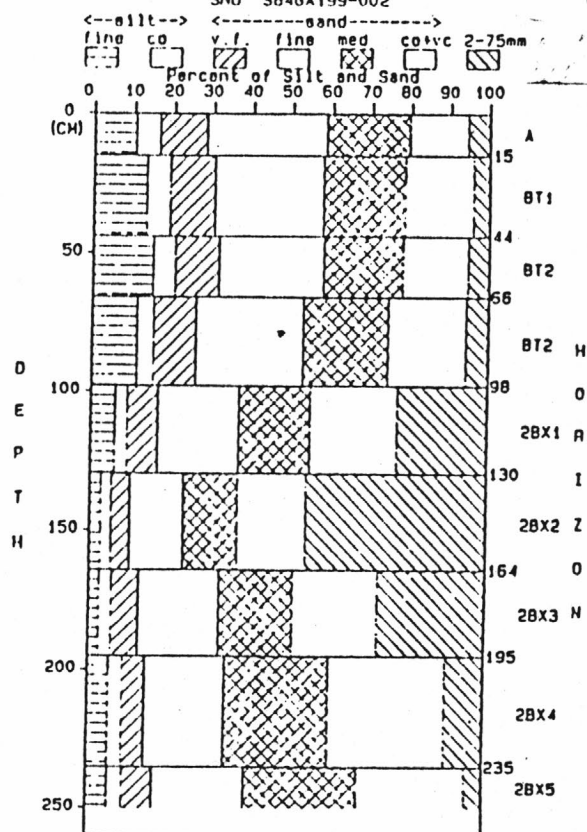
- V- Vermiculite
- K- Kaolinite
- G- Gibbsite
- Q- Quartz



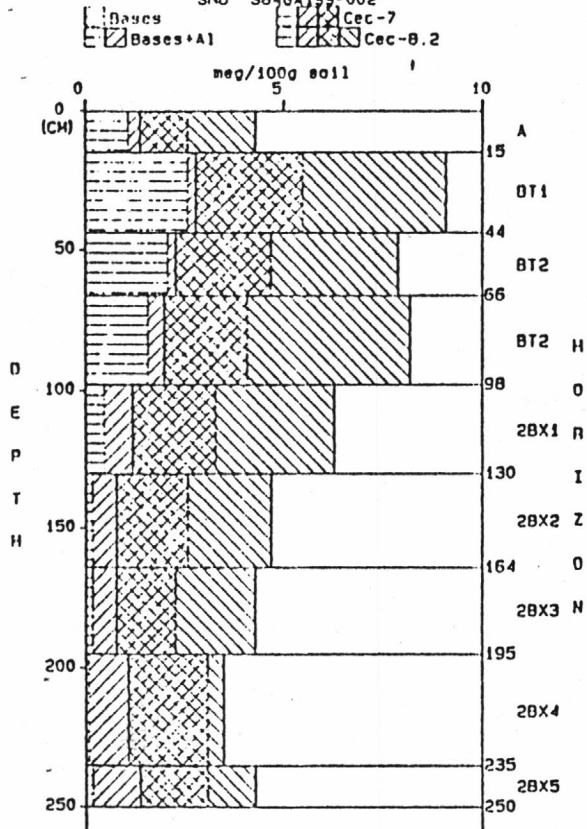
NATIONAL SOIL SURVEY LABORATORY  
Particle Size Distribution  
SND : S84GA199-002



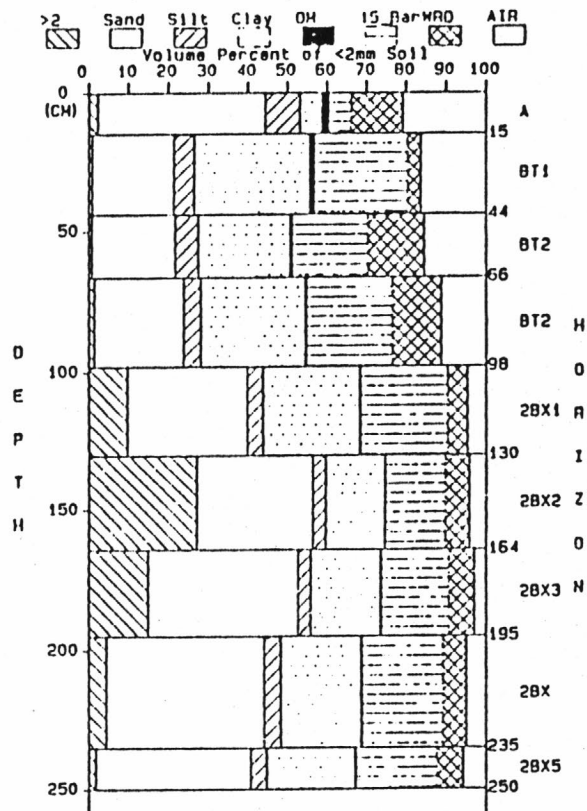
NATIONAL SOIL SURVEY LABORATORY  
Clay-free Particle Size Distribution  
SND S84GA199-002



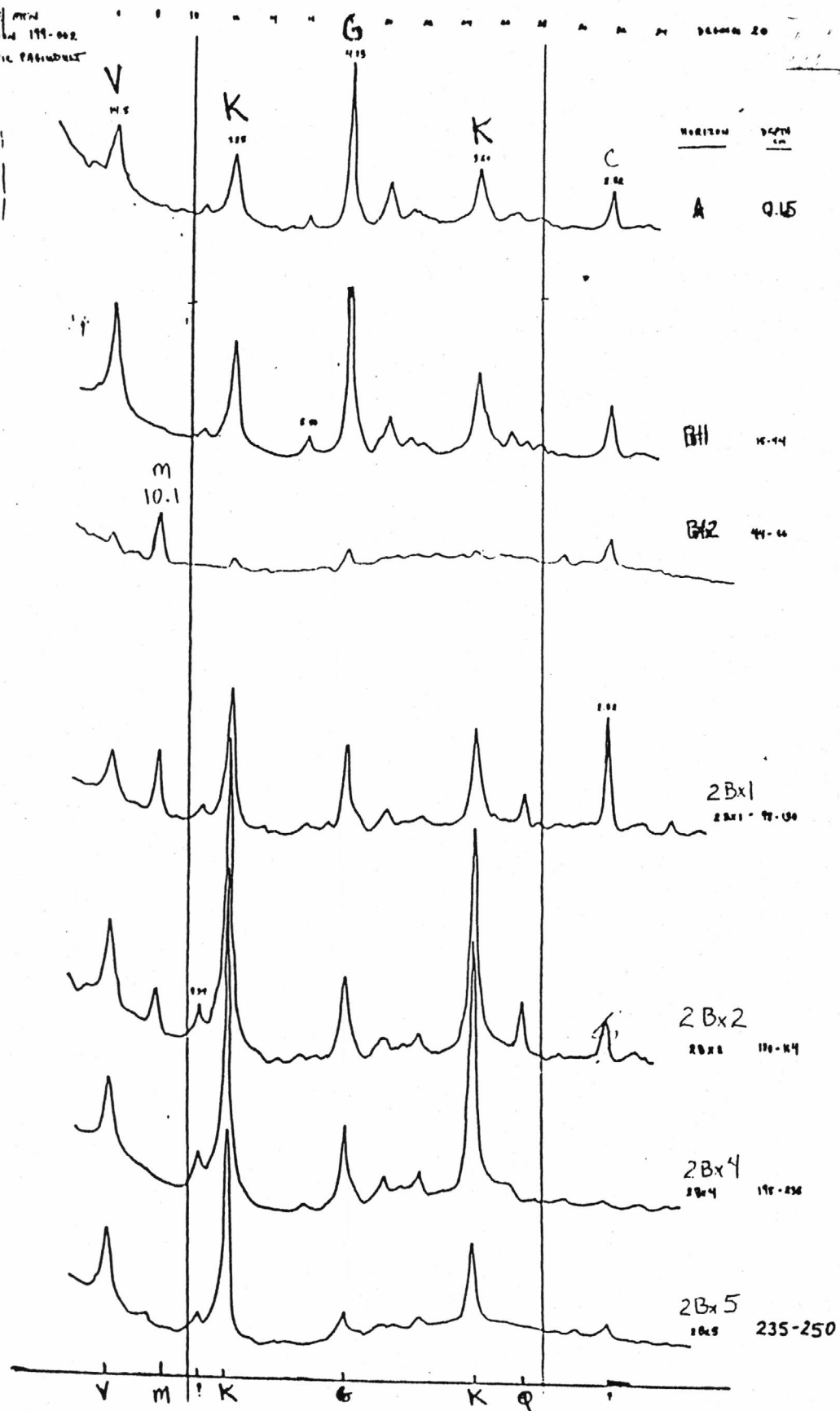
NATIONAL SOIL SURVEY LABORATORY  
Cation Exchange  
SND S84GA199-002



NATIONAL SOIL SURVEY LABORATORY  
Soil Water, Pores and Solids  
SND S84GA199-002





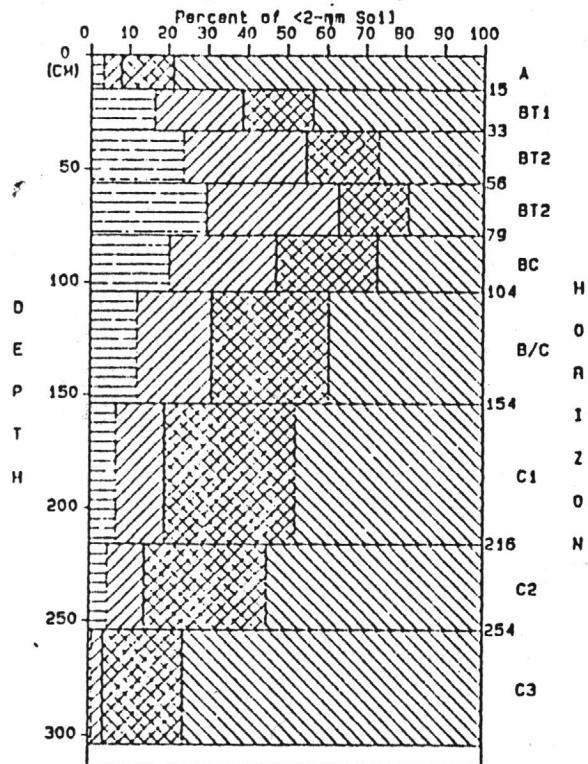




NATIONAL SOIL SURVEY LABORATORY

Particle Size Distribution

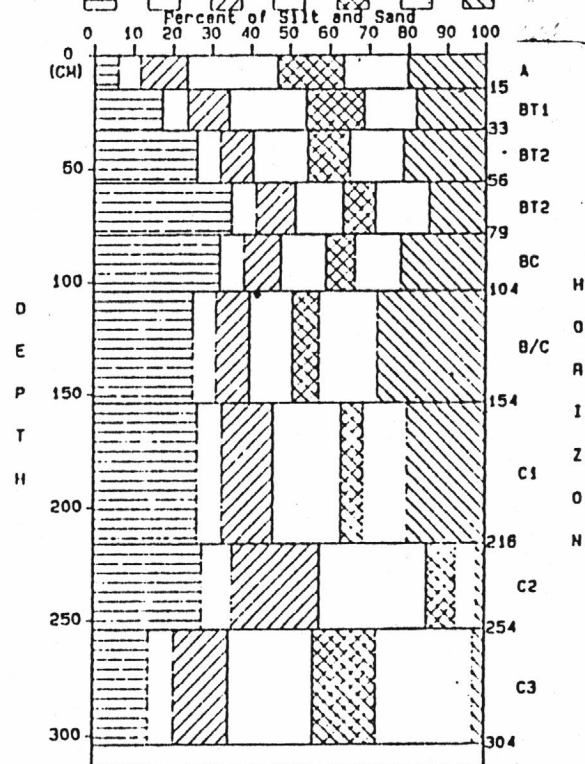
CECIL : S84GA199-001



NATIONAL SOIL SURVEY LABORATORY

Clay-free Particle Size Distribution

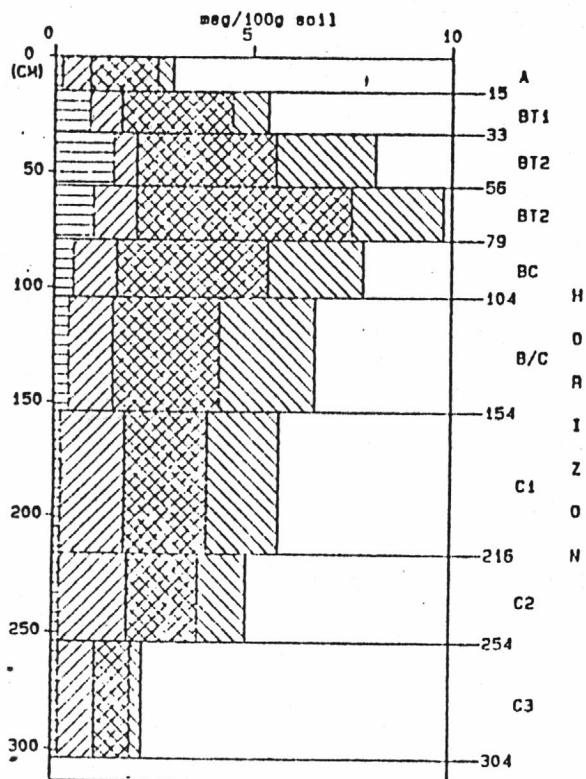
CECIL S84GA199-001



NATIONAL SOIL SURVEY LABORATORY

Cation Exchange

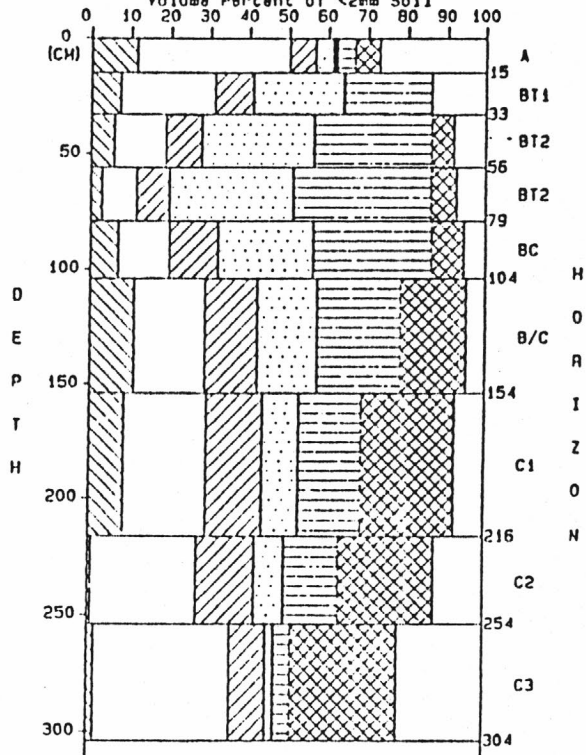
CECIL S84GA199-001



NATIONAL SOIL SURVEY LABORATORY

Soil Water, Pores and Solids

CECIL S84GA199-001

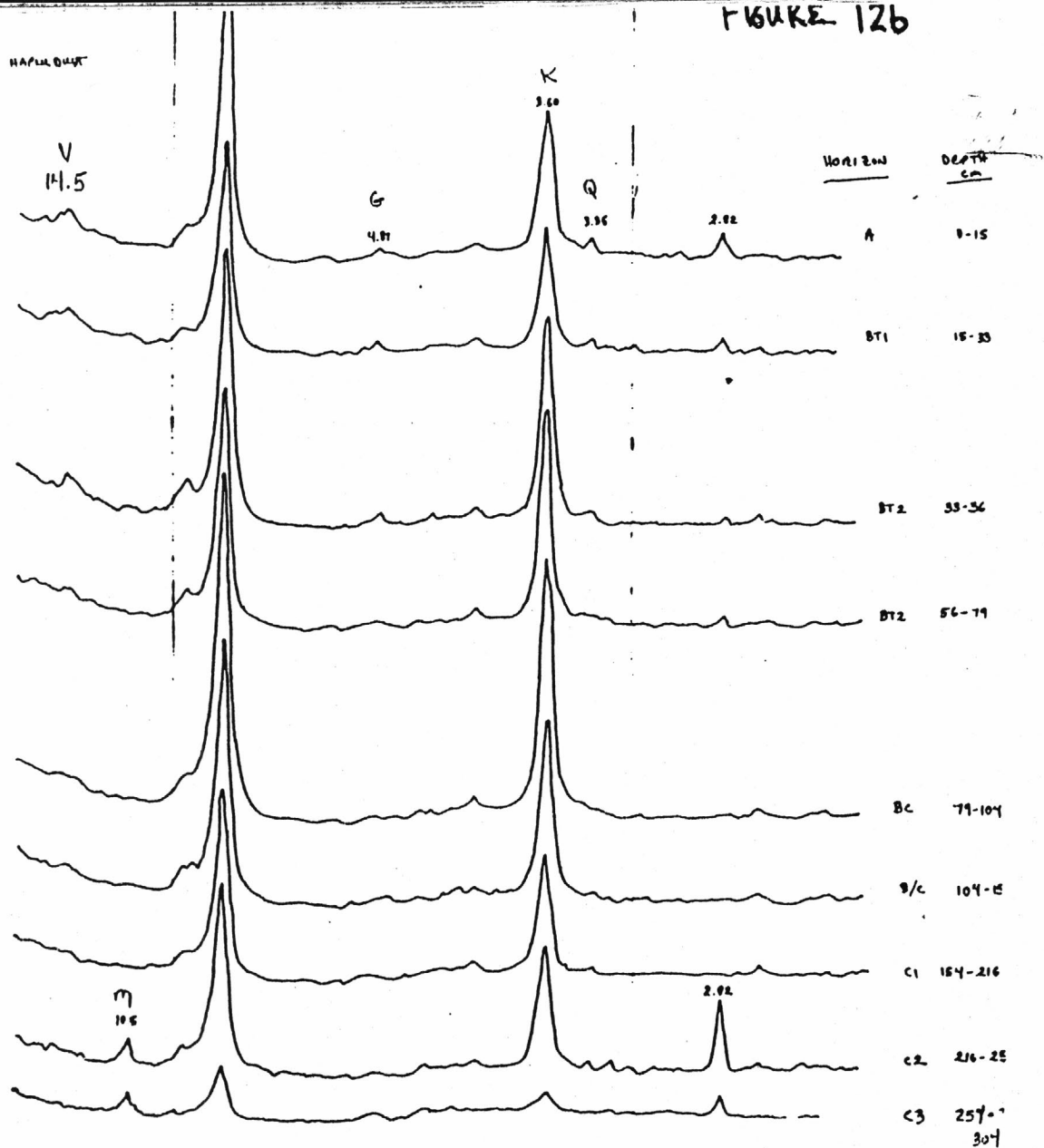




84 GA-199-001

CECIL, KAOLINITE HAPLODUM

FIGURE 126



# EXPLANATION

V - Vermiculite  
 K - Kaolinite  
 G - Gibbsite  
 Q - Quartz





Table 1. Analyses of primary and sedimentary kaolin and bauxite from the area around Warm Springs, Meriwether County, Georgia

Analysis of bauxite from the Warm Springs Bauxite Mine

|   |       |
|---|-------|
| Silica ( $\text{SiO}_2$ ).....                | 19.05 |
| Alumina ( $\text{Al}_2\text{O}_3$ ).....      | 51.28 |
| Ferric oxide ( $\text{Fe}_2\text{O}_3$ )..... | .48   |
| Titanium dioxide ( $\text{TiO}_2$ ).....      | 1.71  |

Analyses of kaolin and bauxitic clay from prospect wells near the Warm Springs Bauxite Mine

A. Stiff semi-hard light gray and drak bluish-gray kaolin from a prospect well 50 ft north of bauxite mine (sample taken between 12 and 18-ft depth).

B. Hard white sandy nodular bauxitic clay from a prospect well 600 ft west of the bauxite mine and in line with it (sample taken below 4 ft depth).

C. Stiff semi-hard white to pink kaolin from prospect pit 10 ft north of B (from about 12-ft depth).

|   | A <sup>1</sup> | B <sup>2</sup> | C <sup>3</sup> |
|---|----------------|----------------|----------------|
| Silica ( $\text{SiO}_2$ ).....                | 44.76          | 47.74          | 46.34          |
| Alumina ( $\text{Al}_2\text{O}_3$ ).....      | 38.00          | 36.64          | 36.40          |
| Ferric oxide ( $\text{Fe}_2\text{O}_3$ )..... | 2.35           | 1.19           | 1.72           |
| Titanium dioxide ( $\text{TiO}_2$ ).....      | 1.08           | 1.17           | 1.80           |
| Sand.....                                     | .97            | 13.15          | 9.91           |

<sup>1</sup> typical kaolin

<sup>2</sup> sandy bauxitic clay. If the percentage of sand is subtracted from the total analysis and the percentage of alumina recalculated to the basis of 100 percent, the clay has 42.27 percent alumina

<sup>3</sup> sandy slightly bauxitic clay. The percentage of alumina, taking away the sand and recalculating as above, is 40.42

Analyses of primary or residual kaolin from property 3 miles south of Durand and 4 miles west of Warm Springs

A. Grab sample from material thrown out of 15-ft prospect well

B. Grab sample from outcrop in bank of road

|   | A <sup>1</sup> | B <sup>2</sup> |
|---|----------------|----------------|
| Silica ( $\text{SiO}_2$ ).....                | 75.02          | 57.30          |
| Alumina ( $\text{Al}_2\text{O}_3$ ).....      | 17.00          | 30.58          |
| Ferric oxide ( $\text{Fe}_2\text{O}_3$ )..... | 1.57           | 1.41           |
| Titanium dioxide ( $\text{TiO}_2$ ).....      | .72            | 1.53           |
| Sand.....                                     | 58.60          | 26.17          |



Table 2. Discharge and temperature data from several springs in the area of Pine Mountain, Georgia (Hewett and Crickmay, 1937)

| Name                    | Location | Discharge<br>gal/min<br>all sources | Temperature<br>°F<br>main source |
|-------------------------|----------|-------------------------------------|----------------------------------|
| WARM SPRINGS (>66°F)    |          |                                     |                                  |
| Warm Springs (>10)      |          | 844-914                             | 87-88                            |
| Parkman Pond            |          | 50-100                              | 76.6                             |
| Brown's Spring          |          | 15-30                               | 69.0                             |
| Thundering Spring       |          | 380                                 | 74                               |
| Barker Spring           |          | 30                                  | 74                               |
| Lifsey Spring           |          | 83                                  | 78                               |
| Taylor Spring           |          | 385                                 | 75                               |
| COLD SPRINGS (<66°F)    |          |                                     |                                  |
| Cold Spring (4)         |          | 1282-1822                           | 64                               |
| North Spring            |          | 238-451                             |                                  |
| South Springs 1 & 2     |          | 50                                  |                                  |
| Cold Spring and seepage |          | 1050-1320                           |                                  |
| Trammel's Spring        |          | 100                                 | 62                               |
| Blue Spring             |          |                                     |                                  |
| Spring                  |          | 282-367                             | 64                               |
| Chalybeate              |          |                                     |                                  |
| Springs (4)             |          | 12-24                               | 62-64                            |
| Oak Mountain            |          |                                     |                                  |
| Spring                  |          | 0.54-0.94                           | 60-64                            |
| White Sulphur           |          |                                     |                                  |
| Springs (4)             |          | 0.65-1.62                           | 62-63                            |



Table 3. 1986 analytical data from Cold Spring at National Fish Hatchery at Warm Springs, Georgia

| DATE  | pH  | ALK. | HRDNS. | NO2   | NO3  | NH3  | SAL. | COND. | TEMP.<br>°C | D.O. | pH  |
|-------|-----|------|--------|-------|------|------|------|-------|-------------|------|-----|
| MAR.  | 3.9 | MV   | 4.0    | -     | -    | -    | -    | 25    | 17          | 9.5  | 5.4 |
| JUNE  | 4.3 | MV   | 2.0    | -     | -    | -    | -    | 25    | MV          | MV   | MV  |
| JULY  | 4.4 | MV   | 4.0    | -     | -    | 0.06 | -    | 20    | 17.8        | 12.0 | 5.0 |
| AUG.  | 4.3 | MV   | 10.0   | -     | 0.33 | -    | -    | 25    | MV          | 12.0 | 5.0 |
| SEPT. | 3.9 | MV   | 1.6    | -     | -    | -    | -    | 25    | 17.8        | 7.8  | 5.0 |
| OCT.  | 3.7 | MV   | 6.0    | 0.004 | 1.0  | 0.03 | -    | 20    | 17.8        | 11.0 | 5.5 |
| NOV.  | 4.1 | MV   | 6.0    | 0.010 | -    | -    | -    | 20    | 17.8        | 7.0  | 5.0 |
| n     | 7   | -    | 7      | 7     | 7    | 7    | 7    | 7     | 5           | 6    | 6   |
| X     | 4.1 | -    | 4.8    | .002  | .19  | 0.01 | -    | 23    | 17.6        | 9.9  | 5.2 |
| S.D.  | .3  | -    | 2.9    | .004  | .38  | 0.02 | -    | 3     | 0.4         | 2.1  | 0.2 |
| S.E.  | .1  | -    | 1      | .001  | .14  | 0.01 | -    | 1     | 0.2         | 0.9  | 0.1 |



Table 4. Analyses, methods, and unit of expression for analyses conducted at NSSL<sup>1</sup>

| Analysis            | Method Code | Unit of Expression               |
|---------------------|-------------|----------------------------------|
| Particle size       | 3A1         | weight % <2 mm material          |
| Organic carbon      | 6A1C        | weight % <2 mm material          |
| Dithionite-Citrate  |             |                                  |
| Iron                | 6C2B        | weight % <2 mm material          |
| Aluminum            | 6G7A        | weight % <2 mm material          |
| Manganese           | 6D2A        | weight % <2 mm material          |
| Bulk density        | 4A1D        | g/cm <sup>3</sup> <2 mm material |
| COLE                | 4D1         | cm/cm whole soil                 |
| 15 bar water        | 4B2A        | weight % <2 mm material          |
| WRD                 | 4C1         | cm/cm whole soil                 |
| Extractable bases   | 5B5A        | meq/100g <2 mm material          |
| CEC                 |             |                                  |
| Sum of cations      | 5A3A        | meq/100g <2 mm material          |
| NH <sub>4</sub> OAC | 5A8B        | meq/100g <2 mm material          |
| Al+bases            | 5A3B        | meq/100g <2 mm material          |
| Base Saturation     |             |                                  |
| Sum of cations      | 5C3         | percent                          |
| NH <sub>4</sub> OAC | 5C1         | percent                          |
| pH                  |             |                                  |
| CaCl <sub>2</sub>   | 8C1E        | negative log <sub>10</sub>       |
| H <sub>2</sub> O    | 8C1A        | negative log <sub>10</sub>       |

<sup>1</sup>Methods codes from Soils Staff (1972)



TABLE 5

## 5. Soil Site Locations

| <u>SCS<br/>Number</u> | <u>7.5°<br/>Quad</u> | <u>Altitude</u> | <u>Latitude</u> | <u>Longitude</u> | <u>Slope</u> | <u>Aspect</u> | <u>Pedologic<br/>Data<br/>Table</u> |
|-----------------------|----------------------|-----------------|-----------------|------------------|--------------|---------------|-------------------------------------|
| S84-GA-231-001        | Thomaston            | 355             | 32°59'58"       | 84°19'24"        | 6%           | SW            | 6                                   |
| S84-GA-231-002        | Zebulon              | 250             | 33°00'58"       | 84°19'38"        | 10%          | E             | 7                                   |
| S84-GA-231-003        | Thomaston            | 342             | 33°00'11"       | 84°20'58"        | 5%           | NE            | 8                                   |
| S84-GA-231-004        | Thomaston            | 345             | 33°00'09"       | 84°20'57"        | 7%           | NE            | 9                                   |
| S84-GA-293-001        | Sunset Village       | 287             | 32°57'19"       | 84°25'00"        | 3%           | E             | 10                                  |
| S84-GA-199-002        | Warm Springs         | 288             | 32°53'05"       | 84°42'35"        | 3%           | S             | 11                                  |
| S84-GA-199-001        | Woodbury             | 248             | 32°57'01"       | 84°37'20"        | 2%           | NW            | 12                                  |



Pedon: SND

Soil Survey # S84-GA-231-001

Location: Pike Co. GA; 1 km N of Upson Co. line on US 19 300 m E of US 19 above gravel pit.

Latitude: 32-59-58-N

NSSL ID #: 84P0468

Longitude: 084-19-24-W

Classification: Clayey, mixed, thermic Typic Kandudult

Physiography: Upland slope in piedmonts

Geomorphic Position:

Microrelief:

Slope Characteristics: 6%, southwest facing

Precipitation: 1200 mm Udic moisture regime

Water Table Depth:

Air Temp. (Centigrade): Ann: Sum: Win:

Soil Temp. (Centigrade): Ann: Sum: Win:

Drainage: Well drained

Stoniness:

Particle Size Control Section: 51 to 101 cm

Parent Material: residuum from quartzite material

Vegetation Codes:

Elevation: 355 m MSL

MLRA: 136

Permeability: Slow

MAT: 18 degrees C

Land Use:

Erosion or Deposition: Slight

Diagnostic Horizons: 0 to 51 cm Ochric, 66 to 144 cm Argillic

Described by: Grover Thomas and Talbert Gerald

Weather Station: 093271

Date: 04/84

UTM Zone 16 3654100 m N 750100 m E Thomaston GA 7.5' Quad. Atlas sheet 41 in Soil Survey for Lamar Pike and Upson Co. GA. Map Unit: Pacolet gravelly loam, 2-6% slopes. Sampled by Warren Lynn and Reese Berdanier 4/3/84.

O--5 to 0 cm; partially decomposed organics.  
Not sampled. Partially decomposed forest litter.

A--0 to 20 cm; very dark gray (10YR 3/1) gravelly sandy loam; weak fine granular structure; very friable; many fine and medium roots; clear smooth boundary.  
84P2492

E--20 to 38 cm; brown (10YR 5/3) gravelly sandy loam; weak fine granular structure; very friable; many fine and medium roots; gradual smooth boundary.  
84P2493

BE--38 to 51 cm; brownish yellow (10YR 6/6) gravelly sandy loam; weak fine granular structure; very friable; many fine and medium roots; 15 percent cobbles; clear wavy boundary.  
Gravel is quartzite.  
84P2494

2Bt1--51 to 66 cm; red (2.5YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; clear smooth boundary.  
84P2495

2Bt2--66 to 85 cm; red (2.5YR 4/8) clay loam; moderate medium subangular blocky structure; friable; few fine roots; clay films on faces of peds; gradual wavy boundary.  
Satellite 2Bt2 horizon sampled 2 m away along pit wall. Sample 84P2500.  
84P2496

2Bt3--85 to 114 cm; red (2.5YR 4/8) clay loam; moderate medium subangular blocky structure; friable; few fine roots; clay films on faces of peds; abrupt irregular boundary.  
84P2497

2Cr--114 to 220 cm;  
Quartzite and mica schist. Red clay seam 30 cm wide extends from 114 cm to 220 cm. Red clay seam at 114 to 168 cm (84P2498) and 168 to 220 cm (84P2499), both indicated as 2Bt4 horizon on data sheet. Fabric has many pressure faces



S84GA-23,1-001

\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*  
(PIKE COUNTY, GEORGIA)

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED ; FINE-LOAMY, SILICEOUS, THERMIC TYPIC HAPLUDULT  
REVISED TO : ; CLAYEY, MIXED, THERMIC TYPIC KANDIUUDULT

NSSL - PROJECT 84P 91, PINE MOUNTAIN  
- PEDON 84P 468, SAMPLES 84P2492-2500  
- GENERAL METHODS 1B1A, 2A1, 2B

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
NATIONAL SOIL SURVEY LABORATORY  
LINCOLN, NEBRASKA 68508-3866

|            |            | -1--       | -2--   | -3-- | -4--   | -5--  | -6--       | -7-- | -8--           | -9-- | -10-         | -11- | -12-        | -13- | -14-             | -15- | -16-             | -17-   | -18-              | -19-   | -20-      |      |
|------------|------------|------------|--|------|--------|-------|------------|------|----------------|------|--------------|------|-------------|------|------------------|------|------------------|--------|-------------------|--------|-----------|------|
| SAMPLE NO. | DEPTH (CM) | HORIZON    | (- - - TOTAL - - - ) (- - - CLAY - - - ) (- - - SILT - - - ) (- - - SAND - - - ) (- - - COARSE FRACTIONS (MM) - - - ) (>2MM) |      |        |       |            |      |                |      |              |      |             |      |                  |      |                  |        |                   |        |           |      |
|            |            |            | CLAY   | SILT | SAND   | FINE  | CO3        | FINE | COARSE         | VF   | F            | M    | C           | VC   | WEIGHT           |      |                  | WT     |                   |        |           |      |
|            |            |            | LT   | .002 | .05    | LT    | LT         | .002 | .02            | .05  | .05          | .10  | .25         | .5   | 1                | 2    | 5                | 20     | .1-               | PCT OF |           |      |
|            |            |            | .002   | .05  | .2     | .0002 | .002       | .02  | .05            | .10  | .25          | .50  | 1           | 2    | 5                | 20   | .1-              | PCT OF | WHOLE SOIL        |        |           |      |
|            |            |            | PCT OF <2MM (3A1) - - - - - PCT OF <75MM (3B1) - - - - -   |      |        |       |            |      |                |      |              |      |             |      |                  |      |                  |        |                   |        |           |      |
| 84P2492S   | 0- 20      | A          | 6.7  | 18.3 | 75.0   | 2.0   |            | 12.1 | 6.2            | 9.7  | 24.0         | 20.9 | 11.8        | 8.6  | 6                | 35   | 21               | 87     | 62                |        |           |      |
| 84P2493S   | 20- 38     | E          | 6.6  | 20.9 | 72.5   | 1.6   |            | 14.3 | 6.6            | 9.9  | 24.6         | 20.1 | 10.2        | 7.7  | 6                | 30   | 22               | 84     | 58                |        |           |      |
| 84P2494S   | 38- 51     | BE         | 9.2  | 20.6 | 70.2   | 2.2   |            | 14.7 | 5.9            | 8.7  | 21.0         | 16.0 | 10.3        | 14.2 | 11               | 31   | 24               | 87     | 66                |        |           |      |
| 84P2495S   | 51- 66     | 2BT1       | 27.8   | 20.6 | 51.6   | 7.9   |            | 15.8 | 4.8            | 6.6  | 14.2         | 11.0 | 8.8         | 11.0 | 12               | 8    | 1                | 57     | 21                |        |           |      |
| 84P2496S   | 66- 85     | 2BT2       | 49.8   | 15.8 | 34.4   | 14.6  |            | 12.4 | 3.4            | 4.7  | 11.1         | 10.6 | 5.4         | 2.6  | 2                | 2    | --               | 33     | 4                 |        |           |      |
| 84P2497S   | 85-114     | 2BT3       | 59.1   | 10.0 | 30.9   | 21.6  |            | 7.1  | 2.9            | 4.0  | 8.5          | 8.9  | 6.0         | 3.5  | 1                | TR   | --               | 28     | 1                 |        |           |      |
| 84P2498S   | 114-168    | 2BT4       | 67.6   | 15.4 | 17.0   | 22.3  |            | 12.8 | 2.6            | 3.5  | 5.9          | 3.9  | 2.0         | 1.7  | --               | --   | --               | 13     | --                |        |           |      |
| 84P2499S   | 168-220    | 2BT4       | 60.4   | 17.4 | 22.2   | 15.1  |            | 14.0 | 3.4            | 4.2  | 8.4          | 6.1  | 2.7         | 0.8  | TR               | TR   | --               | 18     | TR                |        |           |      |
| 84P2500S   | 85-120     | 2BT3 SATEL | 54.7   | 8.6  | 36.7   | 21.0  |            | 5.6  | 3.0            | 3.8  | 11.6         | 13.2 | 6.8         | 1.3  | --               | --   | --               | 33     | --                |        |           |      |
| DEPTH (CM) | ORGN C     |            | TOTAL N  |      | EXTR P |       | TOTAL S    |      | DITH-CIT - - - |      | (RATIO/CLAY) |      | (ATTERBERG) |      | BULK DENSITY - - |      | COLE - - -       |        | WATER CONTENT - - |        | WRD       |      |
|            | 6A1C       |            | 6B3A   |      | 6S3    |       | 6R3A       |      | FE             |      | AL           |      | CEC         |      | FIELD 1/3        |      | OVEN WHOLE       |        | FIELD 1/10        |        | 1/3       |      |
|            | PCT        |            | <2MM   |      | PPM    |       | <- PERCENT |      | OF             |      | <2MM -->     |      | 8D1         |      | PCT <0.4MM       |      | <- - G/CC - - -> |        | <- - PCT OF       |        | <2MM - -> |      |
|            |            |            |  |      |        |       |            |      |                |      |              |      |             |      |                  |      |                  |        |                   |        |           |      |
| 0- 20      | 3.91       | 0.137      |  |      |        |       | 0.3        | 0.2  |                |      | 2.04         | 1.00 |             |      | 1.30             |      |                  |        |                   |        | 6.7       |      |
| 20- 38     | 0.58       | 0.025      |  |      |        |       | 0.3        | 0.1  |                |      | 0.35         | 0.41 |             |      | 1.30             |      |                  |        |                   |        | 2.7       |      |
| 38- 51     | 0.29       | 0.015      |  |      |        |       | 0.4        | 0.1  |                |      | 0.21         | 0.34 |             |      | 1.30             |      |                  |        |                   |        | 3.1       |      |
| 51- 66     | 0.26       | 0.018      |  |      |        |       | 1.3        | 0.2  |                |      | 0.17         | 0.33 |             |      | 1.60             | 1.63 | 0.005            |        |                   | 17.3   | 9.3       | 0.11 |
| 66- 85     | 0.16       | 0.005      |  |      |        |       | 3.1        | 0.3  |                |      | 0.14         | 0.35 | 52          | 20   | 1.47             | 1.54 | 0.015            |        |                   | 24.1   | 17.6      | 0.09 |
| 85-114     | 0.16       |            |  |      |        |       | 4.6        | 0.4  |                |      | 0.13         | 0.36 |             |      | 1.43             | 1.48 | 0.011            |        |                   | 24.8   | 21.5      | 0.05 |
| 114-168    | 0.11       |            |  |      |        |       | 5.0        | 0.4  |                |      | 0.12         | 0.36 |             |      | 1.49             | 1.55 | 0.013            |        |                   | 27.3   | 24.3      | 0.04 |
| 168-220    | 0.11       |            |  |      |        |       | 4.4        | 0.3  |                |      | 0.11         | 0.37 | 56          | 24   | 1.59             | 1.66 | 0.014            |        |                   | 24.7   | 22.1      | 0.04 |
| 85-120     | 0.15       |            |  |      |        |       | 4.0        | 0.4  |                |      | 0.13         | 0.36 | 52          | 21   |                  |      |                  |        |                   |        | 19.6      |      |

AVERAGES, DEPTH 51-101: PCT CLAY 46 PCT .1-75MM 38

TABLE 6B



\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*

S84GA-231-001

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED ; FINE-LOAMY, SILICEOUS, THERMIC TYPIC HAPLUDULT  
NATIONAL SOIL SURVEY LABORATORY ; PEDON 84P 468, SAMPLE 84P2492-2500

|            | -1--                           | -2--               | -3--               | -4--              | -5--         | -6--        | -7--             | -8--                | -9--                | -10-         | -11-       | -12-               | -13-              | -14-                  | -15-               | -16- | -17-               | -18-              | -19-                  | -20-        |  |
|------------|--------------------------------|--------------------|--------------------|-------------------|--------------|-------------|------------------|---------------------|---------------------|--------------|------------|--------------------|-------------------|-----------------------|--------------------|------|--------------------|-------------------|-----------------------|-------------|--|
|            | (- NH4OAC EXTRACTABLE BASES -) |                    |                    |                   |              | ACID-EXTR   | (- - -CEC - - -) |                     | AL                  | -BASE        | SAT-       | CO3 AS             | RES.              |                       |                    |      | COND. (-           | - - -             | -PH -                 | - - -)      |  |
| DEPTH (CM) | CA<br>5B5A<br>6N2E             | MG<br>5B5A<br>6O2D | NA<br>5B5A<br>6P2B | K<br>5B5A<br>6Q2B | SUM<br>BASES | ITY<br>6H5A | AL<br>6G9A       | SUM<br>CATS<br>5A3A | NH4-<br>OAC<br>5A8B | + AL<br>5A3B | SAT<br>5G1 | SUM<br>5C3         | NH4<br>OAC<br>5C1 | CAC03<br><2MM<br>6E1G | OHMS<br>/CM<br>8E1 |      | MMHOS<br>/CM<br>81 | KCL<br>IN<br>8C1G | CACL2<br>.01M<br>8C1F | H2O<br>8C1F |  |
|            | <- - - -MEQ /                  |                    |                    |                   |              | 100 G       | ->               |                     |                     |              |            | <- - - -PCT - - -> |                   |                       |                    |      |                    |                   |                       |             |  |
| 0- 20      | 1.8                            | 0.3                | 0.1                | 0.1               | 2.3          | 14.1        | 1.9              | 16.4                | 13.7                | 4.2          | 45         | 14                 | -                 | 17                    |                    |      |                    | 4.0               | 4.2                   | 4.9         |  |
| 20- 38     | 0.1                            | TR                 | TR                 | --                | 0.1          | 2.4         | 0.4              | 2.5                 | 2.3                 | 0.5          | 80         | 4                  |                   | 4                     |                    |      |                    | 4.2               | 4.8                   | 5.0         |  |
| 38- 51     | 0.1                            | TR                 | TR                 | --                | 0.1          | 2.4         | 0.4              | 2.5                 | 1.9                 | 0.5          | 80         | 4                  |                   | 5                     |                    |      |                    | 4.2               | 4.4                   | 4.8         |  |
| 51- 66     | 0.1                            | 0.3                | TR                 | TR                | 0.4          | 4.4         | 1.2              | 4.8                 | 4.8                 | 1.6          | 75         | 8                  |                   | 8                     |                    |      |                    | 3.7               | 4.2                   | 4.7         |  |
| 66- 85     | 0.1                            | 0.6                | TR                 | TR                | 0.7          | 6.7         | 1.7              | 7.4                 | 6.8                 | 2.4          | 71         | 9                  |                   | 10                    |                    |      |                    | 4.0               | 4.2                   | 4.8         |  |
| 85-114     | 0.1                            | 0.5                | TR                 | TR                | 0.6          | 7.5         | 2.1              | 8.1                 | 7.9                 | 2.7          | 78         | 7                  |                   | 8                     |                    |      |                    | 3.9               | 4.3                   | 4.8         |  |
| 114-168    | TR                             | 0.2                | TR                 | TR                | 0.2          | 8.0         | 3.3              | 8.2                 | 7.9                 | 3.5          | 94         | 2                  |                   | 3                     |                    |      |                    | 3.9               | 4.2                   | 4.7         |  |
| 168-220    | 0.2                            | 0.1                | TR                 | --                | 0.3          | 7.5         | 3.4              | 7.8                 | 6.5                 | 3.7          | 92         | 4                  |                   | 5                     |                    |      |                    | 4.2               | 4.2                   | 4.7         |  |
| 85-120     | 0.2                            | 0.7                | TR                 | 0.2               | 1.1          | 7.7         | 1.7              | 8.8                 | 7.1                 | 2.8          | 61         | 12                 |                   | 15                    |                    |      |                    | 3.9               | 4.3                   | 4.9         |  |

ESTIMATED BULK DENSITY FOR LAYER 1, 2, 3,

TABLE 6C



S84GA-231-001

; FINE-LOAMY, SILICEOUS, THERMIC TYPIC HAPLUDULT  
; PEDON 84P 468. SAMPLE 84P2492-2500

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

[illegible]

TABLE 6



\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*

S84GA-231-001

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED ; FINE-LOAMY, SILICEOUS, THERMIC TYPIC HAPLUDULT  
NATIONAL SOIL SURVEY LABORATORY ; PEDON 84P 468, SAMPLE 84P2492-2500

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

| DEPTH<br>(cm) | FINE EARTH MINERALOGY (<2.0mm) |       |      |      |      |       |       |      |     |     | ELEMENTAL |      |       |      |  |  |  |  |  |  | SURF INTER |  |
|---------------|--------------------------------|-------|------|------|------|-------|-------|------|-----|-----|-----------|------|-------|------|--|--|--|--|--|--|------------|--|
|               | FRACT<br>ION                   | X-RAY | DSC  | TGA  | SiO2 | Al2O3 | Fe2O3 | MgO  | CaO | K2O | Na2O      | Area | Preta | TION |  |  |  |  |  |  |            |  |
| 66-85         | FETH                           | KK 3  | GI 2 | HE 1 | QZ 1 | MI 1  | KK24  | GI 3 |     |     |           |      |       |      |  |  |  |  |  |  |            |  |
| 114-168       | FETH                           | QZ 4  | KK 3 | HE 2 | GI 2 | MI 1  | KK42  | GI 1 |     |     |           |      |       |      |  |  |  |  |  |  |            |  |
| 168-220       | FETH                           | KK 3  | HE 2 | QZ 2 | MI 1 |       | KK25  |      |     |     |           |      |       |      |  |  |  |  |  |  |            |  |

KIND OF MINERAL:

|                |              |             |                 |            |              |
|----------------|--------------|-------------|-----------------|------------|--------------|
| QZ quartz      | MS muscovite | RU rutile   | RA resist-aggre | OP opaques | KK kaolinite |
| VR vermiculite | GI gibbsite  | GE goethite | HE hematite     | MI mica    | FD feldspar  |
| FK potas-feld  | ZR zircon    |             |                 |            |              |

RELATIVE PEAK SIZE: 5 Very Large 4 Large 3 Medium 2 Small 1 Very Small 6 No Peaks

INTERPRETATION (BY HORIZON):

CMIX = MIXED (CLAY) KAOL = KAOLINITIC MICA = MICACEOUS SILI = SILICEOUS SMIX = MIXED (SAND)

PEDON MINERALOGY

BASED ON SAND/SILT: MIXED  
BASED ON CLAY: MIXED  
FAMILY MINERALOGY: MIXED  
COMMENTS:

1 PAGE 66



S84GA-231-001

\*\*\* SUPPLEMENTARY CHARACTERIZATION DATA \*\*\*  
(PIKE COUNTY, GEORGIA)

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED ; FINE-LOAMY, SILICEOUS, THERMIC TYPIC HAPLUDULT  
REVISED TO : ; CLAYEY, MIXED, THERMIC TYPIC KANDIUDULT

NSSL - PROJECT 84P 91, PINE MOUNTAIN  
- PEDON 84P 468, SAMPLES 84P2492-2500  
- GENERAL METHODS (ENGINEERING FRACTIONS ARE CALCULATED FROM USDA FRACTION SIZES)

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
NATIONAL SOIL SURVEY LABORATORY  
LINCOLN, NEBRASKA 68508-3866

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

| SAMPLE NO. | DEPTH (IN.) | HORIZON | ENGINEERING PASSING PERCENTAGE |     |     |     |     |     |     |     |    |    | USDA SIEVE                        |    |    |    |    |    |    |    |      |       | CUMULATIVE CURVE FRACTIONS (<76MM) |  |       | ATTER- GRADATIO |    |
|------------|-------------|---------|--------------------------------|-----|-----|-----|-----|-----|-----|-----|----|----|-----------------------------------|----|----|----|----|----|----|----|------|-------|------------------------------------|--|-------|-----------------|----|
|            |             |         | P E R C E N T A G E            |     |     |     |     |     |     |     |    |    | S I E V E                         |    |    |    |    |    |    |    |      |       | LESS THAN DIAMETERS (MM) AT        |  |       | BERG UN- CUR    |    |
|            |             |         | 3 2 3/2 1 3/4 3/8 4 10 40 200  |     |     |     |     |     |     |     |    |    | 20 5 2 1. .5 .25 .10 .05 60 50 10 |    |    |    |    |    |    |    |      |       | PERCENTILE-->                      |  |       | LL PI FMTY VTU  |    |
|            |             |         | <-----1 N C H E S----->        |     |     |     |     |     |     |     |    |    | <---MICRONS-->                    |    |    |    |    |    |    |    |      |       | <---PERCENTILE-->                  |  |       | <-PCT> CU CC    |    |
| 84P2492S   | 0- 8        | A       | 100                            | 94  | 90  | 83  | 79  | 62  | 44  | 39  | 29 | 12 | 7                                 | 4  | 3  | 36 | 31 | 23 | 14 | 10 | 8.90 | 5.972 | 0.052                              |  |       | >100            | 0. |
| 84P2493S   | 8- 15       | E       | 100                            | 94  | 89  | 83  | 78  | 63  | 48  | 42  | 32 | 14 | 9                                 | 5  | 3  | 39 | 34 | 26 | 16 | 12 | 8.22 | 5.159 | 0.030                              |  |       | >100            | 0. |
| 84P2494S   | 15- 20      | BE      | 100                            | 93  | 88  | 81  | 76  | 61  | 45  | 34  | 24 | 12 | 8                                 | 5  | 3  | 29 | 26 | 20 | 13 | 10 | 9.24 | 5.888 | 0.047                              |  |       | >100            | 2. |
| 84P2495S   | 20- 26      | 2BT1    | 100                            | 100 | 100 | 99  | 99  | 95  | 91  | 79  | 61 | 41 | 34                                | 27 | 22 | 70 | 63 | 55 | 43 | 38 | 0.38 | 0.171 | 0.001                              |  |       | >100            | 0. |
| 84P2496S   | 26- 33      | 2BT2    | 100                            | 100 | 100 | 100 | 100 | 99  | 98  | 96  | 86 | 66 | 60                                | 53 | 48 | 94 | 88 | 78 | 67 | 63 | 0.02 | 0.003 |                                    |  | 52 20 | 67.0            | 0. |
| 84P2497S   | 33- 45      | 2BT3    | 100                            | 100 | 100 | 100 | 100 | 100 | 100 | 99  | 87 | 71 | 66                                | 61 | 59 | 96 | 90 | 81 | 72 | 68 |      | 0.001 |                                    |  |       | 11.0            | 0. |
| 84P2498S   | 45- 66      | 2BT4    | 100                            | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 95 | 85 | 80                                | 73 | 68 | 98 | 96 | 92 | 86 | 83 |      | 0.001 |                                    |  |       | 5.5             | 0. |
| 84P2499S   | 66- 86      | 2BT4    | 100                            | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 95 | 80 | 74                                | 66 | 60 | 99 | 96 | 90 | 82 | 78 |      | 0.001 |                                    |  | 56 24 | 6.7             | 0. |
| 84P2500S   | 33- 47      | 2BT3    | 100                            | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 89 | 65 | 60                                | 57 | 55 | 99 | 92 | 79 | 67 | 63 | 0.02 | 0.002 |                                    |  | 52 21 | 58.0            | 0. |

| DEPTH<br>(IN.) | ( W E I G H T F R A C T I O N S ) |    |    |    |    |    |                         |     |    |    |    |    |     | ( W E I G H T P E R U N I T V O L U M E G / C C ) |      |      |      | ( V O I D                  |      |      |      |            |      |      |     |
|----------------|-----------------------------------|----|----|----|----|----|-------------------------|-----|----|----|----|----|-----|---|------|------|------|----------------------------|------|------|------|------------|------|------|-----|
|                | ---W H O L E S O I L (MM)---      |    |    |    |    |    | --<75 MM FRACTION--     |     |    |    |    |    |     | -----WHOLE SOIL-----                              |      |      |      | -----<2 MM FRACTION-----   |      |      |      | --RATIOS-- |      |      |     |
|                | >2 250 250 75 75 20 5             |    |    |    |    |    | SOIL SURVEY ENGINEERING |     |    |    |    |    |     | --SOIL SURVEY-- ENGINEERING                       |      |      |      | AT 1/3 BA                  |      |      |      |            |      |      |     |
|                | -UP -75 -2 -20 -5 -2 <2           |    |    |    |    |    | 1/3 OVEN MOIST SATUR    |     |    |    |    |    |     | 1/3 15 OVEN MOIST SATUR                           |      |      |      | WHOLE <2                   |      |      |      |            |      |      |     |
|                | <-----PCT OF WHOLE SOIL----->     |    |    |    |    |    | <---PCT OF <75 MM--->   |     |    |    |    |    |     | BAR -DRY MOIST -ATED                              |      |      |      | BAR BAR -DRY -ATED SOIL MM |      |      |      |            |      |      |     |
|                | 26                                | 27 | 28 | 29 | 30 | 31 | 32                      | 33  | 34 | 35 | 36 | 37 | 38  | 39  | 40   | 41   | 42   | 43                         | 44   | 45   | 46   | 47         | 48   | 49   | 50  |
| 0- 8           | 61                                | -- | -- | 61 | 21 | 35 | 5                       | 39  | 61 | 21 | 35 | 5  | 39  |   | 1.90 |      |      |                            |      |      |      |            |      |      |     |
| 8- 15          | 58                                | -- | -- | 58 | 22 | 30 | 6                       | 42  | 58 | 22 | 30 | 6  | 42  |   | 1.83 |      |      |                            |      |      |      |            |      |      |     |
| 15- 20         | 66                                | -- | -- | 66 | 24 | 31 | 11                      | 34  | 66 | 24 | 31 | 11 | 34  |   | 1.96 |      |      |                            |      |      |      |            |      |      |     |
| 20- 26         | 21                                | -- | -- | 21 | 1  | 8  | 12                      | 79  | 21 | 1  | 8  | 12 | 79  |   | 1.75 | 1.77 | 2.00 | 2.09                       | 1.60 | 1.61 | 1.63 | 1.88       | 2.00 | 0.51 | 0.6 |
| 26- 33         | 4                                 | -- | -- | 4  | -- | 2  | 2                       | 96  | 4  | -- | 2  | 2  | 96  |   | 1.50 | 1.57 | 1.85 | 1.93                       | 1.47 | 1.49 | 1.54 | 1.82       | 1.92 | 0.77 | 0.8 |
| 33- 45         | 1                                 | -- | -- | 1  | -- | TR | 1                       | 99  | 1  | -- | TR | 1  | 99  |   | 1.44 | 1.49 | 1.80 | 1.90                       | 1.43 | 1.44 | 1.48 | 1.78       | 1.89 | 0.84 | 0.8 |
| 45- 66         | --                                | -- | -- | -- | -- | -- | --                      | 100 | -- | -- | -- | -- | 100 |   | 1.49 | 1.55 | 1.89 | 1.93                       | 1.49 | 1.50 | 1.55 | 1.90       | 1.93 | 0.78 | 0.7 |
| 66- 86         | TR                                | -- | -- | -- | -- | TR | TR                      | 100 | -- | -- | TR | TR | 100 |   | 1.59 | 1.66 | 1.99 | 1.99                       | 1.59 | 1.60 | 1.66 | 1.98       | 1.99 | 0.67 | 0.6 |
| 33- 47         | --                                | -- | -- | -- | -- | -- | --                      | 100 | -- | -- | -- | -- | 100 |   | 1.45 |      |      |                            |      |      |      |            |      |      |     |

T1A30-6F



\*\*\* SUPPLEMENTARY CHARACTERIZATION DATA \*\*\*

S84GA-231-001

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED  
NATIONAL SOIL SURVEY LABORATORY

; FINE-LOAMY, SILICEOUS, THERMIC TYPIC HAPLUDULT  
; PEDON 84P 468, SAMPLE 84P2492-2500

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

| DEPTH<br>(IN.) | ( V O L U M E F R A C T I O N S ) ( C / ) ( R A T I O S T O C L A Y ) ( L I N E A R E X T E N S I B I L I T Y ) ( W R D |    |    |    |    |    |    |     |    |    |    |    |    |    |      |      |      |      |       |     |     |     |     |      |     |
|----------------|---|----|----|----|----|----|----|-----|----|----|----|----|----|----|------|------|------|------|-------|-----|-----|-----|-----|------|-----|
|                | ---W H O L E S O I L (MM) A T 1/3 B A R--- ( / N ) ---<2 MM FRACTION---<2 MM-- WHOLE SOIL ---<2 MM-- WHOLE <2           |    |    |    |    |    |    |     |    |    |    |    |    |    |      |      |      |      |       |     |     |     |     |      |     |
|                | >2 250 250 75 75 20 5 2- .05- LT PORES RAT FINE ---C E C--- 15 LE <-1/3 BAR TO (PCT)---> SOIL MM                        |    |    |    |    |    |    |     |    |    |    |    |    |    |      |      |      |      |       |     |     |     |     |      |     |
|                | -UP -75 -2 -20 -5 -2 <2 .05 .002 .002 D F -10 CLAY SUM NH4- BAR 1/3 15 OVEN 15 OVEN <--IN/IN-                           |    |    |    |    |    |    |     |    |    |    |    |    |    |      |      |      |      |       |     |     |     |     |      |     |
|                | 51  | 52 | 53 | 54 | 55 | 56 | 57 | 58  | 59 | 60 | 61 | 62 | 63 | 64 | 65   | 66   | 67   | 68   | 69    | 70  | 71  | 72  | 73  | 74   | 75  |
| 0- 8           | 44  | -- | -- | 44 | 15 | 25 | 4  | 56  | 21 | 5  | 2  | 28 |    | 29 | 0.30 | 2.45 | 2.04 | 1.00 |       |     |     |     |     |      |     |
| 8- 15          | 40  | -- | -- | 40 | 15 | 21 | 4  | 60  | 21 | 6  | 2  | 31 |    | 23 | 0.24 | 0.38 | 0.35 | 0.41 |       |     |     |     |     |      |     |
| 15- 20         | 49  | -- | -- | 49 | 18 | 23 | 8  | 51  | 18 | 5  | 2  | 26 |    | 19 | 0.24 | 0.27 | 0.21 | 0.34 |       |     |     |     |     |      |     |
| 20- 26         | 14  | -- | -- | 14 | 1  | 5  | 8  | 86  | 27 | 11 | 15 | 10 | 24 | 14 | 0.28 | 0.17 | 0.17 | 0.33 | 0.022 | 0.2 | 0.4 | 0.2 | 0.6 | 0.11 | 0.1 |
| 26- 33         | 2   | -- | -- | 2  | -- | 1  | 1  | 98  | 19 | 9  | 27 | 9  | 34 | 31 | 0.29 | 0.15 | 0.14 | 0.35 | 0.032 | 0.4 | 1.5 | 0.5 | 1.6 | 0.09 | 0.1 |
| 33- 45         | 1   | -- | -- | 1  | -- | TR | 1  | 99  | 17 | 5  | 32 | 10 | 36 |    | 0.37 | 0.14 | 0.13 | 0.36 | 0.020 | 0.2 | 1.1 | 0.2 | 1.2 | 0.05 | 0.0 |
| 45- 66         | --  | -- | -- | -- | -- | -- | -- | 100 | 10 | 9  | 38 | 4  | 40 |    | 0.33 | 0.12 | 0.12 | 0.36 | 0.019 | 0.2 | 1.3 | 0.2 | 1.3 | 0.04 | 0.0 |
| 66- 86         | TR  | -- | -- | -- | -- | TR | TR | 100 | 13 | 10 | 36 |    | 40 |    | 0.25 | 0.13 | 0.11 | 0.37 | 0.023 | 0.2 | 1.4 | 0.2 | 1.4 | 0.04 | 0.0 |
| 33- 47         | --  | -- | -- | -- | -- | -- | -- | 100 | 20 | 5  | 30 | 45 |    |    | 0.38 | 0.16 | 0.13 | 0.36 |       |     |     |     |     |      |     |

| DEPTH<br>(IN.) | ( W E I G H T F R A C T I O N S - C L A Y F R E E ) ( - T E X T U R E - ) ( - P S D A (MM) - ) ( P H ) ( - E L E C T R I C A L ) ( C U M U L T . A M O U N T S |    |    |    |    |     |    |    |    |    |    |    |    |     |    |     |      |      |      |     |    |    |    |    |     |
|----------------|--|----|----|----|----|-----|----|----|----|----|----|----|----|-----|----|-----|------|------|------|-----|----|----|----|----|-----|
|                | ---W H O L E S O I L---<2 MM FRACTION---<2 MM-- WHOLE SOIL ---<2 MM-- WHOLE <2   |    |    |    |    |     |    |    |    |    |    |    |    |     |    |     |      |      |      |     |    |    |    |    |     |
|                | >2 75 20 2- .05- LT ---SANDS----- SILTS CL IN BY SAND SILT CLAY CA- RES- CON- SALT IN. OF H2   |    |    |    |    |     |    |    |    |    |    |    |    |     |    |     |      |      |      |     |    |    |    |    |     |
|                | -2 -2 .05 .002 .002 VC C M F VF C F AY FIELD PSDA .05 .002 .002 .01M OHMS MMHOS KG 15BAR AIRDR   |    |    |    |    |     |    |    |    |    |    |    |    |     |    |     |      |      |      |     |    |    |    |    |     |
|                | PCT OF >2MM+SAND+SILT> (-----PCT OF SAND+SILT-----) (---<2 MM---) (---PCT OF .2MM---) (---<2 MM---) (WHL SOIL  |    |    |    |    |     |    |    |    |    |    |    |    |     |    |     |      |      |      |     |    |    |    |    |     |
|                | 76   | 77 | 78 | 79 | 80 | 81  | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89  | 90 | 91  | 92   | 93   | 94   | 95  | 96 | 97 | 98 | 99 | 100 |
| 0- 8           | 63   | 63 | 41 | 30 | 7  | 3   | 9  | 13 | 22 | 26 | 10 | 7  | 13 | 7   | SL | SL  | 75.0 | 18.3 | 6.7  | 4.2 |    |    |    |    |     |
| 8- 15          | 60   | 60 | 37 | 31 | 9  | 3   | 8  | 11 | 22 | 26 | 11 | 7  | 15 | 7   | SL | SL  | 72.5 | 20.9 | 6.6  | 4.8 |    |    |    |    |     |
| 15- 20         | 68   | 68 | 43 | 25 | 7  | 3   | 16 | 11 | 18 | 23 | 10 | 6  | 16 | 10  | SL | SL  | 70.2 | 20.6 | 9.2  | 4.4 |    |    |    |    |     |
| 20- 26         | 27   | 27 | 26 | 52 | 21 | 28  | 15 | 12 | 15 | 20 | 9  | 7  | 22 | 39  | SL | SCL | 51.6 | 20.6 | 27.8 | 4.2 |    |    |    |    |     |
| 26- 33         | 8  | 8  | 8  | 63 | 29 | 92  | 5  | 11 | 21 | 22 | 9  | 7  | 25 | 99  | CL | C   | 34.4 | 15.8 | 49.8 | 4.2 |    |    |    |    |     |
| 33- 45         | 2  | 2  | 2  | 74 | 24 | 141 | 9  | 15 | 22 | 21 | 10 | 7  | 17 | 144 | CL | C   | 30.9 | 10.0 | 59.1 | 4.3 |    |    |    |    |     |
| 45- 66         |  |    |    | 52 | 48 | 209 | 5  | 6  | 12 | 18 | 11 | 8  | 40 | 209 |    | C   | 17.0 | 15.4 | 67.6 | 4.2 |    |    |    |    |     |
| 66- 86         |  |    |    | 56 | 44 | 153 | 2  | 7  | 15 | 21 | 11 | 9  | 35 | 153 |    | C   | 22.2 | 17.4 | 60.4 | 4.2 |    |    |    |    |     |
| 33- 47         |  |    |    | 81 | 19 | 121 | 3  | 15 | 29 | 26 | 8  | 7  | 12 | 121 | CL | C   | 36.7 | 8.6  | 54.7 | 4.3 |    |    |    |    |     |

TABLE 66



TABLE 6H

Table 6h S84 GA-231-001 Weight Percents of Oxides

| Horizon<br>Sample No.   | Weight percents of Oxides |           |            |              |                    |                    | 2CR1<br>2499       | 2CR2<br>2500       |
|---|---------------------------|-----------|------------|--------------|--------------------|--------------------|--------------------|--------------------|
|   | A<br>2492                 | E<br>2493 | BE<br>2494 | 2B+1<br>2495 | 2B+2<br>2496       | 2B+2<br>2497       | 2B+3<br>2498       |                    |
| SiO <sub>2</sub>  |                           |           | 90.18      |              | 58.85              | 52.72              | 46.67              | 50.65              |
| Al <sub>2</sub> O <sub>3</sub>                                  |                           |           | 6.16       |              | 23.41              | 26.19              | 30.51              | 28.71              |
| Fe <sub>2</sub> O <sub>3</sub>                                  |                           |           | 0.64       |              | 5.66               | 7.99               | 8.85               | 7.56               |
| MgO   |                           |           |            |              |                    |                    |                    |                    |
| CaO   |                           |           | 0.12       |              | 0.11               | 0.11               | 0.11               | 0.10               |
| Na <sub>2</sub> O   |                           |           |            |              |                    |                    |                    |                    |
| K <sub>2</sub> O  |                           |           | 0.46       |              | 1.23               | 1.17               | 1.14               | 1.14               |
| TiO <sub>2</sub>  |                           |           | 0.73       |              | 1.19               | 1.28               | 1.31               | 1.17               |
| P <sub>2</sub> O <sub>5</sub>                                   |                           |           | 0.07       |              | 0.08               | 0.06               | 0.09               | 0.08               |
| MnO   |                           |           | 0.02       |              | 0.03               | 0.02               | 0.03               | 0.03               |
| SO <sub>2</sub>   |                           |           | 0.06       |              | 0.09               | 0.08               | 0.07               | 0.09               |
| ZrO <sub>2</sub>  |                           |           |            |              |                    |                    |                    |                    |
| Total   |                           |           | 98.44      |              | 90.66 <sup>†</sup> | 89.65 <sup>†</sup> | 88.79 <sup>†</sup> | 89.54 <sup>†</sup> |
| Fe <sub>2</sub> O <sub>3</sub> + Al <sub>2</sub> O <sub>3</sub> |                           |           |            |              |                    |                    |                    |                    |
| SiO <sub>2</sub>  |                           |           | 0.08       |              | 0.49               | 0.65               | 0.84               | 0.72               |

<sup>†</sup>Totals significantly less than 100% are due to high H<sub>2</sub>O contents of clay-rich horizons. H<sub>2</sub>O not included in analyses.



Pedon: Aiken

NSSL ID #: 84P0469

Soil Survey # 884-GA-231-002

Location: Pike Co. GA 11 km N of Thomaston on US19 100 m W on Oliver road 15 m N of road in woods.

Latitude: 33°-00-58 N

Longitude: 084-19-38 W

Classification: Fine-loamy, siliceous, thermic Typic Kanhapludult

Physiography: In piedmonts

Geomorphic Position:

Microrelief:

Slope Characteristics: 10%, east facing

Elevation: 250 m MSL

Precipitation: 1200 mm Udic moisture regime

MLRA: 136

Water Table Depth:

Permeability: Moderate

Air Temp. (Centigrade): Ann: Sum: Win:

MAT: 18 degrees C

Soil Temp. (Centigrade): Ann: Sum: Win:

Drainage: Well drained

Land Use: Forest land not grazed

Stoniness:

Erosion or Deposition: Slight

Particle Size Control Section: 18 to 88 cm

Parent Material: local colluvium from quartzite material

Vegetation Codes:

Weather Station: 091271

Diagnostic Horizons: 0 to 22 cm Ochric, 22 to 114 cm Argillic

Date: 04/84

Described by: Grover Thomas and Talbert Gerald

Site on toe of gravity slide. UTM Zone 16 3655920 m N 747930 m E Zebulon GA 7.5' Quad. Atlas sheet 41 in Soil Survey for Lamar Pike and Upson Co. GA. Map Unit: Pacolet gravelly sandy loam, 6-15% slopes. Sampled by Warren Lynn and Reese Berdaniel 4/4/84.

O--5 to 0 cm; partially decomposed organics.  
Not sampled. Partially decomposed forest litter.

A--0 to 11 cm; brown (10YR 5/3) sandy loam; weak fine granular structure; very friable; many fine and medium and few coarse roots; 2 percent pebbles; clear smooth boundary.  
Few fine gravel.  
84P2501

AB--11 to 22 cm; strong brown (7.5YR 5/6) sandy loam; weak fine granular structure; very friable; many fine and medium roots; 2 percent pebbles; clear smooth boundary.  
Few fine gravel.  
84P2502

BA--22 to 44 cm; yellowish red (5YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; common fine and medium roots; 2 percent pebbles; clear smooth boundary.  
Few fine gravel.  
84P2503

Bt1--44 to 74 cm; red (2.5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; few fine roots; discontinuous thin clay films on faces of peds; 2 percent pebbles; gradual smooth boundary.  
Few fine gravel.  
84P2504

Bt2--74 to 97 cm; red (2.5YR 4/6) clay loam; moderate medium subangular blocky structure; firm; few fine roots; continuous thin clay films on faces of peds; 2 percent pebbles; clear smooth boundary.  
Platy structure in upper 7 cm. Roots slightly restricted. Few fine gravel.  
84P2505

Bt3--97 to 144 cm; red (2.5YR 4/6) clay loam; moderate medium angular blocky structure parting to subangular blocky; firm; discontinuous thin clay films on faces of peds; clear wavy boundary.  
Few small quartzite fragments.  
84P2506

Bt4--144 to 170 cm; red (2.5YR 4/6) clay loam; moderate medium subangular blocky structure; firm; discontinuous thin clay films on faces of peds; clear wavy boundary.  
Common small quartzite fragments.  
84P2507

B/C--170 to 205 cm; red (2.5YR 4/6) and yellow (10YR 7/6) clay loam and sandy clay loam; few fine prominent brownish yellow (10YR 6/8) mottles; moderate medium subangular blocky structure parting to massive; firm; gradual wavy boundary.  
Common fine and medium quartzite fragments. B portion is red and C portion is yellow.  
84P2508

C--205 to 225 cm; sandy clay loam; massive; friable; few fine mica flakes.  
Mottled yellows browns and reds. Common fine and medium fragments of quartzite.  
84P2509

TABLE 7A



PRINT DATE 10/06/87

; FINE-LOAMY, SILICEOUS, THERMIC TYPIC PALEUDULT  
; FINE-LOAMY, SILICEOUS, THERMIC TYPIC KANHAPLUDULT

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
NATIONAL SOIL SURVEY LABORATORY  
LINCOLN, NEBRASKA 68508-3866

| SAMPLE NO. | DEPTH (CM) | HORIZON | (- - - TOTAL - - - ) (- - CLAY - - ) (- - SILT - - ) (- - - - - - - SAND - - - - - ) (- - COARSE FRACTIONS (MM) - - ) (>2MM) |      |      |       |      |      |        |      |      |        |      |      |            |     |     |      |        |    |
|------------|------------|---------|--|------|------|-------|------|------|--------|------|------|--------|------|------|------------|-----|-----|------|--------|----|
|            |            |         | CLAY   | SILT | SAND | FINE  | CO3  | FINE | COARSE | VF   | F    | M      | C    | VC   | WEIGHT     |     |     |      | WT     |    |
|            |            |         | LT   | .002 | .05  | LT    | LT   | .002 | .02    | .05  | .10  | .25    | .5   | 1    | 2          | 5   | 20  | .1-  | PCT OF |    |
|            |            |         | .002   | -.05 | -2   | .0002 | .002 | -.02 | -.05   | -.10 | -.25 | -.50   | -1   | -2   | -5         | -20 | -75 | 75   | WHOLE  |    |
|            |            |         | PCT OF   |      |      | <2MM  |      |      | (3A1)  |      |      | PCT OF |      |      | <75MM(3B1) |     |     | SOIL |        |    |
| 84P2501S   | 0- 13      | A       | 8.7  | 29.5 | 61.8 | 2.8   |      |      | 15.0   | 14.5 | 20.2 | 23.7   | 9.4  | 4.1  | 4.4        | 7   | 24  | 8V   | 64     | 39 |
| 84P2502S   | 13- 22     | AB      | 8.8  | 29.1 | 62.1 | 2.9   |      |      | 14.8   | 14.3 | 21.4 | 23.8   | 9.0  | 3.8  | 4.1        | 7   | 13  | 8V   | 57     | 28 |
| 84P2503S   | 22- 44     | BA      | 14.9   | 28.4 | 56.7 | 6.0   |      |      | 14.5   | 13.9 | 19.7 | 22.3   | 8.5  | 3.5  | 2.7        | 6   | 9   | 7V   | 51     | 22 |
| 84P2504S   | 44- 74     | BT1     | 44.7   | 18.6 | 36.7 | 20.0  |      |      | 7.8    | 10.8 | 13.0 | 13.9   | 5.1  | 2.4  | 2.3        | 5   | 4   | 1    | 31     | 10 |
| 84P2505S   | 74- 97     | BT2     | 58.9   | 16.1 | 25.0 | 22.2  |      |      | 7.4    | 8.7  | 9.9  | 8.3    | 3.2  | 2.0  | 1.6        | 2   | 5   | --   | 21     | 7  |
| 84P2506S   | 97-144     | BT3     | 44.0   | 18.8 | 37.2 | 17.1  |      |      | 6.9    | 11.9 | 15.4 | 9.5    | 4.2  | 4.2  | 3.9        | 7   | 10  | 3    | 37     | 20 |
| 84P2507S   | 144-170    | BT4     | 23.4   | 24.4 | 52.2 | 8.7   |      |      | 8.6    | 15.8 | 21.5 | 12.2   | 4.9  | 6.1  | 7.5        | 8   | 10  | 3    | 45     | 21 |
| 84P2508S   | 170-205    | B/C     | 16.7   | 29.4 | 53.9 | 5.8   |      |      | 10.6   | 18.8 | 22.5 | 12.6   | 5.9  | 6.7  | 6.2        | 8   | 12  | 1    | 46     | 21 |
| 84P2509S   | 205-225    | C       | 12.4   | 30.8 | 56.8 |       |      |      | 11.3   | 19.5 | 23.1 | 13.2   | 6.2  | 7.1  | 7.2        | 9   | 19  | 1    | 53     | 29 |
| 84P2510S   | 300-360    | 2C      | 7.7  | 14.6 | 77.7 |       |      |      | 9.2    | 5.4  | 13.7 | 27.7   | 21.2 | 11.1 | 4.0        | 4   | 4   | 2    | 68     | 10 |

| DEPTH<br>(CM) | ORGN TOTAL |       | EXTR TOTAL |            | (- - DITH-CIT - -) |      | (RATIO/CLAY) |            | (ATTERBERG ) |        | (- BULK DENSITY -) |       | COLE (- - - WATER CONTENT - -) |       | WRD   |         |       |      |       |
|---------------|------------|-------|------------|------------|--------------------|------|--------------|------------|--------------|--------|--------------------|-------|--------------------------------|-------|-------|---------|-------|------|-------|
|               | C          | N     | P          | S          | EXTRACTABLE        |      | 15           | - LIMITS - | FIELD        | 1/3    | OVEN               | WHOLE | FIELD                          | 1/10  | 1/3   | 15      | WHOLE |      |       |
|               | 6A1C       | 6B3A  | 6S3        | 6R3A       | 6C2B               | 6G7A | 6D2A         | CEC        | LL           | PI     | MOIST              | BAR   | DRY                            | SOIL  | MOIST | BAR     | BAR   | SOIL |       |
|               | PCT        | <2MM  | PPM        | <- PERCENT | OF                 | <2MM | -->          | 8D1        | 8D1          | 4F1    | 4F                 | 4A3A  | 4A1D                           | 4A1H  | 4D1   | 4B4     | 4B1C  | 4B1C | 4C1   |
|               |            |       |            |            |                    |      |              |            | PCT          | <0.4MM | <- -               | G/CC  | - - ->                         | CM/CM | <- -  | -PCT OF | <2MM  | - -> | CM/CM |
| 0- 13         | 2.34       | 0.084 |            |            | 1.5                | 0.3  |              | 0.77       | 0.59         |        |                    | 1.40  |                                |       |       |         |       | 5.1  |       |
| 13- 22        | 0.78       | 0.037 |            |            | 1.3                | 0.2  |              | 0.32       | 0.41         |        | NP                 | 1.58  | 1.60                           | 0.003 |       |         | 11.5  | 3.6  | 0.10  |
| 22- 44        | 0.26       | 0.021 |            |            | 2.2                | 0.2  |              | 0.13       | 0.37         |        |                    | 1.65  | 1.68                           | 0.005 |       |         | 13.2  | 5.5  | 0.11  |
| 44- 74        | 0.27       | 0.026 |            |            | 6.3                | 0.4  |              | 0.10       | 0.36         | 38     | 18                 | 1.52  | 1.56                           | 0.008 |       |         | 18.0  | 16.2 | 0.03  |
| 74- 97        | 0.14       |       |            |            | 9.1                | 0.6  |              | 0.10       | 0.39         |        |                    | 1.53  | 1.53                           | --    |       |         | 29.0  | 22.7 | 0.09  |
| 97-144        | 0.08       |       |            |            | 7.7                | 0.4  |              | 0.08       | 0.37         |        |                    | 1.60  | 1.65                           | 0.009 |       |         | 23.1  | 16.1 | 0.10  |
| 144-170       | 0.03       |       |            |            | 5.8                | 0.2  |              | 0.06       | 0.38         |        |                    | 1.79  | 1.80                           | 0.002 |       |         | 16.2  | 8.9  | 0.11  |
| 170-205       | 0.05       |       |            |            | 5.9                | 0.2  |              | 0.05       | 0.38         |        |                    | 1.78  | 1.81                           | 0.005 |       |         | 15.7  | 6.4  | 0.14  |
| 205-225       | 0.02       |       |            |            | 5.2                | 0.2  |              | 0.05       | 0.39         |        |                    | 1.80  |                                |       |       |         |       | 4.8  |       |
| 300-360       | 0.02       |       |            |            | 4.3                | 0.2  |              | 0.22       | 0.56         |        |                    | 1.80  |                                |       |       |         |       | 4.3  |       |

AVERAGES, DEPTH 22- 72: PCT CLAY 32 PCT .1-75MM 40

TAB. E 7B



\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*

S84GA-231-002

PRINT DATE 10/06/87

SAMPLED AS : ALLEN

; FINE-LOAMY, SILICEOUS, THERMIC TYPIC PALEUDULT

NATIONAL SOIL SURVEY LABORATORY

; PEDON 84P 469, SAMPLE 84P2501-2510

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

| DEPTH<br>(CM) | (- NH4OAC EXTRACTABLE BASES -) |      |      |      |      | ACID-<br>ITY | EXTR<br>AL | (- - - CEC - - -) |       | AL<br>SAT | -BASE<br>SUM | SAT-<br>NH4 | CO3 AS<br>CACO3 | RES.<br>OHMS<br>/CM | COND. (- - - PH - - -) |      |       |      |
|---------------|--------------------------------|------|------|------|------|--------------|------------|-------------------|-------|-----------|--------------|-------------|-----------------|---------------------|------------------------|------|-------|------|
|               | CA                             | MG   | NA   | K    | SUM  |              |            | NH4-              | BASES |           |              |             |                 |                     | MMHOS                  | KCL  | CACL2 | H2O  |
|               | 5B5A                           | 5B5A | 5B5A | 5B5A | 5B5A |              |            | OAC               | + AL  |           |              |             |                 |                     | /CM                    | IN   | .01M  |      |
|               | 6N2E                           | 6O2D | 6P2B | 6Q2B | 6Q2B |              |            | 5A8B              | 5A3B  |           |              |             |                 |                     | 8E1                    | 8C1G | 8C1F  | 8C1F |
|               | -MEQ /                         |      |      |      |      | 100 G        |            |                   |       |           |              |             |                 |                     |                        |      | 1:2   | 1:1  |
| 0- 13         | 1.2                            | 0.2  | TR   | 0.1  | 1.5  | 6.9          | 0.7        | 8.4               | 6.7   | 2.2       | 32           | 18          | 22              |                     |                        | 4.9  | 4.6   | 5.2  |
| 13- 22        | 0.1                            | TR   | TR   | TR   | 0.1  | 3.3          | 0.5        | 3.4               | 2.8   | 0.6       | 83           | 3           | 4               |                     |                        | 4.1  | 4.5   | 4.9  |
| 22- 44        | 0.2                            | 0.1  | TR   | TR   | 0.3  | 2.3          | 0.3        | 2.6               | 2.0   | 0.6       | 50           | 12          | 15              |                     |                        | 4.2  | 4.4   | 4.9  |
| 44- 74        | 0.2                            | 0.7  | TR   | TR   | 0.9  | 5.8          | 0.8        | 6.7               | 4.4   | 1.7       | 47           | 13          | 20              |                     |                        | 4.1  | 4.4   | 4.9  |
| 74- 97        | 0.1                            | 0.6  | 0.1  | TR   | 0.8  | 7.5          | 0.8        | 8.3               | 5.6   | 1.6       | 50           | 10          | 14              |                     |                        | 4.3  | 4.5   | 5.2  |
| 97-144        | 0.1                            | 0.2  | TR   | --   | 0.3  | 4.8          | 0.8        | 5.1               | 3.3   | 1.1       | 73           | 6           | 9               |                     |                        | 4.2  | 4.5   | 5.2  |
| 144-170       | TR                             | 0.1  | TR   | --   | 0.1  | 1.7          | 0.4        | 1.8               | 1.5   | 0.5       | 80           | 6           | 7               |                     |                        | 4.2  | 4.4   | 5.0  |
| 170-205       | TR                             | TR   | TR   | --   | TR   | 1.5          | 0.2        | 1.5               | 0.9   | 0.2       | 100          |             | 2               |                     |                        | 4.4  | 4.5   | 5.1  |
| 205-225       | TR                             | TR   | TR   | --   | TR   | 1.0          | 0.1        | 1.0               | 0.6   | 0.1       | 100          |             | 3               |                     |                        | 4.5  | 4.6   | 5.1  |
| 300-360       | TR                             | TR   | TR   | --   | TR   | 1.9          | 1.1        | 1.9               | 1.7   | 1.1       | 100          |             | 1               |                     |                        | 4.2  | 4.2   | 4.8  |

ESTIMATED BULK DENSITY FOR LAYER 1, 9, 10,

TABLE 7C



\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*

S84GA-231-002

SAMPLED AS : ALLEN

NATIONAL SOIL SURVEY LABORATORY

; FINE-LOAMY, SILICEOUS, THERMIC TYPIC PALEUDULT

; PEDON 84P 469, SAMPLE 84P2501-2510

PRINT DATE 10/06/87

|         | -1--   | -2-- | -3-- | -4-- | -5-- | -6-- | -7-- | -8-- | -9-- | -10- | -11- | -12- | -13- | -14- | -15- | -16- | -17- | -18- | -19- | -20- |
|---------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| -----   |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|         | < - - - - - CLAY MINERALOGY (<.002mm) - - - - - >            |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| SAMPLE  | FRACT  | <    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
|         | ION  | <    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
|         |  | <    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
| NUMBER  |  | <-   | -    | ><   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
|         |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 84P2504 | TCLY   | KK   | 4    | GI   | 3    | VR   | 3    | GE   | 2    | HE   | 1    | KK18 | GI11 | -    |      | 18.6 |      | 0.5  |      | CMIX |
| 84P2508 | TCLY   | KK   | 4    | GE   | 3    | VR   | 2    | MI   | 1    | HE   | 1    | KK27 |      |      |      | 25.7 |      | 0.6  |      | CMIX |
| -----   |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|         | < - - - - - SAND - SILT MINERALOGY (2.0-0.002mm) - - - - - > |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| DEPTH   | FRACT  | <    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
|         | ION  | <    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
|         |  | <    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
| (cm)    |  | <-   | -    | ><   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
|         |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 13- 22  | VFS  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | SILI |
| 13- 22  | VFS  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | SILI |
| 44- 74  | VFS  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | SILI |
| 44- 74  | VFS  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | SILI |
| 170-205 | VFS  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | SILI |
| 170-205 | VFS  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | SILI |
| 300-360 | VFS  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | MICA |

TABLE 7D



\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*

S84GA-231-002

SAMPLED AS : ALLEN  
NATIONAL SOIL SURVEY LABORATORY

; FINE-LOAMY, SILICEOUS, THERMIC TYPIC PALEUDULT  
; PEDON 84P 469, SAMPLE 84P2501-2510

PRINT DATE 10/06/87

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

| FINE EARTH MINERALOGY (<2.0mm) |           |  |  |  |  |  |  |  |  |  |       |  |  |  |  |  |  |  |  |  |         |  |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |  |            |  |  |  |  |  |  |  |  |  |       |  |  |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |        |  |  |  |  |  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  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KIND OF MINERAL:

|              |                 |               |                  |                 |              |
|--------------|-----------------|---------------|------------------|-----------------|--------------|
| QZ quartz    | SP sphene       | FK potas-feld | TM tourmaline    | HN hornblende   | ZR zircon    |
| MS muscovite | PO plant opal   | RU rutile     | OP opaques       | HE hematite     | KK kaolinite |
| GI gibbsite  | VR vermiculite  | GE goethite   | LE lepidocrocite | RA resist-aggre | BT biotite   |
| MI mica      | AR weath-aggreg | EP epidote    |                  |                 |              |

RELATIVE PEAK SIZE: 5 Very Large 4 Large 3 Medium 2 Small 1 Very Small 6 No Peaks

INTERPRETATION (BY HORIZON):

CMIX = MIXED (CLAY) KAOL = KAOLINITIC MICA = MICACEOUS SILI = SILICEOUS SMIX = MIXED (SAND)

PEDON MINERALOGY

BASED ON SAND/SILT: SILICEOUS

BASED ON CLAY: MIXED

FAMILY MINERALOGY: SILICEOUS

COMMENTS: OXIDIC EXCEPT TOO MUCH QUARTZ IN SANDS

TABLE 7E



S84GA-231-002

\*\*\* SUPPLEMENTARY CHARACTERIZATION DATA \*\*\*  
(PIKE COUNTY, GEORGIA)

PRINT DATE 10/06/87

SAMPLED AS : ALLEN  
REVISED TO :

; FINE-LOAMY, SILICEOUS, THERMIC TYPIC PALEUDULT  
; FINE-LOAMY, SILICEOUS, THERMIC TYPIC KANHAPLUOULT

NSSL - PROJECT 84P 91, PINE MOUNTAIN  
- PEDON 84P 469, SAMPLES 84P2501-2510  
- GENERAL METHODS (ENGINEERING FRACTIONS ARE CALCULATED FROM USDA FRACTION SIZES)

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
NATIONAL SOIL SURVEY LABORATORY  
LINCOLN, NEBRASKA 68508-3866

|            |             | -1--    | -2--                           | -3-- | -4-- | -5-- | -6-- | -7-- | -8-- | -9-- | -10-- | -11-- | -12--               | -13-- | -14-- | -15--                             | -16-- | -17-- | -18--            | -19-- | -20--   |       |          |                  |    |       |      |            |    |
|------------|-------------|---------|--------------------------------|------|------|------|------|------|------|------|-------|-------|---------------------|-------|-------|-----------------------------------|-------|-------|------------------|-------|---------|-------|----------|------------------|----|-------|------|------------|----|
| SAMPLE NO. | DEPTH (IN.) | HORIZON | ENGINEERING PERCENTAGE PASSING |      |      |      |      |      |      |      |       |       | USDA SIEVE          |       |       | CUMULATIVE CURVE FRACTIONS(<76MM) |       |       |                  |       | AT BERG |       | GRADATIO |                  |    |       |      |            |    |
|            |             |         | P E R C E N T A G E            |      |      |      |      |      |      |      |       |       | P A S S I N G       |       |       | S I E V E                         |       |       | LESS THAN        |       |         |       |          | DIAMETERS(MM) AT |    | LL PI |      | UNIFORMITY |    |
|            |             |         | <-----INCHES----->             |      |      |      |      |      |      |      |       |       | <-----MICRONS-----> |       |       | <-----MM----->                    |       |       | <--PERCENTILE--> |       |         |       |          | <--PCT-->        |    | CU CC |      |            |    |
|            |             |         | 3                              | 2    | 3/2  | 1    | 3/4  | 3/8  | 4    | 5    | 6     | 7     | 8                   | 9     | 10    | 11                                | 12    | 13    | 14               | 15    | 16      | 17    | 18       | 19               | 20 | 21    | 22   | 23         | 24 |
| 84P2501S   | 0- 5        | A       | 100                            | 98   | 96   | 94   | 92   | 80   | 68   | 61   | 54    | 30    | 14                  | 9     | 5     | 58                                | 56    | 50    | 36               | 23    | 1.54    | 0.249 | 0.007    |                  |    |       | >100 | 0.         |    |
| 84P2502S   | 5- 9        | AB      | 100                            | 98   | 97   | 94   | 93   | 87   | 80   | 73   | 66    | 37    | 17                  | 11    | 6     | 70                                | 67    | 61    | 43               | 28    | 0.24    | 0.142 | 0.004    |                  | NP | 56.3  | 3.   |            |    |
| 84P2503S   | 9- 17       | BA      | 100                            | 98   | 97   | 94   | 93   | 89   | 84   | 78   | 71    | 43    | 23                  | 16    | 12    | 76                                | 73    | 67    | 49               | 34    | 0.18    | 0.105 | 0.001    |                  |    |       | >100 | 5.         |    |
| 84P2504S   | 17- 29      | BT1     | 100                            | 100  | 100  | 99   | 99   | 97   | 95   | 90   | 85    | 64    | 47                  | 43    | 40    | 88                                | 86    | 81    | 69               | 57    | 0.06    | 0.026 | --       |                  | 38 | 18    | >100 | 0.         |    |
| 84P2505S   | 29- 38      | BT2     | 100                            | 100  | 100  | 100  | 100  | 98   | 95   | 93   | 89    | 75    | 62                  | 58    | 55    | 92                                | 90    | 87    | 79               | 70    | 0.01    | 0.002 | --       |                  |    |       | 37.7 | 0.         |    |
| 84P2506S   | 38- 57      | BT3     | 100                            | 99   | 99   | 98   | 97   | 92   | 87   | 80   | 73    | 58    | 41                  | 37    | 35    | 77                                | 74    | 70    | 63               | 50    | 0.09    | 0.049 | --       |                  |    |       | >100 | 0.         |    |
| 84P2507S   | 57- 67      | BT4     | 100                            | 99   | 99   | 98   | 98   | 93   | 88   | 80   | 68    | 49    | 26                  | 21    | 19    | 74                                | 69    | 65    | 55               | 38    | 0.15    | 0.080 | 0.001    |                  |    |       | >100 | 7.         |    |
| 84P2508S   | 67- 81      | B/C     | 100                            | 100  | 100  | 99   | 99   | 93   | 87   | 79   | 68    | 48    | 22                  | 17    | 13    | 74                                | 69    | 64    | 54               | 36    | 0.17    | 0.085 | 0.001    |                  |    |       | >100 | 5.         |    |
| 84P2509S   | 81- 88      | C       | 100                            | 100  | 100  | 99   | 99   | 90   | 80   | 71   | 60    | 41    | 17                  | 12    | 9     | 66                                | 61    | 56    | 47               | 31    | 0.44    | 0.133 | 0.003    |                  |    |       | >100 | 1.         |    |
| 84P2510S   | 118-141     | 2C      | 100                            | 99   | 99   | 98   | 98   | 96   | 94   | 90   | 72    | 27    | 15                  | 10    | 7     | 86                                | 76    | 57    | 32               | 20    | 0.23    | 0.191 | 0.005    |                  |    |       | 58.6 | 5.         |    |

| DEPTH<br>(IN.) | ( W E I G H T F R A C T I O N S ) |    |    |    |    |    |    |    |    |    |    |    |    | ( W E I G H T P E R U N I T V O L U M E G / C C ) |      |      |      | ( V O I D                   |      |      |      |              |      |      |     |
|----------------|-----------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|---|------|------|------|-----------------------------|------|------|------|--------------|------|------|-----|
|                | ---W H O L E S O I L (MM)---      |    |    |    |    |    |    |    |    |    |    |    |    | ---WHOLE SOIL---                                  |      |      |      | ---<2 MM FRACTION---        |      |      |      | ---RATIOS--- |      |      |     |
|                | >2 250 250 75 75 20 5 75 75 20 5  |    |    |    |    |    |    |    |    |    |    |    |    | SOIL SURVEY ENGINEERING                           |      |      |      | --SOIL SURVEY-- ENGINEERING |      |      |      | AT 1/3 BA    |      |      |     |
|                | -UP -75 -2 -20 -5 -2 <2           |    |    |    |    |    |    |    |    |    |    |    |    | 1/3 OVEN MOIST SATUR                              |      |      |      | 1/3 15 OVEN MOIST SATUR     |      |      |      | WHOLE <2     |      |      |     |
|                | <-----PCT OF WHOLE SOIL----->     |    |    |    |    |    |    |    |    |    |    |    |    | BAR -DRY -ATED                                    |      |      |      | BAR BAR -DRY -ATED          |      |      |      | SOIL MM      |      |      |     |
|                | 26                                | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39  | 40   | 41   | 42   | 43                          | 44   | 45   | 46   | 47           | 48   | 49   | 50  |
| 0- 5           | 39                                | -- | -- | 39 | 8  | 24 | 7  | 61 | 39 | 8  | 24 | 7  | 61 |   | 1.71 |      |      |                             | 1.58 | 1.59 | 1.60 | 1.76         | 1.98 | 0.50 | 0.6 |
| 5- 9           | 27                                | -- | -- | 27 | 7  | 13 | 7  | 73 | 27 | 7  | 13 | 7  | 73 |   | 1.77 | 1.79 | 1.91 | 2.10                        | 1.58 | 1.59 | 1.60 | 1.76         | 1.98 | 0.50 | 0.6 |
| 9- 17          | 22                                | -- | -- | 22 | 7  | 9  | 6  | 78 | 22 | 7  | 9  | 6  | 78 |   | 1.81 | 1.83 | 1.99 | 2.13                        | 1.65 | 1.67 | 1.68 | 1.87         | 2.03 | 0.46 | 0.6 |
| 17- 29         | 10                                | -- | -- | 10 | 1  | 4  | 5  | 90 | 10 | 1  | 4  | 5  | 90 |   | 1.59 | 1.63 | 1.84 | 1.99                        | 1.52 | 1.52 | 1.56 | 1.79         | 1.95 | 0.67 | 0.7 |
| 29- 38         | 7                                 | -- | -- | 7  | -- | 5  | 2  | 93 | 7  | -- | 5  | 2  | 93 |   | 1.58 | 1.58 | 2.01 | 1.98                        | 1.53 | 1.53 | 1.53 | 1.97         | 1.95 | 0.68 | 0.7 |
| 38- 57         | 20                                | -- | -- | 20 | 3  | 10 | 7  | 80 | 20 | 3  | 10 | 7  | 80 |   | 1.74 | 1.78 | 2.05 | 2.08                        | 1.60 | 1.62 | 1.65 | 1.97         | 2.00 | 0.52 | 0.6 |
| 57- 67         | 20                                | -- | -- | 20 | 2  | 10 | 8  | 80 | 20 | 2  | 10 | 8  | 80 |   | 1.92 | 1.93 | 2.17 | 2.20                        | 1.79 | 1.79 | 1.80 | 2.08         | 2.11 | 0.38 | 0.4 |
| 67- 81         | 21                                | -- | -- | 21 | 1  | 12 | 8  | 79 | 21 | 1  | 12 | 8  | 79 |   | 1.92 | 1.95 | 2.15 | 2.20                        | 1.78 | 1.78 | 1.81 | 2.06         | 2.11 | 0.38 | 0.4 |
| 81- 88         | 29                                | -- | -- | 29 | 1  | 19 | 9  | 71 | 29 | 1  | 19 | 9  | 71 |   | 1.99 |      |      |                             |      |      |      |              |      |      |     |
| 118-141        | 10                                | -- | -- | 10 | 2  | 4  | 4  | 90 | 10 | 2  | 4  | 4  | 90 |   | 1.85 |      |      |                             |      |      |      |              |      |      |     |

TABLE 7F



\*\*\* SUPPLEMENTARY CHARACTERIZATION DATA \*\*\*

S84GA-231-002

SAMPLED AS : ALLEN  
NATIONAL SOIL SURVEY LABORATORY

; FINE-LOAMY, SILICEOUS, THERMIC TYPIC PALEUDULT  
; PEDON 84P 469, SAMPLE 84P2501-2510

PRINT DATE 10/06/87

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

| DEPTH<br>(IN.) | ( V O L U M E F R A C T I O N S ) ( C / ) ( R A T I O S T O C L A Y ) ( L I N E A R E X T E N S I B I L I T Y ) ( W R D |    |    |    |    |    |    |    |    |    |   |    |    |    |      |      |      |      |       |     |                               |     |      |      |                             |  |  |  |
|----------------|---|----|----|----|----|----|----|----|----|----|---|----|----|----|------|------|------|------|-------|-----|-------------------------------|-----|------|------|-----------------------------|--|--|--|
|                | ---W H O L E S O I L (MM) A T 1/3 B A R---  |    |    |    |    |    |    |    |    |    | ---( /N ) ---<2 MM FRACTION---  |    |    |    |      |      |      |      |       |     | W H O L E S O I L ---<2 MM--- |     |      |      | ( P C T ) ---> W H O L E <2 |  |  |  |
|                | >2 250 250 75 75 20 5 2- .05- LT P O R E S R A T F I N E ---C E C---  |    |    |    |    |    |    |    |    |    | <-1/3 BAR TO (PCT)---   |    |    |    |      |      |      |      |       |     | SOIL <2                       |     |      |      |                             |  |  |  |
|                | -UP -75- -2 -20 -5 -2 <2 .05 .002 .002 D F -10 C L A Y S U M N H 4 - B A R 1/3  |    |    |    |    |    |    |    |    |    | 15 O V E N 15 O V E N 15 O V E N 15 O V E N 15 O V E N 15 O V E N 15 O V E N 15 O V E N |    |    |    |      |      |      |      |       |     |                               |     |      |      |                             |  |  |  |
|                | <--PCT OF WHOLE SOIL-->   |    |    |    |    |    |    |    |    |    | C A T S O A C H 2 O B A R   |    |    |    |      |      |      |      |       |     | <--IN/IN-->                   |     |      |      |                             |  |  |  |
|                | 51  | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61  | 62 | 63 | 64 | 65   | 66   | 67   | 68   | 69    | 70  | 71                            | 72  | 73   | 74   | 75                          |  |  |  |
| 0- 5           | 25  | -- | -- | 25 | 5  | 16 | 5  | 75 | 25 | 12 | 3   | 35 |    | 28 | 0.32 | 0.97 | 0.77 | 0.59 |       |     |                               |     |      |      |                             |  |  |  |
| 5- 9           | 18  | -- | -- | 18 | 5  | 9  | 5  | 82 | 31 | 14 | 4   | 19 | 14 | 21 | 0.33 | 0.39 | 0.32 | 0.41 | 0.045 | 0.4 | 0.4                           | 0.2 | 0.4  | 0.10 | 0.1                         |  |  |  |
| 9- 17          | 15  | -- | -- | 15 | 5  | 6  | 4  | 85 | 29 | 15 | 8   | 14 | 18 | 12 | 0.40 | 0.17 | 0.13 | 0.37 | 0.040 | 0.2 | 0.4                           | 0.4 | 0.6  | 0.11 | 0.1                         |  |  |  |
| 17- 29         | 6   | -- | -- | 6  | 1  | 2  | 3  | 94 | 20 | 10 | 24  | 15 | 25 | 11 | 0.45 | 0.15 | 0.10 | 0.36 | 0.020 |     | 0.8                           |     | 0.9  | 0.03 | 0.0                         |  |  |  |
| 29- 38         | 4   | -- | -- | 4  | -- | 3  | 1  | 96 | 14 | 9  | 32  |    | 42 |    | 0.38 | 0.14 | 0.10 | 0.39 |       |     |                               |     | 0.09 | 0.1  |                             |  |  |  |
| 38- 57         | 13  | -- | -- | 13 | 2  | 7  | 5  | 87 | 19 | 10 | 23  | 3  | 31 |    | 0.39 | 0.12 | 0.08 | 0.37 | 0.023 | 0.2 | 0.8                           | 0.4 | 1.0  | 0.10 | 0.1                         |  |  |  |
| 57- 67         | 15  | -- | -- | 15 | 1  | 7  | 6  | 85 | 30 | 14 | 13  | 3  | 25 |    | 0.37 | 0.08 | 0.06 | 0.38 | 0.009 |     | 0.2                           |     | 0.2  | 0.11 | 0.1                         |  |  |  |
| 67- 81         | 15  | -- | -- | 15 | 1  | 9  | 6  | 85 | 31 | 17 | 10  | 5  | 23 |    | 0.35 | 0.09 | 0.05 | 0.38 | 0.036 |     | 0.5                           |     | 0.6  | 0.14 | 0.1                         |  |  |  |
| 81- 88         | 22  | -- | -- | 22 | 1  | 14 | 7  | 78 | 30 | 16 | 7   | 25 |    |    | 0.08 | 0.05 | 0.39 |      |       |     |                               |     |      |      |                             |  |  |  |
| 118-141        | 7   | -- | -- | 7  | 1  | 3  | 3  | 93 | 49 | 9  | 5   | 30 |    |    | 0.25 | 0.22 | 0.56 |      |       |     |                               |     |      |      |                             |  |  |  |

| DEPTH<br>(IN.) | ( W E I G H T F R A C T I O N S - C L A Y F R E E ) |       |       |       |      |     |                              |    |    |    | (-TEXTURE-) |    | (--P S D A(MM)--- |       |      | (PH) | (-ELECTRICAL) |      |      | (CUMULT. AMOUNTS |       |     |             |    |     |
|----------------|---|-------|-------|-------|------|-----|------------------------------|----|----|----|-------------|----|-------------------|-------|------|------|---------------|------|------|------------------|-------|-----|-------------|----|-----|
|                | --W H O L E S O I L--                               |       |       |       |      |     | ---<2 MM F R A C T I O N --- |    |    |    | (DETERMINED |    | SAND              | SILT  | CLAY | CA-  | RES-          | CON- | SALT | IN. OF H2        |       |     |             |    |     |
|                | >2  | 75    | 20    | 2-    | .05- | LT  | -----SANDS-----              |    |    |    | SILTS       |    | CL                | IN    | BY   | 2-   | .05-          | LT   | CL2  | IST.             | DUCT. | MG/ | 1/3 BAR TO  |    |     |
|                | -2  | -2    | .05   | .002  | .002 | VC  | C                            | M  | F  | VF | C           | F  | AY                | FIELD | PSDA | .05  | .002          | .002 | .01M | OHMS             | MMHOS | KG  | 15BAR AIRDR |    |     |
|                | PCT OF  | >2MM+ | SAND+ | SILT+ |      |     | -----PCT OF SAND+SILT-----   |    |    |    | (--<2 MM--) |    | (--PCT OF .2MM--) |       |      |      |               |      |      |                  |       |     | (WHL SOIL   |    |     |
|                | 76  | 77    | 78    | 79    | 80   | 81  | 82                           | 83 | 84 | 85 | 86          | 87 | 88                | 89    | 90   | 91   | 92            | 93   | 94   | 95               | 96    | 97  | 98          | 99 | 100 |
| 0- 5           | 41  | 41    | 33    | 40    | 19   | 6   | 5                            | 4  | 10 | 26 | 22          | 16 | 16                | 10    | SL   | FSL  | 61.8          | 29.5 | 8.7  | 4.6              |       |     |             |    |     |
| 5- 9           | 29  | 29    | 21    | 48    | 23   | 7   | 4                            | 4  | 10 | 26 | 23          | 16 | 16                | 10    | SL   | FSL  | 62.1          | 29.1 | 8.8  | 4.5              |       |     |             |    |     |
| 9- 17          | 25  | 25    | 17    | 50    | 25   | 13  | 3                            | 4  | 10 | 26 | 23          | 16 | 17                | 18    | SCL  | VFSL | 56.7          | 28.4 | 14.9 | 4.4              |       |     |             |    |     |
| 17- 29         | 17  | 17    | 15    | 55    | 28   | 67  | 4                            | 4  | 9  | 25 | 24          | 20 | 14                | 81    | CL   | C    | 36.7          | 18.6 | 44.7 | 4.4              |       |     |             |    |     |
| 29- 38         | 15  | 15    | 15    | 51    | 33   | 121 | 4                            | 5  | 8  | 20 | 24          | 21 | 18                | 143   | CL   | C    | 25.0          | 16.1 | 58.9 | 4.5              |       |     |             |    |     |
| 38- 57         | 31  | 31    | 26    | 46    | 23   | 54  | 7                            | 7  | 7  | 17 | 27          | 21 | 12                | 79    | CL   | C    | 37.2          | 18.8 | 44.0 | 4.5              |       |     |             |    |     |
| 57- 67         | 25  | 25    | 22    | 51    | 24   | 23  | 10                           | 8  | 6  | 16 | 28          | 21 | 11                | 31    | CL   | SCL  | 52.2          | 24.4 | 23.4 | 4.4              |       |     |             |    |     |
| 67- 81         | 24  | 24    | 23    | 49    | 27   | 15  | 7                            | 8  | 7  | 15 | 27          | 23 | 13                | 20    | CL   | FSL  | 53.9          | 29.4 | 16.7 | 4.5              |       |     |             |    |     |
| 81- 88         | 32  | 32    | 31    | 44    | 24   | 10  | 8                            | 8  | 7  | 15 | 26          | 22 | 13                | 14    | SCL  |      | 56.8          | 30.8 | 12.4 | 4.6              |       |     |             |    |     |
| 118-141        | 11  | 11    | 9     | 75    | 14   | 7   | 4                            | 12 | 23 | 30 | 15          | 6  | 10                | 8     | SL   |      | 77.7          | 14.6 | 7.7  | 4.2              |       |     |             |    |     |

TABLE 76



TABLE 7H

Table 7h S84Ga-231-002

| Horizon<br>Sample No.  | A<br>2501 | AB<br>2502 | BA<br>2503        | B+1<br>2504        | B+2<br>2505        | B+3<br>2506 | B+4<br>2507 | B/C<br>2508 | C<br>2509 | 2C<br>2510         |
|--|-----------|------------|-------------------|--------------------|--------------------|-------------|-------------|-------------|-----------|--------------------|
| SiO <sub>2</sub>   |           | 91.30      | 76.42             | 59.63              | 47.79              |             |             | 79.43       |           | 50.24              |
| Al <sub>2</sub> O <sub>3</sub>                                       |           | 4.13       | 6.58              | 16.88              | 24.92              |             |             | 7.84        |           | 26.48              |
| Fe <sub>2</sub> O <sub>3</sub>                                       |           | 2.5        | 3.91              | 11.47              | 15.72              |             |             | 9.32        |           | 7.70               |
| MgO  |           |            |                   |                    |                    |             |             |             |           |                    |
| CaO  |           | 0.12       | 0.12              | 0.12               | 0.11               |             |             | 0.10        |           | 0.10               |
| Na <sub>2</sub> O  |           |            |                   |                    |                    |             |             |             |           |                    |
| K <sub>2</sub> O   |           | 0.24       | 0.26              | 0.35               | 0.43               |             |             | 0.44        |           | 6.14               |
| TiO <sub>2</sub>   |           | 0.71       | 0.71              | 0.83               | 0.87               |             |             | 0.41        |           | 1.28               |
| P <sub>2</sub> O <sub>5</sub>  |           | 0.04       | 0.09              | 0.07               | 0.09               |             |             | 0.07        |           | 0.12               |
| MnO  |           | 0.04       | 0.05              | 0.05               | 0.06               |             |             | 0.05        |           | 0.03               |
| SO <sub>2</sub>  |           | 0.08       | 0.06              | 0.09               | 0.08               |             |             | 0.06        |           | 0.10               |
| Total  |           | 99.17      | 88.2 <sup>1</sup> | 89.50 <sup>1</sup> | 90.07 <sup>1</sup> |             |             | 97.74       |           | 92.19 <sup>1</sup> |
| $\frac{\text{Fe}_2\text{O}_3 + \text{Al}_2\text{O}_3}{\text{SiO}_2}$ |           | 0.07       | 0.14              | 0.48               | 0.85               |             |             | 0.22        |           | 0.68               |

<sup>1</sup> Totals significantly less than 100% are due to high H<sub>2</sub>O content of clay-rich horizons.



Pedon: SNU  
Soil Survey: S84-GA-211-00  
Location: Pike Co. Ga About 2 km W of US19 the 2 km S on mountain road.  
Latitude: 33-00-11-N Longitude: 084-20-58-W  
Classification: Coarse-loamy, siliceous, thermic Typic Oystrochrept  
Physiography: Hillside or mountainside in piedmonts  
Geomorphic Position:  
Microrelief:  
Slope Characteristics: 5%, northeast facing  
Precipitation: 1250 mm Udic moisture regime  
Water Table Depth:  
Air Temp. (Centigrade): Ann: Sum: Win:  
Soil Temp. (Centigrade): Ann: Sum: Win:  
Drainage: Well drained  
Stoniness: Class 3  
Particle Size Control Section: 25 to 100 cm  
Parent Material: residuum from igneous-granite material over residuum from schist & phyllite material  
Vegetation Codes:

Elevation: 142 m MSL  
MLRA: 136  
Permeability: Moderate  
MAT: 18 degrees C  
Land Use: Forest land not grazed  
Erosion or Deposition: Slight

Diagnostic Horizons: 0 to 33 cm Ochric, 33 to 71 cm Cambic  
Described by: Grover Thomas and Talbert Gerald

Weather Station: 091271  
Date: 04/84

UTM Zone 16 1654470 m N 747670 m E Zebulon Ga 7.5' Quad. Atlas sheet 41 of Soil Survey for Lamar Pike and Upson Counties GA. Sampled by Warren Lynn and Reese Berdanier 4/4/84.

A1--0 to 10 cm; brown (10YR 5/3) gravelly sandy loam; weak fine granular structure; very friable; many fine and medium and few coarse roots; clear smooth boundary.  
Common fine and medium gravel. Few coarse gravel.  
84P2511

A2--10 to 33 cm; yellowish brown (10YR 5/4) gravelly sandy loam; weak fine granular structure; very friable; many fine and medium and few coarse roots; clear wavy boundary.  
Common fine and medium gravel. Few coarse gravel.  
84P2512

A3--33 to 53 cm; yellowish brown (10YR 5/6) gravelly sandy loam; weak fine granular structure; very friable; many fine and medium and few coarse roots; clear wavy boundary.  
Few fine medium and coarse gravel.  
84P2513

B/C--53 to 71 cm; yellowish brown (10YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; abrupt smooth boundary.  
Few fine gravel. 30 percent highly weathered fragments of quartzite.  
84P2514

C1--71 to 87 cm; red (2.5YR 4/8) sandy loam; massive; very firm; abrupt wavy boundary.  
Quartzite saprolite that crushes to sandy loam.  
84P2515

C2--87 to 114 cm; red (2.5YR 4/8) and 5 percent strong brown (7.5YR 5/8) unknown texture; massive; hard; abrupt wavy boundary.  
Quartzite saprolite with streaks of strong brown.  
84P2516

C3--114 to 138 cm; red (2.5YR 4/8) fine sandy loam; massive; friable; few fine roots; abrupt wavy boundary.  
Mica schist saprolite that crushes to fine sandy loam.  
84P2517

C4--138 to 150 cm; unknown texture; massive; hard; abrupt wavy boundary.  
Quartzite saprolite.  
84P2518

C5--150 to 178 cm; unknown texture; massive; friable; abrupt wavy boundary.  
Mica schist saprolite.  
84P2519

C6--178 to 191 cm; unknown texture; massive; hard; abrupt wavy boundary.  
Quartzite saprolite.  
84P2520

C7--191 to 204 cm; unknown texture; friable; abrupt wavy boundary.  
Mica schist saprolite.  
84P2521

C8--204 to 221 cm; unknown texture; friable; abrupt wavy boundary.  
Quartzite saprolite.  
84P2522

C9--221 to 230 cm; unknown texture; friable.  
Mica schist saprolite.  
84P2523

TABLE 84



S84GA-231-003

\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*  
(PIKE COUNTY, GEORGIA)

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED ; COARSE-LOAMY, SILICEOUS, THERMIC TYPIC DYSTROCHREPT  
REVISED TO : ; COARSE-LOAMY, SILICEOUS, THERMIC TYPIC DYSTROCHREPT

NSSL - PROJECT 84P 91, PINE MOUNTAIN  
- PEDON 84P 470, SAMPLES 84P2511-2523  
- GENERAL METHODS 1B1A, 2A1, 2B

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
NATIONAL SOIL SURVEY LABORATORY  
LINCOLN, NEBRASKA 68508-3866

|            |            | -1--    | -2--  | -3--      | -4--      | -5--      | -6--      | -7--      | -8--      | -9--      | -10-      | -11-      | -12-      | -13-      | -14-                       | -15-      | -16-      | -17-      | -18-         | -19-      | -20-      |  |
|------------|------------|---------|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------------------------|-----------|-----------|-----------|--------------|-----------|-----------|--|
|            |            | -----   |   |           |           |           |           |           |           |           |           |           |           |           |                            |           |           |           |              |           |           |  |
| SAMPLE NO. | DEPTH (CM) | HORIZON | (- - - TOTAL - - - ) (- - CLAY - - ) (- - SILT - - ) (- - - - - ) (- - SAND - - - - - ) (- - COARSE FRACTIONS (MM) - - ) (>2MM) |           |           |           |           |           |           |           |           |           |           |           |                            |           |           |           |              |           |           |  |
|            |            |         | CLAY  | SILT      | SAND      | FINE      | CO3       | FINE      | COARSE    | VF        | F         | M         | C         | VC        | - - - - - WEIGHT - - - - - |           |           |           | - - - - - WT |           |           |  |
|            |            |         | LT  | .002      | .05       | LT        | LT        | .002      | .02       | .05       | .10       | .25       | .5        | 1         | 2                          | 5         | 20        | .1        | PCT OF       | WT        |           |  |
|            |            |         | .002  | .05       | .2        | .0002     | .002      | .02       | .05       | .10       | .25       | .50       | 1         | 2         | 5                          | 20        | .1        | PCT OF    | WHOLE        |           |           |  |
|            |            |         | <- - - - -  | - - - - - | - - - - - | - - - - - | - - - - - | - - - - - | - - - - - | - - - - - | - - - - - | - - - - - | - - - - - | - - - - - | - - - - -                  | - - - - - | - - - - - | - - - - - | - - - - -    | - - - - - | - - - - - |  |
| 84P2511S   | 0- 10      | A1      | 9.8   | 17.8      | 72.4      |           |           |           |           | 12.5      | 5.3       | 6.4       | 19.3      | 20.9      | 14.5                       | 11.3      | 5         | 16        | 32           | 84        | 53        |  |
| 84P2512S   | 10- 33     | A2      | 9.5   | 18.5      | 72.0      |           |           |           |           | 13.0      | 5.5       | 6.6       | 20.0      | 21.5      | 15.1                       | 8.8       | 9         | 22        | 8            | 79        | 39        |  |
| 84P2513S   | 33- 53     | AB      | 18.1  | 19.5      | 62.4      |           |           |           |           | 14.3      | 5.2       | 5.5       | 15.7      | 18.6      | 13.2                       | 9.4       | 8         | 17        | 18           | 75        | 43        |  |
| 84P2514S   | 53- 71     | B/C     | 18.4  | 12.2      | 69.4      |           |           |           |           | 8.4       | 3.8       | 5.0       | 15.7      | 22.4      | 16.9                       | 9.4       | --        | --        | --           | 64        | --        |  |
| 84P2515S   | 71- 87     | C1      | 16.6  | 10.1      | 73.3      |           |           |           |           | 6.1       | 4.0       | 6.8       | 22.1      | 28.5      | 13.5                       | 2.4       | --        | --        | --           | 66        | --        |  |
| 84P2516S   | 87-114     | C2      | 7.2   | 6.8       | 86.0      |           |           |           |           | 2.3       | 4.5       | 8.9       | 26.1      | 30.7      | 15.2                       | 5.1       | --        | --        | --           | 77        | --        |  |
| 84P2517S   | 114-138    | C3      | 23.9  | 21.4      | 54.7      |           |           |           |           | 17.6      | 3.8       | 5.9       | 16.7      | 16.2      | 11.5                       | 4.4       | --        | --        | --           | 49        | --        |  |
| 84P2518S   | 138-150    | C4      | 8.4   | 19.4      | 72.2      |           |           |           |           | 12.4      | 7.0       | 9.9       | 19.5      | 18.9      | 15.8                       | 8.1       | --        | --        | --           | 62        | --        |  |
| 84P2519S   | 150-178    | C5      | 3.3   | 20.1      | 76.6      |           |           |           |           | 12.3      | 7.8       | 10.2      | 18.0      | 19.9      | 18.4                       | 10.1      | --        | --        | --           | 66        | --        |  |
| 84P2520S   | 178-191    | C6      | 1.5   | 9.7       | 88.8      |           |           |           |           | 4.2       | 5.5       | 10.0      | 26.3      | 28.1      | 16.2                       | 8.2       | --        | --        | --           | 79        | --        |  |
| 84P2521S   | 191-204    | C7      | 11.5  | 26.1      | 62.4      |           |           |           |           | 21.7      | 4.4       | 7.2       | 23.7      | 20.8      | 8.1                        | 2.6       | --        | --        | --           | 55        | --        |  |
| 84P2522S   | 204-221    | C8      | 1.8   | 9.4       | 88.8      |           |           |           |           | 5.9       | 3.5       | 7.8       | 27.5      | 32.6      | 16.3                       | 4.6       | --        | --        | --           | 81        | --        |  |
| 84P2523S   | 221-230    | C9      | 6.5   | 21.5      | 72.0      |           |           |           |           | 17.2      | 4.3       | 6.7       | 19.4      | 22.1      | 17.5                       | 6.3       | --        | --        | --           | 65        | --        |  |

| DEPTH (CM) | ORGN TOTAL |       | EXTR TOTAL |            | (- - DITH-CIT - - ) (RATIO/CLAY) |      |        |      | (- BULK DENSITY - ) |     | COLE (- - - WATER CONTENT - - ) |           |      |      |       |       |      |      |      |       |
|------------|------------|-------|------------|------------|----------------------------------|------|--------|------|---------------------|-----|---------------------------------|-----------|------|------|-------|-------|------|------|------|-------|
|            | C          | N     | P          | S          | FE                               | AL   | MH     | CEC  | BAR                 | LL  | PI                              | MOIST     | BAR  | DRY  | SOIL  | MOIST | BAR  | BAR  | BAR  | WHOLE |
|            | 6A1C       | 6B3A  | 6S3        | 6R3A       | 6C2B                             | 6G7A | 6D2A   | 8D1  | 8D1                 | 4F1 | 4F                              | 4A3A      | 4A1D | 4A1H | 4D1   | 4B4   | 4B1C | 4B1C | 4B2  | 4C1   |
|            | PCT        | <2MM  | PPM        | <- PERCENT | OF                               | <2MM | <- - - |      |                     | PCT | <0.4MM                          | <- - G/CC | <- - | <- - | CM/CM | <- -  | <- - | <- - | <- - | <- -  |
| 0- 10      | 2.19       | 0.063 |            |            | 0.4                              | 0.2  |        | 0.57 | 0.56                |     |                                 |           |      |      |       |       |      |      |      | 5.5   |
| 10- 33     | 0.52       | 0.025 |            |            | 0.4                              | 0.1  |        | 0.24 | 0.33                |     |                                 |           |      |      |       |       |      |      |      | 3.1   |
| 33- 53     | 0.21       | 0.015 |            |            | 0.9                              | 0.2  |        | 0.18 | 0.30                |     |                                 |           |      |      |       |       |      |      |      | 5.5   |
| 53- 71     | 0.11       | 0.012 |            |            | 1.1                              | 0.2  |        | 0.13 | 0.34                |     |                                 |           |      |      |       |       |      |      |      | 6.2   |
| 71- 87     | 0.08       |       |            |            | 1.3                              | 0.2  |        | 0.10 | 0.42                |     |                                 |           |      |      |       |       |      |      |      | 7.0   |
| 87-114     | 0.03       |       |            |            | 0.5                              | 0.1  |        | 0.07 | 0.39                |     |                                 |           |      |      |       |       |      |      |      | 2.8   |
| 114-138    | 0.09       |       |            |            | 3.4                              | 0.3  |        | 0.14 | 0.43                |     |                                 |           |      |      |       |       |      |      |      | 10.2  |
| 138-150    | 0.03       |       |            |            | 1.2                              | 0.1  |        | 0.07 | 0.50                |     |                                 |           |      |      |       |       |      |      |      | 4.2   |
| 150-178    | 0.03       |       |            |            | 0.9                              | 0.1  |        | 0.03 | 0.79                |     |                                 |           |      |      |       |       |      |      |      | 2.6   |
| 178-191    | 0.01       |       |            |            | 0.1                              | TR   |        |      | 0.47                |     |                                 |           |      |      |       |       |      |      |      | 0.7   |
| 191-204    | 0.08       |       |            |            | 1.7                              | 0.1  |        | 0.23 | 0.51                |     |                                 |           |      |      |       |       |      |      |      | 5.9   |
| 204-221    | 0.02       |       |            |            | 0.3                              | TR   |        |      | 0.78                |     |                                 |           |      |      |       |       |      |      |      | 1.4   |
| 221-230    | 0.01       |       |            |            | 1.3                              | 0.1  |        | 0.20 | 0.54                |     |                                 |           |      |      |       |       |      |      |      | 3.5   |

AVERAGES, DEPTH 25-100: PCT CLAY 15 PCT .1-75MM 72

TABLE 83



\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*

S84GA-231-003

SAMPLED AS : NOT DESIGNATED  
NATIONAL SOIL SURVEY LABORATORY

; COARSE-LOAMY, SILICEOUS, THERMIC TYPIC DYSTROCHREPT  
; PEDON 84P 470, SAMPLE 84P2511-2523

PRINT DATE 10/06/87

|            | -1--                           | -2--         | -3--         | -4--        | -5--      | -6--      | -7--             | -8--         | -9--            | -10--   | -11--   | -12--      | -13--           | -14--                  | -15-- | -16--        | -17--       | -18--               | -19--        | -20-- |
|------------|--------------------------------|--------------|--------------|-------------|-----------|-----------|------------------|--------------|-----------------|---------|---------|------------|-----------------|------------------------|-------|--------------|-------------|---------------------|--------------|-------|
|            | (- NH4OAC EXTRACTABLE BASES -) |              |              |             |           | ACID-EXTR | (- - -CEC - - -) | AL           | -BASE           | SAT-    | CO3 AS  | RES.       |                 | COND. (- - - -PH - - - |       |              |             |                     |              |       |
| DEPTH (CM) | CA 5B5A 6N2E                   | MG 5B5A 6O2D | NA 5B5A 6P2B | K 5B5A 6Q2B | SUM BASES | ITY AL    | SUM CATS         | NH4-OAC 5A8B | BASES + AL 5A3B | SAT 5G1 | SUM 5C3 | NH4OAC 5C1 | CACO3 <2MM 6E1G | OHMS /CM 8E1           |       | MMHOS /CM 8I | KCL IN 8C1G | CACL2 .01M 8C1F 1:2 | H2O 8C1F 1:1 |       |
|            | <-                             | -            | -            | -           | -MEQ /    | 100 G     | -                | -            | ->              | <-      | -       | -          | ->              | -                      | -     | -            | -           | -                   | -            | -     |
| 0- 10      | 0.1                            | 0.2          | TR           | 0.1         | 0.4       | 6.7       | 0.8              | 7.1          | 5.6             | 1.2     | 67      | 6          | 7               |                        |       |              |             | 4.3                 | 4.6          | 5.1   |
| 10- 33     | 0.1                            | TR           | TR           | TR          | 0.1       | 2.7       | 0.5              | 2.8          | 2.3             | 0.6     | 83      | 4          | 4               |                        |       |              |             | 4.1                 | 4.4          | 4.7   |
| 33- 53     | 0.1                            | 0.1          | TR           | TR          | 0.2       | 2.8       | 0.7              | 3.0          | 3.3             | 0.9     | 78      | 7          | 6               |                        |       |              |             | 3.9                 | 4.3          | 4.8   |
| 53- 71     | 0.3                            | 0.4          | TR           | TR          | 0.7       | 1.9       | 0.3              | 2.6          | 2.4             | 1.0     | 30      | 27         | 29              |                        |       |              |             | 4.3                 | 4.6          | 5.2   |
| 71- 87     | TR                             | 0.3          | TR           | TR          | 0.3       | 3.9       | 0.4              | 4.2          | 1.6             | 0.7     | 57      | 7          | 19              |                        |       |              |             | 4.3                 | 4.5          | 5.0   |
| 87-114     | TR                             | 0.1          | TR           | TR          | 0.1       | 1.2       | 0.2              | 1.3          | 0.5             | 0.3     | 67      | 8          | 20              |                        |       |              |             | 4.5                 | 4.6          | 5.0   |
| 114-138    | TR                             | 0.2          | --           | 0.1         | 0.3       | 3.8       | 1.0              | 4.1          | 3.4             | 1.3     | 77      | 7          | 9               |                        |       |              |             | 4.2                 | 4.4          | 5.0   |
| 138-150    | --                             | 0.1          | 0.1          | --          | 0.2       | 1.2       | 0.4              | 1.4          | 0.6             | 0.6     | 67      | 14         | 33              |                        |       |              |             | 4.3                 | 4.5          | 4.9   |
| 150-178    | --                             | TR           | 0.1          | TR          | 0.1       | 0.8       | 0.4              | 0.9          | 0.1             | 0.5     | 80      | 11         | 100             |                        |       |              |             | 4.4                 | 4.5          | 4.8   |
| 178-191    | --                             | TR           | TR           | --          | TR        | --        | 0.1              |              | TR              | 0.1     | 100     |            |                 |                        |       |              |             | 5.2                 | 4.9          | 5.4   |
| 191-204    | --                             | TR           | TR           | --          | TR        | 3.0       | 1.2              | 3.0          | 2.6             | 1.2     | 100     |            | 1               |                        |       |              |             | 3.9                 | 4.3          | 4.6   |
| 204-221    | --                             | --           | TR           | --          | TR        | 0.5       | 0.2              | 0.5          | TR              | 0.2     | 100     |            |                 |                        |       |              |             | 4.5                 | 4.5          | 4.8   |
| 221-230    | TR                             | 0.1          | --           | --          | 0.1       | 2.2       | 0.6              | 2.3          | 1.3             | 0.7     | 86      | 4          | 8               |                        |       |              |             | 3.9                 | 4.3          | 4.7   |

TABLE 8C



S84GA-231-003

; COARSE-LOAMY, SILICEOUS, THERMIC TYPIC DYSTROCHREPT  
; PEDON 84P 470, SAMPLE 84P2511-2523

PRINT DATE 10/06/87

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

[illegible]

| DEPTH<br>(cm) | SAND - SILT MINERALOGY (2.0-0.002mm) |       |  |  |           |         |        |         |      |      |             |         |       |      |   | > INTER<br>> PRET<br>> TION |
|---------------|--------------------------------------|-------|--|--|-----------|---------|--------|---------|------|------|-------------|---------|-------|------|---|-----------------------------|
|               | FRACT ION                            | X-RAY |  |  | THERMAL   |         |        | OPTICAL |      |      | GRAIN COUNT |         |       |      |   |                             |
|               | <                                    | >     |  |  | DTA       | TGA     | TOT RE |         |      |      |             |         |       |      |   |                             |
|               | <                                    | >     |  |  | 7A3b      | 7A4b    | <      |         |      |      | 7B1a        | <       |       |      |   |                             |
|               | <                                    | >     |  |  | Peak Size | Percent |        |         |      |      |             | Percent |       |      | < |                             |
| 33- 53        | FS                                   |       |  |  |           |         |        | 96      | QZ96 | MS 3 | BT 1        | ZRtr    | OPtr  | FKtr |   | SILI                        |
| 33- 53        | FS                                   |       |  |  |           |         |        |         | RUtr |      |             |         |       |      |   |                             |
| 53- 71        | FS                                   |       |  |  |           |         |        | 95      | QZ94 | MS 4 | RA 1        | OPtr    | TMtr  | ZRtr |   | SILI                        |
| 53- 71        | FS                                   |       |  |  |           |         |        |         | BTtr |      |             |         |       |      |   |                             |
| 87-114        | FS                                   |       |  |  |           |         |        | 90      | QZ89 | MS10 | ZRtr        | SPtr    |       |      |   | SILI                        |
| 138-150       | FS                                   |       |  |  |           |         |        | 46      | MS52 | QZ46 | BT 1        | RUtr    | OPtr  |      |   | MICA                        |
| 150-178       | FS                                   |       |  |  |           |         |        | 13      | MS87 | QZ12 | RA 1        |         |       |      |   | MICA                        |
| 178-191       | FS                                   |       |  |  |           |         |        | 92      | QZ92 | MS 8 | ZRtr        | RUtr    | RAttr | TMtr |   | SILI                        |
| 191-204       | FS                                   |       |  |  |           |         |        | 12      | MS88 | QZ12 | ZRtr        |         |       |      |   | MICA                        |
| 204-221       | FS                                   |       |  |  |           |         |        | 48      | MS52 | QZ47 | RU 1        | RAttr   | ZRtr  |      |   | MICA                        |
| 221-230       | FS                                   |       |  |  |           |         |        | 18      | MS82 | QZ15 | RA 3        |         |       |      |   | MICA                        |

## KIND OF MINERAL:

|    |              |    |            |    |             |    |          |    |            |    |        |
|----|--------------|----|------------|----|-------------|----|----------|----|------------|----|--------|
| KK | kaolinite    | GI | gibbsite   | VR | vermiculite | CL | chlorite | GE | goethite   | QZ | quartz |
| MS | muscovite    | BT | biotite    | ZR | zircon      | OP | opaques  | FK | potas-feld | RU | rutile |
| RA | resist-aggre | TM | tourmaline | SP | sphene      | MI | mica     | HE | hematite   |    |        |

RELATIVE PEAK SIZE: 5 Very Large 4 Large 3 Medium 2 Small 1 Very Small 6 No Peaks

INTERPRETATION (BY HORIZON):

CMIX = MIXED (CLAY)    KAOL = KAOLINITIC    MICA = MICACEOUS    SILI = SILICEOUS    SMIX = MIXED (SAND)

### PEDON MINERALOGY

ON MINERALOGY:  
 BASED ON SAND/SILT: SILICEOUS  
 BASED ON CLAY: MIXED  
 FAMILY MINERALOGY: SILICEOUS  
 COMMENTS:

1752-80



S84GA-231-003

\*\*\* SUPPLEMENTARY CHARACTERIZATION DATA \*\*\*  
(PIKE COUNTY, GEORGIA)

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED ; COARSE-LOAMY, SILICEOUS, THERMIC TYPIC DYSTROCHREPT  
REVISED TO : ; COARSE-LOAMY, SILICEOUS, THERMIC TYPIC DYSTROCHREPT

NSSL - PROJECT 84P 91, PINE MOUNTAIN  
- PEDON 84P 470, SAMPLES 84P2511-2523  
- GENERAL METHODS (ENGINEERING FRACTIONS ARE CALCULATED FROM USDA FRACTION SIZES)

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
NATIONAL SOIL SURVEY LABORATORY  
LINCOLN, NEBRASKA 68508-3866

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

| SAMPLE NO. | DEPTH (IN.) | HORIZON | ENGINEERING PASSING SIEVE   |     |     |     |     |     |     |     |    |    | CUMULATIVE CURVE FRACTIONS (<76MM) LESS THAN DIAMETERS (MM) AT BERG |    |    |    |    |    |    |    |      |       | GRADATIO |  |          |      |     |
|------------|-------------|---------|---|-----|-----|-----|-----|-----|-----|-----|----|----|---|----|----|----|----|----|----|----|------|-------|----------|--|----------|------|-----|
|            |             |         | PERCENTAGE  |     |     |     |     |     |     |     |    |    | USDA  |    |    |    |    |    |    |    |      |       | LL PI    |  | FMTY VTU |      |     |
|            |             |         | 3 2 3/2 1 3/4 3/8 4 10 40 200 20 5 2  |     |     |     |     |     |     |     |    |    | 1. 5 .25 .10 .05 60 50 10   |    |    |    |    |    |    |    |      |       | <PCT>    |  | CU CC    |      |     |
|            |             |         | <---INCHES---> <---NUMBER---> <---MICRONS---> <---MM---> <---PERCENTILE---> <---PCT---> |     |     |     |     |     |     |     |    |    | 14 15 16 17 18 19 20 21 22 23 24 25                                 |    |    |    |    |    |    |    |      |       |          |  |          |      |     |
| 84P2511S   | 0- 4        | A1      | 100   | 91  | 84  | 75  | 68  | 60  | 52  | 47  | 32 | 15 | 10  | 7  | 5  | 42 | 35 | 25 | 16 | 13 | 9.45 | 3.339 | 0.017    |  |          | >100 | 0.  |
| 84P2512S   | 4- 13       | A2      | 100   | 98  | 96  | 94  | 92  | 81  | 70  | 61  | 43 | 19 | 14  | 9  | 6  | 56 | 46 | 33 | 21 | 17 | 1.76 | 0.655 | 0.007    |  |          | >100 | 3.  |
| 84P2513S   | 13- 21      | A8      | 100   | 95  | 91  | 86  | 82  | 74  | 65  | 57  | 41 | 23 | 18  | 14 | 10 | 52 | 44 | 34 | 25 | 21 | 2.76 | 0.860 | 0.002    |  |          | >100 | 5.  |
| 84P2514S   | 21- 28      | B/C     | 100   | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 68 | 33 | 27  | 22 | 18 | 91 | 74 | 51 | 36 | 31 | 0.33 | 0.232 | 0.001    |  |          | >100 | 8.  |
| 84P2515S   | 28- 34      | C1      | 100   | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 77 | 31 | 23  | 19 | 17 | 98 | 84 | 56 | 34 | 27 | 0.28 | 0.198 | 0.001    |  |          | >100 | 22. |
| 84P2516S   | 34- 45      | C2      | 100   | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 72 | 19 | 9   | 8  | 7  | 95 | 80 | 49 | 23 | 14 | 0.32 | 0.256 | 0.022    |  |          | 14.5 | 2.  |
| 84P2517S   | 45- 54      | C3      | 100   | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 80 | 49 | 41  | 31 | 24 | 96 | 84 | 68 | 51 | 45 | 0.16 | 0.087 | 0.001    |  |          | >100 | 0.  |
| 84P2518S   | 54- 59      | C4      | 100   | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 71 | 33 | 21  | 13 | 8  | 92 | 76 | 57 | 38 | 28 | 0.28 | 0.178 | 0.003    |  |          | >100 | 4.  |
| 84P2519S   | 59- 70      | C5      | 100   | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 66 | 29 | 16  | 8  | 3  | 90 | 72 | 52 | 34 | 23 | 0.34 | 0.230 | 0.007    |  |          | 47.8 | 2.  |
| 84P2520S   | 70- 75      | C6      | 100   | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 69 | 17 | 6   | 3  | 2  | 92 | 76 | 48 | 21 | 11 | 0.34 | 0.266 | 0.041    |  |          | 8.3  | 1.  |
| 84P2521S   | 75- 80      | C7      | 100   | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 84 | 42 | 33  | 20 | 12 | 97 | 89 | 69 | 45 | 38 | 0.18 | 0.122 | 0.001    |  |          | >100 | 0.  |
| 84P2522S   | 80- 87      | C8      | 100   | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 71 | 16 | 8   | 4  | 2  | 95 | 79 | 47 | 19 | 11 | 0.33 | 0.269 | 0.037    |  |          | 9.1  | 1.  |
| 84P2523S   | 87- 90      | C9      | 100   | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 71 | 32 | 24  | 13 | 7  | 94 | 76 | 54 | 35 | 28 | 0.30 | 0.206 | 0.003    |  |          | 94.1 | 3.  |

| DEPTH<br>(IN.) | ( W E I G H T F R A C T I O N S ) |    |    |    |    |    |    |     |    |    |    |    |     | ( W E I G H T P E R U N I T V O L U M E G / C C ) |      |    |    | ( V O I D R A T I O S )     |    |    |    |            |    |    |    |
|----------------|-----------------------------------|----|----|----|----|----|----|-----|----|----|----|----|-----|---|------|----|----|-----------------------------|----|----|----|------------|----|----|----|
|                | --WHOLE SOIL (MM)--               |    |    |    |    |    |    |     |    |    |    |    |     | --WHOLE SOIL--                                    |      |    |    | --<2 MM FRACTION--          |    |    |    | --RATIOS-- |    |    |    |
|                | >2 250 250 75 75 20 5 75 75 20 5  |    |    |    |    |    |    |     |    |    |    |    |     | SOIL SURVEY ENGINEERING                           |      |    |    | --SOIL SURVEY-- ENGINEERING |    |    |    | AT 1/3 BA  |    |    |    |
|                | -UP -75 -2 -20 -5 -2 <2           |    |    |    |    |    |    |     |    |    |    |    |     | 1/3 OVEN MOIST SATUR                              |      |    |    | 1/3 15 OVEN MOIST SATUR     |    |    |    | WHOLE <2   |    |    |    |
|                | <-----PCT OF WHOLE SOIL----->     |    |    |    |    |    |    |     |    |    |    |    |     | BAR -DRY -ATED                                    |      |    |    | BAR BAR -DRY -ATED          |    |    |    | SOIL MM    |    |    |    |
|                | 26                                | 27 | 28 | 29 | 30 | 31 | 32 | 33  | 34 | 35 | 36 | 37 | 38  | 39  | 40   | 41 | 42 | 43                          | 44 | 45 | 46 | 47         | 48 | 49 | 50 |
| 0- 4           | 53                                | -- | -- | 53 | 32 | 16 | 5  | 47  | 53 | 32 | 16 | 5  | 47  |   | 1.91 |    |    |                             |    |    |    |            |    |    |    |
| 4- 13          | 39                                | -- | -- | 39 | 8  | 22 | 9  | 61  | 39 | 8  | 22 | 9  | 61  |   | 1.76 |    |    |                             |    |    |    |            |    |    |    |
| 13- 21         | 43                                | -- | -- | 43 | 18 | 17 | 8  | 57  | 43 | 18 | 17 | 8  | 57  |   | 1.80 |    |    |                             |    |    |    |            |    |    |    |
| 21- 28         | --                                | -- | -- | -- | -- | -- | -- | 100 | -- | -- | -- | -- | 100 |   | 1.45 |    |    |                             |    |    |    |            |    |    |    |
| 28- 34         | --                                | -- | -- | -- | -- | -- | -- | 100 | -- | -- | -- | -- | 100 |   | 1.45 |    |    |                             |    |    |    |            |    |    |    |
| 34- 45         | --                                | -- | -- | -- | -- | -- | -- | 100 | -- | -- | -- | -- | 100 |   | 1.45 |    |    |                             |    |    |    |            |    |    |    |
| 45- 54         | --                                | -- | -- | -- | -- | -- | -- | 100 | -- | -- | -- | -- | 100 |   | 1.45 |    |    |                             |    |    |    |            |    |    |    |
| 54- 59         | --                                | -- | -- | -- | -- | -- | -- | 100 | -- | -- | -- | -- | 100 |   | 1.45 |    |    |                             |    |    |    |            |    |    |    |
| 59- 70         | --                                | -- | -- | -- | -- | -- | -- | 100 | -- | -- | -- | -- | 100 |   | 1.45 |    |    |                             |    |    |    |            |    |    |    |
| 70- 75         | --                                | -- | -- | -- | -- | -- | -- | 100 | -- | -- | -- | -- | 100 |   | 1.45 |    |    |                             |    |    |    |            |    |    |    |
| 75- 80         | --                                | -- | -- | -- | -- | -- | -- | 100 | -- | -- | -- | -- | 100 |   | 1.45 |    |    |                             |    |    |    |            |    |    |    |
| 80- 87         | --                                | -- | -- | -- | -- | -- | -- | 100 | -- | -- | -- | -- | 100 |   | 1.45 |    |    |                             |    |    |    |            |    |    |    |
| 87- 90         | --                                | -- | -- | -- | -- | -- | -- | 100 | -- | -- | -- | -- | 100 |   | 1.45 |    |    |                             |    |    |    |            |    |    |    |

TABLE 8E



\*\*\* SUPPLEMENTARY CHARACTERIZATION DATA \*\*\*

S84GA-231-003

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED  
NATIONAL SOIL SURVEY LABORATORY

; COARSE-LOAMY, SILICEOUS, THERMIC TYPIC DYSTROCHREPT  
; PEDON 84P 470, SAMPLE 84P2511-2523

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

| DEPTH<br>(IN.) | ( V O L U M E F R A C T I O N S ) ( C / ) ( R A T I O S T O C L A Y ) ( L I N E A R E X T E N S I B I L I T Y ) ( W R D |    |    |    |    |    |    |     |    |    |    |    |    |    |    |      |      |      |    |    |    |    |    |    |    |
|----------------|---|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|------|------|------|----|----|----|----|----|----|----|
|                | ---W H O L E S O I L (MM) A T 1/3 B A R--- ( / N ) ---<2 MM FRACTION---> WHOLE SOIL ---<2 MM--> WHOLE <2                |    |    |    |    |    |    |     |    |    |    |    |    |    |    |      |      |      |    |    |    |    |    |    |    |
|                | >2 250 250 75 75 20 5 2- .05- LT PORES RAT FINE ---C E C-- 15 LE <-1/3 BAR TO (PCT)---> SOIL MM                         |    |    |    |    |    |    |     |    |    |    |    |    |    |    |      |      |      |    |    |    |    |    |    |    |
|                | -UP -75 -2 -20 -5 -2 <2 .05 .002 .002 D F -10 CLAY SUM NH4- BAR 1/3 15 OVEN 15 OVEN <---IN/IN-                          |    |    |    |    |    |    |     |    |    |    |    |    |    |    |      |      |      |    |    |    |    |    |    |    |
|                | 51  | 52 | 53 | 54 | 55 | 56 | 57 | 58  | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66   | 67   | 68   | 69 | 70 | 71 | 72 | 73 | 74 | 75 |
| 0- 4           | 38  | -- | -- | 38 | 23 | 12 | 4  | 62  | 25 | 6  | 3  | 28 |    | 35 |    | 0.72 | 0.57 | 0.56 |    |    |    |    |    |    |    |
| 4- 13          | 26  | -- | -- | 26 | 5  | 15 | 6  | 74  | 29 | 7  | 4  | 34 |    | 21 |    | 0.29 | 0.24 | 0.33 |    |    |    |    |    |    |    |
| 13- 21         | 30  | -- | -- | 30 | 12 | 12 | 5  | 70  | 25 | 8  | 7  | 32 |    | 14 |    | 0.17 | 0.18 | 0.30 |    |    |    |    |    |    |    |
| 21- 28         | --  | -- | -- | -- | -- | -- | -- | 100 | 38 | 7  | 10 | 45 |    | 9  |    | 0.14 | 0.13 | 0.34 |    |    |    |    |    |    |    |
| 28- 34         | --  | -- | -- | -- | -- | -- | -- | 100 | 40 | 6  | 9  | 45 |    |    |    | 0.25 | 0.10 | 0.42 |    |    |    |    |    |    |    |
| 34- 45         | --  | -- | -- | -- | -- | -- | -- | 100 | 47 | 4  | 4  | 45 |    |    |    | 0.18 | 0.07 | 0.39 |    |    |    |    |    |    |    |
| 45- 54         | --  | -- | -- | -- | -- | -- | -- | 100 | 30 | 12 | 13 | 45 |    |    |    | 0.17 | 0.14 | 0.43 |    |    |    |    |    |    |    |
| 54- 59         | --  | -- | -- | -- | -- | -- | -- | 100 | 39 | 11 | 5  | 45 |    |    |    | 0.17 | 0.07 | 0.50 |    |    |    |    |    |    |    |
| 59- 70         | --  | -- | -- | -- | -- | -- | -- | 100 | 42 | 11 | 2  | 45 |    |    |    | 0.27 | 0.03 | 0.79 |    |    |    |    |    |    |    |
| 70- 75         | --  | -- | -- | -- | -- | -- | -- | 100 | 49 | 5  | 1  | 45 |    |    |    |      |      | 0.47 |    |    |    |    |    |    |    |
| 75- 80         | --  | -- | -- | -- | -- | -- | -- | 100 | 34 | 14 | 6  | 45 |    |    |    | 0.26 | 0.23 | 0.51 |    |    |    |    |    |    |    |
| 80- 87         | --  | -- | -- | -- | -- | -- | -- | 100 | 49 | 5  | 1  | 45 |    |    |    | 0.28 |      | 0.78 |    |    |    |    |    |    |    |
| 87- 90         | --  | -- | -- | -- | -- | -- | -- | 100 | 39 | 12 | 4  | 45 |    |    |    | 0.35 | 0.20 | 0.54 |    |    |    |    |    |    |    |

| DEPTH<br>(IN.) | ( W E I G H T F R A C T I O N S - C L A Y F R E E ) ( - T E X T U R E - ) ( - P S D A (MM) - ) ( P H ) ( - E L E C T R I C A L ) ( C U M U L T . A M O U N T S |    |                 |    |                              |    |                 |    |                   |    |                                |    |           |    |                       |      |         |      |         |     |         |    |         |    |         |  |         |  |           |  |               |  |                 |  |
|----------------|--|----|-----------------|----|------------------------------|----|-----------------|----|-------------------|----|--------------------------------|----|-----------|----|-----------------------|------|---------|------|---------|-----|---------|----|---------|----|---------|--|---------|--|-----------|--|---------------|--|-----------------|--|
|                | --W H O L E S O I L--  |    |                 |    |                              |    |                 |    |                   |    | ----<2 MM F R A C T I O N ---- |    |           |    | ( D E T E R M I N E D |      | S A N D |      | S I L T |     | C L A Y |    | C A -   |    | R E S - |  | C O N - |  | S A L T   |  | I N . O F H 2 |  |                 |  |
|                | >2.75  |    | 20              |    | 2- .05- LT                   |    | -----SANDS----- |    |                   |    | SILTS                          |    |           |    | CL                    |      | IN      |      | BY      |     | 2-      |    | .05- LT |    | CL2     |  | I S T . |  | D U C T . |  | M G /         |  | 1 / 3 B A R T O |  |
|                | P C T O F  |    | >2MM+SAND+SILT> |    | (-----PCT OF SAND+SILT-----) |    | (---<2 MM-)     |    | (---PCT OF .2MM-) |    | (---<2 MM- - - -)              |    | (WHL SOIL |    |                       |      |         |      |         |     |         |    |         |    |         |  |         |  |           |  |               |  |                 |  |
|                | 76   | 77 | 78              | 79 | 80                           | 81 | 82              | 83 | 84                | 85 | 86                             | 87 | 88        | 89 | 90                    | 91   | 92      | 93   | 94      | 95  | 96      | 97 | 98      | 99 | 100     |  |         |  |           |  |               |  |                 |  |
| 0- 4           | 56   | 56 | 22              | 36 | 9                            | 5  | 13              | 16 | 23                | 21 | 7                              | 6  | 14        | 11 | SL                    | COSL | 72.4    | 17.8 | 9.8     | 4.6 |         |    |         |    |         |  |         |  |           |  |               |  |                 |  |
| 4- 13          | 41   | 41 | 33              | 47 | 12                           | 6  | 10              | 17 | 24                | 22 | 7                              | 6  | 14        | 10 | SL                    | SL   | 72.0    | 18.5 | 9.5     | 4.4 |         |    |         |    |         |  |         |  |           |  |               |  |                 |  |
| 13- 21         | 48   | 48 | 28              | 40 | 12                           | 12 | 11              | 16 | 23                | 19 | 7                              | 6  | 17        | 22 | SL                    | SL   | 62.4    | 19.5 | 18.1    | 4.3 |         |    |         |    |         |  |         |  |           |  |               |  |                 |  |
| 21- 28         |  |    |                 | 85 | 15                           | 23 | 12              | 21 | 27                | 19 | 6                              | 5  | 10        | 23 | SCL                   | COSL | 69.4    | 12.2 | 18.4    | 4.6 |         |    |         |    |         |  |         |  |           |  |               |  |                 |  |
| 28- 34         |  |    |                 | 88 | 12                           | 20 | 3               | 16 | 34                | 26 | 8                              | 5  | 7         | 20 | SL                    | SL   | 73.3    | 10.1 | 16.6    | 4.5 |         |    |         |    |         |  |         |  |           |  |               |  |                 |  |
| 34- 45         |  |    |                 | 93 | 7                            | 8  | 5               | 16 | 33                | 28 | 10                             | 5  | 2         | 8  |                       | LS   | 86.0    | 6.8  | 7.2     | 4.6 |         |    |         |    |         |  |         |  |           |  |               |  |                 |  |
| 45- 54         |  |    |                 | 72 | 28                           | 31 | 6               | 15 | 21                | 22 | 8                              | 5  | 23        | 31 | SL                    | SCL  | 54.7    | 21.4 | 23.9    | 4.4 |         |    |         |    |         |  |         |  |           |  |               |  |                 |  |
| 54- 59         |  |    |                 | 79 | 21                           | 9  | 9               | 17 | 21                | 21 | 11                             | 8  | 14        | 9  |                       | SL   | 72.2    | 19.4 | 8.4     | 4.5 |         |    |         |    |         |  |         |  |           |  |               |  |                 |  |
| 59- 70         |  |    |                 | 79 | 21                           | 3  | 10              | 19 | 21                | 19 | 11                             | 8  | 13        | 3  |                       | LCOS | 76.6    | 20.1 | 3.3     | 4.5 |         |    |         |    |         |  |         |  |           |  |               |  |                 |  |
| 70- 75         |  |    |                 | 90 | 10                           | 2  | 8               | 16 | 29                | 27 | 10                             | 6  | 4         | 2  |                       | S    | 88.8    | 9.7  | 1.5     | 4.9 |         |    |         |    |         |  |         |  |           |  |               |  |                 |  |
| 75- 80         |  |    |                 | 71 | 29                           | 13 | 3               | 9  | 24                | 27 | 8                              | 5  | 25        | 13 |                       | SL   | 62.4    | 26.1 | 11.5    | 4.3 |         |    |         |    |         |  |         |  |           |  |               |  |                 |  |
| 80- 87         |  |    |                 | 90 | 10                           | 2  | 5               | 17 | 33                | 28 | 8                              | 4  | 6         | 2  |                       | S    | 88.8    | 9.4  | 1.8     | 4.5 |         |    |         |    |         |  |         |  |           |  |               |  |                 |  |
| 87- 90         |  |    |                 | 77 | 23                           | 7  | 7               | 19 | 24                | 21 | 7                              | 5  | 18        | 7  |                       | SL   | 72.0    | 21.5 | 6.5     | 4.3 |         |    |         |    |         |  |         |  |           |  |               |  |                 |  |

TABLE 8F



Print date: 10-06-1987

Pedon: SNO

NSSL ID #: 84P0471

Soil Survey # S84-GA-231-004

Location: Pike Co. GA About 2 km W of US19 on Oliver road then 2 km S on mountain road.

Latitude: 33-00-09-N

Longitude: 084-20-57-W

Classification: Pine-loamy, siliceous, thermic Typic Kandudult

Physiography: Hillside in piedmonts

Geomorphic Position:

Microrelief:

Slope Characteristics: 7%, northeast facing

Elevation: 345 m MSL

Precipitation: 1250 mm Udic moisture regime

MLRA: 136

Water Table Depth:

Permeability: Moderate

Air Temp. (Centigrade): Ann: Sum: Win:

MAT: 18 degrees C

Soil Temp. (Centigrade): Ann: Sum: Win:

Drainage: Well drained

Land Use: Forest land not grazed

Stoniness:

Erosion or Deposition: Slight

Particle Size Control Section: 38 to 88 cm

Parent Material: residuum from igneous-granite material over residuum from schist & phyllite material

Vegetation Codes:

Weather Station: 092371

Diagnostic Horizons: 0 to 38 cm Ochric, 38 to 168 cm Argillic

Date: 04/84

Described by: Grover Thomas and Talbert Gerald

UTM Zone 16 1654420 m N 747680 m E Zebulon Ga 7.5' Quad. Atlas Sheet 41 in Soil Survey for Lamar Pike and Upson Counties GA. Sampled by Warren Lynn and Reese Berdanier 4/4/84.

A--0 to 13 cm; brown to dark brown (10YR 4/3) sandy loam; weak fine granular structure; very friable; many fine and medium roots; clear smooth boundary.

Few fine and medium gravel.

84P2524

E--13 to 38 cm; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; very friable; many fine and medium roots; clear smooth boundary.

Common fine and medium gravel.

84P2525

BA--38 to 61 cm; strong brown (7.5YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; common fine and few medium roots; clear smooth boundary.

Common fine and medium gravel.

84P2526

Bt1--61 to 91 cm; yellowish red (5YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; common fine and medium roots; clear smooth boundary.

Common fine and medium gravel.

84P2527

Bt2--91 to 117 cm; yellowish red (5YR 5/8) sandy clay loam; common medium distinct red (10R 4/6) and few fine faint reddish yellow (7.5YR 6/8) mottles; moderate medium platy structure parting to moderate medium angular blocky; firm; few fine roots; clear smooth boundary.

Few fine gravel.

84P2528

Bt3--117 to 145 cm; red (10R 4/6) and yellowish brown (10YR 5/8) clay loam; moderate medium angular blocky structure parting to subangular blocky; firm; abrupt wavy boundary.

Few fine gravel. Red and yellowish brown colors in horizontal bands about 3 cm thick. Red portion is slightly brittle.

84P2529

B/C--145 to 168 cm; 60 percent red (10R 4/6) loam; few medium distinct strong brown (7.5YR 5/8) mottles; massive; firm; common fine mica flakes; abrupt wavy boundary.

20 percent by volume pockets of quartzite.

84P2530

Cr--168 to 183 cm; massive; hard.

Quartzite anprolite. Discontinuous red clay bands 7 to 25 mm thick. Hard in place.

84P2531

TABLE 9A



S84GA-231-004

\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*  
(PIKE COUNTY, GEORGIA)

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED ; FINE-LOAMY, SILICEOUS, THERMIC TYPIC HAPLUDULT  
REVISED TO : ; FINE-LOAMY, SILICEOUS, THERMIC TYPIC KANDIUDULT

NSSL - PROJECT 84P 91, PINE MOUNTAIN  
- PEDON 84P 471, SAMPLES 84P2524-2531  
- GENERAL METHODS 1B1A, 2A1, 2B

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
NATIONAL SOIL SURVEY LABORATORY  
LINCOLN, NEBRASKA 68508-3866

|            | -1--       | -2--    | -3--  | -4-- | -5-- | -6--  | -7-- | -8-- | -9--   | -10- | -11- | -12- | -13- | -14- | -15-                       | -16- | -17- | -18-                       | -19-  | -20-  |
|------------|------------|---------|---|------|------|-------|------|------|--------|------|------|------|------|------|----------------------------|------|------|----------------------------|-------|-------|
| SAMPLE NO. | DEPTH (CM) | HORIZON | (- - - TOTAL - - - ) (- - CLAY - - ) (- - SILT - - ) (- - - - - ) (- - SAND - - - ) (- - COARSE FRACTIONS (MM) - - ) (>2MM) |      |      |       |      |      |        |      |      |      |      |      |                            |      |      |                            |       |       |
|            |            |         | CLAY  | SILT | SAND | FINE  | CO3  | FINE | COARSE | VF   | F    | M    | C    | VC   | - - - - - WEIGHT - - - - - |      |      | - - - - - PCT OF - - - - - |       |       |
|            |            |         | LT  | .002 | .05  | LT    | LT   | .002 | .02    | .05  | .10  | .25  | .5   | 1    | 2                          | 5    | 20   | .1                         | PCT   | WHOLE |
|            |            |         | .002  | .05  | .2   | .0002 | .002 | .02  | .05    | .10  | .25  | .50  | 1    | 2    | 5                          | 20   | 75   | 75                         | WHOLE | SOIL  |
|            |            |         | -<- - - - - PCT OF <2MM (3A1) - - - - - PCT OF <75MM (3B1) - - - - -  |      |      |       |      |      |        |      |      |      |      |      |                            |      |      |                            |       |       |
| 84P2524S   | 0- 13      | A       | 8.0   | 19.5 | 72.5 | 3.2   |      | 13.7 | 5.8    | 6.2  | 22.6 | 27.4 | 13.2 | 3.1  | 2                          | 5    | 1    | 69                         | 8     |       |
| 84P2525S   | 13- 38     | E       | 7.5   | 17.1 | 75.4 | 2.8   |      | 13.5 | 3.6    | 6.8  | 23.9 | 27.7 | 13.1 | 3.9  | 2                          | 9    | 9    | 75                         | 20    |       |
| 84P2526S   | 38- 61     | BA      | 22.5  | 14.4 | 63.1 | 11.1  |      | 11.5 | 2.9    | 5.2  | 19.5 | 21.3 | 13.4 | 3.7  | 2                          | 16   | 3    | 67                         | 21    |       |
| 84P2527S   | 61- 91     | BT1     | 45.5  | 10.2 | 44.3 | 26.1  |      | 7.6  | 2.6    | 4.0  | 13.1 | 15.1 | 9.4  | 2.7  | 3                          | 9    | 1    | 48                         | 13    |       |
| 84P2528S   | 91-117     | BT2     | 54.2  | 12.8 | 33.0 | 25.2  |      | 9.1  | 3.7    | 4.2  | 8.8  | 10.8 | 6.6  | 2.6  | 2                          | 1    | --   | 31                         | 3     |       |
| 84P2529S   | 117-145    | BT3     | 54.9  | 15.9 | 29.2 | 23.4  |      | 11.6 | 4.3    | 4.8  | 7.7  | 8.7  | 5.6  | 2.4  | TR                         | TR   | --   | 24                         | TR    |       |
| 84P2530S   | 145-168    | B/C     | 46.4  | 15.8 | 37.8 | 17.6  |      | 12.9 | 2.9    | 5.5  | 25.2 | 0.5  | 5.5  | 1.1  | TR                         | TR   | --   | 32                         | TR    |       |
| 84P2531S   | 168-183    | CR      | 15.8  | 6.9  | 77.3 | 6.0   |      | 4.4  | 2.5    | 7.2  | 22.4 | 29.2 | 14.9 | 3.6  | TR                         | 2    | 1    | 71                         | 3     |       |

| DEPTH (CM) | ORGN TOTAL |       | EXTR TOTAL |            | (- - DITH-CIT - - ) (RATIO/CLAY) |            |      |      | (ATTERBERG) |     | (- BULK DENSITY - ) |                 |      | COLE (- - - WATER CONTENT - - ) |      | WRD     |            |      |       |
|------------|------------|-------|------------|------------|----------------------------------|------------|------|------|-------------|-----|---------------------|-----------------|------|---------------------------------|------|---------|------------|------|-------|
|            | C          | N     | P          | S          | FE                               | AL         | MN   | CEC  | BAR         | LL  | PI                  | MOIST           | BAR  | DRY                             | SOIL | MOIST   | BAR        | BAR  | WHOLE |
|            | 6A1C       | 6B3A  | 6S3        | 6R3A       | 6C2B                             | 6G7A       | 6D2A | 8D1  | 8D1         | 4F1 | 4F                  | 4A3A            | 4A1D | 4A1H                            | 4D1  | 4B4     | 4B1C       | 4B1C | 4B2   |
|            | PCT        | <2MM  | PPM        | <- PERCENT | OF                               | <2MM - - - |      |      |             | PCT | <0.4MM              | <- - G/CC - - - | <- - | CM/CM                           | <- - | -PCT OF | <2MM - - - | <- - | CM/CM |
| 0- 13      | 2.27       | 0.060 |            |            | 0.5                              | 0.2        |      | 0.86 | 0.63        |     |                     | 1.14            | 1.21 | 0.019                           |      | 34.3    | 5.0        | 0.32 |       |
| 13- 38     | 0.45       | 0.018 |            |            | 0.4                              | 0.1        |      | 0.21 | 0.39        |     | NP                  | 1.64            | 1.64 | --                              |      | 9.1     | 2.9        | 0.09 |       |
| 38- 61     | 0.25       | 0.024 |            |            | 1.3                              | 0.3        |      | 0.13 | 0.35        |     |                     | 1.47            | 1.50 | 0.006                           |      | 14.7    | 7.9        | 0.09 |       |
| 61- 91     | 0.33       | 0.025 |            |            | 3.4                              | 0.7        |      | 0.13 | 0.36        | 41  | 16                  | 1.37            | 1.44 | 0.016                           |      | 25.4    | 16.6       | 0.11 |       |
| 91-117     | 0.21       |       |            |            | 5.2                              | 0.8        |      | 0.11 | 0.42        |     |                     | 1.43            | 1.51 | 0.018                           |      | 26.4    | 22.9       | 0.05 |       |
| 117-145    | 0.18       |       |            |            | 6.2                              | 0.8        |      | 0.10 | 0.46        |     |                     | 1.38            | 1.43 | 0.012                           |      | 31.5    | 25.0       | 0.09 |       |
| 145-168    | 0.09       |       |            |            | 4.2                              | 0.4        |      | 0.06 | 0.40        | 47  | 9                   | 1.52            | 1.54 | 0.004                           |      | 25.2    | 18.7       | 0.10 |       |
| 168-183    | 0.04       |       |            |            | 1.2                              | 0.1        |      | 0.04 | 0.38        |     |                     | 2.01            | 2.01 |                                 |      |         |            | 6.0  |       |

AVERAGES, DEPTH 38- 88: PCT CLAY 34.9 PCT .1-75MM 57

TABLE 9B



\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*

S84GA-231-004

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED ; FINE-LOAMY, SILICEOUS, THERMIC TYPIC HAPLUDULT  
NATIONAL SOIL SURVEY LABORATORY ; PEDON 84P 471, SAMPLE 84P2524-2531

|               | -1--                           | -2-- | -3-- | -4-- | -5--  | -6--         | -7--        | -8--              | -9--  | -10-        | -11-      | -12-         | -13-        | -14-            | -15-                | -16-                   | -17- | -18-  | -19- | -20- |
|---------------|--------------------------------|------|------|------|-------|--------------|-------------|-------------------|-------|-------------|-----------|--------------|-------------|-----------------|---------------------|------------------------|------|-------|------|------|
| DEPTH<br>(CM) | (- NH4OAC EXTRACTABLE BASES -) |      |      |      |       | ACID-<br>ITY | EXTR<br>AL  | (- - - CEC - - -) |       |             | AL<br>SAT | -BASE<br>SUM | SAT-<br>NH4 | CO3 AS<br>CACO3 | RES.<br>OHMS<br>/CM | COND. (- - - PH - - -) |      |       |      |      |
|               | CA                             | MG   | NA   | K    | SUM   |              |             | NH4-              | BASES |             |           |              |             |                 |                     | MMHOS                  | KCL  | CACL2 | H2O  |      |
|               | 5B5A                           | 5B5A | 5B5A | 5B5A | BASES |              |             | OAC               | + AL  |             |           |              |             |                 |                     | 81                     | 8C1G | 8C1F  | 8C1F |      |
|               | 6N2E                           | 6O2D | 6P2B | 6Q2B |       | 6H5A         | 6G9A        | 5A3A              | 5A8B  | 5A3B        | 5G1       | 5C3          | 5C1         | 6E1G            | 8E1                 |                        |      |       |      |      |
|               | <- - - -MEQ /                  |      |      |      |       | 100 G        | <- - - -PCT |                   |       | <- - - -PCT |           |              | <- - - -PCT |                 |                     | <- - - -PCT            |      |       |      |      |
| 0- 13         | 0.8                            | 0.2  | 0.1  | 0.1  | 1.2   | 7.8          | 1.2         | 9.0               | 6.9   | 2.4         | 50        | 13           | 17          |                 |                     |                        | 4.2  | 4.5   | 5.0  |      |
| 13- 38        | 0.1                            | TR   | 0.1  | TR   | 0.2   | 2.3          | 0.4         | 2.5               | 1.6   | 0.6         | 67        | 8            | 13          |                 |                     |                        | 4.2  | 4.4   | 4.8  |      |
| 38- 61        | 0.3                            | 0.4  | TR   | 0.1  | 0.8   | 3.9          | 0.7         | 4.7               | 2.9   | 1.5         | 47        | 17           | 28          |                 |                     |                        | 4.0  | 4.4   | 4.9  |      |
| 61- 91        | 0.5                            | 1.0  | 0.1  | 0.1  | 1.7   | 8.3          | 1.2         | 10.0              | 5.9   | 2.9         | 41        | 17           | 29          |                 |                     |                        | 4.1  | 4.3   | 4.9  |      |
| 91-117        | 0.2                            | 0.7  | TR   | 0.1  | 1.0   | 9.3          | 1.0         | 10.3              | 6.1   | 2.0         | 50        | 10           | 16          |                 |                     |                        | 4.4  | 4.5   | 5.1  |      |
| 117-145       | 0.1                            | 0.3  | 0.1  | 0.1  | 0.6   | 9.4          | 0.8         | 10.0              | 5.5   | 1.4         | 57        | 6            | 11          |                 |                     |                        | 4.4  | 4.5   | 5.1  |      |
| 145-168       | TR                             | 0.1  | 0.1  | --   | 0.2   | 5.0          | 0.7         | 5.2               | 2.8   | 0.9         | 78        | 4            | 7           |                 |                     |                        | 4.2  | 4.5   | 4.9  |      |
| 168-183       | TR                             | TR   | TR   | --   | TR    | 1.7          | 0.4         | 1.7               | 0.6   | 0.4         | 100       |              | 3           |                 |                     |                        | 4.3  | 4.5   | 5.0  |      |

TABLE 9C



PRINT DATE 10/06/87

| DEPTH<br>(cm) | SAND - SILT MINERALOGY (2.0-0.002mm) |         |         |         |         |        |         |             |      |      |      |      |  |      | INTER<br>PRETA<br>TION |
|---------------|--------------------------------------|---------|---------|---------|---------|--------|---------|-------------|------|------|------|------|--|------|------------------------|
|               | FRACT                                | X-RAY   | THERMAL | DTA     | TGA     | TOT RE | OPTICAL | GRAIN COUNT |      |      |      |      |  |      |                        |
|               | ION                                  | 7A2i    | 7A3b    | 7A4b    | 7B1a    |        |         |             |      |      |      |      |  |      |                        |
|               | Peak Size                            | Percent | Percent | Percent | Percent |        |         |             |      |      |      |      |  |      |                        |
| 13- 38        | FS                                   |         |         |         |         | 99     | QZ99    | RUtr        | OPtr | BTtr | ZRtr |      |  | SILI |                        |
| 61- 91        | FS                                   |         |         |         |         | 99     | QZ96    | RA 2        | BT 1 | MS 1 | OP 1 | RUtr |  | SILI |                        |
| 61- 91        | FS                                   |         |         |         |         |        | TMtr    |             |      |      |      |      |  |      |                        |
| 145-168       | FS                                   |         |         |         |         | 65     | QZ64    | MS33        | BT 2 | RA 1 | OPtr |      |  | SMIX |                        |
| 168-183       | FS                                   |         |         |         |         | 84     | QZ83    | MS14        | BT 1 | RA 1 | RUtr | OPtr |  | SMIX |                        |

TABLE 9



S84GA-231-004

; FINE-LOAMY, SILICEOUS, THERMIC TYPIC HAPLUDULT  
: PEDON 84P 471, SAMPLE 84P2524-2531

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

KIND OF MINERAL:[illegible]

RELATIVE PEAK SIZE: 5 Very Large 4 Large 3 Medium 2 Small 1 Very Small 6 No Peaks

INTERPRETATION (BY HORIZON):

CMIX = MIXED (CLAY)    KAOL = KAOLINITIC    MICA = MICACEOUS    SILI = SILICEOUS    SMIX = MIXED (SAND)

### PEDON MINERALOGY

BASED ON SAND/SILT: SILICEOUS

BASED ON CLAY: MIXED

FAMILY MINERALOGY: SILICEOUS

COMMENTS: OXIDIC EXCEPT TOO MUCH QUARTZ IN SANDS

THESE 9E



S84GA-231-004

\*\*\* SUPPLEMENTARY CHARACTERIZATION DATA \*\*\*  
(PIKE COUNTY, GEORGIA)

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED ; FINE-LOAMY, SILICEOUS, THERMIC TYPIC HAPLUDULT  
REVISED TO : ; FINE-LOAMY, SILICEOUS, THERMIC TYPIC KANDIUDULT

NSSL - PROJECT 84P 91, PINE MOUNTAIN  
- PEDON 84P 471, SAMPLES 84P2524-2531  
- GENERAL METHODS (ENGINEERING FRACTIONS ARE CALCULATED FROM USDA FRACTION SIZES)

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
NATIONAL SOIL SURVEY LABORATORY  
LINCOLN, NEBRASKA 68508-3866

|             |             | -1--    | -2--                                  | -3-- | -4-- | -5-- | -6-- | -7-- | -8-- | -9-- | -10- | -11- | -12-  | -13- | -14- | -15- | -16- | -17- | -18- | -19- | -20- |       |                |       |          |      |     |
|-------------|-------------|---------|---------------------------------------|------|------|------|------|------|------|------|------|------|---|------|------|------|------|------|------|------|------|-------|----------------|-------|----------|------|-----|
| SAMPLE NO.  | DEPTH (IN.) | HORIZON | ENGINEERING PASSING SIEVE             |      |      |      |      |      |      |      |      |      | CUMULATIVE CURVE FRACTIONS(<76MM)             |      |      |      |      |      |      |      |      |       | ATTE- GRADATIO |       |          |      |     |
|             |             |         | PERCENTAGE PASSING                    |      |      |      |      |      |      |      |      |      | USDA LESS THAN DIAMETERS(MM) AT               |      |      |      |      |      |      |      |      |       | BERG UNI- CUR  |       |          |      |     |
|             |             |         | 3                                     | 2    | 3/2  | 1    | 3/4  | 3/8  | 4    | 10   | 40   | 200  | 20  | 5    | 2    | 1    | .5   | .25  | .10  | .05  | 60   | 50    | 10             | LL PI | FMTY VTU |      |     |
|             |             |         | 1                                     | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11  | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21             | 22    | 23       | 24   | 25  |
| 84P2524S    | 0- 5        | A       | 100                                   | 100  | 100  | 99   | 99   | 97   | 94   | 92   | 71   | 29   | 20  | 12   | 7    | 89   | 77   | 52   | 31   | 25   | 0.31 | 0.231 | 0.003          |       |          | 96.7 | 7.  |
| 84P2525S    | 5- 15       | E       | 100                                   | 98   | 96   | 94   | 92   | 88   | 83   | 81   | 62   | 23   | 17  | 10   | 6    | 78   | 67   | 45   | 25   | 20   | 0.40 | 0.294 | 0.005          | NP    | 87.5     | 8.   |     |
| 84P2526S    | 15- 24      | BA      | 100                                   | 99   | 99   | 98   | 97   | 89   | 81   | 79   | 61   | 31   | 27  | 21   | 18   | 76   | 65   | 49   | 33   | 29   | 0.40 | 0.264 | 0.001          |       |          | >100 | 11. |
| 84P2527S    | 24- 36      | BT1     | 100                                   | 100  | 100  | 99   | 99   | 95   | 90   | 87   | 73   | 50   | 46  | 42   | 40   | 85   | 76   | 63   | 52   | 48   | 0.19 | 0.068 | --             | 41    | 16       | >100 | -   |
| 84P2528S    | 36- 46      | BT2     | 100                                   | 100  | 100  | 100  | 100  | 100  | 100  | 98   | 86   | 68   | 62  | 57   | 53   | 95   | 89   | 78   | 70   | 66   | 0.01 | 0.002 | --             |       |          | 38.3 | 0.  |
| 84P2529S    | 46- 57      | BT3     | 100                                   | 100  | 100  | 100  | 100  | 100  | 100  | 100  | 90   | 74   | 66  | 60   | 55   | 98   | 92   | 83   | 76   | 71   | 0.01 | 0.002 | --             |       |          | 18.1 | 0.  |
| 84P2530S    | 57- 66      | B/C     | 100                                   | 100  | 100  | 100  | 100  | 100  | 100  | 100  | 93   | 65   | 59  | 52   | 46   | 99   | 93   | 93   | 68   | 62   | 0.03 | 0.004 | --             | 47    | 9        | 76.0 | 0.  |
| 84P2531S    | 66- 72      | CR      | 100                                   | 100  | 100  | 99   | 99   | 98   | 97   | 97   | 72   | 26   | 20  | 17   | 15   | 94   | 79   | 51   | 29   | 22   | 0.31 | 0.242 | 0.001          |       |          | >100 | 38. |
| DEPTH (IN.) |             |         | (WHOLE SOIL (MM) - <75 MM FRACTION--) |      |      |      |      |      |      |      |      |      | (WEIGHT PER UNIT VOLUME G/CC) (VOID RATIOS--) |      |      |      |      |      |      |      |      |       |                |       |          |      |     |
|             |             |         | PCT OF WHOLE SOIL                     |      |      |      |      |      |      |      |      |      | SOIL SURVEY ENGINEERING                       |      |      |      |      |      |      |      |      |       | AT 1/3 BA      |       |          |      |     |
|             |             |         | <75 MM FRACTION--                     |      |      |      |      |      |      |      |      |      | SOIL SURVEY ENGINEERING                       |      |      |      |      |      |      |      |      |       | WHOLE <2       |       |          |      |     |
|             |             |         | 26                                    | 27   | 28   | 29   | 30   | 31   | 32   | 33   | 34   | 35   | 36  | 37   | 38   | 39   | 40   | 41   | 42   | 43   | 44   | 45    | 46             | 47    | 48       | 49   | 50  |
| 0- 5        | 8           | --      | --                                    | 8    | 1    | 5    | 2    | 92   | 8    | 1    | 5    | 2    | 92  |      |      |      | 1.19 | 1.27 | 1.57 | 1.74 | 1.14 | 1.20  | 1.21           | 1.53  | 1.71     | 1.23 | 1.3 |
| 5- 15       | 19          | --      | --                                    | 19   | 8    | 9    | 2    | 81   | 19   | 8    | 9    | 2    | 81  |      |      |      | 1.77 | 1.77 | 1.89 | 2.10 | 1.64 | 1.64  | 1.64           | 1.79  | 2.02     | 0.50 | 0.6 |
| 15- 24      | 21          | --      | --                                    | 21   | 3    | 16   | 2    | 79   | 21   | 3    | 16   | 2    | 79  |      |      |      | 1.62 | 1.65 | 1.81 | 2.01 | 1.47 | 1.48  | 1.50           | 1.69  | 1.92     | 0.64 | 0.8 |
| 24- 36      | 13          | --      | --                                    | 13   | 1    | 9    | 3    | 87   | 13   | 1    | 9    | 3    | 87  |      |      |      | 1.46 | 1.53 | 1.78 | 1.91 | 1.37 | 1.40  | 1.44           | 1.72  | 1.85     | 0.82 | 0.9 |
| 36- 46      | 2           | --      | --                                    | 2    | --   | TR   | 2    | 98   | 2    | --   | TR   | 2    | 98  |      |      |      | 1.44 | 1.52 | 1.81 | 1.90 | 1.43 | 1.44  | 1.51           | 1.81  | 1.89     | 0.84 | 0.8 |
| 46- 57      | TR          | --      | --                                    | --   | --   | TR   | TR   | 100  | --   | --   | TR   | TR   | 100   |      |      |      | 1.39 | 1.44 | 1.83 | 1.87 | 1.38 | 1.39  | 1.43           | 1.81  | 1.86     | 0.91 | 0.9 |
| 57- 66      | TR          | --      | --                                    | --   | --   | TR   | --   | 100  | --   | --   | TR   | --   | 100   |      |      |      | 1.52 | 1.54 | 1.90 | 1.95 | 1.52 | 1.53  | 1.54           | 1.90  | 1.95     | 0.74 | 0.7 |
| 66- 72      | 3           | --      | --                                    | 3    | 1    | 2    | --   | 97   | 3    | 1    | 2    | --   | 97  |      |      |      | 2.02 | 2.02 |      |      |      |       |                |       |          |      |     |

TABLE 9F



\*\*\* SUPPLEMENTARY CHARACTERIZATION DATA \*\*\*

S84GA-231-004

SAMPLED AS : NOT DESIGNATED  
NATIONAL SOIL SURVEY LABORATORY

; FINE-LOAMY, SILICEOUS, THERMIC TYPIC HAPLUDULT  
; PEDON 84P 471, SAMPLE 84P2524-2531

PRINT DATE 10/06/87

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

| DEPTH<br>(IN.) | ( V O L U M E F R A C T I O N S ) ( C / ) ( R A T I O S T O C L A Y ) ( L I N E A R E X T E N S I B I L I T Y ) ( W R O |    |    |    |    |    |    |     |    |   |    |    |    |    |      |      |      |      |       |     |     |     |     |      |     |  |  |  |  |  |
|----------------|---|----|----|----|----|----|----|-----|----|---|----|----|----|----|------|------|------|------|-------|-----|-----|-----|-----|------|-----|--|--|--|--|--|
|                | ---W H O L E S O I L (MM) A T 1/3 B A R--- ( /N ) ---<2 MM FRACTION---> ( PCT ) ---> S O I L M M                        |    |    |    |    |    |    |     |    |   |    |    |    |    |      |      |      |      |       |     |     |     |     |      |     |  |  |  |  |  |
|                | >2 250 250 75 75 20 5 2- .05- LT PORES RAT FINE ---C E C--- 15 LE ---1/3 BAR TO (PCT)---> SOIL MM                       |    |    |    |    |    |    |     |    |   |    |    |    |    |      |      |      |      |       |     |     |     |     |      |     |  |  |  |  |  |
|                | <---PCT OF WHOLE SOIL---> CATS OAC H2O BAR BAR -DRY BAR -DRY <---IN/IN-   |    |    |    |    |    |    |     |    |   |    |    |    |    |      |      |      |      |       |     |     |     |     |      |     |  |  |  |  |  |
|                | 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75  |    |    |    |    |    |    |     |    |   |    |    |    |    |      |      |      |      |       |     |     |     |     |      |     |  |  |  |  |  |
| 0- 5           | 4   | -- | -- | 4  | 1  | 2  | 1  | 96  | 30 | 8 | 3  | 17 | 38 | 38 | 0.40 | 1.13 | 0.86 | 0.63 | 0.250 | 1.9 | 2.2 | 1.7 | 2.0 | 0.32 | 0.3 |  |  |  |  |  |
| 5- 15          | 13  | -- | -- | 13 | 5  | 6  | 1  | 87  | 41 | 9 | 4  | 21 | 12 | 25 | 0.37 | 0.33 | 0.21 | 0.39 |       |     |     |     |     | 0.09 | 0.1 |  |  |  |  |  |
| 15- 24         | 13  | -- | -- | 13 | 2  | 10 | 1  | 87  | 30 | 7 | 11 | 20 | 19 | 10 | 0.49 | 0.21 | 0.13 | 0.35 | 0.031 | 0.2 | 0.6 | 0.2 | 0.7 | 0.09 | 0.1 |  |  |  |  |  |
| 24- 36         | 7   | -- | -- | 7  | 1  | 5  | 2  | 93  | 21 | 5 | 22 | 13 | 32 | 13 | 0.57 | 0.22 | 0.13 | 0.36 | 0.037 | 0.7 | 1.6 | 0.7 | 1.7 | 0.11 | 0.1 |  |  |  |  |  |
| 36- 46         | 1   | -- | -- | 1  | -- | TR | 1  | 99  | 17 | 7 | 29 | 9  | 37 |    | 0.47 | 0.19 | 0.11 | 0.42 | 0.033 | 0.2 | 1.8 | 0.2 | 1.8 | 0.05 | 0.0 |  |  |  |  |  |
| 46- 57         | TR  | -- | -- | -- | -- | TR | TR | 100 | 15 | 8 | 29 | 4  | 44 |    | 0.43 | 0.18 | 0.10 | 0.46 | 0.022 | 0.2 | 1.2 | 0.2 | 1.2 | 0.09 | 0.0 |  |  |  |  |  |
| 57- 66         | TR  | -- | -- | -- | -- | TR | -- | 100 | 22 | 9 | 26 | 5  | 38 |    | 0.38 | 0.11 | 0.06 | 0.40 | 0.009 | 0.2 | 0.4 | 0.2 | 0.4 | 0.10 | 0.1 |  |  |  |  |  |
| 66- 72         | 2   | -- | -- | 2  | 1  | 2  | -- | 98  | 58 | 5 | 12 | 24 |    |    | 0.38 | 0.11 | 0.04 | 0.38 |       |     |     |     |     |      |     |  |  |  |  |  |

| DEPTH<br>(IN.) | ( W E I G H T F R A C T I O N S - C L A Y F R E E ) ( - T E X T U R E - ) ( - P S D A (MM) - ) ( P H ) ( - E L E C T R I C A L ) ( C U M U L . A M O U N T S |    |    |    |    |     |   |    |    |    |    |    |    |     |     |     |      |      |      |     |  |  |  |  |  |  |
|----------------|--|----|----|----|----|-----|---|----|----|----|----|----|----|-----|-----|-----|------|------|------|-----|--|--|--|--|--|--|
|                | ---W H O L E S O I L---> 2 M M F R A C T I O N ---> ( D E T E R M I N E D S A N D S I L T C L A Y C A - R E S - C O N - S A L T I N . O F H 2                |    |    |    |    |     |   |    |    |    |    |    |    |     |     |     |      |      |      |     |  |  |  |  |  |  |
|                | > 2 75 20 2- .05- LT ---SANDS--- SILTS CL IN BY 2- .05- LT CL2 IST. DUCT. MG/ 1/3 BAR TO   |    |    |    |    |     |   |    |    |    |    |    |    |     |     |     |      |      |      |     |  |  |  |  |  |  |
|                | PCT OF > 2 M M + S A N D + S I L T > ( ---PCT OF S A N D + S I L T --- ) ( ---< 2 M M --- ) ( ---PCT OF . 2 M M --- ) ( ---< 2 M M --- ) ( W H L S O I L     |    |    |    |    |     |   |    |    |    |    |    |    |     |     |     |      |      |      |     |  |  |  |  |  |  |
|                | 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100  |    |    |    |    |     |   |    |    |    |    |    |    |     |     |     |      |      |      |     |  |  |  |  |  |  |
| 0- 5           | 9  | 9  | 8  | 72 | 19 | 8   | 3 | 14 | 30 | 25 | 7  | 6  | 15 | 9   | SL  | SL  | 72.5 | 19.5 | 8.0  | 4.5 |  |  |  |  |  |  |
| 5- 15          | 20   | 20 | 12 | 65 | 15 | 6   | 4 | 14 | 30 | 26 | 7  | 4  | 15 | 8   | SL  | SL  | 75.4 | 17.1 | 7.5  | 4.4 |  |  |  |  |  |  |
| 15- 24         | 26   | 26 | 22 | 61 | 14 | 22  | 5 | 17 | 27 | 25 | 7  | 4  | 15 | 29  | SL  | SCL | 63.1 | 14.4 | 22.5 | 4.4 |  |  |  |  |  |  |
| 24- 36         | 22   | 22 | 20 | 64 | 15 | 66  | 5 | 17 | 28 | 24 | 7  | 5  | 14 | 83  | SCL | C   | 44.3 | 10.2 | 45.5 | 4.3 |  |  |  |  |  |  |
| 36- 46         | 4  | 4  | 4  | 69 | 27 | 113 | 6 | 14 | 24 | 19 | 9  | 8  | 20 | 118 | SCL | C   | 33.0 | 12.8 | 54.2 | 4.5 |  |  |  |  |  |  |
| 46- 57         |  |    |    | 65 | 35 | 122 | 5 | 12 | 19 | 17 | 11 | 10 | 26 | 122 | SCL | C   | 29.2 | 15.9 | 54.9 | 4.5 |  |  |  |  |  |  |
| 57- 66         |  |    |    | 71 | 29 | 87  | 2 | 10 | 1  | 47 | 10 | 5  | 24 | 87  | C   | C   | 37.8 | 15.8 | 46.4 | 4.5 |  |  |  |  |  |  |
| 66- 72         | 4  | 4  | 2  | 89 | 8  | 18  | 4 | 18 | 35 | 27 | 9  | 3  | 5  | 19  | SL  | SL  | 77.3 | 6.9  | 15.8 | 4.5 |  |  |  |  |  |  |

TABLE 96



Pedon: SND

NSSL I: 84P0467

Soil Survey: S84-GA-293-001

Location: Upson Co. GA 5 mi NW of Thomaston UTM zone 16 3649230 m N 741170 m E. Spring Valley GA 7.5'

Quad:

Latitude: 32-57-19-N

Longitude: 084-25-00-W

Classification: Fine-loamy, siliceous, thermic Typic Paleudult

Physiography: Fan in piedmonts; off southside of Dorster Mt and Bull Trail Mt

Geomorphic Position:

Microrelief:

Slope Characteristics: 3% plane, east facing

Elevation: 287 m MSL

Precipitation: 1200 mm Udic moisture regime

MLRA: 136

Water Table Depth:

Permeability: Very slow

Air Temp. (Centigrade): Ann: Sum: Win:

MAT: 18 degrees C

Soil Temp. (Centigrade): Ann: Sum: Win:

Drainage: Well drained

Land Use: Forest land not grazed

Stoniness:

Erosion or Deposition: Slight

Particle Size Control Section: 69 to 119 cm

Parent Material: alluvium from quartzite material from schist & phyllite material

Vegetation Codes:

Weather Station: 098535

Diagnostic Horizons: 0 to 69 cm Ochric, 69 to 146 cm Argillic

Described by: Grover Thomas and Talbert Gerald.

Date: 04/84

Sampled by Warren Lynn and Reese Berdanier 4/3/84. Temp 15 degrees C at 50 cm and at 150 cm. Map Unit Holston SL, 2-6% slopes.

Ap--0 to 18 cm; brown to dark brown (10YR 4/3) sandy loam; weak fine granular structure; very friable; many fine roots; clear smooth boundary.  
84P2485

AB--18 to 45 cm; yellowish brown (10YR 5/6) sandy loam; weak fine subangular blocky structure; friable; many fine roots; clear smooth boundary.  
84P2486

BA--45 to 69 cm; strong brown (7.5YR 5/6) sandy loam; weak medium subangular blocky structure; friable; common fine roots; gradual smooth boundary.  
84P2487

Bt1--69 to 97 cm; strong brown (7.5YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; clay films between sand grains; gradual smooth boundary.  
84P2488

Bt2--97 to 146 cm; strong brown (7.5YR 5/8) sandy clay loam; few medium prominent red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; friable; few fine roots; clay films between sand grains; clear smooth boundary.  
84P2489

Bx1--146 to 175 cm; red (2.5YR 4/8), strong brown (7.5YR 5/8), and yellowish brown (10YR 5/8) sandy clay loam; massive; ; clear smooth boundary.  
Moist colors are mottled. Red portion 35% by volume is horizontally oriented and is firm and brittle. Brown portion is friable. Few fine and coarse gravel. Common medium gravel. Few nodules of plinthite.  
84P2490

Bx2--175 to 205 cm; red (2.5YR 4/8), strong brown (7.5YR 5/8), and yellowish brown (10YR 5/8) gravelly sandy clay loam; few fine light gray (10YR 7/2) mottles; massive.  
Moist colors are mottled. Red portion 50% by volume is very hard in place. Brown portion is friable. Few fine medium and coarse gravel.  
84P2491

TABLE 104



PRINT DATE 10/06/87

PRINT DATE 10/06/87

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
NATIONAL SOIL SURVEY LABORATORY  
LINCOLN, NEBRASKA 68508-3866

| DEPTH<br>(CM) | ORGN TOTAL |       | EXTR TOTAL |            | (- - DITH-CIT - -) |      |      |      | (RATIO/CLAY) |            | (ATTERBERG ) |       | (- BULK DENSITY -) |       | COLE (- - -) |       | -WATER CONTENT - -) |      | WRD    |       |      |
|---------------|------------|-------|------------|------------|--------------------|------|------|------|--------------|------------|--------------|-------|--------------------|-------|--------------|-------|---------------------|------|--------|-------|------|
|               | C          | N     | P          | S          | EXTRACTABLE        |      |      |      | 15           | - LIMITS - | FIELD        | 1/3   | OVEN               | WHOLE | FIELD        | 1/10  | 1/3                 | 15   | WHOLE  |       |      |
|               |            |       |            |            | FE                 | AL   | MN   | CEC  | BAR          | LL         | PI           | MOIST | BAR                | DRY   | SOIL         | MOIST | BAR                 | BAR  | BAR    | SOIL  |      |
|               | 6A1C       | 6B3A  | 6S3        | 6R3A       | 6C2B               | 6G7A | 6D2A | 8D1  | 8D1          | 4F1        | 4F           | 4A3A  | 4A1D               | 4A1H  | 4D1          | 4B4   | 4B1C                | 4B1C | 4B2    | 4C1   |      |
|               | PCT        | <2MM  | PPM        | <- PERCENT | OF                 | <2MM | -->  |      | PCT          | <0.4MM     | <- -         | G/CC  | - - ->             | CM/CM | <- -         | -PCT  | OF                  | <2MM | - - -> | CM/CM |      |
| 0- 18         | 0.19       | 0.013 |            |            | 0.4                | 0.2  |      | 0.18 | 0.32         |            |              |       |                    | 1.38  | 1.42         | 0.010 |                     |      | 10.5   | 2.9   | 0.10 |
| 18- 45        | 0.61       | 0.039 |            |            | 0.2                | 0.1  |      | 0.40 | 0.44         |            |              |       |                    | 1.50  |              |       |                     |      | 2.2    |       |      |
| 45- 69        | 0.15       | 0.014 |            |            | 0.5                | 0.1  |      | 0.19 | 0.34         |            |              |       |                    | 1.60  |              |       |                     |      | 3.6    |       |      |
| 69- 97        | 0.14       | 0.018 |            |            | 1.4                | 0.3  |      | 0.17 | 0.32         | 28         | 11           |       |                    | 1.64  | 1.67         | 0.006 |                     |      | 15.8   | 7.3   | 0.14 |
| 97-146        | 0.08       | 0.016 |            |            | 2.4                | 0.5  |      | 0.14 | 0.35         |            |              |       |                    | 1.71  | 1.75         | 0.008 |                     |      | 15.0   | 10.6  | 0.07 |
| 146-175       | 0.10       |       |            |            | 3.9                | 0.7  |      | 0.17 | 0.43         |            |              |       |                    | 1.70  | 1.73         | 0.006 |                     |      | 15.6   | 11.5  | 0.07 |
| 175-205       | 0.10       |       |            |            | 2.4                | 0.4  |      | 0.17 | 0.39         | 35         | 12           |       |                    | 2.16  | 2.18         | 0.002 |                     |      | 6.6    | 10.9  |      |

TA3 LE-10B



\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*

S84GA-293-001

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED  
NATIONAL SOIL SURVEY LABORATORY

; FINE-LOAMY, SILICEOUS, THERMIC TYPIC PALEUDULT  
; PEDON 84P 467, SAMPLE 84P2485-2491

|               | -1--                           | -2--               | -3--               | -4--              | -5--         | -6--         | -7--       | -8--              | -9--        | -10-          | -11-      | -12-         | -13-        | -14-            | -15-                | -16-                   | -17-      | -18-          | -19-       | -20- |
|---------------|--------------------------------|--------------------|--------------------|-------------------|--------------|--------------|------------|-------------------|-------------|---------------|-----------|--------------|-------------|-----------------|---------------------|------------------------|-----------|---------------|------------|------|
| DEPTH<br>(CM) | (- NH4OAC EXTRACTABLE BASES -) |                    |                    |                   |              | ACID-<br>ITY | EXTR<br>AL | (- - - CEC - - -) |             |               | AL<br>SAT | -BASE<br>SUM | SAT-<br>NH4 | CO3 AS<br>CACO3 | RES.<br>OHMS<br>/CM | COND. (- - - PH - - -) |           |               |            |      |
|               | CA<br>585A<br>6N2E             | MG<br>585A<br>602D | NA<br>585A<br>6P2B | K<br>585A<br>6Q2B | SUM<br>BASES |              |            | SUM<br>CATS       | NH4-<br>OAC | BASES<br>+ AL |           |              |             |                 |                     | MMHOS<br>/CM           | KCL<br>IN | CACL2<br>.01M | H2O<br>1:1 |      |
|               | < - - - - - MEQ /              |                    |                    |                   |              | 100 G        |            |                   |             |               |           |              |             |                 |                     |                        |           |               |            |      |
| 0- 18         | 0.5                            | 0.2                | TR                 | 0.1               | 0.8          | 1.3          | 0.2        | 2.1               | 1.6         | 1.0           | 20        | 38           | 50          |                 |                     |                        | 4.5       | 4.9           | 5.5        |      |
| 18- 45        | 0.7                            | 0.1                | TR                 | 0.1               | 0.9          | 2.3          | 0.2        | 3.2               | 2.0         | 1.1           | 18        | 28           | 45          |                 |                     |                        | 4.5       | 4.9           | 5.5        |      |
| 45- 69        | 0.7                            | 0.2                | TR                 | 0.1               | 1.0          | 1.7          | 0.1        | 2.7               | 2.0         | 1.1           | 9         | 37           | 50          |                 |                     |                        | 4.3       | 4.7           | 5.2        |      |
| 69- 97        | 1.6                            | 0.6                | TR                 | 0.1               | 2.3          | 3.6          | 0.1        | 5.9               | 4.0         | 2.4           | 4         | 39           | 57          |                 |                     |                        | 4.7       | 4.9           | 5.4        |      |
| 97-146        | 0.6                            | 0.5                | TR                 | 0.1               | 1.2          | 5.4          | 0.7        | 6.6               | 4.3         | 1.9           | 37        | 18           | 28          |                 |                     |                        | 4.2       | 4.5           | 5.1        |      |
| 146-175       | 0.1                            | 0.2                | TR                 | 0.1               | 0.4          | 5.4          | 1.1        | 5.8               | 4.6         | 1.5           | 73        | 7            | 9           |                 |                     |                        | 4.1       | 4.4           | 5.2        |      |
| 175-205       | 0.2                            | 0.2                | TR                 | 0.1               | 0.5          | 5.4          | 1.8        | 5.9               | 4.8         | 2.3           | 78        | 8            | 10          |                 |                     |                        | 4.0       | 4.3           | 5.2        |      |

ESTIMATED BULK DENSITY FOR LAYER 2, 3,

TABLE 10C



\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*

S84GA-293-001

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED ; FINE-LOAMY, SILICEOUS, THERMIC TYPIC PALEUDULT  
NATIONAL SOIL SURVEY LABORATORY ; PEDON 84P 467, SAMPLE 84P2485-2491

|         | -1--    | -2--    | -3--  | -4--      | -5--     | -6--  | -7--    | -8--  | -9--  | -10-  | -11-   | -12-  | -13-  | -14-  | -15-  | -16-  | -17-  | -18-    | -19-   | -20-         |
|---------|---------|---------|-------|-----------|----------|-------|---------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|---------|--------|--------------|
| -----   |         |         |       |           |          |       |         |       |       |       |        |       |       |       |       |       |       |         |        |              |
|         | < - - - | - - -   | - - - | - - -     | - - -    | - - - | - - -   | - - - | - - - | - - - | - - -  | - - - | - - - | - - - | - - - | - - - | - - - | - - -   | - - -  | >            |
|         | FRACT   | < - - - | - - - | X-RAY     | - - -    | - - - | - - -   | - - - | - - - | - - - | - - -  | - - - | - - - | - - - | - - - | - - - | - - - | - - -   | - - -  | >            |
| SAMPLE  | ION     | < - - - | - - - |           | >< - - - | - - - | DTA     | - - - | TGA   | - - - | SiO2   | AL2O3 | Fe2O3 | MgO   | CaO   | K2O   | Na2O  | < - - - | >      | SURF INTER   |
|         |         | < - - - | - - - | 7A2i      | - - -    | - - - | 7A3b    | - - - | 7A4b  | - - - | - - -  | - - - | - - - | - - - | - - - | - - - | - - - | - - -   | >      | AREA PRETA   |
| NUMBER  | < - -   | >< - -  | - - - | peak size | - - -    | - - - | Percent | - - - | - - - | - - - | - - -  | - - - | - - - | - - - | - - - | - - - | - - - | - - -   | >< - - | ><M2/G>< - - |
| 84P2488 | TCLY    | KK 4    | VR 4  | GI 4      | GE 1     |       | KK 5    | GI 8  |       |       |        |       | 9.2   |       |       | 0.6   |       |         |        | CMIX         |
| 84P2491 | TCLY    | KK 3    | VR 3  | GI 3      | GE 1     |       | KK20    | GI13  |       |       |        |       | 8.3   |       |       | 0.7   |       |         |        | CMIX         |
| -----   |         |         |       |           |          |       |         |       |       |       |        |       |       |       |       |       |       |         |        |              |
|         | < - - - | - - -   | - - - | - - -     | - - -    | - - - | - - -   | - - - | - - - | - - - | - - -  | - - - | - - - | - - - | - - - | - - - | - - - | - - -   | - - -  | >            |
|         | FRACT   | < - - - | - - - | X-RAY     | - - -    | - - - | - - -   | - - - | - - - | - - - | - - -  | - - - | - - - | - - - | - - - | - - - | - - - | - - -   | - - -  | >            |
| DEPTH   | ION     | < - - - | - - - |           | >< - - - | - - - | DTA     | - - - | TGA   | - - - | TOT RE | - - - | - - - | - - - | - - - | - - - | - - - | - - -   | - - -  | >            |
|         |         | < - - - | - - - | 7A2i      | - - -    | - - - | 7A3b    | - - - | 7A4b  | - - - | - - -  | - - - | - - - | - - - | - - - | - - - | - - - | - - -   | - - -  | >            |
| (cm)    | < - -   | >< - -  | - - - | Peak Size | - - -    | - - - | Percent | - - - | - - - | - - - | - - -  | - - - | - - - | - - - | - - - | - - - | - - - | - - -   | - - -  | >< - -       |
| 69- 97  | FS      |         |       |           |          |       |         |       |       | 99    | QZ99   | OPtr  | ZRtr  | RUtr  |       |       |       |         |        | SILI         |
| 175-205 | FS      |         |       |           |          |       |         |       |       | 99    | QZ87   | RA11  | OP 1  | RUtr  | FKtr  | HNtr  |       |         |        | SILI         |
| 175-205 | FS      |         |       |           |          |       |         |       |       |       | TMtr   |       |       |       |       |       |       |         |        |              |
| -----   |         |         |       |           |          |       |         |       |       |       |        |       |       |       |       |       |       |         |        |              |

TABLE 10D



S84GA-293-001

; FINE-LOAMY, SILICEOUS, THERMIC TYPIC PALEUDULT  
: PEDON 84P 467, SAMPLE 84P2485-2491

PRINT DATE 10/06/87

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

[illegible]

|    |           |    |             |    |              |    |            |    |            |    |            |
|----|-----------|----|-------------|----|--------------|----|------------|----|------------|----|------------|
| KK | kaolinite | VR | vermiculite | GI | gibbsite     | GE | goethite   | QZ | quartz     | OP | opaques    |
| ZR | zircon    | RU | rutile      | RA | resist-aggre | FK | potas-feld | HN | hornblende | TM | tourmaline |

RELATIVE PEAK SIZE:    5 Very Large    4 Large    3 Medium    2 Small    1 Very Small    6 No Peaks

INTERPRETATION (BY HORIZON):

CMIX - MIXED (CLAY)    KAOL - KAOLINITIC    MICA - MICACEOUS    SILI - SILICEOUS    SHIX - MIXED (SAND)

### PEDON MINERALOGY

ON MINERALOGY:  
 BASED ON SAND/SILT: SILICEOUS  
 BASED ON CLAY: MIXED  
 FAMILY MINERALOGY: SILICEOUS  
 COMMENTS:

There is



S84GA-293-001

\*\*\* SUPPLEMENTARY CHARACTERIZATION DATA \*\*\*  
(UPSON COUNTY, GEORGIA)

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED ; FINE-LOAMY, SILICEOUS, THERMIC TYPIC PALEUDULT  
REVISED TO : ; FINE-LOAMY, SILICEOUS, THERMIC TYPIC PALEUDULT

NSSL - PROJECT 84P 91, PINE MOUNTAIN  
- PEDON 84P 467, SAMPLES 84P2485-2491  
- GENERAL METHODS (ENGINEERING FRACTIONS ARE CALCULATED FROM USDA FRACTION SIZES)

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
NATIONAL SOIL SURVEY LABORATORY  
LINCOLN, NEBRASKA 68508-3866

|            |             | -1--    | -2--                      | -3-- | -4-- | -5-- | -6-- | -7-- | -8-- | -9-- | -10- | -11- | -12-   | -13- | -14- | -15- | -16- | -17- | -18- | -19- | -20- |       |       |    |    |    |      |     |
|------------|-------------|---------|---------------------------|------|------|------|------|------|------|------|------|------|--|------|------|------|------|------|------|------|------|-------|-------|----|----|----|------|-----|
| SAMPLE NO. | DEPTH (IN.) | HORIZON | ENGINEERING PASSING SIEVE |      |      |      |      |      |      |      |      |      | CUMULATIVE CURVE FRACTIONS(<76MM) AT BERG UNIFORMITY |      |      |      |      |      |      |      |      |       |       |    |    |    |      |     |
|            |             |         | PERCENTAGE                |      |      |      |      |      |      |      |      |      | LESS THAN DIAMETERS(MM)                              |      |      |      |      |      |      |      |      |       |       |    |    |    |      |     |
|            |             |         | 3                         | 2    | 3/2  | 1    | 3/4  | 3/8  | 4    | 10   | 40   | 200  | 20   | 5    | 2    | 1.5  | .25  | .10  | .05  | 60   | 50   | 10    |       |    |    |    |      |     |
|            |             |         | <-----INCHES----->        |      |      |      |      |      |      |      |      |      | <-----MICRONS----->                                  |      |      |      |      |      |      |      |      |       |       |    |    |    |      |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | <-----PERCENTILE----->    |      |      |      |      |      |      |      |      |      | <-----PCT----->                                      |      |      |      |      |      |      |      |      |       |       |    |    |    |      |     |
| 84P2485S   | 0- 7        | AP      | 100                       | 100  | 100  | 100  | 100  | 100  | 100  | 100  | 78   | 28   | 19   | 13   | 9    | 98   | 85   | 58   | 32   | 24   | 0.26 | 0.186 | 0.003 |    |    |    | >100 | 10. |
| 84P2486S   | 7- 18       | AB      | 100                       | 100  | 100  | 100  | 100  | 100  | 100  | 100  | 75   | 21   | 12   | 8    | 5    | 98   | 82   | 53   | 24   | 16   | 0.30 | 0.229 | 0.011 |    |    |    | 28.0 | 4.  |
| 84P2487S   | 18- 27      | BA      | 100                       | 100  | 100  | 100  | 100  | 100  | 100  | 99   | 80   | 30   | 20   | 14   | 10   | 97   | 86   | 62   | 34   | 24   | 0.23 | 0.168 | 0.002 |    |    |    | >100 | 13. |
| 84P2488S   | 27- 38      | BT1     | 100                       | 100  | 100  | 100  | 100  | 100  | 100  | 99   | 79   | 37   | 30   | 26   | 23   | 96   | 84   | 62   | 41   | 33   | 0.23 | 0.148 | 0.001 | 28 | 11 |    | >100 | 3.  |
| 84P2489S   | 38- 57      | BT2     | 100                       | 100  | 100  | 100  | 100  | 100  | 100  | 99   | 79   | 42   | 35   | 32   | 30   | 95   | 84   | 64   | 45   | 39   | 0.20 | 0.126 | --    |    |    |    | >100 | --  |
| 84P2490S   | 57- 69      | BX1     | 100                       | 100  | 100  | 99   | 99   | 98   | 96   | 94   | 68   | 37   | 30   | 27   | 25   | 86   | 72   | 55   | 39   | 34   | 0.30 | 0.185 | 0.001 |    |    |    | >100 | 2.  |
| 84P2491S   | 69- 81      | BX2     | 100                       | 96   | 94   | 90   | 87   | 79   | 70   | 65   | 47   | 25   | 21   | 19   | 18   | 61   | 50   | 37   | 26   | 23   | 0.94 | 0.492 | 0.001 | 35 | 12 |    | >100 | 29. |
|            |             |         | GRAVIMETRIC               |      |      |      |      |      |      |      |      |      | AT 1/3 BA  |      |      |      |      |      |      |      |      |       |       |    |    |    |      |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25   |     |
|            |             |         | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20    | 21    | 22 | 23 | 24 | 25</ |     |



\*\*\* SUPPLEMENTARY CHARACTERIZATION DATA \*\*\*

S84GA-293-001

SAMPLED AS : NOT DESIGNATED  
NATIONAL SOIL SURVEY LABORATORY

; FINE-LOAMY, SILICEOUS, THERMIC TYPIC PALEUDULT  
; PEDON 84P 467, SAMPLE 84P2485-2491

PRINT DATE 10/06/87

|          | -1--  | -2-- | -3-- | -4-- | -5-- | -6-- | -7-- | -8-- | -9-- | -10- | -11-  | -12- | -13- | -14- | -15- | -16- | -17- | -18-  | -19-  | -20- |     |     |      |      |     |
|----------|---|------|------|------|------|------|------|------|------|------|---|------|------|------|------|------|------|-------|-------|------|-----|-----|------|------|-----|
| -----    |   |      |      |      |      |      |      |      |      |      |   |      |      |      |      |      |      |       |       |      |     |     |      |      |     |
|          | ( V O L U M E F R A C T I O N S ) ( C / ) ( R A T I O S T O C L A Y ) ( L I N E A R E X T E N S I B I L I T Y ) ( W R D   |      |      |      |      |      |      |      |      |      |   |      |      |      |      |      |      |       |       |      |     |     |      |      |     |
| DEPTH    | ----W H O L E S O I L ( M M ) A T 1/3 B A R --- ( / N ) -----< 2 M M F R A C T I O N -----  |      |      |      |      |      |      |      |      |      | WHOLE SOIL --< 2 MM-- WHOLE < 2   |      |      |      |      |      |      |       |       |      |     |     |      |      |     |
| ( IN . ) | > 2 250 250 75 75 20 5 2- .05- LT PORES RAT FINE ---C E C-- 15 LE <-1/3 BAR TO ( PCT ) ---> SOIL MM   |      |      |      |      |      |      |      |      |      | SUM NH4- BAR 1/3 15 OVEN 15 OVEN <--IN/IN-                                  |      |      |      |      |      |      |       |       |      |     |     |      |      |     |
|          | <-----PCT OF WHOLE SOIL----->   |      |      |      |      |      |      |      |      |      | CATS OAC H2O BAR -DRY BAR -DRY  |      |      |      |      |      |      |       |       |      |     |     |      |      |     |
|          | 51  | 52   | 53   | 54   | 55   | 56   | 57   | 58   | 59   | 60   | 61  | 62   | 63   | 64   | 65   | 66   | 67   | 68    | 69    | 70   | 71  | 72  | 73   | 74   | 75  |
| 0- 7     | TR  | --   | --   | --   | --   | TR   | 100  | 40   | 8    | 5    | 33  | 15   | 15   | 0.49 | 0.23 | 0.18 | 0.32 | 0.111 | 0.7   | 1.0  | 0.7 | 1.0 | 0.10 | 0.1  |     |
| 7- 18    | TR  | --   | --   | --   | --   | TR   | 100  | 47   | 6    | 3    | 43  |      | 16   | 0.40 | 0.64 | 0.40 | 0.44 |       |       |      |     |     |      |      |     |
| 18- 27   | 1   | --   | --   | 1    | --   | TR   | 1    | 99   | 45   | 9    | 6   | 39   | 11   | 0.50 | 0.26 | 0.19 | 0.34 |       |       |      |     |     |      |      |     |
| 27- 38   | 1   | --   | --   | 1    | --   | TR   | 1    | 99   | 41   | 7    | 14  | 12   | 26   | 8    | 0.60 | 0.26 | 0.17 | 0.32  | 0.026 | 0.4  | 0.6 | 0.4 | 0.6  | 0.14 | 0.1 |
| 38- 57   | 1   | --   | --   | 1    | --   | 1    | 99   | 39   | 6    | 20   | 9   | 26   | 5    | 0.60 | 0.22 | 0.14 | 0.35 | 0.026 | 0.2   | 0.8  | 0.2 | 0.8 | 0.08 | 0.0  |     |
| 57- 69   | 4   | --   | --   | 4    | 1    | 2    | 1    | 96   | 40   | 6    | 16  | 8    | 26   |      | 0.57 | 0.22 | 0.17 | 0.43  | 0.023 | 0.2  | 0.6 | 0.2 | 0.6  | 0.07 | 0.0 |
| 69- 81   | 30  | --   | --   | 30   | 11   | 15   | 4    | 70   | 36   | 4    | 16  | 4    | 9    |      | 0.56 | 0.21 | 0.17 | 0.39  | 0.011 |      |     | 0.3 |      | 0.3  |     |
| -----    |   |      |      |      |      |      |      |      |      |      |   |      |      |      |      |      |      |       |       |      |     |     |      |      |     |
|          | ( W E I G H T F R A C T I O N S - C L A Y F R E E ) ( - T E X T U R E - - ) ( - P S D A ( M M ) - - ) ( P H ) ( - E L E C T R I C A L ) ( C U M U L T . A M O U N T S |      |      |      |      |      |      |      |      |      |   |      |      |      |      |      |      |       |       |      |     |     |      |      |     |
| DEPTH    | --W H O L E S O I L-- ---< 2 M M F R A C T I O N --- ( D E T E R M I N E D S A N D S I L T C L I N B Y  |      |      |      |      |      |      |      |      |      | 2- .05- LT CL2 IST. DUCT. MG/ 1/3 BAR TO                                    |      |      |      |      |      |      |       |       |      |     |     |      |      |     |
| ( IN . ) | > 2 75 20 2- .05- LT ---SANDS----- SILTS CL   |      |      |      |      |      |      |      |      |      | PSDA .05 .002 .002 .01M OHMS MMHOS KG 15BAR AIRDR                           |      |      |      |      |      |      |       |       |      |     |     |      |      |     |
|          | PCT OF > 2MM+SAND+SILT> (-----PCT OF SAND+SILT-----) (---< 2 MM---) (---PCT OF .2MM---) (---< 2 MM---) (---) (WHL SOIL  |      |      |      |      |      |      |      |      |      | 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 |      |      |      |      |      |      |       |       |      |     |     |      |      |     |
| 0- 7     |   |      |      | 84   | 16   | 10   | 2    | 15   | 29   | 29   | 9   | 5    | 11   | 10   | SL   | SL   | 76.4 | 14.6  | 9.0   | 4.9  |     |     |      |      |     |
| 7- 18    |   |      |      | 88   | 12   | 5    | 3    | 16   | 31   | 30   | 9   | 5    | 7    | 5    | SL   | LS   | 83.8 | 11.2  | 5.0   | 4.9  |     |     |      |      |     |
| 18- 27   | 1   | 1    | 1    | 83   | 16   | 12   | 2    | 13   | 26   | 32   | 10  | 5    | 11   | 12   | SL   | SL   | 75.3 | 14.2  | 10.5  | 4.7  |     |     |      |      |     |
| 27- 38   | 1   | 1    | 1    | 85   | 14   | 29   | 4    | 16   | 28   | 29   | 9   | 5    | 9    | 30   | SL   | SCL  | 66.3 | 10.7  | 23.0  | 4.9  |     |     |      |      |     |
| 38- 57   | 1   | 1    | 1    | 86   | 12   | 43   | 6    | 16   | 28   | 28   | 9   | 5    | 8    | 43   | SCL  | SCL  | 60.9 | 8.8   | 30.3  | 4.5  |     |     |      |      |     |
| 57- 69   | 8   | 8    | 7    | 80   | 12   | 33   | 11   | 20   | 25   | 23   | 8   | 5    | 7    | 36   | SL   | SCL  | 64.3 | 9.2   | 26.5  | 4.4  |     |     |      |      |     |
| 69- 81   | 43  | 43   | 27   | 52   | 5    | 23   | 9    | 23   | 29   | 22   | 7   | 5    | 5    | 39   | SL   | SCL  | 65.0 | 6.7   | 28.3  | 4.3  |     |     |      |      |     |

TABLE 106



Print date: 10-06-1987

Pedon: SNO  
Soil Survey # S84-GA-199-002  
Location: Merriweather Co. GA. 1 km W of Warm Springs. UTM Zone 16 1640540 m N 714240 m E Warm Springs  
GA. 7.5' Quad.  
Latitude: 32-51-05-N  
Classification: Fine-loamy, siliceous, thermic Typic Pragiudult  
Physiography: Pan in piedmonts  
Geomorphic Position:  
Microrelief:  
Slope Characteristics: 1% plane  
Precipitation: 1200 mm Udic moisture regime  
Water Table Depth:  
Air Temp. (Centigrade): Ann: Sum: Win:  
Soil Temp. (Centigrade): Ann: Sum: Win:  
Drainage: Well drained  
Stoniness:  
Particle Size Control Section: 15 to 65 cm  
Parent Material: alluvium from quartzite material  
Vegetation Codes:

NSSL ID #: 84P0466

Longitude: 084-42-15-W

Elevation: 288 m MSL  
MLRA: 116  
Permeability: Very slow  
MAT: 18 degrees C

Land Use: Cropland  
Erosion: Moderate

Weather Station: 098535

Diagnostic Horizons: 0 to 15 cm Ochric, 15 to 98 cm Argillic, 98 to 164 cm Fragipan  
Described by: Grover Thomas and Talbert Gerald

Date: 04/84

Site on remnant of dissected fan from Pine Mountain about 1 km to the south. Atlas sheet 54 in Soil Survey for Merriweather Co. GA. Map Unit: Habersham gravelly loamy sand, 2-6% slopes. Sampled by Warren Lynn and Reese Berdanier 4/2/84.

Ap--0 to 15 cm; brown (10YR 5/3) sandy loam; weak fine granular structure; ; many fine roots; abrupt smooth boundary.  
Pew fine gravel.  
84P2476

Bt1--15 to 44 cm; red (2.5YR 4/8) clay loam; moderate medium subangular blocky structure; ; common fine roots; gradual smooth boundary.  
84P2477

Bt2--44 to 98 cm; red (2.5YR 4/8) clay loam; moderate medium subangular blocky structure; friable; few fine roots; discontinuous thin clay films on faces of peds; abrupt wavy boundary.  
Split for sampling at 66 cm. 66 cm to 98 cm is sample 84P2479. Few fine gravel.  
84P2478

2Bx1--98 to 130 cm; red (2.5YR 4/8) sandy clay loam; common medium and coarse distinct strong brown (7.5YR 5/6) mottles; massive; very firm, brittle; few fine roots; gradual smooth boundary.  
Strong brown portion is firm sandy clay with few fine roots and few fine gravel. Red portion 70% by volume is very firm and brittle.  
84P2480

2Bx2--130 to 164 cm; red (2.5YR 4/8) sandy clay loam; many medium and coarse distinct strong brown (7.5YR 5/6) mottles; massive; ; clear smooth boundary.  
Red portion 60% by volume is very firm and brittle. Strong brown portion is firm sandy clay with few fine gravel.  
84P2481

2Bx3--164 to 195 cm; strong brown (7.5YR 5/6) and red (2.5YR 4/8) sandy loam; massive; ; gradual smooth boundary.  
Red portion 50% percent by volume is firm and brittle. Strong brown portion is firm. Common fine and medium gravel.  
84P2482

2Bx4--195 to 235 cm; strong brown (7.5YR 5/6), red (2.5YR 4/8), and yellowish brown (10YR 5/8) sandy loam; massive; ; gradual smooth boundary.  
Brown portion 60% by volume is friable. Red portion is firm and brittle. Few fine gravel.  
84P2483

2Bx5--235 to 250 cm; strong brown (7.5YR 5/8), red (2.5YR 4/8), and yellowish brown (10YR 5/8) sandy loam; massive.  
Fourth moist color is 10YR 6/4. Brown portion 70% by volume is friable. Red portion is firm and brittle. Moist colors are mottled.  
84P2484

TABLE 114



PRINT DATE 10/06/87

PRINT DATE 10/06/87

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
NATIONAL SOIL SURVEY LABORATORY  
LINCOLN, NEBRASKA 68508-3866

| DEPTH<br>(CM) | ORGN TOTAL |       | EXTR TOTAL |            | (- - DITH-CIT - -)(RATIO/CLAY) |      |      |      | (- BULK DENSITY - ) |     | COLE (- - -WATER CONTENT - - ) |                  | WRD |       |      |             |       |           |      |       |       |
|---------------|------------|-------|------------|------------|--------------------------------|------|------|------|---------------------|-----|--------------------------------|------------------|-----|-------|------|-------------|-------|-----------|------|-------|-------|
|               | C          | N     | P          | S          | EXTRACTABLE                    |      |      |      | LIMITS -            |     | FIELD                          |                  |     | WHOLE |      |             |       |           |      |       |       |
|               |            |       |            |            | FE                             | AL   | MN   | CEC  | 15                  | LL  | PI                             | MOIST            |     | 1/3   | OVEN | WHOLE       | FIELD | 1/10      | 1/3  | 15    | WHOLE |
|               | 6A1C       | 6B3A  | 6S3        | 6R3A       | 6C2B                           | 6G7A | 6D2A | 8D1  | 8D1                 | 4F1 | 4F                             | 4A3A             |     | 4A1D  | 4A1H | 4A1H        | 4B4   | 4B1C      | 4B1C | 4B1C  | 4B1C  |
|               | PCT        | <2MM  | PPM        | <- PERCENT | OF <2MM -->                    |      |      |      |                     | PCT | <0.4MM                         | <- - G/CC - - -> |     | CM/CM |      | <- - PCT OF |       | <2MM - -> |      | CM/CM |       |
| 0- 15         | 0.84       | 0.057 |            |            | 0.7                            | 0.2  |      | 0.30 | 0.43                |     |                                |                  |     | 1.54  | 1.57 | 0.006       |       |           | 12.5 | 3.8   | 0.13  |
| 15- 44        | 0.62       | 0.047 |            |            | 4.0                            | 0.7  |      | 0.11 | 0.32                |     |                                |                  |     | 1.43  | 1.49 | 0.014       |       |           | 19.0 | 16.7  | 0.03  |
| 44- 66        | 0.32       | 0.027 |            |            | 3.7                            | 0.6  |      | 0.11 | 0.34                | 37  | 17                             |                  |     | 1.30  | 1.38 | 0.020       |       |           | 26.0 | 15.0  | 0.14  |
| 66- 98        | 0.21       | 0.024 |            |            | 4.0                            | 0.6  |      | 0.09 | 0.33                |     |                                |                  |     | 1.39  | 1.46 | 0.016       |       |           | 24.8 | 15.9  | 0.12  |
| 98-130        | 0.14       |       |            |            | 4.3                            | 0.6  |      | 0.08 | 0.36                | 39  | 14                             |                  |     | 1.68  | 1.72 | 0.007       |       |           | 17.9 | 14.6  | 0.05  |
| 130-164       | 0.09       |       |            |            | 3.6                            | 0.5  |      | 0.09 | 0.40                |     |                                |                  |     | 1.71  | 1.75 | 0.006       |       |           | 17.2 | 12.1  | 0.06  |
| 164-195       | 0.11       |       |            |            | 2.7                            | 0.4  |      | 0.08 | 0.39                |     |                                |                  |     | 1.80  | 1.82 | 0.003       |       |           | 15.5 | 11.2  | 0.07  |
| 195-235       | 0.09       |       |            |            | 2.0                            | 0.3  |      | 0.10 | 0.41                |     |                                |                  |     | 1.75  | 1.77 | 0.004       |       |           | 15.9 | 12.3  | 0.06  |
| 235-250       | 0.09       |       |            |            | 1.6                            | 0.3  |      | 0.10 | 0.37                | 39  | 16                             |                  |     | 1.73  | 1.76 | 0.006       |       |           | 16.0 | 12.1  | 0.07  |

AVERAGES, DEPTH 15- 65: PCT CLAY 49 PCT .1-75MM 36

Table 11B



\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*

S84GA-199-002

SAMPLED AS : NOT DESIGNATED  
NATIONAL SOIL SURVEY LABORATORY

; FINE-LOAMY, SILICEOUS, THERMIC TYPIC FRAGIUDULT  
; PEDON 84P 466, SAMPLE 84P2476-2484

PRINT DATE 10/06/87

|         | -1--                           | -2-- | -3-- | -4-- | -5--  | -6--  | -7-- | -8--               | -9-- | -10-  | -11-    | -12-  | -13- | -14-   | -15- | -16- | -17-                    | -18- | -19-  | -20- |
|---------|--------------------------------|------|------|------|-------|-------|------|--------------------|------|-------|---------|-------|------|--------|------|------|-------------------------|------|-------|------|
|         | (- NH4OAC EXTRACTABLE BASES -) |      |      |      |       | ACID- | EXTR | (- - - -CEC - - -) |      |       | AL      | -BASE | SAT- | CO3 AS | RES. |      | COND. (- - - -PH - - -) |      |       |      |
| DEPTH   | CA                             | MG   | NA   | K    | SUM   | ITY   | AL   | SUM                | NH4- | BASES | SAT     | SUM   | NH4  | CACO3  | OHMS |      | MMHOS                   | KCL  | CACL2 | H2O  |
| (CM)    | 5B5A                           | 5B5A | 5B5A | 5B5A | BASES |       |      | CATS               | OAC  | + AL  |         |       |      | OAC    | <2MM | /CM  |                         | IN   | .01M  |      |
|         | 6N2E                           | 6O2D | 6P2B | 6Q2B |       | 6H5A  | 6G9A | 5A3A               | 5A8B | 5A3B  | 5G1     | 5C3   | 5C1  | 6E1G   | 8E1  |      | 81                      | 8C1G | 8C1F  | 8C1F |
|         | < - - - -MEQ /                 |      |      |      |       | 100 G |      |                    |      |       | < - - - |       | -PCT |        |      |      |                         |      | 1:2   | 1:1  |
| 0- 15   | 0.8                            | 0.2  | TR   | 0.1  | 1.1   | 3.2   | 0.3  | 4.3                | 2.6  | 1.4   | 21      | 26    | 42   |        |      |      | -                       | 4.4  | 4.6   | 5.3  |
| 15- 44  | 2.0                            | 0.5  | TR   | TR   | 2.5   | 6.5   | 0.2  | 9.0                | 5.5  | 2.7   | 7       | 28    | 45   |        |      |      |                         | 4.6  | 4.9   | 5.4  |
| 44- 66  | 1.7                            | 0.4  | TR   | TR   | 2.1   | 5.8   | 0.2  | 7.9                | 4.7  | 2.3   | 9       | 27    | 45   |        |      |      |                         | 4.6  | 4.9   | 5.4  |
| 66- 98  | 1.3                            | 0.3  | TR   | --   | 1.6   | 6.6   | 0.4  | 8.2                | 4.1  | 2.0   | 20      | 20    | 39   |        |      |      |                         | 4.6  | 4.7   | 5.2  |
| 98-130  | 0.4                            | 0.1  | TR   | --   | 0.5   | 5.8   | 0.7  | 6.3                | 3.3  | 1.2   | 58      | 8     | 15   |        |      |      |                         | 4.3  | 4.5   | 5.2  |
| 130-164 | 0.1                            | 0.1  | TR   | --   | 0.2   | 4.5   | 0.6  | 4.7                | 2.6  | 0.8   | 75      | 4     | 8    |        |      |      |                         | 4.3  | 4.5   | 4.9  |
| 164-195 | 0.1                            | TR   | TR   | TR   | 0.1   | 4.1   | 0.6  | 4.2                | 2.3  | 0.7   | 86      | 2     | 4    |        |      |      |                         | 4.3  | 4.4   | 5.0  |
| 195-235 | TR                             | TR   | TR   | --   | TR    | 3.4   | 1.0  | 3.4                | 3.1  | 1.0   | 100     |       | 1    |        |      |      |                         | 4.1  | 4.4   | 4.9  |
| 235-250 | 0.1                            | TR   | TR   | --   | 0.1   | 4.1   | 1.2  | 4.2                | 3.1  | 1.3   | 92      | 2     | 3    |        |      |      |                         | 4.0  | 4.3   | 4.9  |

TABLE 11C



\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*

S84GA-199-002

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED ; FINE-LOAMY, SILICEOUS, THERMIC TYPIC FRAGIUDULT  
NATIONAL SOIL SURVEY LABORATORY ; PEDON 84P 466, SAMPLE 84P2476-2484

|         | -1--  | -2-- | -3-- | -4-- | -5-- | -6-- | -7--      | -8-- | -9-- | -10- | -11- | -12- | -13- | -14- | -15- | -16- | -17- | -18- | -19- | -20- |
|---------|-------|------|------|------|------|------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| <hr/>   |       |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |      |
|         | <     | -    | -    | -    | -    | -    | -         | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
|         | FRACT | <    | -    | -    | -    | -    | X-RAY     | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
|         | ION   | <    | -    | -    | -    | -    | -         | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
| SAMPLE  |       | <    | -    | -    | -    | -    | 7A21      | -    | -    | -    | -    | 7A3b | -    | -    | -    | 7A4b | -    | -    | -    | >    |
| NUMBER  |       | <-   | -    | ><   | -    | -    | peak size | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
|         |       | <-   | -    | ><   | -    | -    | Percent   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
| 84P2478 | TCLY  | GI   | 4    | VR   | 2    | GI   | 2         | GE   | 2    | HE   | 2    | KK10 | GI   | 24   |      | 12.2 |      | 0.3  |      | CHIX |
| 84P2480 | TCLY  | GI   | 4    | KK   | 4    | VR   | 3         | GE   | 2    |      |      | KK26 | GI   | 18   |      | 12.0 |      | 0.4  |      | CHIX |
| 84P2484 | TCLY  | KK   | 4    | GI   | 3    | VR   | 3         | GE   | 1    |      |      | KK25 | GI   | 8    |      | 6.0  |      | 0.6  |      | CHIX |
| <hr/>   |       |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      |      |
|         | <     | -    | -    | -    | -    | -    | -         | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
|         | FRACT | <    | -    | -    | -    | -    | X-RAY     | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
|         | ION   | <    | -    | -    | -    | -    | -         | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
| DEPTH   |       | <    | -    | -    | -    | -    | 7A21      | -    | -    | -    | -    | 7A3b | -    | -    | -    | 7A4b | -    | -    | -    | >    |
| (cm)    |       | <-   | -    | ><   | -    | -    | Peak Size | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
|         |       | <-   | -    | ><   | -    | -    | Percent   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | >    |
| 0- 15   | FS    |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      | SILI |
| 0- 15   | FS    |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      | SILI |
| 44- 66  | FS    |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      | SILI |
| 44- 66  | FS    |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      | SILI |
| 98-130  | FS    |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      | SILI |
| 235-250 | VFS   |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      | SILI |
| 235-250 | VFS   |      |      |      |      |      |           |      |      |      |      |      |      |      |      |      |      |      |      | SILI |

Mass. H.D.



\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*

S84GA-199-002

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED ; FINE-LOAMY, SILICEOUS, THERMIC TYPIC FRAGIUDULT  
NATIONAL SOIL SURVEY LABORATORY ; PEDON 84P 466, SAMPLE 84P2476-2484

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

| DEPTH<br>(cm) | FINE EARTH MINERALOGY (<2.0mm) |      |      |      |      |      |      |       |  |  |         |  |  |  |  |  |  |  |  |  |
|---------------|--------------------------------|------|------|------|------|------|------|-------|--|--|---------|--|--|--|--|--|--|--|--|--|
|               | X-RAY                          |      |      |      |      |      |      |       |  |  | THERMAL |  |  |  |  |  |  |  |  |  |
|               | 7A21                           |      |      |      |      |      |      |       |  |  | 7A6     |  |  |  |  |  |  |  |  |  |
|               | Peak Size                      |      |      |      |      |      |      |       |  |  | Percent |  |  |  |  |  |  |  |  |  |
| 15- 44        | FETH                           | KK 4 | QZ 3 | HE 2 | MI 1 | GI 1 | KK 5 | GI 15 |  |  |         |  |  |  |  |  |  |  |  |  |
| 44- 66        | FETH                           | GI 3 | QZ 2 | KK 1 | FD 1 |      | KK 4 | GI 12 |  |  |         |  |  |  |  |  |  |  |  |  |
| 66- 98        | FETH                           | GI 3 | QZ 2 | KK 1 | HE 1 | FD 1 | KK 8 | GI 15 |  |  |         |  |  |  |  |  |  |  |  |  |
| 98-130        | FETH                           | QZ 3 | GI 2 | HE 1 | KK 1 | FD 1 | KK 7 | GI 9  |  |  |         |  |  |  |  |  |  |  |  |  |
| 235-250       | FETH                           | QZ 3 | GI 2 | KK 2 |      |      | KK 7 | GI 3  |  |  |         |  |  |  |  |  |  |  |  |  |

KIND OF MINERAL:

|             |              |             |                 |               |                |
|-------------|--------------|-------------|-----------------|---------------|----------------|
| QZ quartz   | BT biotite   | OP opaques  | RA resist-aggre | TM tourmaline | FK potas-feld  |
| ZR zircon   | KK kaolinite | HE hematite | MI mica         | GI gibbsite   | VR vermiculite |
| GE goethite | FD feldspar  | RU rutile   | MS muscovite    |               |                |

RELATIVE PEAK SIZE: 5 Very Large 4 Large 3 Medium 2 Small 1 Very Small 6 No Peaks

INTERPRETATION (BY HORIZON):

CMIX = MIXED (CLAY) KAOL = KAOLINITIC MICA = MICACEOUS SILI = SILICEOUS SMIX = MIXED (SAND)

PEDON MINERALOGY

BASED ON SAND/SILT: SILICEOUS

BASED ON CLAY: MIXED

FAMILY MINERALOGY: SILICEOUS

COMMENTS: OXIDIC EXCEPT TOO MUCH QUARTZ IN SANDS

TABLE 11E



S84GA-199-002

\*\*\* SUPPLEMENTARY CHARACTERIZATION DATA \*\*\*  
(MERIWETHER COUNTY, GEORGIA)

PRINT DATE 10/06/87

SAMPLED AS : NOT DESIGNATED ; FINE-LOAMY, SILICEOUS, THERMIC TYPIC FRAGIU DULT  
REVISED TO : ; FINE-LOAMY, SILICEOUS, THERMIC TYPIC FRAGIU DULT

NSSL - PROJECT 84P 91, PINE MOUNTAIN  
- PEDON 84P 466, SAMPLES 84P2476-2484  
- GENERAL METHODS (ENGINEERING FRACTIONS ARE CALCULATED FROM USDA FRACTION SIZES)

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
NATIONAL SOIL SURVEY LABORATORY  
LINCOLN, NEBRASKA 68508-3866

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

| SAMPLE NO. | DEPTH (IN.) | HORIZON | ENGINEERING PERCENTAGE PASSING |     |     |     |     |     |     |    |    |    | PSDA SIEVE        |    |    | CUMULATIVE CURVE FRACTIONS(<76MM) LESS THAN DIAMETERS(MM) AT |    |    |     | AT BERG  |      | GRADATIO |       |    |    |    |      |      |     |
|------------|-------------|---------|--------------------------------|-----|-----|-----|-----|-----|-----|----|----|----|-------------------|----|----|--|----|----|-----|----------|------|----------|-------|----|----|----|------|------|-----|
|            |             |         | 3                              | 2   | 3/2 | 1   | 3/4 | 3/8 | 4   | 5  | 6  | 7  | 8                 | 9  | 10 | 20   | 5  | 2  | 1.5 | .25      | .10  | .05      | 60    | 50 | 10 | LL | PI   | FMTY | VTU |
|            |             |         | -<N U M B E R->                |     |     |     |     |     |     |    |    |    | -<M I C R O N S-> |    |    | -<P E R C E N T I L E->                                      |    |    |     | -<P C T> |      | CU       |       | CC |    |    |      |      |     |
|            |             |         | 1                              | 2   | 3   | 4   | 5   | 6   | 7   | 8  | 9  | 10 | 11                | 12 | 13 | 14   | 15 | 16 | 17  | 18       | 19   | 20       | 21    | 22 | 23 | 24 | 2    |      |     |
| 84P2476S   | 0- 6        | A       | 100                            | 100 | 100 | 100 | 100 | 99  | 98  | 95 | 76 | 30 | 18                | 12 | 8  | 91   | 81 | 62 | 34  | 23       | 0.23 | 0.168    | 0.003 |    |    |    | 78.8 | 8.   |     |
| 84P2477S   | 6- 17       | BT1     | 100                            | 100 | 100 | 100 | 100 | 100 | 99  | 98 | 87 | 63 | 57                | 53 | 51 | 95   | 89 | 79 | 66  | 60       | 0.05 | 0.002    | --    |    |    |    | >100 | -    |     |
| 84P2478S   | 17- 26      | BT2     | 100                            | 100 | 100 | 100 | 100 | 100 | 99  | 97 | 85 | 59 | 52                | 47 | 43 | 94   | 88 | 76 | 61  | 55       | 0.09 | 0.012    | --    | 37 | 17 |    | >100 | -    |     |
| 84P2479S   | 26- 39      | BT2     | 100                            | 100 | 100 | 100 | 100 | 100 | 99  | 97 | 84 | 58 | 53                | 49 | 47 | 93   | 86 | 75 | 61  | 55       | 0.09 | 0.007    | --    |    |    |    | >100 | -    |     |
| 84P2480S   | 39- 51      | 2BX1    | 100                            | 100 | 100 | 99  | 99  | 95  | 91  | 85 | 68 | 43 | 38                | 36 | 34 | 79   | 71 | 59 | 45  | 40       | 0.27 | 0.139    | --    | 39 | 14 |    | >100 | -    |     |
| 84P2481S   | 51- 64      | 2BX2    | 100                            | 98  | 96  | 94  | 92  | 83  | 74  | 63 | 46 | 25 | 21                | 20 | 19 | 57   | 49 | 38 | 27  | 23       | 1.43 | 0.549    | 0.001 |    |    |    | >100 | 16.  |     |
| 84P2482S   | 64- 77      | 2BX3    | 100                            | 99  | 98  | 96  | 95  | 90  | 85  | 79 | 59 | 30 | 25                | 24 | 23 | 72   | 62 | 48 | 32  | 27       | 0.45 | 0.276    | 0.001 |    |    |    | >100 | 21.  |     |
| 84P2483S   | 77- 92      | 2BX4    | 100                            | 100 | 100 | 100 | 100 | 100 | 99  | 93 | 67 | 37 | 32                | 30 | 28 | 85   | 72 | 53 | 38  | 34       | 0.33 | 0.210    | --    |    |    |    | >100 | 0.   |     |
| 84P2484S   | 92- 98      | 2BX5    | 100                            | 100 | 100 | 100 | 100 | 100 | 100 | 97 | 73 | 41 | 35                | 33 | 32 | 91   | 78 | 59 | 43  | 38       | 0.26 | 0.151    | --    | 39 | 16 |    | >100 | -    |     |

| DEPTH<br>(IN.) | ( W E I G H T F R A C T I O N S ) |    |    |    |    |    |    |    |    |    |    |    |    | ( W E I G H T P E R U N I T V O L U M E G/CC ) |      |      |      | ( V O I D                             |      |      |      |      |      |      |     |
|----------------|-----------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|--|------|------|------|---------------------------------------|------|------|------|------|------|------|-----|
|                | --WHOLE SOIL (MM)--               |    |    |    |    |    |    |    |    |    |    |    |    | --WHOLE SOIL--                                 |      |      |      | --SOIL SURVEY-- ENGINEERING AT 1/3 BA |      |      |      |      |      |      |     |
|                | <75 MM FRACTION--                 |    |    |    |    |    |    |    |    |    |    |    |    | --SOIL SURVEY-- ENGINEERING AT 1/3 BA          |      |      |      | --RATIOS--                            |      |      |      |      |      |      |     |
|                | <PCT OF WHOLE SOIL-->             |    |    |    |    |    |    |    |    |    |    |    |    | --SOIL SURVEY-- ENGINEERING AT 1/3 BA          |      |      |      | --RATIOS--                            |      |      |      |      |      |      |     |
|                | <PCT OF WHOLE SOIL-->             |    |    |    |    |    |    |    |    |    |    |    |    | --SOIL SURVEY-- ENGINEERING AT 1/3 BA          |      |      |      | --RATIOS--                            |      |      |      |      |      |      |     |
|                | 26                                | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39   | 40   | 41   | 42   | 43                                    | 44   | 45   | 46   | 47   | 48   | 49   | 50  |
| 0- 6           | 5                                 | -- | -- | 5  | -- | 2  | 3  | 95 | 5  | -- | 2  | 3  | 95 |  | 1.57 | 1.60 | 1.76 | 1.98                                  | 1.54 | 1.56 | 1.57 | 1.73 | 1.96 | 0.69 | 0.7 |
| 6- 17          | 2                                 | -- | -- | 2  | -- | 1  | 1  | 98 | 2  | -- | 1  | 1  | 98 |  | 1.44 | 1.50 | 1.71 | 1.90                                  | 1.43 | 1.44 | 1.49 | 1.70 | 1.89 | 0.84 | 0.8 |
| 17- 26         | 3                                 | -- | -- | 3  | -- | 1  | 2  | 97 | 3  | -- | 1  | 2  | 97 |  | 1.31 | 1.39 | 1.64 | 1.82                                  | 1.30 | 1.34 | 1.38 | 1.64 | 1.81 | 1.02 | 1.0 |
| 26- 39         | 3                                 | -- | -- | 3  | -- | 1  | 2  | 97 | 3  | -- | 1  | 2  | 97 |  | 1.41 | 1.48 | 1.75 | 1.88                                  | 1.39 | 1.42 | 1.46 | 1.73 | 1.87 | 0.88 | 0.9 |
| 39- 51         | 15                                | -- | -- | 15 | 1  | 8  | 6  | 85 | 15 | 1  | 8  | 6  | 85 |  | 1.78 | 1.82 | 2.05 | 2.11                                  | 1.68 | 1.69 | 1.72 | 1.98 | 2.05 | 0.49 | 0.5 |
| 51- 64         | 37                                | -- | -- | 37 | 8  | 18 | 11 | 63 | 37 | 8  | 18 | 11 | 63 |  | 1.97 | 2.00 | 2.19 | 2.23                                  | 1.71 | 1.72 | 1.75 | 2.00 | 2.06 | 0.35 | 0.5 |
| 64- 77         | 21                                | -- | -- | 21 | 5  | 10 | 6  | 79 | 21 | 5  | 10 | 6  | 79 |  | 1.93 | 1.95 | 2.16 | 2.20                                  | 1.80 | 1.81 | 1.82 | 2.08 | 2.12 | 0.37 | 0.4 |
| 77- 92         | 7                                 | -- | -- | 7  | TR | 1  | 6  | 93 | 7  | TR | 1  | 6  | 93 |  | 1.79 | 1.81 | 2.06 | 2.11                                  | 1.75 | 1.75 | 1.77 | 2.03 | 2.09 | 0.48 | 0.5 |
| 92- 98         | 3                                 | -- | -- | 3  | -- | TR | 3  | 97 | 3  | -- | TR | 3  | 97 |  | 1.75 | 1.78 | 2.03 | 2.09                                  | 1.73 | 1.74 | 1.76 | 2.01 | 2.08 | 0.51 | 0.5 |

TABLE II F



\*\*\* SUPPLEMENTARY CHARACTERIZATION DATA \*\*\*

S84GA-199-002

SAMPLED AS : NOT DESIGNATED  
NATIONAL SOIL SURVEY LABORATORY

; FINE-LOAMY, SILICEOUS, THERMIC TYPIC FRAGIUUDULT  
; PEDON 84P 466, SAMPLE 84P2476-2484

PRINT DATE 10/06/87

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

| DEPTH<br>(IN.) | ( V O L U M E F R A C T I O N S ) ( C / ) ( R A T I O S T O C L A Y ) ( L I N E A R E X T E N S I B I L I T Y ) ( W R D |    |    |    |    |    |    |    |    |    |    |    |    |    |      |      |      |      |       |     |     |     |     |      |     |
|----------------|---|----|----|----|----|----|----|----|----|----|----|----|----|----|------|------|------|------|-------|-----|-----|-----|-----|------|-----|
|                | S O I L ( M M ) A T 1 / 3 B A R ( / N )   |    |    |    |    |    |    |    |    |    |    |    |    |    |      |      |      |      |       |     |     |     |     |      |     |
|                | >2 250 250 75 75 20 5 2- .05- LT PORES RAT FINE ---C E C--- 15 LE <-1/3 BAR TO (PCT)---> WHOLE SOIL ---<2 MM-- WHOLE <2 |    |    |    |    |    |    |    |    |    |    |    |    |    |      |      |      |      |       |     |     |     |     |      |     |
|                | -UP -75 -2 -20 -5 -2 <2 .05 .002 .002 D F -10 CLAY SUM NH4- BAR 1/3 15 OVEN 15 OVEN <--IN/IN-                           |    |    |    |    |    |    |    |    |    |    |    |    |    |      |      |      |      |       |     |     |     |     |      |     |
|                | 51  | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65   | 66   | 67   | 68   | 69    | 70  | 71  | 72  | 73  | 74   | 75  |
| 0- 6           | 3   | -- | -- | 3  | -- | 1  | 2  | 97 | 43 | 9  | 5  | 22 | 19 | 15 | 0.50 | 0.49 | 0.30 | 0.43 | 0.068 | 0.4 | 0.6 | 0.4 | 0.6 | 0.13 | 0.1 |
| 6- 17          | 1   | -- | -- | 1  | -- | 1  | 1  | 99 | 20 | 5  | 27 | 19 | 27 | 13 | 0.53 | 0.17 | 0.11 | 0.32 | 0.027 | 0.2 | 1.4 | 0.2 | 1.4 | 0.03 | 0.0 |
| 17- 26         | 1   | -- | -- | 1  | -- | 1  | 1  | 99 | 21 | 6  | 22 | 18 | 33 | 12 | 0.55 | 0.18 | 0.11 | 0.34 | 0.045 | 1.0 | 2.0 | 1.0 | 2.0 | 0.14 | 0.1 |
| 26- 39         | 2   | -- | -- | 2  | -- | 1  | 1  | 98 | 22 | 4  | 25 | 13 | 34 | 9  | 0.55 | 0.17 | 0.09 | 0.33 | 0.035 | 0.7 | 1.6 | 0.7 | 1.7 | 0.12 | 0.1 |
| 39- 51         | 10  | -- | -- | 10 | 1  | 5  | 4  | 90 | 30 | 4  | 23 | 6  | 27 |    | 0.53 | 0.16 | 0.08 | 0.36 | 0.020 | 0.2 | 0.7 | 0.2 | 0.8 | 0.05 | 0.0 |
| 51- 64         | 27  | -- | -- | 27 | 6  | 13 | 8  | 73 | 29 | 3  | 14 | 4  | 22 |    | 0.49 | 0.16 | 0.09 | 0.40 | 0.027 | 0.2 | 0.5 | 0.2 | 0.8 | 0.06 | 0.0 |
| 64- 77         | 15  | -- | -- | 15 | 4  | 7  | 4  | 85 | 38 | 3  | 17 | 4  | 23 |    | 0.44 | 0.15 | 0.08 | 0.39 | 0.014 | 0.2 | 0.3 | 0.2 | 0.4 | 0.07 | 0.0 |
| 77- 92         | 5   | -- | -- | 5  | TR | 1  | 4  | 95 | 39 | 4  | 19 | 5  | 27 |    | 0.39 | 0.11 | 0.10 | 0.41 | 0.013 |     | 0.4 |     | 0.4 | 0.06 | 0.0 |
| 92- 98         | 2   | -- | -- | 2  | -- | TR | 2  | 98 | 39 | 4  | 21 | 6  | 28 |    | 0.38 | 0.13 | 0.10 | 0.37 | 0.018 | 0.2 | 0.6 | 0.2 | 0.6 | 0.07 | 0.0 |

| DEPTH<br>(IN.) | ( W E I G H T F R A C T I O N S - C L A Y F R E E ) ( - T E X T U R E - ) ( - P S D A (MM) - ) (PH ) ( - E L E C T R I C A L ) ( C U M U L T . A M O U N T S |    |    |    |    |     |    |    |    |    |    |    |    |     |    |     |      |      |      |     |    |    |    |    |
|----------------|--|----|----|----|----|-----|----|----|----|----|----|----|----|-----|----|-----|------|------|------|-----|----|----|----|----|
|                | --W H O L E S O I L-- ---<2 MM F R A C T I O N --- ( D E T E R M I N E D S A N D S I L T C L I N B Y 2- .05- LT CL2 I S T . D U C T . M G / 1 / 3 B A R T O  |    |    |    |    |     |    |    |    |    |    |    |    |     |    |     |      |      |      |     |    |    |    |    |
|                | >2 75 20 2- .05- LT ---S A N D S --- S I L T S C L A Y F I E L D P S D A .05 .002 .002 .01M O H M S M M H O S K G 15 B A R A I R D R                         |    |    |    |    |     |    |    |    |    |    |    |    |     |    |     |      |      |      |     |    |    |    |    |
|                | P C T O F > 2 M M + S A N D + S I L T > ( ---P C T O F S A N D + S I L T --- ) ( ---<2 MM- ) ( ---P C T O F . 2 M M - ) ( - - - <2 MM- - - ) ( W H L S O I L |    |    |    |    |     |    |    |    |    |    |    |    |     |    |     |      |      |      |     |    |    |    |    |
|                | 76   | 77 | 78 | 79 | 80 | 81  | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89  | 90 | 91  | 92   | 93   | 94   | 95  | 96 | 97 | 98 | 99 |
| 0- 6           | 5  | 5  | 5  | 78 | 16 | 9   | 5  | 11 | 22 | 32 | 13 | 6  | 11 | 10  | SL | SL  | 75.4 | 15.8 | 8.8  | 4.6 |    |    |    |    |
| 6- 17          | 4  | 4  | 4  | 77 | 19 | 103 | 6  | 12 | 22 | 29 | 12 | 6  | 14 | 107 | CL | C   | 38.7 | 9.6  | 51.7 | 4.9 |    |    |    |    |
| 17- 26         | 5  | 5  | 5  | 74 | 21 | 77  | 6  | 12 | 21 | 28 | 12 | 6  | 16 | 81  | CL | C   | 43.3 | 12.0 | 44.7 | 4.9 |    |    |    |    |
| 26- 39         | 6  | 6  | 6  | 79 | 15 | 87  | 7  | 14 | 23 | 29 | 11 | 4  | 12 | 92  | L  | C   | 43.5 | 8.5  | 48.0 | 4.7 |    |    |    |    |
| 39- 51         | 23   | 23 | 21 | 68 | 9  | 52  | 12 | 17 | 23 | 26 | 10 | 4  | 8  | 67  | L  | SC  | 52.7 | 7.1  | 40.2 | 4.5 |    |    |    |    |
| 51- 64         | 46   | 46 | 36 | 49 | 6  | 23  | 14 | 18 | 25 | 24 | 8  | 5  | 6  | 43  | L  | SCL | 62.9 | 7.1  | 30.0 | 4.5 |    |    |    |    |
| 64- 77         | 27   | 27 | 21 | 67 | 6  | 29  | 12 | 17 | 26 | 28 | 9  | 4  | 4  | 40  | SL | SCL | 65.6 | 5.7  | 28.7 | 4.4 |    |    |    |    |
| 77- 92         | 10   | 10 | 10 | 81 | 9  | 39  | 12 | 21 | 30 | 22 | 6  | 4  | 6  | 43  | SL | SCL | 63.0 | 6.8  | 30.2 | 4.4 |    |    |    |    |
| 92- 98         | 4  | 4  | 4  | 87 | 9  | 46  | 9  | 19 | 30 | 24 | 8  | 4  | 6  | 48  | SL | SCL | 61.0 | 6.4  | 32.6 | 4.3 |    |    |    |    |

TABLE 116



Print date: 10-06-1987

Pedon: Cecil

NSSL ID #: 84P0465

Soil Survey # S84-GA-199-001

Location: Merriweather Co., Georgia 10 km NE of Warm Springs 100 m N of GA Hwy 85W.

Latitude: 32-57-01-N

Longitude: 084-37-20-W

Classification: Clayey, kaolinitic, thermic Typic Kanhapludult

Physiography: Upland slope in piedmonts

Geomorphic Position:

Microrelief:

Slope Characteristics: 2% plane, northwest facing

Elevation: 248 m MSL

Precipitation: Udic moisture regime

MLRA: 136

Water Table Depth:

Permeability:

Air Temp. (Centigrade): Ann: Sum: Win:

Soil Temp. (Centigrade): Ann: Sum: Win:

Drainage: Well drained

Land Use: Forest land not grazed

Stoniness:

Erosion or Deposition: Moderate

Particle Size Control Section: 15 to 65 cm

Parent Material: residuum from igneous-granite material

Vegetation Codes:

Weather Station: 098535

Diagnostic Horizons: 0 to 15 cm Ochric, 15 to 79 cm Argillic

Described by: Grover Thomas and Talbert Gerald

Date: 04/84

Pockets of quartz gravel in BC B/C Cl less in C2. UTM Zone 16 3648390 m N 722520 m E Woodbury GA 7.5'

Quad. Atlas sheet 44 in Soil Survey for Merriweather Co. GA. Map Unit: Madison sandy loam, 2-6% slopes.

Sampled by Warren Lynn and Reese Berdanier 4/2/84.

O--5 to 0 cm; unknown texture; ; many fine and medium roots.  
Not sampled.

A--0 to 15 cm; reddish brown (5YR 4/4) sandy loam; weak fine granular structure; very friable; many fine and medium roots; abrupt smooth boundary.  
Few fine quartz gravel.  
84P2467

Bt1--15 to 33 cm; red (2.5YR 4/8) clay loam; moderate medium subangular blocky structure; friable; many fine roots; faint-thin clay films on vertical and horizontal faces of peds; clear smooth boundary.  
84P2468

Bt2--33 to 79 cm; red (2.5YR 4/6) clay; moderate medium angular blocky structure parting to subangular blocky; friable; prominent-thin clay films on vertical and horizontal faces of peds; clear wavy boundary.  
Split at 56 cm for sampling. 56 cm to 79 cm is 84P2470.  
84P2469

BC--79 to 104 cm; red (2.5YR 4/6) clay loam; few medium distinct strong brown (7.5YR 5/8) mottles; weak medium angular blocky structure parting to subangular blocky; friable; many fine mica flakes; gradual wavy boundary.  
Schistose bedding planes at 45 degree angles in BC B/C and Cl horizons. Pockets of quartz gravel.  
84P2471

B/C--104 to 154 cm; red (2.5YR 4/8) and strong brown (7.5YR 5/8) clay loam; weak medium angular blocky structure; friable; many fine mica flakes; clear wavy boundary.  
B portion is red and C portion is strong brown and massive. Saprolite 40% by volume. Pocket of quartz gravel.  
84P2472

Cl--154 to 216 cm; red (2.5YR 4/8) loam; common medium distinct strong brown (7.5YR 5/8) mottles; massive; very friable; many fine mica flakes; clear irregular boundary.  
Saprolite crushes to loam. Pockets of quartz gravel.  
84P2473

C2--216 to 254 cm; loam; massive; very friable; common fine mica flakes; clear wavy boundary.  
Mottled red yellowish red and strong brown saprolite that crushes to loam. Pockets of quartz gravel.  
84P2474

C3--254 to 304 cm; fine sandy loam; massive; very friable; common fine mica flakes.  
Mottled white brown and red saprolite that crushes to fine sandy loam.  
84P2475

TABLE 12A



S84GA-199-001

\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*  
(MERIWETHER COUNTY, GEORGIA)

PRINT DATE 10/06/87

SAMPLED AS : CECIL  
REVISED TO :

; CLAYEY, KAOLINITIC, THERMIC TYPIC HAPLUDULT  
; CLAYEY, KAOLINITIC, THERMIC TYPIC KANHAPLUDULT

NSSL - PROJECT 84P 91, PINE MOUNTAIN  
- PEDON 84P 465, SAMPLES 84P2467-2475  
- GENERAL METHODS 1B1A, 2A1, 2B

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
NATIONAL SOIL SURVEY LABORATORY  
LINCOLN, NEBRASKA 68508-3866

|            |            | -1--    | -2--   | -3-- | -4-- | -5--  | -6-- | -7-- | -8--   | -9-- | -10- | -11- | -12- | -13- | -14-   | -15- | -16- | -17-   | -18-   | -19-  | -20- |
|------------|------------|---------|--|------|------|-------|------|------|--------|------|------|------|------|------|--------|------|------|--------|--------|-------|------|
| SAMPLE NO. | DEPTH (CM) | HORIZON | (- - -TOTAL - - -)(- -CLAY- -)(- -SILT- -)(- - - - -SAND- - - - -)(-COARSE FRACTIONS(MM)-)(>2MM) |      |      |       |      |      |        |      |      |      |      |      |        |      |      |        |        |       |      |
|            |            |         | CLAY   | SILT | SAND | FINE  | CO3  | FINE | COARSE | VF   | F    | M    | C    | VC   | WEIGHT |      |      |        |        | WT    |      |
|            |            |         | LT   | .002 | .05  | LT    | LT   | .002 | .02    | .05  | .10  | .25  | .5   | 1    | 2      | 5    | 20   | .1     | PCT OF | WHOLE | SOIL |
|            |            |         | .002   | .05  | .2   | .0002 | .002 | .02  | .05    | .10  | .25  | .50  | 1    | 2    | 5      | 20   | .1   | PCT OF | WHOLE  | SOIL  | SOIL |
| 84P2467S   | 0- 15      | A       | 7.8  | 13.5 | 78.7 | 3.4   |      | 7.0  | 6.5    | 13.9 | 26.8 | 19.1 | 12.8 | 6.1  | 7      | 11   | 1    | 71     | 19     |       |      |
| 84P2468S   | 15- 33     | BT1     | 38.9   | 17.8 | 43.3 | 16.6  |      | 12.9 | 4.9    | 7.9  | 14.7 | 10.9 | 6.6  | 3.2  | 7      | 5    | --   | 43     | 12     |       |      |
| 84P2469S   | 33- 56     | BT2     | 55.0   | 18.4 | 26.6 | 24.0  |      | 15.0 | 3.4    | 4.9  | 8.0  | 6.0  | 5.1  | 2.6  | 7      | 4    | --   | 30     | 11     |       |      |
| 84P2470S   | 56- 79     | BT2     | 63.3   | 17.8 | 18.9 | 29.8  |      | 15.1 | 2.7    | 4.4  | 5.1  | 3.5  | 3.1  | 2.8  | 4      | 2    | --   | 20     | 6      |       |      |
| 84P2471S   | 79-104     | BC      | 47.4   | 25.8 | 26.8 | 20.4  |      | 21.6 | 4.2    | 6.5  | 7.7  | 4.9  | 4.1  | 3.6  | 8      | 5    | --   | 31     | 13     |       |      |
| 84P2472S   | 104-154    | B/C     | 31.2   | 29.7 | 39.1 | 12.2  |      | 24.0 | 5.7    | 8.3  | 10.6 | 6.3  | 6.2  | 7.7  | 11     | 10   | --   | 45     | 21     |       |      |
| 84P2473S   | 154-216    | C1      | 19.4   | 33.0 | 47.6 | 6.9   |      | 26.6 | 6.4    | 13.3 | 17.4 | 5.6  | 5.3  | 6.0  | 11     | 7    | --   | 46     | 18     |       |      |
| 84P2474S   | 216-254    | C2      | 14.3   | 30.9 | 54.8 | 4.8   |      | 24.2 | 6.7    | 19.8 | 23.7 | 6.7  | 2.8  | 1.8  | 2      | TR   | --   | 36     | 2      |       |      |
| 84P2475S   | 254-304    | C3      | 3.8  | 20.4 | 75.8 | 1.1   |      | 14.0 | 6.4    | 13.8 | 21.5 | 15.8 | 15.3 | 9.4  | 3      | 1    | --   | 64     | 4      |       |      |

| DEPTH (CM) | ORGN |       | TOTAL |  | EXTR |  | TOTAL   |     | DITH-CIT |  | (RATIO/CLAY) |      | (ATTERBERG) |  | BULK DENSITY |    | COLE       |      | WATER CONTENT |  | WRD    |      |
|------------|------|-------|-------|--|------|--|---------|-----|----------|--|--------------|------|-------------|--|--------------|----|------------|------|---------------|--|--------|------|
|            | C    |       | N     |  | P    |  | S       |     | FE       |  | AL           |      | CEC         |  | FIELD 1/3    |    | OVEN WHOLE |      | FIELD 1/10    |  | 1/3    |      |
|            | 6A1C |       | 6B3A  |  | 6S3  |  | 6R3A    |     | 6C2B     |  | 6G7A         |      | 6D2A        |  | 4F1          |    | 4A3A       |      | 4A1D          |  | 4A1H   |      |
|            | PCT  |       | <2MM  |  | PPM  |  | PERCENT |     | OF       |  | <2MM         |      | PCT         |  | <0.4MM       |    | G/CC       |      | CM/CM         |  | PCT OF |      |
| 0- 15      | 0.64 | 0.006 |       |  |      |  | 0.8     | 0.1 |          |  | 0.33         | 0.45 |             |  |              |    | 1.49       | 1.51 | 0.004         |  | 8.2    | 3.5  |
| 15- 33     | 0.16 | 0.022 |       |  |      |  | 3.3     | 0.3 |          |  | 0.12         | 0.39 |             |  |              |    | 1.58       | 1.62 | 0.008         |  | 15.1   |      |
| 33- 56     | 0.10 | 0.012 |       |  |      |  | 5.7     | 0.4 |          |  | 0.10         | 0.41 |             |  | 62           | 25 | 1.38       | 1.45 | 0.016         |  | 27.2   | 22.8 |
| 56- 79     | 0.12 | 0.012 |       |  |      |  | 7.1     | 0.5 |          |  | 0.12         | 0.45 |             |  |              |    | 1.27       | 1.36 | 0.022         |  | 33.6   | 28.2 |
| 79-104     | 0.08 |       |       |  |      |  | 7.0     | 0.5 |          |  | 0.11         | 0.49 |             |  | 65           | 22 | 1.37       | 1.45 | 0.018         |  | 30.0   | 23.4 |
| 104-154    | 0.05 |       |       |  |      |  | 6.8     | 0.4 |          |  | 0.13         | 0.56 |             |  |              |    | 1.36       | 1.43 | 0.015         |  | 31.3   | 17.4 |
| 154-216    | 0.03 |       |       |  |      |  | 5.6     | 0.3 |          |  | 0.20         | 0.71 |             |  |              |    | 1.27       | 1.32 | 0.012         |  | 34.1   | 13.8 |
| 216-254    | 0.03 |       |       |  |      |  | 3.9     | 0.3 |          |  | 0.26         | 0.76 |             |  | 50           | 6  | 1.29       | 1.33 | 0.010         |  | 29.6   | 10.9 |
| 254-304    | 0.03 |       |       |  |      |  | 0.8     | 0.1 |          |  | 0.53         | 0.97 |             |  |              |    | 1.22       | 1.25 | 0.008         |  | 26.1   | 3.7  |

AVERAGES, DEPTH 15- 65: PCT CLAY 51 PCT .1-75MM 33

TABLE 12B



\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*

S84GA-199-001

SAMPLED AS : CECIL  
NATIONAL SOIL SURVEY LABORATORY

; CLAYEY, KAOLINITIC, THERMIC TYPIC HAPLUDULT  
; PEDON 84P 465, SAMPLE 84P2467-2475

PRINT DATE 10/06/87

|               | -1--                           | -2--                      | -3--                      | -4--                     | -5--                   | -6--                 | -7--       | -8--                | -9--                | -10-                | -11-              | -12-              | -13-                     | -14-                         | -15-               | -16- | -17-               | -18-              | -19-                         | -20-               |
|---------------|--------------------------------|---------------------------|---------------------------|--------------------------|------------------------|----------------------|------------|---------------------|---------------------|---------------------|-------------------|-------------------|--------------------------|------------------------------|--------------------|------|--------------------|-------------------|------------------------------|--------------------|
|               | (- NH4OAC EXTRACTABLE BASES -) |                           |                           |                          |                        | ACID-                | EXTR       | (- - - CEC - - -)   |                     |                     | AL                | -BASE             | SAT-                     | CO3 AS                       | RES.               |      | COND. (            | - - -             | -PH -                        | - - -)             |
| DEPTH<br>(CM) | CA<br>5B5A<br>6N2E<br>-<-      | MG<br>5B5A<br>6O2D<br>-<- | NA<br>5B5A<br>6P2B<br>-<- | K<br>5B5A<br>6Q2B<br>-<- | SUM<br>BASES<br>-MEQ / | ITY<br>6H5A<br>100 G | AL<br>6G9A | SUM<br>CATS<br>5A3A | NH4-<br>OAC<br>5A8B | + AL<br>5A3B<br>->- | SAT<br>5G1<br>-<- | SUM<br>5C3<br>-<- | NH4<br>OAC<br>5C1<br>-<- | CACO3<br><2MM<br>6E1G<br>-<- | OHMS<br>/CM<br>8E1 |      | MMHOS<br>/CM<br>81 | KCL<br>IN<br>8C1G | CACL2<br>.01M<br>8C1F<br>1:2 | H2O<br>8C1F<br>1:1 |
| 0- 15         | 0.1                            | TR                        | TR                        | TR                       | 0.1                    | 2.8                  | 0.7        | 2.9                 | 2.6                 | 0.8                 | - 88              | 3                 | 4                        |                              |                    |      |                    | 3.9               | 4.2                          | 4.7                |
| 15- 33        | 0.5                            | 0.3                       | TR                        | TR                       | 0.8                    | 4.5                  | 0.8        | 5.3                 | 4.5                 | 1.6                 | 50                | 15                | 18                       |                              |                    |      |                    | 4.2               | 4.5                          | 5.1                |
| 33- 56        | 0.7                            | 0.7                       | TR                        | 0.1                      | 1.5                    | 6.6                  | 0.6        | 8.1                 | 5.6                 | 2.1                 | 29                | 19                | 27                       |                              |                    |      |                    | 4.4               | 4.6                          | 5.2                |
| 56- 79        | 0.2                            | 0.7                       | TR                        | 0.1                      | 1.0                    | 8.8                  | 1.1        | 9.8                 | 7.5                 | 2.1                 | 52                | 10                | 13                       |                              |                    |      |                    | 4.3               | 4.5                          | 5.2                |
| 79-104        | 0.1                            | 0.3                       | 0.1                       | TR                       | 0.5                    | 7.3                  | 1.1        | 7.8                 | 5.4                 | 1.6                 | 69                | 6                 | 9                        |                              |                    |      |                    | 5.2               | 4.5                          | 5.4                |
| 104-154       | TR                             | 0.2                       | 0.1                       | 0.1                      | 0.4                    | 6.2                  | 1.1        | 6.6                 | 4.2                 | 1.5                 | 73                | 6                 | 10                       |                              |                    |      |                    | 4.3               | 4.6                          | 5.4                |
| 154-216       | --                             | 0.1                       | TR                        | TR                       | 0.1                    | 5.5                  | 1.6        | 5.6                 | 3.9                 | 1.7                 | 94                | 2                 | 3                        |                              |                    |      |                    | 4.3               | 4.4                          | 5.2                |
| 216-254       | --                             | 0.1                       | TR                        | TR                       | 0.1                    | 4.7                  | 1.7        | 4.8                 | 3.7                 | 1.8                 | 94                | 2                 | 3                        |                              |                    |      |                    | 4.2               | 4.3                          | 5.1                |
| 254-304       | --                             | 0.1                       | TR                        | TR                       | 0.1                    | 2.1                  | 0.9        | 2.2                 | 2.0                 | 1.0                 | 90                | 5                 | 5                        |                              |                    |      |                    | 4.2               | 4.3                          | 5.3                |

ANALYSES: S= ALL ON SIEVED <2MM BASIS

T19846-120



S84GA-199-001

; CLAYEY, KAOLINITIC, THERMIC TYPIC HAPLUDULT  
; PEDON 84P 465, SAMPLE 84P2467-2475

PRINT DATE 10/06/87

[illegible]

|         |      |      |      |      |      |      |      |      |      |     |      |
|---------|------|------|------|------|------|------|------|------|------|-----|------|
| 84P2469 | TCLY | KK 5 | VR 2 | GI 2 | GE 2 | HE 2 | KK49 | GI 2 | 12.7 | 0.3 | KAOL |
| 84P2471 | TCLY | KK 5 | VR 2 | GI 2 | GE 2 | HE 2 | KK56 | GI 1 | 13.7 | 0.3 | KAOL |

|       | <     | - | - | -   | -         | -     | -   | -       | -       | SAND | -         | SILT MINERALOGY (2.0-0.002mm) | - | - | -           | - | -   | -     | - | > |
|-------|-------|---|---|-----|-----------|-------|-----|---------|---------|------|-----------|-------------------------------|---|---|-------------|---|-----|-------|---|---|
| DEPTH | FRACT | < | - | -   | -         | X-RAY | -   | -><     | THERMAL | -    | -><       | OPTICAL                       | - | - | -           | - | ->< | INTER |   |   |
|       | ION   | < | - | -   | -         |       | ->< | DTA     | -><     | TGA  | ->TOT RE< | -                             | - | - | GRAIN COUNT | - | ->< | PRETA |   |   |
| (cm)  |       | < | - | -   | -         | 7A2I  | -   | -><     | 7A3b    | -><  | 7A4b      | -><                           | - | - | 7Bla        | - | ->< | TION  |   |   |
|       |       | < | - | ->< | Peak Size | -     | ->< | Percent | -       | -><  | -         | -><                           | - | - | Percent     | - | ->< |       |   |   |

|         |    |    |      |      |      |      |      |      |      |
|---------|----|----|------|------|------|------|------|------|------|
| 0-15    | FS | 96 | QZ95 | FK 3 | OP 1 | EPTR | MSTR | BTTR | SILI |
| 0-15    | FS |    | ZRtr | SRtr |      |      |      |      |      |
| 33-56   | FS | 83 | QZ73 | MS 8 | RA 5 | BT 5 | OP 5 | FK 4 | SMIX |
| 33-56   | FS |    | EPtr | ZRtr |      |      |      |      |      |
| 79-104  | FS | 67 | QZ57 | BT29 | RA 6 | OP 4 | MS 2 | FK 1 | SMIX |
| 216-254 | FS | 28 | BT70 | QZ25 | OP 2 | MS 2 | FK 1 | RA 1 | HICA |
| 254-304 | FS | 13 | FK43 | BT41 | QZ13 | SR 2 | MS 1 | AR 1 | SMIX |
| 254-304 | FS |    | RUtr | OPtr |      |      |      |      |      |

TABLE 120



\*\*\* PRIMARY CHARACTERIZATION DATA \*\*\*

S84GA-199-001

PRINT DATE 10/06/87

SAMPLED AS : CECIL ; CLAYEY, KAOLINITIC, THERMIC TYPIC HAPLUDULT  
NATIONAL SOIL SURVEY LABORATORY ; PEDON 84P 465, SAMPLE 84P2467-2475

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

| DEPTH<br>(cm) | FINE EARTH MINERALOGY (<2.0mm) |      |      |      |      |      |  |  |  |  |         |       |  |  |  |  |  |  |  |  |
|---------------|--------------------------------|------|------|------|------|------|--|--|--|--|---------|-------|--|--|--|--|--|--|--|--|
|               | X-RAY                          |      |      |      |      |      |  |  |  |  | THERMAL |       |  |  |  |  |  |  |  |  |
|               | 7A21                           |      |      |      |      |      |  |  |  |  | 7A6     |       |  |  |  |  |  |  |  |  |
|               | Peak Size                      |      |      |      |      |      |  |  |  |  | Percent |       |  |  |  |  |  |  |  |  |
| 15- 33        | FETH                           | QZ 3 | KK 2 | HE 1 | GI 1 |      |  |  |  |  | KK13    | GI 1  |  |  |  |  |  |  |  |  |
| 33- 56        | FETH                           | QZ 3 | KK 2 | HE 1 | GI 1 |      |  |  |  |  | KK19    | GI 1  |  |  |  |  |  |  |  |  |
| 56- 79        | FETH                           | KK 3 | QZ 2 | HE 2 | GI 1 |      |  |  |  |  | KK19    | GI 1  |  |  |  |  |  |  |  |  |
| 79-104        | FETH                           | KK 3 | QZ 3 | HE 2 |      |      |  |  |  |  | KK27    | GI tr |  |  |  |  |  |  |  |  |
| 216-254       | FETH                           | KK 4 | QZ 2 | HE 2 | MI 1 | GI 1 |  |  |  |  | KK29    |       |  |  |  |  |  |  |  |  |

KIND OF MINERAL:

|             |                 |              |                 |              |                |
|-------------|-----------------|--------------|-----------------|--------------|----------------|
| QZ quartz   | FK potas-feld   | OP opaques   | EP epidote      | MS muscovite | BT biotite     |
| ZR zircon   | SR sericite     | KK kaolinite | HE hematite     | GI gibbsite  | VR vermiculite |
| GE goethite | RA resist-aggre | MI mica      | AR weath-aggreg | RU rutile    |                |

RELATIVE PEAK SIZE: 5 Very Large 4 Large 3 Medium 2 Small 1 Very Small 6 No Peaks

INTERPRETATION (BY HORIZON):

CMIX = MIXED (CLAY) KAOL = KAOLINITIC MICA = MICACEOUS SILI = SILICEOUS SMIX = MIXED (SAND)

PEDON MINERALOGY

BASED ON SAND/SILT: MIXED  
BASED ON CLAY: KAOLINITIC  
FAMILY MINERALOGY: KAOLINITIC  
COMMENTS:

TABLE 12E



S84GA-199-001

\*\*\* SUPPLEMENTARY CHARACTERIZATION DATA \*\*\*  
(MERIWETHER COUNTY, GEORGIA)

PRINT DATE 10/06/87

SAMPLED AS : CECIL ; CLAYEY, KAOLINITIC, THERMIC TYPIC HAPLUDULT  
REVISED TO : ; CLAYEY, KAOLINITIC, THERMIC TYPIC KANHAPLUDULT

NSSL - PROJECT 84P 91, PINE MOUNTAIN  
- PEDON 84P 465, SAMPLES 84P2467-2475  
- GENERAL METHODS (ENGINEERING FRACTIONS ARE CALCULATED FROM USDA FRACTION SIZES)

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
NATIONAL SOIL SURVEY LABORATORY  
LINCOLN, NEBRASKA 68508-3866

|             |             | -1--    | -2--                              | -3--                  | -4--                  | -5--                  | -6--                  | -7--                  | -8--                  | -9--                  | -10-                  | -11-                  | -12-  | -13-                        | -14-                        | -15-                        | -16-                        | -17-                        | -18-                        | -19-                        | -20-                              |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |      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| SAMPLE NO.  | DEPTH (IN.) | HORIZON | ENGINEERING PASSING PERCENTAGE    |                       |                       |                       |                       |                       |                       |                       |                       |                       | USDA SIEVE  |                             |                             |                             | CUMULATIVE CURVE            |                             |                             |                             | FRACTIONS(<76MM) DIAMETERS(MM) AT |                             |                             | ATTE- GRADATIO              |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |          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                |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |
|             |             |         | P E R C E N T A G E               |                       |                       |                       |                       |                       |                       |                       |                       |                       | S I E V E   |                             |                             |                             | LESS THAN                   |                             |                             |                             | 60 50 10                          |                             |                             | BERG UN- CUR                |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                     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     |
|             |             |         | P E R C E N T A G E               |                       |                       |                       |                       |                       |                       |                       |                       |                       | S I E V E   |                             |                             |                             | 1. .5 .25 .10 .05           |                             |                             |                             | PERCENTILE-->                     |                             |                             | LL PI FMTY                  |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |          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|             |             |         | 3 2 1 3/2 1 3/4 3/8               | 3 2 1 3/2 1 3/4 3/8   | 3 2 1 3/2 1 3/4 3/8   | 3 2 1 3/2 1 3/4 3/8   | 3 2 1 3/2 1 3/4 3/8   | 3 2 1 3/2 1 3/4 3/8   | 3 2 1 3/2 1 3/4 3/8   | 3 2 1 3/2 1 3/4 3/8   | 3 2 1 3/2 1 3/4 3/8   | 3 2 1 3/2 1 3/4 3/8   | 20 5 2  | 20 5 2                      | 20 5 2                      | 20 5 2                      | 14 15 16 17 18              | 19 20 21                    | 22 23                       | 24                          | 2                                 |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |    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|
| 84P2467S    | 0- 6        | A       | 100                               | 100                   | 100                   | 99                    | 99                    | 94                    | 88                    | 81                    | 62                    | 24                    | 12  | 9                           | 6                           | 76                          | 66                          | 50                          | 29                          | 17                          | 0.39                              | 0.248                       | 0.009                       |                             |                             | 43.4                        | 3.                          |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                   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|                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                     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| 84P2468S    | 6- 13       | BT1     | 100                               | 100                   | 100                   | 100                   | 100                   | 98                    | 95                    | 88                    | 77                    | 54                    | 46  | 39                          | 34                          | 85                          | 79                          | 70                          | 57                          | 50                          | 0.13                              | 0.051                       | --                          | --                          |                             | >100                        | --                          |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                   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| 84P2469S    | 13- 22      | BT2     | 100                               | 100                   | 100                   | 100                   | 100                   | 98                    | 96                    | 89                    | 81                    | 68                    | 62  | 54                          | 49                          | 87                          | 82                          | 77                          | 70                          | 65                          | 0.01                              | 0.002                       | --                          | --                          | 62 25                       | 42.0                        | 0.                          |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                   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| 84P2470S    | 22- 31      | BT2     | 100                               | 100                   | 100                   | 100                   | 100                   | 99                    | 98                    | 94                    | 88                    | 79                    | 74  | 65                          | 60                          | 91                          | 88                          | 85                          | 80                          | 76                          | --                                | 0.001                       | --                          | --                          |                             | 7.4                         | 0.                          |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                   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        |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |
| 84P2471S    | 31- 41      | BC      | 100                               | 100                   | 100                   | 100                   | 100                   | 98                    | 95                    | 87                    | 79                    | 67                    | 60  | 49                          | 41                          | 84                          | 80                          | 76                          | 69                          | 64                          | 0.02                              | 0.006                       | --                          | --                          | 65 22                       | 57.0                        | 0.                          |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                   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                   |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                     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| 84P2472S    | 41- 61      | B/C     | 100                               | 100                   | 100                   | 100                   | 100                   | 95                    | 90                    | 79                    | 67                    | 52                    | 44  | 32                          | 25                          | 73                          | 68                          | 63                          | 55                          | 48                          | 0.18                              | 0.061                       | 0.001                       | --                          |                             | >100                        | 0.                          |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                   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| 84P2473S    | 61- 85      | C1      | 100                               | 100                   | 100                   | 100                   | 100                   | 97                    | 93                    | 82                    | 72                    | 49                    | 38  | 25                          | 16                          | 77                          | 73                          | 68                          | 54                          | 43                          | 0.15                              | 0.078                       | 0.001                       | --                          |                             | >100                        | 0.                          |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                   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| 84P2474S    | 85-100      | C2      | 100                               | 100                   | 100                   | 100                   | 100                   | 100                   | 98                    | 92                    | 55                    | 38                    | 23  | 14                          | 96                          | 93                          | 87                          | 64                          | 44                          | 0.09                        | 0.061                             | 0.001                       | --                          | 50 6                        | 84.7                        | 1.                          |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                   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| 84P2475S    | 100-119     | C3      | 100                               | 100                   | 100                   | 100                   | 100                   | 99                    | 96                    | 68                    | 31                    | 17                    | 9   | 4                           | 87                          | 72                          | 57                          | 36                          | 23                          | 0.29                        | 0.182                             | 0.006                       | --                          | --                          |                             | 48.0                        | 3.                          |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                   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|             |             |         |                                   |                       |                       |                       |                       |                       |                       |                       |                       |                       |   |                             |                             |                             |                             |                             |                             |                             |                                   |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |          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| DEPTH (IN.) |             |         | ( W E I G H T F R A C T I O N S ) |                       |                       |                       |                       |                       |                       |                       |                       |                       | ( W E I G H T P E R U N I T V O L U M E G / C C ) |                             |                             |                             | ( V O I D R A T I O S )     |                             |                             |                             |                                   |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                      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    |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |      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            |                             |
|             |             |         | ---W H O L E S O I L ( M M ) ---  |                       |                       |                       |                       |                       |                       |                       |                       |                       | ---WHOLE SOIL---                                  |                             |                             |                             | ---<2 MM FRACTION---        |                             | ---RATIOS---                |                             |                                   |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |   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    |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |      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            |                             |
|             |             |         | SOIL SURVEY ENGINEERING           |                       |                       |                       |                       |                       |                       |                       |                       |                       | SOIL SURVEY ENGINEERING                           |                             |                             |                             | SOIL SURVEY ENGINEERING     |                             | AT 1/3 BA                   |                             |                                   |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |   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    |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |                             |      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            |                             |
|             |             |         | >2 250 250 75 75 20 5 75 75 20 5  | >2 250 250 75 75 20 5 | >2 250 250 75 75 20 5 | >2 250 250 75 75 20 5 | >2 250 250 75 75 20 5 | >2 250 250 75 75 20 5 | >2 250 250 75 75 20 5 | >2 250 250 75 75 20 5 | >2 250 250 75 75 20 5 | >2 250 250 75 75 20 5 | 1/3 SOIL SURVEY ENGINEERING                       | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING       | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING | 1/3 SOIL SURVEY ENGINEERING |

TABLE 12F



\*\*\* SUPPLEMENTARY CHARACTERIZATION DATA \*\*\*

S84GA-199-001

SAMPLED AS : CECIL  
NATIONAL SOIL SURVEY LABORATORY

; CLAYEY, KAOLINITIC, THERMIC TYPIC HAPLUDULT  
; PEDON 84P 465, SAMPLE 84P2467-2475

PRINT DATE 10/06/87

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

| DEPTH<br>(IN.) | ( V O L U M E F R A C T I O N S ) ( C / ) ( R A T I O S T O C L A Y ) ( L I N E A R E X T E N S I B I L I T Y ) ( W R D |    |    |    |    |    |    |    |    |    |             |    |                      |     |                       |      |                       |      |            |     |          |     |     |      |     |
|----------------|---|----|----|----|----|----|----|----|----|----|-------------|----|----------------------|-----|-----------------------|------|-----------------------|------|------------|-----|----------|-----|-----|------|-----|
|                | ---W H O L E S O I L (MM) A T 1/3 B A R---  |    |    |    |    |    |    |    |    |    | ( / N )     |    | ---<2 MM FRACTION--- |     |                       |      | WHOLE SOIL ---<2 MM-- |      |            |     | WHOLE <2 |     |     |      |     |
|                | >2 250 250 75 75 20 5 2- .05- LT P O R E S R A T F I N E  |    |    |    |    |    |    |    |    |    | ---C E C--- |    | 15 L E               |     | <-1/3 BAR TO (PCT)--- |      |                       |      | SOIL MM    |     |          |     |     |      |     |
|                | -UP -75 -2 -20 -5 -2 <2 .05 .002 .002 D F -10   |    |    |    |    |    |    |    |    |    | CLAY        |    | SUM NH4- BAR 1/3     |     | 15 OVEN 15 OVEN       |      |                       |      | <--IN/IN-- |     |          |     |     |      |     |
|                | <---PCT OF WHOLE SOIL---  |    |    |    |    |    |    |    |    |    |             |    | CATS OAC H2O BAR     |     | BAR -DRY BAR -DRY     |      |                       |      |            |     |          |     |     |      |     |
|                | 51  | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61          | 62 | 63                   | 64  | 65                    | 66   | 67                    | 68   | 69         | 70  | 71       | 72  | 73  | 74   | 75  |
| 0- 6           | 12  | -- | -- | 12 | 1  | 7  | 4  | 88 | 40 | 7  | 4           | 27 | 11                   | 106 | 0.44                  | 0.37 | 0.33                  | 0.45 | 0.051      | 0.2 | 0.2      | 0.2 | 0.4 | 0.06 | 0.0 |
| 6- 13          | 7   | -- | -- | 7  | -- | 3  | 4  | 93 | 24 | 10 | 21          | 37 |                      | 7   | 0.43                  | 0.14 | 0.12                  | 0.39 | 0.021      |     |          |     |     |      |     |
| 13- 22         | 6   | -- | -- | 6  | -- | 2  | 4  | 94 | 13 | 9  | 27          | 10 | 35                   | 8   | 0.44                  | 0.15 | 0.10                  | 0.41 | 0.031      | 0.2 | 1.6      | 0.2 | 1.7 | 0.06 | 0.0 |
| 22- 31         | 3   | -- | -- | 3  | -- | 1  | 2  | 97 | 9  | 8  | 29          | 9  | 42                   | 10  | 0.47                  | 0.15 | 0.12                  | 0.45 | 0.036      | 0.5 | 2.2      | 0.5 | 2.3 | 0.07 | 0.0 |
| 31- 41         | 7   | -- | -- | 7  | -- | 3  | 4  | 93 | 13 | 12 | 23          | 7  | 38                   |     | 0.43                  | 0.16 | 0.11                  | 0.49 | 0.040      | 0.5 | 1.8      | 0.5 | 1.9 | 0.08 | 0.0 |
| 41- 61         | 12  | -- | -- | 12 | -- | 6  | 6  | 88 | 18 | 14 | 14          | 5  | 38                   |     | 0.39                  | 0.21 | 0.13                  | 0.56 | 0.054      | 0.7 | 1.5      | 0.7 | 1.7 | 0.17 | 0.1 |
| 61- 85         | 10  | -- | -- | 10 | -- | 4  | 6  | 90 | 21 | 14 | 9           | 9  | 39                   |     | 0.36                  | 0.29 | 0.20                  | 0.71 | 0.067      | 0.7 | 1.2      | 0.8 | 1.3 | 0.23 | 0.2 |
| 85-100         | 1   | -- | -- | 1  | -- | TR | 1  | 99 | 26 | 15 | 7           | 13 | 38                   |     | 0.34                  | 0.34 | 0.26                  | 0.76 | 0.070      | 0.8 | 1.0      | 0.8 | 1.0 | 0.24 | 0.2 |
| 100-119        | 2   | -- | -- | 2  | -- | 1  | 1  | 98 | 34 | 9  | 2           | 22 | 31                   |     | 0.29                  | 0.58 | 0.53                  | 0.97 | 0.211      | 0.8 | 0.8      | 0.8 | 0.8 | 0.27 | 0.2 |

| DEPTH<br>(IN.) | ( W E I G H T F R A C T I O N S - C L A Y F R E E ) ( - T E X T U R E - ) ( - P S D A (MM) - ) ( P H ) ( - E L E C T R I C A L ) ( C U M U L T . A M O U N T S |    |    |    |    |     |    |    |    |    |    |    |    |     |     |      |      |      |      |     |    |    |    |    |     |
|----------------|--|----|----|----|----|-----|----|----|----|----|----|----|----|-----|-----|------|------|------|------|-----|----|----|----|----|-----|
|                | ---W H O L E S O I L---<2 MM F R A C T I O N---<2 MM--> WHOLE SOIL ---<2 MM--> WHOLE   |    |    |    |    |     |    |    |    |    |    |    |    |     |     |      |      |      |      |     |    |    |    |    |     |
|                | >2 75 20 2- .05- LT ---SANDS--- SILTS CL IN BY 2- .05- LT CL2 IST. DUCT. MG/ 1/3 BAR T O   |    |    |    |    |     |    |    |    |    |    |    |    |     |     |      |      |      |      |     |    |    |    |    |     |
|                | -2 -2 .05 .002.002 VC C M F VF C F A Y F I E L D P S D A .05 .002 .002 .01M OHMS MMHOS KG 15BAR AIRDR  |    |    |    |    |     |    |    |    |    |    |    |    |     |     |      |      |      |      |     |    |    |    |    |     |
|                | PCT OF >2MM+SAND+SILT> (-----PCT OF SAND+SILT-----) (---<2 MM-) (---PCT OF .2MM-) (---<2 MM- - - -) (WHL SOIL  |    |    |    |    |     |    |    |    |    |    |    |    |     |     |      |      |      |      |     |    |    |    |    |     |
|                | 76   | 77 | 78 | 79 | 80 | 81  | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89  | 90  | 91   | 92   | 93   | 94   | 95  | 96 | 97 | 98 | 99 | 100 |
| 0- 6           | 20   | 20 | 19 | 68 | 12 | 7   | 7  | 14 | 21 | 29 | 15 | 7  | 8  | 8   | SL  | LS   | 78.7 | 13.5 | 7.8  | 4.2 |    |    |    |    |     |
| 6- 13          | 18   | 18 | 18 | 58 | 24 | 52  | 5  | 11 | 18 | 24 | 13 | 8  | 21 | 64  | CL  | CL   | 43.3 | 17.8 | 38.9 | 4.5 |    |    |    |    |     |
| 13- 22         | 22   | 22 | 22 | 46 | 32 | 96  | 6  | 11 | 13 | 18 | 11 | 8  | 33 | 122 | C   | C    | 26.6 | 18.4 | 55.0 | 4.6 |    |    |    |    |     |
| 22- 31         | 15   | 15 | 15 | 44 | 41 | 147 | 8  | 8  | 10 | 14 | 12 | 7  | 41 | 172 | C   | C    | 18.9 | 17.8 | 63.3 | 4.5 |    |    |    |    |     |
| 31- 41         | 22   | 22 | 22 | 40 | 38 | 70  | 7  | 8  | 9  | 15 | 12 | 8  | 41 | 90  | CL  | C    | 26.8 | 25.8 | 47.4 | 4.5 |    |    |    |    |     |
| 41- 61         | 28   | 28 | 28 | 41 | 31 | 33  | 11 | 9  | 9  | 15 | 12 | 8  | 35 | 45  | CL  | CL   | 39.1 | 29.7 | 31.2 | 4.6 |    |    |    |    |     |
| 61- 85         | 21   | 21 | 21 | 46 | 32 | 19  | 7  | 7  | 7  | 22 | 17 | 8  | 33 | 24  | L   | L    | 47.6 | 33.0 | 19.4 | 4.4 |    |    |    |    |     |
| 85-100         | 2  | 2  | 2  | 62 | 35 | 16  | 2  | 3  | 8  | 28 | 23 | 8  | 28 | 17  | L   | VFSL | 54.8 | 30.9 | 14.3 | 4.3 |    |    |    |    |     |
| 100-119        | 4  | 4  | 4  | 75 | 20 | 4   | 10 | 16 | 16 | 22 | 14 | 7  | 15 | 4   | FSL | LS   | 75.8 | 20.4 | 3.8  | 4.3 |    |    |    |    |     |

TABLE 126



TABLE 12H

Table 12h S84Ga-199-001 Weight Percent Oxides

| Horizon<br>Sample No.  | A<br>2467 | Bt1<br>2468 | Bt2<br>2469 | Bt2<br>2470 | BC<br>2471 | B/C<br>2472 | C1<br>2473 | C2<br>2474 | C3<br>2475 |
|--|-----------|-------------|-------------|-------------|------------|-------------|------------|------------|------------|
| SiO <sub>2</sub>   | 89.5      |             |             | 76.8        | 49.5       |             | 51.7       |            | 67.1       |
| Al <sub>2</sub> O <sub>3</sub>                                       | 5.7       |             |             | 9.0         | 25.6       |             | 25.6       |            | 18.5       |
| Fe <sub>2</sub> O <sub>3</sub>                                       | 1.2       |             |             | 10.3        | 12.8       |             | 4.6        |            | 2.3        |
| MgO  |           |             |             |             |            |             |            |            |            |
| CaO  | 0.11      |             |             | 0.11        | 0.10       |             | 0.10       |            | 0.11       |
| Na <sub>2</sub> O  |           |             |             |             |            |             |            |            |            |
| K <sub>2</sub> O   | 0.52      |             |             | 0.42        | 0.38       |             | 0.21       |            | 5.5        |
| TiO <sub>2</sub>   | 0.95      |             |             | 0.48        | 1.05       |             | 1.08       |            | 0.35       |
| P <sub>2</sub> O <sub>5</sub>  | 0.12      |             |             | 0.02        | 0.12       |             | 0.14       |            | 0.14       |
| MnO  | 0.06      |             |             | 0.03        | 0.04       |             | 0.05       |            | 0.03       |
| SO <sub>2</sub>  | 0.07      |             |             | 0.08        | 0.08       |             | 0.12       |            | 0.06       |
| ZrO <sub>2</sub>   |           |             |             |             |            |             |            |            |            |
| Total  | 98.2      |             |             | 97.2        | 89.8       |             | 83.5       |            | 94.0       |
| $\frac{\text{Fe}_2\text{O}_3 + \text{Al}_2\text{O}_3}{\text{SiO}_2}$ | 8%        |             |             | 25%         | 78%        |             | 58%        |            | 31%        |



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