GEOLOGY AND GROUND-WATER RESOURCES OF CHEROKEE COUNTY, ALABAMA

A Reconnaissance

By Lawson V. Causey

GEOLOGICAL SURVEY OF ALABAMA *BULLETIN 79*

GEOLOGY AND GROUND-WATER RESOURCES OF CHEROKEE COUNTY, ALABAMA

A Reconnaissance

By Lawson V. Causey

GEOLOGICAL SURVEY OF ALABAMA BULLETIN 79

GEOLOGICAL SURVEY OF ALABAMA

Philip E. LaMoreaux
State Geologist

DIVISION OF WATER RESOURCES

Doyle B. Knowles
Chief Hydraulic Engineer

BULLETIN 79

GEOLOGY AND GROUND-WATER RESOURCES OF CHEROKEE COUNTY, ALABAMA

A Reconnaissance

By Lawson V. Causey

Prepared by the United States Geological Survey
in cooperation with the
Geological Survey of Alabama

UNIVERSITY, ALABAMA

1965

University, Alabama
August 13, 1965

Honorable George C. Wallace
Governor of Alabama
Montgomery, Alabama

Dear Governor Wallace:

I have the honor to transmit the manuscript of a report entitled "Geology and Ground-Water Resources of Cherokee County, Alabama, a Reconnaissance" by Lawson V. Causey, with a request that it be printed as Bulletin 79 of the Geological Survey of Alabama.

According to the report, the chief sources of water for wells and springs in the county are the Conasauga Formation and Cambrian and Ordovician dolomites. Ground water in Cherokee County is used primarily for domestic, stock, and school supplies in rural parts of the county. The estimated average use of water from wells and springs in the county in 1961 was about 700,000 gallons daily.

The chemical quality of ground water is usually good except for the hardness of water from some wells developed in the Conasauga Formation and the Chickamauga Limestone, and the excessive iron concentration reported in water from the Red Mountain and Pottsville Formations.

Respectfully,

Philip E. LaMoreaux
State Geologist

CONTENTS

CONTENTS

ILLUSTRATIONS

(All plates are in pocket)

TABLES

GEOLOGY AND GROUND-WATER RESOURCES OF CHEROKEE COUNTY, ALABAMA

A Reconnaissance

By Lawson V. Causey

ABSTRACT

Cherokee County is underlain by consolidated rocks that range in age from Early Cambrian to Pennsylvanian. Unconsolidated deposits of sand, gravel, and clay overlie the Conasauga Formation in parts of the Coosa Valley.

Ground-water supplies are obtained chiefly from the Conasauga Formation, the Cambrian or Ordovician dolomites undifferentiated, and the Pottsville Formation. Wells yield as much as 40 gpm (gallons per minute) of water from the Conasauga Formation; 7 to 50 gpm from the Cambrian or Ordovician dolomites; 6 to 35 gpm from the Floyd Shale; and as much as 30 gpm from the Pottsville Formation. Springs discharge as much as 50 gpm of water from the Weisner Formation; 260 to 970 gpm from the Conasauga Formation; 250 to 3,300 gpm from the Cambrian or Ordovician dolomites; and 20 to 1,700 gpm from the Tuscumbia Limestone and Fort Payne Chert undifferentiated.

Ground water is used primarily for domestic, stock, and school supplies in rural parts of the county. The estimated average use of water from wells and springs in Cherokee County in 1961 was about 700,000 gallons daily.

The chemical quality of ground water is usually good except for the hardness of water from some wells developed in the Conasauga Formation and Chickamauga Limestone, and the excessive iron concentration reported in water from the Red Mountain and Pottsville Formations. The median temperature of ground water in Cherokee County is about 60° F.

INTRODUCTION

PURPOSE

Ground-water supplies in some areas of Alabama have become inadequate owing to the increasing use of water for industrial expansion, growth in population, and modernization of rural homes. In order to meet the increased demands, general ground-water information is needed to aid in the development of available supplies. A study of the ground-water resources of Alabama is being made by the U.S. Geological Survey in cooperation with the Geological Survey of Alabama. This investigation was made to collect sufficient information to outline in general terms the occurrence, quantity, and quality of ground water in Cherokee County. The work was under the direct supervision of William J. Powell, district geologist in charge of ground-water investigations in Alabama for the U.S. Geological Survey.

AREA OF INVESTIGATION

Cherokee County, in northeast Alabama, has an area of 600 square miles and, according to the 1960 census, a population of 16,303. The county is primarily rural; the incorporated towns are Centre, Cedar Bluff, Gaylesville, and Leesburg. Centre, the county seat, had a population of 2,392 in 1960. The area of study and areas of other ground-water studies are shown in figure 1.

The economy of Cherokee County is mainly agricultural. Industrial development is limited to the production of lumber, pulpwood, and a small amount of textile products and apparel. Many residents commute to work in adjacent Calhoun and Etowah Counties, and Georgia.

TOPOGRAPHY AND DRAINAGE

Cherokee County lies almost entirely within the Tennessee section of the Valley and Ridge physiographic province, which is characterized by northeastward-trending valleys and ridges resulting from the erosion of extensively folded and faulted beds. A small area in the northwestern part of the county is in the Cumberland Plateau section of the Appalachian Plateaus province (U.S. Geological Survey, 1946).

The county can be divided topographically into three areas. One area lies north of the Gadsden Fault (pl. 2) and consists chiefly of relatively narrow northeastward-trending valleys and ridges. A second area is of low relief and consists of the 10- to 12-mile wide Coosa Valley, which occupies more than the center third of the county. A third area, in the southeastern part of the county, comprises steep and rugged mountains surrounded by valleys. The maximum relief of the county is about 1,400 feet and the

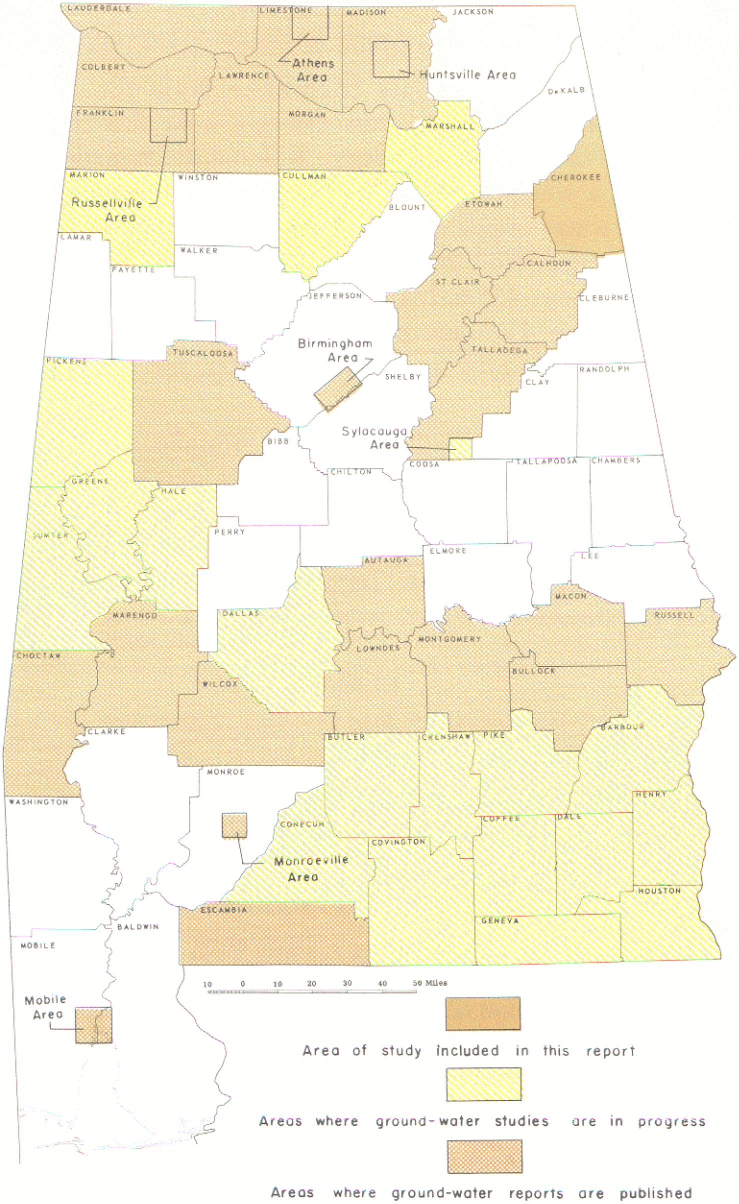


Figure 1.—Area studied and areas of other ground-water studies in Alabama.

highest altitude of the land surface is about 2,000 feet.

The Coosa River and its tributaries drain the county. The Coosa River enters Alabama from Georgia near the center of the east boundary of Cherokee County. It formerly meandered across the county in a westerly direction. Most of the meanders are now covered with water impounded by Weiss Dam, built near Leesburg in 1961. Weiss Reservoir covers an area of about 36,000 acres, has a shoreline of about 426 miles, and has a total capacity of 306,400 acre feet of water. The impounded water is used to generate electricity. The reservoir is a source of water for future industrial development.

The northern part of the county is drained southward to the Coosa River by Yellow Creek and by Little and Chattooga Rivers and their tributaries, which consist chiefly of Wolf, Spring, Mills, and Culstigh Creeks. The southern part is drained northward to the Coosa River by Spring, Cowan, Terrapin, Frog, and Ballplay Creeks and their tributaries.

CLIMATE

Cherokee County has a mild temperate climate with only rare extremes of temperature. The mean annual temperature, based on records of U.S. Weather Bureau Stations in adjacent counties, is about 62° F. The average annual precipitation, based on 70 years of record for the U.S. Weather Bureau Station at Leesburg, is 53.94 inches. March is usually the wettest month and October is usually the driest. The climate is favorable for growing cotton, corn, grain, hay, timber, and truck crops. The average length of the growing season is about 216 days.

PREVIOUS INVESTIGATIONS

In 1928-29 William D. Johnston, Jr. made a reconnaissance of the ground-water resources in northern Alabama. The results of this investigation were published in 1933 as Geological Survey of Alabama Special Report 16, "Ground Water in the Paleozoic Rocks of Northern Alabama" and indicated that adequate quantities of ground water were available in most parts of Cherokee County.

Other reports that describe the geology of Cherokee County and contain other relative data include: Geological Survey of Alabama Special Report 9, "Report on the Valley Regions of Alabama, pt. 2, On the Coosa Valley Region," by Henry McCalley; Geological Survey of Alabama Special Report 14, "Geology of Alabama," by G. I. Adams, Charles Butts, L. W. Stephenson, and C. Wythe Cooke; Geological Survey of Alabama Special Report 19, "Iron Ore Outcrops of the Red Mountain Formation in Northeast Alabama," by E. F. Burchard and T. G. Andrews; U.S. Geological Survey Geologic Atlas, Folio 78, "Description of the Rome Quadrangle [Georgia-Alabama]," by C. W. Hayes; and U.S. Geological Survey Bulletin 1087-E, "Stratigraphy and Uranium Content of the Chattanooga Shale in Northeastern Alabama, Northwestern Georgia, and Eastern Tennessee," by Lynn Glover.

WELL- AND SPRING-NUMBERING SYSTEM

The numbering of wells and springs in Cherokee County is based on the Federal land classification. Each township is divided into 36 sections that are numbered consecutively starting with 1 in the northeast corner of the township and ending with 36 in the southeast corner. In Cherokee County each township has been assigned a letter in the same order that sections are numbered; thus, the letter A is assigned to the northeast township, and the adjoining townships are lettered alphabetically through the letter Y (fig. 2). The wells and springs within a township are numbered consecutively, as are sections in a township, and each number is prefixed by the letter identifying the township; for example, in township F (fig. 2 and pl. 1) they are designated F-1, F-2, F-3, etc.

ACKNOWLEDGMENTS

The author is grateful to the residents of Cherokee County for supplying information on wells and springs, use of water, and other basic data essential to this report. Special appreciation is given the officials of the water department in Cedar Bluff; Hancock and Chestnut Drilling Co., Centre; J. B. Rogers Drilling Co., Leesburg; H. W. Peerson Drilling Supply Co., Birmingham; and Alabama Power Co., Birmingham, for supplying geologic and hydrologic data for wells in the county.

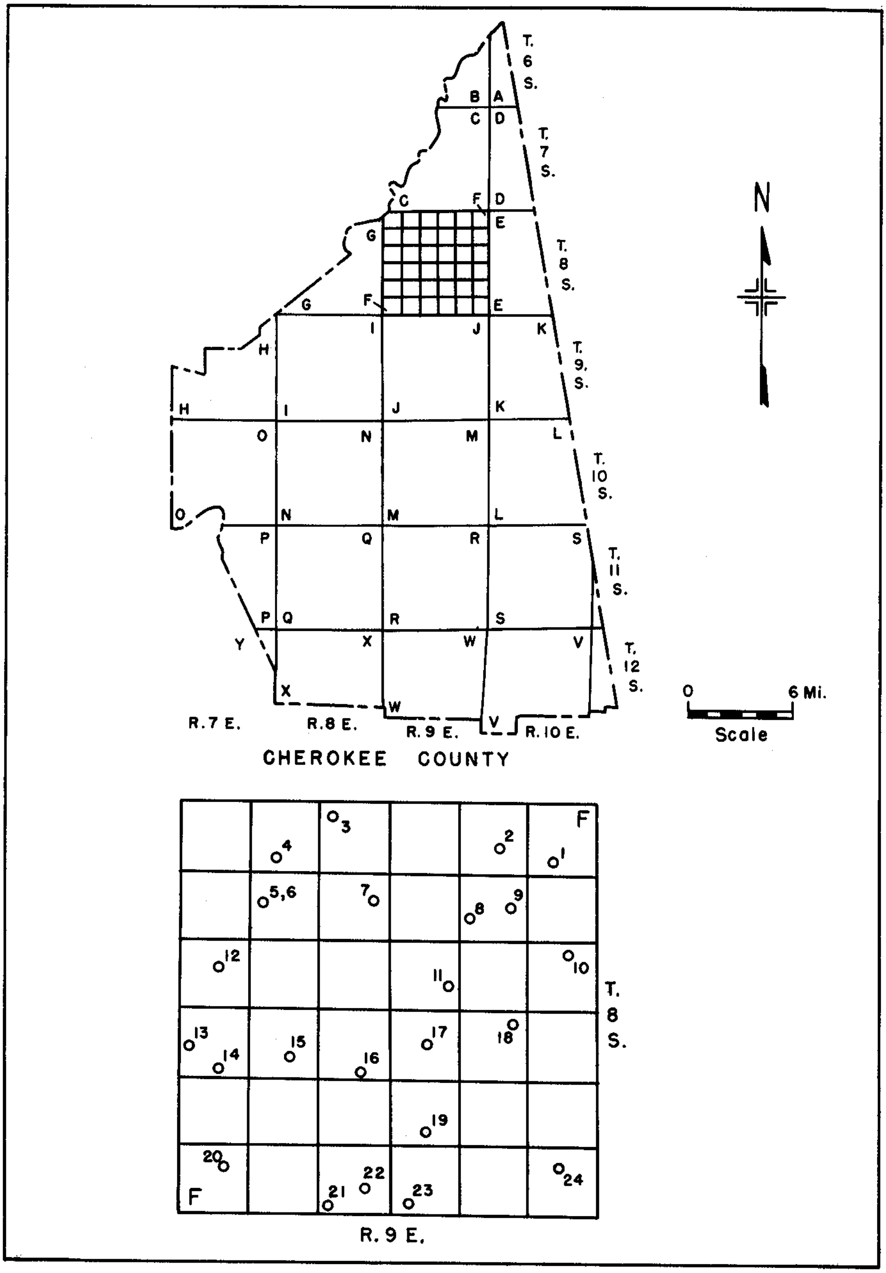


Figure 2.--Well- and spring-numbering system used in this report.

GROUND WATER

SOURCE

Ground water is the water below the land surface that occurs in the zone of saturation—a zone in which all the pore spaces and voids of a rock are filled with water. Ground water is derived from precipitation, and in Cherokee County the precipitation consists of rain and occasional hail, sleet, or snow. Part of the precipitation is carried away by surface streams, part is evaporated directly, and part seeps into the soil. Some of the water entering the soil is returned to the atmosphere by evaporation or transpiration and some moves downward to the zone of saturation to become ground water.

Water seeping down through the soil first enters a zone of aeration which lies between the land surface and the zone of saturation (fig. 3). A part of the water entering the zone of aeration is used to satisfy soil-moisture requirements, being held in this zone by molecular forces which counteract the force of gravity, and a part seeps downward into the zone of saturation. All openings in the zone of saturation are filled with water, and it is from this zone that wells and springs yield water.

OCCURRENCE AND STORAGE

The occurrence and storage of ground water in an aquifer varies from place to place and is controlled chiefly by the porosity of the rock. The porosity or percentage of open space in a rock determines the amount of water the rock will hold. The shape and arrangement of particles; the degree of sorting, compaction, and cementation of the particles; and the amount of fracturing, solution, and recrystallization in the rocks determine the porosity. The permeability of an aquifer is its ability to transmit water under pressure, and is a measure of the rate at which water is transmitted through a unit cross sectional area under a unit hydraulic gradient. Clay generally has a high porosity but a low permeability, and sand and gravel have a lower porosity than clay but have a higher permeability.

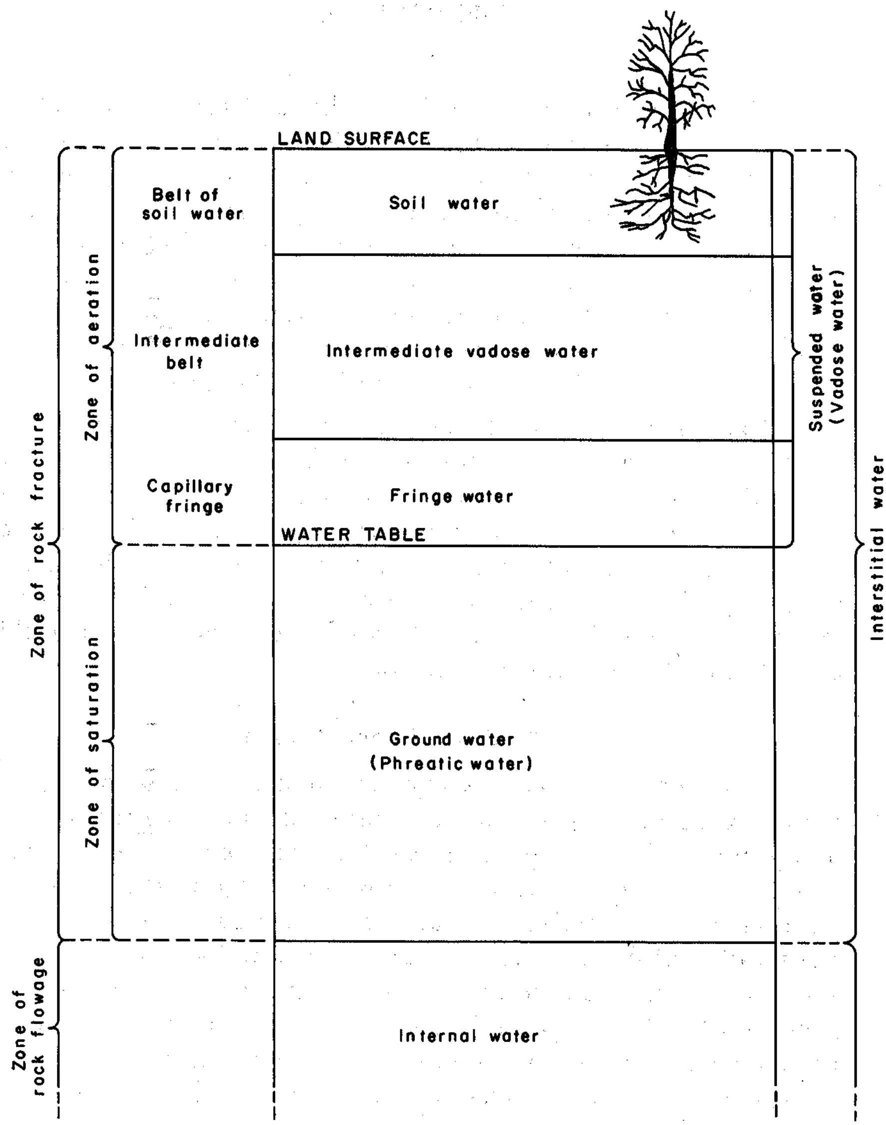


Figure 3.—Divisions of subsurface water.

WATER-TABLE AND ARTESIAN CONDITIONS

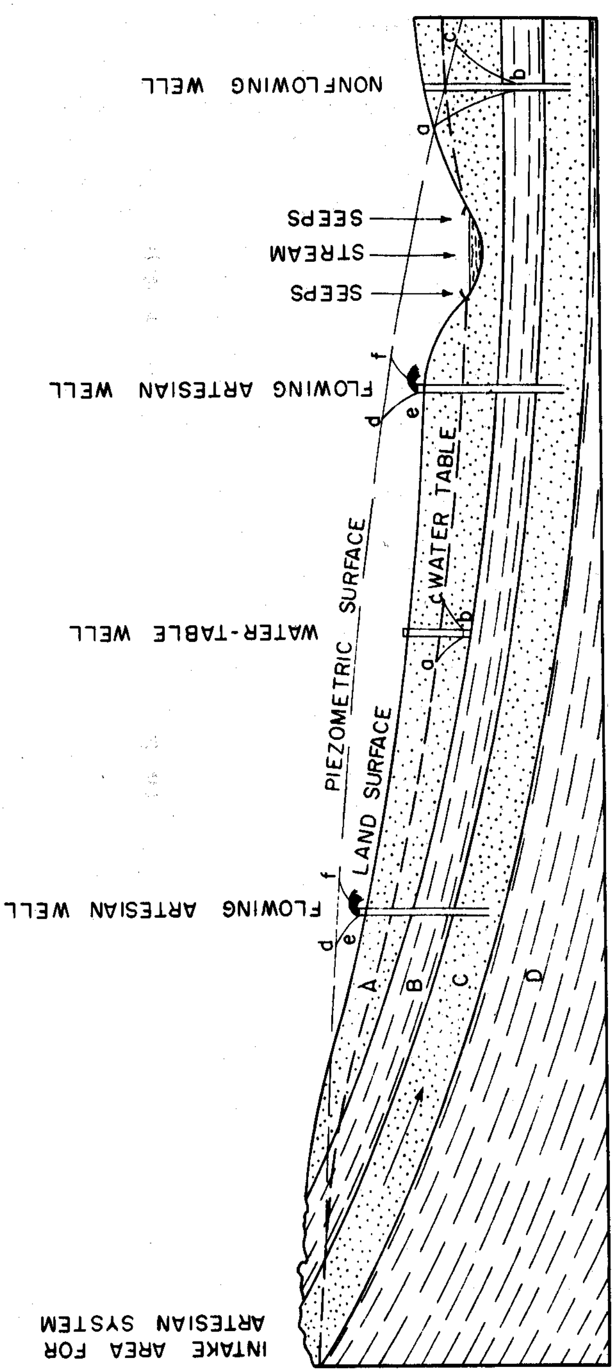
Water is contained in a water-bearing unit or aquifer chiefly under one of two physical conditions—water-table or artesian (fig. 4). Water in an aquifer is under atmospheric pressure at the water table and below the water table is under hydrostatic pressure. The aquifer functions much like a storage reservoir. Precipitation may enter the water-table aquifers directly in areas of outcrop, causing a rise in water level and a temporary increase in storage. The upper surface of the zone of saturation in a water-table aquifer is called the "water table." This surface is not flat but undulates with the topography and with local variations in permeability, recharge, and discharge. Springs may occur in areas where the water table intersects the land surface.

Artesian aquifers are overlain by relatively impermeable beds and the contained water is under greater than hydrostatic pressure. Water that enters an aquifer in its outcrop area seeps slowly downward to the water table in response to gravity. Within the aquifer the water may flow beneath a confining bed and thus there is a change from water-table to artesian conditions. However, artesian aquifers need not crop out at the land surface as they may receive recharge from other aquifers. The water beneath a confining bed is under pressure. The pressure causes the water to rise in a well above the bottom of the overlying confining bed, and the well is said to be artesian. Artesian pressures are generally maintained by the weight of water in the same or interconnected aquifers at higher elevations. Wells tapping artesian aquifers flow only when the altitude of the land surface is below that to which the water will rise. The piezometric surface is the surface to which the water from a given aquifer will rise in a tightly cased well.

Ground water is under both water-table and artesian conditions in Cherokee County. However, artesian conditions prevail in most parts of the county.

WATER-LEVEL FLUCTUATIONS

Water levels in wells fluctuate chiefly in response to precipitation or a lack of precipitation, pumpage or natural flows from wells and springs, changes in atmospheric pressure, earthquakes,



A. Permeable surficial material B. Upper confining bed C. Artesian aquifer D. Lower confining bed

abc Cone of depression caused by pumping a water-table or a nonflowing artesian well.

def Cone of depression caused by natural discharge from flowing artesian well.

Figure 4.—Water-table and artesian conditions.

ocean and earth tides, and loading of the land surface.

Fluctuations of water levels in shallow wells and flows from springs in Cherokee County are, for the most part, seasonal or cyclic and are related directly to precipitation. The water levels are highest in early spring because of the continuous and large amount of recharge from the heavy winter rains. Water levels are generally lowest during late autumn or early winter.

Periodic water-level measurements were made in well J-12, which is developed in shale of the Conasauga Formation at Cedar Bluff. Fluctuations in water level in this well for the period of record reflect recharge or a lack of recharge from precipitation (fig. 5).

RECOVERY

Ground water is obtained from wells and springs. Wells in Cherokee County generally are drilled, however, there are many dug wells. Some of the dug wells become dry or almost dry during late summer and fall. To obtain large and sustainable yields from wells, it is generally necessary to drill until sufficient water-bearing fractures or other openings in the bedrock are penetrated.

Under natural conditions a state of dynamic equilibrium, developed over a long period in response to natural recharge and discharge, exists in an aquifer. Pumping from a well tapping an aquifer creates artificial discharge and the aquifer must adjust as a result of this condition. As pumping lowers the water level in the well, water from the aquifer moves toward the well producing a cone of depression in the water table with the pumped well at the center (fig. 4). The lowering of the water level may be rapid when pumping is started, but it gradually declines until the pumping water level becomes nearly stationary, provided the well is pumped at a constant rate within the capacity of the aquifer to transmit water. If this capacity is exceeded, the water level will continue to lower and the yield will decrease to the capacity of the aquifer.

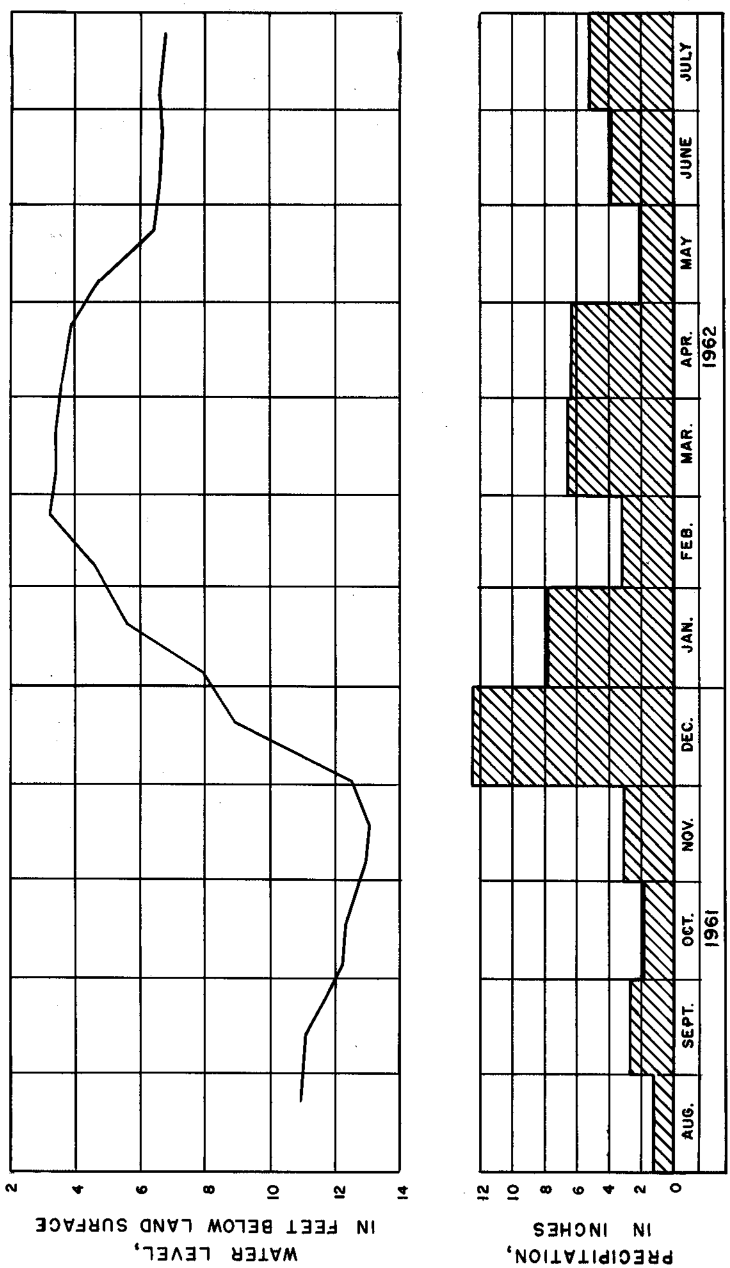


Figure 5.—Fluctuations in water level in well J-12 at Cedar Bluff, and precipitation at Leesburg.

DRILLED WELLS

An inventory of 190 drilled wells in Cherokee County has furnished a large part of the ground-water data in this report. The wells range from 5 to 10 inches in diameter but most are 6 inches in diameter. Depths of wells range from 17 to 1,025 feet but most are between 100 and 200 feet deep. Most of the wells are cased through the soil zone and the casing is seated in bedrock. The lower parts of the wells are left open. Some wells developed in fractures or in sand and gravel are cased completely except for screen or perforated casing placed opposite the producing zones. Wells O-10, O-11, O-18, and O-19 at Weiss Dam near Leesburg contain perforated casing opposite beds of sand and sandy clay. These wells were also gravel packed–a method of surrounding the well screen or perforated casing with gravel. Sample logs of drilled wells J-12, J-13, and W-11 are given in table 5 and drillers' logs of 7 wells are given in table 6.

Drilled wells in the county generally range in yield from 1 to 100 gpm (gallons per minute).

DUG WELLS

Dug wells in Cherokee County range from 18 to 60 inches in diameter and from 12 to 60 feet in depth. These wells supply a large part of the ground water used for domestic and stock supplies in rural parts of the county. Many dug wells fail to supply sufficient water during prolonged droughts and to obtain an adequate water supply, many have been deepened or replaced by drilled wells during the past 10 to 15 years. Dug wells generally are excavated in unconsolidated deposits and may or may not be lined, depending on the character of the material penetrated. Unlined wells tend to cave and are more subject to pollution from surface seepage. Data for 58 dug wells were collected during the investigation (table 4).

SPRINGS

Springs are abundant north and south of the Coosa Valley and are a potential source of water for industrial development. Twenty-one selected springs with measured or estimated discharges ranging from 20 to 3,300 gpm were inventoried during the investigation.

The total discharge of the 21 springs is about 24 million gallons daily. About half of these springs are used for domestic and stock supplies; however, less than 1 percent of the water is used. Ten of the 21 springs discharge from openings in the Cambrian or Ordovician dolomites undifferentiated. Spring V-1 on a mountain slope in the vicinity of Rock Run supplies water by gravity flow to about 40 families. Discharges and dates of measurements or estimates are as follows:

Spring	Discharge[1] (gpm)	Date	Spring	Discharge[1] (gpm)	Date
A-3	20 E	8-30-61	R-16	580 M	2-15-62
D-4	3,300 M	2-14-62	R-17	300 M	2-15-62
D-7	25 E	2-14-62	S-3	260 M	2-15-62
F-11	2,100 M	2-14-62	S-5	970 M	2-15-62
F-13	20 E	2-15-62	V-1	50 E	2-15-62
F-16	2,500 M	2-14-62	V-9	50 E	12-13-61
F-22	800 M	2-14-62	V-10	40 E	12-13-61
G-9	1,700 M	5-10-55	W-1	2,500 M	2-15-62
G-9	1,600 M	2-14-62	W-3	340 M	2-15-62
O-3	210 M	5-10-55	W-7	280 M	2-15-62
O-3	250 M	2-14-62	X-4	480 M	2-15-62
R-12	250 M	2-15-62			

[1]Discharge: E, estimated; and M, measured

USE

Ground water is used chiefly for domestic, stock, and school supplies in Cherokee County. Rural areas depend almost entirely on ground-water supplies. All the schools in the county, with the exception of those at Centre and Cedar Bluff, obtain their water supplies from wells. The estimated average use of water from wells and springs in Cherokee County in 1961 was about 700,000 gallons daily.

The towns of Centre and Cedar Bluff obtain their water supplies from streams. Until 1961, Cedar Bluff obtained its supply from drilled wells; however, the supply became inadequate because of increased demands on the system concurrent with several years of drought. The town was unsuccessful in locating an adequate ground-water supply from drilled wells, so the system was converted to filter water from the nearby Coosa River. Cedar Bluff uses about 50,000 gallons of water daily from the Coosa River and Centre uses about 110,000 gallons daily from Terrapin Creek.

GEOLOGY

GENERAL STRATIGRAPHY AND STRUCTURE

Consolidated rocks that crop out in the county consist of shale, sandstone, limestone, dolomite, chert, quartzite, conglomerate, claystone, and coal, which range in age from Early Cambrian to Pennsylvanian. Unconsolidated deposits of sand, gravel, and clay of Quaternary age were not mapped because of their limited extent and because of their similarity to residual deposits weathering from adjacent formations.

Rocks in Cherokee County have been sharply folded into northeastward-trending synclines and anticlines complicated by thrust faults; these structures are typical of the Valley and Ridge province of the southern Appalachian Mountains. The county is divided into three structure areas.

The first lies north of the Gadsden Fault (Rome fault of Hayes, 1902, p. 5; pl. 2) where folding dominates and thrust faults strike northeast. Erosion of the folds has formed a series of northeastward-trending valleys and ridges. The valleys were formed in soluble limestone of Mississippian age and in the Cambrian or Ordovician dolomites undifferentiated. The ridges were formed by the more resistant Fort Payne Chert and Red Mountain Formation.

The second structural area is the Coosa Valley which occupies more than the center third of the county and is underlain by the Conasauga Formation. The valley is of low relief and is without local structural trend. Doubtless, there are thrust faults in the Coosa Valley; however, they are difficult, if not impossible, to recognize because the shale in the Conasauga Formation is incompetent.

The third structural area is in the southeastern part of the county where thrust faults are the dominating feature. In this area, faulting is very complex and the thrust planes do not strike consistently to the northeast as in the northern part of the county. The contrast between the simple faulting in the northern part of the county and the complex thrusting in the southeastern part is shown on the geologic map (pl. 2).

FORMATIONS AND THEIR WATER-BEARING PROPERTIES

A generalized section of the geologic formations in Cherokee County and their water-bearing properties is given in table 1. The water-bearing properties of rocks underlying various parts of the county are given on plate 1.

CAMBRIAN SYSTEM

WEISNER FORMATION

The Weisner Formation, named for Weisner Mountain in Cherokee County, is of Early Cambrian age and is the oldest formation that crops out in the county. Owing to its hardness and resistance to erosion, it forms prominent ridges and knobs in the southern part of the county. The Weisner consists of more than 5,500 feet (Hayes, 1902, columnar section, sheet 2) of grayish-orange and light-tan hard vitreous quartzite, sandstone, conglomerate, and sandy shale. The coarser rocks constitute a series of lenses, variable in extent and thickness, which are interbedded with the finer grained rocks. The quartzite beds are conspicuous; however, the finer grained rocks compose the bulk of the formation. The thickness of the Weisner has not been accurately determined owing to faulting and inadequate exposure. Sandstone or quartzite formerly was quarried from the formation in the vicinity of Rock Run and was used to manufacture silica bricks.

Obtaining ground water from the Weisner depends chiefly on the presence of fractures that, in most places, yield sufficient water of good quality to wells and springs for domestic supplies. Springs V-1, V-9, and V-10 flow from fractures or other openings and have discharges of 50, 50, and 40 gpm, respectively. Water from the Weisner Formation, based on 4 analyses (table 3), ranges in hardness from 6 to 24 ppm (parts per million).

SHADY DOLOMITE

The Shady Dolomite of Early Cambrian age overlies the Weisner Formation and crops out in several narrow bands in the southern part of Cherokee County. The Shady is probably composed of 800 to 1,200 feet (Hayes, 1902, p. 2) of yellowish-gray to light bluish-gray fine-grained medium- to thick-bedded limestone and dolomite.

Table 1.—*Generalized section of the geologic formations in Cherokee County, Ala., and their water-bearing properties*

System	Stratigraphic Unit	Thickness (feet)	Rock Character	Water-bearing Properties
Quaternary	Alluvium	0-30±	Sand, gravel, and clay underlies parts of the Coosa Valley.	Yields small quantities of soft water for domestic supplies. Will probably yield moderate to large supplies where aquifers are of sufficient thickness.
Pennsylvanian	Pottsville Formation	300-400	Sandstone, tan and gray; sandy shale; thin coal beds; and conglomerate.	Yields water to wells that are generally less than 100 feet deep. Water levels generally are a few feet below land surface. Wells yield as much as 30 gpm of soft water. The water generally contains excessive iron.
Mississippian	Pennington Formation and Bangor Limestone	250-300±	Pennington Formation consists of gray shaly and cherty limestone and red shale. Bangor Limestone consists of dark bluish-gray crystalline oolitic limestone.	Not known to yield water to wells or springs; however, wells penetrating openings in the Bangor probably would yield small to moderate quantities of water.
	Floyd Shale	1,000 ?	Shale, brown, dark-gray, and dull-green, friable; gray to brown fine-grained sandstone; layers of gray limestone in the lower part of the formation in places.	Yields adequate quantities of water for domestic supplies and, in places, as much as 35 gpm. The water generally is hard and contains excessive iron.
	Hartselle Sandstone, *Gasper Formation, and Ste. Genevieve Limestone	?	Hartselle Sandstone consists of light-gray and tan friable to well-cemented sandstone. The Gasper Formation consists of light-gray limestone and shale. The Ste. Genevieve Limestone consists of light- to dark-gray oolitic limestone interbedded with shale.	Formations are not known to yield water to wells or springs in Cherokee County; however, wells that penetrate openings in the limestone probably would yield water adequate for domestic supplies.
	Tuscumbia Limestone	10-15	Limestone and chert, gray.	Yields adequate quantities of moderately hard water for domestic supplies and springs discharge as much as 1,550 gpm from solutionally enlarged openings.
	Fort Payne Chert	100-200	Limestone, light-gray or white, siliceous; and nodules of fossiliferous chert.	
	Maury Formation	7-8	Shale and claystone, green, red, and gray, glauconitic, pyritiferous; contains phosphate nodules.	Relatively impermeable and does not yield water to wells.
Devonian	Chattanooga Shale	20-41	Shale, gray to black, carbonaceous, pyritiferous.	Relatively impermeable and does not yield water to wells.
	Frog Mountain Sandstone	800-1,200	Sandstone, gray to tan, coarse-grained, thick-bedded to massive, friable.	Formation is not known to yield water to wells or springs in Cherokee County.
Silurian	Red Mountain Formation	400-600	Shale, green, gray, and tan, and light-green or gray sandstone in the upper part; red, green, and brown shale and ferruginous sandstone in the lower part.	Yields adequate quantities of water for domestic and stock supplies. The water is soft but generally contains excessive iron.
Ordovician	Chickamauga Limestone	700-1,500	Limestone, bluish-gray to dark-gray in the upper part; red shale, red sandstone, and gray limestone in the lower part.	Yields adequate quantities of hard water for domestic and stock supplies.
	Newala Limestone	400 ?	Limestone, dark- to pearl-gray; and minor amounts of dolomite.	Not known to yield water to wells or springs in Cherokee County. Wells that penetrate openings in the limestone probably would yield small to moderate quantities of water.
Ordovician or Cambrian	Chepultepec Dolomite and Copper Ridge Dolomite	1,500-4,000	Dolomite, light- to dark-gray; weathers to a cherty clayey subsoil.	Source of water for many wells and springs. Wells yield as much as 50 gpm of moderately hard water and springs discharge as much as 3,300 gpm.
Cambrian	Conasauga Formation	1,000-1,500	Shale, light- to dark-gray, and dark-green, interbedded with limestone and dolomite.	Source of water for about one-third of the wells inventoried and 4 springs. Wells yield as much as 40 gpm of hard water and springs discharge as much as 970 gpm. Wells developed in shale generally yield little water below a depth of 100 feet. Some wells go dry during droughts.
	Rome Formation	700-1,000	Shale, red and green; interbedded with red, green, and tan sandstone.	Not known to yield water to wells or springs in Cherokee County.
	Shady Dolomite	800-1,200	Limestone and dolomite, yellowish-gray to light bluish-gray.	Yields adequate quantities of good quality water for domestic supplies.
	Weisner Formation	5,500+	Quartzite, grayish-orange and light-tan, hard, vitreous; sandstone; conglomerate; and sandy shale.	Yields adequate quantities of soft water for domestic supplies and springs discharge as much as 50 gpm.

The outcrop is generally marked by a deep residual clay covered by a dark-red soil several feet thick. In these residual accumulations, deposits of limonite formed at many places have been extensively worked for iron ore. The locations of some of these deposits are shown on plates 1 and 2.

The Shady Dolomite has a small areal extent in the county and is a source of water for a few domestic supplies. The hardness of water from wells V-4 and V-8 is 40 and 76 ppm.

ROME FORMATION

The Rome Formation of Early Cambrian age overlies the Shady Dolomite and crops out in several narrow bands in the southern part of the county. It consists of 700 to 1,000 feet (Hayes, 1902, p. 2) of red and green shale interbedded with red, green, and tan thin- to medium-bedded sandstone. The formation is well exposed in a road cut along Alabama Highway 9 about 2 miles south of Ellisville. Wells and springs are not known to yield water from the Rome Formation in Cherokee County.

CONASAUGA FORMATION

The Conasauga Formation of Middle and Late Cambrian age overlies the Rome Formation and is composed of about 1,000 to 1,500 feet of light- to dark-gray and dark-green shale interbedded with thin layers of light- to dark-gray limestone and dolomite. In parts of the county, the limestone and dolomite become medium- to thick-bedded. The Conasauga crops out in the 10- to 12-mile wide Coosa Valley, which comprises more than the center third of the county. The Conasauga also crops out in several small areas that are north and south of the valley.

Wells tapping openings in the thicker beds of limestone and dolomite yield as much as 40 gpm of water from the Conasauga Formation. Yields from wells tapping fractures in the shale generally are less than 5 gpm. The wells tapping the shale generally do not obtain additional water below a depth of 100 feet. The Conasauga will not yield adequate quantities of water for some uses in parts of the Coosa Valley. In those areas, future supplies may be available from springs and streams. Four springs known to flow from openings in the Conasauga range in discharge from 260 to 970 gpm. Water from the Conasauga Formation, based on 89 analyses (table 3), ranges in hardness from 58 to 2,290 ppm and has a median of 174 ppm.

CAMBRIAN OR ORDOVICIAN SYSTEM

CAMBRIAN OR ORDOVICIAN DOLOMITES UNDIFFERENTIATED

The Cambrian or Ordovician dolomites in Cherokee County are composed of the Copper Ridge Dolomite of Cambrian age and the Chepultepec Dolomite of Early Ordovician age. They crop out in several northeastward-trending bands in the northern part of the county and in several irregular patterns in the southeastern part (pl. 2). The Copper Ridge and Chepultepec consist of about 1,500 to 4,000 feet (Hayes, 1902, columnar section, sheet 1) of light- to dark-gray medium- to thick-bedded dolomite, which weathers to a cherty clayey subsoil. An abundance of chert along the land surface, which has developed during the process of weathering, generally marks the area of outcrop.

The water-bearing properties and lithologies of the Copper Ridge and Chepultepec Dolomites are similar and are not differentiated in this report. Openings in the dolomites supply water to 10 of 21 springs and many of the wells inventoried. Nine of the springs range in discharge from 250 to 3,300 gpm. Five wells tapping the dolomites were reported to yield 7 to 50 gpm, however, large quantities of water probably could be developed from properly constructed wells that penetrate water-bearing fractures, solution cavities, and other openings within the dolomites. Water from the Cambrian or Ordovician dolomites, based on 57 analyses (table 3), ranges in hardness from 6 to 188 ppm and has a median of 94 ppm.

ORDOVICIAN SYSTEM

NEWALA LIMESTONE

The Longview and Newala Limestones of Early Ordovician age generally overlie the Cambrian or Ordovician dolomites in other parts of northern Alabama. However, the Longview is probably not present in Cherokee County. The Newala crops out in three small areas in the southeastern part of the county (pl. 2). It consists of an estimated 400 feet or less of relatively pure dark- to pearl-gray thick-bedded limestone with minor amounts of dolomite.

The Newala Limestone is not known to yield water to wells or springs in Cherokee County. Fractures and solution openings, where present below the water table in the limestone, probably would yield small to moderate quantities of water.

CHICKAMAUGA LIMESTONE

The Chickamauga Limestone of Ordovician age crops out north of the Gadsden Fault (pl. 2) in several northeastward-trending bands. It consists of about 700 to 1,500 feet of bluish-gray to dark-gray fine-grained thick-bedded limestone in the upper part of the formation and red shale, red coarse-grained sandstone, and thin layers of gray limestone in the lower part.

The Chickamauga generally yields adequate quantities of water for domestic and stock use. The yield from well C-3 was reported to be 17 gpm in 1939. Larger yields probably could be obtained from wells that penetrate fractures, solution cavities, and other openings below the water table in the limestone. Water from the Chickamauga Limestone, based on 12 analyses (table 3), ranges in hardness from 10 to 478 ppm and has a median of 166 ppm.

SILURIAN SYSTEM

RED MOUNTAIN FORMATION

The Red Mountain Formation of Silurian age overlies the Chickamauga Limestone and crops out in Cherokee County in five areas north of the Gadsden Fault (pl. 2). The Red Mountain varies considerably in lithology. It generally is composed of 400 to 600 feet of red, green, and brown shale and ferruginous sandstone in the lower part of the formation, and green, gray, and tan shale and light-green or gray thick-bedded fine-grained sandstone in the upper part. The steeply tilted beds of the Red Mountain Formation and those of the closely associated Fort Payne Chert form long straight ridges in the area of outcrop.

Wells developed in the Red Mountain yield sufficient water for domestic and stock use; however, the water generally has a high iron content. The water, based on 10 analyses (table 3), ranges in hardness from 16 to 112 ppm and has a median of 33 ppm.

DEVONIAN SYSTEM

FROG MOUNTAIN SANDSTONE

The Frog Mountain Sandstone, named for Frog Mountain in Cherokee County, crops out in three areas in the southeastern part of the county (pl. 2). It is of Devonian age and consists of about 800 to 1,200 feet of gray to tan coarse-grained thick-bedded to massive friable sandstone. The Frog Mountain is not known to yield water to wells or springs in Cherokee County; however, fractures, where present, probably would yield adequate supplies for domestic use.

CHATTANOOGA SHALE

The Chattanooga Shale of Late Devonian age unconformably overlies the Red Mountain Formation in some of the ridges north of the Gadsden Fault (pl. 2) and is absent in the rest of the county. It consists of about 20 to 41 feet of gray to black carbonaceous pyritiferous marine shale that is sparsely fossiliferous. The shale thickens northward in Cherokee County. The Chattanooga Shale is relatively impermeable and does not yield water to wells.

MISSISSIPPIAN SYSTEM

MAURY FORMATION

The Maury Formation was formerly considered to be a part of the Chattanooga Shale of Devonian age; however, it is considered now to be Early Mississippian (Hass, 1956, p. 23). It unconformably overlies the Frog Mountain Sandstone south of the Gadsden Fault and conformably overlies the Chattanooga Shale in the rest of the county. The Maury consists of 7 to 8 feet of green, red, and gray glauconitic pyritiferous shale and claystone with phosphate nodules. The Maury Formation is relatively impermeable and does not yield water to wells.

FORT PAYNE CHERT AND TUSCUMBIA LIMESTONE

The Fort Payne Chert and Tuscumbia Limestone of Mississippian age have been combined in this report. The water-bearing properties of the two formations are similar and the outcrop of the Tuscumbia, where present, is too narrow to show separately on the geologic map (pl. 2). The Fort Payne crops out in five narrow bands—four in the northern part of the county and one in the south-central part. It overlies the Maury and is composed of about 100 to 200 feet of light-gray or white thin- to medium-bedded siliceous limestone containing nodules of light- to dark-gray chert. The formation weathers to a fossiliferous cherty rubble containing abundant crinoid stems. The cherty rubble is often stained black. The highly fossiliferous chert is readily distinguished from the sparsely fossiliferous cherts of the underlying Cambrian or Ordovician dolomites. The Tuscumbia Limestone overlies the Fort Payne Chert and is composed of about 10 to 15 feet of gray limestone and chert. It is not present south of the Gadsden Fault in Cherokee County.

Water in the Fort Payne and Tuscumbia occurs in openings along joints, fractures, and bedding planes. Wells that tap these openings yield water adequate for domestic supplies, and springs discharge as much as 1,700 gpm. Springs A-3, F-13, G-9, and O-3, which have discharges of 20, 20, 1,700, and 250 gpm, respectively, flow from openings in these formations. Water in the Fort Payne and Tuscumbia, based on 8 analyses (table 3), ranges in hardness from 58 to 150 ppm and has a median of 118 ppm.

STE. GENEVIEVE LIMESTONE, GASPER FORMATION, AND HARTSELLE SANDSTONE

The Ste. Genevieve Limestone, Gasper Formation, and Hartsselle Sandstone of Mississippian age are combined in this report and are shown as a single unit on the geologic map (pl. 2). These formations are present only in the northwestern part of the county. Except for a small area where their absence is due to faulting, they crop out in a narrow northeastward-trending band. The Ste. Genevieve overlies the Tuscumbia and consists of light- to dark-gray thin- to medium-bedded oolitic limestone interbedded with shale. The limestone weathers to gray chert in places. The Gasper overlies the Ste. Genevieve and consists of light-gray medium-bedded limestone; light-gray compact lithographic limestone; and shale. The Hartselle overlies the Gasper and consists of light-gray and tan friable to well-cemented sandstone. Weathered exposures show a dominantly tan color, but in detail may show zones and patches colored by brown iron oxide. These formations are not known to yield water to wells or springs in Cherokee County.

FLOYD SHALE

The Floyd Shale of Mississippian age crops out in two small areas in the east-central part of the county and in a narrow band in the south-central part (pl. 2). In places, the formation probably is composed of as much as 1,000 feet of brown, dark-gray, and dull-green friable shale; gray to brown fine-grained sandstone; and layers of gray limestone which are interbedded in the lower part of the formation.

Wells tapping the Floyd Shale yield sufficient quantities of water for domestic supplies. Well K-3 had a reported yield of 6 gpm in 1961 and well X-6 a reported yield of 35 gpm in 1958. The water, based on 7 analyses (table 3), ranges in hardness from 24 to 196 ppm and has a median of 125 ppm.

BANGOR LIMESTONE AND PENNINGTON FORMATION

The Bangor Limestone and Pennington Formation of Mississippian age crop out along the southeast flank of Lookout Mountain. The Bangor consists of an estimated 200 to 300 feet of dark bluish-gray thick-bedded crystalline and oolitic limestone. It is overlain by the Pennington, which is composed of about 50 feet of gray shaly and cherty limestone, and red shale. The Bangor and Pennington are undifferentiated on the geologic map (pl. 2). The formations are not known to yield water to wells or springs in Cherokee County; however, openings in limestone in the Bangor probably would yield small to moderate supplies.

PENNSYLVANIAN SYSTEM

POTTSVILLE FORMATION

The Pottsville Formation of Pennsylvanian age overlies the Pennington Formation and caps Lookout Mountain. The formation consists of an estimated 300 to 400 feet of tan and gray thin- to thick-bedded well-cemented sandstone, tan and dark-gray sandy shale, thin coal beds, and conglomerate. The conglomerate generally is composed of coarse sand grains with numerous well-rounded small quartz pebbles. Because of the resistant character of the rocks, the area underlain by the Pottsville is higher in altitude than adjacent areas and is bounded by a steep escarpment. The subsoil generally is less than 10 feet thick throughout the outcrop area.

Most wells tapping the Pottsville Formation are 6 inches in diameter and less than 100 feet deep. Water levels generally are a few feet below the land surface and buckets are often used to lift the water. Wells developed in the Pottsville generally range in yield from 1 to 30 gpm. The water is used for domestic and stock supplies. Ground water from the Pottsville generally contains an excessive amount of iron. The water, based on 35 analyses (table 3), ranges in hardness from 8 to 80 ppm and has a median of 24 ppm.

QUATERNARY SYSTEM

ALLUVIUM

Alluvial deposits of Recent age, consisting chiefly of sand, gravel, and clay, overlie the Conasauga Formation in places in the Coosa River valley. Available data indicate that the thickness of the alluvium, where present, is less than 30 feet in most areas. Most of the deposits were inundated by backwaters of the Weiss Reservoir in 1961. The alluvial deposits were not mapped separately from other geologic units (pl. 2) because of their limited extent and because of their similarity to weathered residual deposits formed on adjacent formations.

Wells tapping beds of sand and gravel supply small quantities of water for domestic use and would probably yield moderate to large quantities where the aquifers are of sufficient thickness. Reported yields of 25 to 100 gpm were obtained from wells O-10, O-11, O-18, and O-19 at Weiss Dam near Leesburg in 1961. Water from the alluvium, based on 29 analyses (table 3), ranges in hardness from 8 to 192 ppm and has a median of 28 ppm.

QUALITY OF WATER

All natural waters contain dissolved minerals. Precipitation, even before it reaches the ground, dissolves gases and minor quantities of mineral matter from the atmosphere. After reaching the ground, it continues to dissolve minerals and undergoes various chemical reactions, which may or may not effect its potability. The amount and kind of minerals dissolved in ground water may vary greatly from place to place depending primarily on the types of minerals in the soils and rocks over or through which the water moves, the presence of carbon dioxide in the water, the temperature of the water, and the length of time the water has been in contact with the minerals. The most common mineral constituents in ground water are silica, iron, manganese, calcium, magnesium, sodium, potassium, bicarbonate, sulfate, chloride, fluoride, and nitrate (table 2).

The quality limits of water for a particular purpose are not easily defined. However, water for municipal and domestic supplies should, insofar as possible, conform to the standards of the U.S. Public Health Service (1962) for interstate carriers. These standards are included in the following discussion, which is not inclusive but summarizes briefly chemical properties and mineral constituents of ground water that should be considered in developing a supply for drinking water.

Iron and manganese.—Iron and manganese in water, even in small quantities, are objectionable because they stain plumbing fixtures and laundry yellowish-brown to reddish-brown or black. A concentration of more than 0.3 ppm iron or 0.05 ppm manganese is considered excessive in drinking water or public water supplies.

Sulfate.—Sulfate content should not exceed 250 ppm. Salts of sulfate are a laxative and a quantity equal to that in 1 liter of water containing 1,000 to 2,000 ppm sulfate constitutes an average dose (Rainwater and Thatcher, 1960, p. 279).

Chloride.—Chloride in large concentrations makes the water undesirable for many uses. Chloride content should not exceed 250 ppm.

Fluoride.—Fluoride is a minor constituent of ground water, however, excessive quantities in drinking water during calcification may cause mottling of children's teeth. Supplies should not contain more than 0.8 to 1.7 ppm of fluoride depending on the annual average of maximum daily air temperatures. Rainwater and Thatcher (1960, p. 163) stated, "Available evidence indicates that water containing less than 1.0-0.9 ppm of fluoride seldom causes mottling of children's teeth, and the literature describing the beneficial effect of 0.88-1.5 ppm in drinking water as an aid in the reduction of tooth decay in children is abundant."

Nitrate.—Nitrate in water has considerable significance as an indication of pollution and it may be a contributing factor to a condition in babies known as methemoglobinemia (Maxcy, 1950, p. 265). Nitrate content should not exceed 45 ppm.

Hardness.—Hardness is a property of water attributable chiefly to alkaline earths, principally calcium and magnesium. Hardness is an indicator of the soap-consuming capacity of the water and, indirectly, an indicator of the scale-forming tendency of the water when used in boilers. Hardness of water is classified by the U.S. Geological Survey as: less than 61 ppm, soft; 61 to 120 ppm, moderately hard; 121 to 180 ppm, hard; and in excess of 180 ppm, very hard.

Specific conductance and dissolved solids.—Specific conductance is a measure of the ability of a solution to conduct an electric current, and is a general indicator of the amount of minerals dissolved in a water. The following general relation is applicable: specific conductance x (0.65 ± 0.05) = ppm dissolved solids. Dissolved solids should not exceed 500 ppm.

pH.—The pH of a water is a number that is the negative logarithm of the hydrogen-ion concentration in moles per liter of solution and, thus, is a measure of the water's acidity or alkalinity. Theoretically a neutral water has a pH of 7.0. Progressive values on the pH scale below 7.0 denote increasing acidity and progressive values above 7.0 denote increasing alkalinity.

The hardness and chloride concentrations in water were determined by field methods for 243 samples from wells and springs inventoried in Cherokee County (table 4). A more comprehensive chemical analysis was made of water from 11 selected wells and springs by the U.S. Geological Survey, Quality of Water Branch Laboratory at Baton Rouge, La. (table 2).

Field analyses are only approximations, however, they are useful in a general comparison of hardness and chloride content of water from different geologic formations as shown in table 3. Any apparent discrepancies in values of hardness and chloride between table 2 and table 4 are due in part to seasonal changes in the quality of the water caused by changes in ground-water recharge and differences in laboratory and field techniques.

The information obtained from the chemical analyses indicates:

1. The quality of ground water from the principal aquifers in Cherokee County is suitable for many uses; however, the reported high iron content of water from the Red Mountain and Pottsville Formations and the hardness of water from some of the aquifers, chiefly the Conasauga Formation and Chickamauga Limestone, would require treatment for some uses.

2. The iron content of water from 11 wells and springs ranges from 0.03 to 5.6 ppm (table 2). Well H-10 has an iron content of 5.6 ppm and is developed in sandstone and shale of the Pottsville Formation. Most families that obtain water supplies from the Red Mountain and Pottsville Formations report excessive iron in the water.

3. The chloride concentration of water from wells and springs ranges from a trace to 152 ppm (tables 2 and 4). However, concentrations of chloride are generally less than 50 ppm. The median chloride content of water from each of the aquifers is 12 ppm or less (table 3).

4. The fluoride concentration of water from 10 of 11 wells and springs sampled is low. However, water from well J-5 has a fluoride concentration of 1.6 ppm (table 2).

5. The hardness of water from wells and springs sampled ranges from 6 ppm in water from a few wells in the Weisner Formation and the Cambrian or Ordovician dolomites undifferentiated to 2,290 ppm in water from well W-6 in the Conasauga Formation (tables 2 and 4). The median hardness of water from the aquifers ranges from 9 ppm in the Weisner Formation to 174 ppm in the Conasauga Formation (table 3).

6. Concentrations of sulfate, nitrate, and dissolved solids (calculated from specific conductance) determined are within the recommended limits of the U.S. Public Health Service.

7. Ground water in Cherokee County has a wide range of temperatures. The median temperature determined from the data in tables 2 and 4 is 60° F.

Table 2.—*Chemical analyses of water from wells and springs in Cherokee County, Ala.*

Well or spring: Numbers correspond with those in plate 1 and table 4.

Water-bearing unit: O€u, Cambrian or Ordovician dolomites undifferentiated; Srm, Red Mountain Formation; Mtm, Maury Formation, Fort Payne Chert, and Tuscumbia Limestone; Mf, Floyd Shale; IPpv, Pottsville Formation.

Well or spring	Date of collection	Water-bearing unit	Temperature (°F)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25° C)	pH
				Parts per million													
C-2	1-24-62	Srm ?	59	0.29	27	2.4	2.8	100	0	0.4	1.1	0.1	0.1	77	0	167	7.4
D-4	1-24-62	O€u	59	.36	30	6.9	1.6	124	0	.4	2.0	.0	2.8	103	1	201	7.7
F-16	1-24-62	O€u	59	.05	26	8.1	2.3	120	0	.0	2.1	.1	1.8	98	0	190	...
F-22	1-24-62	O€u	59	.03	27	9.4	1.4	136	0	.0	.9	.0	1.9	106	0	207	7.8
G-9	1-24-62	Mtm	59	.04	42	1.8	3.2	140	0	3.8	1.1	.0	.4	112	0	226	7.7
H-10	1-24-62	IPpv	...	5.6	16	2.5	6.9	77	0	.0	1.8	.1	.7	50	0	127	7.5
I-3	1-24-62	IPpv	...	.16	21	3.1	31	163	0	.4	.8	.1	.2	65	0	246	7.8
J-5	1-24-62	Mf	...	.05	21	18	39	233	0	8.2	7.2	1.6	.2	125	0	379	8.0
O-3	1-24-62	Mtm	61	.04	36	1.5	3.7	124	0	.6	1.1	.1	.5	96	0	201	7.8
W-1	1-24-62	O€u	60	.04	26	10	3.7	136	0	.6	.9	.1	.6	106	0	207	7.9
W-5	1-24-62	O€u	...	.20	30	15	2.5	157	0	.6	6.0	.1	2.8	135	6	268	7.9

Table 3.—*Hardness and chloride concentrations in water from wells and springs in Cherokee County, Ala.*[1]

Water-bearing unit	Number of analyses	Hardness as $CaCO_3$ parts per million			Chloride (Cl) parts per million		
		min	max	median	min	max	median
Alluvium	29	8	192	28	2	28	7
Pottsville Formation	35	8	80	24	Trace	138	4
Floyd Shale	7	24	196	125	2	25	7
Tuscumbia Limestone and Fort Payne Chert	8	58	150	118	1.1	25	2
Red Mountain Formation	10	16	112	33	1.1	57	9
Chickamauga Limestone	12	10	478	166	2	117	5
Ordovician or Cambrian dolomites undifferentiated	57	6	188	94	9	39	4
Conasauga Formation	89	58	2,290	174	Trace	152	7
Shady Dolomite	2	40	76	58	11	14	12
Weisner Formation	4	6	24	9	2	4	2

[1] Based on results of analyses in tables 2 and 4.

SUMMARY

Rocks in Cherokee County have been sharply folded into northeastward-trending synclines and anticlines complicated by thrust faults. These structures are typical of the Valley and Ridge province of the southern Appalachian Mountains. The county is underlain by consolidated rocks consisting of shale, sandstone, limestone, dolomite, chert, quartzite, conglomerate, claystone, and coal, which range in age from Early Cambrian to Pennsylvanian. Unconsolidated deposits of sand, gravel, and clay of Recent age overlie the Conasauga Formation in parts of the Coosa Valley.

Ground-water supplies are obtained chiefly from the Conasauga Formation, the Cambrian or Ordovician dolomites undifferentiated, and the Pottsville Formation. Based on data obtained from the investigation, wells yield as much as 40 gpm of water from the Conasauga Formation; 7 to 50 gpm from the Cambrian or Ordovician dolomites; 6 to 35 gpm from the Floyd Shale; and as much as 30 gpm from the Pottsville Formation. Springs discharge as much as 50 gpm of water from the Weisner Formation; 260 to 970 gpm from the Conasauga Formation; 250 to 3,300 gpm from the Cambrian or Ordovician dolomites; and 20 to 1,700 gpm from the Tuscumbia Limestone and Fort Payne Chert undifferentiated. Nearly all the springs are in the northern and southeastern parts of the county and many discharge water of good quality in quantities adequate for future industrial development.

Ground water is used primarily for domestic, stock, and school supplies in rural parts of the county. The larger towns in Cherokee County are in the Coosa Valley, which is underlain by shale of the Conasauga Formation. Wells developed in the shale generally fail to furnish adequate quantities of water for municipal and industrial supplies. Therefore, the towns of Centre and Cedar Bluff obtain their water supplies from streams. Cedar Bluff formerly obtained its water supply from drilled wells; however, the supply became inadequate because of increased demands on the system concurrent with several years of drought.

The chemical quality of ground water generally is good except for the hardness of water from some wells developed in the Conasauga Formation and Chickamauga Limestone, and the excessive

iron content of water from the Red Mountain and Pottsville Formations. The median temperature of ground water from wells and springs in Cherokee County is about 60° F.

SELECTED REFERENCES

Adams, G. I., Butts, Charles, Stephenson, L. W., and Cooke, C. Wythe, 1926, Geology of Alabama: Alabama Geol. Survey Spec. Rept. 14, 312 p.

Burchard, E. F., and Andrews, T. H., 1947, Iron ore outcrops of the Red Mountain Formation in northeast Alabama: Alabama Geol. Survey Spec. Rept. 19, 375 p.

Causey, L. V., 1961, Ground-water resources of Etowah County, Alabama, a reconnaissance: Alabama Geol. Survey Inf. Ser. 25, 63 p.

Glover, Lynn, 1959, Stratigraphy and uranium content of the Chattanooga Shale in northeastern Alabama, northwestern Georgia, and eastern Tennessee: U.S. Geol. Survey Bull. 1087-E, p. 133-168.

Hass, W. H., 1956, Age and correlation of the Chattanooga Shale and the Maury Formation: U.S. Geol. Survey Prof. Paper 286, 47 p.

Hayes, C. W., 1902, Description of the Rome quadrangle [Georgia-Alabama]: U.S. Geol. Survey Geol. Atlas, Folio 78.

Johnston, W. D., Jr., 1933, Ground water in the Paleozoic rocks of northern Alabama: Alabama Geol. Survey Spec. Rept. 16, pt. 1, 414 p.; pt. 2, 48 well and spring tables.

Maxcy, K. F., 1950, Report on the relation of nitrate concentrations in well waters to the occurrence of methemoglobinemia in infants: Natl. Research Council, Bull. Sanitary Eng. and Environment, App. D.

McCalley, Henry, 1897, Report on the valley regions of Alabama (Paleozoic strata), pt. 2, On the Coosa Valley region: Alabama Geol. Survey Spec. Rept. 9, 862 p.

Meinzer, O. E., 1923, Outline of ground-water hydrology, with definitions: U.S. Geol. Survey Water-Supply Paper 494, 71 p.

Rainwater, F. H., and Thatcher, L. L., 1960, Methods for collection and analysis of water samples: U.S. Geol. Survey Water-Supply Paper 1454, 301 p.

U.S. Geological Survey, 1946, Physical divisions of the United States.

U.S. Public Health Service, 1962, Drinking water standards: U.S. Public Health Service Pub. 956, 61 p.

Warman, J. C., Causey, L. V., Burks, J. H., and Ziemand, H. W., 1960, Geology and ground-water resources of Calhoun County, Alabama, an interim report: Alabama Geol. Survey Inf. Ser. 17, 67 p.

BASIC DATA

Table 4.—*Records of wells and springs in Cherokee County, Ala.*

Well or spring: Numbers correspond to those in plate 1 and table 2; asterisk indicates chemical analyses given in table 2.

Type: D, drilled; Du, dug; S, spring.

Depth of well and water level: Depths shown in feet are reported; those shown in feet and tenths are measured.

Altitude: Altitudes determined by aneroid barometer.

Method of lift: F, flows; J, jet; M, manual; N, none; P, piston; S, submergible; T, turbine.

Use: D, domestic; Ind, industrial; Irr, irrigation; N, not used; P, public supply; S, stock.

Water-bearing unit: Ꞓw, Weisner Formation; Ꞓs, Shady Dolomite; Ꞓc, Conasauga Formation; OꞒu, Cambrian or Ordovician dolomites undifferentiated; Oc, Chickamauga Limestone; Srm, Red Mountain Formation; Mtm, Maury Formation, Fort Payne Chert, and Tuscumbia Limestone; Mf, Floyd Shale; IPpv, Pottsville Formation; Qal, Alluvium.

Well or spring	Owner	Driller	Type	Depth of well (feet)	Diameter of well (inches)	Water-bearing unit	Altitude of land surface (feet)	Water level: Above (+) or below land surface (feet)	Water level: Date of measurement	Method of lift	Use of water	Field determinations: Temperature (° F)	Field determinations: Chloride (Cl) (ppm)	Field determinations: Hardness as $CaCO_3$ (ppm)	Remarks
A-1	Looney Galloway...	....	D	107.1	6	IPpv	1,559	24.6	8-30-61	M	D	59	7	18	Supplies 2 families.
A-2	Albert Deering.....	-- O'Dell.......	D	47	6	IPpv	1,521	19.1	8-30-61	M	D	59	2	10	Cased to 4 ft.
A-3	Luther D. Willingham	....	S	.....	...	Mtm (?)	751	....	....	F	N	..	...	.....	Estimated flow, 20 gpm on 8-30-61.

B-1	L. D. Powell	-- O'Dell	D	96	8-6	IPpv	1,528	33.7	8-30-61	M	D	59	99	32	8-in. terra-cotta casing to 3 ft., 6-in. open hole below. Inadequate during dry season. Coal seam at about 60 ft.
C-1	Melvin Bentley	....	Du	42.4	36	Srm (?)	810	33.3	9- 6-61	J	D	..	11	24	Not cased.
*C-2	Robert Jennings	Michel Houston	D	45	6	Srm (?)	807	.0	8-25-61	J	D	59	4	112	Cased to 45 ft. Flow estimated with pump off, 1 gpm on 8-25-61.
C-3	James Bankson	Cherokee Well Drillers.	D	97	6	Oc	948	27.0	9- 6-61	J	D	..	2	134	Cased to about 30 ft. Yield reported, 17 gpm in 1939.
C-4	B. J. Dodd	Winston William	D	150	6	OЄu	766	58.5	9- 5-61	J	D	..	2	158	Cased to 85 ft.
C-5	James A. Gardner	Michel Houston	D	154	6	OЄu	776	111.1	9- 5-61	J	D	..	2	54	Cased to 145 ft.
C-6	Rex Maples	....	Du	50.4	30	OЄu	811	43.2	9- 5-61	J	D	..	14	32	
C-7	Auburn Canada	-- O'Dell	D	80	6	Srm	823	35.2	8-30-61	J	D	..	11	60	Cased to 5 ft. Supplies 2 families. Water contains excessive iron.
C-8	Mrs. Nora Kennedy	....	Du	40.1	30	Srm	823	27.5	8-30-61	M	D	60	28	38	Lined with rock to 40 ft. Inadequate during dry season.
C-9	Jimmy Epps	....	Du	58.2	36	OЄu	737	46.6	9- 5-61	M	D	59	5	90	Not cased.
D-1	Millard Bridges	Michel Houston	D	100	6	Oc (?)	782	40.7	9-11-61	J	D	..	4	76	Cased to 42 ft. Bedrock at 41 ft.
D-2	Della Cavin	....	D	52	6	Srm	760	21.8	9- 6-61	J	D	..	7	100	
D-3	G. O. Crowe	....	Du	31.2	24	Єc	731	25.2	8-23-61	P	D	..	7	140	Terra-cotta casing to 30 ft. Supplies 4 families.
*D-4	Jim Berry	....	S	.....	...	OЄu	693	.....	....	F	D	59	4	138	Berry Spring. Supplies 2 families. Measured flow, 3,300 gpm on 2-14-62.
D-5	J. J. Sentell	....	Du	31.9	36	OЄu	720	26.4	9-11-61	J	D	..	11	26	
D-6	Archie H. Parker	....	Du	16.6	30	OЄu	685	11.3	8-30-61	M	D	66	5	32	
D-7	J. T. Hughes, Jr.	....	S	.....	...	OЄu	662	.....	....	F	N	..	...	.....	Estimated flow, 25 gpm on 2-14-62.

Table 4.—*Records of wells and springs in Cherokee County, Ala.*—Continued

Well or spring	Owner	Driller	Type	Depth of well (feet)	Diameter of well (inches)	Water-bearing unit	Altitude of land surface (feet)	Water level: Above (+) or below land surface (feet)	Water level: Date of measurement	Method of lift	Use of water	Field determinations: Temperature (°F)	Field determinations: Chloride (Cl) (ppm)	Field determinations: Hardness as $CaCO_3$ (ppm)	Remarks
D-8	Dewey Tallent	Michel Houston	D	167	6	O€u	783	140.7	9- 5-61	J	D	..	4	94	Cased to 135 ft.
D-9	Ben Humphrey	....	Du	49.2	36	Oc	709	46.3	9- 5-61	M	D	58	2	10	Not cased.
D-10	A. H. Moseley	Rogers Well Drillers.	D	100	6	Oc	675	25.0	8-23-61	J	D	..	4	152	Cased to 21 ft. Supplies 2 families.
E-1	Billy Ray	Hawthorne Well Drillers.	D	96	6	O€u	702	56.0	8-25-61	J	D	..	2	12	Cased to 94 ft. Yield reported, 8 gpm in September 1960.
E-2	John M. Doherty	Virgil Mitchell	D	69	6	O€u	691	49.3	8-25-61	J	D,S	..	39	182	Cased to 64 ft. Supplies 1 family and 35 head of stock. Yield reported, 7 gpm in 1954.
E-3	Ray Cecil Burkhalter	Rogers Well Drillers.	D	66	6	O€u	695	33.6	8-23-61	J	D,P	..	4	90	Cased to 51 ft. Supplies 2 families and store. See driller's log in table 6.
E-4	C. E. Chesnut	....	Du	25.8	30	O€u	599	16.6	9-12-61	M	D	61	28	50	Not cased.
E-5	...do	....	Du	42.7	30	O€u	606	24.1	9-13-61	M	D	60	32	82	Rock curbing.
E-6	Robert Bell	....	D	150.5	6	Mf (?)	646	37.8	9-12-61	J	D,S	..	2	196	Supplies 1 family and 20-30 head of stock.
E-7	Miss Buford Bell	....	Du	27.0	42	O€u	600	17.8	9-13-61	J	D	..	11	50	Not cased.

E-8	Dwight Henderson	.....	D	100	6	O€u	634	76.7	9-13-61	J	D	..	4	162	Supplies 2 families.
F-1	H. R. Hughes, Jr.	-- O'Dell	D	102	....	O€u	708	72	8- -61	J	D	..	4	18	
F-2	Rinehart Junior High School.	Rogers Well Drillers.	D	328	6	O€u	812	128.9	8-25-61	P	P	..	2	180	Supplies 90 students and 5 teachers.
F-3	Alabama Power Co.	.....	Du	36.8	36	Srm (?)	797	14.5	9- 6-61	M	D	60	11	20	Not cased.
F-4	...do.	.....	D	318	6	Mtm	718	22.1	8-28-61	J	D	..	...	.....	Former supply for sawmill and 40 families.
F-5	Carl Lewis	Hawthorne Well Drillers.	D	57	6	Srm	701	12.7	8-28-61	N	N	..	...	.....	Cased to 9 ft. Water contains excessive iron.
F-6	...do.	...do.	D	83	6	Mtm	701	29.2	8-28-61	J	D	..	2	142	Cased to 71 ft.
F-7	J. C. Wilson	...do.	D	185	6	O€u	699	46.3	9-11-61	J	D	..	4	148	Cased to 60 ft.
F-8	Miss Viola Bannister.	.....	Du	46.1	36	O€u	772	33.2	9-11-61	J	D	..	11	22	Not cased. Supplies 2 families.
F-9	Tom Burleson	Hancock and Chesnut.	D	173	6	O€u	758	121.7	9- 6-61	J	D	..	2	8	
F-10	Jerry G. Leath	.....	Du	22.3	42	Oc	660	15.8	9- 5-61	J	D	..	50	478	Lined with rock to 22 ft.
F-11	Ralph Martin	.....	S	.....	....	O€u	644	.....	....	F	D	58	2	130	Measured flow, 2,100 gpm on 2-14-62.
F-12	Mrs. O. L. Tumlin	Rogers Well Drillers.	D	126	6	Mtm	768	55.5	9-15-61	J	D	..	4	96	
F-13	V. B. Taft	.....	S	.....	....	Mtm	773	.....	....	F	D	58	11	124	Taft Spring. Estimated flow, 20 gpm on 2-15-62.
F-14	Clarence Crane	.....	Du	22.0	30	O€u	744	22.7	9-15-61	M	D	60	18	18	Not cased. Inadequate during dry season.
F-15	E. G. Slayton	.....	Du	31.0	48	O€u	801	21.8	9-15-61	M	D	59	4	12	Not cased. Supplies 2 families. Dry during summer of 1954.
*F-16	T. A. Ray	.....	S	.....	....	O€u	628	.....	....	F	N	59	4	108	Waterloo Spring. Measured flow, 2,500 gpm on 2-14-62
F-17	S. E. Looney	Michel Houston	D	102	6	O€u	684	70.8	9- 6-61	J	D,P	..	4	100	Supplies 1 family and store.
F-18	Marie Laws	Rogers Well Drillers.	D	118.1	6	Oc	662	14.3	8-23-61	M	D	61	4	248	
F-19	Hugh Reed	.....	D	85.8	6	Oc	640	32.3	9-11-61	M	D	61	7	146	

Table 4.—*Records of wells and springs in Cherokee County, Ala.*—Continued

Well or spring	Owner	Driller	Type	Depth of well (feet)	Diameter of well (inches)	Water-bearing unit	Altitude of land surface (feet)	Water level: Above (+) or below land surface (feet)	Water level: Date of measurement	Method of lift	Use of water	Field determinations: Temperature (°F)	Field determinations: Chloride (Cl) (ppm)	Field determinations: Hardness as $CaCO_3$ (ppm)	Remarks
F.20	C. D. Sanford......	....	Du	37.4	30	OꞒu	650	23.7	9-15-61	M	D	60	2	50	Cased to 37 ft.
F-21	C. M. Thomas......	Rogers Well Drillers.	D	150(?)	6	OꞒu	659	50.9	9-13-61	J	D	..	25	110	Water contains excessive iron.
*F-22	Milton Erwin	....	S	.....	...	OꞒu	590	.....	....	F	D	59	2	124	Erwin Spring. Measured flow, 800 gpm on 2-14-62.
F-23	Hoyt Hurley........	....	Du	25.5	30	Oc	661	21.0	9-11-61	M	D	59	117	450	Not cased.
F-24	W. D. Browder	Rogers Well Drillers.	D	72	6	Mf (?)	646	39.9	9-12-61	J	D	..	25	24	Water contains excessive iron.
G-1	Doyle Tidmore.....	....	D	42.5	6	IPpv	1,205	29.9	9-25-61	M	D	62	7	16	Cased to 6 ft. Inadequate during dry season.
G-2	...do.............	Taylor Gozia	D	85	6	IPpv	1,205	25.2	9-25-61	N	N	..	...	.....	Cased to 4 ft. Water contains excessive iron.
G-3	J. M. and C. A. Daniel.	....	Du	47.9	30	Mtm	679	30.6	9-15-61	M	D	59	25	58	Lined with rock.
G-4	Grady New	....	D	26.9	6	IPpv	1,203	15.0	9-25-61	M	D	61	4	10	Water contains excessive iron.
G-5	Amanda Tucker and Ellie Teague.	Hawthorne and Hancock.	D	71.6	6	IPpv	1,131	34.0	9-25-61	N	N	..	...	.....	Do.
G-6	...do	...do..........	D	116	6	IPpv	1,131	41.5	9-25-61	N	N	..	...	.....	Do.
G-7	...do	....	D	43	6	IPpv	1,120	17.9	9-25-61	J	D	..	4	8	6-in. terra-cotta casing to 5 ft.

G-8	...do	....	D	31.9	6	IPpv	1,110	21.1	9-25-61	P	S	62	2	14	6-in. terra-cotta casing to 4 ft. Supplies 2-3 head of stock. Measured yield, ¼ gpm for 1 hr. on 9-25-61.
*G-9	....	....	S	.....	...	Mtm	597	....	....	F	N	59	2	150	Congo Spring. Measured flow, 1,700 gpm on 5-10-55 and 1,600 gpm on 2-14-62.
G-10	Charlie Hindmon ...	Michel Houston ..	D	127	6	OЄu	720	78.3	9-15-61	M	D	60	2	10	Cased to 127 ft.
H-1	J. L. Manley	....	D	80	6	IPpv	996	27.5	10- 4-61	J	D	..	4	32	Supplies 2 families. Water contains excessive iron.
H-2	Andy Mitchell	....	D	44.7	6	IPpv	916	28.6	10- 4-61	M	D	61	4	64	
H-3	Paul Lawson	Hancock and Chesnut.	D	40	8-6	IPpv	1,050	12.0	9-26-61	M	D	65	4	14	8-in. terra-cotta casing to 5 ft., 6-in. open hole below.
H-4	J. E. Dantzler	....	D	40	6	IPpv	1,027	7.5	10- 6-61	J	D,P	..	2	24	Cased to 3 ft. Supplies 1 family and store. Water contains excessive iron. Installed water conditioner.
H-5	...do	....	D	38.4	6	IPpv	1,027	7.7	10- 6-61	N	N	..	...	....	Water contains excessive iron.
H-6	P. K. Brindley.....	....	D	31.9	...	IPpv	891	22.7	10- 4-61	M	D	61	7	14	Inadequate during dry season.
H-7	Dewey Brune	....	D	55.8	6	IPpv	869	17.2	10- 6-61	J	D,P	..	Trace	26	Supplies 1 family and service station. Water contains excessive iron.
H-8	R. H. Mackey......	Hawthorne and Hancock.	D	127	6	IPpv	942	40.4	10- 4-61	J	D,S	..	4	80	Cased to 24 ft. Supplies 4 families and 55 head of stock.
H-9	G. H. Farmer	Dewey Yancy....	D	39.7	6	IPpv	934	22.4	10- 6-61	J	D	..	4	38	Cased to 6 ft. Water contains excessive iron.
*H-10	Sandrock High School.	Rogers Well Drillers.	D	126	6	IPpv	928	28.3	9-26-61	J	P	..	2	58	Supplies 406 students and 16 teachers. Water contains excessive iron.

Table 4.—*Records of wells and springs in Cherokee County, Ala.*—Continued

Well or spring	Owner	Driller	Type	Depth of well (feet)	Diameter of well (inches)	Water-bearing unit	Altitude of land surface (feet)	Water level: Above (+) or below land surface (feet)	Water level: Date of measurement	Method of lift	Use of water	Field determinations: Temperature (°F)	Field determinations: Chloride (Cl) (ppm)	Field determinations: Hardness as $CaCO_3$ (ppm)	Remarks
H-11	R. H. Daniel.......	Hancock and Chesnut.	D	75.9	30-6	IPpv	979	15.9	9-28-61	J	D	..	4	34	30-in. dug well to 18 ft. and 6-in. open hole from 18 to 75.9 ft. Supplies 3 families.
H-12	W. G. Abernathy ...	....	D	31	6	IPpv	870	9.6	10- 4-61	J	D	..	2	18	Cased to 20 ft. Water contains excessive iron. Installed water conditioner. Yield reported, 30 gpm in 1951.
H-13	H. A. Hood........	....	D	44.4	6	IPpv	864	29.0	9-26-61	M	D	61	138	54	
H-14	Dan Beck	....	D	.....	6	IPpv	863	19.1	10- 6-61	J	D	..	4	38	Supplies 2 families. Water contains excessive iron.
H-15	H. L. Simpson	-- O'Dell........	D	131	6	IPpv	974	35	8- -60	J	D	..	2	20	Cased to 35 ft. Water contains excessive iron.
H-16	T. A. Gladden	L. K. McElroy ...	D	56	6	IPpv	859	2.3	10-17-61	J	P	..	7	24	Supplies store and service station. Water contains excessive iron.
H-17	Joe Farley	Hawthorne Well Drillers.	D	38.1	6	IPpv	894	11.7	10- 6-61	P	D	..	4	54	
H-18	J. T. Kirby........	....	D	57.5	6	IPpv	891	22.5	10- 6-61	J	D	..	Trace	22	Water contains excessive iron.

H-19	Myrtle Chandler....	Dick Hood	D	74	6	IPpv	834	32.6	10-17-61	J	D	..	4	8	Cased to 2 ft. Supplies 2 families. Water contains excessive iron.
H-20	N. F. St. Clair.....	Rogers Well Drillers.	D	98.5	6	IPpv	859	37.1	9-28-61	N	N	..	...	....	Cased to 2 ft.
H-21	...do............	Hawthorne Well Drillers.	D	171	6	IPpv	859	4.9	10- 4-61	J	D	..	2	22	Cased to 10 ft. Water contains excessive iron. Yield reported, 1 gpm in 1959. Coal seam at about 100 ft.
H-22	C. L. St. Clair.....	...do	D	70	6	Oc	590	33.2	9-28-61	J	D	..	4	188	Supplies 2 families.
I-1	Mrs. J. C. Daniels..	Rogers Well Drillers.	D	47.1	6	Srm	586	15.8	8-28-61	M	D	62	4	18	
I-2	T. W. Hufsteler	....	D	32.0	6	IPpv	950	18.5	9-26-61	J	D	..	4	12	Cased to 5 ft.
*I-3	Mrs. W. M. Hancock.	Hancock and Chesnut.	D	200	6	IPpv	907	6.9	9-26-61	J	D, Ind, S	..	2	76	Cased to 4 ft. Supplies 2 families, cotton gin, and 2 head of stock. Flows during wet season.
I-4	Melvin Tucker	....	D	40.1	6	IPpv	939	18.3	9-26-61	M	D	62	32	70	Cased to 3 ft. Inadequate and muddy during dry season.
I-5	R. C. Wester.......	....	D	19.7	6	IPpv	900	19.1	9-26-61	M	D	62	2	10	Cased to 4 ft.
I-6	Herman Edge	Hancock and Chesnut.	D	70	6	IPpv	854	28.5	9-26-61	J	D	..	7	20	Cased to about 6 ft.
I-7	Mrs. Eula Coffey...	....	Du	33.9	48	Oc	595	29.5	9-25-61	M	D	60	39	180	Lined with rock to 33 ft.
I-8	Renfroe Daniel.....	....	Du	29.1	24	Oc	581	21.0	9-25-61	J	D	..	25	82	24-in. terra-cotta casing to about 27 ft. Supplies 2 families.
I-9	Mrs. G. E. W. Smith.	Rogers Well Drillers.	D	63.9	6	Srm	602	25.2	9-25-61	M	D	61	4	28	Water contains excessive iron.
I-10	H. B. Starling	....	Du	41.1	24	Srm (?)	624	30.7	9-25-61	J	D	..	57	16	Became dry summer of 1954.
I-11	Erskine Mitchell ...	....	D	53.3	6	IPpv	827	14.5	10- 4-61	J	D	..	11	32	Water contains excessive iron.

Table 4.—*Records of wells and springs in Cherokee County, Ala.*—Continued

Well or spring	Owner	Driller	Type	Depth of well (feet)	Diameter of well (inches)	Water-bearing unit	Altitude of land surface (feet)	Water level: Above (+) or below land surface (feet)	Water level: Date of measurement	Method of lift	Use of water	Field determinations: Temperature (°F)	Field determinations: Chloride (Cl) (ppm)	Field determinations: Hardness as $CaCO_3$ (ppm)	Remarks
I-12	Curtis Pruitt	....	Du	17.0	36	IPpv	846	12.5	9-28-61	M	D	64	50	30	Not cased. Inadequate during dry season.
I-13	P. E. Owen	....	D	163.8	6	O€u	640	83.9	9-28-61	N	D	..	...	....	
I-14	Kenneth St. Clair ..	Hancock and Chesnut.	D	130	6	O€u	606	65.0	9-28-61	J	D	..	2	160	Supplies 2 families.
J-1	C. E. Chesnut	....	Du	32.3	24	Mf (?)	611	26.2	9-12-61	M	D	60	25	172	Lined with rock to 32 ft.
J-2	Georgia Renderers, Inc.	....	D	92.8	6	Oc	614	26.2	9-13-61	M	D	61	71	292	
J-3	Oliver Zuber	Hancock and Chesnut.	D	60	6	O€u	625	22.9	9-15-61	J	D,S	..	2	10	Cased to 60 ft. Supplies 1 family and 21 hogs.
J-4	R. L. Story	....	D	100.0	6	Oc	641	29.9	9-13-61	N	N	..	...	....	Abandoned quarry.
*J-5	Gaylesville High School.	....	D	356	6	Mf	616	.....	....	T	P	..	4	120	Supplies 392 students and 15 teachers. Pump set at 300 ft.; can be pumped dry.
J-6	Gaylesville Oak Bowery Methodist Church.	Rogers Well Drillers.	D	.....	6	O€u	592	20.0	9-13-61	J	D	..	7	108	
J-7	Hobart Bishop	....	D	34.9	6	€c	588	23.1	9-12-61	M	D	61	7	182	Inadequate during dry season.

J-8	Paul K. McWhorter	Hancock and Chesnut.	D	314	6	Єc	582	12.6	9-12-61	N	N	..	...	.....	Cased to 25-30 ft. Yield reported, 20 gallons per hour in 1956.
J-9	W. T. Harton	Hawthorne Well Drillers.	D	56	6	Єc	589	10.2	9-15-61	J	D	..	2	122	Cased to 46 ft.
J-10	V. E. Smith	Hancock and Chesnut.	D	45	6	Єc	601	11.8	9-11-61	J	D,P	..	32	332	Cased to 38 ft. Supplies 1 family and truck stop. Bedrock at 18 ft. and cavity 40 to 45 ft.
J-11	-- Bedwell	....	D	.....	10	Єc	579	1.0	8-22-61	P	Irr	..	21	228	Supply used to water lawn. Former supply for town of Cedar Bluff.
J-12	Town of Cedar Bluff	H. W. Peerson Drilling Supply Co.	D	300	8-6	Єc	586	11.1	9-12-61	T	N	..	...	.....	Well 8-in. to 200 ft. and 6-in. 200 to 300 ft. Former supply for town of Cedar Bluff. See fig. 5, sample log in table 5, and driller's log in table 6.
J-13	...do	...do	D	375	8-6	Єc	578	15	1960	T	N	..	...	.....	Former supply for town of Cedar Bluff. See sample log in table 5.
K-1	R. B. Stancell	....	Du	34.1	30	Єc	585	22.3	9-13-61	J	D,S	..	4	108	Lined with rock. Supplies 1 family and 22 head of stock.
K-2	T. F. Bouchillon	....	D	65	6	Єc	655	13.8	9-18-61	J	D	..	11	218	
K-3	John Richardson	Hancock and Chesnut.	D	70	6	Mf (?)	675	12.6	9-18-61	N	N	..	...	.....	Cased to about 50 ft. Yield reported, 6-7 gpm in August 1961.
K-4	Edward Black	Rogers Well Drillers.	D	108	6	Єc	680	54.9	9-18-61	J	D	..	4	152	
K-5	Robert Bishop and E. Early.	....	D	50	6	Єc	646	5.4	9-18-61	J	D	..	4	242	Supplies 3 families. Flowed for several days after drilled.
K-6	W. J. Smith	....	Du	25.1	30	Qal	621	16.3	9-18-61	M	D	62	7	20	30-in. terra-cotta casing to 25 ft.

Table 4.—*Records of wells and springs in Cherokee County, Ala.*—Continued

Well or spring	Owner	Driller	Type	Depth of well (feet)	Diameter of well (inches)	Water-bearing unit	Altitude of land surface (feet)	Water level: Above (+) or below land surface (feet)	Water level: Date of measurement	Method of lift	Use of water	Field determinations: Temperature (°F)	Field determinations: Chloride (Cl) (ppm)	Field determinations: Hardness as $CaCO_3$ (ppm)	Remarks
K-7	H. J. Chapman.....	....	Du	19.5	24	Qal	609	13.2	9-18-61	M	D	60	18	28	
K-8	Joe Loveless......	Hancock and Chesnut.	D	69	6	Qal	617	9.6	9-18-61	J	D	..	4	34	Cased to 69 ft.; slotted near bottom.
L-1	O. B. Wilson	Cherokee Well Drillers (?).	Du-D	64.1	24-6	Qal	586	15.1	11-21-61	J	D	..	2	24	Drilled within dug well. 24-in. casing to 18 ft.; 6-in. casing from 17 to about 29 ft. Supplies 2 families.
L-2	Mrs. Henrietta Poole Wade.	....	Du	41.9	36	Qal	634	33.4	9-18-61	M	D	60	21	18	Supplies 2 families.
L-3	Alexis Junior High School	Hawthorne Well Drillers (?).	D	238	6	Qal	599	114.4	11-21-61	J	P	..	2	30	Supplies 102 students and 5 teachers.
L-4	P. H. Flynt	....	Du	13.7	24	Qal	570	10.0	11-21-61	J	D	..	21	32	Inadequate during dry season.
L-5	J. D. Lindsey	....	Du	23.1	36	Ꞓc	572	14.4	11-21-61	P	D	..	81	70	Not cased. More water since completion of Weiss Reservoir.
L-6	R. F. Lindsey	....	Du	40.6	36	Ꞓc	627	26.6	11-21-61	P	D	..	2	64	Not cased.
L-7	Ruby Arnold.......	Hancock and Chesnut.	D	82.9	6	Ꞓc	635	45.9	11-21-61	M	D	62	4	130	
L-8	Joe G. Jennings....	....	D	270(?)	6	Ꞓc	624	26	1959	P	D	..	113	602	Yields very little water.

L-9	Friendship Baptist Church.	....	Du	12.3	18	€c	593	10.0	11-21-61	J	D	..	14	194	
L-10	J. W. Graham	....	D	32.3	6	€c	596	2.2	12- 1-61	M	N	62	25	194	House burned.
L-11	Charles Rosser	Hawthorne Well Drillers.	D	60	6	€c	611	15.2	12- 1-61	J	D	..	92	354	Cased to 40 ft. Will pump dry in about 6 hrs.
L-12	Alton Kerr.........	Michel Houston ..	D	64	5	€c	627	8.6	12- 1-61	M	D	63	11	234	Supplies 2 families.
L-13	B. G. Twilley	Hawthorne Well Drillers.	D	40	6	€c	630	6.8	12- 1-61	J	D	..	21	362	
M-1	Mrs. O. Jordan.....	....	Du	17.5	30-24	Qal	584	13.9	11- 6-61	M	D	63	7	44	24-in. casing from 11 to 17 ft.
M-2	Mrs. Willie Smith...	Hancock and Chesnut.	D	90	6	€c	602	26.1	11-14-61	J	D	..	21	174	Yield reported, 20 gpm in October 1961. Water enters at 40 ft.; very little below.
M-3	C. H. Pruett, Jr....	Cherokee Well Drillers.	D	.....	6	Qal	611	18.2	11-14-61	J	D	..	7	24	
M-4	Joe Newberry......	....	Du	17.1	36	€c	675	14.0	11-14-61	M	D	63	152	58	
M-5	Albert Neyman.....	....	Du	15.1	30-24	Qal	625	12.8	11- 6-61	J	D	..	7	16	24-in. casing from 9 to 15 ft.
M-6	R. L. Guice	....	Du	20.3	24	€c	612	10.6	11- 8-61	M	D	..	...	.....	
M-7	H. J. Bishop.......	Cherokee Well Drillers.	D	128	6	Qal	585	18.7	11-14-61	J	D	..	2	40	Cased to 37 ft. Supplies 2 families.
M-8	A. L. Steed	...do	D	103	6	€c	585	8.8	11- 8-61	J	D	..	2	112	
M-9	Pruett's Fishing Camp.	...do	D	112	6	Qal	579	21.6	11- 8-61	J	P	..	7	34	Supplies store, service station, cafe, and fishing camp; inadequate at times.
M-10	E. S. Young	Hancock and Chesnut.	D	120	6	€c	604	37.0	11- 8-61	J	S	..	4	70	Supplies turkey farm.
M-11	V. C. Singleton	....	D	.....	6	€c	680	26.9	11- 8-61	J	S	..	2	68	Supplies chicken farm.
M-12	Hoyt Jorden	....	D	45.8	6	€c	612	13.5	11- 8-61	M	D	63	78	244	
M-13	Powell Jorden	....	Du	17.3	24	€c	577	15.6	11- 8-61	M	D	62	25	252	Inadequate during dry season.
M-14	B. H. New	Hawthorne Well Drillers.	D	125	6	Qal	588	16.3	11-14-61	J	D	..	11	8	Yield reported, 4 gpm.

Table 4.—*Records of wells and springs in Cherokee County, Ala.*—Continued

Well or spring	Owner	Driller	Type	Depth of well (feet)	Diameter of well (inches)	Water-bearing unit	Altitude of land surface (feet)	Water level: Above (+) or below land surface (feet)	Water level: Date of measurement	Method of lift	Use of water	Field determinations: Temperature (° F)	Field determinations: Chloride (Cl) (ppm)	Field determinations: Hardness as $CaCO_3$ (ppm)	Remarks
M-15	Clyde H. West	Hawthorne Well Drillers.	D	99	6	Ꞓc	582	23.2	11-21-61	J	D	..	11	132	Original depth 61 ft.
N-1	John F. Ray	Hancock and Chesnut.	D	80	6	Qal	577	12.3	11- 6-61	J	D	..	2	22	
N-2	R. B. Baker	Hawthorne Well Drillers.	D	82	6	Ꞓc	577	13.3	10-26-61	J	D	..	4	78	
N-3	Donald Doey	Hancock and Chesnut.	D	100(?)	6	Ꞓc	596	12.5	10-26-61	N	N	..	...	.....	
N-4	Mrs. Tevis Burke ..	Rogers Well Drillers.	D	80	6	Ꞓc	.....	13.4	11- 6-61	J	D	..	32	80	
N-5	W. M. Hancock	Hancock and Chesnut.	D	112	6	Ꞓc	586	3.3	4-23-62	N	N	..	...	.....	Cased to 60 ft. Reported yield, 80 gallons per hour.
N-6	Joe Bob Smith	....	Du	22.6	30	Qal	598	20.0	10-26-61	P	D	..	7	20	Not cased.
N-7	James Jackson	Hawthorne Well Drillers.	D	80(?)	6	Ꞓc	555	15	10- -56	J	D,P	..	4	58	Supplies 1 family and service station.
N-8	Lamar Lowe	....	Du	17.3	24	Ꞓc	553	12.7	10-26-61	J	D	..	28	20	
N-9	Jack Norton	....	D	47.7	6	Ꞓc	613	8.5	11- 6-61	M	D	65	4	206	
N-10	C. D. Steed	Hawthorne Well Drillers.	D	80	6	Ꞓc	638	18.1	11- 6-61	J	D	..	2	124	
N-11	Roy Grimes	Hancock and Chesnut.	D	84	6	Ꞓc	667	19.7	11- 6-61	N	N	..	...	.....	

N-12	Vance Stinson	...do	D	100	6	Єc	576	2.0	1-31-62	J	D,S	..	18	122	Cased to 42 ft. Supplies 1 family and 8 head of stock.
N-13	R. W. Sentell	Rogers Well Drillers.	D	79	6	Єc	551	11.5	10-24-61	J	D	..	Trace	80	
N-14	Frank Lowe	....	D	85.2	6	Qal	563	17.9	10-24-61	J	D	..	7	56	
N-15	R. L. Vaughan	Hawthorne Well Drillers.	D	160	6	Єc	578	4.4	1-31-62	J	D	..	25	342	Cased to 21 ft.
N-16	Jeff D. Jorden and Co.	....	Du	25.3	24	Єc	596	6.6	2- 7-62	J	D	..	71	112	24-in. terra-cotta casing to 24 ft.
O-1	Willie McDaniel	....	D	137	6	OЄu	637	80.2	9-28-61	J	D	..	7	180	Cased to 122 ft. Yield reported, 20 gpm in 1954.
O-2	Mrs. M. Roberson	Rogers Well Drillers.	D	96	6	OЄu	605	38.2	9-28-61	J	D	..	4	134	Cased to 90 ft.
*O-3	Tenn., Ala., and Ga. RR.	....	S	.....	..	Mtm	612	.....	....	F	N	61	2	138	Bristow Spring. Measured flow, 210 gpm on 5-10-55 and 250 gpm on 2-14-62.
O-4	Hoyt Mackey	Hawthorne Well Drillers.	D	82	6	Єc	580	7.5	10-24-61	J	D	..	4	124	Yield reported, 40 gpm in 1954. Finished in limestone.
O-5	O. D. Chambers	...do	D	135	6	Єc	618	57.0	10-26-61	J	D	..	2	126	Cased to about 78 ft.
O-6	H. M. Mackey	...do	D	55	6	Єc	575	16.0	10-18-61	J	D	..	2	124	
O-7	J. B. Rogers	Rogers Well Drillers.	D	.....	6	Єc	601	.....	....	J	D	..	7	176	
O-8	Mackey's Service Station.	...do	D	165	6	Єc	604	25.1	10-18-61	J	Ind	..	2	174	
O-9	W. M. Smith	...do	D	116(?)	6	Єc	577	13.8	10-18-61	J	D	..	35	140	Cased to 22 ft. Inadequate at times. Yield reported, 10 gallons per hour in 1951.
O-10	Alabama Power Co. Weiss Dam.	Alabama Power Co.	D	80	6	Qal	548	22	4-10-61	S	Ind	..	7	192	Cased to 39.5 ft.; slotted 29.5 to 39.5 ft. with 12-in. diameter gravel pack. Yield reported, 25-100 gpm in July 1961. See driller's log in table 6.

Table 4.—*Records of wells and springs in Cherokee County, Ala.*—Continued

Well or spring	Owner	Driller	Type	Depth of well (feet)	Diameter of well (inches)	Water-bearing unit	Altitude of land surface (feet)	Water level: Above (+) or below land surface (feet)	Water level: Date of measurement	Method of lift	Use of water	Field determinations: Temperature (°F)	Field determinations: Chloride (Cl) (ppm)	Field determinations: Hardness as $CaCO_3$ (ppm)	Remarks
O-11	Alabama Power Co. Weiss Dam.	Alabama Power Co.	D	80	6	Qal	548	19	6- 9-61	S	Ind	..	...	.....	Cased to 43 ft.; slotted 28 to 43 ft. with 12-in. diameter gravel pack. Yield reported, 30-90 gpm. See driller's log in table 6.
O-12	Joe R. Awbrey.....	Rogers Well Drillers.	D	200	6	Єc	611	20	1958	S	D	..	4	152	Yield reported, 60 gallons per hour in 1958.
O-13	Wayne Sewell......	....	D	65	6	Єc	611	14.9	10-23-61	J	D	..	4	78	
O-14	E. A. Higgins	Rogers Well Drillers.	D	90	24-6	Qal	616	21.1	10-23-61	J	D	..	4	22	Dug to 23.2 ft. and drilled from 23.2 to 90 ft.
O-15	Livingston Junior High School.	....	D	186.9	6	Єc	558	14.5	10-23-61	J	P	..	4	220	Supplies 147 students and 8 teachers. Well no. 1.
O-16	...do	....	D	.....	6	Єc	558	.....	....	J	P	..	...	.....	Supplies 147 students and 8 teachers. Well no. 2.
O-17	Grady Miller.......	....	D	50.9	6	Єc	558	5.2	10-23-61	M	D	..	...	.....	
O-18	Alabama Power Co. Weiss Dam.	Alabama Power Co.	D	80	6	Qal	559	12	4-18-61	S	Ind	..	4	68	Cased to 70 ft.; slotted 15 to 24 ft. with 12-in. diameter gravel pack. Supplies drinking and bathroom water for power house. Yield reported, 37 gpm for 8 hrs. in May 1961. See driller's log in table 6.

O-19	. . . do	. . . do	D	80	6	Qal	545	21	5- 8-61	S	Ind	. .	2	108	Cased to 32.8 ft.; slotted 20 to 30 ft. with 12-in. diameter gravel pack. Supplies guest house. Yield reported, 40 gpm for 8 hrs. in May 1961. See driller's log in table 6.
O-20	B. F. Lancaster . . .	Hawthorne Well Drillers.	D	122	6	Єc	585	22	9- -60	J	D	. .	7	352	Cased to 23 ft. Yield reported, 5 gpm in September 1960.
O-21	Mrs. C. A. Burke . . .	Rogers Well Drillers.	D	. . . . .	6	Qal	602	23.5	10-23-61	J	D	. .	4	36	Supplies 2 families.
P-1	Richard Sewell	. . . .	Du	19.3	24	Qal	582	16.7	10-23-61	M	D	62	4	10	
P-2	W. D. Hood	Hawthorne Well Drillers.	D	90	6	Qal	552	11.9	10-23-61	J	D	. .	4	42	Supplies 2 families.
P-3	B. B. McKinney	. . . do	D	78.4	6	Qal	563	16.0	10-23-61	J	D	. .	4	26	
P-4	King Baker	Rogers Well Drillers.	D Du	65	30- 6	Qal	575	11.0	3- 9-62	J	D	. .	4	60	First drilled to 65 ft., then dug around 6-in. well to 25.7 ft. Yields little water. Inadequate during dry season.
P-5	Barrington Estate . .	. . . .	Du	20.9	36	Єc	562	5.2	3- 9-62	M	D	54	2	92	Rock lined.
P-6	Joe Burks	. . . .	Du	21.5	24	Qal	571	2.2	3-16-62	M	D	58	18	20	24-in. terra-cotta casing to 21 ft.
Q-1	-- Ellis	. . . .	Du	19.6	24	Єc	571	11.9	1-29-62	M	D	59	21	446	Terra-cotta casing.
Q-2	P. L. Hannah	Rogers Well Drillers.	D	40	6	Єc	562	2.6	1-31-62	J	D	. .	4	80	Supplies 1 family and store.
Q-3	Mrs. Stella Graham .	. . . .	Du	12.7	30	Qal	550	2.6	3- 9-62	M	D	55	25	20	24-in. concrete casing from 3.5 to 12.5 ft.
Q-4	Mrs. Etta Patty	Rogers Well Drillers.	Du D	49.9	24- 6	Єc	575	14.1	3- 9-62	M	D	60	18	98	24-in. terra-cotta casing to 25 ft.; 6-in. open hole below.

Table 4.–*Records of wells and springs in Cherokee County, Ala.* -Continued

Well or spring	Owner	Driller	Type	Depth of well (feet)	Diameter of well (inches)	Water-bearing unit	Altitude of land surface (feet)	Water level: Above (+) or below land surface (feet)	Water level: Date of measurement	Method of lift	Use of water	Field determinations: Temperature (°F)	Field determinations: Chloride (Cl) (ppm)	Field determinations: Hardness as $CaCO_3$ (ppm)	Remarks
Q-5	S. C. Graham	J. L. Abernathy	D	230	24-6	Єc	560	3.0	1-31-62	J	D	..	35	174	24-in. terra-cotta casing to 18 ft., none below. Dug to 55 ft. and drilled from 55 to 230 ft.
Q-6	...do	...do	D	115	6	Єc	560	1.4	1-31-62	N	N	..	...	.....	Yields very little water.
Q-7	Curtis Grimes		Du	17.4	24	Qal	569	2.2	1-29-62	J	D	..	25	42	Cased to 17 ft.
Q-8	Mrs. Della Burnett		D	95	6	Єc	575	20.4	3-16-62	J	D	..	50	222	Cased to 20 ft.
Q-9	G. F. Byram		D	110	6	Єc	596	9.0	1-31-62	J	D	..	103	726	
Q-10	J. W. Williams		Du	18.0	60	Єc	593	1.4	3-16-62	P	D	..	4	262	
Q-11	George Waldrop		Du	19.3	36	Єc	631	5.6	3-16-62	J	D	..	21	200	Lined with cement blocks.
Q-12	Mrs. R. S. Story	Hancock and Chesnut.	D	80	6	Єc	624	6.5	1-31-62	J	D	..	131	624	Cased to 21 ft. Supplies 2 families. Yield reported, 12 gpm in 1958.
Q-13	H. R. Whatley	...do	D	85	6	Єc	615	6.5	1-30-62	J	D	..	14	192	Yield reported, 20 gpm in 1957.
R-1	Tom Jordan		D	84.3	6	Єc	633	10.7	11- 9-61	M	D	63	7	122	
R-2	...do		D	60.8	6	Єc	604	21.1	11- 9-61	M	D	62	2	180	
R-3	...do		D	21.6	6	Єc	575	12.3	11- 8-61	M	D	63	21	286	Water becomes muddy at times.

R-4	John Harold Anthony	Hawthorne Well Drillers.	D	77.9	6	Ɛc	589	25.4	11- 8-61	M	D	61	4	138	
R-5	Mrs. Doc Lindsey . .	. . . .	D	62.6	6	Ɛc	610	16.0	11- 9-61	M	D	62	4	168	
R-6	Ellis Brothers	Hancock and Chesnut.	D	72.3	5	Ɛc	616	22.6	11- 9-61	J	D	. .	2	156	Will pump dry.
R-7	. . . do	. . . .	D	16.9	6	Ɛc	594	12.3	11- 9-61	M	D	63	50	344	
R-8	Mrs. J. E. McKinney	. . . .	D	39.3	6	Ɛc	581	21.3	3-16-62	M	D	61	46	676	Cased to about 20 ft.
R-9	Ellis Brothers	. . . .	D	54.3	8	Ɛc	606	17.7	11- 9-61	M	D	63	35	350	
R-10	John L. Ellis	Hancock and Chesnut.	D	120	6	Ɛc	636	28.8	11- 9-61	J	D	. .	2	146	Cased to 11 ft. Yield reported, 35 gpm in June 1961.
R-11	Ellis Brothers	. . . .	Du	17.5	24	Ɛc	606	15.2	11-14-61	M	D	62	25	226	24-in. terra-cotta casing to 17 ft. Inadequate during dry season.
R-12	Burval Hilburn	. . . .	S	. . . . .	. . .	Ɛc	672	. . . . .	. . . .	F	D	60	2	198	Measured flow, 250 gpm on 2-15-62.
R-13	J. T. Bright	Hancock and Chesnut.	D	104	6	Ɛc	662	17.2	11-14-61	J	D	. .	4	290	Cased to 100 ft.; slotted near bottom. Inadequate during dry season.
R-14	Mrs. Willie Jones. . .	. . . .	Du	24.5	24	Ɛc	647	1.9	1-29-62	J	D	. .	25	96	24-in. terra-cotta casing to 24 ft.
R-15	Joe Bedwell	. . . .	D	80	6	Ɛc	617	6.6	1-29-62	J	D	. .	60	142	
R-16	Donald Williams and Emory Low.	. . . .	S	. . . . .	. . .	Ɛc	626	. . . . .	. . . .	F, J	D	60	4	98	Mountain Spring. Supplies 3 families. Measured flow, 580 gpm on 2-15-62.
R-17	J. T. Roberts	. . . .	S	. . . . .	. . .	Ɛc	583	. . . . .	. . . .	F, J	D	60	2	188	Coloma Spring. Measured flow, 300 gpm on 2-15-62.
R-18	Will Ellis	. . . .	Du	32.0	30	Ɛc	715	1.9	1-29-62	M	D	57	120	110	Not cased.
S-1	Hardin Junior High School.	Hawthorne Well Drillers.	D	150(?)	6	Ɛc	636	18.4	12- 4-61	J	P	. .	2	300	Supplies lunchroom and drinking water for 170 students and 6 teachers.

Table 4.—*Records of wells and springs in Cherokee County, Ala.*—Continued

Well or spring	Owner	Driller	Type	Depth of well (feet)	Diameter of well (inches)	Water-bearing unit	Altitude of land surface (feet)	Water level: Above (+) or below land surface (feet)	Water level: Date of measurement	Method of lift	Use of water	Field determinations: Temperature (°F)	Field determinations: Chloride (Cl) (ppm)	Field determinations: Hardness as $CaCO_3$ (ppm)	Remarks
S-2	Hardin Junior High School.	....	D	325	6	Єc	636	.....	....	J	P	..	...	.....	Supplies bathrooms; inadequate at times.
S-3	Providence Baptist Church.	....	S	.....	...	Єc	678	.....	....	F	P	61	2	162	Supplies church. Measured flow, 260 gpm on 2-15-62.
S-4	H. M. Snead	Rogers Well Drillers.	D	40	6	Єc	705	15.1	12- 1-61	J	D	..	11	204	Cased to 28 ft. Supplies 2 families and store.
S-5	Robert Browder	....	S	.....	...	Єc	679	.....	....	F	S	60	2	300	Supplies several head of stock. Measured flow, 970 gpm on 2-15-62.
S-6	E. L. Conaway	Cherokee Well Drillers.	D	72	6	Єc	756	21.4	12- 4-61	J	D,S	..	2	130	Supplies 1 family and 13 head of stock.
S-7	Jeff Lewis	Harvey Roden ...	D	92	6	OЄu	788	68	1956	J	D	..	2	6	Cased to 92 ft.
S-8	W. C. Bearden	Rogers Well Drillers.	D	209	6	OЄu	930	183.4	12- 4-61	J	D	..	2	62	Cased to 209 ft. Bauxite from about 80 to 130 ft. Seam of iron ore at about 208 ft.
S-9	Orbie Bishop	....	Du	31.5	36	OЄu	868	12.9	12- 4-61	M	D	60	4	12	
S-10	Sammy Rhinehart ...	Kilgore and Ingram.	D	93	6	OЄu	769	48.1	12- 4-61	J	D	..	2	78	Cased to about 63 ft.
S-11	Mrs. Ruth Thompson	Rogers Well Drillers.	D	186	6	OЄu	830	98.1	12- 4-61	J	D	..	4	102	Drilled through layer of bauxite.

V-1	D. W. Gilmer	....	S	.....	...	Єw	1,100 est.	.....	....	F	P	..	2	10	Log Hollow Spring. Supplies 40 families by gravity flow. Estimated flow, 50 gpm on 2-15-62.
V-2	E. F. Pope	....	Du	33.6	24	Єc	737	5.1	12-13-61	J	D,S	..	18	100	Cased to 33 ft. Supplies 1 family and 8 head of stock.
V-3	E. T. Welsh	Rogers Well Drillers.	D	.....	6	OЄu	762	5.9	12-13-61	J	D,S	..	4	46	Supplies 1 family and 1,200 chickens.
V-4	L. L. Millican	....	Du	41.7	42	Єs	861	3.7	4- 2-62	J	D,S	..	14	40	Not cased. Supplies 1 family and 5 to 6 head of stock. Became almost dry in 1954.
V-5	T. J. Pope	Rogers Well Drillers.	D	76	6	Єc	689	9.0	4- 2-62	J	D	..	4	146	Cased to 42 ft.
V-6	Harold Pope	Kilgore and Ingram.	D	100	6	OЄu	773	51.8	4- 2-62	J	D	..	4	60	Cased to about 90 ft.
V-7	Floyd Boswell	Hancock and Chesnut.	D	160	6	OЄu	820	20.3	4-10-62	J	D,S	..	4	62	Supplies 1 family and 6,000 chickens. Bedrock at about 135 ft.
V-8	E. H. Davis	do	D	80	6	Єs	797	12.2	4- 2-62	J	D,P S	..	11	76	Cased to 80 ft. Supplies 1 family, store, and 5 head of stock. Water contains excessive iron.
V-9	Edward J. Goss	....	S	.....	...	Єw	920	.....	....	F	D	57	2	8	Goss Spring. Supplies 1 family and store. Estimated flow, 50 gpm on 12-13-61.
V-10	Herman Dobbs	....	S	.....	...	Єw	908	.....	....	F	D	58	4	6	Estimated flow, 40 gpm on 12-13-61.
V-11	Mrs. Sutie Hulsey	....	Du	25.0	30	Єw	948	7.1	4-10-62	J	D	..	2	24	Becomes low during dry season.
*W-1	Louie Gravinsteader	....	S	.....	...	OЄu	627	.....	....	F	D	60	2	106	Sanford Spring. Measured flow, 2,500 gpm on 2-15-62.
W-2	Odis Parker	Hawthorne Well Drillers.	D	93	6	OЄu	642	40	7- -61	J	D	..	...	.....	Yield reported, 5 gpm in July 1961.

Table 4.—*Records of wells and springs in Cherokee County, Ala.*—Continued

Well or spring	Owner	Driller	Type	Depth of well (feet)	Diameter of well (inches)	Water-bearing unit	Altitude of land surface (feet)	Water level: Above (+) or below land surface (feet)	Water level: Date of measurement	Method of lift	Use of water	Field determinations: Temperature (°F)	Field determinations: Chloride (Cl) (ppm)	Field determinations: Hardness as $CaCO_3$ (ppm)	Remarks
W-3	....	....	S	.....	...	O€u	631	.....	....	F	N	60	2	134	Garvin (Cazey) Spring. Measured flow, 340 gpm on 2-15-62.
W-4	G. E. Pollard	....	Du	30.5	24	€c	704	1.2	12-13-61	P	D	60	11	174	Cased to 30 ft.
*W-5	Spring Garden High School.	Hawthorne Well Drillers.	D	112	6	O€u	667	6.6	12- 4-61	J	P	..	4	166	Supplies 448 students and 17 teachers.
W-6	Neal Borden	Hancock and Chesnut.	D	254	6	€c	662	9.9	1-29-62	S	D	..	21	2,290	
W-7	C. B. Harbour	....	S	.....	...	O€u	661	.....	....	F J	D	60	2	98	Harbour (Parker) Spring. Measured flow, 280 gpm on 2-15-62.
W-8	Mrs. Lillian Harper.	Hawthorne Well Drillers.	D	75	6	Mf (?)	682	11.9	4-10-62	J	D,S	..	4	174	Cased to 75 ft. Supplies 2 families and 6,500 chickens. See driller's log in table 6.
W-9	B. F. Mobley	Rogers Well Drillers.	D	112	6	€c	716	55	7- -61	J	D	..	4	158	
W-10	Paul H. Savage, Jr.	Cherokee Well Drillers.	D	190	6	€c (?)	708	31.9	12-13-61	J	D	..	2	172	Cased to 42 ft. Supplies 4 families.

W-11	P. H. Minton	Lloyd C. Green and Robert and John Westbrook.	D	1,025	8	OЄu	710	12.7	4- 2-62	J	D,S	..	4	142	Drilled to explore oil. 10-in. surface casing to 48 ft. and 8-in. from 0 to about 300 ft.; none below. Well plugged 200-300 ft. from bottom. Supplies 1 family and about 70 head of stock. Yield reported, 50 gpm with 35 ft. of draw-down. See sample log in table 5.
W-12	R. W. Naugher	Rogers Well Drillers.	D	.....	6	OЄu	676	11.1	1-29-62	J	D	..	4	188	
W-13	Frank J. Little	J. C. Dobbs	D	86	6	Єc	658	8.3	2- 1-62	J	D	..	11	236	Cased to 65 ft.
X-1	Mrs. L. P. Wood ...	....	Du	59.7	24	OЄu	853	38.5	4-10-62	M	D	61	4	14	Cased to 59 ft. Supplies 2 families. Almost dry in 1954.
X-2	G. R. Vaughan	Hawthorne Well Drillers.	D	150	6	Єc	636	1.9	1-30-62	M	D	60	4	62	Cased to 23 ft.
X-3	Carlos Sanford	....	Du	30.0	30	OЄu	745	2.8	1-30-62	J	D,S	..	11	28	Supplies 1 family and 35 hogs; inadequate during summer of 1961.
X-4	Louis D. Megnin ...	....	S	.....	...	OЄu	655	.....	....	F, J	D,S	61	4	106	Hendon Spring. Supplies 4 families and 10 to 30 head of stock. Measured flow, 480 gpm on 2-15-62.
X-5	James F. Estes	Hawthorne Well Drillers.	D	103	6	Єc	623	18.4	1-30-62	J	D,S	..	7	202	Cased to 37 ft. Supplies 1 family and 21 head of stock. Water enters at 83 ft.
X-6	E. H. Anderson	Hancock and Chesnut.	D	85	6	Mf (?)	630	4.0	1-30-62	J	D,S	..	7	28	Cased to 20 ft. Supplies 2 families, 70 hogs, and 43,000 chickens. Yield reported, 35 gpm in 1958.

Table 4.—*Records of wells and springs in Cherokee County, Ala.*—Continued

Well or spring	Owner	Driller	Type	Depth of well (feet)	Diameter of well (inches)	Water-bearing unit	Altitude of land surface (feet)	Water level: Above (+) or below land surface (feet)	Water level: Date of measurement	Method of lift	Use of water	Field determinations: Temperature (°F)	Field determinations: Chloride (Cl) (ppm)	Field determinations: Hardness as $CaCO_3$ (ppm)	Remarks
X-7	L. J. Williams	Hancock and Chesnut.	D	155	6	O€u	711	42.7	1-30-62	J	D	..	2	104	Cased to 140 or 150 ft.
X-8	Mrs. Myrtle Woolf ..	....	D	83	6	O€u	723	2.4	2- 1-62	J	D	..	2	56	Supplies 2 families. Water becomes turbid after heavy rain.
Y-1	Edwin H. Estes....	Fords Valley Well Drillers.	D	325	6	€c	569	6.0	1-30-62	J	D	..	46	244	
Y-2	...do	Hawthorne Well Drillers.	D	100	6	€c	569	.1	1-30-62	N	N	..	...	.....	Yields very little water during dry season.

Table 5.—*Sample logs of wells in Cherokee County, Ala.*

	Thickness (feet)	Depth (feet)
Well J-12		
Owner: Town of Cedar Bluff		
Driller: H. W. Peerson Drilling Supply Co.		
Conasauga Formation		
No sample	5	5
Limestone, light olive-gray; and moderate-yellow clay	5	10
Limestone, light olive-gray; dusky yellow shale; and light-gray clay	5	15
Limestone, light olive-gray and medium light-gray	10	25
Limestone, medium light-gray; and dusky yellow shale	5	30
Limestone, light olive-gray and medium light-gray; and dusky yellow shale	5	35
Limestone, medium-gray; and dusky yellow shale	5	40
Limestone, medium-gray; and dark-gray hard calcareous shale	10	50
Limestone, medium-gray and light olive-gray; and dark-gray hard calcareous shale	5	55
Limestone, medium-gray; and dark-gray hard calcareous shale	5	60
Limestone, medium-gray; dark-gray hard calcareous shale; and light-gray clay	5	65
Limestone, medium-gray; and medium-gray hard calcareous shale	5	70
Shale, medium-gray, hard, calcareous; and medium-gray limestone	5	75
Shale, medium-gray, hard, calcareous	5	80
Shale, medium dark-gray, hard, calcareous; and medium-gray limestone	5	85
Limestone, medium- to medium dark-gray; and medium dark-gray hard calcareous shale	5	90
Shale, medium dark-gray, hard, calcareous; and medium- to medium dark-gray limestone	10	100
Samples not available	200	300
Well J-13		
Owner: Town of Cedar Bluff		
Driller: H. W. Peerson Drilling Supply Co.		
Conasauga Formation		
No samples	40	40
Limestone, medium- to light-gray; light olive-gray shale; and crystalline calcite	5	45
Limestone, medium- to light-gray; light olive-gray and medium-gray shale; and calcite	5	50

Table 5.—*Sample logs of wells in Cherokee County, Ala.*—Continued

	Thickness (feet)	Depth (feet)
Well J-13—Continued		
Conasauga Formation—Continued		
Limestone, medium-gray; and light olive-gray, dusky yellow, and medium-gray shale	5	55
Limestone, medium-gray; light olive-gray and light-gray shale; and crystalline calcite	10	65
Limestone, medium- to light-gray; light-gray shale; and crystalline calcite	5	70
Shale, medium-gray, calcareous; medium- to light-gray limestone; and crystalline calcite	5	75
Limestone, medium- to light-gray; medium light-gray shale; and crystalline calcite	5	80
Shale, medium-gray and light olive-gray, calcareous; medium- to light-gray limestone; and calcite	10	90
Limestone, medium- to light-gray; and crystalline calcite	5	95
Limestone, medium- to medium light-gray; dark-gray calcareous shale; and crystalline calcite	5	100
Limestone, medium-gray; dark- to medium dark-gray calcareous shale; and crystalline calcite	10	110
Shale, dark-gray, calcareous; medium- to medium light-gray limestone; and crystalline calcite	10	120
Limestone, medium- to light-gray; medium-gray calcareous shale; and crystalline calcite	5	125
Shale, medium dark-gray, calcareous; medium- to light-gray limestone; and crystalline calcite	5	130
Limestone, medium- to light-gray; and crystalline calcite	10	140
Limestone, medium- to light-gray; dark-gray calcareous shale; and crystalline calcite	10	150
Limestone, medium- to light-gray; and crystalline calcite	10	160
Limestone, medium- to light-gray; medium dark-gray calcareous shale; and crystalline calcite	5	165
Shale, dark-gray, calcareous; and light-gray clay	5	170
Limestone, medium-gray; dark-gray calcareous shale; and crystalline calcite	5	175
Limestone, medium-gray; and crystalline calcite	5	180
Limestone, medium-gray; dark-gray calcareous shale; and crystalline calcite	15	195
Limestone, medium- to light-gray; and crystalline calcite	5	200
Limestone, medium-gray; dark-gray calcareous shale; and crystalline calcite	15	215
Limestone, medium- to light-gray; dark-gray calcareous shale; and crystalline calcite	15	230
Limestone, dark- to light-gray; and crystalline calcite	15	245
Limestone, medium- to light-gray; dark-gray calcareous shale; and crystalline calcite	5	250

Table 5.—*Sample logs of wells in Cherokee County, Ala.*—Continued

	Thickness (feet)	Depth (feet)
Well J-13—Continued		
Conasauga Formation—Continued		
Shale, dark-gray, calcareous; medium- to light-gray limestone; and crystalline calcite	5	255
Limestone, medium- to light-gray; dark-gray calcareous shale; and crystalline calcite	5	260
Limestone, medium- to light-gray; and crystalline calcite	15	275
Shale, dark-gray, calcareous; and medium-gray limestone	10	285
Shale, dark-gray, calcareous; and medium-gray limestone with calcite veinlets	5	290
Limestone, dark- to light-gray; and crystalline calcite	5	295
Limestone, medium- to light-gray; and crystalline calcite	25	320
Limestone, medium- to light-gray; very light gray shale; and crystalline calcite	5	325
Limestone, medium- to light-gray with calcite veinlets; and crystalline calcite	10	335
Limestone, medium-gray with white streaks; light-gray clay; and pyrite	15	350
Limestone, medium-gray; dark-gray calcareous shale; and pyrite	15	365
Limestone, medium- to light-gray; light-gray clay; and pyrite	10	375

Well W-11

Owner: P. H. Minton
Driller: Lloyd C. Green and Robert and John Westbrook

(Samples described by Winnie McGlamery[1])

	Thickness (feet)	Depth (feet)
Cambrian or Ordovician dolomites		
Quartz in the form of miniature geodes	30	30
Same with gray dolomite	20	50
Gray dolomite	8	58
Same with gray lime	12	70
Gray to pink and reddish tinged dolomite and limestone	12	82
Light gray dolomite	8	90
Same with pink tinged dolomite	5	95
Light gray dolomite	51	146
Light gray dolomite	54	200
Light gray dolomite	27	227
Medium gray dolomite	8	235
Gray dolomite	5	240
Gray finely crystalline dolomite	30	270
Same, medium and darker gray	12	282

Table 5.—*Sample logs of wells in Cherokee County, Ala.*—Continued

	Thickness (feet)	Depth (feet)
Well W-11—Continued		
Cambrian or Ordovician dolomites—Continued		
Gray dolomite	18	300
Medium gray dolomite	3	303
Gray dolomite	12	315
Medium and darker gray dolomite	15	330
Gray dolomite	97	427
Light gray dolomite	18	445
No sample	12	457
Light gray dolomite	8	465
No sample	2	467
Light gray to smoky dolomite	30	497
Same and dark gray shale with pyrite	33	530
Light gray and smoky dolomite	20	550
Smoky dolomite, crystallization much finer than sample above	40	590
Smoky colored dolomite	10	600
Light gray dolomite	30	630
Smoky dolomite	20	650
Smoky fine-grained dolomite	20	670
Smoky and medium gray dolomite	15	685
No sample	2	687
Smoky fine-grained dolomite	8	695
Smoky and dark gray dolomite	5	700
Smoky dolomite	5	705
No sample	1	706
Dark gray dolomite	9	715
Medium and dark gray dolomite	10	725
Dark gray to black dolomite	20	745
Same with light gray dolomite	15	760
Same and medium-gray dolomite	7	767
Gray dolomite	3	770
Gray dolomite with very dark streaks	16	786
Light gray dolomite	20	806
Same and dark gray dolomite	8	814
No sample	4	818
Light gray and dark gray dolomite	18	836
Light gray dolomite	7	843
No sample	2	845
Light gray and dark gray dolomite	10	855
Very dark gray dolomite	5	860
Same and light gray dolomite	13	873
Dark gray dolomite	6	879
Same and light gray dolomite	6	885
Light gray dolomite	6	891

Table 5.—*Sample logs of wells in Cherokee County, Ala.*—Continued

	Thickness (feet)	Depth (feet)
Well W-11—Continued		
Cambrian or Ordovician dolomites—Continued		
Light gray and bluish dolomite	12	903
No sample	1	904
Bluish dolomite	7	911
Light gray and bluish dolomite	34	945
Same, cherty?	8	953
Gray dolomite with almost black chert	5	958
Gray to black cherty dolomite	3	961
Bluish gray dolomite	4	965
Gray coarsely crystalline dolomite	22	987
Light gray dolomite	14	1,001
Light gray coarsely crystalline dolomite	14	1,015
Gray dolomite	10	1,025

[1] Paleontologist, Geological Survey of Alabama

Table 6.—*Drillers' logs of wells in Cherokee County, Ala.*

	Thickness (feet)	Depth (feet)
Well E-3		
Owner: Ray Cecil Burkhaulter; Driller: Rogers Well Drillers		
Clay with limestone boulders	50	50
Limestone	11	61
Cavity filled with white sand	5	66
Well J-12		
Owner: Town of Cedar Bluff; Driller: H. W. Peerson Drilling Supply Co.		
Dirt and clay	7	7
Chert and boulders	8	15
Limerock	48	63
Shale and limestone	37	100
Limerock	38	138
Limestone	102	240
Limestone, soft	35	275
Limestone and flint	10	285
Limestone	15	300
Well O-10		
Owner: Alabama Power Co., Weiss Dam; Driller: Alabama Power Co.		
Fill material	3	3
Clay, light brown with small amount of sand	14	17
Clay, gray with small amount of fine-grained sand and small gravel; gravel increasing in size at 25 feet	12	29
Shale, gray, hard	51	80
Well O-11		
Owner: Alabama Power Co., Weiss Dam; Driller: Alabama Power Co.		
Fill	3	3
Clay, light brown with small amounts of fine sand	10	13
Clay, gray with small amounts of sand and scattered small gravel	6.5	19.5
Clay, gray with small amounts of sand; gravel increasing in amount but size remaining small	9.5	29

Table 6.—*Drillers' logs of wells in Cherokee County, Ala.*—Continued

	Thickness (feet)	Depth (feet)
Well O-11—Continued		
Shale, gray	51	80
Well O-18		
Owner: Alabama Power Co., Weiss Dam Driller: Alabama Power Co.		
Sandy clay, brown	12	12
Clayey sand and gravel	5.5	17.5
Shale, brown	2.5	20
Shale, gray	22	42
Sand, coarse grained, with small amount of clay and gravel	1	43
Shale, gray with limestone stringers	3	46
Shale, gray	34	80
Well O-19		
Owner: Alabama Power Co., Weiss Dam Driller: Alabama Power Co.		
Fill	5	5
Sandy clay, light brown	7	12
Sandy clay, brown, with scattered pea to 1-in. gravel	9	21
Sandy clay, brown, with increasing pea to 1-in. gravel	8	29
Shale, gray	51	80
Well W-8		
Owner: Mrs. Lillian Harper Driller: Hawthorne Well Drillers		
Soil and clay	17	17
Limestone	33	50
Broken limestone	25	75