CHEMICAL ANALYSES OF WATERS OF ALABAMA

By

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And

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* Written by George H. Hazelhurst, Chief Sanitary Engineer, Alabama Board of Health, Montgomery, Alabama

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Clarke	37 (43)	Marshall	7
Clay	22	Mobile	40-41
Cleburne	22	Monroe	37
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Colbert	2 (43)	Morgan	5
Conecuh	37	Perry	28
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Dale	36	Saint Clair	17 (44)
Dallas	29 (43)	Shelby	15
DeKalb	8	Sumter	32
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Hale	28 (43)		
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Houston	39		

NOTE: Table numbers in parentheses refer to miscellaneous tables.

List of Tables and Zones in Order, with Counties

ZONE A

TABLE,	COUNTY
1	Lauderdale
	Laurence
2	Colbert
	Franklin
3	Limestone
	Madison
4	Jackson
5	Morgan

ZONE B

6	Winston
	Cullman
7	Marshall
8	DeKalb
9-10	Walker
11-12-13	Jefferson

ZONE C

14	Blount
15	Talladega
	Shelby
16	Talladega
17	St. Clair
18	Etowah
19-20	Calhoun
21	Cherokee

ZONE D

TABLE,	COUNTY
22	Chambers
	Clay
	Cleburne
	Coosa
	Randolph
23	Lee
	Tallapoosa

ZONE E

24	Fayette
	Marion
25	Bibb
	Chilton
	LaMar
26-27	Tuscaloosa
	Autauga
	Elmore

ZONE F

28	Pickens
	Hale
	Perry
29	Greene
	Dallas
	Lowndes
30	Montgomery
31	Macon
	Russell
	Bullock

ZONE G

32	Sumter
33	Marengo
	Wilcox
	Butler

ZONE G

TABLE,	COUNTY
34	Barbour
	Crenshaw
	Pike
35	Choctaw
	Coffee
36	Dale
	Henry

ZONE H

37	Monroe
	Clark
	Conecuh
38	Escambia
	Covington
39	Geneva
	Houston
40-41	Mobile
42	Baldwin
	Washington

MISCELLANEOUS

43-45	Chilton
	Clarke
	Colbert
	Dale
	Dallas
	Hale
	Madison
	Marengo
	Pickens
	Saint Clair
	Tuscaloosa

List of Analyses of Streams

Stream	County	Analysis No.	Table No.
Alabama River	-----	1	45
"	Dallas	1	29
"	"	2	43
Big Wills Creek	Jefferson	48	13
"	Etowah	12	18
Cahaba River	Jefferson	6	11
"	"	49	13
Cedar Creek	Franklin	3	2
Chattahoochee River	Chambers	1	22
"	Barbour	2	34
Choccolocco Creek	Calhoun	7	19
Conecuh River	Escambia	7	38
Coosa River, Mitchell Dam		2	22
"	Elmore	6	22
" Ala. Power Co. Steam Plant		2	45
Five Mile Creek	Jefferson	10-13	11
Hurricane Creek	Tuscaloosa	29	44
Mobile River	Mobile	19	41
North River	Tuscaloosa	30	44
Pea River	Coffee	2	35
Rock Creek	Colbert	6	2
Talladega Creek	Talladega	19	16
Tallapoosa River	Randolph	1	22
"	Tallapoosa	3	23
"	Elmore	3,5	27
Tennessee River	Morgan	8,9,16	5
"	Colbert	3	43
Tombigbee River	Sumter	11,17	32
"	Marengo	4	33
"	Clarke	3	37
Warrior River	Walker	36	10
"	Jefferson	31,34	12
"	Tuscaloosa	21,25	27
"	"	3-8	45
"	Locust Fork	9	45
"	Mulberry Fork	10	45

CHEMICAL ANALYSES OF WATERS OF ALABAMA

By

J. A. Callan and H. B. Gordon

INTRODUCTION

Among the factors which make for human well being few are so important, or so universally recognized as of prime importance, as is an adequate and wholesome supply of water for drinking and culinary purposes. A suitable supply for bathing and laundering purposes is also universally recognized as a necessary requirement, but many people who have no connection with industry fail to appreciate the importance of an adequate supply of water of suitable quality to certain industries. Now that Alabama is becoming an industrial state, this requirement is of great and increasing importance in this state. While naturally the particular characteristic of a water which makes it harmful depends somewhat upon the industry in which it is to be used, in most cases hardness of water, that is the presence of compounds of calcium, magnesium etc., in solution, is one of its most objectionable features. This characteristic of water is primarily responsible for the formation of scale in steam boilers and also causes great loss in various industries which require water for their processes. This latter loss may be in some measure envisaged by considering the loss of soap due to hardness of water. When toilet or laundry soap is added to hard water a sticky solid is formed. This is an insoluble soap formed by the metal causing hardness in the water and the fatty acid radical of the soap. The soap used up in this way is completely wasted, and only after the hardness has been removed can the additional soap serve the cleaning purpose for which it is used. Buswell (1) estimates that in a town of 40,000 inhabitants using water of 300 parts per million hardness, a ton of soap is wasted each day. Based on the results of Whipple (2) assuming that the average hardness of water in Alabama is 100 parts per million, that soap wasted costs 10 cents per pound, and that a gallon of water per day is thus softened that there is annually wasted about two million dollars worth of soap in this state. It must be borne in mind that this is soap wasted in softening hard water, in addition to that which performs its cleansing function. The actual loss is probably considerably less than this for probably the average supply for domestic purposes in this state contains somewhat less than 100 parts per million of hardness, and many water supplies are softened before they are used for domestic purposes. While this loss is very small for one family each day, in the case of an industry which uses large quantities of water it becomes a matter of considerable concern, and in many cases, as in the use of certain dyes, satisfactory work is impossible if hard water is used.

(1) The Chemistry of Water and Sewage Treatment, A. M. Buswell-p. 81 The Chemical Catalog Co. 1928.

(2) The value of Pure Water, G. C. Whipple-John Wiley & Sons, 1907-p. 27.

From the foregoing considerations it seems desirable that information on the analyses of waters of the state should be available. Such information would in general be of special interest to those considering locating in any point of the state, and to those preparing to serve the state in regard to the use or improvement of water. There does not appear to be any suitable compilation of analyses available to the public. The chief publication of this sort is the bulletin by Smith (3) published in 1907. While this appears to cover its field pretty thoroughly at the time it was published, it is obviously too old and too specialized to fill the present needs. To supply this need the writers have undertaken to compile all mineral analyses of waters of the state which are available. Sanitary analyses and bacteria counts have not been compiled. For information regarding these subjects the reader is referred to the State Board of Health at Montgomery or to the Chamber of Commerce of the community for which the information is desired.

(3) The Underground Water Resources of Alabama, bulletin of the Geological Survey of Alabama, by State Geologist, Eugene Allen Smith, 1907.

DISCUSSION OF GEOLOGICAL FACTORS INFLUENCING WATER COMPOSITION

In evaluating the water supplies of a region some knowledge of its rocks is of importance since the dissolved mineral matter depends very largely on the rocks with which water has come in contact. Thus while some sodium, calcium, silicon and iron will be found in almost any ground water, the amount of these materials dissolved depends greatly on the nature of the rocks and time they were in contact with the water. Thus if water containing carbon dioxide remains long in contact with lime-stone (calcium carbonate) it dissolves some of this rock as calcium-bicarbonate. ++ Similarly dolomite, which is composed of the carbonates of both calcium and magnesium, yields a water which contains the bicarbonates of both of these metals. If the water comes in contact with gypsum it will contain some of this highly objectionable material, if it has access to salt beds it will be salty, or if it passes through sulfur bearing shale with organic matter, it will probably contain hydrogen sulfide and be known as a "sulfur water". Under similar conditions it will contain compounds of iron and other metals.

The extent to which each dissolved ingredient affects the desirability of the water depends largely on the purpose for which it is to be used. If the water is for industrial purposes the chemist of the industry should be able to evaluate the effect of each impurity on the process for which it is to be used. It has been suggested (4) that water intended for drinking and culinary purposes should have no easily noticeable color or turbidity and no unpleasant or unusual odor or taste as of hydrogen sulfide, chlorine, or those caused by bacteria. Of the common mineral impurities there should not be more than the amounts (parts per million) indicated;

Sulfate (SO_4)	250 p. p. m.
Magnesium (Mg)	100
Chloride (Cl)	250
Iron (Fe)	0.3

If water requires treatment, the treated water should possess no caustic alkalinity, no taste or odor of free chlorine.

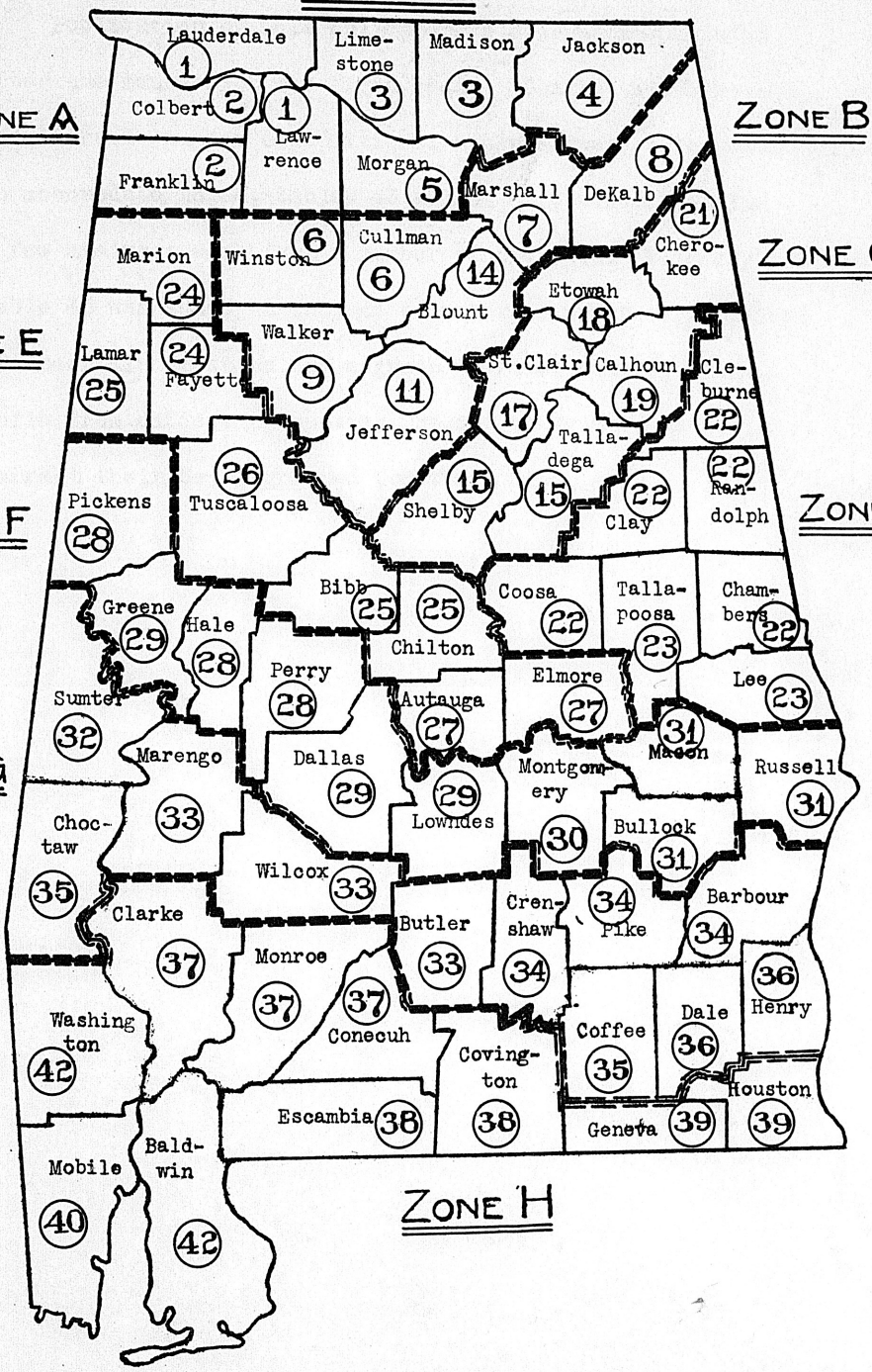
However, personal taste has much to do with the water to be used for drinking. If it is not contaminated by bacteria and is without objectionable taste or odor it is seldom prejudicial to health.

While almost all natural waters contain enough iron to be detected by chemical test, a water is not usually referred to as iron bearing or chalybdeate unless the iron is present in excess of 8 parts per million. However, less than one part per million may prove quite objectionable, causing stains in laundry, inkiness in cold tea, and other annoyances.

++ This effect is well illustrated by analyses 11 and 12 Lauderdale Co., Table 1. Sinking Creek flows under ground a mile and a half in the Warsaw limestone region, emerging as Woodland Spring, with a greatly increased content of calcium and other less important changes.

(4) Manual of Water Works Practice of the American Water Works Association, 1929, page 146 and following.

PLATE I


ZONE A
ZONE B
ZONE C
ZONE D
ZONE E
ZONE F
ZONE G
ZONE H
Lauderdale 1
Limestone 3
Madison 3
Jackson 4
Colbert 2
Lawrence 1
Franklin 2
Morgan 5
Marshall 7
DeKalb 8
Cherokee 21
Marion 24
Winston 6
Cullman 6
Blount 14
Etowah 18
Walker 9
Lamar 25
Fayett 24
St.Clair 17
Calhoun 19
Cleburne 22
Jefferson 11
Talladega 15
Shelby 15
Clay 22
Randolph 22
Pickens 28
Tuscaloosa 26
Bibb 25
Coosa 22
Talladega 23
Chambers 22
Greene 29
Hale 28
Chilton 25
Perry 28
Elmore 27
Lee 23
Sumter 32
Autauga 27
Marengo 33
Dallas 29
Montgomery 29
Maeon 31
Russell 31
Choctaw 35
Lowndes 29
Bullock 31
Wilcox 33
Barbour 34
Clarke 37
Butler 33
Crenshaw 34
Pike 34
Monroe 37
Conecuh 37
Coffee 35
Dale 36
Henry 36
Washington 42
Covington 38
Houston 39
Escambia 38
Geneva 39
Mobile 40
Baldwin 42

Publication of this bulletin was delayed some months after the manuscript was first ready. During this time a considerable number of additional analyses were obtained. To accomodate these, tables 43 and 44 were added, showing a few analyses each from a number of counties. Finally table 45 was added to include a number of analyses of waters of uncertain location and a group of river waters, which, while from different counties, seemed so related as to warrant their being grouped together.

DISCUSSION OF GROUPING OF ANALYSES--ZONES

In considering the manner of arranging the analyses it appeared best to group together those from a given county. While it would be better in some ways to group together waters from a given geological series, yet, since most of the people who wish to consult this bulletin will probably be unfamiliar with the geology of the state, the county appears to be the better grouping unit. Some regard for the geological aspect of the subject appears warranted, however, and accordingly the counties have been divided into groups or zones, in each of which, certain geological features are characteristic. Of course, many of the counties contain formations from a number of different geological series, while even in a given series various formations differ widely in chemical nature, causing great variations in the waters of other counties. However, the counties included in each zone are usually somewhat similar both as to geology and quality of water.

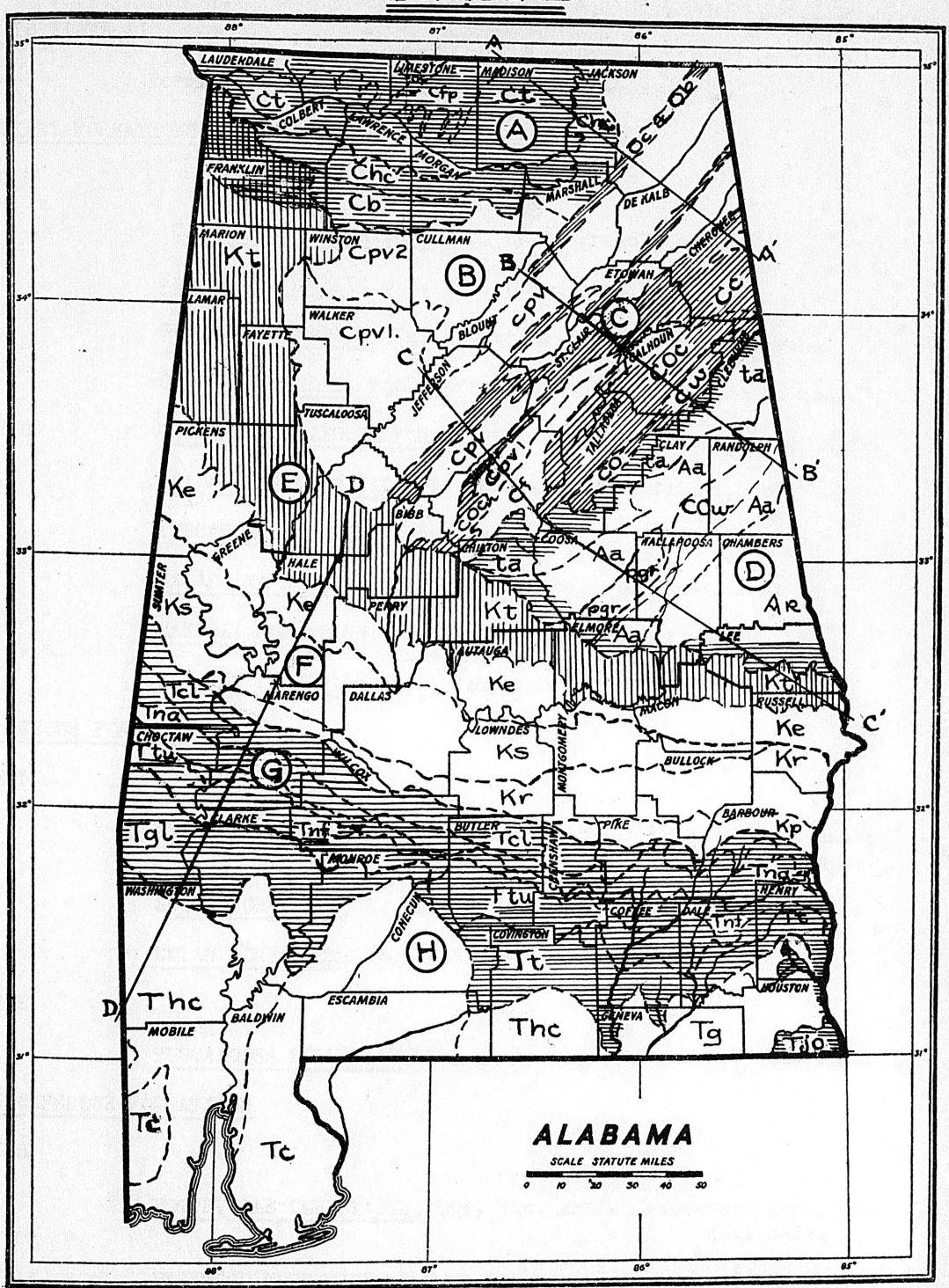
From the historical standpoint it would appear proper to choose the first zone in the east central part of the state, zone D in plates I and II, since this section contains the oldest geological formations in the state. However, arrangement with respect to geography appeared more useful for the purpose in hand. Accordingly the first zone, * A, Plates I and II, was taken at the northern part of the state, and other zones were taken in alphabetical order southward. Some of the zones extend entirely across the state while others do not, for as stated above, they roughly approximate geologic regious. The degree of this approximation may be judged by a comparison of Plates I and II. In the latter the chief geologic formations are indicated. This plate was adapted from maps in the bulletin of E. A. Smith mentioned above and Special Bulletin 14 of the Geological Survey of Alabama (1926) by the same author. The key which accompanies this plate gives very briefly the geology of the different sections, including the types of rock to be found in the different formations. **

It must be borne in mind that the formations indicated for a certain region are those that appear on or near the surface. In general the more recent formations lie on top of the older. Thus if one were to drill a deep well in the southern part of the state he would find the older formations in much the same order in which he would find them on the surface if he were to travel northward. Plate III-DD', which is a structure section along the line DD', Plate II, makes this relation clear. It thus follows that the surface formations may yield a certain type of water while a deep spring or bored well may yield water entirely different in character, because from a different type of formation. As examples may be cited the saline waters from the deep well at Livingston, Sumter Co., No. 12, Table 32, and the court house well at Linden, Marengo, Co., No. 7, Table 33. Both wells pierce the Selma chalk and overlying formations and yield saline waters from the Eutaw sands beneath. Had these wells ended in the Selma chalk they would no doubt have yielded hard waters. In the older regions, especially Zones C and D, the relation of different formations is much less simple. This is clearly shown in Plate III, which shows four structure-sections along the lines AA', BB', CC' and DD' respectively of Plate II.

* The number given each county indicates the table in which its analyses are to be found. If analyses of a county are in several tables the number indicates the first of these tables.

** The letters used in Plate II and the Key denote certain formations are used in the tables of analyses to indicate, when known, the formations from which waters were derived.

PLATE II



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KEY TO PLATE II

Formations are listed in order of increasing age.

TERTIARY FORMATIONS

ZONE H

CITRONELLE FORMATIONS, Tc, sand, gravel, etc.

HATTIESBURG CLAY, etc. Thc, clay, sand, etc.

GLENDON FORMATION, Tg, limestone, chert, clay and sand.

OCALA LIMESTONE, Tjo, soft simestone and calcareous clay.

ZONE G

GOSPORT AND LISBON FORMATIONS, Tgl, sand, shells, and marl.

TALLAHATTA FORMATION, Tt, claystone, sandstone, etc.

TUSCAHOMA FORMATION,Ttu, sand.

NANAFALIA FORMATION,Tnf, sandstone, claystone, etc.

NAHEOLA FORMATION, Tna, micaceous sand and clay.

CLAYTON FORMATION, Tcl, limestone and sand

CRETACEOUS FORMATIONS

ZONE F

RIPLEY FORMATIONS, Kp, and Kr, sand and clay, in some cases calcareous.

SELMA FORMATION, Ks, chalky limestone with clay, sand, etc.

EUTAW FORMATION, Ke, sand and clay

ZONE E

TUSCALOOSA FORMATION, Kt, sand, clay and gravel, some lignite.

CARBONIFEROUS FORMATIONS

ZONE B

POTTSVILLE FORMATIONS, Cpv, etc, shale, sandstone etc., with coal beds.

PARKWOOD FORMATION, Cp, shale and sandstone.

ZONE A

BANGOR FORMATION, Cb, limestone, shale, etc.

HARTSELLE FORMATION, etc., Chc, or Chs, sandstone, marl, limestone, etc.

TUSCUMBIA FORMATION, etc., Ct, limestone, fossiliferous chert.

FORT PAYNE FORMATION, Cfp, limestone with clay and chert.

FLOYD SHALE, Cf, shale, limestone, sandstone, etc.

ORDOVICIAN AND CAMBRIAN

ZONE C

(RED MOUNTAIN FORMATION, Srm, Silurian, shale, sandstone, iron ore, limestone).

CHICAMAUGA FORMATION, etc., O_c, limestone with shale, chert, etc.

BEEKMANTOWN FORMATION, O_b, limestone, sometimes with clay, chert, etc.

CHEPULTEPEC FORMATION, CO_c, dolomite, sometimes with chert.

CONASAUGA FORMATION , C_c, limestone with shale and dolomite.

ROME FORMATION, Cr, shale, sandstone and limestone.

CAMBRIAN AND ORDOVICIAN, dolomite, CO, and CC_{bk}.

WEISNER FORMATION, C_w, sandstone, shale, iron ore.

METAMORPHIC AND IGNEOUS ROCKS

ZONE D

TALLADEGA SLATE, ta, slate, micaceous schist, dolomite, marble, sandstone, iron ore, etc.

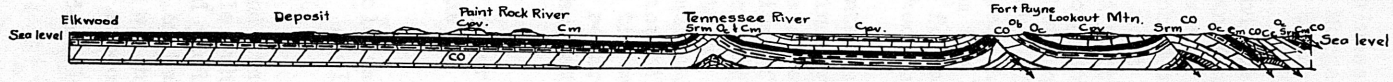
ASHLAND MICA SCHIST, A_a, mica schist, sandstone, graphitic schist, garnet schist, etc.

WEDOWEE FORMATION, C_{cw}, slate, sandstone and schist

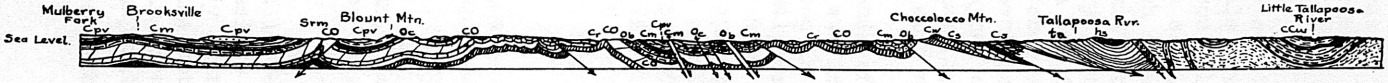
PINCKNEYVILLE GRANITE, pgr, hornblende and biotite granite.

ARCHAEAN SCHIST AND GNEISS, AR.

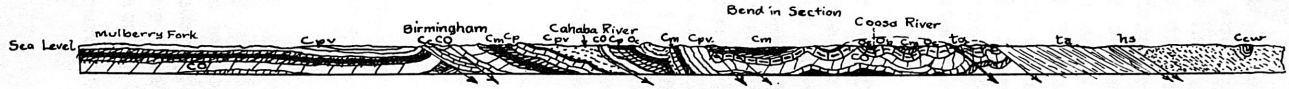
PLATE III



Section AA'



Section BB'



Section CC'

Section DD'

Tc = Citronelle Tol = Oligocene. Te = Eocene
Ks = Selma Chalk. Kr = Ripley Ke = Eutaw
Kt = Tuscaloosa Formation. Cc = Conasauga
Cr = Rome " Cs = Shady Limestone.

Cp = Parkwood, Cm = Carboniferous below Parkwood,
Srm = Red Mtn formation, Oc = Chickamauga,
Ol = Limestones of Beekmantown Age,
€O = Cambrian or Ordovician dolomites,

DISCUSSION OF WATERS BY ZONES

ZONE A.-This zone includes Lauderdale, Lawrence, Colbert, Franklin, Limestone, Madison, Jackson and Morgan counties. Analyses of waters from the zone are found in tables 1 to 5 inclusive and a few in tables 43 and 44.

From Plate II and its key we see that this zone has a great variety of rocks - limestone, sandstone, shale, etc. We would expect therefore that some waters from limestone and shale would be quite hard, while other waters, from sandstone strata, should be quite soft. These expectations are fully borne out by the analyses, most of which show considerable hardness, often running up to several hundred parts per million, while occasional analyses show very little hardness. Among these very soft waters are Lauderdale No. 11 and Franklin Co. No. 4, both of which are from the Tuscaloosa formation, (Kt), which is found in spots of this zone, and which normally yields soft water. Other rather soft waters are Colbert Co. No. 2, from the Hartselle (Chs), Lauderdale No. 1 from the Fort Payne, and Lawrence Co. No. 1 from the Pottsville (Cpv). All of these formations have some strata such as clay or sandstone which would be expected to yield soft waters.

If the shale contains compounds of sulfur or of iron with organic matter we would expect to find hydrogen sulfide or some form of iron respectively in the waters from these strata. Iron is shown in appreciable quantities in a considerable proportion of the analyses. Hydrogen sulfide is not mentioned in any of these analyses, but it may have been present but not determined. In any case this region contains sulfur springs of some note as well as chalybdeate springs. In nearly all cases the chief acid radical present is the bicarbonate, indicating the solution of compounds of magnesium, calcium and iron by carbon dioxide dissolved in the water. In a few analyses considerable quantities of sulfate radical were reported. In every case this was accompanied by a large amount of calcium, thus evidently indicating the presence of gypsum in the course of the water.

Very few of the waters of this zone contain large amounts of alkali metals, hence the total solids of most analyses is not greatly in excess of the total hardness.

ZONE B.-This zone includes Cullman, Winston, Marshall, DeKalb, Walker, Jefferson and Blount counties. Analyses for these counties are reported in tables 6 to 14.

From Plate II and its Key it is seen that the chief formation of this zone is the Pottsville, which consists largely of shale, sandstone and coal. This formation should yield mainly fairly soft waters, but there are more or less extensive areas of Bangor limestone, Chicamauga, Fort Payne, Red Mountain and other formations which contain more or less limestone and dolomite. Accordingly we would expect the majority of waters to show low or moderate hardness but a considerable number with high hardness content - over 100 parts

per million. These expectations are borne out by the analyses. Most of the waters reported as from the Pottsville formation show a low or moderate hardness while those from other formations usually show considerably higher hardness.

Several analyses show the presence of large amounts of hydrogen sulfide, and large amounts of iron are not uncommon. As in Zone A, the chief acid radical present is usually the bicarbonate (sometimes apparently reported as carbonate) but considerable amounts of sulfate and chloride are more frequently met than in Zone A. This is especially true in Walker and Jefferson counties, where these radicals are frequently associated with alkali metals.

ZONE C.-This zone includes Shelby, Talladega, Saint Clair, Etowah, Calhoun, and Cherokee counties. Analyses for these counties are reported in tables 15 to 21 and 44.

From Plate II and the Key we find that most of the chief formations of this zone contain limestone or dolomite, that shale and iron ore are common, and that sandstone occurs occasionally. We should therefore expect analyses of waters from this zone to be somewhat similar to those of Zone B, but with a higher proportion showing high or moderately high hardness.

In the main the analyses are in agreement with these expectations. The waters with very low hardness are usually from the Pottsville formation or the Weisner sandstone. Large amounts of iron and hydrogen sulfide are occasionally found but not so frequently as in Zone B.

As in Zones A and B the bicarbonate is the chief acid radical except in a few abnormal waters.

The alkali metals are less prominent than in Zone B.

ZONE D.-This zone includes Cleburne, Clay, Coosa, Chambers, Lee, Tallapoosa and Randolph counties. Analyses are reported in tables 22 and 23.

The formations in this zone are mainly such that comparatively little material should be dissolved by water passing through them. The analyses are in the main about what would be expected of waters from such formations, the hardness and total dissolved matter being much lower than for Zones A to C. One water, Lee Co. No. 1, contains an amount of sodium and sulfate which would not be expected here; but it is by no means certain that this water, analyzed for the Western Railway of Alabama, was from this district.

ZONE E.-This zone includes Marion, Fayette, Bibb, Chilton, Lamar, Tuscaloosa, Autauga, and Elmore counties. Analyses are reported in tables 24 to 27 and 43 to 45.

The predominant formation is the Tuscaloosa, from which soft waters would be expected. The Eutaw sands and Ripley formation, covering some of the southern part of the zone, should not produce many very hard waters, but some of the formations of Zones B and C, which extend into the northern part of this zone, might result in some waters characteristic of those zones.

Examination of the analyses shows that the waters from the Tuscaloosa formation have indeed the low hardness and total dissolved solids to be expected, but so many analyses are from the older formations of Zones A, B, and C, that the tables show some similarity to the ones for those zones.

ZONE F.-The counties included in Zone F are Pickens, Hale, Perry, Greene, Dallas, Lowndes, Montgomery, Bullock, Macon and Russel. Analyses are reported in tables 28 to 31, 43 and 44.

The chief formations of this zone are the Eutaw sands and Selma chalk, but considerable areas in the northern and southern parts of the zone are covered by the Tuscaloosa and Ripley formations respectively. Of these the Selma formation alone would be expected to yield hard water only, but the Ripley formation should also yield some hard waters.

As is to be expected, many of the analyses show high hardness although the majority show considerably less than 100 parts per million. While the formation yielding these waters was not reported, it seems quite probable, from comparison of the locations of the wells with the geological map, that all or nearly all of the very hard waters are from the Selma chalk.

The presence of iron in objectionable quantities is very common and appears to bear no relation to the amount of other substances dissolved.

The presence of objectionable quantities of alkali sulfates and chlorides is also frequently observed, especially in Greene and Hale counties. In the absence of significant quantities of alkali metals bicarbonate is the chief acid radical.

ZONE G.-Included in this zone are Sumter, Wilcox, Butler, Marengo, Crenshaw, Barbour, Coffee, Dale, Henry, Pike and Choctaw counties, whose analyses are reported in tables 32 to 43.

The formations which cover most of this zone are composed of sand, clay etc., with calcareous materials in no considerable quantities except in parts of the Selma and Clayton formations in the northern, and the Gosport and Lisbon formations in the southern part of the zone. Consequently we would expect mainly soft waters except in the northern section and some areas of the southern part of the zone.

Examination of the tables shows a great number of saline waters, as well as some ordinary hard waters, and a considerable number of soft waters. Unfortunately, it is not feasible to determine the formation from which most of these waters are obtained, but the two saline, deep-well waters, Sumter Co. No. 12 and Marengo Co. No. 7, are both reported as from the Eutaw sand, the Ripley and Selma formations both having been pierced by these deep wells.

Most of the analyses, even those of waters which are not to be classed as saline, contain appreciable amounts of the alkali metals. In such waters,

although the bicarbonate and carbonate radicals are present in greater quantity than other acid radicals, chloride and sulfate are found in larger amount than in the waters of the older formations.

Iron is present in objectionable quantities in most of the waters of this zone.

ZONE H.-This zone includes Monroe, Clarke, Conecuh, Escambia, Covington, Geneva, Houston, Mobile, Baldwin, and Washington counties. Analyses are reported in tables 37 to 42.

The chief formations of this zone are the Ocala limestone, Glendon, Hattiesburg and Citronelle, and all more recent formations, including alluvial deposits at present developing. The Ocala and Glendon formations are the only ones which would be expected to cause hardness of waters, and as these are found mainly in the eastern part of the zone, we would expect the waters from the western part to be soft, although there are occasional spots of Ocala formation even in the western part of the zone.

From the tables we see that a number of springs in Monroe Co. yield hard water. This is probably due to calcareous strata of the Lisbon formation in this vicinity. The hard water at Geneva is to be expected since the town is located in the Lisbon and very near an outcrop of the Ocala formation.

Most of the waters of the zone would be classed as soft. In view of the great number of saline waters in Zone G it is surprising to find so few in this zone. These are all from the Tombigbee and Mobile Rivers, or very near them, indicating an influence from the Gulf of Mexico.

Iron is present in objectionable quantities in a considerable proportion of the waters reported.

WELL DRILLING RECORDS - BY ZONES

Since the evaluation of a water supply is facilitated by a knowledge of the geologic formation from which it is obtained, it seems proper in the absence of this definite knowledge to give the drilling records of a considerable number of wells, thus enabling the reader to estimate the depth which must be bored in order to pierce the surface strata to reach the older formations beneath, and so to judge the possibilities of the region better than in the absence of such records. In some cases the drilling record is given for a well and analysis of the water is also given in the appropriate table. This is indicated at its drilling record and by "R" in the miscellaneous column of the analysis. It would be logical to place drilling records of any region immediately after the table giving the analyses of waters of that region, but the mechanics of the bulletin would be simplified by placing the well records together and the tables together, which has accordingly been done. Since both tables of analyses and drilling records are arranged to correspond to their zones, and these are placed in alphabetical order, comparisons should be sufficiently simple.

It will be noted that the greater part of the drilling records are of wells in zones E to H, which lie within the coastal plain region. Conditions in this section are more often favorable to flowing wells than in other parts of the state. The dearth of available records for other sections is not important for the purpose in hand, since in many places the relation of different formations is so irregular as to render the record of one well of little value in judging the character of formations that will be met in drilling another at but a short distance from the first. This condition is clearly shown in the structural sections, BB', and CC' of Plate III.

ZONE A.- NO RECORDS AVAILABLE.

ZONE B.-Jasper, Walker Co. Table 9. This well appears to have been drilled about July and August 1918. Source of record, A. *

The drilling record is as follows:
Clay 3 ft; slate to 11 ft, hard sand rock with a little water to 111 ft; sand and shale (an 18 inch stratum of coal) to 138 ft; shale to 150 ft. hard sand to 160 ft; shale and sand (artesian water) to 340 ft; slate and shale to 565 ft; dark brown sand to 367 ft; sand and calcareous material to 627 ft.

ZONE C.-Log of well No. 1, Columbiana, Shelby Co., bored about 700 feet from the old court house on a lot owned by the Warrior Water Co. Record from A. Earth, 13 ft; rock to 35 ft; clay to 37 ft; boulders to 57 ft; solid rock to 75 ft; loose rock to 87 ft.

The water is in a crevice 3 ft. from top to bottom just under the 18 ft. stratum of solid rock.

ZONE D.-NO RECORD AVAILABLE

* For significance of key letters see page 26.

ZONE E.-Well drilled at Winfield Marion Co. About October, 1926. Record from A. Clay and soft shale, 18 ft.;dark and gray sandstone to 181 ft.;white sandstone to 195 ft.; coal and fireclay to 197 ft; gray sand to 220 ft; shale to 233 ft; dark sandstone to 245 ft; shale to 252 ft; gray sandstone to 265 ft; coal to 266 ft; gray sandstone to 278 ft; sandy shale to 320 ft; gray sandstone to 380 ft; white sandstone to 435 ft; slate to 525 ft; dark sandstone to 536 ft; white sandstone with water (35 gal. per minute) to 660 ft; white sand (no increase in water) to 670 ft; coal to 671 ft; dark sandy slate to 710 feet; dark gray slaty sandstone to 727 ft. The well was plugged at 650 ft. It flowed 25 gallons per minute.

Well at Centerville, Bibb Co., about May, 1930.
Record from A.
Clay and sand to 64 ft; gravel and sand to 69 ft; soft slate to 74 ft; red sandstone to 93 ft; slatey soapstone to 179 ft; limestone to 199 ft; marble and slate to 285 ft; marly shale to 470 ft; limestone to 537 ft.

Tuscaloosa Co., Analysis No. 8 8 Table 26. Well of Y. T. Auxford, at Hulls.
Soil and clay to 43 ft; blue rock to 210 ft; sand and water to 234 ft.
Tuscaloosa Co., analysis No. 20 Table 27 Rosenaw Hosiery Co., well near Tuscaloosa. Soil to 20 ft; (from 20 to 30 - ?) quicksand and gravel 30 to 115 ft; alternating sandstone and slate of coal measures to 520 ft.

Autauga Co., Academy well at Prattville. Analysis in table 27. The well was bored in 1904. Soil (?) to 25 ft; sand to 30 ft; mark to 90 ft; water bearing sand to 99 ft.

Mr. J. S. Catts, states (G p. 218) that an average well as drilled in the vicinity of Prattville about 1904 to 1906 has a record about as follows:
Sand and very hard hard-pan composed of very fine white sand, 20 ft; yellow or red clay or marl with some fine beds of red and yellow ochre and a great deal of ising glass, 80 to 100 ft. No rock was struck in numerous borings, as deep as 325 ft. Most of these wells overflow.

ZONE F.-
Hale Co. Analysis No. 10 Table 28. Moundville, Elliott & Sons well, bored 1899.
The well flowed one gallon per minute.
Boring record: Soil and clay to 50 ft.; sandrock to 54 ft.; pink soapstone to 300 ft.; hard rock to 310 ft.; sand (with some hard rock) to 600 ft.

Hale Co. Analysis No. 13. Table 28. Well of W. M. Wedgeworth, near Wedgeworth.
Bored about 1900. Water flows 18 gallons per minute.
Record of boring: Sand gravel to 30 ft.; blue rock to 140 ft.; sand and water to 150 ft.; blue rock to 190 ft.; sand and water to 200 ft.

Greene Co., Court House well at Eutaw;probably No. 3, Table 29;bored 1858.
Boring record: From G 153.

Soil and red clay 15 feet; sand and soft, mottled clay to 60 feet; white sand and water to 63 ft.; alternate blue shale and yellow clay, to 263 ft.; yellow clay inclining to red, to 363 ft.; red, crumbling soil to 463 ft.;

sand with water to 482 ft.; red and yellow clay to 583 ft.; dark brown sand 633 ft.; coarse red sand, with gravel and mica to 713 ft.; reddish "soapstone" like a bed of clay - total depth 743 ft.

This record may be interpreted as soil etc., 15 ft. Eutaw beds 378 ft.; Tuscaloosa beds 350 ft.

Dallas Co. Selma water works well, Analysis No. 4, Table 29. Bored in 1903. Record of well:
Clay to 14 ft.; sand and gravel to 18 feet, blue rock to 34 ft.; hard rock to 35 ft.; blue rock to 165 ft.; greensand to 180 ft.; hard rock to 182 ft.; sand and water to 272 ft.; marl to 290 ft.; sand and gravel to 303 ft.; red marl to 310 ft.; soapstone to 427 ft.; hard rock to 532 ft.; red marl to 572 ft.; sand and gravel to 655 ft. Water estimated to flow 300 gallons per minute.

Montgomery Co., Montgomery water supply well No. 5, bored 1921. Record from A. Top soil to 10 ft.; clay to 16 ft.; yellow sand to 83 ft.; hard pan to 93 ft.; white sand to 120 ft.; blue marl to 130 ft.; clay to 161 ft.; marl to 162 ft., coarse, white sand to 233 ft; red clay to 251 ft.; red and white sand to 300 ft.; blue and red gumbo to 382 ft.; white sand to 466 ft.; packed sand to 505 ft.

Montgomery: Twelve new water works wells, bored about 1899. Record G 212. Top soil 15 ft.; clay to 95 ft.; marl to 225 ft.; water bearing sand to 228 ft.; red clay and pebbles, small ledges of sandstone to 450 ft.; black clay; water to 650 ft.

Red clays of Tuscaloosa appear to have been reached at about 225 feet. The horizon of the mouth of the wells is about 100 ft. below the top of the Eutaw sands.

Russell Co., Analysis No. 7 Table 31. Well of W. J. McLendon, at Oswichee. Sand and clay, 20 ft.; marl with shell to 85 ft.; beds of sand and marl, 15 to 25 ft. thick, alternating to 380 ft.; hard rock to 382 ft.; sand to 445 ft.; water flowed 12 gallons per minute, but became slower, well lowered 20 ft. more through sand to hard rock.

Bullock Co., Union Springs, City Water Works wells; bored 1895, 848 1/2 feet deep to hard rock. Analysis No. 2, Table 31.

Two wells showed similar records. Top soil to 15 feet; marl with seams of light gray rock 2 to 12 inches thick occur every 25 feet to bottom of well, 848 1/2 feet.

Macon Co., Well No. 2, Tuskegee Institute. Red clay to 25 ft.; sand to 35 ft.; chalky clay to 51 ft.; sand to 110 ft.; clay to 123 ft.; sand to 151 ft.; clay to 232 ft.; sand to 256 ft., where rock was struck and boring stopped.

ZONE G.-
Sumter Co., Analysis No. 12, Table 32. Well at Livingston. G. 142.
Record of boring:
Soil and sand, 20 ft.; Selma chalk or blue rock, 930 ft.; Eutaw sands to bottom of well (1062 feet), 112 ft. First water just below blue rock at 966 ft.

a larger stream was found at 1005 feet in coarse, green sand. The flow barely reaches the surface. A considerable quantity of inflammable gas comes from the well.

Sumter Co., Analysis No. 1, Table 32, Allison Lumber Co., well near Bellamy, G. 143, Bored 1903.
Record of boring: Clay and soil 20 ft.; black clay (sucarnochee or Flatwoods clay) to 160 ft.; white lime rock to 1000 ft.; Below the rock the well extends ten feet into quicksand and water. The water overflows about three gallons per minute.

The mouth of the well is on the Flatwoods clay (Tertiary) and the boring passes through the chalk formation into the Eutaw sand.

Another well bored three miles south of this one by the same company shows a similar record but with thicker layers of both black clay and lime rock. The well is 1240 feet deep. Water rose to within five feet of the surface. The water contains less salt and other minerals than water No. 1.

Sumter Co., Analysis No. 9. Epes Cotton Oil well. G. 140. Bored 1899.
The well is 735 feet deep. It passes through 442 feet of blue rock, 65 feet of reddish mud, 103 feet of greenish sand with water, eight inches of stone, 70 feet of rusty hardpan, three inches of stone, and 42 ft. of white sand.

Marengo Co., Analysis No. 7, Table 33, Courthouse well at Linden. G. 187.
Record of well: Clay, 7 ft.; soft limestone to 34 ft.; quicksand to 58 ft.; blue sand to 68 ft.; quicksand with mica to 118 ft.; white sand to 169 ft.; blue sand to 188 ft.; hard bluestone to 190 ft.; soft shale or clay 193 to 322 ft.; light colored limestone (like that at Demopolis) to 50[illegible]ft.; slatey, darker limestone to 901 ft.; Similar limestone but harder (ending below in a hard crust) to 1041 ft. Below this hard crust was fine-grained, water bearing sand. Below this, at 1115 ft., hard limestone was reported. Soft limestone, clay, and quicksand were also reported between 1115 and 1200 ft. The flow was very weak at the surface but much more powerful up to 16 ft. below the surface.

Barbour Co., Analysis No. 1 Table 34, Clayton City water supply. G. 244.
Bored 1903.
Record of well: Clay to 50 ft.; sand to 80 ft.; yellow clay to 120.; quicksand to 220 ft.; rock and marl to 520 ft.; sand and water to 560 ft.

Barbour Co., Analysis No. 8, Table 34, C. H. Bishop's well at Harris; G. 243.
Bored 1899.
Record: Clay and sand to 13 ft.; marl to 103 ft.; hard shell rock to 105 ft.; marl to 110 ft.; shell rock to 112 ft.; water bearing sand to 115 ft.; shell rock and marl to 140 ft.; compact marl to 183 ft.

Eufaula Oil and Gin Co. well at Eufaula: G. 241. Bored 1895.
Record: Top soil and sand to 30 ft.; marl to 380 ft.; soft sandstone to 381 ft.; cavity with a little water to 389 ft.; marl with water below in very fine sand, to 950 ft. Supply insufficient, well abondoned.

Choctaw Co., Analysis No. 2, Table 35. G. 296. Deep well.
Cullom Springs, near Bladon. Tertiary.
Record: Loose surface material to 80 ft.; blue and sandy marl to 161 ft.; soft clayey marl to 184 ft.; green sand, shells, hard and soft beds to 209 ft.; marl and blue clay to 255 ft.; brown and blue marls to 276 ft.; blue marl and green sand to 337 ft.; lignite to 342 ft.; brown, tough marl to 361 ft.; blue sandy marl with shells to 384 ft.; blue, sandy marl to 442 ft.; brown and blue marl to 470 ft.; greensand and marl to 525 ft.; brown clay marl to 544 ft.; blue clay, greensand, shells to 559 ft.; brown marl (shells and water) to 609 ft.; gray, sandy marl, shells to 688 ft.; tough blue marl, thin layers of sand-white and green-to 759 ft.; brown marl, clay and sand with salt water to 779 ft.; gray and brown sand with marl to 805 ft.; tough blue marl (salt water) to 818 ft.; sand and clay to 832 ft.; white, micaceous limestone (?) to 858 ft.; marl with shells to 888 ft.; marl and sand to 912 ft.; greenish rock to 923 ft.; sandstone to 927 ft.; quick sand (salt water) to 952 ft.; marl with ledges of hard rock to 1089 ft.; clay to 1203 ft.; sand and shells to 1220 ft.; hard ledge four inches thick followed by blue or gray "rotten limestone" without shells to 1345 ft.

Three streams were struck. At 200 ft. mineral (vichy) water was struck which overflowed. At 400 feet, another similar stream was struck. At 1000 ft, a salt water stream with inflammable gas was struck. The flow is from all three streams. Temperature is 83°. Several mineral springs are in the vicinity of Bladon.

Coffee Co., Analysis No. 4. Table 35. Enterprise Town well, bored 1903.
G. 258 Tertiary.
Well record: Clay to 60 ft. Soft lime rock to 68 ft.; shell rock to 104 ft.; black mud to 130 ft.; flint rock to 132 ft.; sand to 140 ft.; marl to 230 ft.; mud to 265 ft.; rock to 266 ft.; marl to 370 ft.; sand and water to 398 ft.

Coffee Co. Well at Elba railway depot, bored in 1904. G. 257. Tertiary.
Well record: Surface sand to 16 ft.; marl or laminated grayish blue clays to 265 ft.; water bearing sands with shells to 293 ft.; The shells (Gryphaea-thirsae) show that the horizon is the Nanafalia.

Dale Co. Analysis No. 1. Table 36. Ozark city water works; G. 256; Tertiary.
Well bored 1902.
Well record: Red clay to 40 ft.; marl to 500 ft.; sand, marl, and shell rock to 526 ft.; Depth of well 710 ft. No record 525 to 710.

ZONE H.
Monroe Co. Monroeville, Record from A. 1928.
Record of well: Red clay to 20 ft.; white sand to 25 ft.; soft gumbo to 35 ft.; stiff gumbo to 41 ft.; white sand and gravel (with water) to 60 ft.; yellow clay to 80 ft.; coarse sand and gravel (with water) to 112 ft.; stiff red clay to 116 ft.

Conecuh Co. Well at Evergreen, bored in 1926.
Probably the source of water sample No. 1, Conecuh Co. Record A.
Well record: Clay to 52 ft.; lime rock to 82 ft.; soft rock to 102 ft.; lime rock to 134 ft.; stiff clay to 144 ft.; sand rock to 156 ft.; sand and water 162 ft.; rock and sand 182 ft.; stiff marl to 205 ft.; rock to 229 ft.; flint rock to 232 ft.

Escambia Co. Well drilled (1929) for State Prison, at Atmore.
Record from A:
Red, sandy soil to 25 ft.; sand to 58 ft.; sand and heavy gravel to 105 ft.; gumbo to 136 ft.; sand and water to 176 ft.

Escambia Co., Flomaton. Well drilled 1928. Record from A.
Sandy soil 5 ft.; water bearing gravel to 30 ft.; white chalk to 35 ft.; gumbo to 41 ft.; fine, white sand to 43 ft.; clay to 67 ft.; water bearing sand and gravel to 104 ft.

"The deepest boring made in Escambia Co. is a well bored for oil on the banks of the Conecuh River six miles above Roberts". The well was bored in 1902 and 1903. "Grand Gulf sands are on the surface and the lower part of the river bluff is formed by calcareous sands of Miocene age". At a depth of 100 ft. St. Stephens limestone was struck, and the boring was still in the same rock at 190 feet. Claiborne shells were brought up in abundance before the drill had gone 700 feet. As nearly as can be determined the boring must have gone to the base of the Tertiary, if not into the Ripley beds. A great volume of water was struck at less than 700 feet. It was estimated, that when half shut off, this flow was 3000 gallons per minute. Strong flow of water was encountered at about 350 feet and 525 feet, and salt water (150 gal. per minute) about 1450 ft.; and at 1600 ft. salt water, about 200 gal. per minute.
Complete log is given, G-274-5.

Covington Co. Andalusia Town well. G. 260.
Well record: Sand and clay to 113 ft.; sand rock 1 foot; sand to 122; sand rock 1 foot; black mud to 130 ft.; sand rock to 133 ft.; shale to 141 ft.; sand rock 1 foot; clay to 168 ft.; sand to 186 ft.; followed by three inches of rock, and clay to 190 ft.; sand to 207 ft.; shaly clay and sand to 273 ft.; one foot of rock followed by gritty muck to 380 feet with frequent layers of rock between 313 and 380 feet; blue marl to 480 ft.

Houston Co. Dothan, City well No. 5. Record from A.
Clay to 38 ft.; fine white sand to 58 ft.; sand and clay to 119 ft.; red sand to 123 ft.; water bearing sand to 147 ft.; red sand and gravel to 167 ft.; sand rock to 182 ft.; lime rock to 204 ft.; soft sand rock to 211; blue marl with a little rock to 271 ft.; sandy marl to 2 91 ft.; water bearing sand to 332 ft., where solid sand rock was found.

Mobile Co. Analysis No. 11. Table 40. Well at Fort Gaines, east end of Dauphin Island. Bored 1903. G. 312. Tertiary.
Well record: White sand to 10 ft.; black sand to 70 ft.; blue sand to 76 ft.; white sand to 171 ft.; blue clay to 191 ft.; white sand to 232 ft.; fine blue sand to 277 ft.; blue clay to 312 ft.; blue sand to 342 ft.; blue clay to 352 ft.; two feet of limestone followed by gray sand and salt water to 409 ft.; very hard sandstone to 414 ft.; gravel to 419 ft., gumbo clay to 449 ft.; gray sand to 559 ft.; blue clay to 619 ft.; gray sand to 669 ft.; gravel to 679 ft.; blue clay to 884 ft.; water bearing sand to 819 ft.

Mobile Co. Brewery well bored in 1894 at Water and Adams streets, Mobile. G. 309.
Well record: Coarse sand to 9 ft.; fine sand to 100 ft.; coarse gravel and sand with lignitized coniferous wood to 130 ft.; mud, sand and water with bluish green argillaceous matter, (becoming more compact as depth increases) to 490 ft.; similar material becoming finer and more plastic to 660 ft.; indurated clay, with coarse sand abounding in bivalves (small flow of water) to 700 ft. Well 800 ft. deep, no record below 700 ft.

Records (from A) of a number of wells about 150 ft. deep in the vicinity of Mobile are essentially similar to that above, but show some clay strata between 50 and 100 feet. Apparently water bearing strata are also found at a depth of about 100 ft. or in one well, at less than 50 feet.

Baldwin Co. Well No. 6 bored at Bay Minette in 1923. Record from A.
Upper soil 1 ft.; sand and clay to 9 ft.; white chalk to 19 ft.; yellow clay to 21 ft.; sand and boulders to 43 ft.; fine sand to 57 ft.; shells with water to 61 ft.; white clay to 69 ft.; sand and water to 79 ft.; shell and limestone to 94 ft.; soft clay, muddy, to 107 ft.; soft clay and sand to 137 ft.; hard clay to 169 ft.; chalk and sand to 199 ft.; coarse sand with water, to 219 ft.; sand, chalk, gravel and water to 229 ft.; red sandstone and water to 234 ft.; hard shell rock to 235 ft.; soft sandstone to 250 ft.; hard rock to 251 ft.; water sand to 256 ft.; chalky clay to 260 ft.

Baldwin Co. Fairhope, Well bored 1927. Record from A.
Soil and sand, 15 ft.; sand and gravel to 28 ft.; clay to 34 ft.; gravel to 43 ft.; sandy clay to 58 ft.; sand to 66 ft.; sandy clay to 86 ft.; red sand to 117 ft.; blue clay to 149 ft.; shale to 170 ft.; gravel to 180 ft.; fine sand to 211 ft.; gumbo to 213 ft.

PLATE IV

LOCATION, TYPE, TREATMENT & CONDITION OF PUBLIC WATER SUPPLIES IN ALABAMA

ALABAMA STATE BOARD OF HEALTH

JANUARY 1933

LEGEND

- SHALLOW GROUND SUPPLY
- DEEP GROUND SUPPLY
- SURFACE SUPPLY

- NO TREATMENT
- CHLORINATED - LIQUID
- CHLORINATED - HYPO
- COAG. & PRES. FILTERS
- COAG. & GRAVITY FILTERS
- SLOW SAND FILTERS
- PLAIN SEDIMENTATION
- AERATION
- DEPENDENT SUPPLY
- SAFE
- UNSATISFACTORY
- DANGEROUS

NOTE -
NOT ALL INDUSTRIAL SUPPLIES ARE SHOWN

Any compilation of data and information on the chemical characteristics of waters of any locality which is intended for wide distribution should also contain some word on the quality and quantity as regards human use and consumption and for domestic purposes.

The State Department of Public Health does not maintain data in regard to the chemical characteristics of water of public supplies as it does in regard to bacterial content because it is not often that such waters contain deleterious chemicals in sufficient concentration to affect the health of users. However, chemical analyses are required on certain waters as circumstances require.

Alabama is blessed with an abundant and universal supply of good water made available by an average rainfall of 52" distributed fairly evenly throughout the year. In a large portion of the State a choice of supply, as regards quality and quantity, may be had in the selection of either surface or underground sources.

The twelve major river systems with their many tributaries makes the development of supplies relatively easy.

The Southern third of the State relies mainly on ground waters developed by means of wells. Such supplies are of good quality, can be developed and delivered economically and require little or no treatment.

The middle third uses ground water or surface water as the economics and quality dictate.

The northern section likewise uses both sources but surface supplies are in the majority. Impounding is not normally necessary as the streams are not flashy. Well waters in this section are more highly mineralized than in the south and as a rule well drilling is not so much of an assured success as in south Alabama, hence, the greater number of communities go to surface supplies as of better quality and quantity.

By referring to the plate showing the location, type and treatment of the supplies the above zoning is in evidence. (Plate IV)

The State of Alabama has a statutory law placing the supervision of public water supplies in the State Department of Public Health. Frequent inspections and periodic bacterial examinations of samples of water are made and the Department has available on call sanitary engineers to aid in solving water supply problems.

Records of quality of the various supplies are kept and information in regard to any or all supplies is available upon inquiry to the Bureau of Engineering, State Department of Public Health.

SOURCES OF ANALYSES AND TREATMENT OF DATA

A great many analyses of this compilation were taken from the bulletin by E. A. Smith, mentioned above. Numerous others have been obtained from Special Bulletin No. 16, of the Geological Survey of Alabama, by William Drummon Johnston, Jr., entitled "The Ground Water in the Paleozoic Rocks of Northern Alabama".

Large numbers were also obtained from the records of the State Chemist at Auburn, the State Board of Health at Montgomery, Alabama, the Alabama Industrial Development Board at Birmingham, the Alabama Power Company at Birmingham, and the Picard Laboratories, at Birmingham, and a few were obtained through other sources.

Altogether there are over 600 analyses reported in the following tables, including atleast one from each county of the state. It would have been desirable to have had analyses made of samples of water from numerous sections of the state from which the analyses obtained were not adequate to give a clear idea of the potential water supplies, but unfortunately this could not be done since no funds for the purpose were available. However, a fairly reliable estimate of such supplies can usually be made by considering analyses of waters from geologically related regions.

Many analyses given are of little value, either because they are incomplete or too old to give a reliable idea of present conditions, or for other reasons. When possible dates of analyses have been given.

In some cases analyses as received showed obvious errors. Where possible these were investigated and corrected, but when no other copy of the analysis could be found, and the laboratory which made it was unknown, the data were necessarily reported as received. A frequent error of this sort was the report of hardness, which the writers have in all cases calculated from the amount of metals causing hardness reported present. While most analyses received showed "total hardness" corresponding only to the calcium and magnesium present, it was thought best to report not only this value, but, also the hardness caused by iron and aluminum. In the majority of cases these two values do not differ greatly. In accordance with the custom in reporting water analyses, the hardness was calculated as the parts per million of calcium carbonate ($CaCO_3$) to which the metals present were chemically equivalent. The factors by which the metals present were multiplied were Ca, * 2.498; Mg, 4.115; Fe, 1.792; Al, 5.537.

Frequently analyses were found which showed total solids entirely out of harmony with the rest of the report. If the value was not obviously impossible it was reported as received. Where total solids were not included in the analysis as received the item has not been given in the tables, as no method for calculating it has been universally accepted by chemists.

* The atomic weight of calcium is 40.1; the molecular weight of calcium carbonate is 100.1, which is 2.498 times 40.1

Some analyses received reported "Organic Matter", others " Volatile Matter", and still others "Loss on Ignition". All these have been grouped under "Organic Matter" in the tables.

Many analyses as received were reported in grains per gallon. To conform with the present custom in this country these values were converted to parts per million, by use of the factor 17.1. Many analyses as received were calculated in terms of hypothetical combinations which might exist in the water. The different laboratories used different schemes for making these calculations, hence their analyses were often not at all * comparable unless recalculated by a uniform system. This the writers have attempted to do, using the system which is growing in favor, of reporting the metals as such and the acid radicals separately. Since silicon is usually determined by weighing the oxide (SiO_2) it is customary to report it in this form. For the sake of uniformity it is reported in this bulletin as the element, Si. Should the amount of oxide be desired it may be obtained by multiplying that of the element by 2.14.

In accordance with the usual custom, when compounds of sodium and potassium were reported together, the acid radical was calculated on the assumption that it was combined with sodium only. Similarly when the report was of a compound of iron and aluminum, it was assumed that iron was the only metal present. When iron was reported as the oxide it was assumed to be in the ferric condition, but if a different compound was reported, as the bi-carbonate, the metal was assumed to be in the ferrous state. In accordance with this assumption, as indicated above, in calculating the calcium carbonate equivalent of iron, the factor 1.792 was used.

ARRANGEMENT OF DATA

In determining the order of recording the various counties of a zone it was desired to follow a geographic sequence beginning each zone at its west side, but it sometimes appeared desirable to deviate from this natural order to permit the counties of a zone to be placed in the tables without undue waste of space.

In general, if there was no reason for some other arrangement, the analyses for any county were placed in alphabetical order according to the towns from which they were obtained or the names of the owners of the water supplies analyzed. An effort has been made to give the location of each water analyzed. This has been indicated by the name of a town or city when the supply was in or near it, otherwise by the usual section, township and range numbers when these were known.

* R. B. Dole, in an article entitled "Hypothetical Combinations in Water Analysis, J. Ind. & Eng. Chem. 6, 710 (1914), shows seven different methods of calculating combinations for a single water analysis. Some of these appear very different to the unitiated.

Since there was a great variation in methods of reporting used by different laboratories making analyses it seemed desirable in some cases to conserve table space by permitting one column to include two related items. Accordingly the column headed "Fe" contains not only the element iron, but also the "Oxides of Iron and Alumina" reported by some laboratories. In the latter case the number is marked by an asterisk. Thus in Table 1 we see that sample 2 of Lauderdale Co. showed 1.6 parts per million of iron oxide and alumina, while 11 of that county contained 0.8 parts per million of iron (Fe).

Similarly when the analyst reported sodium and potassium together this quantity was placed in the column headed "Na" with an asterisk, while if the report was "Sodium" no asterisk was used. Also when carbonate (CO_3) was reported, this was placed in the column headed "HCO_3", and was distinguished from HCO_3 by an asterisk. Thus Colbert Co. No. 5, Table 2, was reported as containing 138.0 parts per million of HCO_3 and 3.9 of CO_3.

The column headed "Source" indicates the laboratory making the analysis or the bulletin or organization through which it was obtained. The abbreviations used and their significance are as follows:

G indicates that the analysis was taken from the bulletin of the Geological Survey of Alabama, by Dr. Eugene Allen Smith, entitled " The Under-ground Water Resources of Alabama". This was published in 1907, hence all such analyses were made in that year or earlier. A number in connection with this letter refers to the page of the bulletin on which the analysis is found.

J indicates that the analysis is from Special Bulletin No. 16, of the Geological Survey of Alabama, on the Ground Water in the Paleozoic Rocks of Northern Alabama, by W. D. Johnston, Jr., The analyses in this bulletin were all made about 1928 or 1929. The geological formations from which these waters were derived are indicated in the table. Numbers in connection with this letter refer to the number assigned to the water in the bulletin.

P indicates that an analysis was made by the Picard Laboratories, of Birmingham; ST by the Southern Testing Laboratoties, also of Birmingham; and PT by the Pittsburgh Testing Laboratories, while M, H and F indicate respectively that the analyses were made by J. P. Montgomery, R. S. Hodges, and R. L. Farabee, all of University, Alabama.

I indicates that an analysis was obtained through the Alabama Industrial Development Board, of Birmingham, AP that it was obtained through the Alabama Power Company of Birmingham, and A that it was obtained through the Alabama State Board of Health, at Montgomery - analyst uncertain:

SL indicates that the analysis was made in the State Chemists Laboratory at Auburn. These analyses were made in accord with the scheme given in Stillman's Engineering Chemistry, p. 576, 5th edition, 1916. The chief item of interest in this connection is that the CO_3 or HCO_3 reported, is that necessary to be added to other acid radicals determined, to make the sum chemically equivalent to the metals found. It is probable that some of the analyses from other sources were also made by this scheme.

As stated above, two columns are devoted to hardness, the one giving the calcium carbonate equivalent of the calcium and magnesium present, the other (Total Hardness) giving the sum of this and the calcium carbonate equivalents of the iron, aluminum etc., present.

It will be noted that some analyses from source "J" have two numbers in each hardness column. In such cases the number placed beneath the other represents the calculated value, while the upper number is the value obtained by analysis.

Any interesting facts known regarding a water other than the amounts of elements and radicals commonly reported are recorded in the Miscellaneous column. Usually items are self explanatory. The letter D refers to the depth of the well, which is given in feet. The symbols used for the various geologic formations are those used in Plates II and III. As mentioned previously, an R in this column indicates that the drilling record of the well is given in its appropriate place in this bulletin.

TABLE (1)

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG.	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
LAUDERDALE CO.																			
1. WESTMORELAND Bailey Spring S10,T2S,R10W.						6.0	*6.9		1.2	3.0	36.0		0.8		20.0 15.0	20.0 15.0	37.0	J 44	
2. BAILEY SPRINGS Moody's Spring		3.8	*1.6		2.6	16.0	2.4	1.4	5.3	3.8	57.0				49.7	52.8	98.2	G 103	
3. FLORENCE Public Supply		2.3	Tr.		0.7	11.0	1.5	0.8	1.2	11.0	25.0				30.4	30.4	46.0		4/15/31
4. FLORENCE Shoal and Cypress Creeks	3.4		*6.8		3.9	14.4	2.7		13.0		*24.2				52.1	60.7		I	
5. FLORENCE Cypress Creek Chamber of Commerce		7.2	5.1		1.1	11.4	1.8		7.0	1.0	33.5			29.1	33.2	39.6	82.2	S.L.	2/9/26
6. FLORENCE Shoals Creek Chamber of Commerce		5.6	*6.9		5.0	14.7	3.2		1.8	2.0	46.6			15.4	57.5	66.2	75.4	S.L.	2/9/26
7. FLORENCE, Negley Hotel, R.D.Scott City Water Works		4.4	*2.1		1.9	20.5	2.5		2.1	3.9	*35.3			19.1	59.0	62.3	83.0	S.L.	6/25/26
8. FLORENCE Spurlock Neal Co.		5.6	*9.4		4.5	24.2	3.8		0.7	3.7	*47.1			25.7	78.9	90.7	102.7	S.L.	6/25/25
9. KEY SPRING S35,T3S,R12W.		6.6	0.1		2.8	52.0	1.4	0.7	1.2	4.8	161.0		7.0		141.0	141.1	166.0	J 50	
10. DART M. E.Mann's Well S24,T1S,R14W.			0.3			2.0	*6.1		2.1	2.5	18.0		6.2		12.0 5.0	12.5 5.5	31.0	J 3	D=60'
11. SINKING CREEK		4.0	0.8		2.5	30.0	1.5	0.6	0.9	5.3	98.0		0.9	3.0	85.0	86.3	98.0	J 3	Flows into Twelve Temp=78 F
12.GRAVELLY or WOODLAND SPRING-John Darby S29,T3S,R12W.		6.6	0.1		2.5	48.0	1.6	1.0	1.4	3.3	152.0		3.8		130.0	130.1	150.0	J 49	
LAWRENCE CO.																			
1. ALA.NAT'L FOREST WELL S13,T8S,R6W.		7.5	2.5		3.1	2.6	2.0	1.4	2.8	4.1	51.0		0.2		19.2	23.7	60.0	J 37	D = 50'
2. J.P.FRENCH'S WELL S29,T4S,R6W.		8.0	0.19		44.0	110.0	31.0	3.5	36.0	235.0	279.0		0.75		455.0	455.3	648.0	J 6	D = 47'
3. GRADY MOODY'S WELL S25,T6S,R7W		5.2	1.2		21.0	44.0	12.0	2.1	2.1	5.9	258.0		0.4		196.3	198.1 199.0	233.0	J 20	D = 30'
4. SWOPE'S POND E.S.Ballantyne Spring S22,T4S,R7W		7.0	0.1		3.5	41.0	1.2	0.7	1.5	3.0	135.0		1.7		116.9	117.2	141.0	J 41	Boiler Sup'y
5. MOULTON Town Spring S32,T6S,R7W		4.7	0.1		6.1	55.0	1.9	0.8	2.9	5.4	183.0		5.0		163.0	163.2	178.0	J 46	Pub.Sup'y

TABLE (2)

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
COLBERT CO. See also Misc. Table 23																			
1. CHEROKEE C. Alexander's Well S35,T3S,R14W			12.0		332.0	590.0	*96.0		218.0	2218.0	524.0		0.6		2840.0	2861.5	3892.0	J 13	Chs D=45'
2. CHEROKEE SPRING Arthur Lumber Co. S1,T4S,R14W		5.6	0.2		2.5	1.6	0.7	0.8	2.0	3.7	14.0		0.1		14.3	14.6	31.0	J 44	Chc
3. CHEROKEE Oscar Hom's Well S2,T4S,R14W						40.0	*141.0		32.0	107.0	400.0		0.05		177.0 99.9	177.0 99.9	534.0	J 16	Chs D=55'
4. " "						28.0	*11.0		13.0	6.0	66.0		25.0		74.0 69.9	74.0 69.9	119.0	J 17	Chs D=18'
5. PRIDE SCHOOL WELL S8,T4S,R12W			7.7			36.0	*12.0		1.2	3.0	138.0 *3.9		1.0		99.0 89.9	99.0 103.7	129.0	J 22	Ct D=110'
6. ROCK CREEK	5.1	3.9	0.2	2.4	7.0	10.9	31.8		4.3	97.6	21.1	8.3		3.2	56.0	69.6		P	
7. SPOUT SPRING S21,T2S,R14W						1.0	*4.2		0.8	2.5	11.0		0.1		2.5	2.5	14.0	I	
8. TUSCUMBIA Tuscumbia Spring						50.0	16.0		5.0	3.0	163.0				125.0	125.0		I	
9. TUSCUMBIA SPRING S9,T4S,R11W		6.1	0.09		3.5	51.0	1.8	0.7	1.4	4.1	165.0		4.2		141.8	142.0	166.0	J 48	Ct
10. TUSCUMBIA Artesian Well	5.5		*7.9		11.1	4.2	6.7		9.5	12.7	27.9				56.0	65.9		I	
11. MARGERUM M.D.Wallace's Well S36,T3S,R15W						68.0	*15.0		17.0	8.0	183.0		19.0		165.0 169.9	165.0 169.9	218.0	J 8	Kt D=37'
12. WILLIAM'S SPRING S34,T4S,R14W						80.0	*35.0		1.2	56.0	375.0		0.25		291.0 199.9	291.0 199.9	393.0	J 46	Chc
FRANKLIN CO.																			
1. BELGREEN Underground Lake						36.0	*3.3		1.6	1.0	110.0		0.96		89.9	89.9	97.0	J a/	
2. ROCKWOOD SPRING Rockwood Public Supply Co.		6.1	0.1		5.4	56.0	0.9	0.9	1.6	4.9	190.0		1.3		162.0	162.2	180.0	J 43	
3. RUSSELLVILLE Cedar Creek	10.0	3.8	*0.1		5.4	37.2			8.2	10.4	56.8	13.0			115.1	115.3	125.1	I	Alka = 93.0
4. VINA S.B. William's Spring						4.0	*9.3		7.0	5.0	36.0		3.3		27.0 10.0	27.0 10.0	53.0	J 44	

TABLE (3)

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg	Total Hardness	Total Solids	Source	Misc
LIMESTONE Co.																			
1. ATHENS Athen's Spring		4.5	.04		3.7	17.0	1.6	0.7	2.1	5.3	60.0		2.3		57.7	57.8	72.0	J 46	C_{fp}
2. ATHENS Volunteer Mills Well SE 1/4,S5,T3S,R4W		5.2	.04		4.1	22.0	6.9	1.6	10.0	12.0	58.0		1.0		71.9	72.0	132.0	J 26	Ct D=96'
3. BOOKER LEGG SPRING SW 1/4,S16,T1S,R5W		8.9	.07		7.2	38.0	2.9	1.1	1.5	9.2	138.0		4.2		124.6	124.7	149.0	J 34	Oc
4. CAVE SPRING NE 1/4,S26,T2S,R6W		7.5	.04		4.3	16.0	1.5	0.9	1.4	7.2	60.0		1.1		57.6	57.7	76.0	J 37	Oc
5. GIPSEY Hillside Spring NW 1/4,S8,T2S,R5W						32.0	*6.5		1.4	3.0	96.0		2.9		72.0 80.0	72.0 80.0	90.0	J 41	Cfp
6. GIPSEY Smith Spring NW 1/4,S5,T2S,R5W						20.0	*40.0		1.5	4.0	136.0		13.0		63.0 50.0	63.0 50.0	162.0	J 40	Oc
7. LERMAN SPRING SW 1/4,S31,T1S,R4W						38.0	*4.1		1.0	3.5	115.0		3.2		95.0	95.0	107.0	J 35	Oc
MADISON Co.		See also Misc. Table 44																	
1. R.T.BAUGH'S WELL NW 1/4,S33,T3S,R1E.			4.3			22.0	*3.6		1.2	4.0	101.0		0.3		81.0 55.0	88.7 62.7	92.0	J 12	Cpu.
2. J.L.HEREFORD'S WELL SW 1/4,S33,T3S,R1W						150.0	*60.0		22.0	352.0	176.0		0.1		412.0 374.7	412.0 374.7	675.0	J 13	Ct D=67'
3. J.B.HILL'S WELL SW 1/4,S36,T4S,R1W						80.0	*0.4		19.0	4.0	5.0		32.0		60.0 20.0	60.0 20.0	85.0	J 27	Ct D=55'
4. HUNTSVILLE Big Huntsville Spring		7.0	.06		5.5	39.0	1.4	0.6	1.7	5.3	129.0		7.3		120.1	120.2	139.0	J 45	Ct Warsaw
5. HUNTSVILLE Huntsville Spring						38.0	15.0		7.4	3.0	141.0				94.9	94.9		I	
6. HUNTSVILLE Sanaqua Mineral Water Well		7.6	5.9	5.7	187.4	410.7	2634.7	22.5	1365.3	5393.0	Tr.				1797.6	1849.8		G 120	
7. HUNTSVILLE		4.3	*7.2		1.8	10.4	*42.1		27.2	12.6	*44.7			48.8	33.4	42.4	202.9	SL	7/21/23
8. HUNTSVILLE Huntsville Gas Co.		10.5	*150.0		10.8	127.0	*13.4		35.3	461.3				202.8	361.8	550.1	991.5	SL	5/16/27
9. MERRIMACK SPRING NW 1/4 S11,T4S,R1W		6.1	.04		4.6	30.0	1.4	0.7	1.6	5.8	103.0		5.8		93.9	94.0	115.0	J 53	Ct Warsaw
10. MADISON CO. HUNTSVILLE NO. 1		3.2	*0.9		4.5	40.3	5.6		14.1	2.6				47.2	119.5	120.6	164.8	SL	3/4/32

TABLE ④

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc.
JACKSON CO.																			
1. ALA. W.S. CORP. Bridgeport Spring S11,T1S,R6E		5.6	.12		7.1	38.0	1.4	1.7	1.0	5.6	145.0		Tr.		124.1	124.3	138.0	J 56	
2. J.B. WYNNE Cave Spring S36,T1S,R6E		8.5	.16		6.9	47.0	2.5	2.1	1.6	4.9	171.0		Tr.		145.9	146.2	166.0	J 55	
3. J.B. COTTON Isabella Spring S22,T4S,R4E		6.6	.15		7.4	37.0	1.7	1.7	1.4	5.3	142.0		Tr.		123.3	123.6	138.0	J 62	
4. SCOTTSBORO WELL S24,T4S,R9E		7.0	.19		6.3	49.0	2.5	1.8	5.0	12.0	159.0		1.7		148.3	148.7	178.0	J 28	D=160'
5. T. SNODGRASS WELL S12,T4S,R6E		3.9	.70		24.0	42.0	*3.1		8.2	23.0	197.0		0.9		203.7	205.0	227.0	J 33	D=108'
6. SCOTTSBORO Woodall Bros. Well S19,T4S,R6E		5.6	.18		22.0	60.0	31.0	3.5	20.0	46.0	280.0		Tr.		240.3	240.6	336.0	J 34	D=48'
7. PISGAH B.O. Young's Well S24,T4S,R7E		12.0	.78		3.6	18.0	13.0	2.5	1.2	2.7	111.0		0.4		59.8	61.2	123.0	J 39	D=95'

TABLE 5

MORGAN CO.

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG.	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
1. CENTER GROVE W.E.Forman, Spring		23.4	7.1	7.9	28.2	23.8	Tr.	Tr.	Tr.	276.0					155.7	280.3		G 104	Mn=20.6
2. DECATUR J. D. Cloud		1.0	*3.8		14.7	53.1	1.5		4.6	45.0	*79.3 8.4			17.8	193.0	197.8	228	SL	8/6/31
3. DECATUR Connecticut Mills		2.6	*4.6		4.4	25.4	11.6		17.7	Tr.	*49.1			16.8	81.6	87.4	132	SL	1/29/31
4. DECATUR Hotel Hilda		8.5	*6.5		11.3	45.8	8.1		4.1	5.2	*71.8			37.7	160.7	168.9	166	SL	6/25/25
5. DECATUR Hotel Hilda		7.2	*6.0		2.1	43.0	0.6		2.4	11.1	*69.1			14.6	116.1	123.6	164.4	SL	8/25/25
6. DECATUR Tillery Drug Store		5.4	*9.4		2.6	32.6	1.6		0.7	29.0	*28.8			49.9	92.2	104.0	150.4	SL	9/30/26
7. DECATUR Tillery Drug Store		2.4	*4.5		1.6	25.6	2.7		0.7	5.3	*42.2			19.7	70.6	76.3	79.6	SL	9/10/26
8. DECATUR Tenn. River			Tr.		5.0	21.8	4.8		8.8	17.6	69.5				75.1	75.1	127.5	P	2/8/27
9. DECATUR Tenn. River		4.7	0.34	4.6	2.3	30.0	5.5		8.4	26.7	69.3		8.1	2.1	84.5	110.2		P	2/8/27
10. VALHERMOSA SPRING E. Giers Spout Spring S19T6SR1W		4.7	0.2		4.7	34.0	1.7	1.6	3.3	3.9	110.0		12.0		104.3	104.8	129.0	J 51	Ch_s
11. HARTSELLE Town Well, S10.		6.6	1.0		14.0	78.0	23.0	2.2	19.0	51.0	273.0		0.6		252.6	254.3	338.0	J 38	Chs D=150'
12. AUSTINVILLE Home Oil Mills Well		5.6	0.1		11.0	71.0	7.2	1.2	14.0	53.0	186.0		11.0		222.8	222.9	280.0	J 2	Ct D=136'
13. LACEY'S WELL S12,T6S,R1W.		5.2	0.1		6.1	47.0	1.5	0.8	2.6	6.6	155.0		6.2		142.6	142.8	161.0	J 50	Ggs
14. SOMERVILLE School Well		7.0	0.9		5.6	100.0	16.0	1.7	44.0	22.0	219.0		53.0		273.3	274.7	396.0	J 15	Chs D=35'
15. J.D.WHISENOUT'S WELL S25,T6S,R1W		4.1	0.1		2.4	2.1	13.0	2.1	9.0	2.5	5.0		34.0		15.1	15.2	76.0	J 24	Cpv. D=61'
16. DECATUR Tennessee River			Nil.		5.0	15.0	6.0		8.1	14.7	72.0				58.1	58.1		A.P.	

TABLE 6

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg	Total Hardness	Total Solids	Source	Misc
WINSTON CO.																			
1. ADDISON J.C.Smother's Well S5,T10S,R6W			2.9			48.0	*20.0		10.0	8.0	206.0		0.3		147.0 120.0	152.2 125.2	199.0	J 22	Cpu. D=31'
2. ASHRIDGE Sara Hudd's Well S17,T9S,R9W			19.0			15.0	*3.1		2.2	75.0	26.0		0.2		96.0 37.5	130.0 71.5	130.0	J 6	Cpu. D=35'
3. C. LYLE Blue Spring S1,T10,R9W						2.0	*4.9		2.3	1.0	5.0		12.0		7.5 5.0	7.5 5.0	26.0	J 45	Cpu.
4. DOUBLE SPRINGS Henry Hilton S29,T10S,R8W						2.0	*12.0		19.0	1.0	0	6.2	34.0		20.0 5.0	20.0 5.0	70.0	J 46	Cpu. HCL=5.8
5. HALEYVILLE, S32 City Spring		2.8	0.04		1.1	1.7	0.6	0.3	1.3	2.5	4.0		3.3		8.8	8.8	19.0	J 43	Cpu.
6. HALEYVILLE, S31 Ice Company Well						3.0	*11.0		23.0	1.5	3.0		8.9		20.0 7.5	20.0 7.5	54.0	J 3	" " D=105'
7. HOUSTON C.J.Williams Well S27,T10S,R7W						2.0	*0.2		2.0	1.0	7.0		1.0		10.0 5.0	10.0 5.0	12.0	J 16	Cpu. D=102'
8. WILLIAMS SPRING S28,T9S,R10W						2.0	*1.4		2.2	1.0	6.0		3.7		9.0 5.0	9.0 5.0	15.0	J 42	Cpu.
CULLMAN CO																			
1. CULLMAN CITY WELL S10,T10S,R3W		13.1	0.9		16.0	52.0	13.0	1.9	5.0	40.0	212.0		0.55		195.7	197.3	253.0	J 20	Cpu. D=550'
2. CULLMAN CITY WELL S15,T10S,R3W			16.0			28.0	*17.0		32.0	77.0	57.0		0.30		136.0 70.0	164.7 98.6	207.0	J 25	Cpu. D=100'
3. CULLMAN City Well		9.9	0.7		10.8	36.0	12.0		9.5	21.4	76.7				134.3	135.6		P.T.	PH=7.6 1/17/30
4. CULLMAN City Supply NW 1/4,S15						1.0	*63.0		50.0	1.0	8.0		91.0		15.0 2.5	15.0 2.5	215.0	J 27	Cpu. D=110'
5. C.W.DARROUGH'S WELL S11,T10S,R2W			15.0			32.0	*22.0		35.0	81.0	55.0		0.1		132.0 79.9	158.9 106.8	215.0	J 33	Cpu. D=44'
6. L.W.KILGORE'S WELL S3,T12S,R5W			2.0			6.0	*6.1		1.0	2.0	46.0		0.1		15.0	18.6	43.0	J 48	Cpu. D=46'

TABLE 7

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
MARSHALL CO.																			
1. ALBERTVILLE Ala. Water Service Corp Well S10,T9S,R4E		8.4	0.3		4.7	19.0	7.6	2.1	4.6	6.7	87.0		1.8		66.8	67.3	107.0	J 32	Cpu. D=185'
2. ALBERTVILLE		5.5	0.3	1.0	10.0	35.7	19.5		10.0	27.2	159.1	8.5		3.2	131.9	137.6		P	5/2/28
3. ALBERTVILLE		3.6	2.3	1.3	0.6	7.2	3.4		4.4	1.1	24.8	16.0		5.0	20.3	31.8		P	5/11/28
4. ALBERTVILLE		0.6	1.3		1.8	10.3	*8.4		7.0	8.7	39.0				33.3	35.6	54.0	-	PH=8.1 1931
5. ALBERTVILLE	23.9	9.3	0.1	3.6	5.5	12.4	18.5		25.0	4.4	*32.0	27.9		170.5	53.6	73.6		P	4/9/24
6. ALBERTVILLE, CITY WELL		8.9	0.05	0.3	7.2	22.7	11.4		17.5	13.3	*43.3	51.3		10.0	86.0	87.7		P	7/26/24
7. ALBERTVILLE Short Creek, City water		0.4	1.2		3.1	14.0	*1.1		6.0	21.7	26.8		1.3		47.7	49.9	75.2	I	PH=7.7
8. ALBERTVILLE Short Creek, City Water	9.0	3.9	0.3	0.5	2.8	8.1	5.8		0.8	13.1	35.8	4.4		0.8	32.0	35.3	76.0	P	12/31/27
9. ALBERTVILLE Short Creek, City Wat'r	62.6	3.8	4.2	8.9	4.1	9.7	2.9		4.5		50.4	4.2		4.3	41.1	53.4		P	7/27/28
10. BOAZ		9.8	6.0	5.0	2.1	11.3	9.1		10.0	6.0	45.1	42.4		3.9	37.1	75.4		P	10/26/26
11. BOAZ Ala. Water Service Corp Well S1,T10S,R4E		9.4	1.5		4.7	19.0	27.0	3.0	9.0	3.2	137.0		0.5		66.8	69.5	174.0	J 36	Cpu D=104'
12. BOAZ, NEW WELL	Nil.	9.4	1.5		5.2	10.6	9.8		15.2	Tr.	*8.4 58.7	6.2		18.0	48.0	67.0		P	1/27/27
13. BOAZ, OLD WELL	Nil.	9.3	1.6		4.8	15.8	11.7		18.2	Tr.	*7.5 72.3	9.9		19.7	59.2	71.6		P	1/27/27
14. BOAZ, WELL	Nil	9.8	6.0	5.0	2.1	11.3	9.1		9.7	13.0	45.2	42.4		4.0	36.9	75.4		P	10/19/26
15. COLUMBUS, S 5 McDonald Spring		6.1	0.1		2.9	53.0	1.9	2.0	1.4	2.9	174.0		0.3		144.2	144.4	160.0	J 41	Cb
16. GUNTERSVILLE, S12 Loveless Spring		4.3	0.1		3.2	23.0	2.0	1.8	1.9	4.2	77.0		1.6		70.7	70.9	95.0	J 44	Cb Public supply
17. MORTON SPRING S7,T8S,R3E		6.1	0.1		5.9	36.0	2.5	2.1	1.5	4.8	135.0		1.2		114.0	114.2	132.0	J 42	Cb
18. J.SEABOLD'S WELL S18,T4S,R4E		4.7	0.3		5.6	64.0	3.7	2.4	4.5	7.1	204.0		1.4		182.8	183.3	201.0	J 15	Oc D=52'

TABLE 8

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG.	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC
DEKALB CO.																			
1.ALA.WHITE SULPHUR SPG. White Sulphur Spring #1		12.1	0.7	0.7	55.8	118.3	15.7	3.2	4.2	304.2	294.5				525.3	530.5		G 77	
2.ALA.WHITE SULPHUR SPG. Freestone Spring		5.2	0.6	1.1	5.3	74.6	1.8		1.4	10.5	246.2				203.2	215.4	353.5	G 77	
3.BEN ALLEN SPRING S16,T6S,R9E		4.1	0.07		14.0	28.0	2.0	1.4	1.2	2.9	144.0		0.2		127.6	127.7	121.0	J 56	Cfp
4.COLLINSVILLE Ala.Water Service Corp.Well S12,T9S,R7E.		3.6	0.06		3.9	47.0	3.1	1.8	15.0	5.0	146.0		0.2		135.5	133.6	154.0	J 4	Cb D=78'
5. COLLINSVILLE Water Works Well	Nil.	3.3	0.1	0.9	2.3	53.6	6.3		9.6		181.6	108.6		3.1	147.9	148.6		P	6/7/27
6. COLLINSVILLE	Nil.	7.0	0.5	3.1	3.9	58.1	5.5		8.4	10.2	183.2	16.4		2.1	161.1	179.2		P	12/5/27
7. FORT PAYNE City Water Supply,Spring		5.4	Tr.		2.5	32.6	*6.3		20.0	5.8	50.8	7.0	33.6		91.7	91.7	165.0	I	PH 6.9
8. FORT PAYNE SPRING S5,T7S,R9E		5.6	0.14		3.5	64.0	13.0	3.4	25.0	8.9	178.0		5.5		174.4	176.9	240.0	J 60	Cb
9. GERALDINE Scarham School Well S14,T8S,R6E		3.0	0.77		1.9	2.8	2.1	2.7	4.5	1.5	3.0		11.0		14.8	16.1	41.0	J 33	Cpu D=43'
10. HENAGAR D.C.Perry's Well S2,T5S,R8E		0.8	0.06		2.4	3.6	5.2	4.0	7.8	1.8	3.0		18.0		18.9	19.0	56.0	J 3	Cpu. D=43'
11.LYDA SNODGRASS SPRING S23,T6S,R9E		3.7	0.07		5.0	52.0	2.4	1.7	1.8	3.9	178.0		0.2		151.0	151.1	165.0	J 57	COc
12. MANATOU SPRING S19,T7S,R9E			Tr.			70.0			1.0	16.0	196.0				166.0 174.9	166.0 174.9		J 61	Cb
13.MENTONE Beauty Spring S21,T5S,R10E			6.0			11.0			1.0	24.0	49.0				54.0 27.5	38.3		J 53	Cpv.
14.MENTONE Chalybeate Spring Loring Springs Hotel Co.		5.1	6.6	1.2	3.0	4.5	2.6	1.3	0.8	15.4	33.2				23.2	42.0	80.5	G 91	
15. VALLEY HEAD Winston Spring S29,T5S,R10E		2.9	0.06		5.1	46.0	2.0	1.9	3.1	4.3	155.0		0.2		136.0	136.1	149.0	J 55	Cfp
16.LOOKOUT MOUNTAIN All Pine Lodge Spring Col. Howard	14.0	3.8	0.7		2.2	10.6	2.6		4.0	Tr.	*22.6				35.5	36.8			11/14/29

TABLE (9)

WALKER CO.

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc.
1. ALA. WATER SERVICE Corp. Well		6.6	0.43			3.6	73.0	5.8	2.0	4.4	*18.0 526.0		0.05		16.4	17.2	525.0	J 10	Cpv D = 450'
2. JASPER. Ala. Water Service Corp. Well		8.9	0.23			6.5	258.0	4.0	24.0	7.5	*17.0 633.0		2.8		27.3	27.8	652.0	J 25	Cpv D = 465'
3. ALA. WATER SERVICE Corp. Well		8.9	3.4		14.0	29.0	73.0	5.8	5.5	119.0	204.0		1.2		130.1	136.2	358.0	I	
4. KANSAS, Ala. Water Service Corp. Waterworks Spring						28.0	*10.0		2.3	127.0	4.0		1.0		117.0 70.0	117.0 70.0	186.0	J 44	Cpv
5. BANKHEAD, Old Mine Cane Creek Mining Co.		7.2			8.4	17.8	143.3		7.3	87.9	*173.0				78.9	78.9	453.2	A	PH = 7.4
6. BENOIT SPRING C.S.Bissell Spring						2.0	*5.7		6.0	1.0	1.0		15.0		10.0 5.0	10.0 5.0	33.0	J 49	Cpv
7. CARBON HILL Galloway Mine		4.4	0.1		11.8	15.6	*18.6		5.0	114.5			15.3		87.7	87.9		P.T.	PH = 5.2 8/20/29
8. CARBON HILL City Supply Spring		9.5	1.1		12.9	16.0	*8.7		Tr.	115.2		25.5	0.88		93.2	95.2	201.8	I	PH = 5.1
9. CARBON HILL, Galloway Coal Co. Spring	2.0	7.0	Tr.		7.5	19.9	25.4		6.7	73.4	*3.0	18.0			80.5	80.5	194.0	A	2/16/28
10. CARBON HILL	Nil.	9.3	2.6	8.5	5.5	8.4	30.0		11.2	9.9	*101.5	1.0		Tr.	43.6	95.3		P	3/30/29
11. CORONA, Old Mine DeBardeleben Coal Corp.		7.5			13.3	26.0	119.9		4.6	317.9	*22.7				119.8	119.8		A	8/7/23
12. CORDOVA	Nil.	5.2	2.7	2.5	2.3	6.7	19.9		6.8	10.3	*43.4	Nil.		Tr.	26.2	44.8	109.0	P	3/30/29
13. DORA	92.9	7.9	0.17	0.02	19.7	55.6	123.6		10.8	256.2	*123.5	17.3		18.6	220.1	222.3	452.7	P	4/6/25
14. DORA	Nil.	5.0	1.5	4.1	7.0	25.4	73.0		13.2	104.1	*93.0	Nil.		Tr.	92.3	117.5	336.2	P	3/30/29
15. DORA	31.8	11.7	0.7	2.8	24.4	22.4	69.2		15.8	138.8	*84.1	51.8		32.8	156.3	173.0		P	4/29/25
16. DORA, Ice Co. Well # 2			0.5			32.0	*130.0		28.0	245.0	202.0		0.33		178.0 80.0	178.9 80.9	557.0	J 43	Cpv D = 260'
17. DORA Old Deep Well (Boiler)					2.6	75.1	75.1		2.5	190.0	*96.0	90.3			198.3	198.3	446.3	P	10/21/20
18. JASPER City Water Supply		10.8	0.4	7.1	1.0	22.4	154.5		8.0	6.0	*418.3				60.1	100.3		A	5/18/21

TABLE (10)

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG.	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
WALKER CO. (Concluded)																			
19. JASPER	Nil.	7.9	*7.9		2.3	5.7	25.9		21.2		61.2	Nil		5.0	23.7	33.6	542.1	P	9/17/25
20. JASPER	Nil.	6.9	0.8	1.5	6.7	15.1	119.4		20.4	67.1	*232.3	Nil		Tr.	65.3	75.1	479.6	P	3/30/29
21. JASPER New Well		12.1		21.5	3.8	40.3	49.0	9.6	25.5	60.9	*92.5	51.6	0.9		116.3	235.6		P	7/31/18
22. JASPER Office Well	Nil.	6.0	3.3	9.1	4.9	3.1	115.0		28.1		*101.6 187.4	Nil.		2.2	27.9	84.0	474.0	P	10/29/27
23. JASPER Old Well		7.9	33.4	0.4	2.2	35.7	15.2	7.2	6.6	31.5	*77.5	15.0	0.6		98.3	160.3		P	7/31/18
24. JASPER Flowing Well		7.0	0.2		6.6	27.7	*166.1		46.0	3.8	139.9	9.7	Tr.		96.3	96.7	406.2	PT	Ph=7.6 8/17/29
25. JASPER Water Co. Well		5.4	5.5	0.9	13.1	34.0	31.6		17.5	10.9	*122.7				138.8	153.6	250.8	A	4/14/20
26. JASPER Well # 2	Nil.	0.5	8.0	14.1	15.2	55.8	54.1	8.6	19.0	1.4	*228.9	48.0		Tr.	202.1	294.0	428.3	P	1/26/22
27. JASPER Wells # 2 & 3	Nil.	8.8	6.7	5.1	39.6	139.2	38.8		15.2	311.2	*149.0	25.8		8.3	510.2	550.4	712.0	P	3/31/23
28. JASPER Well # 3		18.1	4.9	8.5	5.5	28.6	*43.3		10.2		211.9	21.0 @25'			94.1	150.0	361.1	P	3/29/22
29. JASPER	55.8	10.5	174.7		41.3	78.4	217.4		28.3	736.6	420.4	111.1		17.3	365.8	678.4	1720.0	P	3/29/27
30. JASPER City Ice Co. Well			3.6			24.0	*107.0		6.0	60.0	304.0		0.7		87.0 60.0	93.4 66.4	348.0	J 24	D=218 Cpu.
31. PARRISH Wm. Kellum's Well S20,T15S,R7W			0.9			60.0	*28.0		11.0	20.0	199.0		0.7		140.0 150.0	141.5 151.5	212.0	J 38	Cpu. D=35'
32/ MORGAN SPRINGS Drainage from Mine	Nil.	5.7	0.6	0.3	12.7	12.0	20.1	5.7	8.9	87.1	36.5	14.8		33.0	82.3	85.3		P	5/29/23
33. OAKMAN Dixie Spring		10.4	*22.2		635.6	523.6	180.7	6.7	24.4	4075.4					3923.5	4057.9	5666.1	A	Ni&Co=Trac Mn=58.7 1931?
34. CHISCA Jos. Scott's Well S29,T13S,R9W			1.6			100.0	*177.0		25.0	387.0	304.0		1.1		303.0 249.8	305.9 252.7	837.0	J 9	Cpu. D=52'
35. TOWNLEY	Nil.	3.5	1.5	5.8	9.1	13.1	3.2		5.0	5.8	75.2	2.1		Tr.	67.6	102.4	130.8	P	3/30/29
36. WARRIOR RIVER Gorgas # 4 (17.1)		1.1	*4.5		3.5	7.4	2.1		2.4	24.7	15.6				32.9	38.5		A.P.	Feed Water 12/26/26

TABLE (11)

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc.
JEFFERSON CO.																			
1. BIRMINGHAM	55.7	10.5	175.4		41.4	78.3	217.5		28.2	548.9	421.7	111.2		173	365.7	680.0	1719.7	P	Fe from Bicarb 3/29/27
2. BIRMINGHAM Cahaba River		7.5	0.44		2.5	13.0	*9.1		2.2	8.8	52.0		0.6		42.7	43.5		I	
3. B'HAM. ICE & COLD STORAGE CO. 22nd.St.&4th.Ave.S.Well		5.2	0.12		29.0	66.0	23.0	3.1	38.0	46.0	260.0		4.6		284.3	284.5	378.0	J 48	CC bk D=440'
4. BLOSSBURG Sloss-Sheffield Coal Mine	6.0				13.3	28.1	163.6		15.8	242.7	124.9	4.3			124.8	124.8		A	
5. E.T.COX'S SPRING Sec.26,T17,R2W		20.3	*3.2		5.6	22.8	8.2	0.8	3.3	6.6	106.6				80.0	84.0		G 87	
6. DESHAZO'S MILL Cahaba River		21.6	*3.2		8.0	40.7	3.8	3.6	3.5	1.7	162.2				134.6	138.6		G 317	
7. DOLCITO QUARRY SPRING S5,T17S,R2W		5.2	0.22		21.0	39.0	7.2	2.2	2.8	18.0	208.0		0.87		183.8	184.2	204.0	J 104	CC bk
8. EAST AVONDALE SPRING S29,T17S,R2W		5.2	0.12		21.0	40.0	2.0	1.5	4.2	9.4	207.0		5.5		186.3	186.5	203.0	J 106	CC bk.
9. EAST THOMAS	Nil.	1.8	3.2	1.7	3.8	11.0	35.4		8.2	23.3	51.5	Nil.		Tr.	43.1	58.3	143.9	P	3/30/29
10. FIVE MILE CREEK		3.3	0.4		14.0	35.0	*9.4		3.5	27.0	169.0		0.6		145.1	145.8		I	
11. FIVE MILE CREEK	71.8	100.3	*37.6		214.1	626.2	73.7	14.4	47.2	691.5	1117.0			141.9	2446.0	2493.0		P	4/6/23
12. FIVE MILE CREEK	236.0	78.6	*88.9		197.3	606.8	99.9	16.2	68.4	681.8	1075.0			172.7	2326.0	2483.0		P	4/6/23
13. FIVE MILE CREEK	4750.4	75.4	*37.6		181.5	410.6	244.5	33.2	183.6	1526.0	319.6			946.9	1771.2	1818.3		P	4/6/23
14. WOODWARD ALA. W.S.CORP. Hawkin's Spring S24,T18S,R4W		4.7	0.43		7.3	77.0	2.8	3.2	6.0	15.0	240.0		11.0		222.3	223.1	256.0	J 108	Cc
15. LAKEVIEW WELL	152.4	9.8	0.9	0.8	5.0	7.9	3.8		4.2	18.8	32.8	4.0		13.9	40.8	46.3	94.2	A	2/26/27
16. LAKEVIEW PARK Well	3.1	4.2	0.1	3.6	8.6	19.9	43.8	11.9	3.0	10.1	111.7	10.0		2.2	85.1	105.2	222.8	A	7/29/27
17. LEEDS Hawkins' Well		9.3	2.1	2.4	0.9	2.5	20.5	6.7	20.5	35.2	34.5				10.0	27.2		G 76	
18. LEEDS-ALA. WATER CO. Jones-Owens Springs	Nil	1.7	2.1	3.4	0.9	32.2	2.7	0.5	4.5		51.3	4.8		0.1	84.2	106.7		P	7/31/23

TABLE 12

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG.	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
JEFFERSON CO. (Continued)																			
19. IRONDALE ALA. Water Company Montgomery Spring	Nil	1.0	0.5	1.5	3.3	12.6	1.9	1.2	4.0		27.4	61.5		1.4	45.1	54.3		P	8/15/23
20. MAGELLA		3.8	0.5	0.4	18.7	47.7	5.2	Tr.	8.0	15.2	109.1				195.9	198.8		P	Mn=Tr 10/21/22
21. MAGELLA		10.4	0.4	0.4	66.7	16.5	1.7	4.9	7.0	41.3	165.6				315.7	318.8		P	Mn=Tr 11/2/22
22. MAGELLA		0.5	*7.1		9.4	42.0	0.6	0.5		1.8	87.6				143.6	152.5		P	Mn & Ti=Tr 6/30/22
23. OXMOOR Desoto Springs		17.3	*5.1		3.2	34.1	7.3	0.6	1.7	1.9	129.4				98.4	104.8		G 90	
24. OXMOOR Townes Spring		14.6	*3.6		3.9	21.0	15.8	2.3	5.3	0.5	118.4				68.4	72.9		G 90	
25. PALOS	Nil.	12.1	3.8	14.2	6.6	8.1	25.7		7.8	19.0	44.2	Nil.		Tr.	47.5	132.8	168.6	P	3/30/29
26. PRATT CITY	Nil	1.4	1.4	4.0	2.6	14.8	4.7		7.2	6.3	49.8	4.4		Tr.	47.7	72.3	97.9	P	3/30/29
27. SELLER'S SPRING S22,T19S,R4W.		5.2	0.1		3.8	44.0	*4.2		2.2	5.8	143.0		0.62		125.5	125.7	142.0	J 114	C_f
28. SLOSS SHEFFIELD WELL S26,T17S,R2E		6.1	0.1		2.3	41.0	1.5	1.4	1.5	3.3	133.0		0.3		112.0	112.2	131.0	J 51	C_{hs} D=50'
29. R.A.PORTER Thompson Spring S2,T20S,R4W		16.0	0.6		5.0	20.0	11.0	2.0	3.0	6.2	109.0		Tr.		70.6	71.7	127.0	J 118	C_p
30. WARRIOR ICE CO. WELL S13,T14S,R3W		6.1	1.3		14.0	40.0	23.0	3.2	50.0	4.2	153.0		0.15		157.6	159.8	288.0	J 3	C_{pu} D=701'
31. WARRIOR RIVER	26.8	5.0	0.3	4.1	7.2	20.9	14.1		4.8	40.2	78.1	6.3		2.6	81.8	105.0	184.1	P	12/8/27
32. WARRIOR RIVER	29.3	3.8	0.2	3.8	3.3	19.3	12.0		2.1	45.6	45.6	8.2		3.6	61.8	83.2	143.4	P	12/17/27
33. WARRIOR RIVER	894.4	3.1	0.2	2.2	4.2	12.6	6.5		2.8	29.3	34.9	2.4		15.3	48.8	61.4	101.3	P	12/22/27
34. WARRIOR RIVER	15.2	20.3	0.2	1.0	8.5	22.5	7.5		4.8	31.3	85.6	1.2		2.2	91.1	97.0	177.4	P	12/1/27
35. BESSEMER Spencer Spring	Nil.	6.3	1.0	0.5	14.2	67.8	10.4		5.9	11.5	140.5	11.0		19.6	227.9	232.5		P	6/15/23
36. FULTON SPRINGS	2065.0	19.7	*15.2		12.0	10.6	148.6		12.4		465.2				75.9	94.9	692.0	S.T.	2/2/29

TABLE 13

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K
JEFFERSON CO. (Concluded).								
37. MORRIS Brookside Pratt # 2 Mine Nickelplate Coal Co.			49.0			80.0	400.0	
38. MORRIS Brookside Pratt # 2 Mine Nickelplate Coal Co.			178.0			60.0	320.0	
39. SLOSS # 1 MINE						44	*15	
40. SLOSS # 1 MINE						24	*253	
41. SLOSS # 2 MINE		5.2	0.04		2.8	10.0	207.0	4.0
42. WARRIOR Powhatan Mine Franklin Coal Co.		7.5	0.49		1.0	3.1	223.0	5.3
43. WARRIOR Powhatan Mine Franklin Coal Co.		15.4	2.9		4.9	17.0	60.0	2.2
44. WARRIOR Powhatan Mine Franklin Coal Co.						1.0	169.0	
45. JEFFERSON CO.	152.4	9.8	0.9	0.8	5.1	7.9	2.8	
46. JEFFERSON CO.	3.1	4.2	0.1	3.2	8.6	20.0	44.5	11.9
47. Birmingham Water Works Co. City Supply		3.4	0.07		5.9	17.0	19.0	1.3
48. BIRMINGHAM BRIDGE Big Wills Creek	448.9	1.3	0.6	3.0	3.1	38.0	4.2	
49. BIRMINGHAM Cahaba River		7.5	0.4		3.5	14.0	6.3	2.2

CL	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg	Total Hardness	Total Solids	Source	Misc
										13
2.0	1079.0	9.0		0		264.0	352.9	1521.0	J 6 Pa	D 100' Cpv Broken cover
3.0	1520.0	0		0		705.0	1024.0	1946.0	J 7 Pa	Old stagnant sump water Cpv.
3.0	18.0	* 5.9 151.0				123.0	123.0	166.0	J 1 Rm	Mine Seepage Srm
73.0	139.	* 22.0 443.0		8.3		105.0	105.0	730.0	J 2 Rm	Iron Ore 100 Cover Seepage Srm
25.0	24.0	*5.9 519.0		0.21		36.0	36.0	548.0	J 3	1000' Cover Iron Ore Seepage Srm
32.0	191.0	264.0		48.0		12.0	12.9	687.0	J 1 Pa	220' Mine Seepage Cpv.
3.4	13.0	*4.9 211.0		1.2		63.0	68.2	244.0	J 2 Pa	Seepage from 375' Cover Cpv.
4.0	127.0	280.0		0		1.0	1.0	418.0	J 3 Pa	Roof Seepage 100' Cover Cpv.
4.2	18.9	32.7	4.0		13.9	40.7	46.7	95.1	P	
3.0	9.4	111.7	10.0		2.2	85.4	103.0	223.1	P	
2.0	61.0	54.0		0.4		66.8	66.9	140.0	A	5/18/32
6.8		*64.6			11.3	107.7	125.5	126.1	P	8/17/27
2.4	8.8	62.0			0.7	49.4	50.1		A.P.	

TABLE 14

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc.
BLOUNT CO.																			
1. BANGOR W.P. Grave's Well		5.2	0.41		3.1	14.0	4.6	3.6	4.6	49.0	6.0		1.0		47.8	48.5		J 10	Chc D=40'
2. BLOUNT SPRINGS Arsenic Spring (#2)		9.3	1.0	0.8	24.9	53.2	232.0	13.8	320.1		276.2				235.6	241.8		G 78	H_2S 54.2 Str, Ba. Li-Tr.
3. BLOUNT SPRINGS Cold Spring		6.9	*1.7		4.4	58.7	7.2	1.3	9.9	8.9	194.8				164.6	166.7		G 79	
4. BLOUNT SPRING Glenwood Spring		5.7	*1.1		2.1	28.1	4.5	1.0	5.3	8.4	91.8				78.8	80.1		G 80	
5. BLOUNT SPRINGS W.F.Harrell-Shallow Well		6.9	*12.4		7.4	53.9	6.6	1.0	15.7	19.3	167.7				164.4	179.9	298.2	G 80	
6. BLOUNT SPRINGS Red Sulphur Spring(# 1)		12.4	0.8	0.8	24.3	51.4	234.3	14.2	325.1		279.1				228.4	245.0	1023.8	G 78	Li=1.2 H_2S=56.5 Str=4.6 Br=1.9 Ba=24 I=Tr.
7. BLOUNT SPRINGS White Sulphur Springs(#3)		7.8	0.8	0.7	23.1	50.6	217.8	11.8	297.3		257.3				221.5	227.3	928.9	G 78	Li=Tr. H_2S=53.1 Str.=Tr. Br.=Tr Ba=" I="
8. BLOUNTSVILLE SPRING SE1/4,S13,T11S,R1W.		9.4	0.08		4.0	27.0	1.3	1.4	1.6	3.7	99.0		0.3		83.9	84.0	107.0	J 26	Cfp
9. CHAPULTEPEC Gibson Spring SW1/4,S11,T13S,R1E.		5.2	0.02		14.0	27.0	*1.9		1.9	2.5	150.0		0.15		125.0	125.0	123.0	J 32	Cfp
10. CLEVELAND D.R. Blackwood's Well NW1/4,S18,T12S,R1E		10.8	0.34		7.5	25.0	29.0	1.2	7.9	3.7	180.0		0.4		93.2	93.9	186.0	J 12	Cpu. D=96'
11. CRIM SPRING Big Spring NW1/4,S28,T11S,R1W.		5.6	0.08		4.5	39.0	1.0	1.4	1.8	3.5	127.0		0.3		116.0	116.1	130.0	J 28	Cfp
12. ONEONTA Ala.Water Service Corp. Well NW1/4,S31,T12S,R2E.		4.4	0.03		4.2	8.0	*1.7		2.2	2.6	37.0		2.1		37.3	37.4	49.0	J 17	COc D=50'
13. ONEONTA			Tr.		11.1	19.5	6.1		9.5	2.9	55.1	4.6		Tr.	94.4	94.4		P	9/7/22
14. ONEONTA	0.9	4.2	0.07	0.1	4.0	11.6	5.0		7.8		62.1	7.0		11.0	45.5	51.1	100.6	P	5/16/27
15. ONEONTA	Nil.	2.4	0.09	0.6	2.8	15.8	5.5		8.4	3.5	61.8	101		17.6	51.0	54.5	103.9	P	5/7/27
16. ONEONTA City Water Supply			Tr.		11.1	20.2	6.1		9.5	4.3	55.7	4.5		Tr.	96.2	96.2		I	
17. VILLAGE SPRING SE1/4,S33,T14S,R1W.		4.2	0.02		15.0	32.0	2.6	1.3	2.6	2.7	171.0		0.53		141.6	141.6	137.0	J 35	COc

TABLE 15

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
SHELBY CO.																			
1. CALCIS, H.J. JUSTICE Calcis Produce Co.		43.2	*42.8		465.7	506.9	104.4		9.1	1501.2	1075.0			345.0	3182.6	3236.3	4560.0	SL	
2. CALERA, SPRING CREEK Warrior Water Co.	Nil.	9.4	2.2	18.0	4.7	31.2	2.6		4.2	13.3	104.5	54.8		20.5	97.3	201.0	218.7	A	10/20/28
3. COLUMBIANA New Well	Nil.	7.5	1.3	2.4	8.8	60.5	1.4		2.2	20.6	202.5	11.3		12.0	187.4	203.0	312.2	P	4/20/28
4. L.B. GREEN'S WELL SW1/4, S16, T20S, R1E		14.1	2.6		9.0	13.0	9.4	0.9	14.0	28.0	43.0		0.15		69.5	92.8	125.0	J 19	D=22'
5. HELENA Sam Lee Spring S16		4.7	0.1		34.0	58.0	4.1	0.9	2.8	9.1	343.0		0.15		284.7	388.5	285.0	J 58	
6. MONTEVALLO SPRING Warrior Water Co.		*0.35	*1.7		15.2	33.4	4.6		7.1		*87.5				145.9	146.8	156.0	S.T.	6/1/29
7. PELHAM Keystone Lime Co. Well Sec 26		4.7	0.1		5.3	95.0	6.1	0.6	5.0		281.0		0.9		259.1	429.1	294.0	J 16	D=160'
8. SHELBY'S SPRING White Sulphur Spring		17.1	*1.3		7.9	47.8	7.3	1.2	2.4	9.6	8.1				152.0	153.6	194.8	G 75	H_2S=0.8
9. SHOAL CREEK SPRING Alabama College S4		7.0	Tr.		17.0	35.0	3.6	1.0	1.8	7.4	180.0		Tr.		157.4	220.1	153.0	J 69	
10. W.H. TEMPLIN'S WELL SW 1/4, S28, T21S, R1E		8.0	Tr.		5.3	43.0	5.0	1.6	3.9	8.0	144.0		0.65		129.3	206.1	152.0	J 39	D=100'
11. HELENA Nettie Truck's Well SW 1/4, S15, T20S, R3W		8.0	0.1		30.0	74.0	9.8	1.4	10.0	103.0	252.0		0.2		308.1	308.3	372.0	J 14	D=30'
TALLADEGA CO.																			
1. WALKER COLLINS Cedar Spring S27, T17S, R6E		6.6	0.03		14.0	28.0	3.9	0.6	1.5	4.3	152.0		0.35		127.6	127.7	130.0	J 41	
2. CHAMBERS' SPRING		26.6	*3.3		19.2	39.0	5.5	0.3	3.0	5.4	217.8				176.4	180.6	350.2	G 68	
3. CHANDLER'S SPRING		25.8	4.3	4.4	10.3	37.7	7.5	3.3	1.7	9.5	186.0				136.5	157.1		G 67	
4. CHILDERSBURG	90.0	4.4	0.5	4.1	5.2	13.8	2.5	Tr	3.9		*33.3			28.6	55.8	79.4	105.0	P	1/12/23
5. WILL GAITHER'S Spout Spring S16, T18S, R5E						20.0			3.0	3.0	174.0				136.0	136.0		J 42	
5-a TALLADEGA See-23 City Water (Raw)	Nil.	2.6	1.0	1.2	13.1	35.0	1.7	Tr.	8.3	3.4					141.5	149.9	157.7	P	2/3/21

TABLE 16

TALLADEGA CO. (Concluded)

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG.	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
6. CHOCCOLOCCO SPGS.		4.8	*1.7		3.2	4.2	1.3		3.6	13.0	*4.7			11.7	23.7	25.8	32.9	S.L.	2/22/28
7. LINCOLN-Consolidated School Well		6.1	0.16		10.0	25.0	3.5	1.4	3.1	2.6	121.0		2.2		103.6	103.9	110.0	J 2	CO_c D= 80'
8. MORETTI-Harrah's GANTT'S QUARRY Quarry Spring, S36		6.1	0.3		6.4	46.0	2.8	1.1	1.8	3.3	170.0		0.6		141.3	141.8	154.0	J 49	ta
9. MUNFORD, Consolidated Schools Well		13.1	Tr.		14.0	27.0	3.3	1.5	1.9	2.6	150.0		0.35		125.1	125.1	139.0	J 9	C_c D= 140'
10. H. T.Newman's Well JUANITA (2 MI.E.) S15,T22S,R4E			Tr.			2.0			3.0	3.0	22.0				8.0		8.0	J 37	ta D = 31'
11. E.B.ROSELLE'S WELL S21,T18S,R5E			Tr.			4.0			2.0	4.0	25.0				13.0	13.0		J 12	C_w D = 130'
12. SHOCCO SPRING S16		4.3	0.04		1.0	1.2	1.8	2.0	1.6	3.1	6.0		Tr.		7.1	7.2	25.0	J 44	C_w
13. SYLACAUGA, City Spring-S29						50.0			4.0	Tr.	175.0				131.0	131.0		J 50	ta
14. SYLACAUGA Tallasseehatchee Creek		7.3	0.07	0.16	1.0	1.7			2.8	0.4		2.1		11.5	8.4	9.4	38.0	A	5/25/29
15. SYLACAUGA Spring		5.6	Nil.	0.1	4.5	51.7			4.8	1.0		5.7		15.0	147.8	148.4	151.5	A	
16. SYLACAUGA City Well		8.5	0.08		9.7	42.0	6.8	1.8	3.2	12.0	172.0		0.8		144.7	144.9	168.0	J 30	ta D =1360'
17. SYLACAUGA, Wisconsin Lumber Co.		7.4	*3.4		13.2	38.7	3.8		6.8	7.0	*90.4			15.4	151.0	155.3	150.6	S.L.	8/25/25
18. TALLADEGA, Light and Water Co.		1.2	*47.1		7.9	23.9	7.9		11.6	1.1	*55.6				92.2	151.2	160.3	A	
19. TALLADEGA, Water Works Talladega Creek			*1.9		2.4	5.7			6.0	13.1					24.1	26.5		I	
20. TALLADEGA Talladega Creek		7.2	*4.3		2.2	5.4	2.7	1.0	8.8	7.1	*6.0				23.0	28.4	52.2	A	11/8/19
21. TALLADEGA Springs Sulphur Spring		19.9	Tr.	13.1	4.6	115.3	127.7	77.4	55.5	131.7	368.0				307.0	379.5		G 75	H_2S=539.2
22. JUANITA Wm. Hendrex Warm Spring, S14.						28.0			2.0	4.0	94.0				67.0	67.0		J 55	ta (Sylacauga)
23. TALLADEGA See 5-a City Water (Filtered)	Nil.	0.9	0.6	0.5	2.4	5.8			6.0	13.2		7.9			24.4	28.4		P	

TABLE (17)

ST. CLAIR CO. See also Misc. Table 44

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc.
1. ASHVILLE, S5 Ashville Spring		6.1	0.12		14.0	41.0	2.8	1.6	1.2	4.7	194.0		0.72		160.1	160.4	168.0	J 57	CO_c
2. PELL CITY, S30 Avondale Mills Pump Station		6.6	0.1		2.4	46.0	3.2	1.5	2.0	5.8	149.0		0.3		124.8	125.0	149.0	J 67	C_{fp}
3. COOK SPRINGS Sulphur Springs # 1		20.6	*2.8		4.1	22.6	30.2	2.6	5.3	5.3	157.1				73.3	76.9		G 89	H_2S=0.4
4. COOK SPRINGS #2 Lithia or Magnesia Spg.		9.2	*4.0		1.3	10.0	6.9	1.5	5.3	7.9	38.3				30.3	35.3		G 89	
5. COOK SPRINGS Chalybeate Spring # 3		21.0	*10.8		2.6	11.7	11.0	3.7	3.5	2.1	74.1				39.9	53.4		G 89	
6. COOK SPRINGS Lithia Spring # 4		5.1	*0.8		1.0	2.8	3.7	0.9	3.5	2.1	14.9				11.1	12.1		G 89	
7. W.L.MCCORKLE'S WELL S18,T14S,R3E		10.8	0.17		34.0	132.0	49.0	4.6	10.0	115.0	555.0		0.2		469.6	469.9	641.0	J 11	C_c D=40'
8. PELL CITY, S35 Hinesman Spring		5.2	0.11		2.6	49.0	3.5	1.0	1.2	5.2	159.0		0.2		133.2	133.4	151.0	J 65	C_{fp}
9. PELL CITY City Spring		4.9	0.5	0.6	3.1	66.6	3.1	1.8	6.4	6.4	*108.2	10.8			166.7	171.0	202.9	P	Mn=Tr. 1/2/23
10. PELL CITY		4.8	0.6	1.9	8.8	55.6	3.6	1.5	6.9	12.3	*92.8	6.6		1.2	175.2	186.8	193.9	P	1/2/23
11. PELL CITY		5.2	0.2	1.6	9.5	23.4	3.2	0.8	5.6	0.1	*58.4	3.3		Tr.	97.6	106.9	115.3	P	Mn=Tr. 1/2/23
12. PELL CITY		3.7	0.14	1.9	2.8	47.8	2.2	0.5	4.9	3.9	*76.2	8.0		0.56	131.0	141.7	149.8	P	1/2/23
13. RAGLAND Deep Well		9.3	9.1	2.7	7.2	12.1	7.3		11.3		73.1	54.9		1.9	59.9	91.1		A	6/26/29
14. RAGLAND, S7 Town Well		16.9	3.9		7.5	9.8	17.0	1.8	4.5	9.8	95.0		0.15		55.3	62.3	126.0	J 33	C_{pv} D=200'
15. ODENVILLE Seaboard Air Line Well S35,T15S,R2E		4.0	0.3		6.9	45.0	1.3	1.4	1.9	4.9	166.0		0.2		140.9	141.4	152.0	J 28	O_c D=187'
16. ST. CLAIR SPRINGS White Sulphur Spring # 4		6.2	*2.2		16.4	36.9	8.3	1.2	4.9		209.1				159.8	162.5	292.6	G 74	H_2S=0.3 Li,Ba,&Sr=Tr
17. ST. CLAIR SPRINGS Red Sulphur Springs # 5		7.9	*2.2		14.8	31.8	23.6	1.8	11.5		170.0				140.4	143.1		G 74	H_2S=8.2 Li,Ba,&Sr=Tr
18. ST. CLAIR SPRINGS Lithia Spring # 6		8.6	*1.3		17.3	37.5	3.5	0.6	4.1	4.8	161.2				164.9	166.5		G 74	

TABLE (18)

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG.	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
ETOWAH																			
1. ATTALLA	16.9	6.6	Tr.	3.7	8.6	14.5	4.4		4.2	3.4	43.6	3.9		108.8	71.6	92.1		P	4/9/24
2. ATTALLA	66.7	10.3	0.1	4.2	6.6	28.0	6.5		6.0	5.3	59.1	2.9		48.1	97.0	120.6		P	4/9/24
3. ATTALLA	Nil.	2.3	1.4	6.2	2.8	17.1	5.5		6.0	3.4	64.4	34.8		7.0	54.2	91.0		P	4/18/24
4. ATTALLA Gray's Well Ala. Water Co.	Nil.	4.3	1.5	0.7	2.2	33.8	2.0	0.7	2.0	5.5	54.3	2.0		12.6	93.5	100.0		P	6/25/23
5. ALA.W.S.CORP. Atalla Spring S35,T11S,R5E		5.2	0.07		5.8	47.0	6.5	1.8	3.2	31.0	138.0		0.25		141.2	141.4	178.0	J 47	C_t
6. BOY SCOUTS SPRING S4,T11S,R7E		8.9	0.07		3.9	43.0	2.0	1.5	1.2	3.9	147.0		0.2		123.5	123.6	138.0	J 51	C_{fp} (chert)
7. COUNTRY CLUB SPRING S22,T12,R6E		5.6	0.1		8.8	38.0	5.4	2.2	1.7	3.5	170.0		0.2		131.1	131.3	144.0	J 55	CO_c & C_c
8. ED COX'S WELL S21,T11S,R6E		5.6	5.7		3.5	7.0	3.6	1.6	1.6	2.[illegible]	42.0		Tr.		32.0	42.1	48.0	J 23	C_{pv} D=32'
9. GADSDEN Crossfield Ice So. Well S4,T12S,R6E		3.7	0.08		2.4	8.8	41.0	2.9	64.0	5.5			42.0		32.0	32.1	181.0	J 37	C_c D=90'
10. HOOK'S LAKE SPRING S25,T11S,R7E		5.2	0.07		16.0	42.0	3.4	1.4	2.3	3.3	210.0		0.3		170.9	171.0	176.0	J 50	CO_c
11. GADSDEN Ice Company Spring S4,T12S,R6E		5.6	0.08		8.7	28.0	2.2	2.1	2.4	3.2	135.0		0.3		105.7	105.8	117.0	J 54	CO_c
12. ATTALLA Big Wills Creek	52.5	8.4	Tr.	5.3	1.2	8.6			2.4	1.6					26.4	55.8	98.5	M	3/13/23
13. ATTALLA Spring		5.3	1.4	4.2	9.6	37.2	3.0		7.8	4.0					132.4	158.1		A.P.	
14. GADSDEN City Water		2.3	0.4	0.2	5.3	10.8	0.7		8.0	2.7	*21.9			41.0	48.8	50.3	99.4	A.P.	
15. GADSDEN Spring		5.3	1.4	4.2	9.6	37.4	3.0		7.8	4.0					132.9	158.7	104.9	A.P.	

TABLE 19

CALHOUN CO.

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG.	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
1. ALA. UNITED ICE CO. S8,T16S,R8E	WELL	10.8	0.02		20.0	30.0	0.9	2.1	20.0	15.0	144.0		1.3		157.2	157.2	203.0	I	
2. ANNISTON Boiling Spring		7.6	0.1	0.6	11.6	22.2	2.7	1.3	5.2	0.1	62.9	0.2		Tr.	103.1	106.6	122.5	P	Mn=Tr 1/2/23
3. ANNISTON Charcoal Furnace # 2 Adelaide Cotton Mills	Nil.	6.6	0.5	2.8	12.5	23.9	6.0		9.3		135.1	4.2		0.3	111.0	127.6	206.8	P	6/5/30
4. ANNISTON	Nil.	3.7	0.05	0.4	6.0	21.3			3.8	4.9	88.7	23.9		0.2	77.8	80.3	135.8	P	11/25/24
5. OHATCHEE Anniston Cooperage Well S27,T14S,R6E		6.6	0.3		1.7	2.2	2.8	1.5	4.5	2.9	9.0		4.3		12.5	13.0	43.0	J 7	C_f D=29'
6. ANNISTON, Well Anniston Steel Casting Co.	7.7		*6.0		5.3	9.4	5.4	3.3	13.8	10.0	19.3				45.3	52.8		I	
7. ANNISTON Choccolocco Creek		5.0	0.4	2.6	6.2	10.6	2.4	1.0	4.5	5.9	27.9	0.3		3.2	52.0	66.9	74.1	P	Mn=Tr 1/2/23
8. ANNISTON City Water Supply		1.2	*0.5		12.9	22.2	3.5	Tr.	5.5	70.4	*21.4				108.4	109.1		I	
9. ANNISTON Coldwater Spring		2.7	0.2	1.0	10.7	22.9	2.9	1.3	5.7	0.4	61.3	0.3			101.2	106.8	111.9	P	1/2/23
10. ANNISTON S8 Deep Well Alabama Ice Co.		10.8	0.02		20.0	30.0	0.9	2.1	20.0	15.0	144.0		1.3		157.2	157.2	203.0	J 33	C_s D=405'
11. N.G. CHRISTIAN Boiling Spring S27,T16S,R8E		4.7	0.02		13.0	22.0	3.5	3.2	1.8	3.0	125.0		0.3		108.5	108.5	109.0	J 68	C_s
12. PIEDMONT City Spring S6,T13S,R10E		7.0	0.02		13.0	23.0	2.1	3.8	1.2	4.0	132.0		Tr.		110.9	110.9	110.0	J 50	CO_c
13. E.W. ALFRIED Choccolocco Mountain Spring S23,T15S,R9E			6.0			12.0			2.0	13.0	68.0				33.2	40.7		J 49	C_w
14. ALA. W.S. CO. Coldwater Spring S29,T16S,R7E		9.4	0.04		12.0	22.0	*3.9		1.4	2.4	132.0		Tr.		104.3	104.4	117.0	J 65	C_w
15. WEAVER J.M. Daughthard's Well S3,T15S,R8E		8.9	0.09		2.0	2.5	*7.2		3.6	3.7	27.0		0.3		14.4	14.6	49.0	J 24	65' = D C_r
16. C. HAMILTON Fourmile Spring S35,T14S,R8E			Tr.			15.0			3.0	Tr.	144.0				123.0 37.5	123.0 37.5		J 56	C_r
17. JACKSONVILLE A. M. Lander's Well		16.6	*3.4		122.9	276.3	41.3		0.7	1017.5	206.6				1196.0	1199.6	1758.1	G 83	
18. JACKSONVILLE Town Spring			Tr.		8.0	23.0	3.0		3.5	Tr.	117.0				90.4	90.4	154.5	—	

TABLE 20

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg	Total Hardness	Total Solids	Source	Misc.
CALHOUN CO. (Concluded)																			
19. JACKSONVILLE Weem's Well			Tr.		2.0	32.0	4.0		6.0	Tr.					88.1	88.1	173.0		
20. WHITE PLAINS McElroy Spring S8,T15S,R8E		4.7	0.12		13.0	32.0	*5.2		3.0	3.0	165.0		2.3		133.0	133.5	150.0	J 61	CO
21. JOE McREYNOLD'S SPRING S36,T4S,R8E		8.4	0.04		10.0	20.0	2.5	3.4	2.0	4.3	113.0		0.15		91.1	91.2		I	
22. CHATCHEE Well 1 1/2 Mi. E. 28'deep Ingram Lithia Water		18.6	0.07	0.2		44.2	6.4	1.6	5.7	17.1	147.7				110.4	112.5		G 82	Li=0.1
23. OXFORD LAKE	0.11	1.7	0.6	1.1	9.6	16.4	6.0		9.3		98.4	7.3		Tr.	80.5	87.7	146.3	P	8/3/29
24. JACKSONVILLE Waterworks Spring S19, T14S,R9E		5.6	0.09		0.7	1.4	1.7	2.4	2.0	3.5	8.0		Tr.		6.4	6.6	25.0	J 59	Cw
25. U.S.GOVERNMENT Wellborn Spring S13,T15S, R8E		4.7	0.06		11.0	18.0	* 3.8		1.3	1.2	114.0		2.2		90.0	90.2	97.0	J 60	COc
26. JACKSON PUBLIC SERVICE CO. White's View Spring S17,T14S,R9E			0.4			4.0			1.0		12.0				17.0 10.0	17.0 10.7		J 58	Cw
27. R.A.WILKERSON'S WELL S9,T14S,R8E			Tr.			500.0			109.0	2000.0	432.0				1800.0	1800.0		J 17	Cf D=22'
28. SPRING # 49			6.0			12.0			2.0	13.0	68.0				30.0	41.4		A	10/11/28
29. SPRING # 56			Tr.		15.0				3.0	Tr.	144.0				37.4	37.4		A	10/11/28
30. C.B. HENRY Spring # 57 T14S,R8E, Joe McReynolds Spg.		8.4	0.04		10.0	20.0	2.5	3.4	2.0	4.3	113.0		0.15		91.1	91.2	105.0	J 57	Cs 10/11/28
31. SPRING # 58			0.4			4.0			1.0	Tr.	12.0				10.0	10.7		A	10/11/28
32. CALHOUN CO. ANNISTON, ALA. Water Service		2.5	*0.2		13.9	22.2	3.6		5.4	70.0	*21.1				112.7	113.0	136.1	A	
33. ANNISTON Thompson Spring		3.9	Nil.	9.1	4.8	24.2	2.4		6.0	8.2					80.2	130.6	84.6	M	3/2/23
34. OXFORD LAKE Blue Pond		1.8	*1.04		2.1	2.7			Tr.	Tr.	*9.1		Tr.	11.2	15.4	16.7		P.T.	2/4/26

TABLE (21)

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG.	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	(21) MISC.
CHEROKEE CO.																			
1. FIRESTONE(2Mi.W) Wm.Bailey's Well S5,T9S,R9E		1.0	0.05		2.0	3.1	9.1	2.1	12.0	1.8	3.0		23.0		15.9	16.0	47.0	J 17	Cpu. D=38'
2. BALL FLAT John B.Smith's Well		9.4	*3.5		96.3	393.6	112.1	5.9	127.6	1302.5	120.3				1379.1	1383.2	2181.1	G 83	
3.CEDAR BLUFF J.C.Bannister's Well S29,T9S,R10E		6.6	0.13		10.0	132.0	12.0	1.9	30.0	32.0	356.0		32.0		371.0	371.2	462.0	J 22	Cc D=24'
4. G.I.HENDON SPRING S10,T12S,R9E		4.4	0.06		12.0	23.0	1.8	1.8	1.6	2.9	127.0		0.4		106.9	107.0	106.0	J 65	COc
5.JAMESTOWN J.O.Kennedy's Well S28,T7S,R10E		7.5	0.06		8.8	9.2	32.0	6.0	60.0	7.6	19.0		40.0		59.2	59.3	188.0	J 1	COc D=42'
6. R.M.McQUIRTER'S WELL S19,T10S,R10E		2.4	0.18		1.7	1.8	2.0	2.0	2.6	1.6	2.0		8.1		11.5	11.8	26.0	J 39	D=25' Recent
7. ROCK RUN IRON CO. Sanford Spring S3,T12S,R10E.		3.9	0.06		10.0	27.0	1.0	1.0	1.2	3.0	134.0		0.4		108.6	108.7	112.0	J 67	COc
8. JIM RAY Waterloo Spring S21,T8S,R10E		2.1	0.05		9.9	34.0	2.8	1.5	1.6	3.7	141.0		0.3		125.7	125.8	124.0	J 60	Ct
9.ROCK RUN D.W.Gilmer		1.6	*2.6		1.2	3.0	* 2.5		3.4	2.4	15.6			15.4	12.5	15.8	35.9	SL	7/13/25

TABLE 22

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc.
CHAMBERS CO. (See #3 below.)																			
1. LANETT Chattahoochee River		9.4	0.47		0.8	4.8	*7.7		2.1	4.5	23.0		0.7		15.5	16.1		I	
2. ASHLAND C. M. Pruitt		16.1	*7.2		3.6	4.5	4.3		5.8	23.2	*2.3			24.0	26.1	35.1	112.6	S.L.	
CLAY CO.																			
1. ASHLAND City Supply-Deep Well	342		*7.2		3.6	4.5	4.4		5.6	23.1	2.4				26.0	35.0		I	
CLEBURNE CO.																			
1. BORDEN-WHEELER SPRING		9.3	1.6	0.2	6.7	36.3	4.0	0.9	1.7	22.9	131.6				118.2	122.8	225.9	G 81	
COOSA CO.																			
1. KELLYTON R.C. Porter		11.6	*20.4		2.3	15.4	30.2		7.0	8.8	*58.8			43.5	48.0	73.6	151.4	S.L	9/23/31
2. MITCHELL DAM Coosa River			1.7		0.8	15.1	1.7		3.1	2.0					38.4	42.5		I	
CHAMBERS CO. (See above)																			
CHAMBERS CO.#3. LAFAYETTE Big Boy Bottling Co.	6.2				Present	Present			High	Low				Low			344.8	A	Alkalinity = 56.0 8/15/32
																			Ignition Loss =134.0
RANDOLPH CO.																			
1. BLAKES FERRY Tallapoosa River			2.2		1.0	8.6	1.7		4.1	2.5					25.5	29.4		M	

TABLE 23

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
LEE CO.																			
1. AUBURN W.Rwyof Alabama		2.7	*20.5		Tr.	17.0	392.3		41.3	149.5	*220.5			71.9	42.5	68.2	751.7	S.L.	8/22/25
2. BLUE SPRINGS-Judge Brewer 6 Mi.So.of Auburn # 1			*3.4		13.0	25.6	2.2		3.4	Tr.	*71.8			32.5	117.4	121.7	157.5	S.L.	6/16/24
3. BLUE SPRINGS # 2 Judge Brewer		1.8	*38.0		14.6	35.0	0.8		2.7	Tr.	*99.2			66.1	147.4	195.1	269.2	S.L	1/1/31
4. OPELIKA Spring Villa		5.6	0.05	1.5	12.2	26.1	2.9	1.5	5.9	2.6	*67.9		0.4	Tr.	115.1	123.7	133.8	P	1/2/23
5. OPELIKA Spring Villa		3.1	*0.7		7.1	28.2	4.4		3.1	4.9	121.3				99.4	100.3	174.0	A	1927
6. OPELIKA Spring Villa		5.8	1.2		12.4	24.3	0.3		0.5	4.0	*65.0				111.7	113.2	122.0	S.T.	1927
7. OPELIKA Spring Villa		1.9	*0.6		4.7	26.2	1.9		3.0	2.1	100.6				84.6	85.2	143.1	S.T.	1927
8. OPELIKA-City Supply Spring Villa			*0.7		12.2	45.5	4.3		3.1	4.9	*98.2				164.2	165.1		I	
9. PHENIX CITY City Water Works		1.3	0.3	0.6	3.4	11.4	5.8		9.0	10.3	*19.0				42.5	46.3	63.2	P	6/17/30
10. PHENIX CITY City Water Works	Duplicate of 6																		
11. PHENIX CITY Surface Supply (Public)		5.6	Tr.		1.1	6.6	3.9	1.2	2.5	10.0	20.0				21.0	21.0	51.0	A	4/14/31
TALLAPOOSA CO.																			
1. ALEXANDER CITY Avondale Mills		11.3	*3.4		1.5	5.5	3.2		3.4	3.5	*8.6			24.0	18.9	23.2	80.5	S.L.	6/26/24
2. ALEXANDER CITY		9.2	*12.0		2.0	3.4	5.1		5.3	6.2	*10.1			8.0	16.8	31.8	94.2	S.L.	5/24/23
3. Tallassee Tallapoosa River Tallassee Mills		2.0	*0.3		2.0	5.5	1.8		6.0	35.1	*8.6			18.0	21.9	22.3	111.4	S.L	6/29/28

TABLE 24

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG.	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
FAYETTE CO.																			
1. BERRY High School Well S17,T16S,R10W						16.0	*6.9		9.0	40.0	12.0		0.9		50.0 39.9	50.0 39.9	82.0	J 29	Cpu. D=41'
2. TOM CABIN'S WELL S26,T16S,R11W						36.0	*14.0		1.5	8.0	179.0		0.2		126.0 89.9	126.0 89.9	163.0	J 24	Cpu. D=33'
3. FAYETTE E.M. Cannon's Spring S7,T16S,R12W			1.8			2.0	*3.8		1.2	4.0	20.0		0.05		14.0 5.0	14.0 8.2	24.0	J 43	Kt
4. RUTH GILLIAM'S WELL S19,T16S,R10W						48.0	*52.0		4.0	30.0	245.0		0.7		124.0 119.9	124.0 119.9	254.0	J 28	Cpu. D=92'
5. JOE McCONNELL'S WELL S29,T15S,R12W						22.0	*98.0		113.0	2.0	159.0		0.1		78.0 55.0	78.0 55.0	316.0	J 10	Cpu. D=500'
6. JOHN RAY'S WELL S33,T17S,R12W						2.0	*8.3		3.0	2.0	29.0		0.05		12.0 5.0	12.0 5.0	32.0	J 38	Kt D=23'
MARION CO.																			
1. BEAR CREEK-S16 High School Well			5.6			3.0			2.5	3.5	48.0		0.42		7.5	17.5	49.0	J 4	Cpu. D=41'
2. BRILLIANT COAL MINE Aldrich Co. Deep Well #1		6.6	*2.6		17.0	52.1	2.7		4.2	14.0	111.3				200.2	203.5		G 96	
3. HACKLEBURG Church of God Well S18,T9S,R12W						2.0	*1.5		1.5	1.0	1.0		4.7		5.0	5.0	11.0	J 1	Kt D=85'
4. BEAR CREEK M.R. Golden's Well S21,T9S,R11W						5.0	*14.0		18.0	6.0	11.0		14.0		22.0 12.5	22.0 12.5	66.0	J 5	Cpu. D=27'
5. HAMILTON Court House Well						24.0	*23.0		1.1	2.0	130.0		0.1		60.0	60.0	113.0	J 10	Cpu. D=402
6. BEXAR S.F. Robinson's Well S18,T10S,R15W						14.0	*68.0		99.0	2.5	6.0		58.0		45.0 35.0	45.0 35.0	248.0	J 7	Kt D=75'
7. BARNESVILLE SPRING S1,T11S,R15W						2.0	*0.5		1.5	2.0	6.0		2.4		10.0 5.0	10.0 5.0	14.0	J 91	Kt
8. WINFIELD Warrior Water Co. Well	1-S17	6.6	0.05		1.3	2.8	97.0	2.7	2.2	5.3	*12.0 245.0				12.4	12.4	264.0	J 46	Cpu. D=700'
9. Winfield	Nil.	19.0	5.5	7.2	3.1	3.6	13.9		6.8	11.5	*23.3	0		Tr.	21.6	71.1	124.1	P	3/30/29
10. WINFIELD-New Well Warrior Water Co.		17.2	0.6	2.5	1.1	3.9	92.2		4.3	11.8	*26.8 212.6				14.3	29.2	394.9	P	8/30/28
11. WINFIELD-Well Warrior Water Co.		7.5	*0.7		0.9	2.7	69.4		3.3	3.5	*177.5				10.5	11.4	274.0	S.T.	9/21/28

TABLE 25

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc
BIBB Co.																			
1. BATTLE SPRING-SIX MILE S6,T23N,R11E						28.0	*1.7		1.8	2.0	180.0		1.8		150.0 69.9	150.0 69.9	158.0	J 56	Cc
2. BIG SPRING-Will Wade S34,T21S,R6W		6.6	0.02		5.9	42.0	1.7	0.5	1.6	5.5	148.0		0.38		129.0	129.0	140.0	J 47	CO_c
3. CENTERVILLE Gary Spring		8.6	*8.9		85.6	456.1	4.3	2.7	3.3	1337.4	126.8	47.7			1491.1	1502.2	2091.1	G 83	
4. H. C. CRIDER'S WELL S20,T24N,R11E						2.0	*3.0		1.5	2.0	12.0		0.05		7.5 5.0	7.5 5.0	15.0	J 17	C_r D=36'
5. GAREY SPRING-W.F. Connett S20,T23N,R10E					101.0	490.0	*2.9		1.7	1441.0	173.0		0.25		1639.0	1639.0	2122.0	J 54	C_r
6. BLOCTON-J.D. Lowry's Well S13,T22S,R6W						7.0	*15.0		21.0	8.0	29.0		20.0		45.0 17.5	45.0 17.5	97.0	J 9	C_{pv} D=55'
7. C.A.McINTOSH'S WELL S10,T23N,R10E						48.0	*7.3		2.8	14.0	185.0		2.2		156.0 119.9	156.0 119.9	181.0	J 26	C_r D=48'
8. OWEN SPRING S30,T24N,R11E						96.0	*3.8		1.3	4.0	225.0		1.8		182.0 239.9	182.0 239.8	196.0	J 51	O_b
9. WOODSTOCK Southern Railway Well S15,T21S,R6W						7.0	*8.8		6.0	9.0	26.0		8.8		27.0 17.5	27.0 17.5	56.0	J 2	C_c D=25'
10. CENTERVILLE Town Spring S25,T23N,R9E			0.34			4.0	*9.4		8.0	3.0	17.0		2.7		10.0	10.8	35.0	J 52	K_t
CHILTON Co.	See also Misc. Table 43																		
1. CLANTON-City Well	15.0	11.7	4.0		3.0	3.7	4.4		4.9	7.6	2.4	20.0			21.6	28.8	56.7	A	12/12/28
2. CLANTON		6.4	7.2	1.0	5.4	4.7	9.8		4.3	28.2	24.6	48.5		2.1	34.0	52.3	102.7	P	5/22/28
3. MAPLESVILLE Goodwyn Hills Sam F. Brewster		8.7	*12.3		2.0	16.9	16.4		44.8	22.2				48.9	50.6	66.0	182.0	S.L.	9/10/32
LAMAR Co.																			
1. CREWS		3.4	0.4	2.2	1.4	1.7	1.7		2.6		12.2	6.3		0.8	10.0	22.9	31.6	P	3/30/29
2. SULLIGENT W.G. Priddy		3.1	23.3		1.8	4.5	7.5		10.6	1.2	73.5	4.2			18.6	60.4	72.0	S.T.	11/19/32

TABLE 26

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
TUSCALOOSA CO			See also Misc. Table 44																
1. HOLT Central Coal & Iron Company Well			1.0			28.0	*65.0		66.0	38.0	130.0		1.7		99.0 70.0	100.8 71.8	270.0	J 34	Cpu. D=600'
2. GOETHITE Freeman Well S19,T20S,R5W						4.0	*4.1		2.7	1.0	27.0		4.8		22.0 10.0	22;0 10.0	35.0	J 26	CO_c D=54'
3. JOHN FREEMAN'S WELL S20,T19S, R10W			2.9			40.0	*18.0		3.0	72.0	109.0		0.25		135.0 100.0	140.2 105.2	197.0	J 9	Cpu. D=28'
4. RICHARD FOSTER S13,T22S,R11W			1.4			14.0	*15.0		2.8	1.0	91.0		0.05		48.0 35.0	50.5 37.5	82.0	J 53	K_t D=300'
5. W.E.HALL WELL S35,T20S,R6W						52.0	*32.0		2.5	10.0	232.0		3.3		138.0 129.8	138.0 129.8	216.0	J 24	C_f D=30'
6. HOLT-Central Coal & Iron Co. Well # 1		35.5	*13.7		31.3	84.0	152.6	8.2	449.3	5.4	24.1				338.4	355.6		G 99	H2S=1.5
7. HOLT-Central Coal & Iron C. Well # 5		40.8	*13.0		28.1	81.0	1779.0	12.7	474.5	5.6	26.7				317.9	334.4		G 99	
8. HULL-Y.T. Auxford's Deep Well		8.4	*2.5		8.4	36.3	4.9	2.4	7.0	5.1	148.9				125.2	128.3		G 121	R.
9. GEO. ISOM SPRING S19,T21S,R7W						1.0	*3.6		1.5	1.0	10.0		5.6		8.0 2.5	8.0 2.5	20.0	J 74	Cpu.
10. RALPH-J.W. Park's S22						14.0	*12.0		3.5	2.0	93.0		0.05		58.0 35.0	58.0 35.0	86.0	J 61	K_t D=400'
11. R.H. PEARSON S13,T22S,R11W		8.0	1.8		5.4	13.0	12.0	5.6	3.8	4.8	97.0		0.05		54.7	57.9	100.0	J 52	K_t D=350'
12. NORTHPORT SPRING S16,T21S,R10W		3.9	0.07		1.7	1.9	1.6	7.0	2.6	4.3	5.0		5.2		11.8	11.9	27.0	J 71	K_t Pub Sup'y
13. PURE PROCESS ICE Company's Spring S22						24.0	56.0		80.0	50.0	17.0		31.0		82.0 60.0	82.0 60.0	256.0	J 72	K_t
14.REPUBLIC STEEL & IRON CO Goethite Spring S30						48.0	*3.3		1.5	2.5	161.0		0.64		130.0 120.0	130.0 120.0	141.0	J 69	CO_c
15. REPUBLIC STEEL & IRON CO. Rickley Spring S35						44.0	*3.8		1.5	1.0	135.0		0.5		106.0 110.0	106.0 110.0	117.0	J 68	CO_c Pub. Sup'y
16. SLOSS CO. S30 Brookwood Spring						1.0	*2.7		1.2	1.0	9.0		2.1		6.0 2.5	6.0 2.5	14.0	J 66	K_t
17. GREEN POND T.C.I. Co. Well-S2		5.2	0.02		8.1	53;0	1.3	0.6	1.8	11.0	193.0		0.34		165.8	165.8	178.0	J 49	O_c D=97'
18. A.B. THORNTON S23,T22S,R11W			1.7			16.0	*13.0		3.5	3.0	86.0		0.05		50.0 40.0	53.0 43.0	82.0	J 56	K_t D=262'

TABLE 27

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc.
TUSCALOOSA Co. (Concluded) See also Misc. Table 44 and 45																			
19, TUSCALOOSA Ozment's Spring		8.4	*2.0		1.4	2.3	Tr.		Tr.	5.4	6.9				11.5	14.0		G 116	
20. TUSCALOOSA Rösenau Hosiery Mill	Well	8.1	0.5		14.9	70.0	403.7	5.9	703.0	2.2	152.1				236.4	237.3		G 98	R
21. TUSCALOOSA Warrior River			Tr.		3.0	6.0	4.0		3.0	10.0	25.0				27.3	27.3	51.0	I	
22. UNIVERSITY SPRING	3.1	*0.7			1.6	4.9	1.8	0.9	1.9	5.3	20.2				18.8	19.7		G 116	
23. VANCE SCHOOL WELL S5,T21S,R9W.		2.3				3.0	*5.8		8.0	2.0	24.0		9.3		28.0 7.5	32.1 11.6	49.0	J 43	C_{hc} D=41'
24. WILLIFORD'S LANDING Deep Well		6.2	*2.5		5.3	23.4	17.4	11.6	17.4	Tr.	130.0				80.3	83.4		G 122	
25. TUSCALOOSA City Hall		2.8	0.26		0.8	5.9	1.7	0.6	1.6	9.3	13.0		0.2		18	18.5	33.0	A	1/18/32
AUTAUGA Co.																			
1. PRATTVILLE Academy Well		7.3	0.2	0.2	0.4	0.6	1.3	1.2	1.7	0.5	5.6				3.1	5.1	27.4	G 216	R Bored 1904
ELMORE Co.																			
1. SPEIGNER Ala.Cotton Mill Cistern		4.0	*9.4		2.6	10.1	*2.2		7.0	2.1	*152.0			18.0	35.9	47.7	53.1	S.L.	9/2/25
2. SPEIGNER Ala.Cotton Mill-Lake		2.0	*1.7		1.8	1.1	*3.9		3.3	3.1				21.4	10.2	12.3	41.1	S.L.	9/2/25
3. TALLASSEE Tallapoosa River	4.3		*0.3		2.0	5.2	17.8		6.0	36.0	*8.2				21.2	21.6		I	
4. TALLASSEE Tallassee Mills	1.6	0.6	1.1	5.7	1.1	13.1	4.8		6.2	10.2	17.1	3.3		0.2	37.2	70.8		P	1/31/28
5. TALLASSEE MILLS Muddy Water	3.6	3.2	4.3	65.0	0.2	8.4	7.1		7.2	9.3	10.7	12.5		1.0	21.8	389.0		P	8/31/28
6. WETUMPKA Coosa River	28.5	4.7	4.8	0.1	5.3	18.0	2.7		4.1	6.2	73.8	2.8		1.2	66.8	74.9		I	

TABLE 28

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc.
PICKENS CO.																			
1. CARROLLTON	21.9	5.1	28.1	0.3	2.6	7.2	5.3		8.2	11.9	49.5	51.3		2.2	29.7	80.7	108.1	P	12/9/27
2. GORDO Deep Well	36.5		*Tr.		0.5	6.1	7.4		5.2	4.2	* 16.5				17.3	17.3		I	
HALE CO.	See also Misc. Table 43																		
1. AKRON Land Company's Well # 1 (Deep)		8.3	13.6	1.0	0.3	7.0	8.1	4.3	3.1	5.2	68.6				18.7	48.4		G 162	Li=Tr
2. AKRON-Land Co's Well # 2 (Deep)		9.2	10.0	0.8	0.3	8.2	6.6	3.0	4.1	5.8	56.2				21.7	44.2		G 162	Li=Tr.
3. EVAN'S STATION Evan's Well		20.9	*1.9		33.2	84.2	106.3	3.0	21.0	274.0	423.4				347.0	349.4		G 320	
4. GREENSBORO-Well City Waterworks		2.2	*5.3		13.1	21.8	24.9	5.1	60.4	4.8	95.6				108.4	115.0		G 167	
5. GREENSBORO-New Well City Waterworks		10.2	2.1		4.4	16.6	*3.9		9.0	9.1	50.3	8.8	Tr.		59.5	63.3		P.T.	12/5/29
6. GREENSBORO T.G. Moore's Spring		5.4	0.3	1.2	0.6	1.2	4.3	0.6	2.9	0.6	13.8				5.5	12.6		G 319	
7. LOCK No. 4 (Now No. 7) Well		6.2	*1.6		2.7	14.9	444.8	4.5	481.9	0.4	413.6				48.3	50.3		G 166	Bored 1900
8. LOCK No. 5 (Now No. 8) Well		7.4	2.8		15.2	87.2	1057.4	8.3	1330.1	Tr.	865.1				280.5	284.0		G 319	
9. MOUNDVILLE Thos.B.Allen Well		7.5	*1.7		20.7	109.8	295.6	11.8	649.6	0.6					359.1	361.2	1221.3	G 159	
10. MOUNDVILLE Elliott & Sons Deep Well		9.3	*2.0		5.5	23.8	2.9	3.3	4.2	4.3	100.0				82.0	84.5		G 160	R
11. NEWBERN S. Hardenbergh's Well		20.4	*12.2		39.6	589.2	266.0	24.8	720.1	760.4	528.6				1634.0	1649.2		G 172	
12. WEDGEWORTH Madison Jones Jr.Well		13.1	*2.5		2.6	12.3	51.8	3.9	38.4	5.0	121.2				41.4	44.5		G 165	
13. WEDGEWORTH W.M. Wedgeworth's Well		8.1	*2.6		2.2	11.9	24.6	7.6	10.5	5.1	88.4				38.8	42.1		G 164	R
PERRY CO.																			
1. HAMBURG J.C. Tidmore's Well		25.5	*16.8		85.2	357.6	177.6	11.3	661.1	1448.5	546.5				2492.9	2513.8	3859.0	G 181	

TABLE 29

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc.
GREENE CO.																			
1. EUTAW-J.O. Bank's Crassdale Well		5.3	*2.1		0.5	7.0	221.8	5.2	238.7	0.6	217.6				19.6	22.2		G 153	Bored-1854
2. EUTAW-J.O. Bank's Little Egypt Well		3.4	*1.9		5.3	24.7	193.0	9.8	220.7	0.9	246.7				83.4	85.8		G 153	
3. EUTAW City Water Works		4.0	*2.7		3.0	14.0	430.0	7.6	515.0	1.2	319.7				47.3	50.7		G 153	R?
4. EUTAW Towards Finch's Ferry A.G.S.R.R.-Dump Well		4.1	*5.7		29.6	175.6	1750.0	23.4	2986.1	3.2	173.7				559.9	567.8		G 153	
5. EUTAW Overflowing Well		6.2	*8.3		1.1	14.8	117.9	18.9	41.7	4.4	*135.4 39.9				41.5	51.9		A	
6. CLINTON	7.0	4.7	0.7	2.1	1.1	3.7	5.9	Tr.	8.6	5.1	*5.5				13.7	26.3	47.0	P	Mn=Tr 1/12/23
DALLAS CO.	See also Misc. Table 43																		
1. SELMA Alabama River		9.9	0.53		2.9	13.0	*7.0		2.3	9.0	48.0		0.7		44.2	45.2		I	
2. SELMA Calif.Cotton Mills Co. Artesian Well	30.7		*8.5		3.1	10.8	3.0		10.4	9.2	13.4				39,8	50.5		I	
3. SELMA-C.C. Ferrill's Deep Well		8.7	*1.8		1.8	21.3	6.9	6.5	3.4	6.4	88.2				60.6	62.9	154.9	G 195	
4. SELMA Water Works Well		15.5	*1.0		2.3	19.3	12.0	5.4	6.8	9.6	86.5				57.6	58.9	175.9	G 195	R
5. SELMA-Deep Well Waterwork's Plant	10.8	3.7	2.6	1.0	8.9	38.9	5.9		9.0		82.2	14.9		29.2	133.8	138.8	157.0	P	7/14/24
6. SELMA Waterwork's Well			*1.5		10.0	24.0			7.0	19.0		11.0		7.0	101.2	103.5	103.0	A	3/1/25
7. SELMA # 1 Sunset Textile Mills		12.6	*5.9		2.2	9.1	*4.3		6.3	9.25	*13.2			16.8	31.9	39.3	76.2	S.L.	1923
8. SELMA # 2 Sunset Textile Mills		15.9	*9.4		1.1	7.4	0.13	0	6.3	4.1	*6.1			18.8	23.0	34.7	80.0	S.L.	1923
9. SELMA # 3 Sunset Textile Mills		8.5	*5.7		0.7	31.2	*2.3		9.1	12.4	*35.0			34.2	80.9	88.0	131.0	S.L.	1923
LOWNDES CO.																			
1. CALHOUN-Deep Well Colored School			0.1		4.9	16.0			825.0	Nil					60.0	60.2		A	11/10/23

TABLE 30

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG.	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
MONTGOMERY CO.																			
1. MONTGOMERY-WELL Exchange Hotel		5.5	Tr.		0.4	4.3	78.7	16.2	7.7	1.5	144.1				12.4	12.4	264.7	G 212	
2. MONTGOMERY-DEEPWELL 5 Miles toward B'ham.	24.4		*10.6		3.3	20.4	16.5	3.7	7.4	28.9	*38.8				64.6	77.9		I	
3. MONTGOMERY W.D. Null Co. Well #4			*4.2		1.3	4.0	74.2	15.9	13.8	1.9	*101.3				15.3	20.6	249.7	A	2/29/23
4. MONTGOMERY Public Water Supply			2.6		3.5	5.5	*41.8		18.0	26.0	75.0				28.2	32.8		I	
5. MONTGOMERY # 1 Kilby Prison					5.2	7.4	94.3		132.6	16.6	*23.8			47.9	39.9	39.9	459.0	SL	1/6/25
6. MONTGOMERY # 2 Kilby Prison Deep Well					1.9	9.8	*113.7		160.5	20.1	*19.3			34.2	32.3	32.3	640.0	SL	1/6/27
7. MONTGOMERY Kilby Prison Deep Well		7.2	*5.1		5.6	6.5	*185.5		243.2	11.9	*49.2			22.3	39.2	45.6	602.0	SL	8/6/29
8. MONTGOMERY J. T. Roberts & Son Bell Building		8.6	*12.8		4.1	10.5	*24.2		33.4	10.3	*15.7			46.3	43.3	59.4	134.6	SL	8/7/1929
9. MONTGOMERY J.E. Wilson Printing Co		6.1	*1.7		4.7	107.7	1.4		23.0	30.2	*136.7			49.5	288.1	290.2	375.0	SL	4/14/28
10. MONTGOMERY J.E. Wilson Printing Co.		15.9	*11.7		4.7	162.1	4.2		28.0	16.3	*254.6			65.1	423.7	438.4	431.0	SL	4/14/28
11. MONTGOMERY Montgomery City Supply		11.0	*18.0		10.7	7.6			40.0	37.6	*37.5			46.8	63.1	78.1		SL	12/15/32
12. MONTGOMERY G. S. Gilder		7.1	*3.4		4.1	48.4	25.3		51.0	24.5	*57.1			39.2	137.9	142.2		SL	1/16/33
13. MONTGOMERY City Reservoir			*41.7		1.3	4.0	74.4	16.0	14.0	1.9	*105.4			13.1	15.4	67.5	250.4	A.P.	
14. MONTGOMERY Layne Central Well # 5		7.9	*2.9		2.9	8.2	68.0		24.7	23.6	*72.5 32.4			19.9	36.0	39.6	239.8	B	1/28/29

TABLE (31)

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG.	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
RUSSELL CO.																			
1. GLENVILLE E. C. Perry's Well # 1		9.1	1.8		1.5	36.5	87.2	8.6	73.5	175.9	12.8				97.4	99.6	417.2	G 238	
2. HURTSBORO New City Well	23.4	6.3	0.3	5.0	2.3	67.0	30.3		17.6	60.9	189.1		0.9	3.9	177.0	205.3	390.7	P	4/23/27
3. GIRARD-Ala Water Service Co. Small Lake		3.3	Tr.		0.7	7.9	*6.4		5.0	4.9	31.7				22.7	22.7	48.0	P.T.	6/28/30
4. GIRARD-City Supply Small Lake	Duplicate of 3																		
5. GIRARD	Duplicate of 3																		
6. GIRARD		2.4	0.3		1.3	7.3	*4.2		14.0	4.8	9.8		7.0		23.5	24.0	62.2	P.T.	PH 6.0 6/13/30
7. OSWICHEE J.W.McClendon's Deep Well	17.3	*2.0			0.7	11.5	23.9	1.8	1.7	6.4	93.5				31.7	34.2	178.3	G 235	R
8. PITTSBORO Public Well		19.2	*0.9		0.8	9.0	59.1	1.5	61.3	1.6	82.6				25.8	26.9		G 237	
BULLOCK CO.																			
1. GUERRYTON W.T. & H.J. Banks		1.6	*34.3		10.4	47.8	*55.8		166.5	52.6				177.9	162.1	205.2	544.0	S.L.	
2. UNION SPRINGS Water Works Deep Well		7.1	*0.7		0.2	2.5	61.4	6.6	9.4	31.8	124.8				7.0	7.9	252.5	G 229	R
3. UNION SPRINGS Dr. A.M. Shelemer		4.8	*Tr.		2.1	2.4	*34.1		10.6	23.0	*5.8 42.8			42.8	14.7	14.7	196.0	S.L	1/10/30
MACON CO.																			
1. TUSKEGEE INST. Deep Well-256'									6.2				5.1	2.4			13.7		R

TABLE 33

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc.
MARENGO CO.																			
1. DEMOPOLIS	Nil.	4.7	0.3	8.2	3.5	23.9	3.1		7.7		90.2	32.0		5.5	74.0	119.9	151.2	P	9/10/25
2. DEMOPOLIS		7.0	*10.9		2.2	11.6	166.9		38.2	20.5	*59.9 337.4	0		1.7	37.9	51.6	662.5	P	10/25/27
3. DEMOPOLIS City Water Supply		10.4	*4.0		1.1	3.7	255.8		40.6	Tr.	624.0				13.8	18.8		G 184	
4. DEMOPOLIS Tombigbee River			Tr.		4.0	26.0	3.0		14.0	17.0	62.0				81.4	81.4		I	
5. LINDEN	Nil.	6.6	*7.0		2.7	58.5	37.8		11.5	63.4	191.7	6.7		0.9	157.4	166.2	400.7	P	10/25/27
6. LINDEN	Nil.	17.3	0.4	3.1	3.4	4.3	617.8	21.7	166.1		1417.6	16.4		35.0	24.4	42.3	2274.0	P	1/24/30
7. LINDEN-Deep Well? City		8.4	*5.0		1.6	7.2	550.0	Tr.	445.1	Tr.	719.2				24.6	30.9	1745.9	G 188	R
8. LINDEN Well N.of R.R.Track		9.5	*1.5		11.2	155.0	68.4		105.3	118.2	*185.7			145.0	433.2	435.0	590.0	A	1928
9. LINDEN Station Well		8.9	*9.5		2.8	160.6	26.9		109.8	16.9	*178.8			97.0	412.5	424.5	503.0	A	1928
WILCOX CO.																			
1. CALEDONIA W.H. McGraw-Shallow Well		21.2	*2.6		189.0	649.8	150.6	14.6	310.8	1712.0	686.5				2400.9	2404.2		G 280	
2. SCHUSTER Stuart's Spring		5.3	*1.3		0.7	0.8	3.1	1.1	3.5	3.4	18.7				4.9	6.5		G 281	
BUTLER CO.																			
1. BUTLER SPRINGS W.Border of County		9.2	*2.9		1.0	5.3	9.3	1.8	7.0	13.1	16.5				17.3	20.9		G 265	
2. GREENVILLE (3miles E.of) Ropers Well		61.5	294.6	132.8	78.0	322.4	57.6	7.6	78.3	2493.3					1125.5	2571.2		G 265	Free H_2SO_4=19.9 Fe(Ferrous)=90.5 "(Ferric)=204.4
3. GREENVILLE F.W. Stanley			2360.6	317.4	225.1	428.2			120.7	1054.4					1995.2	7983.3		S.L.	11/14/29

TABLE 34

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc.
BARBOUR CO. (See also #10 below)																			
1. CLAYTON City Water Supply		12.6	*6.5		2.9	19.5	69.4	4.6	21.2	25.7	195.5				60.7	68.7	372.1	G 244	R
2. EUFAULA Chattahoochee River		4.7	*5.1		3.3	18.3	3.0		6.4	10.6	27.9				59.4	65.8		I	
3. EUFAULA Moulthrop's Brickyard		7.5	*1.9		0.8	3.5	136.9	3.1	13.7	5.3	172.8			33.0	14.4	16.8		G 241	
4. EUFAULA Chamber of Commerce		11.9	*45.7		2.2	5.4	*10.9		4.1	10.7	*15.2			26.4	22.6	79.9	159.7	SL	9/22/24
5; EUFAULA Chamber of Commerce		4.6	*5.1		2.7	18.4	*3.0		1.9	11.1	*27.2			19.7	57.1	63.5	72.0	SL	9/30/25
6. EUFAULA C.M. Grammage		11.1	*18.5		13.7	39.1	*149.1		150.0	157.2	*62.0			58.2	150.1	173.3	671.9	SL	6/1/31
7. EUFAULA L.H. Shelly		5.2	*32.0		3.1	4.8	*0.6		8.2	14.0				29.8	24.0	64.2	103.4	SL	12/2/31
8. HARRIS C.H. Bishop's Well		8.9	*5.3		5.1	9.3	85.3	3.8	17.5	31.6	211.6				43.0	49.8		G 243	R
9. COMER BISHOP'S WELL 6 Miles N. of Clayton		13.2	*7.0		4.3	14.9	77.8	3.3	17.5	27.6	212.7				54.9	63.7		G 242	
CRENSHAW CO																			
1. BRANTLEY Town Well, Deep		16.6	*9.9		5.6	45.6	4.1	1.3	1.7	10.1	157.5				136.9	149.4		G 262	
2. LUVERNE S.M. Revel		4.4	*2.6		1.7	40.3	*1.5		5.1	4.1	*60.2			24.0	107.8	111.0	130.3	SL	9/2/27
PIKE CO.																			
1. BRUNDIDGE Dr. T. D. McKnight		8.8	*3.4		0.6	34.3	*6.1		3.3	5.8	*74.8			26.5	129.4	133.7	167.8	SL	4/2/25
BARBOUR CO. (See above)																			
10. EUFAULA Levi Kelly		6.1	*24.3		2.4	3.8	1.3		7.0	11.5	*37.5			26.1	19.4	62.2	98.7	SL	9/25/31

TABLE 35

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc.
CHOCTAW CO.																			
1. CULLOM'S SPRINGS Well		4.6	*3.4		29.0	73.5	3980.0	28.5	6174.0	Tr.	369.4				303.0	307.2		I	
2. CULLOM'S SPRINGS Deep Well, near Bladon		4.6	*3.8		35.3	79.4	4043.0	21.0	6098.9	Tr.	457.5				332.4	337.2	10744.3	G 297	R
3. RIDERWOOD, Well		15.8	8.5	3.0	1.4	11.2	311.0	4.7	467.3	4.7	20.4		0.3	115.5	33.8	76.2			M_n 6.0 1920
4. RIDERWOOD, Well		8.5	3.2		0.3	3.5	345.0		534.4	5.3	3.5			12.4	9.9	15.6	923.6	A	
5. RIDERWOOD, Well E.E.Jackson Lumber Co.			*3.4		4.4	42.8	35.0		6.9	36.3	96.9				125.0	129.3		I	
6. RIDERWOOD, Well, Deep? E.E.Jackson Lumber Co.		1.3	0.2		Tr.	0.2	20.7		17.3	0.1	10.3				0.5	0.8		A	1917
7. RIDERWOOD E.E.Jackson Lumber Co.		4.8	*3.4		4.4	42.8	*40.8		7.0	31.4	*95.5			23.9	125.1	129.4	246.4	S.L.	6/16/24
8. BLADON SPRINGS Branch Spring S20,T9N,R2W			1.9		3.0	40.0	306.8			33.2	*420.1	59.2 cu. in.		32.6	112.3	115.7	838.3	G 292	Cl_2=1.8cu.
9. BLADON SPRINGS Old Spring S20,T9N.R2W		16.8	1.7		0.4	1.1	295.1		80.1	2.6	*320.7	32.5 cu. in.			4.4	11.3	831.5	G 292	Sr=2.6 Crenic
10. BLADON SPRINGS Sulphur Spring S20,T9N,R2W			6.3		3.2	31.5	260.5			35.8	*379.0	52.9 cu. in.		21.4	91.7	103.2	737.0	G 292	H_2S=0.6cu.in. Cl_2=1.8cu.in.
11. BLADON SPRINGS Vichy Spring S20,T9N,R2W.			4.0		1.4	17.3	244.9			27.3	*466.6	65.4 cu. in.		38.8	49.0	56.2	900.2	G 292	cl_2=1.8cu.in.
COFFEE CO.																			
1. ELBA City Water Supply Artesian Well	18.8		*13.7		10.0	48.8	24.2		13.0	17.0	109.7				163.1	180.2		I	
2. ELBA Pea River			Tr.		4.0	14.0	2.0		7.0	10.0	43.0				51.5	51.5	80.0	I	
3. ELBA Town Well		8.8	*13.7		10.0	48.9	*23.9		13.0	17.3	*108.4			85.7	163.4	180.6	293.8	S.L.	4/21/28
4. ENTERPRISE Town Well		9.1	*9.0		0.7	35.2	17.2		15.0	40.2	39.1			33.9	90.9	102.3	205.3	G 258	R

TABLE 36

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg	Total Hardness	Total Solids	Source	Misc.
DALE CO.																			
1. OZARK, CITY WATER WORKS Deep Well		20.8	*1.4		7.7	47.7	6.1	2.9	3.5	8.8	132.9				123.5	125.3	256.3	G 256	R
2. OZARK, CITY WATER WORKS Two Deep Wells	3.3		*1.0		0.4	2.5	1.6		3.6		3.8				6.8	8.1		I	
3. OZARK Well # 2		14.8	*5.1		6.5	52.0	*5.1		6.9	18.1	137.7			36.8	156.7	163.1	218.5	S.L	12/14/25
4. OZARK City Water Works, Well #1		14.5	*5.1		4.7	47.7	*7.25		6.9	10.5	162.0			20.6	138.4	144.8	210.8	S.L.	12/14/25
5. OZARK D. G. Munn		1.5	*1.0		0.9	2.5	*1.5		3.4	2.7	*3.7			12.0	10.0	11.2	23.1	S.L	4/29/25
HENRY CO.																			
1. ABBEVILLE-NEW WELL Ala. Water Service Co.		14.8	3.9		7.9	146.3	* 13.4		Nil.	15.1	254.3	118.8	Nil		397.5	404.5	461.2	P.T.	PH=6.6 2/28/30
2. ABBEVILLE Old Air Lift Well		7.3	0.6		4.8	65.5	*12.3		6.0	17.3	229.4	5.3			183.1	184.2	232.2	P.T.	PH=8.0 1/29/31
3. ABBEVILLE M. Sachar		3.2	*2.6		0.5	61.4	*5.2		3.9	9.9	*90.7			24.0	155.6	158.9	209.0	S.L	6/9/27
4. HEADLAND-DEEP WELL Ala. Water Service Co.		1.8	Tr.		1.0	4.0	*22.5		29.0	Nil.	12.2	15.0	2.2		14.0	14.0	81.2	P.T.	PH 5.8 8/1/30
5. HEADLAND-DEEP WELL Ala. Water Service Co.		6.6	0.4	1.7	6.3	37.7	*3.0		4.6	6.9	151.9	6.3			120.1	130.1	146.1	A	P_H = 7.5 8/31/31
6. HEADLAND PLANT Shallow Well		2.6	0.8	2.2	4.0	7.9	*53.4		79.0	3.6	56.5	35.2	0.6		36.2	49.7	198.8	A	P_H = 6.1 8/31/31

TABLE 37

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG.	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
MONROE CO.																			
1. CROOK SPRING # 1 N.E. Part of Co. South of Awin, Wilcox Co.		13.9	*2.8		1.2	13.7	9.2	1.9	3.5	10.2	55.7				39.1	42.6	127.8	G 276	
2. CROOK SPRING # 2		23.2	*7.3		4.1	59.6	7.7	1.1	6.6	52.1	146.4				165.6	174.7	334.4	G 276	
3. CROOK SPRING # 3		20.6	*1.9		3.9	54.1	7.5	1.2	5.3	38.2	148.2				151.1	153.5	303.1	G 276	
4. CROOK SPRING # 4		25.3	*3.0		3.2	36.0	8.2	1.3	5.3	23.3	114.1				103.2	106.9	248.3	G 276	
5. CROOK SPRING # 5		14.6	*4.8		4.3	17.2	7.0	0.8	3.7	7.5	77.7				60.7	66.7	154.1	G 276	
6. TUNNEL SPRINGS Spring # 1		16.2	44.6	32.8	37.4	88.4	6.9	1.9	Tr.	618.0	7.1				374.6	632.8	871.0	G 277	
7. TUNNEL SPRINGS # 2		18.4	42.6		23.0	65.0	4.8	1.0	Tr.	336.0					257.1	310.3	511.8	G 277	
8. MONROEVILLE Old Well		1.4	1.5		2.4	4.2	*11.3		19.0	6.3	Nil.	50.6	15.5		20.2	23.0	88.0	P.T.	Ph 5.2 12/31/29
9. NADAWAH Nadawah Lumber Co.		3.2	*5.1		2.6	25.7	*4.2		17.8	30.6	*16.9			27.4	74.9	81.3	121.7	S.L	3/1/27
10. SNOWHILL Nadawash Lumber Co.		4.0	*3.4		4.1	18.3	*4.5		17.8	2.1	*29.9			27.9	62.8	67.1	87.4	S.L.	3/1/27
CLARKE CO.																			
1. JACKSON-Sulphur Well Sec.9,T6N,R2E		8.4	*2.6		16.0	54.0	960.0	8.2	1466.5	6.4	267.1				200.5	204.0	2978.9	G 285	H_2S Present but not detrmd Li=Trace
2. JACKSON-Old Brine Well Sec.17,T7N,R1E		3.8	*5.2		1 22.4	246.8	11472.0	144.0	18520.0	Tr.	26.1				111 9.2	1125.7		G 287	
3.LOCK 1-Tombigbee River McCrew Shoals Well			5.4		560.5	1585.8	17482.9		31305.6	Tr.	160.7				6272.0	6302.0		I	
4. OLD SALT WELL Sec.17,T7N,R1E		4.0	*5.1		121.6	243.4	11404.4	143.5	18482.5	Tr.	25.8				1108.0	1114.4		I	
CONECUH CO.																			
1. EVERGREEN Artesian Well	10.3	9.6	0.1	0.3	4.3	48.5			9.2	5.0	73.8	8.2			138.7	140.7	160.7	A	4/28/26
2. EVERGREEN Evergreen Ice&Fuel Co. Well	4.3	7.2	0.3	0.1	2.7	49.8	3.9		4.4	4.9	81.0				135.5	136.7		A	1927

TABLE 38

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg	Total Hardness	Total Solids	Source	Misc.
ESCAMBIA CO.																			
1. ATMORE, CITY SUPPLY Deep Well	6.0		*4.3		1.6	1.7	3.8		5.9	2.2	5.4				10.8	16.2		I	
2. BREWTON 5 Artesian Wells	25.6		*8.5		8.1	52.4	1.9		18.4	21.0	73.7				164.1	174.9		I	
3. ATMORE Town Well		2.8	*4.3		2.0	1.8	*4.1		6.9	2.3	*5.2			15.4	12.7	18.1	34.3	S.L	9/3/28
4. BREWTON J.R.Miller Mill Co.		121.1	*8.6		2.9	42.8	*1.9		15.7	21.0	*67.8			51.4	118.9	129.7	219.2	S.L	9/27/25
5. BREWTON J.R.Miller Mill Co.		4.0	*1.7		1.0	5.5	*1.9		3.4	13.2	*2.4			17.1	17.8	19.9	48.0	S.L	12/8/24
6. BREWTON C.H.Motley		14.2	*9.4		1.8	5.7	*7.3		3.6	7.4	*14.0			12.0	21.6	33.4	76.1	S.L	5/21/25
7. CONECUH RIVER			Tr.		3.0	15.0	4.0		7.0	11.0	46.0				49.5	49.5	86.0	I	
8. FLOMATON G.A.Ivey's Deep Well		7.1	3.8	1.2	3.7	8.5	9.2	2.3	2.8	9.4	64.1				36.4	50.0	121.3	G 273	
COVINGTON CO.																			
1. ANDALUSIA Deep Well		1.2	*11.6		4.0	30.4	5.3		3.4	2.1	63.5				92.4	106.9		I	
2. ANDALUSIA-DEEP WELL Southern Oil Co.		9.6	0.5		1.0	1.2	63.8		12.0	7.5	72.7				7.1	8.0	179.3	G 260	
3. ANDALUSIA Light & Power Co.		1.2	*11.7		3.8	4.0	*8.9		3.4	2.1	*62.6			23.5	25.6	40.3	134.4	S.L	6/14/27

TABLE 39

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc.
GENEVA CO.																			
1. GENEVA-New Well City Water Supply		5.8	0.6		8.1	51.9	*15.5		4.0		130.1		Tr.		163.0	164.1	220.6	P.T	12/5/29
2. HARTFORD City Well	50.0	4.7	0.2		4.3	29.3			8.9	4.8	*43.7		17.0		90.7	91.0	101.3	A.	6/23/26
3. HARTFORD, Ice & Bottling Co. Well	3.0	2.4	Tr.		1.8	5.4			8.6		*4.2		5.0		20.9	20.9	25.0	A	6/23/26
4. HARTFORD, Ice & Coal Co., Well	3.0	2.3	Tr.		1.8	4.9			9.1		*4.2		5.0		19.6	19.6	25.0	A	5/31/26
5. HARTFORD P.D. Commander		8.2	*2.6		4.5	24.4	*2.9		4.1	8.3	*48.1			24.8	79.5	82.8	125.3	S.L.	6/12/23
6. GENEVA Geneva Old Well		10.8	Tr.		2.8	17.7	39.8		4.0	7.1	*79.3				55.7	55.7		P.T.	PH = 7.8 12/4/29
HOUSTON CO.																			
1. DOTHAN City Deep Wells	7.3		*8.1		5.2	5.8	5.4		12.9	5.2	14.4				35.9	46.1		I	
2. DOTHAN, City Supply Wells # 4,5 & 6		7.6	Tr.		0.9	4.8	4.2	0.6	6.0	1.7	12.0		4.4		15.7	15.7	40.0	A	4/7/31
3. DOTHAN, Moody Hospital, Bored Well	4.3		*0.9		0.5	7.3	9.5		16.4		11.2				20.4	21.5		I	9/11/27
4. DOTHAN, Electricity & Water Dept.		2.0	*0.9		0.5	7.4	*7.9		17.5	3.5	*11.0			10.3	20.6	21.7	57.0	S.L.	8/29/27
5. DOTHAN Moody Hospital		2.0	*2.6		0.7	1.6	*4.7		6.3	2.3	8.8			18.9	6.9	10.2	49.7	S.L.	9/4/26
6. DOTHAN Moody Hospital		4.8	*13.7		4.4	6.1	*4.7		6.3	8.2	25.6			39.4	33.4	50.6	272.3	S.L.	8/23/26
7. DOTHAN W.D. Black		9.8	*67.8			4.6				10.9				27.1	11.5	96.3	121.3	S.L.	

TABLE 40

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG.	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
MOBILE CO.																			
1. ALABAMA PORT Deep Well		15.7	*1.1		Tr.	2.6	120.2	Tr.	113.7	1.0	129.1				6.5	7.9	401.2	G 311	
2. BAYOU LABATRE, #1 F.G. Bromberg's Spring(#1)		3.0	2.3		0.9	0.6	3.7	1.7	12.7	1.4					5.2	9.5	29.7	G 305	
3. BAYCU LABATRE F.W.Bromberg's Spring(#2)		2.9	0.9		1.2	1.1	5.1	0.3	9.3	2.2	15.1			0.5	7.7	9.3	41.9	G 305	
4. BAYOU LABATRE Canning Factory-Deep Well		22.9	*1.8		1.1	3.5	54.5	3.7	42.5	4.0	87.9				13.2	15.5	247.7	G 313	
5. CHICKASAW	279.0	34.7	5.7	1.4	2.2	22.1	40.2		62.2	34.5	34.6	Nil.		2.6	64.2	82.2	280.4	P	10/25/29
6. CHICKASAW	Nil.	6.9	2.0	0.7	0.2	4.5	6.2		9.5	2.7	10.9	4.2		Nil	12.0	19.6	52.8	P	10/25/29
7. CHICKASAW	Nil.	4.2	2.2	0.5	0.2	5.8	7.1		11.0	4.8	12.7	8.8		Nil	15.3	22.0	54.6	P	10/25/29
8. CITRONELLE-3 Mi.East Cherokee Mineral Spring		8.4	12.6	0.4	1.1	3.0	4.0	0.9	3.5	2.1	45.6				12.0	36.9	91.5	G 304	
9. CITRONELLE Consumers Ice Co. Well	3.2	7.1	0.9	2.3	2.8	2.1	5.0		7.8		20.8	2.9		0.8	17.1	31.2	60.3	P	2/4/31
10. CITRONELLE Springs		0.4	*1.2		4.3	10.6	21.0	8.2	69.0	41.0		26.0		19.0	44.0	45.5	172.0	A	1921
11. FORT GAINES Government Deep Well		25.3	*1.6		1.4	6.1	125.7	4.1	192.9	2.0	29.1				21.0	23.0	416.8	G 312	R
12. GRAND BAY John W.Bright's Shallow Well		16.4	*24.4		0.2	4.1	26.5	2.4	28.3	1.4	42.1				11.1	41.6	164.4	G 306	
13. MOBILE	1.1	3.0	25.9	0.3	12.0	8.0	112.6		23.9	25.7	23.8	18.4		0.6	69.3	117.7	438.6	P	10/30/29
14. MOBILE	1.4	14.0	0.4	3.4	7.2	16.1	237.7	2.2	368.6		83.9	4.2		2.1	69.8	89.3	752.5	P	11/29/29
15. MOBILE Bienville Public Supply		9.4	0.1		0.4	0.9	1.9	0.3	3.2	1.4	2.4	Nil			3.9	4.1	20.0	A	4/19/22
16. MOBILE Coca Cola Bottling Co. Well			*4.3		6.8	15.3	40.0		60.2	60.9	*1.8			29.2	66.4	71.6	219.5	A	11/24/28
17. MOBILE-3 Miles North Cotton Oil Co's Deep Well		9.0			7.4	15.1	1135.5	15.7	1440.4		281.3			178.3	68.1	68.1	3093.0	G 308	
18. MOBILE-Spring Hill & Bienville Watersheds		2.3	1.7		0.7									11.3	2.7	5.7	31.6	A	Sulf.&Chlorides of Na.& K.=7.7 4/24/20.

TABLE 41

MOBILE CO. (Concluded)

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
19. MOBILE Mobile River			Tr.		128.0	60.0	1091.0		1936.0	251.0	61.0				678.0	678.0	3527.0	A	12/12/29
20. MOBILE Spring Hill		2.8	0.2		0.4	1.6	1.9	0.3	4.5	1.4	2.4				5.7	5.9	22.0	A	4/19/22
21. MOBILE Well-100 Ft. Deep	18.3		*12.8		0.4	10.5	26.2		33.7	10.9	*15.6				27.9	43.9		I	
22. MOBILE Lindsey Lumber and Export Company		62.8	*198.0		12.6	88.1	*45.2		66.7	25.0	*146.6			102.8	271.8	520.1	584.1	S.L.	10/8/30
23. MOBILE Lindsey Lumber and Export Company		48.3	*108.7		11.2	49.6	*31.6		51.0	20.5	*89.2			114.8	170.0	306.3	567.6	S.L.	10/11/30
24. MOBILE Belle Camp W.D.Bellingrath, Well		6.0	Tr.		6.2	2.3	*889.2		1335.4	12.3	*31.1				31.2	31.2	2644.0	S.L.	7/3/29
25. MOBILE Belle Camp W.D.Bellingrath, Well		8.0	*15.4		2.1	7.3	*8.3			Tr.	*16.1				26.9	46.2	75.3	S.L.	D= 65' 7/3/29
26. MOBILE Sears Lumber Company		4.4	*10.3		5.2	6.1	21.4		55.8	5.5				7.5	36.7	49.6	179.8	S.L.	8/1/28
27. MOBILE Harry T. Smith Well		0.4	Tr.		4.4	2.4	*12.3		17.1	1.0	*14.7				24.4	24.4	83.0	S.L.	7/5/28
28. MOBILE, 100 Ft. Harry H. Smith's Well		8.6	*12.9		0.4	10.5	26.3		33.8	11.0	*15.8				27.9	44.0		A.P.	
29. MOBILE Mobile Drug Company Dr. Solomon's Spring		65.6	*28.0		2212.0	1185.0	19030.0	118.0	38002.0	Tr.					12059.0	12094.0		A.P.	3/28/31
30. MT. VERNON J. B. Curry & Sons Well		6.9	*4.5		1.9	3.1	*140.3		45.4	2.3	*81.2			28.2	15.6	21.2	2.9.0	S.L.	Sulphur Water D=265' 5/6/25
31. PRICHARD Eight Mile Branch	Nil.	1.5	0.1	0.5	1.3	3.3	2.5		4.0	Tr.	16.5	5.0		0.7	13.6	16.0		I	
32. PRICHARD Ice Plant Well		3.9		0.6	2.3	2.9	6.9		10.6		20.9				16.7	17.5	52.5	S.T.	7/15/27
33. EIGHT MILE BRANCH	Nil.	1.5	0.1	0.5	1.3	3.3	2.5		4.0	Tr.	16.5	5.0		0.7	13.7	16.8	25.5	P	1/31/28
34. BAYOU SARA					1.5	1.3			9.3	Nil.				18.8	8.4	8.4	54.6	P.T.	2/25/28
35. TOULMINVILLE	28.0	13.1	*15.4		259.0	1795.0	28574.0	183.5	45400.0		2426.0				55.4	55.6	78000.0	F	9/15/30
36. MOBILE Ice Specialties Co.		2.4	*7.7		2.8	8.0	*6.4		9.1	30.9				24.0	31.5	41.1	101.0	S.L.	7/13/23

TABLE 42

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc.
BALDWIN CO.																			
1. BAYMINETTE Drilled Well			0.3		Tr.	2.0	3.6		5.3	1.0	6.0				5.0	5.5		A	10/27/23
2. MONTROSE 80 Ft. Well	22.2		*0.3		2.3	4.0	1.7		8.3	7.6	*3.6				18.5	18.9		I	
3. MONTROSE Alfred Marshall		10.4	Tr.		1.1	1.8	*7.7		9.8	7.8				16.3	9.2	9.2	79.8	S.L.	7/7/28
4. MONTROSE Alfred Marshall		16.7	*4.3		1.5	2.7	*7.7		10.6	7.6				13.7	12.7	18.1	82.2	S.L.	7/13/28
5. BAYMINETTE Well # 2 and 3	Nil.	7.0	Tr.	2.1	7.4		142.2		20.0	36.4	381.6		Nil.	1.9	70.5	82.1		P	8/12/24
6. BAYMINETTE Well # 4	Nil.	7.0	Tr.	2.3	2.1	19.2	140.9		19.9	10.8	395.1		Nil.	5.1	56.6	69.4		P	6/21/24
WASHINGTON CO.																			
1. HEALING SPRINGS Mound Spring # 1		13.5	*4.9		1.9	8.5	2.2	1.6	3.5	11.5	23.3				29.0	35.2	86.2	G 300	
2. HEALING SPRINGS Creek Spring # 2		12.7	*4.9		2.0	9.2	2.6	1.5	3.5	8.9	31.7				31.2	37.3	91.4	G 300	
3. HEALING SPRINGS Schole's Spring # 3		13.7	*5.5		1.9	8.1	3.4	1.9	3.5	9.8	29.3				28.0	34.9	92.5	G 300	
4. HEALING SPRINGS McCartney Spring # 4		12.5	*4.1		1.4	5.2	2.3	1.9	3.5	9.6	13.8				18.8	23.9	68.4	G 300	

TABLE 43

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc.
CLARKE CO. (See also Table 37																			
1. JACKSON																			
Smith's Well		191.2	*1205.5		5.8	15.9	14.4	3.7	80.5	2259.8					63.5	1577.5	4562.0	S.L.	6/1/26
CHILTON CO. (See also Table 25																			
1. CLANTON																			M_n=Tr
	7.0	4.7	0.6	2.1	1.1	3.7	5.9	Tr.	8.6	5.1	*5.5				13.7	26.3	54.0	P	1/9/23
COLBERT CO. (See also Table 2																			
1. TUSCUMBIA																			
County Health Dept.		2.6	*7.9		11.2	47.7	6.9		8.6	11.9	*92.2			47.6	165.4	175.3	177.0	S.L.	8/20/27
2. SHEFFIELD-Iron Spg.																			
Green Drug Co.		2.6	*2.1		1.9	11.3	1.4		7.0	3.1	*14.6			12.7	36.0	38.6	52.1	S.L.	
3. SHEFFIELD																			
Tennessee River	31.0	3.5	0.5		6.8	16.7	5.0		4.1	55.8	*9.7				69.7	70.6	123.8	A.P.	4/15/25
4. SHEFFIELD																			
Tennessee River		9.4	0.4		4.1				3.0	11.0	72.0				16.9	17.7		A.P.	
DALLAS CO. (See also Table 29																			
1. SELMA-Deep Well																			
Ice Specialties Co.		7.2	*5.1		4.0	20.8	12.6		2.1	11.1	*48.9			463	68.5	74.9	138.8	S.L.	7/2/23
2. SELMA																			
Alabama River		7.5	Tr.		3.7	13.0	6.4	1.9	2.3	4.5	62.0		1.0		47.7	47.7		A.P.	
HALE CO. (See also Table 28																			
1. WEDGEWORTH																			
W.M.Wedgeworth's-800 ft.Well			3.9		17.9	80.2			156.9	Tr.	73.2				274.2	281.2	822.2	H	5/15/25
2. W. M. Wedgeworth's											*3.7								
1410 Ft. Well					144.7	658.7	2818.0		5880.9	Tr.	71.7				2240.5	2240.5		H	5/15/25
MARENGO CO. (See also Table 33																			
1. MANAFALIA																			
A.A. Miller's Well		3.6	*6.0		2.9	5.5	270.8		174.5	8.1	*207.6		73.6		25.7	33.2	764.4	S.L.	8/30/23

TABLE 44

LOCATION	Suspended Solids	Si	Fe	Al	Mg	Ca	Na	K	Cl	SO_4	HCO_3	Free CO_2	NO_3	Organic Matter	Hardness Ca & Mg.	Total Hardness	Total Solids	Source	Misc.
MADISON Co. (See also Table 3																			
11. HUNTSVILLE # 2		24.0	*1.7		5.6	40.4	3.6		14.1	4.7		Tr.		42.9	124.1	126.2	159.3	S.L.	3/21/32
12. HUNTSVILLE Big Spring	Nil.	3.7	0.8	1.0	3.6	46.4	4.3		6.5	1.8		7.7			131.0	137.9	149.9	P	3/16/23
13. HUNTSVILLE Big Spring		0.9	0.4	0.7	1.7	72.0	6.7		10.3	10.2	215.3				187.0	191.7	320.0	A.P.	
PICKENS Co. See also Table 28																			
1. GORDO L. C. Davis		8.4	*Tr.		0.7	6.1	8.0		5.1	4.3	*10.9			18.8	18.1	18.1	68.5	S.L.	9/15/25
ST. CLAIR Co. See also Table 17																			
19. PELL CITY Hindsman Spring		3.7	0.1	1.9	2.8	47.8	2.6	0.5	4.5	3.9	*76.2	8.0		0.6	131.0	143.3	149.8	P	1/2/23
20. SPRINGVILLE Springville Lake					9.9	26.4	1.9		3.0		*64.0				106.7	106.7		P	3/8/26
TUSCALOOSA Co. See also Tables 26-25 and 45																			
26. MAXWELL'S Wells # 1			1.5		3.6	17.9	5.2		2.0	9.0	112.0				59.5	62.4	162.5	A.P.	
27. MAXWELL'S Well # 2			1.0		3.6	19.3	24.5		43.0	9.0	118.0				63.1	64.9	237.0	A.P.	
28. HOLT Central Foundry Co.		8.5	0.8		3.1	5.2	4.0	1.1	4.0	14.0	26.0				25.8	27.2	76.7	A.P.	
29. HURRICANE CREEK Near Bridge	1563	33.8	*18.9		8.3	13.5				Tr.				44.8	67.9	91.6	165.7	F	Taken 6 hrs. after rain (Filtered)
30. NORTH RIVER			Tr.		0.6	2.1	3.0		2.5	4.9	14.0				7.8	7.9			

TABLE 45

LOCATION	SUSPENDED SOLIDS	SI	FE	AL	MG	CA	NA	K	CL	SO_4	HCO_3	FREE CO_2	NO_3	ORGANIC MATTER	HARDNESS CA & MG.	TOTAL HARDNESS	TOTAL SOLIDS	SOURCE	MISC.
RIVERS AND MISC. STREAMS.																			
1. ALABAMA RIVER		*	*		2.9	27.4	3.5		5.1	9.3	*44.5			40.0	80.4			A.P.	Oxides of Si, Fe, & Al 35.8, 1920
2. COOSA RIVER Alabama Power Co. Steam Plant	193.4	1.5	0.4	2.3	4.0	34.7	3.8		5.9		*61.5			15.2	102.9	116.3	118.0	P	8/17/27
3. WARRIOR RIVER Tuscaloosa Pump House			*Tr.		2.0	7.0	7.0		3.0	10.0	20.0				25.7		49.0	H	6/8/10
4. WARRIOR RIVER Tuscaloosa Filtered Water			*Tr.		2.0	5.0	5.0		3.0	15.0	12.0				20.7			H	6/8/10
5. WARRIOR RIVER Tuscaloosa			*Tr.		4.0	7.0	10.0		4.2	18.8					33.9				
6. WARRIOR RIVER Lock 12 Tuscaloosa			*Tr.		3.0	6.0	4.0		3.0	10.0	25.0				27.3		51.0		6/8/08
7. WARRIOR RIVER Lock 14			*Tr.		2.0	6.0	4.0		3.0	10.0	22.0				23.2		47.0	H	6/15/08
8. WARRIOR RIVER Below Fork		2.2	0.1		3.6	10.8	4.1	1.8	4.5	14.3					41.8	42.0	103.0	A.P.	
9. WARRIOR RIVER Locust Fork		3.0	0.1		5.1	12.6	5.6	3.0	5.2	27.5					52.5	52.7	126.0	A.P.	
10. WARRIOR RIVER Mulberry Fork		2.7	0.1		1.6	3.8	2.7	1.1	5.1	2.6					16.0	16.2	82.0	A.P.	
11. BRAHAM SPRINGS						36.0	16.0		5.0	3.0	141.0				90.0		201.0	A.P.	
12. CLEMENT SPRINGS			Tr.	2.7	7.4	20.9			3.0	8.2	*				82.7	109.4	121.0	A.P.	*Loss on ignition= 48.0