PUBLIC WATER SUPPLIES IN EASTERN TEXAS

By

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Volume II
Harrison County through Wood County

See Volume I
(for Anderson County through Harris County)

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Harrison County

Hallsville

Population in 1940. 1,000.

Ownership: Municipal.

Source of information:
J. W. Johnson and T. A. Brown
December 2, 1943

Source of supply: Well 1,000 feet southeast of post office, drilled in 1939 by Layne-Texas Company, depth, drilled to 615 feet and plugged back to 201 feet, diameter 10 inches, screen from 180 to 200 feet; deep-well turbine pump and 10-horsepower electric motor; static water level reported 90 feet; yield 100 gallons a minute with drawdown of 35 feet after 10 hours pumping.

Pumpage: Average 15,000 gallons a day.

Storage: Elevated tank, 50,000 gallons.

Number of customers: 117.

Treatment: Occasional chlorination.

Analysis of water:

Date of collection: Oct. 17, 1941 Analyzed by J. W. Yett

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	15	
Iron (Fe)	.13	
Calcium (Ca)	2.8	.14
Magnesium (Mg)	1.7	.14
Sodium (Na))	114	4.95
Potassium (K))		
Bicarbonate (HCO_3)	156	2.56
Sulfate (SO_4)	105	2.19
Chloride (Cl)	17	.48
Fluoride (F)	---	--
Nitrate (NO_3)	0	.00
Total dissolved solids	333	
Total hardness as $CaCO_3$	14	

Gallsville -- Continued

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sandy clay	3	3	Sandy shale	6	275
Yellow clay	10	13	Sand	10	285
Black sticky shale	106	119	Sandy shale	33	318
Rock	1	120	Brittle shale	68	386
Shale and boulders	22	142	Black shale	69	455
Sandy shale	20	162	Sandy shale	46	501
Good white sand	38	200	Fine-grained gray sand	91	592
Blue shale	44	244	Shale	10	602
Rock	1	245	Rock	1	603
Sandy shale	7	252	Shale and lignite	10	613
Black sand	17	269			

Karnack

Population in 1940: 850.

Owner: T. J. Taylor

Source of information: T. J. Taylor, owner Nov. 2, 1943

Source of supply: Well three-quarters of a mile southwest of Karnack, drilled in 1942 by B. F. Eddington, depth - drilled to 430 feet and plugged back to 306 feet, diameter 12 to 6 inches; air lift; static water level 70.3 feet below land surface on March 16, 1942; yield 30 gallons a minute.

Pumpage: Maximum 36,000 gallons; average 15,000 gallons a day.

Storage: 2 steel tanks, 50,000 gallons.

Number of customers: 90.

Treatment: None.

Harrison County

Karnack -- Continued

Analysis of water:

Date of collection: November 2, 1943 Analyzed by J. L. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	13	
Iron (Fe)	0.01	
Calcium (Ca)	5.9	0.29
Magnesium (Mg)	1.8	0.15
Sodium (Na)	139	6.05
Potassium (K)	4.4	0.11
Bicarbonate (HCO_3)	301	4.93
Sulfate (SO_4)	20	0.42
Chloride (Cl)	41	1.16
Fluoride (F)	0.2	0.01
Nitrate (NO_3)	3.5	0.06
Total dissolved solids	377	
Total hardness as $CaCO_3$	22	
pH	8.2	

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	22	22	Sandy shale	22	160
Blue shale	33	55	Lignite	5	165
Sand	11	66	Shale	38	203
Shale	34	100	Shale, streaks of sand	87	290
Sandy shale	37	137	Rock	1	291
Rock	1	138	Gumbo and shale	139	430

Marshall

Population in 1940: 18,410.

Ownership: Municipal.

Source of information:
H. J. Graeser, City Manager
November 4, 1943

Marshall -- Continued

Source of supply: 10 wells (Nos. 61 to 70).

Well No.	Date completed	Depth (feet)	Diameter (in.)	Pump and power[a]	Water level: Feet below land surface	Water level: Date	Yield G.P.M.	Drawdown	Temp.
61	1906	200	10	T,E,20	14	Nov. 1941	88	---	---
62	1936	240	8	T,E,20	---	---	145		65°F.
63	1932	300	10	T,E,15	22.2	Nov. 1941	132		64.5°F.
64	1925	300	10	T,E,15	19.7	Nov. 1941	145		64.5°F.
65	1928	300	8	T,E,15	---	---	120		---
66	1927	300	8	T,E,25	---	---	145		---
67	1937	473	16,8	T,E,40	114	June 1937	210		---
68	1937	375	16,8	T,E,30	180.9	Nov. 1941	198		69°F.
69	1936	351	18,12	T,E,30	181.8	Nov. 1941	145		---
70	1938	422	16,8	T,E,30	---	---	158		71°F.

a/ T, deep-well turbine; E, electric; number indicates horsepower.

Well numbers correspond to those in mimeographed report "Water resources of Harrison County, Texas", released by the Texas Board of Water Engineers and Geological Survey in September 1943. Wells 61 to 66, inclusive, are at the old pump station on the Jefferson road and correspond to city well numbers 1, 18, 17, 9, 12, and 11, respectively; wells 67 to 70, inclusive, are within the city limits and correspond to city wells 1 at new pump station, 2 on Higgins Street, 3 on south Washington Avenue, and 4 on east Grand Avenue, respectively.

Analyses of water:

Date of collection: November 12, 1941 Analyzed by W. W. Hastings

	Well 62		Well 64	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Calcium (Ca)	7.6	0.379	4.8	0.240
Magnesium (Mg)	9.0	0.740	6.6	0.543
Sodium & Potassium (Na+K)	2.5	0.109	16	0.696
Bicarbonate (HCO_3)	31	0.508	24	0.393
Sulfate (SO_4)	26	0.541	42	0.874
Chloride (Cl)	6.5	0.183	7.0	0.197
Fluoride (F)	0.2	0.011	0.1	0.005
Nitrate (NO_3)	b/	---	b/	---
Total dissolved solids	67		88	
Total hardness as $CaCO_3$	56		39	

b/ Less than 20.

Marshall -- Continued

	Well 69		Well 70	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Iron (Fe)	0.10		--	
Calcium (Ca)	15	0.75	6.0	0.30
Magnesium (Mg)	0.5	0.04	11	0.90
Sodium & Potassium (Na+K)	100	4.35	109	4.74
Bicarbonate (HCO_3)	189	3.10	195	3.20
Sulfate (SO_4)	77	1.60	103	2.14
Chloride (Cl)	16	0.45	20	0.56
Fluoride (F)	0.2	0.01	0	0.00
Nitrate (NO_3)	a/	--	a/	--
Total dissolved solids	302		345	
Total hardness as $CaCO_3$	40		62	

a/ Less than 20.

Drillers' logs:

Well 61

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	1	1	Gray clay	3	242
Sand and clay	11	12	Coarse-grained sand	7	249
Red and yellow rock	14	26	Lignite	4	253
Lignite	1	27	White sand, water	4	257
Gray sand	17	44	Lignite	1	258
Gray clay	23	67	Gray sand	17	275
Soft dark-brown clay	8	75	Lignite	5	280
Lignite	5	80	Gray clay and sand	10	290
Clay	4	84	Gray sand	20	310
Lignite	8	92	Clay and lignite	10	320
White clay	8	100	Gray clay	10	330
Sandstone	1	101	Lignite	2	332
Gray clay	11	112	Sand and clay	1	333
Gray sand	4	116	"Sholly" rock	3	336
Lignite	1	117	Sharp sand	31	367
Gray clay	4	121	Soft gray sand rock	51	418
Sandstone	3	124	Hard sand rock	1	419
Gray clay	6	130	Soft gray rock	86	505
Lignite	1	131	Hard rock	3	508
Gray sand	8	139	Sand rock	2	510
Hard rock	21	160	Sand and clay	10	520
Sand and clay	12	172	Hard rock	6	526
Lignite	3	175	Pipe clay	22	548
Sand and gray clay	15	190	Hard rock	1	549
Lignite	3	193	Gray sand	28	577
White sand	17	210	Pipe clay	6	583
Lignite	1	211	Lignite	1	584
Gray sand	26	237	Gray sand rock	11	595
Not given	1	238	Lignite, clay and sand	15	610
Sandstone	1	239			

Harrison County

Marshall -- Continued

Well 62

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	3	3	Gray gumbo	82	144
Blue gumbo	21	24	Water sand	8	152
Quicksand	6	30	Gray gumbo	5	157
Sand, gravel and water	10	40	Water sand	3	160
Sand and water	20	60	Lignite	1	161
Lignite	2	62	Gray gumbo	57	218
			Unknown	22	240

Well 67

Rotary	5	5	Soft shale with layers of lignite and fine-grained sand	30	273
Surface soil	3	8			
Red clay	12	20			
Gray sandy shale	26	46	Fine-grained sand and blue shale	28	301
Soft rock	1	47			
Soft gray shale	15	62	Rock	1	302
Lignite, shale and sand	47	109	Fine-grained dark-colored sand	45	347
Fine-grained silty sand	15	124			
Soft shale	16	140	Fine-grained sand and shale	22	369
Hard rock	1	141	Rock	2	371
Soft shale	9	150	Soft blue shale with some sand	68	439
Soft rock	1	151			
Hard gray shale	35	186	Rock	1	440
Soft shale and silty sand	29	215	Soft shale with layers of fine-grained sand	44	484
Hard shale	12	227			
Fine-grained silty sand	16	243	Rock	1	485
			Soft shale	41	526

Well 68

Rotary	4	4	Fine-grained sand with layers of lignite	25	268
Surface soil and red clay	2	6			
White sand	47	53	Rock	1	269
Loam, white sand and lignite	17	70	Fine-grained dark-gray sand	45	314
Lignite	15	85	Rock	3	317
Sand and shale	14	99	Dark-gray sand	47	364
Rock	1	100	Soft rock	1	365
Gray sand and mica	20	120	Coarse-grained sand	18	383
Silty sand with layers of shale	70	190	Rock	1	384
			Soft shale	92	476
Sand with layers of shale	53	243			

Marshall --- Continued

Well 69

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	12	12	Shale and boulders	10	185
White sand	14	26	Fine-grained gray sand and boulders	15	200
Shale and lignite	24	50	Shale	35	235
Gummy shale with streaks of lignite	35	85	Dark-gray fine-grained sand	18	253
Shale and boulders	20	105	Rock	1	254
Fine-grained gray sand	13	118	Sand and shale	10	264
Shale	39	157	Gray water sand	87	351
Rock	3	160	Sand and shale	20	371
Shale	14	174			
Rock	1	175			

Well 70

Red clay	26	26	Lignite	5	245
Coarse-grained loose gray sand	38	64	Fine-grained silty sand	17	262
Fine-grained gray sand and shale	87	151	Soft shale and fine-grained dark-gray sand	67	329
Rock	1	152	Fine-grained dark-gray sand and shale	37	366
Sand	5	157	Sand	6	372
Lignite	3	160	Hard rock	1	373
Soft blue shale and fine-grained sand	42	202	Dark-gray sand	30	403
Rock	5	207	Rock	2	405
Hard brown shale with layers of sand	33	240	Sticky brown shale	74	479

Waskom

Population in 1940: 564.

Owner: Allen Thomas.

Source of information:
J. P. Jones
December 3, 1943

Source of supply: 2 wells.

Well 1. Drilled in 1924 by W. M. Waterman Lumber Company, depth 151 feet, diameter 6-5/8 inches; deep-well turbine pump and 5-horsepower electric motor, pump set at 120 feet; yield 100 gallons a minute.

Well 2. Standby well drilled in 1925 by W. M. Waterman Lumber Company, depth 150 feet, diameter 6 inches; deep-well turbine pump and 3-horsepower electric motor; static water level 79.2 feet below land surface on October 29, 1941

Pumpage: No data.

Storage: Elevated tank, 25,000 gallons.

Harrison County

Waskom -- Continued

Number of customers: 25.

Treatment: None.

Analysis of water:

Date of collection: October 29, 1941 Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Calcium (Ca)	16	0.80
Magnesium (Mg)	16	1.32
Sodium & Potassium (Na+K)	172	7.47
Bicarbonate (HCO_3)	262	4.29
Sulfate (SO_4)	77	1.60
Chloride (Cl)	130	3.67
Nitrate (NO_3)	-	--
Total dissolved solids	540	
Total hardness as $CaCO_3$	105	

Henderson County

Athens

Source of information: Raymond Shelton, Water Superintendent and Lonnie Dowell, Asst. Fire Chief July 27, 1943.

Population in 1940: 4,765.

Ownership: Municipal.

Source of supply: 3 wells about 0.3 mile northeast of courthouse.

Well 1. Drilled in 1910 by John Shackleford, depth 1,000 feet, diameter 6 to 4 inches, screen from 640 to 784 feet; static water level reported 200 feet below land surface when drilled; pump removed, well now unused.

Well 2. Drilled about 1914 by Claude Witherspoon, depth 1,000 feet, diameter 8 to 6 inches; deep-well turbine pump and 25-horsepower electric motor; static water level reported 200 feet below land surface when drilled; yield 100 gallons a minute; temperature 75°F.

Well 3. Drilled in 1932 by Layne-Texas Company, depth 1,019 feet; diameter 12 to 6 inches; screens at 317-337, 360-381, 487-532, 575-620, and 732-782 feet; deep-well turbine pump and 60-horsepower electric motor; static water level reported 123 feet below land surface in 1935, drawdown 47 feet after 42 minutes pumping at 445 gallons a minute; present yield reported 400 gallons a minute; temperature 75°F.

Pumpage: No record.

Storage: Concrete reservoir, 50,000 gallons; elevated tank, 50,000 gallons. (Concrete reservoir unused, 100,000 gallons).

Athens -- Continued

Number of customers: 950.

Treatment. None.

Analyses of water:

Date of collection: July 27, 1943 Analyzed by J. . . Rowley

	Well 2		Well 3	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	18		20	
Iron (Fe)	0.38		0.47	
Calcium (Ca)	13	0.649	12	0.599
Magnesium (Mg)	2.2	0.181	2.1	0.173
Sodium (Na)	43	1.877	45	1.968
Potassium (K)	3.2	0.082	4.0	0.102
Bicarbonate (HCO_3)	144	2.360	147	2.410
Sulfate (SO_4)	4.0	0.083	7.2	0.150
Chloride (Cl)	10	0.282	8.0	0.226
Fluoride (F)	0.6	0.032	1.0	0.053
Nitrate (NO_3)	2.0	0.032	0.2	0.003
Total dissolved solids	167		172	
Total hardness as $CaCO_3$	42		38	
pH	8.0		7.9	

Driller's log:

Well 3

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sandy clay	17	17	Shale and streaks sand	34	461
Brown sand	10	27	Sandy shale	18	479
White sand	26	53	Rock, hard	3	482
Lignite and clay	10	63	Sand and shale	10	492
Sand and lignite	12	75	Gray sand, fine	20	512
Shale	28	103	Shale	5	517
Rock	1	104	Lignite and shale	17	534
Shale	38	142	Sand and lignite	20	554
Sandy shale and lignite	32	174	Sandy shale	78	632
Shale and lignite	77	251	Shale and boulders	5	637
Sandy shale	17	268	Rock	2	639
Rock	1	269	Sandy shale	58	697
Shale	8	277	Hard sandy shale	30	727
Sandy shale	14	291	Boulders	1	728
Shale and lignite	5	296	Sandy shale	4	732
Sandy shale	17	313	Boulders	1	733
Shale and lignite	48	361	Shale	6	739
Sandy shale, real fine	66	427	Boulders	1	740
			Sandy shale	2	742

(Continued on next page)

Athens -- Continued

Well 3 -- Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Boulders	1	743	Sandy shale	82	946
Sandy shale	120	863	Shale	33	979
Boulders	1	864	Sticky shale	40	1019

Eustace

Population in 1940: 500.

Owners: V. E. West and M. C. Andrews.

Source of information: M. C. Andrews, Co-owner July 28, 1943

Source of supply: Well 1 block south of railroad depot, drilled in 1940 by V. E. West, depth 186 feet, diameter 8 inches, 22 feet of screen near bottom of well; deep-well turbine pump and 3-horsepower electric motor; static water level reported 20 feet when drilled; yield 15 gallons a minute; temperature 69°F.

Pumpage: Average 3,500 gallons a day.

Storage: Elevated tank, 1,400 gallons.

Number of customers: 60.

Treatment: None.

Analysis of water:

Date of collection: July 28, 1943 Analyzed by J. M. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	12	
Iron (Fe)	0.17	
Calcium (Ca)	4.0	0.20
Magnesium (Mg)	1.2	0.10
Sodium (Na)	163	7.10
Potassium (K)	3.6	0.09
Bicarbonate (HCO_3)	305	5.00
Sulfate (SO_4)	8.0	0.17
Chloride (Cl)	80	2.26
Fluoride (F)	1.0	0.05
Nitrate (NO_3)	0.5	0.01
Total dissolved solids	424	
Total hardness as $CaCO_3$	15	
pH	8.4	

Henderson County

Malakoff

Population in 1940: 2,168.

Source of information:
T. A. Bartlett, Sr., President
July 28, 1943

Owner: Malakoff Water Co.

Source of supply: Well (No. 2) 2 blocks west of railroad depot and south of tracks, drilled in 1936, depth 365 feet, diameter 6 inches; deep-well turbine pump and 7½-horsepower electric motor, pump set at 200 feet; static water level 84 feet below land surface on July 28, 1943; yield 83 gallons a minute with drawdown of 30 feet; temperature 71°F.

Pumpage: Maximum, 42,000 gallons, average, 24,000 gallons a day.

Storage: 3 galvanized tanks, combined capacity 6,900 gallons.

Number of customers: 204.

Treatment: None.

Analysis of water:

Date of collection: July 28, 1943 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	17	
Iron (Fe)	0.04	
Calcium (Ca)	2.9	0.14
Magnesium (Mg)	0.5	0.04
Sodium (Na)	156	6.77
Potassium (K)	3.8	0.10
Bicarbonate (HCO_3)	266	4.37
Sulfate (SO_4)	2	0.04
Chloride (Cl)	92	2.59
Fluoride (F)	1.0	0.05
Nitrate (NO_3)	0.2	0.00
Total dissolved solids	406	
Total hardness as $CaCO_3$	9	
pH	8.4	

Trinidad

Population in 1940: 750.

Owners: V. E. West and W. C. Andrews.

Source of information:
J. W. Bradley, Operator
July 28, 1943

Source of supply: Well 2 blocks south of railroad depot, dug in 1939 by J. W. Bradley, depth 45 feet, diameter 7 feet; cylinder pump and 3-horsepower electric motor; static water level reported 40 feet below land surface.

Henderson County

Trinidad -- Continued

Pumpage: Average, 3,300 gallons a day.

Storage: Steel pressure tank, 5,000 gallons.

Number of customers: 75.

Treatment: Chlorination occasionally.

Analysis of water:

Date of collection: July 28, 1943 Analyzed by J. E. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	8.5	
Iron (Fe)	.05	
Calcium (Ca)	60	2.995
Magnesium (Mg)	3.6	.296
Sodium (Na)	5.9	.257
Potassium (K)	3.0	.077
Bicarbonate (HCO_3)	155	2.541
Sulfate (SO_4)	7.4	.154
Chloride (Cl)	15	.423
Fluoride (F)	.4	.021
Nitrate (NO_3)	30	.484
Total dissolved solids	228	
Total hardness as $CaCO_3$	182	
pH	7.7	

Hill County

Abbott

Population in 1940: 264.

Ownership: Municipal.

Source of information: Claude Barnett, Water Superintendent January 15, 1943

Source of supply: Well 1 block east of railroad station, drilled in 1898, depth 1,850 feet, diameter 12 to 2 inches; pump jack and deep-well cylinder, cylinder set at 160 feet; static water level reported 90 feet below land surface in 1942; well flowed when drilled in 1898 and ceased flowing in 1899; present yield 33 gallons a minute.

Pumpage (estimated): Maximum 15,000 gallons, minimum 8,000 gallons, average 12,000 gallons a day.

Storage: Concrete ground reservoir, 50,000 gallons; elevated tank, 25,000 gallons.

Number of customers: 74.

Abbott -- Continued

Treatment: None.

Analysis of water:

Date of collection: January 15, 1943 Analyzed by J. M. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	14	
Iron (Fe)	.08	
Calcium (Ca)	46	2.30
Magnesium (Mg)	22	1.81
Sodium (Na)	401	17.43
Potassium (K)	12	0.31
Bicarbonate (HCO_3)	386	6.32
Sulfate (SO_4)	683	14.22
Chloride (Cl)	40	1.13
Fluoride (F)	2.3	.12
Nitrate (NO_3)	4.0	.06
Total dissolved solids	1,414	
Total hardness as $CaCO_3$	206	
pH	8.2	

Aquilla

Population in 1940: 500.

Owner: B. O. Poole.

Source of information:
Miss Annie Hunt, Operator
January 15, 1943

Source of supply: Well about 1 block west of railroad tracks on south side of the main east and west street, drilled about 1908, depth reported about 1,400 feet; well flows directly into water mains with sufficient pressure to supply all parts of the town; pressure at one house tap estimated to be between 10 and 15 pounds; pressure reported to be slowly diminishing.

Pumpage: No record.

Storage: None.

Number of customers: 63.

Treatment: None.

Analysis of water:

Hill County

Aquilla --- Continued

Date of collection: January 15, 1943 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	8.5	
Iron (Fe)	.10	
Calcium (Ca)	22	1.10
Magnesium (Mg)	28	2.30
Sodium (Na)	668	29.03
Potassium (K)	22	.56
Bicarbonate (HCO_3)	488	8.00
Sulfate (SO_4)	1,089	22.67
Chloride (Cl)	73	2.06
Fluoride (F)	5.0	.26
Nitrate (NO_3)	.2	0.00
Total dissolved solids	2,156	
Total hardness as $CaCO_3$	170	
pH	7.8	

Brandon

Population in 1940: 236.

Owner: Private.

Source of information: Mr. Kirby January 14, 1943

Source of supply: Well, reported depth 670 feet, diameter 6 inches; pump jack and deep well cylinder; well supplies cotton gin and the town.

Pumpage: No record.

Storage: Elevated tank, about 15,000 gallons.

Number of customers: Unknown.

Treatment: None.

Analysis of water:

Hill County

Brandon -- Continued

Date of collection: Jan. 14, 1943 Analyzed by J. A. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	8.0	
Iron (Fe)	.13	
Calcium (Ca)	4.0	.20
Magnesium (Mg)	2.1	.17
Sodium (Na)	595	25.86
Potassium (K)	18	.46
Bicarbonate (HCO_3)	628	10.28
Sulfate (SO_4)	466	9.70
Chloride (Cl)	228	6.43
Fluoride (F)	4.0	.21
Nitrate (NO_3)	4.6	.07
Total dissolved solids	1,639	
Total hardness as $CaCO_3$	18	
pH	8.4	

Bynum

Population in 1940: 350.

Owner: Ennis Smith.

Source of information: Ennis Smith, owner January 14, 1943

Source of supply: Well drilled in 1913, depth 760 feet, diameter 10 to 4 inches; pump jack and deep-well cylinder pump; yield 15 gallons a minute.

Pumpage: Average 5,000 gallons a day.

Storage: Elevated tank, 16,000 gallons.

Number of customers: 65.

Treatment: None.

Hill County

Bynum -- Continued

Analysis of water:

Date of collection: Jan. 14, 1943 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	7.0	
Iron (Fe)	.06	
Calcium (Ca)	4.5	.22
Magnesium (Mg)	2.4	.20
Sodium (Na)	705	30.66
Potassium (K)	11	.28
Bicarbonate (HCO_3)	870	14.25
Sulfate (SO_4)	538	11.20
Chloride (Cl)	199	5.61
Fluoride (F)	4.4	.23
Nitrate (NO_3)	4.5	.07
Total dissolved solids	1,904	
Total hardness as $CaCO_3$	21	
pH	8.2	

Hillsboro

Population in 1940: 7,799.

Ownership: Municipal.

Source of information:
T. A. Bullock, City Engineer
Jan. 13, 1943

Source of supply: 11 wells.

Uptown well 2. At pumping station about 2 blocks west of courthouse, drilled in 1939, depth 1,810 feet, diameter 6-5/8 inches; pump jack and deep-well cylinder; flowed when drilled in 1919, ceased flowing in 1930; reported static water level 125 feet below land surface in 1943; yield 60 gallons a minute with drawdown of 215 feet.

Uptown well 3. At pumping station, drilled in 1919, depth 830 feet, diameter 8 inches; submersible deep-well turbine pump; reported static water level 150 feet below land surface in 1943; yield 70 gallons a minute with drawdown of 275 feet.

Well 1. About 0.6 mile west of courthouse, drilled in 1912, depth about 200 feet, diameter 8 inches; pump jack and deep-well cylinder; reported static water level about 90 feet below land surface in 1942; yield 30 gallons a minute with drawdown of about 100 feet.

Well 2. Near well 1, drilled in 1919, depth about 200 feet, diameter 5 inches; pump jack and deep-well cylinder; yield 30 gallons a minute.

Well 3. About 0.1 mile northeast of well 1, drilled in 1922, depth about 200 feet, diameter 8 inches; submersible deep-well turbine pump; yield 65 gallons a minute.

Hillsboro --- Continued

Well 4. About 0.2 mile west of pumping station, drilled in 1924, depth about 200 feet, diameter 8 inches; pump jack and deep-well cylinder; yield 30 gallons a minute.

Well 5. About 0.3 mile northwest of pumping station, drilled in 1925 by Stinson and Gathings, depth 200 feet, diameter 8 inches; pump jack and deep-well cylinder; yield 30 gallons a minute.

Well 6. About 0.1 mile northeast of well 5, drilled in 1924 by Stinson and Gathings, depth 185 feet, diameter 8 inches; pump jack and deep-well cylinder; yield 30 gallons a minute.

Well 10. 1.3 miles west of courthouse, drilled in 1930 by Layne-Texas Company, depth 1,784 feet, diameter 12 to 8 inches, screens set opposite Woodbine, Paluxy, and Travis Peak sands; deep-well turbine pump; static water level 125 feet below land surface; yield 350 gallons a minute with drawdown of 245 feet.

Well 11. About 0.1 mile west of well 2, drilled in 1941 by Layne-Texas Company, depth 833 feet, diameter 13 inches; deep-well turbine pump; static water level 150 feet below land surface in 1941; pumping level below air line; yield 65 gallons a minute.

Well 12. About 0.1 mile northwest of well 6, drilled in 1941 by Layne-Texas Company, depth 830 feet, diameter 13 inches; deep-well turbine pump; static water level 135 feet below land surface in 1941; yield 90 gallons a minute with drawdown of 293 feet.

Pumpage (average in gallons a day):

	1940	1941	1942
Jan.	422,000	387,000	408,000
Feb.	400,000	350,000	372,000
Mar.	424,000	373,000	378,000
Apr.	411,000	386,000	363,000
May	413,000	450,000	386,000
June	413,000	419,000	426,000
July	425,000	420,000	444,000
Aug.	465,000	493,000	443,000
Sept.	478,000	450,000	394,000
Oct.	426,000	399,000	384,000
Nov.	389,000	371,000	372,000
Dec.	373,000	378,000	330,000

Storage: 3 concrete ground reservoirs, combined capacity 1,240,000 gallons; elevated tank, 110,000 gallons.

Number of customers: 2,100.

Treatment: Sedimentation, chlorination.

Hillsboro -- Continued

Analyses of water:

Date of collection: Jan. 13, 1943 Analyzed by J. H. Rowley

	Uptown well 2		Uptown well 3	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	18		6.5	
Iron (Fe)	0.7		.02	
Calcium (Ca)	3.5	.18	13	.65
Magnesium (Mg)	1.6	.13	8.3	.68
Sodium (Na)	254	11.06	488	21.22
Potassium (K)	14	.36	17	.43
Bicarbonate (HCO_3)	464	7.63	468	7.67
Sulfate (SO_4)	116	2.42	649	13.51
Chloride (Cl)	59	1.66	63	1.75
Fluoride (F)	0.3	.02	0.5	.03
Nitrate (NO_3)	0.0	0.00	1.0	.02
Total dissolved solids	695		1,476	
Total hardness as $CaCO_3$	16		66	
pH	8.3		8.2	

Date of collection: Jan. 13, 1943 Analyzed by J. H. Rowley

	Well 1		Well 10	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	10		6.5	
Iron (Fe)	.02		.02	
Calcium (Ca)	2.7	.13	55	2.75
Magnesium (Mg)	1.1	.09	25	2.06
Sodium (Na)	278	12.10	)	)
Potassium (K)	11	.28	496)	21.58)
Bicarbonate (HCO_3)	508	8.32	399	6.54
Sulfate (SO_4)	160	3.33	861	17.93
Chloride (Cl)	35	.99	66	1.86
Fluoride (F)	0.2	.01	0.4	.02
Nitrate (NO_3)	2.5	.04	2.5	.04
Total dissolved solids	751		1,709	
Total hardness as $CaCO_3$	12		240	
pH	8.3		7.9	

Hill County

Hillsboro -- Continued

Date of collection: Jan. 13, 1943 Analyzed by J. H. Rowley

	Well 11	
	Parts per million	Equivalents per million
Silica (SiO_2)	6.0	
Iron (Fe)	.12	
Calcium (Ca)	11	.55
Magnesium (Mg)	8.4	.69
Sodium (Na)	629	27.35
Potassium (K)	16	.41
Bicarbonate (HCO_3)	561	9.20
Sulfate (SO_4)	796	16.57
Chloride (Cl)	105	2.96
Fluoride (F)	4.7	.25
Nitrate (NO_3)	1.2	.02
Total dissolved solids	1,854	
Total hardness as $CaCO_3$	62	
pH	8.0	

Drillers' logs:

Uptown well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil and clay	18	18	Thin layers of blue shale with limestone	44	961
Shaly white rock	8	26	Limestone with some layers of blue shale	491	1452
Blue shale	65	91	Water sand (Glen Rose)	62	1514
Sandstone	1	92	Sandstone	33	1547
Water sand	9	101	Red, pink, and white marl with few layers of sandstone	28	1575
Sandstone, water sand and blue shale	32	133	Blue and white marl with some layers of sandstone	22	1597
Blue shale with some sandstone	46	179	Red, pink, white and blue marl with layers of sandstone	37	1634
Water sand	15	194	Layers of white sand with pink, red, and white marl	37	1671
Sand with some sandstone and blue shale	14	208	Very fine water sand mixed with marl	15	1686
Very hard sandstone	4	212	Sandstone	6	1692
Blue shale	115	327	Water sand	8	1700
Layers of soft white limestone and light blue shale	13	340	Sandstone with layers of marl	11	1711
White limestone with some light blue shale	450	790	Hard sand (water)	9	1720
Water sand	30	820	Sandstone	3	1723
Hard sandstone	3	823	Good water sand	69	1792
Water sand	17	840	Layers of hard sandstone and red and brown shale	18	1810
Sandstone	19	859			
Light blue shale with few streaks of sandstone	40	899			
Blue shale	18	917			

Hillsboro --- Continued

Well 5

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Black shale	15	15	Water shale and sand	5	150
Sand and shale	40	55	Sandstone (water)	25	175
Shale and sand	45	100	Shale	25	200
Blue sticky clay	45	145			

Well 6

Black shale	15	15	Shale	68	148
Sand and shale	60	75	Sandstone	37	185
Sand and shale	5	80	Shale	5	190

Well 10

Surface soil	10	10	Hard limestone	16	706
Yellow clay and gravel	5	15	Hard limestone	16	722
Hard fine sand (Woodbine)	35	50	Shale and boulders	14	736
Hard shale	67	117	Hard sandstone	1	737
Sand	17	134	Shale	10	747
Sandstone (Woodbine)	2	136	Hard sandstone	3	750
Sand	22	158	Shale	14	764
Hard shale	22	180	Limestone	5	769
Pyrites of iron	1	181	Hard sandstone	18	787
Hard shale	102	283	Hard white clay	2	789
Hard chalk	22	305	Shale and sandy limestone	43	832
Limestone	36	341	Sandy limestone	53	885
Hard limestone	33	374	Limestone	33	918
Broken limestone and shale	19	393	Sandy limestone and shale	12	930
Limestone	37	430	Limestone	15	945
Broken limestone and shale	42	472	Shale layers and sandy limestone	18	963
Hard limestone	2	474	Hard sandy limestone	3	966
Chalk	26	500	Limestone and shale	8	974
Limestone	6	506	Sandy limestone and shale	56	1030
Limestone and shale	57	563	Sandy limestone and hard shale	35	1065
Hard shale and limestone	45	608	Hard limestone	5	1070
Shale	72	680	Limestone	30	1100
Limestone	10	690	Hard limestone	16	1116

(Continued on next page)

Hillsboro -- Continued

Well 10 -- Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Limestone	24	1140	Red shale	75	1575
Hard limestone	20	1160	Blue shale	15	1590
Limestone and shale	31	1191	Hard red shale	12	1602
Hard limestone	24	1215	Hard shale	6	1608
Shale and limestone	9	1224	Hard sandy limestone	12	1620
Sandy limestone and shale	32	1256	Red shale and hard red sand	27	1647
Limestone	54	1310	Red sandstone and shale	13	1660
Hard sandy limestone	25	1335	Sand	10	1670
Sandy shale, streaks of hard sand	55	1390	Hard gravel and sand	3	1673
Packsand	29	1419	Sandy limestone and gravel	3	1676
Shale	5	1424	Sandstone	4	1680
Hard sand and streaks of shale	15	1439	Shale	12	1692
Rock	17	1456	Hard rock	4	1696
Red shale	14	1470	Hard shale	4	1700
Shale	30	1500	Shale	19	1719
			Hard shale	65	1784

Well 11

Surface soil	5	5	Gray limestone	30	425
Dark shale	45	50	White limestone	30	455
Sandstone	5	55	Gray limestone	20	475
Blue clay	15	70	Blue shale	45	520
Water sand	5	75	White limestone	105	625
Blue shale	20	95	Blue shale	15	640
Sand shale	25	120	White limestone	10	650
Blue shale	38	158	Blue shale	55	705
Sand shale	12	170	Sandstone	5	710
Hard sand	20	190	Hard gray limestone	30	740
Blue shale	90	280	Blue shale	37	777
White limestone	70	350	Limestone	2	779
Blue shale	5	355	Shale and sand	4	783
White limestone	25	380	Sand water	50	833
Blue shale	15	395	Dark limestone	9	842

Hillsboro --Continued

Well 12

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Yellow clay	8	8	Gray limestone	75	485
Black shale	47	55	Blue shale	35	520
Dark rock	10	65	White limestone	140	660
Blue sandy clay	5	70	Blue clay	20	680
Sand, little water	5	75	Blue shale	20	700
Shale	5	80	Gray limestone	5	705
Blue shale	30	110	Sandstone	5	710
Sandstone	5	115	Gray limestone	35	745
Blue shale	35	150	Blue shale	32	777
Sand water (Woodbine)	35	185	Limestone and shell	1	778
Blue shale	30	215	Limestone	2	780
Blue limestone	60	275	White sand	35	815
White limestone	115	390	Hard gray sand	15	830
Blue shale	20	410	Limestone	15	845

Hubbard

Population in 1940: 1,871.

Ownership: Municipal.

Source of information: Water Superintendent Jan. 14, 1943

Source of supply: Small impounding reservoirs near town, developed about 1900. (City attempted to obtain ground-water supply in 1892 or 1893 and put down a well about 3,300 feet deep which had a flow of salty water.)

Pumpage: No record.

Storage: Elevated tank, about 50,000 gallons.

Number of customers: Unknown.

Treatment: Coagulation and sedimentation with alum and lime; chlorination.

Analysis of water:

Date of collection: Jan. 14, 1943 Analyzed by J. H. Rowley

	Treated water	
	Parts per million	Equivalents per million
Silica (SiO_2)	11	
Iron (Fe)	.05	
Calcium (Ca)	40	2.00
Magnesium (Mg)	4.9	.40
Sodium (Na)	9.5	.41
Potassium (K)	3.2	.08
Bicarbonate (HCO_3)	130	2.13
Sulfate (SO_4)	31	.64
Chloride (Cl)	3.0	.08
Fluoride (F)	.6	.03
Nitrate (NO_3)	.2	0.00
Total dissolved solids	176	
Total hardness as $CaCO_3$	120	
pH	7.6	

Hill County

Irene

Population in 1940: 267.

Owner: C. C. Hawkins.

Source of information: C. C. Hawkins, Owner Jan. 15, 1943

Source of supply: Well in town west of railroad, drilled in 1910, depth 915 feet, diameter 5 inches; pump jack and deep-well cylinder pump; flowed about 8 feet above land surface in 1910; ceased flowing about 1913; static water level in 1942 reported about 50 feet below land surface; yield about 50 gallons a minute.

Pumpage: No record.

Storage: Elevated tank, about 16,000 gallons.

Number of customers: 54.

Treatment: None.

Analysis of water:

Date of collection: Jan. 15, 1943 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	7.0	
Iron (Fe)	.04	
Calcium (Ca)	5.7	.28
Magnesium (Mg)	2.4	.20
Sodium (Na)	812	35.29
Potassium (K)	10	.26
Bicarbonate (HCO_3)	750	12.29
Sulfate (SO_4)	505	10.51
Chloride (Cl)	460	12.97
Fluoride (F)	4.4	.23
Nitrate (NO_3)	2.0	.03
Total dissolved solids	2,178	
Total hardness as $CaCO_3$	24	
pH	8.0	

Itasca

Population in 1940: 1,759.

Ownership: Municipal.

Source of information: Water Superintendent Jan. 14, 1943

Source of supply: 2 wells (Nos. 2 and 3).

Well 2. At pumping station, drilled in 1924, depth 293 feet, diameter 8 inches; pump jack and deep-well cylinder pump; static water level 114 feet below land surface in 1939; well is used as standby; yield 70 gallons a minute.

Itasca --- Continued

Well 3. At pumping station, drilled in 1939 by Layne-Texas Company, depth 1,835 feet, diameter 8-5/8 to 6-5/8 inches, 90 feet of screen at bottom; deep-well turbine pump; static water level 133 feet below land surface on April 20, 1939; yield 180 gallons a minute with drawdown of 252 feet. (Nearby well drilled in 1894 to a depth of 1,785 feet flowed when drilled but the static water level in 1927 was 67 feet below land surface.)

Pumpage: Average 30,000 gallons a day.

Storage: Standpipe, 100,000 gallons; concrete ground reservoir, 167,000 gallons.

Number of customers: 408.

Treatment: None.

Analysis of water:

Date of collection: Jan. 14, 1943 Analyzed by J. H. Rowley

	Well 3	
	Parts per million	Equivalents per million
Silica (SiO_2)	14	
Iron (Fe)	.01	
Calcium (Ca)	.6	.03
Magnesium (Mg)	.5	.04
Sodium (Na)	240	10.44
Potassium (K)	7.4	.19
Bicarbonate (HCO_3)	434	7.10
Sulfate (SO_4)	80	1.67
Chloride (Cl)	67	1.89
Fluoride (F)	.3	.02
Nitrate (NO_3)	1.5	.02
Total dissolved solids	638	
Total hardness as $CaCO_3$	4	
pH	8.4	

Driller's log:

Well 3

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	4	4	Sand and sandy shale	37	291
Yellow clay	22	26	Hard shale and limestone	134	425
Black shale	110	136	Limestone	202	627
Sandstone	1	137	Limestone and layers of hard shale	29	656
Black shale	52	185	Limestone	174	830
Rock	3	188	Limestone and layers of shale	15	845
Sandy shale	10	198	Sand	7	852
Brown shale	48	246			
Sand	8	254			

Itasca --- Continued

Well 3--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sandy shale	40	892	Blue shale	9	1533
Shale and layers of limestone	46	938	Sand	13	1546
Limestone	16	954	Hard blue and gray shale	8	1554
Shale and layers of sand	25	979	Sand	20	1574
Limestone and layers of shale	57	1036	Hard shale	11	1585
Shale	81	1117	Sand	20	1605
Limestone	115	1232	Hard blue shale	21	1626
Limestone	2	1234	Sand	18	1644
Limestone and layers of shale	88	1322	Hard blue shale	22	1666
Limestone	35	1357	Red shale	13	1679
Sandy shale	28	1385	Hard red and blue shale	17	1696
Shale	5	1390	Hard blue and brown shale	25	1721
Hard shale and layers of anhydrate	36	1426	Sand	13	1734
Hard shale	20	1446	Layers of sand and shale	20	1754
Sandy shale	30	1476	Sand	25	1779
Sand	40	1516	Shale	6	1785
Layers of sand and shale	8	1524	Sand	9	1794
			Sand and layers of hard shale	15	1809
			Hard sandy shale	5	1814
			Hard blue, red, and brown shale	17	1831

Malone

Population in 1940: 429.

Ownership: Municipal.

Source of information:
R. V. Reavis
Jan. 14, 1943

Source of supply: Well near elevated tank, drilled in 1924 by R. L. Dearing and Sons, depth 2,471 feet, diameter 13 to 6-5/8 inches; reported now to have a natural flow of about 50 gallons a minute.

Pumpage: No record.

Storage: Elevated tank, about 50,000 gallons.

Number of customers: Unknown.

Treatment: None.

Analysis of water:

Hill County

Malone -- Continued

Date of collection: Jan. 14, 1943 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	18	
Iron (Fe)	.18	
Calcium (Ca)	147	7.34
Magnesium (Mg)	49	4.03
Sodium (Na)	855	37.18
Potassium (K)	20	.51
Bicarbonate (HCO_3)	225	3.69
Sulfate (SO_4)	2,072	43.14
Chloride (Cl)	76	2.14
Fluoride (F)	1.4	.07
Nitrate (NO_3)	1.0	.02
Total dissolved solids	3,350	
Total hardness as $CaCO_3$	568	
ph	7.8	

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	6	6	Limestone, broken & hard	635	1695
Clay, gravel, and shale	264	270	Paluxy sand	12	1708
White limestone	376	646	Limestone and soapstone	368	2076
Shale, gumbo, boulders	210	856	Glen Rose sand	72	2148
1st Woodbine sand	25	881	Limestone, hard and broken	231	2379
Shale, limestone soapstone	159	1040	Limestone, very hard	5	2384
2nd Woodbine sand	21	1061	Trinity sand -- fine quality, unbroken	87	2471

Mertens

Population in 1940: 251.

Ownership: Municipal.

Source of information: Russell Goodman, Mayor Jan. 14, 1943

Source of supply: Well at elevated tank, drilled in 1931, reported depth 1,400 feet, diameter 8 inches; deep-well turbine pump; yield about 80 gallons a minute.

Pumpage: No record.

Storage: Elevated tank, 50,000 gallons.

Mertens -- Continued

Number of customers: 56.

Treatment: None.

Analysis of water:

Date of collection: Jan. 14, 1943 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	10	
Iron (Fe)	.12	
Calcium (Ca)	5.2	.26
Magnesium (Mg)	1.8	.15
Sodium (Na)	492	21.39
Potassium (K)	19	.49
Bicarbonate (HCO_3)	442	7.25
Sulfate (SO_4)	480	9.99
Chloride (Cl)	173	4.88
Fluoride (F)	2.9	.15
Nitrate (NO_3)	1.0	.02
Total dissolved solids	1,403	
Total hardness as $CaCO_3$	20	
pH	8.2	

Mount Calm

Population in 1940: 525.

Ownership: Municipal.

Source of information: Luther Carter, Water Superintendent Jan. 15, 1943

Source of supply: 3 small impounding reservoirs. (The city has tried to obtain water from wells but salt water was encountered to a depth of 3,500 feet).

Pumpage: No record.

Storage: Elevated tank, about 50,000 gallons.

Number of customers: 105.

Treatment: Chlorination; reservoirs treated in summer with copper sulfate.

Mount Calm -- Continued

Analysis of water:

Date of collection: Jan. 15, 1943 Analyzed by J. H. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	1.8	
Iron (Fe)	.13	
Calcium (Ca)	28	1.40
Magnesium (Mg)	4.3	.35
Sodium (Na)	12	.51
Potassium (K)	5.6	.14
Bicarbonate (HCO_3)	111	1.82
Sulfate (SO_4)	23	.48
Chloride (Cl)	3.0	.08
Fluoride (F)	.4	.02
Nitrate (NO_3)	.2	.00
Total dissolved solids	146	
Total hardness as $CaCO_3$	88	
pH	7.8	

Whitney

Population in 1940: 824.

Source of information:
R. H. Wilson, Water Superintendent
January 13, 1943

Ownership: Municipal.

Source of supply: 3 wells.

Well 1. At pumping station, drilled prior to 1900, reported depth 1,575 feet, diameter 6 inches; flows; pressure when drilled reported to have been about 40 feet above land surface and yield about 140 gallons a minute, present yield about 20 gallons a minute.

Well 2. About 100 feet southeast of well 1; drilled in 1925, depth 1,280 feet, diameter 6 inches; flows, pressure 29 feet above land surface and yield about 40 gallons a minute at present.

Well 3. About 300 feet southwest of well 1; drilled in 1942 by Layne-Texas Company, depth 1,282 feet, diameter 8 to 5 inches, casing perforated from 1,129 to 1,282 feet; now flows 65 gallons a minute.

Pumpage: No record.

Storage: Concrete ground reservoir, 51,000 gallons; elevated tank, 55,000 gallons.

Number of customers: 265.

Treatment: None.

Hill County

Whitney

Analysis of water:

Date of collection: Jan. 13, 1943 Analyzed by J. H. Rowley

	Composite sample from wells 1, 2 and 3. Parts per million	Equivalents per million
Silica (SiO_2)	10	
Iron (Fe)	.03	
Calcium (Ca)	3.6	.18
Magnesium (Mg)	1.6	.13
Sodium (Na)	223	9.68
Potassium (K)	8.6	.22
Bicarbonate (HCO_3)	394	6.44
Sulfate (SO_4)	129	2.69
Chloride (Cl)	37	1.04
Fluoride (F)	0.3	.02
Nitrate (NO_3)	1.5	.02
Total dissolved solids	622	
Total hardness as $CaCO_3$	16	
pH	8.4	

Driller's log:

Well 3

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Black soil and gravel	20	20	Gray limestone	30	890
Chalk	10	30	Blue shale	15	905
Shale and shell	95	125	Gray limestone	15	920
Gray limestone	15	140	Sandy limestone	15	935
Shale	70	210	Gray limestone	25	960
White limestone	30	240	Sandy shale	10	970
Gray shale	60	300	Sand T & T (Trinity)	15	985
Gray limestone	10	310	Hard shell	2	987
Blue gumbo	5	315	Sand (1st Trinity)	3	990
Blue shale	40	355	Brown sand and limestone	8	998
Gray limestone	10	365	Sand	15	1013
Limestone	20	385	Blue shale	4	1017
Limestone and flint	15	400	Red rock	3	1020
Blue shale	12	412	Shale and limestone	5	1025
Blue shale	18	430	Sandy shale	5	1030
Sand (Paluxy)	30	460	Sandy lime	10	1040
Sand	6	466	Limestone	7	1047
White limestone	1	467	Blue shale	28	1075
White limestone	113	580	Limestone	5	1080
Gray limestone	10	590	Hard limestone	14	1094
White limestone	20	610	Sandy limestone	6	1100
Blue limestone	20	630	Limestone	7	1107
White limestone	85	715	Blue shale	9	1116
Blue shale	15	730	Red shale	7	1123
White limestone	105	835	Sandy limestone	5	1128
Broken limestone	25	860	Sand (Trinity)	42	1270

Como

Population in 1940: 412.

Source of information:
A. B. Moore, well driller
July 21, 1942

Ownership: Municipal.

Source of supply: Well in north part of town, drilled in 1926 by A. B. Moore, depth 229 feet, diameter 6 inches, casing perforated from 149 to 229 feet; air lift; static water level 58.8 feet below land surface on July 21, 1942; yield 10 gallons a minute with drawdown of 7 feet after 6 hours pumping on July 23, 1942, reported yield 75 gallons a minute when drilled; temperature 70°F.

Pumpage (estimated): Average 10,000 gallons a day.

Storage: No record.

Number of customers: About 100.

Treatment: None.

Analysis of water:

Date of collection: July 23, 1942 Analyzed by J. W. Yett

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	47	
Iron (Fe)	3.2	
Calcium (Ca)	24	1.198
Magnesium (Mg)	9.4	0.773
Sodium and Potassium (Na+K)	45	1.973
Bicarbonate (HCO_3)	130	2.131
Sulfate (SO_4)	53	1.103
Chloride (Cl)	25	0.705
Fluoride (F)	0.1	0.005
Nitrate (NO_3)	0.0	0.000
Total dissolved solids	280	
Total hardness as $CaCO_3$	99	
pH	7.3	

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface material	47	47	Coal	2	102
Water sand	12	59	Shale	33	135
Coal	1	60	Packsand, shale streaks	94	229
Shale	40	100			

Cumby

Population in 1940: 642.

Ownership: Municipal.

Source of information:
M. F. Cross, Mayor
July 21, 1942

Source of supply: Well near elevated tank, drilled in 1924, depth 710 feet, diameter 8 to 4 inches, one joint of perforated casing at bottom; deep-well turbine pump and 15-horsepower electric motor, pump set at 480 feet; static water level reported 90 feet below land surface in 1937; present yield 55 gallons a minute with drawdown more than 300 feet; temperature 77°F.

Pumpage: Average 30,000 to 35,000 gallons a day.

Storage: Concrete ground reservoir, 50,000 gallons; elevated tank, 50,000 gallons.

Number of customers: No record.

Treatment: None.

Analysis of water:

Date of collection: July 29, 1942 — Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	22	
Iron (Fe)	0.03	
Calcium (Ca)	1.4	0.07
Magnesium (Mg)	0.4	0.03
Sodium and Potassium (Na+K)	220	9.57
Bicarbonate (HCO_3)	472	7.74
Sulfate (SO_4)	41	0.85
Chloride (Cl)	38	1.07
Fluoride (F)	0.1	0.01
Nitrate (NO_3)	0.0	0.0
Total dissolved solids	555	
Total hardness as $CaCO_3$	5	
pH	8.9	

Sulphur Springs

Population in 1940: 6,742.

Ownership: Municipal.

Source of information:
W. B. Raney, Water Superintendent
November 18, 1943

Source of supply: Two impounding reservoirs; one at west edge of city built in 1905, capacity 230,000,000 gallons; the other two miles northwest, built 1938, capacity 120,000,000 gallons.

Sulphur Springs -- Continued

Pumpage: (Average in gallons a day)

	1941	1942	1943
Jan.	296,000	331,000	337,000
Feb.	303,000	305,000	330,000
Mar.	307,000	234,000	344,000
Apr.	352,000	330,000	366,000
May	422,000	475,000	433,000
June	425,000	422,000	495,000
July	539,000	528,000	566,000
Aug.	514,000	495,000	658,000
Sept.	330,000	305,000	499,000
Oct.	371,000	361,000	352,000
Nov.	326,000	340,000	
Dec.	307,000	318,000	

Storage: Elevated tank, 250,000 gallons.

Number of customers: 2,000.

Treatment: Aeration, coagulation, sedimentation, rapid sand filter and chlorination.

Analyses of water:

Date of collection: Nov. 18, 1943 Analyzed by W. W, Hastings

	Well 1			
	Raw Water		Treated Water	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	2.7		2.0	
Iron (Fe)	0.06		0.02	
Calcium (Ca)	10	0.499	29	1.447
Magnesium (Mg)	4.4	0.362	4.5	0.370
Sodium (Na)	11	0.467	11	0,476
Potassium (K)	3.4	0.087	2.6	0.067
Bicarbonate (HCO_3)	52	0.852	34	0.557
Sulfate (SO_4)	17	0.354	74	1.541
Chloride (Cl)	6.0	0.169	9.0	0.254
Fluoride (F)	0.6	0.032	0.1	0.005
Nitrate (NO_3)	0.5	0.008	0.2	0.003
Total dissolved solids	88		158	
Total hardness as $CaCO_3$	43		91	
pH	7.6		6.8	

Houston County

Crockett

Population in 1940: 4,536.

Ownership: Municipal.

Source of information:
Geo. Sraun, Water Superintendent
June 21, 1943

Source of supply: 2 wells 4 blocks west of city hall.

Well 1. Drilled in 1930 by Layne-Texas Company, depth 544 feet, diameter 16 to 8 inches, screen from 415 to 538 feet; deep-well turbine pump and 40 horsepower electric motor, pump set at 190 feet; static water level 113.5 below measuring point on August 12, 1930; yield 508 gallons a minute with drawdown of 63 feet.

Well 2. Drilled in September 1934 by Layne-Texas Company, depth 576 feet, diameter 16 to 8-5/8 inches, screens at 386-428, 491-512, and 532-553; deep-well turbine pump and 40-horsepower electric motor, pump set at 199 feet; static water level 150 feet below measuring point on July 11, 1940; yield 400 gallons a minute with drawdown of 55 feet.

Pumpage (estimated): Average, 350,000 gallons a day.

Storage: 2 ground reservoirs, 200,000 gallons; 2 elevated tanks, 75,000 gallons.

Number of customers: 1,000.

Treatment: Splash aeration, and filtration through slow sand filters containing limestone sand with graduated gravel base at the bottom of the filter, chlorination.

Analyses of water:

Date of collection: June 21, 1943 — Analyzed by J. H. Rowley

	Raw water Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	43	
Iron (Fe)	1.7	
Calcium (Ca)	7.4	0.369
Magnesium (Mg)	3.5	0.288
Sodium (Na)	54	2.339
Potassium (K)	3.8	0.097
Bicarbonate (HCO_3)	73	1.197
Sulfate (SO_4)	45	0.937
Chloride (Cl)	34	0.959
Fluoride (F)	0.0	.000
Nitrate (NO_3)	0.0	.000
Total dissolved solids	231	
Total hardness as $CaCO_3$	33	
pH	6.4	

Crockett -- Continued

	Well 2			
	Treated Water		Raw Water	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	39		37	
Iron (Fe)	0.08		1.6	
Calcium (Ca)	22	1.098	32	1.597
Magnesium (Mg)	4.5	0.370	5.2	0.428
Sodium (Na)	51	2.226	26	1.136
Potassium (K)	4.0	0.102	4.8	0.123
Bicarbonate (HCO_3)	104	1.705	75	1.229
Sulfate (SO_4)	51	1.062	52	1.083
Chloride (Cl)	36	1.015	34	0.959
Fluoride (F)	0.2	0.011	0.2	.011
Nitrate (NO_3)	0.2	0.003	0.1	.002
Total dissolved solids	264		237	
Total hardness as $CaCO_3$	73		101	
pH	7.7		6.4	

Drillers' logs:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil	10	10	Hard shale	20	194
Sand	6	16	Sand rock	1	195
Hard shale	26	42	Hard shale	6	201
Sand	13	55	Sand rock	1	202
Shale	36	91	Hard shale	9	211
Rock	1	92	Rock	1	212
Hard sand lignite	20	112	Hard shale and rock	38	250
Sand rock	2	114	Hard black sand	25	275
Hard shale	10	124	Hard shale and		
Sand rock	1	125	streaks of sand	60	335
Hard shale	12	137	Hard shale	9	344
Sand rock	1	138	Hard sand	15	359
Hard shale	24	162	Sand and shale	32	391
Sand rock	1	163	Sand	43	434
Hard shale	10	173	Lignite	6	440
Sand rock	1	174	Sand	104	544

Well 2

Rotary platform	5	5	Sand	15	312
Top soil	1	6	Shale and lignite	63	375
Clay	12	18	Sand	76	451
Clay with hard sand	42	60	Lignite	10	461
Shale and boulders	188	248	Sand with shale		
Sand	18	266	breaks	47	508
Shale and lignite	3	269	Sticky shale	20	528
Sand	24	293	Sand	20	548
Shale and lignite	4	297	Sand with small		
			shale breaks	8	576

Houston County

Grapeland

Population in 1940: 1,327.

Ownership: Municipal.

Source of information:
Ben Brooks, Water Superintendent
June 24, 1943

Source of supply: 2 wells.

Well 1. Drilled by J. W. Jackson, depth 746 feet, diameter 6 inches, 60 feet of screen at bottom; deep-well turbine pump; static water level reported 185 feet below measuring point; yield 130 gallons a minute.

Well 2. Drilled in 1941 by Layne-Texas Company, depth 784 feet, diameter 8 to 6 inches; deep-well turbine pump; reported yield 190 gallons a minute with drawdown of 15 feet.

Pumpage (estimated): Average 60,000 to 75,000 gallons a day.

Storage: Ground reservoir, 50,000 gallons; elevated tank, 50,000 gallons.

Number of customers: 235.

Treatment: None.

Analyses of water:

Date of collection: June 24, 1943 Analyzed by J. H. Rowley

	Well 1		Well 2	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	12		13	
Iron (Fe)	0.89		0.04	
Calcium (Ca)	1.1	0.05	1.1	0.05
Magnesium (Mg)	0.3	0.02	0.3	0.02
Sodium (Na)	138	6.02	148	6.42
Potassium (K)	2.0	.05	1.8	.05
Bicarbonate (HCO_3)	316	5.19	320	6.25
Sulfate (SO_4)	31	0.65	32	0.67
Chloride (Cl)	9.0	0.25	19	0.54
Fluoride (F)	0.8	0.04	1.0	0.05
Nitrate (NO_3)	0.8	0.01	2.0	0.03
Total dissolved solids	361		376	
Total hardness as $CaCO_3$	4		4	
pH	8.0		8.0	

Grapeland -- Continued

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sand	8	8	Sand and shale	69	250
Sand and clay	30	38	Hard shale	210	460
Sand	70	108	Sand	30	490
Green sand	7	115	Gumbo, boulders	50	540
Rock	2	117	Boulders	15	555
Sand and shale	60	177	Gumbo	81	636
Rock	4	181	Sand	110	746

Lovelady

Population in 1940: 542.

Ownership: Municipal.

Source of information:
Grady Stone, Water Superintendent
June 24, 1943

Source of supply: Well 0.5 mile east of water tower, drilled about 1936, depth 150 feet, diameter 8 inches, 22 feet of screen at bottom; deep-well turbine pump; yield 90 gallons a minute.

Pumpage (estimated): Average about 20,000 gallons a day.

Storage: Ground reservoir, 55,000 gallons; elevated tank, 50,000 gallons.

Treatment: Aeration, coagulation with lime, sedimentation, chlorination.

Analysis of water:

Date of collection: June 24, 1943 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	50	
Iron (Fe)	13	
Calcium (Ca)	25	1.25
Magnesium (Mg)	5.6	0.46
Sodium (Na)	133	5.79
Potassium (K)	7.6	.19
Bicarbonate (HCO_3)	236	3.87
Sulfate (SO_4)	85	1.77
Chloride (Cl)	71	2.00
Fluoride (F)	0.9	0.05
Nitrate (NO_3)	0.0	0.00
Total dissolved solids	503	
Total hardness as $CaCO_3$	86	
pH	7.2	

Boles Orphan Home (about 5 miles north of Quinlan)

Population in 1943: 300.

Owner: Boles Orphan Home.

Source of information:
Mrs. J. B. Nelson, Home Superintendent
September 13, 1943

Source of supply: Well 1,000 feet east of home, drilled in 1936, depth 560 feet; deep-well turbine pump and 5-horsepower electric motor; reported yield 30 to 40 gallons a minute; temperature 75°F.

Pumpage (estimated): Maximum, 50,000 gallons; average 25,000 gallons a day.

Storage: Elevated tank, 25,000 gallons.

Number of customers: Home.

Treatment: None.

Analysis of water:

Date of collection: Sept. 13, 1943 Analyzed by J. A. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	21	
Iron (Fe)	0.09	
Calcium (Ca)	4.7	.23
Magnesium (Mg)	1.4	.12
Sodium (Na)	663	28.81
Potassium (K)	5.0	.13
Bicarbonate (HCO_3)	719	11.80
Sulfate (SO_4)	161	3.35
Chloride (Cl)	492	13.88
Fluoride (F)	2.9	.15
Nitrate (NO_3)	6.8	.11
Total dissolved solids	1,712	
Total hardness as $CaCO_3$	18	
pH	8.0	

Caddo Mills

Population in 1940: 390.

Ownership: Municipal.

Source of information:
Ed Morgan, Water Superintendent
September 13, 1943

Source of supply: Impounding reservoir 0.5 mile southwest of town, constructed in 1939, area under water 50 acres.

Caddo Mills -- Continued

Pumpage (estimated): Average 3,000 to 10,000 gallons a day.

Storage: Elevated tank, 50,000 gallons.

Number of customers: 106.

Treatment: Coagulation with sedimentation, chlorination, alum and lime.

Analysis of water:

Date of collection: Sept. 13, 1943 Analyzed by J. H. Rowley

	Raw Water	
	Parts per million	Equivalents per million
Silica (SiO_2)	17	
Iron (Fe)	0.15	
Calcium (Ca)	52	2.595
Magnesium (Mg)	4.1	0.337
Sodium (Na)	22	.949
Potassium (K)	6.0	0.153
Bicarbonate (HCO_3)	146	2.393
Sulfate (SO_4)	36	0.750
Chloride (Cl)	30	0.846
Fluoride (F)	0.6	0.032
Nitrate (NO_3)	0.8	0.013
Total dissolved solids	256	
Total hardness as $CaCO_3$	147	
pH	7.5	

Celeste

Population in 1940: 730.

Ownership: Municipal.

Source of information: Ellis Sumron, Water Superintendent and J. W. Ewing, City Secretary September 23, 1943

Source of supply: Well near elevated tank, drilled in August 1937 by Marks and Meadows, depth 1,880 feet, diameter 8 inches; deep-well turbine pump and 15-horsepower electric motor, pump set at 340 feet; static water level 223 feet below land surface in 1940 and 261 feet on Dec. 16, 1942; yield 35 gallons a minute.

Pumpage (estimated): Average 10,000 gallons a day. From July 25 to August 25, 1943 pumped 950,000 gallons of which 400,000 gallons was supplied to city of Leonard.

Storage: Concrete ground reservoir, 50,000 gallons, elevated tank, 50,000 gallons.

Number of customers: 142.

Treatment: None.

Celeste -- Continued

Analysis of water:

Date of collection: Sept. 13, 1943 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	23	
Iron (Fe)	0.07	
Calcium (Ca)	2.6	.13
Magnesium (Mg)	0.7	.06
Sodium (Na)	326	14.19
Potassium (K)	18	.46
Bicarbonate (HCO_3)	501	8.22
Sulfate (SO_4)	170	3.54
Chloride (Cl)	105	2.96
Fluoride (F)	1.6	.08
Nitrate (NO_3)	2.2	.04
Total dissolved solids	896	
Total hardness as $CaCO_3$	10	
pH	8.1	

Commerce

Population in 1940: 4,699.

Ownership: Municipal.

Source of supply: 3 wells.

Source of information:
M. J. Salmon, Water Superintendent
September 14, 1943

Well 1. About 200 feet north of pump station on north Washington Street, drilled in 1914 by Tomlin, depth 500 feet, diameter 10 to 8 inches, perforated from 374 to 412 feet; static water level 125 feet below land surface when drilled, 190 feet in 1918, 227 feet in 1925, 220 feet in 1935, 228 feet in 1941, and 226 feet on Nov. 7, 1943.

Well 2. 583 feet northwest of well 1, drilled in 1923 by Jones, depth 580 feet, diameter 12½ inches, casing perforated from 375 to 435 feet; deep-well turbine and 60-horsepower electric motor, pump set at 400 feet; reported static water level 235 feet below land surface on February 6, 1939; yield 285 gallons a minute with drawdown of 70 feet; temperature 72½°F.

Well 3. 542 feet southeast of well 1; drilled in 1936 by J. L. Myers and Sons, depth 435 feet, diameter 12½ to 10 inches, casing perforated from 365 to 405 feet; deep-well turbine pump and 60-horsepower electric motor, pump set at 400 feet; static water level 210 feet below land surface when drilled and 235 feet in 1939; yield 335 gallons a minute.

Commerce --- Continued

Pumpage: (Average in gallons a day)

1943

Jan.	303,000	May	365,000
Feb.	288,000	June	363,000
Mar.	334,000	July	430,000
Apr.	358,000	Aug.	494,000

Storage: 2 concrete ground reservoirs, 260,000 gallons, elevated tank, 50,000 gallons.

Number of customers: 1,254.

Treatment: None.

Analyses of water:

Date of collection: Sept. 14, 1943 Analyzed by J. H. Rowley

	Well 2		Well 3	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	14		10	
Iron (Fe)	0.03		0.03	
Calcium (Ca)	2.7	.13	2.9	.14
Magnesium (Mg)	0.5	.04	0.4	.03
Sodium (Na)	256	11.15	266	11.56
Potassium (K)	10	.26	6.4	.16
Bicarbonate (HCO_3)	474	7.76	471	7.71
Sulfate (SO_4)	73	1.52	91	1.89
Chloride (Cl)	80	2.26	80	2.26
Fluoride (F)	0.5	.03	0.3	.02
Nitrate (NO_3)	0.8	.01	0.5	.01
Total dissolved solids	678		694	
Total hardness as $CaCO_3$	8		8	
pH	9.0		8.8	

Driller's log:

Well 3

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	8	8	Variation of light and dark gray shale	149	364
Yellow clay	7	15	Hard lime or cap rock	1	365
Yellow sandy clay	8	23	Hard coarse sand--water boaring	40	405
Dark blue shale	177	200	Black shale, soft	7	412
Hard lime rock	2	202	Black sandy shale	5	417
Gray shale	3	205	Dark gray shale	8	425
Hard lime rock	5	210	Dark gray sandy shale	5	430
Medium hard lime rock	5	215	Black shale	3	433

Hunt County

Greenville

Population in 1940: 13,995.

Ownership: Municipal.

Source of information:
Scot Wright, City Commissioner of Utilities
September 11, 1943

Source of supply: 4 reservoirs north of city impounding water from the Sabine River; (reservoirs also supply the small towns of Revilon and Penill); capacity No. 1, 36,000,000 gallons; No. 2, 52,000,000 gallons; No. 3, 136,000,000 gallons and No. 4, 636,000,000 gallons.

Pumpage: Maximum 2,950,000 gallons, average 2,500,000 gallons a day in 1943.

Storage: 4 concrete ground reservoirs, 415,000 gallons each, standpipe, 178,000 gallons.

Number of customers: 3,617.

Treatment: Coagulation, sedimentation and chlorination.

Analysis of water:

Date of collection: Sept. 11, 1943 Analyzed by J. H. Rowley

	Untreated water from concrete reservoir No. 2	
	Parts per million	Equivalents per million
Silica (SiO_2)	5.6	
Iron (Fe)	0.05	
Calcium (Ca)	38	1.897
Magnesium (Mg)	4.9	0.403
Sodium (Na)	12	.523
Potassium (K)	4.3	0.110
Bicarbonate (HCO_3)	127	2.082
Sulfate (SO_4)	27	0.562
Chloride (Cl)	9.0.	0.254
Fluoride (F)	0.6	0.032
Nitrate (NO_3)	0.2	0.003
Total dissolved solids	174	
Total hardness as $CaCO_3$	115	
pH	7.7	

Quinlan

Population in 1940: 677.

Ownership: Municipal.

Source of information:
W. G. Griffis, Water Commissioner
Sept. 11, 1943

Source of supply: Well 1 block east and ½ block south of post office, drilled in 1910 by Chilcote, depth 157 feet, diameter 6 inches, lower 40 feet of casing perforated; deep-well turbine pump and 5-horsepower electric motor, pump set at 140 feet; present static water level reported 100 feet below land surface; yield 18 gallons a minute; temperature 68½°F.

Quinlan -- Continued

Pumpage: No record.

Storage: Elevated tank, 12,600 gallons.

Treatment: None.

Number of customers: 125.

Analysis of water:

Date of collection: Sept. 11, 1943 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	16	
Iron (Fe)	4.2	
Calcium (Ca)	60	2.99
Magnesium (Mg)	4.1	.34
Sodium (Na)	161	6.99
Potassium (K)	5.0	.13
Bicarbonate (HCO_3)	383	6.28
Sulfate (SO_4)	111	2.31
Chloride (Cl)	63	1.78
Fluoride (F)	0.5	.03
Nitrate (NO_3)	3.0	.05
Total dissolved solids	612	
Total hardness as $CaCO_3$	166	
pH	7.3	

Wolf City

Population in 1940: 1,339.

Ownership: Municipal.

Source of information:
W. O. Gilmer, City Secretary
September 15, 1943

Source of supply: Impounding reservoir 0.5 mile east of town, constructed in 1916, area 56 acres, maximum depth 40 feet. (A well drilled to a depth of 1,760 feet yielded saline water).

Pumpage: Maximum 50,000 gallons; average about 35,000 gallons a day.

Storage: 2 concrete ground reservoirs, elevated tank 32,000 gallons, combined capacity 172,000 gallons.

Treatment: Coagulation, sedimentation, and chlorination.

Number of customers: 300.

Hunt County

Wolf City --- Continued

Analysis of water:

Date of collection: Sept. 15, 1943 Analyzed by J. E. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	7.6	
Iron (Fe)	0.06	
Calcium (Ca)	16	.799
Magnesium (Mg)	4.2	.345
Sodium (Na)	5.5	.239
Potassium (K)	4.8	.123
Bicarbonate (HCO_3)	72	1.180
Sulfate (SO_4)	12	0.250
Chloride (Cl)	1.0	0.028
Fluoride (F)	0.6	0.032
Nitrate (NO_3)	1.0	0.016
Total dissolved solids	96	
Total hardness as $CaCO_3$	57	
pH	7.7	

Jackson County

Edna

Population in 1940: 2,724.

Source of information:
J. E. Porch, Water Superintendent
October 1, 1942

Ownership: Municipal.

Source of supply: Well drilled in 1930 by Layne-Texas Company, depth 416 feet, diameter 6 inches; deep-well turbine pump; yield 532 gallons a minute; temperature 75°F.

Pumpage (estimated): Average 200,000 gallons a day.

Storage: Ground reservoir, 100,000 gallons; elevated tank, 100,000 gallons.

Number of customers: 730.

Treatment: None.

Analysis of water:

Edna -- Continued

Date of collection: Oct. 1, 1942 Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	14	
Iron (Fe)	0.07	
Calcium (Ca)	25	1.25
Magnesium (Mg)	13	1.07
Sodium and Potassium (Na+K)	181	7.86
Bicarbonate (HCO_3)	370	6.06
Sulfate (SO_4)	2	.04
Chloride (Cl)	144	4.06
Fluoride (F)	0.4	.02
Nitrate (NO_3)	0.0	.00
Total dissolved solids	561	
Total hardness as $CaCO_3$	116	
pH	7.7	

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil	3	3	Shale	14	261
Sandy clay	37	40	Sand	44	305
Clay	14	54	Rock	2	307
Sand	12	66	Sand	37	344
Clay	65	131	Shale	5	349
Shale with sand	41	172	Sand	12	361
Sand	5	177	Shale and sand	7	368
Clay with sand	21	198	Sand	44	412
Sand	8	206	Rock	1	413
Shale	17	223	Shale	3	416
Sand and gravel	24	247			

Ganado

Population in 1940: 717.

Ownership: Municipal.

Source of information:
E. D. Andrews, Water Superintendent
September 30, 1942

Source of supply: Well drilled in 1938 by McMaster and Pomeroy, depth 267 feet, diameter 6 inches, screen from 224 to 256 feet; deep-well turbine pump; yield 160 gallons.

Pumpage (estimated): Average, 35,000 gallons a day.

Storage: Ground reservoir, 50,000 gallons; elevated tank, 50,000 gallons.

Ganado -- Continued

Number of customers: 200.

Treatment: None.

Analysis of water:

Date of collection: Sept. 30, 1942 Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	35	
Iron (Fe)	.05	
Calcium (Ca)	90	4.49
Magnesium(Mg)	17	1.40
Sodium and Potassium (Na+K)	31	1.36
Bicarbonate (HCO_3)	242	3.97
Sulfate (SO_4)	14	.29
Chloride (Cl)	105	2.96
Fluoride (F)	.2	.01
Nitrate (NO_3)	1.0	.02
Total dissolved solids	465	
Total hardness as $CaCO_3$	294	
pH	7.4	

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface and clay	19	19	Sand and gravel	76	200
Sand	33	52	Gumbo	24	224
Clay	10	62	Sand and gravel	32	256
Sand	12	74	Gumbo	11	267
Gumbo	50	124			

Jasper County

Bessmay

Population in 1940: 500.

Owner: Kirby Lumber Company.

Source of information: D. R. Byrd, Superintendent April 14, 1942

Source of supply: 3 wells at sawmill of Kirby Lumber Company.

Well 1. Drilled in 1902, depth about 1,100 feet, diameter 8 inches; air lift.

Well 2. Drilled by O. C. Adams, depth 761 feet, diameter 5 inches, screen from 704 to 749 feet; air lift.

Well 3. Drilled in 1936 by Frank Balcar, depth 280 feet, diameter 9 inches, screen from 260 to 280 feet.

Pumpage (estimated): Average, 500,000 gallons a day for sawmill and town.

Storage: Concrete ground reservoir, 65,000 gallons; elevated tank, 65,000 gallons.

Number of customers: 175.

Treatment: None.

Analyses of water:

Date of collection: Apr. 14, 1942 Analyzed by W. W. Hastings

	Well 1		Well 2	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Calcium (Ca)	17	0.85	20	1.00
Magnesium (Mg)	2.2	0.18	1.7	.14
Sodium and Potassium (Na+K)	39	1.70	36	1.57
Bicarbonate (HCO_3)	146	2.39	146	2.39
Sulfate (SO_4)	4	0.08	4	0.08
Chloride (Cl)	7.5	0.21	6	0.17
Fluoride (F)	.1	0.01	.3	0.02
Nitrate (NO_3)	0.0	0.00	0	0.00
Total dissolved solids	142		140	
Total hardness as $CaCO_3$	51		56	

Bessmay -- Continued

Date of collection: Apr. 14, 1942 Analyzed by W. W. Hastings

	Well 3	
	Parts per million	Equivalents per million
Calcium (Ca)	6.8	0.339
Magnesium (Mg)	2.2	.181
Sodium and Potassium (Na+K)	27	1.174
Bicarbonate (HCO_3)	61	1.000
Sulfate (SO_4)	3	0.062
Chloride (Cl)	23	0.649
Fluoride (F)	--	--
Nitrate (NO_3)	0	0.000
Total dissolved solids	92	
Total hardness as $CaCO_3$	26	

Driller's log:

Well 3

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Red clay	18	18	Clay	24	194
Yellow sand	3	21	Brown sand	57	251
Reddish and gray clay	77	98	Shale rock	1	252
Shale	52	150	Gravel	8	260
Sandy shale	20	170	Sand	20	280

Jasper

Population in 1940: 3,497.

Ownership: Municipal.

Source of information:
Grover Calvert, Water Superintendent
April 10, 1941

Source of supply: Well at 900 north Main Street, drilled in 1930 by Layne-Texas Company, depth 581 feet, diameter 10 to 6 inches, screens at 403-445 and 534-577 feet; deep-well turbine pump, and electric motor; static water level 70 feet below land surface in 1930; yield 411 gallons a minute with drawdown of 55 feet.

Pumpage (estimated): Average, 140,000 gallons a day.

Storage: Ground reservoir, 300,000 gallons; elevated tank, 100,000 gallons.

Number of customers: 450.

Treatment: Chlorination.

Jasper -- Continued

Analysis of water:

Date of collection: Apr. 10, 1941 Analyzed by E.W.Lohr and J.W.Yett, Jr.

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	58	
Iron (Fe)	.07	
Calcium (Ca)	9.3	.464
Magnesium (Mg)	1.0	.082
Sodium and Potassium (Na+K)	10	.435
Bicarbonate (HCO_3)	35	.574
Sulfate (SO_4)	14	.292
Chloride (Cl)	4.1	.116
Fluoride (F)	.2	.011
Nitrate (NO_3)	.0	.000
Total dissolved solids	126	
Total hardness as $CaCO_3$	27	
pH	6.5	

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sandy soil	2	2	Sand with clay streaks	113	364
Sandy red clay	16	18	Clay	9	373
Sandy clay and gravel	11	29	Sand and gravel	18	391
Sand	7	36	Sand and lignite	12	403
Clay	7	43	Sand	49	452
Sand	27	70	Gumbo	8	460
Sand, gravel and clay streaks	69	139	Sand	14	474
Sandy clay	45	184	Hard shale	42	516
Sand	21	205	Sand	65	581
Clay	15	220	Rock	1	582
Sand	31	251			

Kirbyville

Population in 1940: 1,088.

Ownership: Municipal.

Source of information:
F. L. Henry, Water Superintendent
Apr. 10, 1942

Source of supply: Well drilled in 1927 by J. W. Jackson, depth 1,490 feet, diameter 6 inches; flows 175 gallons a minute.

Pumpage (estimated): Average, 80,000 gallons a day.

Jasper County

Kirbyville -- Continued

Storage: Ground reservoir, 100,000 gallons; elevated tank, 50,000 gallons.

Number of customers: 280.

Treatment: None.

Analysis of water:

Date of collection: Apr. 10, 1942 Analyzed by B. Irelan

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	28	
Iron (Fe)	0.30	
Calcium (Ca)	40	1.997
Magnesium (Mg)	1.7	.140
Sodium and Potassium (Na+K)	32	1.397
Bicarbonate (HCO_3)	188	3.082
Sulfate (SO_4)	12	.250
Chloride (Cl)	7.0	.197
Fluoride (F)	0.1	.005
Nitrate (NO_3)	0.0	.000
Total dissolved solids	214	
Total hardness as $CaCO_3$	107	
pH	7.8	

Jefferson County

Beaumont

Population in 1940: 59,061
(Estimated in 1944, 90,000)

Source of information:
F. H. Newman, Water Superintendent
Apr. 14, 1944

Ownership: Municipal.

Source of supply: Neches River. Water is obtained through a canal from a point five miles upstream from Beaumont.

Pumpage (estimated): Minimum 6,000,000 gallons; maximum 9,000,000 gallons; average 7,500,000 gallons a day.

Storage: Concrete ground reservoir, 5,000,000 gallons; 2 elevated tanks, 1,000,000 and 500,000 gallons.

Treatment: Aeration, coagulation with alum and lime, sedimentation, rapid sand filter and chlorination.

Number of customers: 14,760.

Analysis of water:

Jefferson County

Beaumont -- Continued

Date of collection: April 14, 1944 Analyzed by J. L. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	15	
Iron (Fe)	0.96	
Calcium (Ca)	9.3	0.464
Magnesium (Mg)	3.7	0.304
Sodium (Na)	15	.640
Potassium (K)	3.6	.092
Bicarbonate (HCO_3)	30	0.492
Sulfate (SO_4)	14	0.291
Chloride (Cl)	24	0.677
Fluoride (F)	0.6	0.032
Nitrate (NO_3)	0.5	0.008
Total dissolved solids	131	
Total hardness as $CaCO_3$	38	
pH	6.5	

Nederland

Population in 1940: 1,500.

Ownership: Municipal.

Source of information:
Geo. Crane, Water Superintendent
April 1944

Source of supply: 2 wells.

Well 1. Drilled in 1935 by F. L. Balcar, depth 510 feet, diameter 6 inches; deep-well turbine pump; static water level 13.90 feet below measuring point on March 7, 1941; reported yield 70 gallons a minute.

Well 2. Drilled in 1937 by F. L. Balcar, depth 510 feet, diameter 6 to 4½ inches, screen from 488 to 510 feet; deep-well turbine pump; reported yield 70 gallons a minute; temperature 75°F.

Pumpage (estimated): Minimum 140,000 gallons; maximum 170,000 gallons; average 160,000 gallons a day.

Storage: Elevated tank, 80,000 gallons.

Treatment: None.

Number of customers: 700.

Nederland -- Continued

Analysis of water: (Partial)

Date of collection: March 7, 1941 Analyzed by W. W. Hastings

	Composite sample Well 1 and 2
	Parts per million
Bicarbonate (HCO_3)	291
Sulfate (SO_4)	2
Chloride (Cl)	320
Total hardness as $CaCO_3$	28

Driller's log:

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Yellow clay	32	32	Hard shale	30	300
Sand	6	38	Gumbo	26	326
Shale	22	60	Rock	1	327
Gumbo	10	70	Pink shale	23	350
Blue shale	39	109	Gumbo	32	382
Sand	52	161	Hard shale	53	435
Shale	11	172	Soft shale	23	458
Black gumbo	13	185	Sandy shale	22	480
Gray shale	60	245	Rock	2	482
Sandstone	1	246	Sand, water	28	510
Gumbo	24	270			

Port Arthur

Population in 1940: 46,140

Source of information:
J. L. Swanson, Water Superintendent
April 1944

Ownership: Municipal.

Source of supply: Neches River. Water is diverted by canal 15 miles upstream from Beaumont.

Pumpage (estimated): Minimum 3,000,000 gallons; maximum 4,000,000 gallons; average 3,500,000 gallons a day.

Storage: Earthen raw water reservoir, 300,000,000 gallons; concrete ground reservoir, 1,000,000 gallons; 2 elevated tanks, 300,000 gallons each.

Number of customers: No data.

Treatment: Aeration, coagulation, sedimentation, rapid sand filter and chlorination.

Port Arthur -- Continued

Analysis of water:

Date of collection: April 13, 1944 Analyzed by J. H. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	16	
Iron (Fe)	0.40	
Calcium (Ca)	11	0.549
Magnesium (Mg)	3.5	0.288
Sodium (Na)	22	0.943
Potassium (K)	3.3	0.084
Bicarbonate (HCO_3)	22	0.361
Sulfate (SO_4)	19	0.396
Chloride (Cl)	38	1.072
Fluoride (F)	0.6	0.032
Nitrate (NO_3)	0.2	0.003
Total dissolved solids	142	
Total hardness as $CaCO_3$	42	
pH	6.7	

Port Neches

Population in 1940: 2,487 (estimated in 1944, 5,000).

Ownership: Municipal.

Source of information:
J. R. Hennan, Water Superintendent
April 1944

Source of supply: Neches River. Water is diverted by canal from a point 15 miles upstream from Beaumont.

Pumpage (estimated): Minimum 500,000, maximum 700,000, average, 600,000 gallons a day.

Storage: 2 concrete ground reservoirs, 120,000 and 240,000 gallons; elevated tank, 75,000 gallons.

Number of customers: 1,000.

Treatment: Coagulation, sedimentation, rapid sand filter and chlorination.

Port Neches -- Continued

Analysis of water:

Date of collection: April 13, 1944 Analyzed by J. [illegible] Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	25	
Iron (Fe)	1.5	
Calcium (Ca)	10	0.499
Magnesium (Mg)	2.8	0.230
Sodium (Na)	16	.681
Potassium (K)	3.0	.077
Bicarbonate (HCO_3)	27	0.443
Sulfate (SO_4)	13	0.271
Chloride (Cl)	26	0.733
Fluoride (F)	0.6	0.032
Nitrate (NO_3)	0.5	0.008
Total dissolved solids	158	
Total hardness as $CaCO_3$	36	
pH	6.7	

Voth

Population in 1940: 600.

Source of information:
L. L. Jones, Water Superintendent
April 1944

Owner: Kirby Lumber Corporation.

Source of supply: Well drilled in 1937 by [illegible]. D. Adams, depth 315 feet, diameter [illegible] inches, screen from 275 to 315 feet, air lift; reported to have flowed 12 gallons a minute when drilled; temperature 72⅔°F.

Pumpage: No record.

Storage: Steel ground reservoir, 12,000 gallons; elevated tank, 50,000 gallons.

Number of customers: 150.

Treatment: None.

Jefferson County

Voth -- Continued

Analysis of water:

Date of collection: March 11, 1941 Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Calcium (Ca)	6.9	.34
Magnesium (Mg)	1.8	.15
Sodium & Potassium (Na+K)	176	7.65
Bicarbonate (HCO_3)	375	6.15
Sulfate (SO_4)	1	.02
Chloride (Cl)	69	1.95
Fluoride (F)	.7	.04
Nitrate (NO_3)	0	.00
Total dissolved solids	315	
Total hardness as $CaCO_3$	25	

Kaufman County

Crandall

Population in 1940: 580.

Source of information: John R. Crawford, Jr., Operator July 30, 1943

Owner: Crandall Deep Well Co.

Source of supply: Well 2 blocks east of railroad station and 100 feet south of tracks, drilled about 1910, depth about 2,400 feet, diameter 6 to 4 inches; jet pump and 15-horsepower electric motor; reported to have flowed when drilled; static water level 55 feet below land surface in 1943; yield 7 gallons a minute with drawdown of 20 feet; temperature 95°F.

Pumpage: No record.

Storage: Steel pressure tank, about 2,000 gallons.

Number of customers: 40.

Treatment: None.

Crandall -- Continued

Analysis of water:

Date of collection: July 30, 1943 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	15	
Iron (Fe)	0.06	
Calcium (Ca)	8.5	0.42
Magnesium (Mg)	3.1	0.25
Sodium (Na)	1,357	58.98
Potassium (K)	4.0	0.10
Bicarbonate (HCO_3)	1,206	19.79
Sulfate (SO_4)	269	5.60
Chloride (Cl)	1,210	34.13
Fluoride (F)	3.7	.19
Nitrate (NO_3)	2.2	.04
Total dissolved solids	3,470	
Total hardness as $CaCO_3$	34	
pH	8.2	

Forney

Population in 1940: 1,295.

Owner: Forney Ice and Water Company

Source of information: A. A. Hinton, Manager July 30, 1943

Source of supply: Well 2 blocks west and 2 blocks north of railroad station, drilled in 1909, depth 2,051, diameter 6 inches; deep-well turbine pump and 5-horsepower electric motor, pump set at 100 feet; reported to have flowed until 1920; static water level 65 feet below land surface in 1942; yield 100 gallons a minute with drawdown of 30 feet; temperature 100°F.

Pumpage: Average, 75,000 gallons a day.

Storage: Concrete reservoir, 50,000 gallons; elevated tank, 50,000 gallons.

Number of customers: 325.

Treatment: None.

Forney -- Continued

Analysis of water:

Date of collection: July 30, 1943 Analyzed by J. K. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	6.0	
Iron (Fe)	0.02	
Calcium (Ca)	6.7	0.33
Magnesium (Mg)	2.1	0.17
Sodium (Na)	985	42.81
Potassium (K)	3.8	0.10
Bicarbonate (HCO_3)	1,104	18.08
Sulfate (SO_4)	453	9.43
Chloride (Cl)	548	15.46
Fluoride (F)	4.0	.21
Nitrate (NO_3)	14	.23
Total dissolved solids	2,570	
Total hardness as $CaCO_3$	25	
pH	8.2	

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil	4	4	Shale	28	1870
Clay	16	20	Hard rock	4	1874
Sand	4	24	Blue shale	21	1895
Shale with streaks of gumbo	710	734	Reddish brown clay	32	1927
White rock	360	1094	Soft lime	12	1939
Shale	25	1119	Shale	6	1945
Lime rock	3	1121	Sand	6	1951
Shale	140	1261	Light gray shale	12	1963
Sandy shale	7	1268	Hard lime	10	1973
Shale with hard streaks	66	1334	Shale	7	1980
Sandy shale	8	1342	Hard rock	5	1985
Black gumbo	425	1767	Hard sand	2	1987
Sandy shale	13	1780	Hard sand	12	1999
Hard gumbo	7	1787	Blue shale	16	2015
Sandy rock	19	1806	Shale with hard streaks	10	2025
Lime rock	4	1810	Hard rock (some grit)	8	2033
Sand with streaks of lime	32	1842	Red shale	18	2051

Kaufman County

Kaufman

Population in 1940: 2,654.

Ownership: Municipal.

Source of information: Brown Fender, Water Superintendent July 30, 1943.

Source of supply: 2 impounding reservoirs 1 mile northeast of city, capacity about 1,000,000,000 gallons, drainage area 1.8 square miles.

Pumpage: Maximum, 350,000 gallons; average, 200,000 gallons a day.

Storage: 2 concrete ground reservoirs, 250,000 gallons each; elevated tank, 109,000 gallons.

Number of customers: 650.

Treatment: Coagulation with lime and alum, sedimentation, chlorination.

Analysis of water:

Date of collection: July 30, 1943 Analyzed by J. H. Powley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	14	
Iron (Fe)	0.61	
Calcium (Ca)	18	0.898
Magnesium (Mg)	2.9	0.238
Sodium (Na)	7.8	0.338
Potassium (K)	3.0	0.077
Bicarbonate (HCO_3)	76	1.246
Sulfate (SO_4)	7.3	0.152
Chloride (Cl)	4.0	0.113
Fluoride (F)	0.6	0.032
Nitrate (NO_3)	0.5	0.008
Total dissolved solids	100	
Total hardness as $CaCO_3$	57	
pH	8.6	

Kemp

Population in 1940: 990.

Ownership: Municipal.

Source of information: Maurice Mullins, Water Superintendent July 30, 1943

Source of supply: Impounding reservoir 2 miles southeast of town, area of reservoir 60 acres, maximum depth 20 feet.

Pumpage: Maximum, 100,000 gallons; average, 75,000 gallons a day.

Storage: Elevated tank, 50,000 gallons.

Number of customers: 300.

Kemp -- Continued

Treatment: Coagulation with lime and alum, sedimentation, chlorination.

Analysis of water:

Date of collection: July 30, 1943 Analyzed by J. H. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	10	
Iron (Fe)	0.69	
Calcium (Ca)	22	1.098
Magnesium (Mg)	5.1	0.419
Sodium (Na)	7.3	0.316
Potassium (K)	2.8	0.072
Bicarbonate (HCO_3)	78	1.279
Sulfate (SO_4)	21	0.437
Chloride (Cl)	4.0	0.113
Fluoride (F)	1.2	0.063
Nitrate (NO_3)	0.8	0.013
Total dissolved solids	117	
Total hardness as $CaCO_3$	76	
pH	7.6	

Mabank

Population in 1940: 963.

Source of information: L. L. Harper, Water Superintendent July 30, 1943

Ownership: Municipal.

Source of supply: Impounding reservoir 2 miles southeast of town, capacity about 98,000,000 gallons, drainage area 150 acres.

Pumpage: Maximum, 70,000 gallons; average, 60,000 gallons a day.

Storage: 3 concrete ground reservoirs, 100,000 gallons; elevated tank, 50,000 gallons.

Number of customers: 235.

Treatment: Coagulation with lime and alum, sedimentation, chlorination.

Mabank --- Continued

Analysis of water:

Date of collection: July 30, 1943 Analyzed by J. H. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	6.4	
Iron (Fe)	0.40	
Calcium (Ca)	7.8	0.389
Magnesium (Mg)	2.7	0.222
Sodium (Na)	7.3	.317
Potassium (K)	2.6	0.067
Bicarbonate (HCO_3)	46	0.754
Sulfate (SO_4)	3	0.062
Chloride (Cl)	4.0	0.113
Fluoride (F)	1.2	0.063
Nitrate (NO_3)	0.2	0.003
Total dissolved solids	62	
Total hardness as $CaCO_3$	31	
pH	7.8	

Terrell

Population in 1940: 8,796.

Ownership: Municipal.

Source of information:
Frank McClary, Water Superintendent
July 30, 1943

Source of supply: Impounding reservoir 2 miles east of city, area 300 acres, maximum depth 18 feet.

Pumpage: Maximum, 1,250,000 gallons; average, 1,000,000 gallons a day.

Storage: Elevated tank, 285,000 gallons.

Number of customers: 1,650.

Treatment: Coagulation with alum, charcoal, rapid sand filter, chlorination.

Terrell -- Continued

Analysis of water:

Date of collection: July 30, 1943 Analyzed by J. H. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	13	
Iron (Fe)	0.78	
Calcium (Ca)	16	0.799
Magnesium (Mg)	3.9	0.321
Sodium (Na)	4.0	0.176
Potassium (K)	3.6	0.092
Bicarbonate (HCO_3)	63	1.033
Sulfate (SO_4)	10	0.208
Chloride (Cl)	4.0	0.113
Fluoride (F)	0.4	0.021
Nitrate (NO_3)	0.8	0.013
Total dissolved solids	92	
Total hardness as $CaCO_3$	56	
pH	8.4	

Lamar County

Blossom

Population in 1940: 858.

Source of information: L. C. Smallman, Pumper September 20, 1943

Ownership: Municipal.

Source of supply: Small impounding reservoir 1 mile north of town, built in 1934, area 45 acres, maximum depth of water 18 feet.

Pumpage: Capacity of cistern 100 gallons a minute.

Storage: Concrete ground reservoir, 30,000 gallons; elevated tank, 50,000 gallons.

Number of customers: 160.

Treatment: Coagulation, sedimentation, pressure filter, and chlorination.

Analysis of water:

Date of collection: Sept. 20, 1943 Analyzed by J.H.Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	2.1	
Iron (Fe)	0.02	
Calcium (Ca)	15	0.749
Magnesium (Mg)	1.2	0.148
Sodium (Na)	4.6	.199
Potassium (K)	2.8	0.072
Bicarbonate (HCO_3)	64	1.049
Sulfate (SO_4)	3	0.062
Chloride (Cl)	1.0	0.028
Fluoride (F)	0.4	0.021
Nitrate (NO_3)	0.5	0.008
Total dissolved solids	72	
Total hardness as $CaCO_3$	45	
pH	7.9	

Depart

Population in 1940: 822.

Source of information: K.V.Kimball, City Secretary September 21, 1943

Ownership: Municipal.

Source of supply: Impounding reservoir about 3 miles west of town, area 14 acres.

Lamar County

Deport--Continued

Pumpage:

(Average in gallons a day)

	1943
Apr.	12,000
May	11,000
June	12,000
July	15,000
Aug.	20,000

Maximum, 30,000 gallons; minimum, 9,000 gallons a day.

Storage: Elevated tank, 65,000 gallons.

Number of customers: 155.

Treatment: Aeration, coagulation with lime and alum, sedimentation, pressure filter, chlorination.

Analysis of water:

Date of collection: Sept. 20, 1943 — Analyzed by J. H. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	2.1	
Iron (Fe)	0.03	
Calcium (Ca)	19	0.948
Magnesium (Mg)	2.6	0.214
Sodium (Na)	9.1	.396
Potassium (K)	2.9	0.072
Bicarbonate (HCO_3)	87	1.426
Sulfate (SO_4)	2.4	0.050
Chloride (Cl)	3.0	0.085
Fluoride (F)	1.0	0.053
Nitrate (NO_3)	1.0	0.016
Total dissolved solids	92	
Total hardness as $CaCO_3$	58	
pH	8.2	

Paris

Population in 1940: 18,678.

Source of information: W. F. Hick, Water Superintendent September 21, 1943

Ownership: Municipal.

Source of supply: Impounding reservoir (Lake Creek) about 4 miles north of town, built in 1923, area 1,400 acres, drainage area 48 square miles, capacity when full 4,000,000,000 gallons; capacity of treating plant 3,000,000 gallons a day; this lake supplies Camp Maxey with 59 to 75 million gallons a month through government-operated treating plant.

Lamar County

Paris--Continued

Pumpage: Maximum, 2,800,000 gallons; minimum, 1,000,000 gallons; average, 1,600,000 gallons a day.

Storage: Elevated tank, 500,000 gallons; standpipe, 300,000 gallons.

Number of customers: No record.

Treatment: Aeration, coagulation, sedimentation, rapid sand filter, chlorination, copper sulfate treatment to lake during summer months for the reduction of algae.

Analysis of water:

Date of collection: Sept. 21, 1943 — Analyzed by J. H. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	6.6	
Iron (Fe)	0.02	
Calcium (Ca)	16	0.799
Magnesium (Mg)	2.1	0.173
Sodium (Na)	5.6	.245
Potassium (K)	4.1	0.105
Bicarbonate (HCO_3)	51	0.836
Sulfate (SO_4)	16	0.333
Chloride (Cl)	4.0	0.113
Fluoride (F)	0.4	0.021
Nitrate (NO_3)	1.2	0.019
Total dissolved solids	85	
Total hardness as $CaCO_3$	49	
pH	7.3	

Roxton

Population in 1940: 900.

Source of information:
Dr. Jas. Creed
September 17, 1943

Owner: Lamar County Water District.

Source of supply: 3 wells.

Well 1. 500 feet southeast of railroad depot, dug in 1907, depth 38 feet, diameter 10 feet; deep-well turbine pump and 2-horsepower electric motor; static water level 10 feet below land surface; yield 75 gallons a minute.

Well 2. 500 feet southeast of railroad depot, dug in 1938, depth 31 feet, diameter 12 feet; deep-well turbine pump and 2-horsepower electric motor; static water level 10 feet below land surface; yield 75 gallons a minute.

Well 3. Standby well near south edge of town, dug in 1907, depth 40 feet, diameter 12 feet, deep-well turbine pump and 1-horsepower electric motor.

Lamar County

Roxton--Continued

Pumpage: Average, 30,000 gallons a day.

Storage: Concrete ground reservoir, 75,000 gallons; elevated tank, 75,000 gallons.

Number of customers: 100.

Treatment: Chlorination.

Analysis of water:

Date of collection: Sept. 17, 1943 — Analyzed by J. H. Rowley

	Composite sample from wells 1 and 2	
	Parts per million	Equivalents per million
Silica (SiO_2)	4.8	
Iron (Fe)	0.04	
Calcium (Ca)	188	9.38
Magnesium (Mg)	10	0.82
Sodium (Na)	76	3.30
Potassium (K)	5.3	0.14
Bicarbonate (HCO_3)	345	5.65
Sulfate (SO_4)	110	2.29
Chloride (Cl)	162	4.57
Fluoride (F)	0.0	0.00
Nitrate (NO_3)	70	1.13
Total dissolved solids	836	
Total hardness as $CaCO_3$	510	
pH	7.2	

Lavaca County

Hallettsville

Population in 1940: 1,581

Source of information: A. F. Dusek, Utilities Superintendent, February 22, 1944

Ownership: Municipal.

Source of supply: 3 wells.

Well 1. 1½ blocks northeast of post office, depth 329 feet, diameter 6 inches; air lift; flowed until 1942.

Well 2. Near well 1, depth 480 feet, diameter 3 inches; air lift; flowed until 1942.

Well 3. Near wells 1 and 2, depth 412 feet, diameter 4½ inches; air lift; flowed until 1942.

Lavaca County

Halletsville--Continued

Pumpage:

(Average in gallons a day)

	1942	1943
Jan.	134,300	148,350
Feb.	116,100	141,950
Mar.	125,100	131,250
Apr.	134,800	147,330
May	138,500	162,830
June	163,700	146,160
July	131,500	163,870
Aug.	150,960	175,420
Sept.	130,200	156,930
Oct.	130,900	145,290
Nov.	117,400	157,230
Dec.	117,600	139,710

Storage: Concrete ground reservoir, 40,000 gallons; elevated tank, 125,000 gallons.

Number of customers: 461.

Treatment: None.

Analysis of water:

Date of collection: Feb. 22, 1944 — Analyzed by J. H. Rowley

	Well 2	
	Parts per million	Equivalents per million
Silica (SiO_2)	17	
Iron (Fe)	0.23	
Calcium (Ca)	16	0.80
Magnesium (Mg)	5.4	0.44
Sodium (Na)	285	12.41
Potassium (K)	9.4	0.24
Bicarbonate (HCO_3)	367	6.03
Sulfate (SO_4)	129	2.69
Chloride (Cl)	183	5.16
Fluoride (F)	0.1	0.01
Nitrate (NO_3)	0.0	0.00
Total dissolved solids	835	
Total hardness as $CaCO_3$	62	
pH	8.5	

Lavaca County

Moulton

Population in 1940: 643.

Source of information:
Wm. Wachtender, Water Superintendent
February 21, 1944

Ownership: Municipal.

Source of supply: Well 1 block south of post office, drilled in 1918, depth about 600 feet, diameter 4 inches; air lift; static water level reported 90 feet below land surface; yield 65 gallons a minute.

Pumpage (estimated): Minimum, 5,000 gallons; maximum, 20,000 gallons; average, 12,000 gallons a day.

Storage: Concrete ground reservoir, 11,000 gallons; elevated tank, 50,000 gallons.

Number of customers: 108.

Treatment: None.

Analysis of water:

Date of collection: Feb. 21, 1944 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	71	
Iron (Fe)	0.13	
Calcium (Ca)	71	3.54
Magnesium (Mg)	3.8	0.31
Sodium (Na)	165	7.18
Potassium (K)	19	0.49
Bicarbonate (HCO_3)	345	5.65
Sulfate (SO_4)	64	1.33
Chloride (Cl)	160	4.51
Fluoride (F)	0.1	0.01
Nitrate (NO_3)	1.2	0.02
Total dissolved solids	744	
Total hardness as $CaCO_3$	192	
pH	8.4	

Shiner

Population in 1940: 1,520.

Source of information:
J.F.Degenhart, Water Superintendent
February 22, 1944

Ownership: Municipal.

Source of supply: 2 wells.

Lavaca County

Shiner--Continued

Well 1. 3 blocks east of post office, drilled in 1925 by Layne-Texas Company, depth 315 feet, diameter 24 to 6 inches; deep-well turbine pump; well has natural flow, and when pumped on September 8, 1935 yielded 200 gallons a minute with pumping level at 122 feet below land surface.

Well 2. 3 blocks east of post office, drilled in 1938 by Layne-Texas Company, depth 400 feet, diameter 12 to 8-5/8 inches; deep-well turbine pump; static water level 27 feet below measuring point July 1, 1938; yield 108 gallons a minute with drawdown of 50 feet.

Pumpage (estimated): Average, 75,000 gallons a day.

Storage: Concrete ground reservoir, 85,000 gallons; elevated tank, 115,000 gallons.

Number of customers: 350.

Treatment: None.

Analyses of water:

Date of collection: Feb. 22, 1944 Analyzed by J. H. Rowley

	Well 1		Well 2	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	20		28	
Iron (Fe)	0.52		0.04	
Calcium (Ca)	90	4.49	77	3.84
Magnesium (Mg)	3.5	0.29	9.1	0.75
Sodium (Na)	32	1.41	73	3.17
Potassium (K)	7.1	0.18	13	0.33
Bicarbonate (HCO_3)	300	4.92	331	5.43
Sulfate (SO_4)	19	0.40	23	0.48
Chloride (Cl)	37	1.04	77	2.17
Fluoride (F)	0.2	0.01	0.2	0.01
Nitrate (NO_3)	0.0	0.00	0.2	0.00
Total dissolved solids	366		471	
Total hardness as $CaCO_3$	239		230	
pH	8.2		8.1	

Lavaca County

Shiner--Continued

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil	5	5	Rock and sand	2	96
Clay	32	37	Sand with streaks of clay	22	118
Shale	30	67	Sand and gravel	20	138
Rock	3	70	Sand and shale	25	163
Shale	4	74	Rock	1	164
Sand	1	75	Fine-grained sand and shale	120	284
Shale	3	78	Shale	31	315
Shale and sand	7	85			
Rock	1	86			
Sand	8	94			

Yoakum

Population in 1940: 4,733.

Source of information:
L. W. Sheckles, City Manager
February 22, 1944

Ownership: Municipal.

Source of supply: 4 wells 1 mile southwest of town in DeWitt County.

Well 1. Standby well, drilled in 1932 by Johnson, depth 105 feet, diameter 10 inches; deep-well turbine pump; static water level 25 feet below land surface.

Well 2. Drilled in 1927, depth 175 feet, diameter 10 inches; deep-well turbine pump; static water level reported 25 feet below land surface; reported yield 150 gallons a minute.

Well 3. Drilled in 1927, depth 175 feet, diameter 10 inches; deep-well turbine pump; static water level 17.8 feet below measuring point on May 12, 1937; yield 175 gallons a minute with drawdown of 26.5 feet.

Well 4. Drilled in 1940 by Layne-Texas Company, depth 109 feet, diameter 24 to 10¾ inches; deep-well turbine pump; static water level 21 feet below land surface on September 26, 1940; yield 375 gallons a minute; temperature 75° F.

Lavaca County

Yoakum--Continued

Pumpage:

(Average in gallons a day)

	1942	1943
Jan.	250,000	196,000
Feb.	192,000	241,000
Mar.	238,000	209,000
Apr.	200,000	268,000
May	261,000	307,000
June	339,000	268,000
July	266,000	305,000
Aug.	229,000	272,000
Sept.	232,000	319,000
Oct.	256,000	242,000
Nov.	218,000	238,000
Dec.	191,000	233,000

Storage: Concrete ground reservoir, 40,000 gallons; elevated tank, 250,000 gallons.

Number of customers: 1,400.

Treatment: None.

Analysis of water:

Date of collection: Feb. 22, 1944 — Analyzed by J. H. Rowley

	Well 4	
	Parts per million	Equivalents per million
Silica (SiO_2)	39	
Iron (Fe)	0.05	
Calcium (Ca)	66	3.29
Magnesium (Mg)	10	0.82
Sodium (Na)	67	2.92
Potassium (K)	6.6	0.17
Bicarbonate (HCO_3)	272	4.46
Sulfate (SO_4)	24	0.50
Chloride (Cl)	75	2.12
Fluoride (F)	0.2	0.01
Nitrate (NO_3)	6.9	0.11
Total dissolved solids	456	
Total hardness as $CaCO_3$	206	
pH	8.4	

Lavaca County

Yoakum--Continued

Drillers' log:

Well 4

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil	3	3	Yellow clay	30	141
White clay	8	11	Hard clay and chalk	38	179
White sand	15	26	Hard clay and packsand	7	186
Yellow sand	36	62	Hard sand (cored)	2	188
Packsand	10	72	Hard clay (cored)	2	190
Packsand and chalk	17	89	Hard clay	11	201
Hard clay, sand and chalk	22	111			

Lee County

Dime Box

Population in 1940: 509.

Source of information: C. W. Bridges, Director February 18, 1944

Owner: City Water Company.

Source of supply: Well across street from post office, drilled in 1914 by Kiel Caldwell, depth 465 feet, diameter 4 inches; deep-well cylinder pump; static water level 39 feet below land surface; yield 20 gallons a minute.

Pumpage (estimated): Average 5,000 gallons a day.

Storage: Elevated tank, 10,000 gallons.

Number of customers: 65.

Treatment: None.

Analysis of water:

Date of collection: Feb. 18, 1944 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	15	
Iron (Fe)	.32	
Calcium (Ca)	6.6	0.329
Magnesium (Mg)	1.4	0.115
Sodium (Na)	94	4.070
Potassium (K)	3.6	.092
Bicarbonate (HCO_3)	159	2.606
Sulfate (SO_4)	40	0.833
Chloride (Cl)	39	1.100
Fluoride (F)	0.6	0.032
Nitrate (NO_3)	2.2	0.035
Total dissolved solids	281	
Total hardness as $CaCO_3$	222	
pH		8.4

Lee County

Giddings

Population in 1940: 2,166.

Source of information:
R. A. Tyler, City Manager
February 18, 1944

Ownership: Municipal.

Source of supply: 3 wells.

Well 1. Drilled in 1931 by Layne-Texas Company, depth 1,364 feet, diameter 12 to 6 inches, deep-well turbine pump; reported static water level 160 feet below land surface in 1930; yield 100 gallons a minute.

Well 2. Drilled in 1936 by Layne-Texas Company, depth 1,354 feet, diameter 13-3/8 to 6 inches; deep-well turbine pump; static water level 193 feet below measuring point in 1944; yield 272 gallons a minute; temperature 94½° F.

Well 3. Drilled in 1942 by Layne-Texas Company, depth 1,196 feet, diameter 12" to 6-5/8 inches; screens at 884-974, 1,024-1,054 and 1,154-1,194 feet; static water level 154 feet below measuring point on June 10, 1942; yield 390 gallons a minute with drawdown of 65 feet; temperature 89° F.

Pumpage:

(Average in gallons a day)

	1942	1943
Jan.	-	127,000
Feb.	-	148,000
Mar.	-	144,000
Apr.	-	166,000
May	-	155,000
June	-	137,000
July	122,000	155,000
Aug.	143,000	158,000
Sept.	135,000	159,000
Oct.	130,000	139,000
Nov.	152,000	169,000
Dec.	127,000	143,000

Storage: Ground reservoir, 55,000 gallons; elevated tank, 100,000 gallons.

Number of customers: 500.

Treatment: None.

Lee County

Giddings--Continued

Analyses of water:

Date of collection: Feb. 18, 1944 Analyzed by J. H. Rowley

	Well 2		Well 3	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	12		10	
Iron (Fe)	.01		0.10	
Calcium (Ca)	5.1	0.25	17	0.85
Magnesium (Mg)	2.1	0.17	5.8	0.48
Sodium (Na)	417	18.11	307	13.33
Potassium (K)	9.4	0.24	15	0.38
Bicarbonate (HCO_3)	779	12.78	261	4.28
Sulfate (SO_4)	155	3.23	344	7.16
Chloride (Cl)	94	2.65	127	3.58
Fluoride (F)	1.9	0.10	0.4	0.02
Nitrate (NO_3)	0.8	0.01	0.2	0.00
Total dissolved solids	1,080		964	
Total hardness as $CaCO_3$	21		66	
pH	8.5		8.2	

Drillers' logs:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	2	2	Shale	184	782
Shale	224	226	Sand	54	836
Rock	1	227	Shale	171	1007
Shale	6	233	Sand and shale	66	1073
Rock, hard and soft	30	263	Sandy shale	29	1102
Shale	24	287	Fine-grained sand	34	1136
Sand	38	325	Gumbo	20	1156
Shale	12	337	Hard shale	114	1270
Sand	7	344	Rock	1	1271
Shale	4	348	Sticky shale	23	1294
Rock	1	349	Good sand	45	1339
Shale	22	371	Sticky shale	6	1345
Rock	1	372	Fine-grained sand	10	1355
Shale	142	514	Sticky shale	8	1363
Shale, hard layers	84	598			

Lee County

Giddings--Continued

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil	4	4	Rock	8	541
White clay	5	9	Hard brown shale	21	562
Fine-grained gray sand	5	14	Rock	1	563
White clay	16	30	Brown shale	24	587
Fine-grained gray sand	6	36	Rock	1	588
Red clay	30	66	Hard brown shale	67	655
Black sandy shale	157	223	Hard rock	1	656
Shale, layers of rock	14	237	Lignite and shale	15	671
Hard rock, layers of shale	24	261	Hard brown shale	50	721
Hard shale	11	272	Fine-grained gray sand	112	833
Black shale	99	371	Brown shale and boulders	177	1010
Rock	2	373	Brown shale and shell	32	1042
Hard shale	28	401	Hard shale and layers of sand	54	1096
Rock	1	402	Hard brown shale	15	1111
Hard shale	71	473	Fine-grained gray sand	32	1143
Hard rock	1	474	Dark brown shale	25	1168
Hard brown shale	30	504	Hard shale	123	1291
Hard sand	3	507	Hard packsand	58	1349
Hard brown shale	26	533	Brown shale	1	1350

Well 3

Surface soil and gravel	3	3	Rock	4	272
White clay	18	21	Shale and sand breaks	19	291
Sandy clay	8	29	Shale and rock layers	16	307
Sand and gravel	2	31	Shale	9	316
Soft shale	27	58	Shale and gravel	18	334
Hard shale	3	61	Tough shale	72	406
Fine-grained sand	15	76	Sand rock	1	407
Sand and shale breaks	15	91	Tough sticky shale	4	411
Sand	6	97	Sandy shale	2	413
Hard sandy rock	1	98	Sticky shale and lime layers	9	422
Tough shale	24	122	Tough sticky shale	6	428
Sand and shale breaks	14	136	Hard shale	10	438
Blue shale	17	153	Tough sticky shale	22	460
Sand	8	161	Sticky shale	91	551
Blue shale	8	169	Shale and sand breaks	3	554
Sandy breaks	2	171	Sticky shale	18	572
Brown shale	22	193	Sandy shale	18	590
Blue shale-hard	27	220	Tough sticky shale	21	611
Sand--cut good	16	236	Tough shale	36	647
Sand rock-hard	6	242	Tough sticky shale	22	669
Sand and shale breaks	5	247	Sand breaks	2	671
Sand rock and shale breaks	7	254	Tough sticky shale	12	683
Sand breaks	2	256	Sticky shale and shell breaks	15	698
Lignite	12	268			

(Continued on next page)

Giddings--Continued

Well 3--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Tough sticky shale	36	734	Sand and shell, layers shale	109	1218
Hard shale	31	765	Sand and shell	40	1258
Sand and shell	76	841	Tough shale	24	1282
Tough sticky shale	49	890	Sand	5	1287
Hard shale	9	899	Hard shale	33	1320
Sandy shale	11	910	Sand and shell	12	1332
Shale and shell	6	916	Sticky shale	17	1349
Sand	18	934	Sand and shale layers	5	1354
Sticky shale	5	939	Sand and shale breaks	42	1396
Hard sand	5	944	Hard packsand	28	1424
Rock	4	948	Soft shale	2	1426
Sand and shell	70	1018	Sticky shale	20	1446
Tough sticky shale	28	1046			
Sand and shell	26	1072			
Fine-grained hard packsand	37	1109			

Lexington

Population in 1940: 531.

Source of information: Mr. Jenkins, Commissioner February 18, 1944

Ownership: Municipal.

Source of supply: Well drilled in 1938 by Reihner Bros., depth 517 feet, diameter 6 to 4 inches; deep-well turbine pump; yield 80 gallons a minute; temperature 76° F.

Pumpage (estimated): Average, 20,000 gallons a day.

Storage: Elevated tank, 50,000 gallons.

Treatment: None.

Number of customers: 118.

Lee County

Lexington--Continued

Analysis of water:

Date of collection: Feb. 18, 1944 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	17	
Iron (Fe)	0.10	
Calcium (Ca)	37	1.847
Magnesium (Mg)	8.3	0.683
Sodium (Na)	43	1.850
Potassium (K)	9.6	0.246
Bicarbonate (HCO_3)	155	2.541
Sulfate (SO_4)	74	1.541
Chloride (Cl)	19	0.536
Fluoride (F)	0.1	0.005
Nitrate (NO_3)	0.2	0.003
Total dissolved solids	285	
Total hardness as $CaCO_3$	126	
pH	8.5	

Leon County

Buffalo

Population in 1940: 737.

Source of information: T. Boyken, Water Superintendent April 20, 1944

Ownership: Municipal.

Source of supply: Well 1 block northeast of the railroad station, drilled in 1936 by J. W. Jackson, depth 681 feet, diameter 8 to 6 inches, screen from 619 to 681 feet; deep-well turbine pump; yield 500 gallons a minute.

Pumpage: No data available.

Storage: Elevated tank, 50,000 gallons.

Number of customers: 140.

Treatment: None.

Buffalo--Continued

Analysis of water:

Date of collection: Apr. 20, 1943. Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	19	
Iron (Fe)	0.10	
Calcium (Ca)	14	0.699
Magnesium (Mg)	2.7	0.222
Sodium (Na)	46	2.010
Potassium (K)	3.0	.077
Bicarbonate (HCO_3)	151	2.475
Sulfate (SO_4)	14	0.291
Chloride (Cl)	8.0	0.226
Fluoride (F)	0.0	0.000
Nitrate (NO_3)	1.0	0.016
Total dissolved solids	183	
Total hardness as $CaCO_3$	46	
pH	8.0	

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sandy clay	20	20	Hard sand	14	282
Sandy shale	40	60	Gumbo and shale	44	326
Shale and sand	67	127	White sand	46	372
Tough shale	23	150	Hard sand	4	376
Sandy shale	17	167	White sand	20	396
Soapstone	3	170	Hard sand	9	405
Sandy shale	38	208	Sand	63	468
Boulders	2	210	Shale and gumbo	28	496
Sandy shale	24	234	Tough gumbo	10	506
Tough shale	34	268	Blue sand	175	681

Centerville

Population in 1940: 900.

Source of information:
H. W. Wallace, Water Superintendent
April 20, 1943

Ownership: Municipal.

Source of supply: Well 1 block west of the courthouse in Centerville, drilled in 1940 by Layne-Texas Company, depth 360 feet; deep-well turbine pump.

Pumpage: Average, 120,000 gallons a day.

Centerville--Continued

Storage: Elevated tank, 30,000 gallons.

Number of customers: 116.

Treatment: None.

Analysis of water:

Date of collection: Apr. 20, 1943 Analyzed by W.W. Hastings and P.A. Witt

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	16	
Iron (Fe)	0.04	
Calcium (Ca)	41	2.05
Magnesium (Mg)	15	1.23
Sodium (Na)	71	3.07
Potassium (K)	9.4	.24
Bicarbonate (HCO_3)	175	2.87
Sulfate (SO_4)	131	2.73
Chloride (Cl)	35	.99
Fluoride (F)	.0	.00
Nitrate (NO_3)	.0	.00
Total dissolved solids	411	
Total hardness as $CaCO_3$	164	
pH		8.1

Jewett

Population in 1940: 515.

Source of information:
T. C. Evans, Mayor
April 20, 1944

Ownership: Municipal.

Source of supply: Well 3 blocks north of the railroad in the center of town, drilled about 1935, depth 670 feet, diameter 12 inches; screens at 307-329, 346-368, and 378-392 feet; deep-well turbine pump and 25-horsepower electric motor, pump set at 170 feet; static water level reported 70 feet below land surface.

Pumpage (estimated): Average, 7,500 gallons a day.

Storage: Elevated tank, 35,000 gallons.

Number of customers: 174.

Treatment: None.

Leon County

Jewett--Continued

Analysis of water:

Date of collection: Apr. 20, 1943 Analyzed by W. W. Hastings and P. A. Witt

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	20	
Iron (Fe)	0.04	
Calcium (Ca)	39	1.947
Magnesium (Mg)	5.9	.485
Sodium (Na)	21	.915
Potassium (K)	7.4	.189
Bicarbonate (HCO_3)	146	2.393
Sulfate (SO_4)	22	.458
Chloride (Cl)	24	.677
Fluoride (F)	.0	.000
Nitrate (NO_3)	.5	.008
Total dissolved solids	219	
Total hardness as $CaCO_3$	122	
pH	8.0	

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sand and light clay	30	30	Shale	4	197
Soft yellow clay	6	36	Rock	1	198
Sandy shale	6	42	Shale	16	214
Hard shale	14	56	Hard shale	17	231
Hard shale	3	59	Tough hard shale	38	269
Sand with some clay	27	86	Fine-grained sand	16	285
Sand	7	93	Tough shale	8	293
Tough shale	12	105	Fine-grained gray sand	14	307
Lignite	2	107	Fine-grained white sand	86	393
Tough shale	43	150	Tough shale	6	399
Lignite	2	152			
Hard shale	40	192			
Rock	1	193			

Le n County

Normangee

Population in 1940: 535.

Source of information:
Will Hunt, Mayor.
April 20, 1944

Ownership: Municipal.

Source of supply: Well at elevated tank in Normangee; drilled in 1941 by the Texas Water Supply Corporation of Houston, depth 1,209 feet, diameter 8 to 6 inches; deep-well turbine pump; yield 150 gallons a minute. (Prior to 1941 Normangee obtained its water supply from a nearby well which tapped higher sands containing water high in iron and very lot in pH.)

Pumpage (estimated): Maximum 50,000 gallons a day.

Storage: Elevated tank, 50,000 gallons.

Number of customers: 106.

Treatment: None.

Analysis of water:

Date of collection: Apr. 20, 1943 Analyzed by W. W. Hastings and P. A. Witt

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	14	
Iron (Fe)	0.01	
Calcium (Ca)	0.4	.020
Magnesium (Mg)	0.3	.025
Sodium (Na)	95	4.120
Potassium (K)	4.8	.123
Bicarbonate (HCO_3)	220	3.606
Sulfate (SO_4)	12	.250
Chloride (Cl)	14	.395
Fluoride (F)	0.4	.021
Nitrate (NO_3)	1.0	.016
Total dissolved solids	250	
Total hardness as $CaCO_3$	2	
pH	8.2	

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Clay	34	34	Boulders	1	61
Sand	12	46	Clay	3	64
Clay	10	56	Boulders	1	65
Boulders	1	57	Sand and clay	10	75
Clay	3	60	Sand	5	80

(Continued on next page)

Leon County

Normangee--Continued

Well 1--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Clay	30	110	Shale	47	807
Boulders	1	111	Sticky shale	68	875
Clay	1	112	Sand and shale	65	940
Sand and shale	298	300	Shale and rock	20	960
Sand and soft shale	85	385	Rock	1	961
Hard shale	15	400	Sand, shale and rock	68	1029
Shale and boulders	145	545	Sand and rock	15	1044
Sand and shale	65	610	Sticky shale	4	1048
Sticky shale	55	665	Sand	30	1078
Fine-grained sand and shale	84	749	Shale and rock	6	1084
Hard shale	11	760	Sand	125	1209

Oakwood

Population in 1940: 1,086.

Source of information:
G. S. Biggs, Water Superintendent
April 20, 1943

Ownership: Municipal.

Source of supply: Well drilled in 1930, depth 189 feet, diameter 12 to 6 inches; deep-well turbine pump and 7½-horsepower electric motor; bottom of suction pipe 146 feet below land surface; original static water level reported 10 feet below land surface; static water level 30 feet in 1942; yield 30 gallons a minute with pumping level at 87 feet in April 20, 1943.

Pumpage (estimated): Average 15,000 to 20,000 gallons a day.

Storage: Elevated tank, 60,000 gallons.

Number of customers: 116.

Treatment: None.

Oakwood--Continued Leon County

Analysis of water:

Date of collection: Apr. 20, 1943 Analyzed by W. W. Hastings and P. A. Witt

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	11	
Iron (Fe)	0.02	
Calcium (Ca)	35	1.747
Magnesium (Mg)	8.4	.691
Sodium (Na)	29	1.251
Potassium (K)	4.0	.102
Bicarbonate (HCO_3)	181	2.967
Sulfate (SO_4)	27	.562
Chloride (Cl)	9.0	.254
Fluoride (F)	.0	.000
Nitrate (NO_3)	.5	.008
Total dissolved solids	213	
Total hardness as $CaCO_3$	122	
pH	8.0	

Liberty County

Cleveland

Population in 1940: 1,783.

Source of information:
D.J.Billingsley, Operater
April 11, 1944

Ownership: Municipal.

Source of supply: 2 wells.

Well 1. North well at pump station, drilled in 1938 by Layne-Texas Company, depth 845 feet, diameter 13-3/8 to 7 inches; deep-well turbine pump; yield 378 gallons a minute with drawdown of 73 feet.

Well 2. South well at pump station, drilled in 1938 by Layne-Texas Company, depth 929 feet, diameter 13-3/8 to 7 inches; screens at 614-637, 752-771 and 793-833 feet; deep-well turbine pump; yield 353 gallons a minute with drawdown of 78 feet; temperature 78½° F.

Pumpage (estimated): Maximum 110,000 gallons a day; minimum 85,000 gallons a day; average 97,000 gallons a day.

Storage: Ground reservoir, 50,000 gallons; elevated tank, 100,000 gallons.

Number of customers: 673.

Treatment: None.

Liberty County

Cleveland--Continued

Analysis of water:

Date of collection: Apr. 11, 1944 — Analyzed by J. H. Rowley

	Well 2	
	Parts per million	Equivalents per million
Silica (SiO_2)	17	
Iron (Fe)	0.12	
Calcium (Ca)	34	1.70
Magnesium (Mg)	7.2	0.59
Sodium (Na)	90	3.91
Potassium (K)	6.7	0.17
Bicarbonate (HCO_3)	321	5.26
Sulfate (SO_4)	15	0.31
Chloride (Cl)	27	0.76
Fluoride (F)	0.6	0.03
Nitrate (NO_3)	0.5	0.01
Total dissolved solids	377	
Total hardness as $CaCO_3$	114	
pH	7.7	

Drillers' log:

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	6	6	Clay	98	433
Soft yellow clay	14	20	Hard layers	1	434
Sand	6	26	Clay	61	495
Soft clay	24	50	Hard layers	2	497
Sand	29	79	Clay	29	526
Clay	2	81	Hard layers	1	527
Sand	29	110	Clay	83	610
Clay	5	115	Sand	26	636
Sand	30	145	Clay	10	646
Clay	61	206	Gumbo	105	751
Coarse-grained sand and gravel	11	217	Sand	19	770
Clay	17	234	Sticky shale	21	791
Gravel	51	285	Hard sandy shale	22	813
Soft yellow clay and sand	4	289	Sand breaks and shale	17	830
Sand and gravel	25	314	Sticky shale	80	910
Clay with sand breaks	21	335	Sand	16	926
			Sticky shale	3	929

Liberty County

Daisetta

Population in 1940: 2,000.

Source of information:
W. G. Winters, Superintendent
April 17, 1944

Owner: Hull-Daisetta Water Company.

Source of supply: Well in south Hull, drilled in 1940 by Pitre Water Well Drilling Company, depth 365 feet, diameter 6 inches, screen from 327 to 350 feet; deep-well turbine pump, temperature 74$\frac{1}{2}$° F.

Pumpage (estimated): Average 45,000 gallons a day.

Storage: Ground reservoir in south Hull, 1,500 gallons; elevated tank in Daisetta, 80,000 gallons.

Number of customers: 220.

Treatment: None.

Analysis of water:

Date of collection: Apr. 17, 1944 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	24	
Iron (Fe)	0.03	
Calcium (Ca)	50	2.50
Magnesium (Mg)	3.2	0.26
Sodium (Na)	46	2.02
Potassium (K)	4.0	0.10
Bicarbonate (HCO_3)	213	3.49
Sulfate (SO_4)	4.7	0.10
Chloride (Cl)	44	1.24
Fluoride (F)	0.8	0.04
Nitrate (NO_3)	0.5	0.01
Total dissolved solids	288	
Total hardness as $CaCO_3$	138	
pH	7.9	

Daisetta--Continued

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Clay	20	20	Sand	5	96
Fine-grained sand	10	30	Clay	60	156
Coarse-grained sand	33	63	Fine-grained sand	19	175
Clay	1	64	Clay	23	198
Coarse-grained sand	11	75	Rock	6	204
Clay	3	78	Clay	30	234
Coarse-grained sand	4	82	Gravel	3	237
Yellow clay	3	85	Clay	71	308
Coarse-grained sand	5	90	Coarse-grained sand	57	365
Clay	1	91			

Dayton

Population in 1940: 1,279.

Source of information:
W. S. Neel, City Secretary
April 17, 1944

Ownership: Municipal.

Source of supply: 2 wells.

Well 1. At pump station, drilled in 1929, depth 395 feet, diameter 8 to 6 inches, screen from 314 to 376 feet; deep-well turbine pump; yield 300 gallons a minute.

Well 2. At pump station, drilled in 1929 by J. A. Walling, depth 399 feet, diameter 8 to 6 inches, screen from 316 to 376 feet; deep-well turbine pump; yield 300 gallons a minute; temperature 73° F.

Pumpage (estimated): Average 180,000 gallons a day.

Storage: Concrete ground reservoir, 50,000 gallons; elevated tank, 50,000 gallons.

Number of customers: 344.

Treatment: Chlorination.

Liberty County

Dayton--Continued

Analysis of water:

Date of collection: Apr. 17, 1944 — Analyzed by J. H. Rowley

	Well 2	
	Parts per million	Equivalents per million
Silica (SiO_2)	21	
Iron (Fe)	0.11	
Calcium (Ca)	40	2.00
Magnesium (Mg)	4.4	0.36
Sodium (Na)	170	7.38
Potassium (K)	4.0	0.10
Bicarbonate (HCO_3)	239	3.92
Sulfate (SO_4)	2	0.04
Chloride (Cl)	207	5.84
Fluoride (F)	0.8	0.04
Nitrate (NO_3)	0.0	0.00
Total dissolved solids	590	
Total hardness as $CaCO_3$	118	
pH	7.7	

Drillers' log:

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Clay	52	52	Sandy shale	11	170
Sand	11	63	Shale	43	213
Clay	7	70	Gumbo	97	310
Boulder	2	72	Sand	75	385
Red clay	41	113	Shale	14	399
Sticky clay	46	159			

Liberty

Population in 1940: 3,087.

Source of information:
Wm. L. Schupp, Water Superintendent
November 18, 1943

Ownership: Municipal.

Source of supply: 3 wells.

Well 1. At elevated tank, depth 680 feet, diameter 6 inches; natural flow of 30 to 35 gallons a minute, temperature 76° F.

Liberty--Continued

Well 2. At power plant, drilled in 1939 by Texas Water Supply Company, depth 565 feet, diameter 13 to 7 inches; deep-well turbine pump; static water level at land surface in November 1943; yield 321 gallons a minute with drawdown of 57 feet; temperature 75½° F.

Well 3. At power plant, drilled in 1939, depth 351 feet, diameter 8 inches; deep-well turbine pump; temperature 72° F.

Pumpage (estimated): Average 115,000 gallons a day.

Storage: Concrete ground reservoir, 25,000 gallons; elevated tank, 65,000 gallons.

Number of customers: 520.

Treatment: None.

Analyses of water:

Date of collection: Nov. 18, 1943 — Analyzed by J. H. Rowley

	Well 1		Well 2	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	16		21	
Iron (Fe)	0.08		0.08	
Calcium (Ca)	76	3.79	70	3.49
Magnesium (Mg)	11	0.90	6.6	0.54
Sodium (Na)	112	4.85	62	2.68
Potassium (K)	3.5	0.09	3.6	0.09
Bicarbonate (HCO_3)	149	2.44	190	3.11
Sulfate (SO_4)	3.7	0.08	6.8	0.14
Chloride (Cl)	251	7.08	125	3.53
Fluoride (F)	0.2	0.01	0.4	0.02
Nitrate (NO_3)	1.0	0.02	0.2	0.00
Total dissolved solids	636		419	
Total hardness as $CaCO_3$	334		202	
pH	7.6		7.5	

	Well 3	
	Parts per million	Equivalents per million
Silica (SiO_2)	21	
Iron (Fe)	0.10	
Calcium (Ca)	53	2.65
Magnesium (Mg)	4.7	0.39
Sodium (Na)	54	2.36
Potassium (K)	2.9	0.07
Bicarbonate (HCO_3)	240	3.93
Sulfate (SO_4)	9.5	0.20
Chloride (Cl)	46	1.30
Fluoride (F)	0.6	0.03
Nitrate (NO_3)	0.8	0.01
Total dissolved solids	312	
Total hardness as $CaCO_3$	152	
pH	7.5	

Liberty County

Liberty--Continued

Drillers' log:

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface clay	12	12	Sand and gravel	14	320
Sand	48	60	Sticky shale	40	360
Clay	20	80	Sand	16	376
Sand	14	94	Sticky shale	69	445
Clay	25	119	Sand	10	455
Sand and clay	27	146	Sand and shale	10	465
Sticky shale	110	256	Sticky shale	58	523
Sand	42	298	Sand	39	562
Sticky shale	8	306	Sticky shale	3	565

Limestone County

Coolidge

Population in 1940: 1,102.

Source of information: Bill Strickling, Operator April 21, 1943

Ownership: Municipal.

Source of supply: 2 impounding reservoirs 0.5 mile northwest of Coolidge.

Pumpage (estimated): From 18,000 to 30,000 gallons a day.

Storage: 3 ground settling basins at pumping plant, 52,000 gallons each; elevated tank, 50,000 gallons.

Number of customers: 240.

Treatment: Coagulation with lime and alum, sedimentation, chlorination.

Limestone County

Coolidge--Continued

Analysis of water:

Date of collection: Apr. 21, 1943 Analyzed by J. H. Rowley

	Treated water	
	Parts per million	Equivalents per million
Silica (SiO_2)	1.2	
Iron (Fe)	0.08	
Calcium (Ca)	27	1.348
Magnesium (Mg)	4.1	0.337
Sodium (Na)	7.9	0.343
Potassium (K)	6.2	0.159
Bicarbonate (HCO_3)	75	1.229
Sulfate (SO_4)	36	0.750
Chloride (Cl)	7.0	0.197
Fluoride (F)	0.2	0.011
Nitrate (NO_3)	0.0	0.000
Total dissolved solids	134	
Total hardness as $CaCO_3$	84	
pH	7.8	

Groesbeck

Population in 1940: 3,272.

Source of information:
Alva Grimes, Water Superintendent
April 21, 1943

Ownership: Municipal.

Source of supply: Navasota River.

Pumpage: Average 320,000 gallons a day.

Storage: Elevated tank, 200,000 gallons.

Number of customers: 550.

Treatment: Coagulation with lime and alum, sedimentation, rapid sand filter, chlorination.

Limestone County

Groesbeck--Continued

Analysis of water:

Date of collection: Apr. 21, 1943 Analyzed by J. H. Rowley

	Treated water	
	Parts per million	Equivalents per million
Silica (SiO_2)	6.0	
Iron (Fe)	0.16	
Calcium (Ca)	61	3.04
Magnesium (Mg)	5.4	0.44
Sodium (Na)	37	1.61
Potassium (K)	5.2	0.13
Bicarbonate (HCO_3)	149	2.44
Sulfate (SO_4)	64	1.33
Chloride (Cl)	49	1.38
Fluoride (F)	0.1	0.01
Nitrate (NO_3)	3.5	0.06
Total dissolved solids	316	
Total hardness as $CaCO_3$	174	
pH	7.9	

Kosse

Population in 1940: 881.

Source of information:
J. J. Adams, Operator
April 21, 1943

Ownership: Municipal.

Source of supply: Well at pumping plant 2½ miles east of Kosse, drilled in 1939 by Layne-Texas Company, depth 155 feet (drilled to 700 feet and plugged back), diameter 6 inches; deep-well turbine pump; yield 70 gallons a minute.

Storage: Ground reservoir at pumping station, 50,000 gallons; elevated tank, 50,000 gallons.

Treatment: Soda ash and high-pressure zeolite filter.

Limestone County

Mexia--Continued

Analyses of water:

Date of collection: June 24, 1942; Apr. 21, 1943 — Analyzed by B. Irelan and J. H. Rowley

	June 24, 1942 Treated water		Apr. 21, 1943 Raw water	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	34		28	
Iron (Fe)	.10		20	
Calcium (Ca)	58	2.89	120	5.99
Magnesium (Mg)	37	3.04	43	3.54
Sodium (Na) } Potassium (K) }	223	9.70	109	4.74
Bicarbonate (HCO_3)	306	6.00	324	5.31
Sulfate (SO_4)	171	3.56	155	3.23
Chloride (Cl)	215	6.06	203	5.73
Fluoride (F)	0.2	.01	0	0.00
Nitrate (NO_3)	0.0	.00	0.2	0.00
Total dissolved solids	926		869	
Total hardness as $CaCO_3$	296		476	
pH	7.0		7.7	

Mexia

Population in 1940: 6,410

Source of information: R. C. Daniels, Water Superintendent, April 21, 1943.

Ownership: Municipal.

Source of supply: 3 wells 3 miles west of town.

Well 1. Drilled in 1925, depth 320 feet, diameter 8 inches, deep-well turbine pump and electric motor; yield 290 gallons a minute.

Well 2. Drilled in 1925, depth 320 feet, diameter 8 inches; deep-well turbine pump and electric motor; yield 300 gallons a minute.

Well 3. Drilled in 1925, depth 450 feet, diameter 8 inches; deep-well turbine pump and electric motor; yield 240 gallons a minute.

(Standby supply from spring at Springfield, 7 miles southwest of Mexia will supply an additional 1,000,000 gallons daily.)

Limestone County

Mexia--Continued

Pumpage:

(Average in gallons a day)

	1940	1941	1942
Jan.	441,000	488,000	491,000
Feb.	432,000	443,000	510,000
Mar.	480,000	492,000	485,000
Apr.	443,000	506,000	481,000
May	457,000	515,000	489,000
June	540,000	570,000	524,000
July	568,000	625,000	627,000
Aug.	486,000	590,000	499,000
Sept.	481,000	496,000	554,000
Oct.	486,000	500,000	500,000
Nov.	487,000	464,000	452,000
Dec.	451,000	466,000	435,000

Storage: Standpipe, 86,000 gallons.

Number of customers: 1,436.

Treatment: Aeration, sedimentation, chlorination.

Analyses of water:

Date of collection: Apr. 21, 1943 Analyzed by E. A. Witt and W. W. Hastings

	Well 1		Well 2	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	22		19	
Iron (Fe)	0.02		0.10	
Calcium (Ca)	41	2.05	31	1.55
Magnesium (Mg)	8.4	.69	7.4	.61
Sodium (Na)	205	8.90	128	5.55
Potassium (K)	4.8	.12	6.2	.16
Bicarbonate (HCO_3)	392	6.43	342	5.61
Sulfate (SO_4)	4.9	.10	13	.27
Chloride (Cl)	184	5.19	69	1.95
Fluoride (F)	0.4	.02	0.4	.02
Nitrate (NO_3)	1.0	.02	1.0	.02
Total dissolved solids	665		466	
Total hardness as $CaCO_3$	137		108	
pH	7.7		7.9	

Limestone County

Mexia--Continued

Date of collection: Apr. 21, 1943 Analyzed by E. A. Hitt and W. W. Hastings

	Well 3	
	Parts per million	Equivalents per million
Silica (SiO_2)	21	
Iron (Fe)	0.08	
Calcium (Ca)	30	1.50
Magnesium (Mg)	8.0	.66
Sodium (Na))	126	5.49
Potassium (K))		
Bicarbonate (HCO_3)	340	5.57
Sulfate (SO_4)	7.7	.16
Chloride (Cl)	67	1.89
Fluoride (F)	0.4	.02
Nitrate (NO_3)	0.5	.01
Total dissolved solids	442	
Total hardness as $CaCO_3$	108	
pH	7.7	

Drillers' log:

(Well 1 at Mexia Interment Camp, about one-fourth mile north of city wells)

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Clay	38	38	Hard rock	6	335
Blue shale, hard	221	259	Soft sand	2	337
Sandy shale, soft	9	268	Hard rock	1	338
Blue shale	29	297	Soft sand	2	340
Rock, hard	6	303	Hard rock	2	342
Lost returns on mud	1	304	Soft sand	1	343
Rock, hard	1	305	Rocks	1	344
Rock, soft	1	306	Sand, broken rock	2	346
Rock, hard	8	314	Rock	3	349
Broken rock, hard and soft streaks	10	324	Sand, broken rock	1	350
			Rock	3	353
Rock, hard	2	326	Sand	1	354
Broken rock and sand	3	329	Rock	6	360

Limestone County

Prairie Hill

Population in 1940: 500.

Source of information:
Mrs. C. C. Evans, Owner
April 1943

Owner: Mrs. C. C. Evans.

Source of supply: Impounding reservoir west of town.

Pumpage: No record.

Storage: Elevated tank, 10,000 gallons.

Treatment: None.

Analysis of water:

Date of collection: Apr. 1943 Analyzed by J. H. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	4.4	
Iron (Fe)	0.30	
Calcium (Ca)	38	1.897
Magnesium (Mg)	4.3	0.354
Sodium (Na)	6.3	0.273
Potassium (K)	5.0	0.128
Bicarbonate (HCO_3)	129	2.114
Sulfate (SO_4)	15	0.312
Chloride (Cl)	7.0	0.197
Fluoride (F)	0.4	0.021
Nitrate (NO_3)	0.5	0.008
Total dissolved solids	160	
Total hardness as $CaCO_3$	113	
pH	7.8	

Tehuacana

Population in 1940: 408.

Source of information:
Water Superintendent
April 1943

Ownership: Municipal.

Source of supply: Well 0.5 mile west of town, depth about 50 feet, diameter 12 inches; deep-well turbine pump.

Storage: Elevated tank, 20,000 gallons.

Treatment: None.

Limestone County

Tehuacana--Continued

Analysis of water:

Date of collection: Apr. 1943 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	4.6	
Iron (Fe)	0.15	
Calcium (Ca)	108	5.39
Magnesium (Mg)	3.1	0.25
Sodium (Na)	34	1.46
Potassium (K)	2.2	0.06
Bicarbonate (HCO_3)	337	5.52
Sulfate (SO_4)	17	0.35
Chloride (Cl)	23	0.65
Fluoride (F)	0.2	0.01
Nitrate (NO_3)	39	0.63
Total dissolved solids	429	
Total hardness as $CaCO_3$	282	
pH	7.9	

Thornton

Population in 1940: 745

Source of information:
R. A. Black, Water Superintendent
April 1943

Ownership: Municipal.

Source of supply: Dug well 6 miles west of town, depth 14 feet, diameter 8 feet with lateral trenches; flows by gravity to ground reservoir at west edge of town.

Consumption (estimated) Average 10,000 gallons a day.

Storage: Ground reservoir, 50,000 gallons; elevated tank, 50,000 gallons.

Number of customers: 135.

Treatment: Chlorination.

Limestone County

Thornton--Continued

Analysis of water:

Date of collection: Apr. 1943 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	29	
Iron (Fe)	0.20	
Calcium (Ca)	18	0.898
Magnesium (Mg)	3.3	0.271
Sodium (Na)	13	0.557
Potassium (K)	3.8	0.097
Bicarbonate (HCO_3)	72	1.180
Sulfate (SO_4)	7.4	0.154
Chloride (Cl)	13	0.367
Fluoride (F)	0.2	0.011
Nitrate (NO_3)	6.9	0.111
Total dissolved solids	145	
Total hardness as $CaCO_3$	58	
pH	7.8	

Madison County

Madisonville

Population in 1940: 2,095.

Source of information:
T. H. Allen, Water Superintendent
June 25, 1943

Ownership: Municipal.

Source of supply: 2 wells.

Well 1. Drilled in 1933 by Layne-Texas Company, depth 190 feet (drilled to 380 feet and plugged back to 190 feet), diameter 14 inches, screen from 160 to 190 feet; deep-well turbine pump and electric motor; static water level reported 47 feet below land surface in 1933; yield 400 gallons a minute.

Well 2. 100 feet from well 1, drilled in 1936 by Layne-Texas Company, depth 190 feet (drilled to 874 feet and plugged back to 190 feet), diameter 14 inches, screen from 160 to 190 feet; deep-well turbine pump; yield about 400 gallons a minute.

Pumpage (estimated): Average 150,000 gallons a day.

Storage: Not known.

Number of customers: 500.

Treatment: None.

Madison County

Madisonville--Continued

Analysis of water:

Date of collection: June 25, 1943 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	51	
Iron (Fe)	2.1	
Calcium (Ca)	75	3.74
Magnesium (Mg)	14	1.15
Sodium (Na)	185	8.05
Potassium (K)	10	0.26
Bicarbonate (HCO_3)	170	2.79
Sulfate (SO_4)	131	2.73
Chloride (Cl)	271	7.64
Fluoride (F)	0.7	0.04
Nitrate (NO_3)	0.0	0.00
Total dissolved solids	832	
Total hardness as $CaCO_3$	244	
pH	7.2	

Midway

Population in 1940: 500.

Source of information: Pump operator. June 23, 1943.

Ownership: Municipal.

Source of supply: Well drilled in 1928 reported depth 209 feet, diameter 6 inches; deep-well turbine pump and 5-horsepower electric motor; static water level reported 85 feet below the surface; yield about 40 gallons a minute.

Pumpage (estimated): Average 14,000 gallons a day.

Storage: Elevated tank, 3,500 gallons.

Number of customers: 71.

Treatment: None.

Madison County

Midway--Continued

Analysis of water:

Date of collection: June 25, 1943 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	42	
Iron (Fe)	2.7	
Calcium (Ca)	42	2.10
Magnesium (Mg)	8.4	0.69
Sodium (Na)	142	6.18
Potassium (K)	9.0	0.23
Bicarbonate (HCO_3)	215	3.52
Sulfate (SO_4)	68	1.42
Chloride (Cl)	149	4.20
Fluoride (F)	1.0	0.06
Nitrate (NO_3)	0.0	0.00
Total dissolved solids	575	
Total hardness as $CaCO_3$	140	
pH	7.8	

Marion County

Jefferson

Population in 1940: 2,797.

Source of information: Mr. Meyer, Water Superintendent March 24, 1943

Ownership: Municipal.

Source of supply: Well at Dallas Street and Cypress Creek; drilled in 1926 by Layne-Texas Company, depth 780 feet, diameter 12 to 8 inches, screen from 742 to 780 feet; reported to have had natural flow of 50 gallons a minute when drilled but stopped flowing in 1937; deep-well turbine pump and 50-horsepower electric motor, pump set at 120 feet; yield 200 gallons a minute with pumping level of 57 feet on test; present yield 150 gallons a minute; temperature 78° F.

Pumpage: Average, about 200,000 gallons a day.

Storage: Concrete ground reservoir, 250,000 gallons; elevated tank, 50,000 gallons.

Number of customers: 500.

Treatment: None.

Jefferson--Continued

Analysis of water:

Date of collection: Mar. 24, 1943 Analyzed by J. W. Yett, Jr.

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	20	
Iron (Fe)	.10	
Calcium (Ca)	2.0	.10
Magnesium (Mg)	0.9	.07
Sodium (Na))	395	17.16
Potassium (K))		
Bicarbonate (HCO_3)	540	8.85
Sulfate (SO_4)	.7	.01
Chloride (Cl)	299	8.43
Fluoride (F)	.8	.04
Nitrate (NO_3)	.0	.00
Total dissolved solids	985	
Total hardness as $CaCO_3$	8	

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sand	30	30	Sandy shale	21	306
Sandy clay	30	60	Sand	11	317
Dark sand	11	71	Rock	1	318
Rock	1	72	Sand	22	340
Sand and rock layers	4	76	Shale	12	352
Rock	1	77	Rock	1	353
Sand and rock layers	5	82	Sticky shale	65	418
Rock	1	83	Sandy shale	41	459
Fine-grained sand	11	94	Gumbo	35	494
Rock	1	95	Shale	96	590
Fine-grained sand	35	129	Sand	10	600
Soft shale	18	147	Gumbo	46	646
Lignite	5	152	Rock	1	647
Shale	20	172	Sand and shale	21	668
Sandstone	2	174	Shale	21	689
Gumbo and soapstone	25	199	Rock	2	691
Lignite	5	204	Gumbo and shale	26	717
Soapstone	5	209	Sand and lime	18	735
Gumbo and soapstone	12	221	Sand and lignite	2	737
Shale and lignite	13	234	Shale	4	741
Rock	1	235	Sandstone	2	743
Shale	26	261	Sand	36	779
Shale and soapstone	24	285	Gumbo	2	781

Matagorda County

Bay City

Population in 1940: 6,590.
(Estimated in 1943: 8,500).

Source of information:
S. A. Russell, Water Superintendent
April 1943

Ownership: Municipal.

Source of supply: 3 wells.

Well 1. At pumping station about 2 blocks east of the city hall, depth 444 feet, diameter 20 inches; deep-well turbine pump and 40-horsepower electric motor; static water level 10.4 feet below surface July 26, 1934; reported yield 602 gallons a minute when drilled.

Well 2. South of the pump station, drilled in 1912, depth 435 feet, diameter 10 inches; deep-well turbine pump and 40-horsepower electric motor; yield reported 565 gallons a minute when drilled.

Well 3. South of pump station, drilled in 1940, depth 811 feet, diameter 6-5/8 inches; sand formation underreamed to 30 inches and gravel walled; deep-well turbine pump and 40-horsepower electric motor; yield reported 545 gallons a minute; static water level 6 feet below surface when drilled.

Pumpage:

(Average in gallons a day)

Month	1941	1942	1943
Jan.		311,400	302,100
Feb.		274,000	308,200
Mar.		237,600	271,900
Apr.		256,300	271,900
May		280,000	
June		319,100	
July		257,200	
Aug.		274,500	
Sept.	330,600	270,500	
Oct.	224,400	233,600	
Nov.	241,700	269,100	
Dec.	215,500	245,600	

Storage: 2 elevated steel tanks, 50,000 and 150,000 gallons.

Number of customers: 1,500.

Treatment: Periodical chlorination.

Matagorda County

Bay City--Continued

Analyses of water:

Date of collection: Apr. 6, 1943 — Analyzed by J. H. Rowley

	Well 1		Well 2	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	14		13	
Iron (Fe)	0.12		3.1	
Calcium (Ca)	35	1.75	33	1.65
Magnesium (Mg)	15	1.23	14	1.15
Sodium (Na)	59	2.57	67	2.90
Potassium (K)	3.6	0.09	3.0	0.08
Bicarbonate (HCO_3)	258	4.23	268	4.39
Sulfate (SO_4)	16	0.33	12	0.25
Chloride (Cl)	38	1.07	40	1.13
Fluoride (F)	0.2	0.01	0.2	0.01
Nitrate (NO_3)	0.0	0.00	0.2	0.00
Total dissolved solids	308		315	
Total hardness as $CaCO_3$	149		140	
pH			8.0	

	Well 3	
	Parts per million	Equivalents per million
Silica (SiO_2)	19	
Iron (Fe)	0.68	
Calcium (Ca)	46	2.30
Magnesium (Mg)	20	1.64
Sodium (Na)	85	3.71
Potassium (K)	3.6	0.09
Bicarbonate (HCO_3)	316	5.18
Sulfate (SO_4)	21	0.44
Chloride (Cl)	74	2.09
Fluoride (F)	0.6	0.03
Nitrate (NO_3)	0.0	0.00
Total dissolved solids	426	
Total hardness as $CaCO_3$	197	
pH		

Matagorda County

Bay City--Continued

Drillers' logs:

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	3	3	Pink gumbo	49	190
Clay and sand	18	21	Sticky shale	38	228
Sand	17	38	Blue gumbo	40	268
Clay and sand	37	75	Sandy shale	27	295
Tough clay	37	112	Blue gumbo	90	385
Hard sand	29	141	Water sand and gravel	50	435

Well 3

Soil and clay	13	13	Shale	24	573
Sand and layers of clay	116	129	Fine-grained sharp sand	10	583
Red, blue and gray clay	143	272	Blue mixed shale	36	619
Sandy clay and sand	51	323	Sharp sand	44	663
Blue shale	20	343	Shale	9	672
Sand and clay breaks	10	353	Sand and shale breaks	36	708
Shale	39	392	Shale	17	725
Brown sand and shale breaks	37	429	Sand	20	745
			Shale	9	754
Shale	8	437	Sand and shale breaks	31	785
Sand with shale breaks	33	470	Shale with streaks of sand	21	806
Shale	26	496			
Sand with shale breaks	53	549	No record	5	811

Blessing

Population in 1940: 500.

Source of information: A. B. Pierce, owner May 1943.

Owner: A. B. Pierce.

Source of supply: Well about 2 blocks west of T. & N. O. Railroad, drilled in 1907 by L. A. Layne, depth 625 feet, diameter 4 inches; air lift and 3-horsepower electric motor; flow reported 90 gallons a minute when drilled.

Pumpage: No data.

Storage: Elevated tank.

Number of customers: No data.

Matagorda County

Blessing--Continued

Analysis of water:

Date of collection: April 8, 1943 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	18	
Iron (Fe)	2.9	
Calcium (Ca)	40	2.00
Magnesium (Mg)	19	1.56
Sodium (Na))	62.2	2.62
Potassium (K))		
Bicarbonate (HCO_3)	286	4.69
Sulfate (SO_4)	19	0.40
Chloride (Cl)	38	1.07
Fluoride (F)	0.4	0.02
Nitrate (NO_3)	0.0	0.00
Total dissolved solids	339	
Total hardness as $CaCO_3$	178	
pH		-

Driller's log:

Well 3

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Black soil	4	4	Sand	19	399
Clay	37	41	Hard rock	19	418
Sand	15	56	Gumbo	62	480
White clay	34	90	Red rock	11	491
Muddy sand	22	112	Gumbo	87	578
Red clay	71	183	Rock	5	583
Rock	8	191	Sand	35	618
Lime rock	129	320	Gumbo	6	624
Clay and cobblestones	60	380			

Palacios

Population in 1940: 2,288
(Estimated in 1943: 4,000)

Source of information:
Water Superintendent
May 1943

Ownership: Municipal.

Source of supply: 4 wells.

Well 1. At pumping station about 3 blocks northwest of city hall, depth about 590 feet, diameter 12 inches; static level 15.69 feet below surface April 2, 1944; used as standby well.

Palacios--Continued

Well 2. At pumping station about 3 blocks northwest of city hall, depth about 590 feet; used as standby well.

Well 3. Two blocks north of city hall, drilled in 1936 by Layne-Texas Company, depth 607 feet, diameter 13-3/8 to 6 inches; deep-well turbine pump and 20-horsepower electric motor; flow reported 25 gallons a minute when drilled; pumping yield reported 250 gallons a minute.

Well 4. Two blocks north of city hall, drilled in 1941 by Layne-Texas Company, depth 590 feet, diameter 13-3/8 to 6-5/8 inches; deep-well turbine pump and 20-horsepower electric motor; static water level reported 14 feet below surface June 28, 1941.

Pumpage: No data.

Storage: Ground reservoir 75,000 gallons; elevated steel tank, 75,000 gallons.

Analyses of water:

Date of collection: April 8, 1943 Analyzed by J. H. Rowley

	Well 3		Well 4	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	17		17	
Iron (Fe)	0.05		0.06	
Calcium (Ca)	6.6	0.33	5.8	0.29
Magnesium (Mg)	2.8	0.23	3.2	0.26
Sodium (Na)) Potassium (K))	177.8	7.69	169	7.36
Bicarbonate (HCO_3)	353	5.79	348	5.71
Sulfate (SO_4)	17	0.35	18	0.37
Chloride (Cl)	73	2.06	63	1.78
Fluoride (F)	1.0	0.05	1.0	0.05
Nitrate (NO_3)	0.2	0.05	0.0	0.00
Total dissolved solids	475		456	
Total hardness as $CaCO_3$	28		28	

Drillers' logs:

Well 3

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Clay	7	7	Sand	3	345
Sand	8	15	Clay	14	359
Clay	44	59	Sand	14	373
Sand	7	66	Shale	3	376
Clay	109	175	Sand	38	414
Sand	7	182	Shale	31	445
Clay	40	222	Sand	7	452
Sandy clay	24	246	Shale	28	480
Sand	12	258	Sand	6	486
Clay	48	306	Shale	60	546
Sand	12	318	Sand	42	588
Shale	24	342	Shale	19	607

Matagorda County

Palacios--Continued

Well 4

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil	1	1	Shale	11	304
Clay	14	15	Sand	12	316
Sand	4	19	Shale and streaks of shell	43	359
Sandy clay	24	43	Sand	21	380
Sand	8	51	Shale	63	443
Clay	55	106	Shale and layers of sand	17	460
Sandy clay	20	126	Shale and layers of shell	21	481
Clay and caliche	30	156	Shale	30	511
Sandy clay	16	172	Hard shale	25	536
Sand, clay and caliche	44	216	Good sand	33	569
Soft shale	29	245	Shale	3	572
Shale and layers of shell	23	268	Sand	6	578
Shale	18	286	Shale	12	590
Tough shale	7	293			

McLennan County

Bruceville

Population in 1940: 500.

Source of information:
E. B. Firquin, Jr., Owner
January 9, 1943

Owner: E. B. Firquin, Jr.

Source of supply: Well at north side of town, 1 block from railroad station, drilled before 1900, depth 1,565 feet, diameter 6 inches; deep-well cylinder, pump jack and gasoline engine; flowed when drilled; static water level reported 80-100 feet below land surface in 1943.

Pumpage: No record.

Storage: Elevated wooden tank, about 2,000 gallons.

Number of customers: Not reported.

Treatment: None.

Bruceville--Continued

Analysis of water:

Date of collection: Jan. 9, 1943 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	6.5	
Iron (Fe)	35	
Calcium (Ca)	17	.85
Magnesium (Mg)	15	1.23
Sodium (Na))	611	26.57
Potassium (K))		
Bicarbonate (HCO_3)	484	7.93
Sulfate (SO_4)	719	14.97
Chloride (Cl)	198	5.58
Fluoride (F)	3.2	.17
Nitrate (NO_3)	0.2	0.0
Total dissolved solids	1,810	
Total hardness as $CaCO_3$	104	
pH	8.0	

China Spring

Population in 1940: 214.

Owner: China Spring Water Company.

Source of information: China Spring Water Company A. M. Humberson, Manager January 7, 1943

Source of supply: Well 150 yards south of post office, drilled before 1903, depth 1,110 feet, diameter 6 inches at surface; deep-well cylinder, pump jack, and electric motor; reported flow 40 gallons a minute when drilled; present water level undetermined.

Storage: Small tank.

Treatment: None.

McLennan County

China Spring--Continued

Analysis of water:

Date of collection: Jan. 7, 1943 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	15	
Iron (Fe)	.00	
Calcium (Ca)	6.9	0.34
Magnesium (Mg)	7.7	0.63
Sodium (Na))	348	15.11
Potassium (K))		
Bicarbonate (HCO_3)	466	7.65
Sulfate (SO_4)	307	6.39
Chloride (Cl)	69	1.95
Fluoride (F)	1.8	.09
Nitrate (NO_3)	0.0	0.0
Total dissolved solids	985	
Total hardness as $CaCO_3$	48	
pH		8.4

Crawford

Population in 1940: 471.

Source of information:
Homer Brown, Water Superintendent
January 6, 1943

Ownership: Municipal.

Source of supply: Well 200 yards northwest of railroad station, drilled before 1900, depth approximately 1,000 feet, diameter at surface 5 inches; deep-well cylinder, pump jack, and electric motor, cylinder set at 170 feet; flowed when drilled.

Pumpage (estimated): Average, 12,000 gallons a day in winter and 27,000 gallons a day in summer.

Storage: Elevated tank, estimated 50,000 gallons.

Number of customers: 125.

Treatment: None.

Crawford--Continued

Analysis of water:

Date of collection: Jan. 6, 1943 — Analyzed by J.H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	10	
Iron (Fe)	0.04	
Calcium (Ca)	5.6	0.28
Magnesium (Mg)	5.0	0.41
Sodium (Na)	284	12.33
Potassium (K)	3.6	0.09
Bicarbonate (HCO_3)	457	7.48
Sulfate (SO_4)	214	4.46
Chloride (Cl)	38	1.07
Fluoride (F)	1.4	.07
Nitrate (NO_3)	1.8	.03
Total dissolved solids	789	
Total hardness as $CaCO_3$	34	
pH	8.3	

Eddy

Population in 1940: 407.

Owner: Sun Utility Company

Source of information:
I. N. Hendrick, Manager
January 9, 1943

Source of supply: Well in center of town, west of highway; depth 1,630 feet, diameter 6 inches at surface; air lift and semi-diesel type motor; water level reported 80-100 feet below land surface; temperature 96° F.

Pumpage: Not reported

Storage: Approximately 15,000 gallons.

Number of customers: 100.

Treatment: None.

McLennan County

Eddy--Continued

Analysis of water:

Date of collection: Jan. 9, 1943 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	12	
Iron (Fe)	0.02	
Calcium (Ca)	7.2	0.36
Magnesium (Mg)	4.5	0.37
Sodium (Na)	372	16.19
Potassium (K)	3.8	0.10
Bicarbonate (HCO_3)	445	7.31
Sulfate (SO_4)	284	5.91
Chloride (Cl)	131	3.69
Fluoride (F)	1.8	.09
Nitrate (NO_3)	1.0	.02
Total dissolved solids	1,037	
Total hardness as $CaCO_3$	36	
pH	8.4	

Hewitt

Population in 1940: 79.

Owner: W. D. Chapman.

Source of information: W. D. Chapman, Owner January 9, 1943

Source of supply: Well in southeast part of town, 2 blocks north of school, drilled in 1899, depth 1,646 feet; small cylinder pump and gasoline engine; static water level approximately 100 feet below land surface.

Pumpage: 5,000 to 8,000 gallons a day in addition to supplies for railroad and schools.

Storage: 6,000 gallons.

Number of customers: 40.

Treatment: None.

Hewitt--Continued

Analysis of water:

Date of collection: Jan. 9, 1943 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	12	
Iron (Fe)	0.14	
Calcium (Ca)	14	0.70
Magnesium (Mg)	6.4	0.53
Sodium (Na)) Potassium (K))	367	15.94
Bicarbonate (HCO_3)	467	7.65
Sulfate (SO_4)	327	6.81
Chloride (Cl)	93	2.62
Fluoride (F)	1.8	0.09
Nitrate (NO_3)	0.2	0.0
Total dissolved solids	1,052	
Total hardness as $CaCO_3$	62	
pH	8.2	

Leroy

Population in 1940: 250.

Source of information:
S. E. Morgan, Manager
January 8, 1943

Owner: Farmers and Merchants Gin Company.

Source of supply: Well 300 yards southeast of railroad station, drilled in 1914 by Dearing and Sons, depth 2,311 feet, diameter 6 to 4 inches; estimated natural flow 15 to 20 gallons a minute, pressure reported 40 pounds at surface in 1936; temperature reported 114° F.

Storage: None.

Treatment: None.

McLennan County

Leroy--Continued

Analysis of water:

Date of collection: Jan. 8, 1943 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	20	
Iron (Fe)	.45	
Calcium (Ca)	112	5.59
Magnesium (Mg)	46	3.78
Sodium (Na)) Potassium (K))	933	40.57
Bicarbonate (HCO_3)	298	4.88
Sulfate (SO_4)	1,830	38.10
Chloride (Cl)	242	6.83
Fluoride (F)	2.1	.11
Nitrate (NO_3)	1.5	.02
Total dissolved solids	3,330	
Total hardness as $CaCO_3$	468	
pH	7.6	

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil and clay	16	16	Hard lime	15	1900
Sand and gravel	74	90	White marl	25	1925
Shale	204	294	Sand	5	1930
Soft white rock	81	375	White marl	4	1934
Shale and thin rock	478	853	Hard brown rock	8	1942
Hard sand rock	4	857	White marl	23	1965
First Woodbine sand	3	860	Soft lime	23	1988
Shale and soapstone	12	872	Hard brown rock	7	1995
Hard rock	6	878	White marl	30	2025
Shale and thin rock	82	960	Hard lime	45	2070
Gumbo	20	980	White marl	20	2090
Shale	48	1028	Hard lime	8	2098
Lime rock	402	1430	Hard shale	20	2118
Blue shale	7	1437	Hard brown rock	7	2125
Limestone and marl	308	1745	Soft marl and lime	40	2165
Hard sand	1	1746	Hard lime	15	2180
Soapstone	9	1755	Shale	6	2186
Hard lime	45	1800	Hard lime	14	2200
Marl and lime	45	1845	Hard sand	45	2245
Hard sand, flow of salt water	1	1846	Soft marl	11	2256
Hard brown sand	9	1855	Good sand	52	2308
Shale and marl	15	1870	Hard lime	3	2311
Hard brown rock	15	1885			

McLennan County

Lorena

Population in 1940: 342.

Owner: Sun Utility Company.

Source of information:
I. N. Hendricks, Manager
January 9, 1943

Source of supply: Well, reported depth 1,600 fe t, diameter 6 inches at surface; air lift.

Storage: Elevated tank, 30,800 gallons.

Treatment: None.

Analysis of water:

Date of collection: Jan. 9, 1943 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	14	
Iron (Fe)	0.29	
Calcium (Ca)	5.6	0.28
Magnesium (Mg)	3.2	0.26
Sodium (Na)	321	13.96
Potassium (K)	4.2	0.11
Bicarbonate (HCO_3)	470	7.69
Sulfate (SO_4)	234	4.87
Chloride (Cl)	69	1.95
Fluoride (F)	1.6	.08
Nitrate (NO_3)	1.5	.02
Total dissolved solids	904	
Total hardness as $CaCO_3$	27	
pH	8.4	

Mart

Population in 1940: 2,856.

Ownership: Municipal.

Source of information:
Miss Alma Patrick, City Secretary
April 21, 1943

Source of supply: Mart Lake, 5.3 miles northwest of city, capacity 640 million gallons, drainage area 1,450 acres, 29,644 feet of 10-inch and 3,700 feet of 8-inch pipe line, two pumps with capacity of 500 gallons a minute each and crude oil engines.

Pumpage: Average, 300,000 gallons a day.

Storage: Standpipe, 70,000 gallons.

Number of customers:

Treatment: Chlorination.

Mart--Continued

Analysis of water:

Date of collection: Apr. 21, 1943	Analyzed by J. H. Rowley (Sample from hydrant at city hall)	
	Parts per million	Equivalents per million
Silica (SiO_2)	2.5	
Iron (Fe)	.06	
Calcium (Ca)	36	1.797
Magnesium (Mg)	5.3	.436
Sodium (Na)	9.8	.426
Potassium (K)	4.4	.113
Bicarbonate (HCO_3)	132	2.164
Sulfate (SO_4)	16	.333
Chloride (Cl)	8.0	.226
Fluoride (F)	.6	.032
Nitrate (NO_3)	1.0	.016
Total dissolved solids	158	
Total hardness as $CaCO_3$	112	
pH	7.9	

McGregor

Population in 1940: 2,662.

Source of information: Lloyd Sebastian, Manager, January 6, 1943

Ownership: Community Public Service Company.

Source of supply: 2 wells near north edge of town.

Well 1. Drilled in 1908 by Darley, depth 1,080 feet, diameter 12 to 8 inches; deep-well turbine pump and electric motor; pump set at 300 feet in 1942; static water level reported 150 feet below land surface; yield 200 gallons a minute with drawdown of 35 feet in 1942; temperature 85° F.

Well 2. 300 feet north of well 1; drilled in 1942 by Layne-Texas Company, depth 1,250 feet, diameter 8-5/8 to 6-5/8 inches; deep-well turbine pump and 15-horsepower electric motor, pump set at 400 feet; static water level 175 feet below land surface when drilled; yield 65 gallons a minute with drawdown of 175 feet.

Pumpage: 120,000 to 130,000 gallons a day in winter; 160,000 gallons a day in summer.

Storage: Concrete ground reservoir, 110,000 gallons; elevated tank 100,000 gallons.

McLennan County

McGregor--Continued

Number of customers: 655.

Treatment: None.

Analyses of water:

Date of collection: Jan. 6, 1943 Analyzed by J. H. Rowley

	Well 1		Well 2	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	10		13	
Iron (Fe)	0.00		0.00	
Calcium (Ca)	6.3	0.31	5.6	0.28
Magnesium (Mg)	4.6	0.38	2.4	0.20
Sodium (Na)	309	13.54	276	12.02
Potassium (K)			4.6	.12
Bicarbonate (HCO_3)	470	7.71	494	8.11
Sulfate (SO_4)	214	4.46	123	2.56
Chloride (Cl)	67	1.89	66	1.86
Fluoride (F)	1.0	0.05	1.7	.09
Nitrate (NO_3)	0.5	.01	0.0	.00
Total dissolved solids	844		736	
Total hardness as $CaCO_3$	34		24	
pH	8.2		8.4	

Drillers' log:

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Black soil	3	3	Lime	102	795
Sandy chalk	17	20	Lime and shale	103	898
Broken lime	98	118	Lime	46	944
Hard lime	37	155	Sandy lime	13	957
Shale and lime	26	181	Sandy lime and shale	25	982
Hard lime rock	1	182	Sandy shale	32	1014
Broken lime	7	189	Sand	21	1035
Lime	25	214	Shale and sandy layers	17	1052
Broken lime	21	235	Red beds	11	1063
Blue shale	13	248	Fine-grained white sand	9	1072
Shale and hard layers	19	267	Blue shale, hard	18	1090
Broken layer rock	4	271	Shale, hard	15	1105
Shale and lime	99	370	Shale, lime and red beds	31	1136
Lime	79	449	Shale and sandy shale	14	1150
Lime and shale	66	515	Lime	10	1160
Sandy lime	18	533	Sandy shale	20	1180
Lime and shale	117	650	Shale	23	1203
Sandy lime	10	660	Blue shale	47	1250
Lime and shale	33	693			

McLennan County

Moody

Population in 1940: 931.

Source of information:
Lloyd Sebastian, Manager
January 5, 1943

Owner: Community Public Service Company.

Source of supply: Well drilled about 1905, depth 1,700 feet, diameter 6 inches at surface; air lift and 40-horsepower electric motor; bottom of 1½-inch airline at 435 feet; temperature 89° F.

Pumpage: 75,000 to 85,000 gallons a day in summer; 35,000 to 45,000 gallons a day in winter.

Storage: Concrete ground reservoir, 79,000 gallons; elevated tank, 55,000 gallons.

Number of customers: 315.

Treatment: None.

Analysis of water:

Date of collection: Jan. 5, 1943 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	12	
Iron (Fe)	0.00	
Calcium (Ca)	7.8	0.39
Magnesium (Mg)	4.9	0.40
Sodium (Na)	365	15.85
Potassium (K)	3.8	0.10
Bicarbonate (HCO_3)	451	7.40
Sulfate (SO_4)	266	5.54
Chloride (Cl)	133	3.75
Fluoride (F)	0.6	.03
Nitrate (NO_3)	1.5	.02
Total dissolved solids	1,006	
Total hardness as $CaCO_3$	40	
pH	8.2	

Ross

Population in 1940: 52.

Source of information:
Mrs. John J. Heil, Manager
January 8, 1943

Owner: Ross Gin Company.

Source of supply: Well 250 yards south of post office near gin, drilled in 1925 by Jim Maresh, depth 1,950 feet, diameter 8 inches at surface; cylinder pump and windmill, cylinder set at 220 feet.

McLennan County

Ross--Continued

Pumpage: Not measured.

Storage: Small wood tank.

Number of customers: Not reported.

Treatment: None.

Analysis of water:

Date of collection: Jan. 8, 1943 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	13	
Iron (Fe)	2.7	
Calcium (Ca)	8.6	.43
Magnesium (Mg)	5.7	.47
Sodium (Na)) Potassium (K))	456	19.84
Bicarbonate (HCO_3)	498	8.15
Sulfate (SO_4)	486	10.12
Chloride (Cl)	82	2.31
Fluoride (F)	3.1	.16
Nitrate (NO_3)	0.2	.00
Total dissolved solids	1,301	
Total hardness as $CaCO_3$	45	
pH	8.4	

Speegleville

Population in 1940: 111.

Owner: N. G. Alford.

Source of information: N. G. Alford, Owner, January 6, 1943

Source of supply: Well 0.5 mile west of town, drilled in 1901 by Lee Hannah, depth 1,120 feet, diameter 6 inches at surface, flowed 15 feet above surface when drilled, no flow in last 10 years; cylinder pump and electric motor.

Pumpage: No record.

Storage: Small tank.

Treatment: None.

McLennan County

Speegleville--Continued

Analysis of water:

Date of collection: Jan. 6, 1943 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	9.6	
Iron (Fe)	0.06	
Calcium (Ca)	13	0.65
Magnesium (Mg)	14	1.15
Sodium (Na)) Potassium (K))	472	20.54
Bicarbonate (HCO_3)	501	8.21
Sulfate (SO_4)	585	12.18
Chloride (Cl)	63	1.78
Fluoride (F)	3.3	.17
Nitrate (NO_3)	0.2	.00
Total dissolved solids	1,407	
Total hardness as $CaCO_3$	90	
pH	8.2	

Waco

Population in 1940: 55,982.

Ownership: Municipal.

Source of information: George J. Roban, Water Superintendent January 8, 1943

Source of supply: Lake Waco on Bosque River, capacity 39,000 acre-feet when built about 1930; (the city still uses a few water wells for display fountains and special industrial requirements. It was reported that the estimated natural flow of water from 12 wells in Waco was more than 10 million gallons a day in 1891 with pressure as high as 76 pounds, enough to raise the water 175 feet above the land surface. Because of these wells, Waco has been called the "Geyser City." Some of the wells in the lower part of town still have a flow. The yield diminished considerably, but the yield and pressure have recovered somewhat since the city started to use surface water.)

McLennan County

Waco--Continued

Pumpage: (From Lake Waco).

(Average in gallons a day)

	1941	1942
Jan.	3,960,000	4,660,000
Feb.	3,910,000	4,560,000
Mar.	3,930,000	4,890,000
Apr.	4,210,000	4,790,000
May	4,640,000	4,860,000
June	4,700,000	6,140,000
July	6,140,000	8,530,000
Aug.	6,510,000	7,620,000
Sept.	6,270,000	5,560,000
Oct.	4,840,000	5,220,000
Nov.	4,520,000	4,890,000
Dec.	4,200,000	4,930,000

Storage: Treated water, 5,850,000 gallons; clear water, 1,000,000 gallons.

Number of customers: 14,000.

Treatment: Aeration, coagulation (100 pounds of alum per million gallons), sedimentation, activated carbon, rapid sand filtration, and chlorination (7 lbs. per million gallons.) (Capacity of treating plant, 15,000,000 gallons a day.)

Analyses of water:

Date of collection: Jan. 8, 1943 Analyzed by J. H. Rowley

	Raw water		Treated water	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	7.6		2.8	
Iron (Fe)	.06		.18	
Calcium (Ca)	70	3.49	69	3.44
Magnesium (Mg)	11	.90	11	.90
Sodium (Na)	30	1.29	31	1.35
Potassium (K)	0.6	.02	0.7	0.2
Bicarbonate (HCO_3)	217	3.55	207	3.39
Sulfate (SO_4)	52	1.08	57	1.19
Chloride (Cl)	33	.93	35	.99
Fluoride (F)	0.8	.04	1.0	.05
Nitrate (NO_3)	5.9	.10	5.7	.09
Total dissolved solids	335		335	
Total hardness as $CaCO_3$	218		217	
pH	8.2		7.8	

McLennan County

Waco--Continued

Date of collection: Jan. 8, 1943 — Analyzed by J. H. Rowley

	Well 1 (at filtration plant)	
	Parts per million	Equivalents per million
Silica (SiO_2)	16	
Iron (Fe)	0.04	
Calcium (Ca)	5.9	.29
Magnesium (Mg)	3.1	.26
Sodium (Na)) Potassium (K))	280	12.19
Bicarbonate (HCO_3)	434	7.10
Sulfate (SO_4)	208	4.33
Chloride (Cl)	43	1.21
Fluoride (F)	2.0	.10
Nitrate (NO_3)	0.0	.00
Total dissolved solids	779	
Total hardness as $CaCO_3$	28	
pH	8.3	

Drillers' log:

Well 1

At filtration plant on west side of Vermont and Brazos River Streets.

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Austin:			Blue slate	105	1660
White lime	165	165	White lime	45	1705
Edwards and Del Rio:			Basal Sand:		
Brown slate	185	350	"Trinity" water sand	30	1735
Georgetown:			Brown sandy slate	65	1800
Blue slate	215	565	Blue gumbo	55	1855
Edwards, Comanche Peak and Walnut:			Brown water sand	30	1885
			Sandy lime	15	1900
White lime	435	1000	Red slate	5	1905
Blue slate, small sulphur water above 1200 feet	70	1070	Sandy lime	35	1940
			Black slate	10	1950
			White sand rock	5	1955
Glen Rose:			White lime	5	1960
White lime	485	1555	White sand	80	2040
			Sandy lime	6	2046

Bureau of Economic Geology, University of Texas, Bulletin No. 2340, page 118.

McLennan County

West

Population in 1940: 1,979.

Source of information:
John Kubala, Water Superintendent
January 8, 1943.

Ownership: Municipal.

Source of supply: Well at corner of Pine and Regan Streets, drilled in 1894, depth 2,010 feet, diameter 12 to 3½ inches; deep-well turbine pump and 25-horsepower electric motor, pump set at 167 feet, bottom of suction at 181 feet, sucks air after 9 hours pumping at 225 gallons a minute; flowed when drilled; static water level reported 30 feet below land surface in 1926, 54 feet in February 1932, 66 feet in May 1942, and 88.9 feet below pump base 4 hours after pump was shut off on January 8, 1943.

Storage: Standpipe and underground reservoirs, 235,000 gallons.

Number of customers: 574.

Treatment: Chlorination.

Analysis of water:

Date of collection: Jan. 8, 1943 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	14	
Iron (Fe)	0.00	
Calcium (Ca)	16	0.80
Magnesium (Mg)	8.0	0.66
Sodium (Na)	269	11.69
Potassium (K)	4.0	.10
Bicarbonate (HCO_3)	430	7.05
Sulfate (SO_4)	234	4.87
Chloride (Cl)	46	1.30
Fluoride (F)	0.6	.03
Nitrate (NO_3)	0.2	.00
Total dissolved solids	804	
Total hardness as $CaCO_3$	73	
pH	8.2	

Milam County

Cameron

Population in 1940: 5,040.

Source of information:
R. W. Hester, Water Superintendent
February 12, 1943

Owner: Community Public Service Company.

Source of supply: Surface supply from Little River 1 mile west of Cameron. Storage reservoirs and treating plant 2 blocks east and 1 block north of courthouse in Cameron.

Cameron--Continued

Pumpage (estimated): Average 200,000 gallons a day.

Storage: Ground reservoir, also used for settling basin, 2,000,000 gallons; standpipe, 173,000 gallons.

Number of customers: 1,000.

Treatment: Alum and activated carbon for coagulation and sedimentation, chlorination.

Analyses of water:

Date of collection: Feb. 12, 1943 — Analyzed by P. A. Witt

	Raw water		Treated water	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	5.8		5.2	
Iron (Fe)	.00		.04	
Calcium (Ca)	74	3.69	76	3.79
Magnesium (Mg)	25	2.06	23	1.89
Sodium (Na)	62	2.70	64	2.79
Potassium (K)	6.0	.15	7.2	.18
Bicarbonate (HCO_3)	278	4.56	284	4.66
Sulfate (SO_4)	65	1.35	68	1.42
Chloride (Cl)	92	2.59	88	2.48
Fluoride (F)	0.3	0.02	0.2	.01
Nitrate (NO_3)	4.8	0.08	4.8	.08
Total dissolved solids	472		476	
Total hardness as $CaCO_3$	288		284	
pH	7.9		8.0	

Rockdale

Population in 1940: 2,136.

Ownership: Municipal.

Source of information: J. W. Offield, Water Superintendent February 12, 1943

Source of supply: 2 wells about 300 feet apart in the southwestern part of town.

Well 1. Dug, depth 80 feet, diameter 10 feet; deep-well turbine pump and 5-horsepower electric motor; yield 125 gallons a minute.

Well 2. Dug, depth 80 feet, diameter 8 feet; deep-well turbine pump and 5-horsepower electric motor; yield 150 gallons a minute.

Storage: Ground reservoir, 50,000 gallons; elevated tank, 100,000 gallons.

Number of customers: 590.

Treatment: Aeration and sedimentation.

Rockdale--Continued

Analysis of water:

Date of collection: Feb. 12, 1943 — Analyzed by P. A. Witt

	Well 2	
	Parts per million	Equivalents per million
Silica (SiO_2)	29	
Iron (Fe)	0.05	
Calcium (Ca)	58	2.89
Magnesium (Mg)	21	1.73
Sodium (Na)	52	2.27
Potassium (K)	13	.33
Bicarbonate (HCO_3)	59	0.97
Sulfate (SO_4)	34	0.71
Chloride (Cl)	193	5.44
Fluoride (F)	0.2	0.01
Nitrate (NO_3)	5.8	0.09
Total dissolved solids	497	
Total hardness as $CaCO_3$	231	
pH	7.9	

Thorndale

Population in 1940: 898.

Source of information: Amos Snyder, Water Superintendent February 12, 1943

Ownership: Municipal.

Source of supply: Surface supply from a lake 1 mile southwest of town.

Pumpage (estimated): Maximum 75,000 gallons, average 25,000 gallons a day.

Storage: Elevated tank, 50,000 gallons.

Number of customers: 110.

Treatment: Coagulation, sedimentation, and chlorination.

Milam County

Thorndale--Continued

Analysis of water:

Date of collection: Feb. 12, 1943 — Analyzed by P. A. Witt

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	3.2	
Iron (Fe)	0.05	
Calcium (Ca)	56	2.795
Magnesium (Mg)	8.1	0.666
Sodium (Na)	15	0.633
Potassium (K)	8.4	.215
Bicarbonate (HCO_3)	210	3.442
Sulfate (SO_4)	24	0.500
Chloride (Cl)	12	0.338
Fluoride (F)	0.4	0.021
Nitrate (NO_3)	0.5	0.008
Total dissolved solids	231	
Total hardness as $CaCO_3$	174	
pH	8.0	

Montgomery County

Conroe

Population in 1940: 4,624.

Source of information:
H. T. Schroeder, Engineer
September 1942 and April 11, 1944

Owner: Gulf States Utilities Company.

Source of supply: 3 wells.

Well 1. Drilled in 1921, depth 205 feet, diameter 6 inches; air lift; yield about 60 gallons a minute in 1942; used as standby well.

Well 2. Drilled in 1924, depth 1,221 feet, diameter 8 inches; air lift; yield about 440 gallons a minute in 1942.

Well 3. Drilled in 1938, depth 221 feet, diameter 16 to 8½ inches; deep-well turbine pump and 15-horsepower electric motor; reported static water level 64 feet below land surface in May 1938; reported yield 500 gallons a minute with drawdown of 56 feet.

Montgomery County

Conroe--Continued

Pumpage:

(Average in gallons a day)

	1942	1943
Jan.	236,000	245,000
Feb.	225,000	191,000
Mar.	228,000	219,000
Apr.	210,000	231,000
May	224,000	263,000
June	234,000	288,000
July	240,000	242,000
Aug.	246,000	449,000
Sept.	238,000	398,000
Oct.	254,000	380,000
Nov.	203,000	320,000
Dec.	188,000	338,000

Storage: Surface reservoir, 38,000 gallons; elevated tank, 50,000 gallons.

Treatment: Aeration, adjustment of pH with lime, and chlorination.

Number of customers: 1,045.

Analysis of water:

Date of collection: Apr. 11, 1944 — Analyzed by J. H. Rowley

	Well 2	
	Parts per million	Equivalents per million
Silica (SiO_2)	26	
Iron (Fe)	2.7	
Calcium (Ca)	40	2.00
Magnesium (Mg)	7.4	.61
Sodium (Na)	81	3.54
Potassium (K)	7.8	.20
Bicarbonate (HCO_3)	278	4.56
Sulfate (SO_4)	22	.46
Chloride (Cl)	46	1.30
Fluoride (F)	0.2	.01
Nitrate (NO_3)	1.0	.02
Total dissolved solids	369	
Total hardness as $CaCO_3$	130	
pH	7.9	

Conroe--Continued

Drillers' log:

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	50	50	Packsand	10	505
Fine-grained sand	30	80	Shale	65	570
Shale	90	170	Sand	20	590
Sand	35	205	Hard sand	16	606
Shale	45	250	Sand	24	630
Hard sand, some gravel	55	305	Shale	55	685
Clay	17	322	Sand	25	710
Packsand	12	334	Gumbo	20	730
Sand	24	358	Shale	50	780
Clay	10	368	Gumbo and shale	110	890
Shale	32	400	Shale	50	940
Packsand	8	408	Packsand	40	980
Shale	17	425	Shale	80	1060
Packsand	6	431	Water sand	106	1166
Clay	29	460	Gumbo	20	1186
Packsand	20	480	Sand	35	1221
Clay	15	495			

Fostoria

Population in 1940: 1,000.

Source of information:
Frank Thomas, Master mechanic
April 11, 1944

Owner: Foster Lumber Company.

Source of supply: 2 wells. (Nos. 3 and 4).

Well 3. Drilled in 1918, depth 1,222 feet, diameter 6 inches; air lift; natural flow about 50 gallons a minute in 1944.

Well 4. Drilled in 1937 by Layne-Texas Company, depth 1,191 feet, diameter 6-5/8 to 5 inches; air lift; natural flow about 110 gallons a minute in 1944.

Pumpage (estimated): Average 30,000 gallons a day.

Storage: Elevated tank, 40,000 gallons.

Treatment: None.

Number of customers: 220.

Fostoria--Continued

Analysis of water:

Date of collection: June 5, 1942 Analyzed by W. W. Hastings.

	Well 3	
	Parts per million	Equivalents per million
Calcium (Ca)	4.8	.24
Magnesium (Mg)	2.4	.20
Sodium (Na)) Potassium (K))	123	5.77
Bicarbonate (HCO_3)	244	4.00
Sulfate (SO_4)	26	.54
Chloride (Cl)	41	1.16
Fluoride (F)	.8	.04
Nitrate (NO_3)	2.0	.03
Total dissolved solids	320	
Total hardness as $CaCO_3$	22	

Montgomery

Population in 1940: 750.

Source of information: Luther Cleveland, Water Superintendent April 11, 1944.

Owner: H. F. Mickles.

Source of supply: Well, drilled in 1940, depth 230 feet, diameter 6 inches; deep-well cylinder pump and 5-horsepower electric motor; static water level 94 feet below land surface in June 1942.

Pumpage:: Elevated tank, 10,000 gallons.

Treatment: None.

Number of customers: 59.

Montgomery--Continued

Analysis of water:

Date of collection: Apr. 11, 1944 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	25	
Iron (Fe)	0.05	
Calcium (Ca)	126	6.29
Magnesium (Mg)	7.6	0.62
Sodium (Na)	20	.85
Potassium (K)	6.4	0.16
Bicarbonate (HCO_3)	403	6.61
Sulfate (SO_4)	4.9	0.10
Chloride (Cl)	42	1.18
Fluoride (F)	0.6	0.03
Nitrate (NO_3)	0.2	0.00
Total dissolved solids	433	
Total hardness as $CaCO_3$	346	
pH	7.0	

Willis

Population in 1940: 904.

Source of information:
T. E. Darden, City Secretary
April 11, 1944.

Ownership: Municipal.

Source of supply: Well, drilled in 1941 by Layne-Texas Company, depth 365 feet, diameter 10⅝ to 4½ inches; deep-well turbine pump and 20-horsepower electric motor; static water level 182.7 feet below measuring point in June 1942; yield 105 gallons a minute with drawdown of 85 feet in July 1941.

Pumpage (estimated): Average 12,000 gallons a day.

Storage: Elevated tank, 50,000 gallons.

Treatment: None.

Number of customers: 90.

Montgomery County

Willis--Continued

Analysis of water:

Date of collection: June 10, 1942 Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Calcium (Ca)	72	3.59
Magnesium (Mg)	16	1.32
Sodium (Na)) Potassium (K))	41	1.78
Bicarbonate (HCO_3)	262	4.29
Sulfate (SO_4)	23	.48
Chloride (Cl)	65	1.83
Fluoride (F)	.8	.04
Nitrate (NO_3)	1.0	.02
Total dissolved solids	348	
Total hardness as $CaCO_3$	245	

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sandy clay	25	25	Hard sand	10	254
Gravel	15	40	Shale	22	276
Clay	10	50	Hard fine-grained sand	21	297
Sand	30	80	Shale	23	320
Clay	50	130	Hard sand	13	333
Sandy clay	11	141	Fine-grained sand	28	361
Clay	27	168	Shale	4	365
Clay with hard streaks	76	244			

Morris County

Daingerfield

Population in 1940: 1,032.

Source of information:
Jim Moore, Water Superintendent
March 14, 1942

Ownership: Municipal.

Source of supply: Well drilled in 1939 by Layne-Texas Company, depth 654 feet, diameter 13-7/8 to 8 inches; screens at 258-279, 301-321 and 357-378 feet; deep-well turbine pump and 15-horsepower electric motor, pump set at 270 feet; static water level 210 feet below land surface in July 1939; yield 140 gallons a minute with drawdown of 47 feet in 1939; present yield reported 140 gallons a minute; temperature 60° F.

Morris County

Daingerfield--Continued

Pumpage (estimated): Average 400,000 gallons a day.

Storage: Steel ground reservoir on hill 100 feet above down-town area, 100,000 gallons.

Number of customers: 156.

Treatment: Aeration, slow sand filter.

Analysis of water:

Date of collection: Nov. 2, 1943 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	29	
Iron (Fe)	0.08	
Calcium (Ca)	8.0	.399
Magnesium (Mg)	3.2	.263
Sodium (Na)	6.3	.272
Potassium (K)	6.0	.154
Bicarbonate (HCO_3)	23	.377
Sulfate (SO_4)	24	.500
Chloride (Cl)	7.0	.197
Fluoride (F)	0.2	.011
Nitrate (NO_3)	0.2	.003
Total dissolved solids	99	
Total hardness as $CaCO_3$	33	
pH	7.3	

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Red sandy clay	25	25	Rock	2	276
Sand	7	32	Sand	55	331
Yellow clay	37	69	Hard pan	2	333
Black shale	23	92	Sand	53	386
Sandy shale	23	115	Shale	23	409
Sand and lignite	16	131	Sandy shale	66	475
Shale	5	136	Rock	1	476
Sand and lignite	25	161	Hard blue shale	67	543
Sand	21	182	Shale	27	570
Rock	1	183	Rock	7	577
Shale	47	230	Black shale	77	654
Sand	44	274			

Morris County

Omaha

Population in 1940: 623.

Source of information:
Thomas & Ware Water Company
March 11, 1942

Owner: Thomas & Ware Water Company.

Source of supply: Well 2½ blocks east and 1 block north of railroad station, drilled in 1930, depth 260 feet, diameter 12 to 6 inches lower 40 feet of casing perforated; air lift; reported static water level 60 feet below land surface; reported yield 100 gallons a minute; temperature 66° F.

Pumpage: No record.

Storage: Ground reservoir and elevated tank, capacity unknown.

Number of customers: 74.

Treatment: None.

Analysis of water:

Date of collection: Mar. 11, 1942 Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Calcium (Ca)	8.8	.44
Magnesium (Mg)	2.2	.18
Sodium (Na)) Potassium (K))	21	.93
Bicarbonate (HCO_3)	6.0	.10
Sulfate (SO_4)	17	.35
Chloride (Cl)	22	.62
Fluoride (F)	.0	0.00
Nitrate (NO_3)	30	0.48
Total dissolved solids	104	
Total hardness as $CaCO_3$	31	
pH	5.4	

Naples

Population in 1940: 821.

Source of information:
Mr. Smith, Mayor
March 11, 1942

Ownership: Municipal.

Source of supply: Well 2½ blocks west of railroad station, drilled in 1935 by Layne-Texas Company, depth 864 (plugged back to 450 feet), diameter 13 to 6 inches, screens at 297-354 and 397-430 feet; deep-well turbine pump and 15-horsepower electric motor, pump set at 280 feet; static water level 123 feet below land surface on March 31, 1935; yield 88 gallons a minute with drawdown of 155 feet.

Pumpage (estimated): Average 16,000 gallons a day.

Storage: Concrete ground reservoir, 100,000 gallons; elevated tank, 50,000 gallons.

Naples--Continued

Number of customers: 130.

Treatment: None.

Analysis of water:

Date of collection: Dec. 1, 1943 Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	20	
Iron (Fe)	.47	
Calcium (Ca)	3.0	.15
Magnesium (Mg)	.8	.07
Sodium (Na)	225	9.78
Potassium (K)	3.6	.09
Bicarbonate (HCO_3)	411	6.74
Sulfate (SO_4)	1.4	.03
Chloride (Cl)	114	3.22
Fluoride (F)	1.4	.07
Nitrate (NO_3)	.2	.00
Total dissolved solids	578	
Total hardness as $CaCO_3$	11	
pH	8.3	

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Red clay	10	10	Shale, sand layers	38	346
Blue clay	51	61	Shale	57	403
Shale	46	107	Sand	33	436
Hard shale	50	157	Shale	40	476
Shale, lignite, fine-grained sand	91	248	Shale, layers rock	51	527
Rock	1	249	Shale	66	593
Hard shale	49	298	Sand	7	600
Sand	10	308	Shale	264	864

Nacogdoches County

Appleby

Population in 1940: 500.

Source of information:
J. P. Coon, Water Superintendent
June 15, 1944

Owner: Citizens of Appleby.

Source of supply: Well at north edge of town, drilled in 1913, depth 560 feet, diameter 5-3/16 to 4 inches; cylinder pump and electric motor; reported yield 40 gallons a minute.

Pumpage: No data.

Storage: Steel tank, 1,000 gallons.

Number of customers: 16.

Treatment: Aeration.

Analysis of water:

Date of collection: Aug. 18, 1944 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	20	
Iron (Fe)	6.6	
Calcium (Ca)	1.8	0.090
Magnesium (Mg)	1.0	0.082
Sodium (Na)	3.5	0.151
Potassium (K)	3.0	0.077
Bicarbonate (HCO_3)	11	0.180
Sufate (SO_4)	3.8	0.079
Chloride (Cl)	5.0	0.141
Fluoride (F)	0	0.000
Nitrate (NO_3)	0	0.000
Total dissolved solids	8	
Total hardness as $CaCO_3$	9	
pH	5.8	

Cushing

Population in 1940: 173.

Source of information:
E. D. Beck, City Secretary
June 15, 1944

Ownership: Municipal.

Source of supply: Well near elevated tank, drilled in 1936 by J. N. Heard, depth 320 feet, diameter 6 to 4½ inches, screen from 280 to 320 feet; deep-well turbine pump and electric motor; static water level reported 115 feet below land surface in September 1936 and 117 feet in June, 1944; yield 50 gallons a minute; temperature 71° F.

Pumpage: Average 15,000 to 18,000 gallons a day.

Nacogdoches County

Cushing--Continued

Storage: Concrete ground reservoir, 10,000 gallons; elevated tank, 50,000 gallons.

Number of customers: 121.

Treatment: Aeration, coagulation with lime and alum, pressure filter, and occasional chlorination.

Analysis of water:

Date of collection: June 15, 1944 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	21	
Iron (Fe)	1.0	
Calcium (Ca)	12	0.599
Magnesium (Mg)	4.3	0.354
Sodium (Na)	8.0	0.347
Potassium (K)	2.2	0.056
Bicarbonate (HCO_3)	16	0.262
Sulfate (SO_4)	37	0.770
Chloride (Cl)	11	0.310
Fluoride (F)	0.2	0.011
Nitrate (NO_3)	0.2	0.003
Total dissolved solids	115	
Total hardness as $CaCO_3$	48	
pH	6.8	

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Clay	50	50			
Shale, sandy shale and rock	115	165	Gumbo	22	208
Sand, water	21	186	Sand, water	99	307
			Gumbo	13	320

Nacogdoches County

Garrison

Population in 1940: 770.

Ownership: Municipal.

Source of information:
N. G. Garrison
April 3, 1942

Source of supply: Well half a mile northeast of town, drilled in 1939 by Merle R. Pretty, depth 340 feet, diameter $10\frac{3}{4}$ to $4\frac{1}{2}$ inches, screen from 296 to 336 feet; deep-well turbine pump and 15-horsepower electric motor; static water level 94.9 feet below land surface when drilled; yield 110 gallons a minute with drawdown of 115.5 feet after 24 hours pumping; temperature 71° F.

Storage: Elevated tank, 50,000 gallons.

Treatment: None.

Analysis of water:

Date of collection: Sept. 4, 1944 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	15	
Iron (Fe)	0.08	
Calcium (Ca)	2.2	0.11
Magnesium (Mg)	0.5	0.04
Sodium (Na)	157	6.81
Potassium (K)	1.8	0.05
Bicarbonate (HCO_3)	343	6.42
Sulfate (SO_4)	7.0	0.15
Chloride (Cl)	14	0.39
Fluoride (F)	0.2	0.01
Nitrate (NO_3)	2.2	0.04
Total dissolved solids	399	
Total hardness as $CaCO_3$	8	
pH	8.4	

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Blue clay	12	12	Hard rock	1	234
Lignite	30	42	Sandy shale	8	242
Hard sandy shale	101	143	Hard rock	1	243
Hard rock	2	145	Sandy shale	29	272
Sandy shale	3	148	Hard rock	1	273
Hard rock	1	149	Sandy shale	6	279
Sandy shale	34	183	Hard rock	3	282
Hard rock	1	184	Blue shale	14	296
Sticky shale	2	186	Water sand	40	336
Hard rock and shale	16	202	Gumbo	4	340
Sandy shale	31	233			

Nacogdoches County

Nacogdoches

Population in 1940: 7,538.

Source of information:
Mr. Stallings, City Manager
June 15, 1944

Ownership: Municipal.

Source of supply: 2 wells (Nos. 6 and 7.)

Well 6. Drilled in 1929 by Layne-Texas Company, depth 485 feet, diameter 20 to 8 inches; deep-well turbine pump and 30-horsepower electric motor; static water level 17 feet below land surface on April 28, 1937; yield 700 gallons a minute with drawdown of 50 feet; temperature 75° F.

Well 7. Drilled in 1933 by Layne-Texas Company, depth 484 feet, diameter 20 to 10 inches, screen from 380 to 470 feet; deep-well turbine pump and 30-horsepower electric motor; static water level 21 feet below land surface on April 28, 1937; yield 710 gallons a minute with drawdown of 56.5 feet after pumping 3 hours; temerature 75° F. (Note: pumps lowered 30 feet in 1942.)

Pumpage:

(Average in gallons a day)

	1941	1942	1943	1944
Jan.	479,000	503,000	443,000	522,000
Feb.	428,000	488,000	485,000	508,000
Mar.	443,000	513,000	478,000	517,000
Apr.	504,000	536,000	579,000	516,000
May	527,000	584,000	705,000	570,000
June	565,000	699,000	738,000	
July	701,000	821,000	890,000	
Aug.	700,000	746,000	758,000	
Sept.	644,000	598,000	619,000	
Oct.	623,000	498,000	550,000	
Nov.	497,000	409,000	488,000	
Dec.	502,000	410,000	491,000	

Storage: Concrete ground reservoir, 110,000 gallons; elevated tank, 250,000 gallons.

Number of customers: 1,904.

Treatment: Aeration and chlorination.

Nacogdoches County

Nacogdoches--Continued

Analyses of water:

	Well 6		Well 7	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	13		12	
Iron (Fe)	0.42		0.41	
Calcium (Ca)	3.1	0.155	2.0	0.100
Magnesium (Mg)	1.0	0.082	0.6	0.049
Sodium (Na)	55	2.384	53	2.315
Potassium (K)	4.3	0.110	3.7	0.095
Bicarbonate (HCO_3)	123	2.016	112	1.836
Sulfate (SO_4)	22	0.458	22	0.458
Chloride (Cl)	9.0	0.254	9.0	0.254
Fluoride (F)	0.0	0.000	0.2	0.011
Nitrate (NO_3)	0.2	0.003	0.0	0.000
Total dissolved solids	172		161	
Total hardness as $CaCO_3$	12		7	
pH	6.1		6.1	

Drillers' logs:

Well 6

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Rotary	3	3	Hard sand rock	1	215
Surface sand	4	7	Hard sandy shale	4	219
Sandy clay	9	16	Hard sand rock	1	220
Iron ore rock	2	18	Hard sandy shale	18	238
Black sand	19	37	Hard sand rock	1	239
Green rock	1	38	Gumbo	18	257
Green shale	37	75	Rock	2	259
Sand rock	1	76	Shale	19	278
Shale	30	106	Gumbo	4	282
Gumbo and shale	16	122	Hard sand	3	285
Gray shale	31	153	Gumbo	27	312
Sand rock	1	154	Gray shale and sand	26	338
Hard shale	25	179	Gumbo	15	353
Brown gumbo	28	207	Gray sandy shale	16	369
Hard sand rock	4	211	White water sand	112	481
Hard sandy shale	3	214	Gumbo	4	485

Nacogdoches County

Nacogdoches--Continued

Well 7

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface sand	7	7	Hard sand	7	214
Sand clay	9	16	Hard rock	1	215
Iron ore rock	2	18	Sandy shale	4	219
Black sand	19	37	Sand rock	1	220
Green rock	1	38	Hard sandy shale	18	238
Green shale	37	75	Sand rock	1	239
Sand rock	1	76	Hard shale	18	257
Boulders and black shale	30	106	Shale and rock	2	259
Shale and boulders	47	153	Hard shale	53	312
Sand rock	1	154	Sandy shale	57	369
Hard shale	25	179	White sand	5	374
Sticky shale	28	207	Good sand	110	484

Navarro County

Barry

Population in 1940: 350.

Source of information:
R. W. Varnell, Water Superintendent
February 22, 1944

Owner: Barry Deep Well Company.

Source of supply: Well drilled in 1917 by Fred M. Allison, depth 1,721 feet, diameter $4\frac{1}{2}$ to $3\frac{3}{4}$ inches; deep-well cylinder pump and $1\frac{1}{2}$-horsepower electric motor, pump set at 160 feet; reported static water level 18 feet below land surface in 1917 and 50 to 60 feet in 1943; yield 10 gallons a minute.

Pumpage: No record.

Storage: Elevated tank, 32,000 gallons.

Number of customers: 25.

Treatment: None.

Navarro County

Barry--Continued

Analysis of water:

Date of collection: Feb. 22, 1944 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	14	
Iron (Fe)	0.14	
Calcium (Ca)	4.8	0.24
Magnesium (Mg)	1.5	.12
Sodium (Na)	946	41.12
Potassium (K)	9.0	.23
Bicarbonate (HCO_3)	1,080	17.70
Sulfate (SO_4)	351	7.31
Chloride (Cl)	588	16.58
Fluoride (F)	2.2	.12
Nitrate (NO_3)	2.2	.04
Total dissolved solids	2,450	
Total hardness as $CaCO_3$	18	
pH	7.6	

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	4	4	Shale	12	1571
Clay	56	60	Cap rock	1	1572
Shale	160	220	Water sand	53	1625
Rock	2	222	Rock	4	1629
Shale	588	810	Shale	20	1649
White lime	418	1228	Rock	2	1651
Shale	72	1300	Shale	42	1693
Gumbo	80	1380	Rock	1	1694
Shale	171	1551	Sand and shale	17	1711
Rock	8	1559	Water sand	10	1721

Blooming Grove

Population in 1940: 821.

Ownership: Municipal.

Source of supply: 2 wells.

Source of information:
S. W. Grant, Water Superintendent
February 21, 1944

Navarro County

Blooming Grove--Continued

Well 1. About 40 feet east of water works building; drilled in 1907; depth 1,436 feet, diameter 6 to 3½ inches; air lift; reported static water level 55 feet below land surface on July 9, 1907, measured static water level 251.12 feet below top of air line February 21, 1944 while well 2 was pumping; 241.55 feet after well 2 was shut down 15½ hours February 22, 1944; used for stand-by since 1925.

Well 2. About 50 feet north of water works building; drilled in 1925 by R. H. Dearing and Sons, depth 1,488 feet, diameter 6-5/8 to 5-3/16 inches; deep-well turbine pump and 15-horsepower electric motor, pump set at 400 feet; yield 100 gallons a minute.

Pumpage (estimated): Average 50,000 gallons a day during summer; 30,000 gallons a day during winter.

Storage: Concrete ground reservoir, 60,000 gallons; elevated tank, 40,000 gallons.

Number of customers: 158.

Treatment: None.

Analysis of water:

Date of collection: Feb. 21, 1944 Analyzed by J. H. Rowley

	Well 2	
	Parts per million	Equivalents per million
Silica (SiO_2)	14	
Iron (Fe)	0.05	
Calcium (Ca)	6.2	0.31
Magnesium (Mg)	2.4	.20
Sodium (Na)	981	42.65
Potassium (K)	9.2	.24
Bicarbonate (HCO_3)	1,110	18.19
Sulfate (SO_4)	172	3.58
Chloride (Cl)	760	21.43
Fluoride (F)	2.4	.13
Nitrate (NO_3)	7.1	.11
Total dissolved solids	2,500	
Total hardness as $CaCO_3$	26	
pH	7.7	

Navarro County

Blooming Grove--Continued

Drillers' logs:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface dirt, clay and water sand, 2 feet hard rock at 16 feet	35	35	Black cavy shale	131	1296
			Hard sand cap rock	13	1309
Blue gritty shale and gumbo	315	350	Streaks of water sand and shells	6	1315
Blue shale and gumbo	12	362	Hard sand rock and pyrites of iron	8	1323
Tough gumbo	20	382	Water sand	17	1340
White lime rock	3	385	Hard rock	4	1344
Gumbo	505	890	Light blue cavy shale	9	1353
Black shale	3	893	Hard rock	1	1354
White lime rock	72	965	Light blue cavy shale and boulders	82	1436
Black caving shale and hard flint boulders	200	1165			

Well 2

Rock and shale	565	565	Shale, gumbo, and soapstone	53	1398
Chalk (white rock)	385	950	Rock	3	1401
Rock and shale	347	1297	Second Woodbine sand	49	1450
First Woodbine sand	28	1325	Shale, gumbo, limestone	38	1488
Rock	3	1328			
First Woodbine sand	17	1345			

Corsicana

Population in 1940: 15,232.

Ownership: Municipal.

Source of information:
Fred M. Blucher, City Engineer
February 22, 1944

Source of supply: Lake Halbert, impounding reservoir 5 miles southeast of city hall; developed in 1923, maximum capacity 9,350 acre-feet, 6,500 acre-feet available storage, area of lake 540 acres, maximum depth 35 feet.

(Before 1894 supply was obtained from an impounding reservoir known as Lake Beaton. Between 1894 and 1923 water was obtained from 5 wells about 2,500 feet deep in Corsicana. The wells flowed when drilled and later ceased flowing. The water was highly mineralized, and had a temperature of about 120° F. An impounding reservoir was used to supplement the wells.)

Pumpage:

(Average in gallons a day)

1939	1940	1941	1942	1943
1,020,000	1,240,000	1,100,000	1,130,000	1,290,000

Navarro County

Corsicana--Continued

Storage: 2 elevated tanks, 200,000 and 400,000 gallons.

Number of customers: 3,500.

Treatment: Aeration, coagulation with alum and lime, activated carbon, sedimentation, rapid sand filter, and chlorination.

Analysis of water:

Date of collection: Feb. 22, 1944 Analyzed by J. H. Rowley

	Treated water	
	Parts per million	Equivalents per million
Silica (SiO_2)	2.8	
Iron (Fe)	.06	
Calcium (Ca)	42	2.096
Magnesium (Mg)	7.8	.641
Sodium (Na)	21	.924
Potassium (K)	4.7	.120
Bicarbonate (HCO_3)	105	1.721
Sulfate (SO_4)	87	1.811
Chloride (Cl)	7.0	0.197
Fluoride (F)	0.7	.037
Nitrate (NO_3)	0.5	.008
Total dissolved solids	232	
Total hardness as $CaCO_3$	137	
pH	7.6	

Dawson

Population in 1940: 1,155.

Ownership: Municipal.

Source of information: G. E. Sellers, Water Superintendent February 21, 1944

Source of supply: Impounding reservoir about 1 mile south of town, area 72 acres, average depth 8 feet, pump at lake forces water $\frac{1}{2}$ mile to filter plant and booster station; 250 and 500 g.p.m. pumps at booster station deliver water to elevated tank and distribution system. (Before April 2, 1937 water was obtained from a well about 1,000 feet deep, water reported salty; yield 25 gallons a minute; casing pulled and well filled when surface water system installed.)

Pumpage (estimated): Average 17,000 gallons a day.

Storage: Elevated tank, 50,000 gallons.

Number of customers: 224.

Treatment: Coagulation with alum and lime, sedimentation, chlorination.

Dawson--Continued

Analysis of water:

Date of collection: Feb. 21, 1944 — Analyzed by J. H. Rowley

	Treated water	
	Parts per million	Equivalents per million
Silica (SiO_2)	5.3	
Iron (Fe)	.28	
Calcium (Ca)	56	2.795
Magnesium (Mg)	3.8	.312
Sodium (Na)	20	.871
Potassium (K)	5.2	.133
Bicarbonate (HCO_3)	144	2.360
Sulfate (SO_4)	63	1.312
Chloride (Cl)	10	0.282
Fluoride (F)	1.3	.068
Nitrate (NO_3)	5.5	.089
Total dissolved solids	256	
Total hardness as $CaCO_3$	155	
pH	7.4	

Emhouse

Population in 1940: 281.

Source of information: Mr. Hoffman, Mayor and Fred M. Allison, driller. February 22, 1944

Owner: Local residents.

Source of supply: Well about 100 feet west of railroad loading dock, drilled in 1917 by Fred M. Allison, depth 2,017 feet, diameter 6 to $3\frac{3}{4}$ inches, deep-well cylinder pump and electric motor; reported static water level 25 feet above land surface on November 7, 1914 and flow of 35 gallons a minute, flowed until about 1925.

Storage: Elevated tank 3,200 gallons.

Treatment: None.

Number of customers: Unknown.

Navarro County

Emhouse--Continued

Analysis of water:

Date of collection: Feb. 22, 1944 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	15	
Iron (Fe)	0.32	
Calcium (Ca)	9.4	0.47
Magnesium (Mg)	3.0	.25
Sodium (Na)	1,040	45.00
Potassium (K)	11	.28
Bicarbonate (HCO_3)	1,120	18.36
Sulfate (SO_4)	491	10.22
Chloride (Cl)	612	17.26
Fluoride (F)	2.3	.12
Nitrate (NO_3)	3.2	.05
Total dissolved solids	2,740	
Total hardness as $CaCO_3$	36	
pH	7.5	

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	5	5	Rock	2	1758
Clay	55	60	Sand and shale	5	1763
Shale	213	273	Rock	2	1765
Rock	2	275	Shale	35	1800
Shale	75	350	Rock	1	1801
Rock	3	353	Water sand (First Woodbine)	11	1812
Shale	572	925	Lime	24	1836
Austin chalk	402	1327	Shale	34	1870
Shale	93	1420	Rock	2	1872
Gumbo	80	1500	Shale	30	1902
Shale	188	1688	Rock	3	1905
Rock	2	1690	Shale	15	1920
Shale	4	1694	Gumbo	30	1950
Iron rock	10	1704	Rock	2	1952
Shale	4	1708	Water sand (Second Woodbine)	18	1970
Rock	1	1709	Lime	47	2017
Water sand (First Woodbine)	47	1756			

Navarro County

Frost

Population in 1940: 671.

Source of information:
Robert Freeman, Water Superintendent
February 21, 1944

Ownership: Municipal.

Source of supply: Well near elevated tank and standpipe, drilled in 1901 by C. L. Witherspoon, depth 1,184 feet, diameter 6 to 8 inches; deep-well turbine pump and 7½-horsepower electric motor; yield 60 gallons a minute; temperature 92°F.

Pumpage (estimated): Average 30,000 gallons a day.

Storage: Elevated tank 100,000 gallons; standpipe, 80,000 gallons.

Number of customers: 185.

Treatment: None.

Analysis of water:

Date of collection: Feb. 21, 1944 — Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	14	
Iron (Fe)	0.03	
Calcium (Ca)	3.5	0.17
Magnesium (Mg)	1.1	.09
Sodium (Na)	594	25.83
Potassium (K)	10	.26
Bicarbonate (HCO_3)	812	13.31
Sulfate (SO_4)	441	9.18
Chloride (Cl)	131	3.69
Fluoride (F)	2.1	.11
Nitrate (NO_3)	4.4	.07
Total dissolved solids	1,600	
Total hardness as $CaCO_3$	13	
pH	7.8	

Kerens

Population in 1940: 1,287.

Source of information:
Earl M. McClung, City Secretary
February 22, 1944

Ownership: Municipal.

Source of supply: Impounding reservoir 3 miles east of Kerens, capacity 778 acre-feet, average depth 8 feet.

(Before 1935 water was obtained from 16 wells, depth about 50 feet, diameter 6 feet. The water was of poor quality and the yield was insufficient during the summers. Fred M. Allison reported that he drilled a test well to the Woodbine sand at about 4,000 feet and found salty water.)

Navarro County

Kerens--Continued

Pumpage: Average 50,000 gallons a day in 1940; 47,000 gallons a day in 1941.

Storage: Concrete settling basin, 50,000 gallons; elevated tank, 75,000 gallons.

Number of customers: 342.

Treatment: Coagulation with alum and lime, sedimentation, chlorination.

Analysis of water:

Date of collection: Feb. 22, 1944 — Analyzed by J. H. Rowley

	Treated water	
	Parts per million	Equivalents per million
Silica (SiO_2)	2.0	
Iron (Fe)	.18	
Calcium (Ca)	30	1.497
Magnesium (Mg)	2.0	.164
Sodium (Na)	2.6	.115
Potassium (K)	2.2	.056
Bicarbonate (HCO_3)	31	.508
Sulfate (SO_4)	57	1.187
Chloride (Cl)	4.0	0.113
Fluoride (F)	.2	.011
Nitrate (NO_3)	.8	.013
Total dissolved solids	125	
Total hardness as $CaCO_3$	83	
pH	7.8	

Newton County

Call Junction

Population in 1940: 200.

Owner: Kirby Lumber Company.

Source of information:
J. M. Prichard, Kirby Lumber Company
April 15, 1942

Source of supply: Well drilled in 1935 by John Adams, depth 529 feet, diameter 8 inches, screen from 489 to 529 feet; air lift; static water level reported 40 feet below land surface in 1942; yield 325 gallons a minute.

Pumpage (estimated): Average 150,000 gallons a day, of which 70 percent is used by saw mill.

Storage: Ground reservoir, 5,500 gallons; 2 elevated tanks, 65,000 and 31,000 gallons.

Number of customers: 375.

Treatment: None.

Analysis of water:

Date of collection: Apr. 15, 1942 Analyzed by E. W. Lohr

	Well 1	
	Parts per million	Equivalents per million
Calcium (Ca)	17	.848
Magnesium (Mg)	1.0	.082
Sodium and Potassium (Na+K)	8.5	0.370
Bicarbonate (HCO_3)	61	1.000
Sulfate (SO_4)	4	.083
Chloride (Cl)	7.0	.197
Fluoride (F)	.1	.005
Nitrate (NO_3)	0.0	.000
Total dissolved solids	68	
Total hardness as $CaCO_3$	46	
pH	--	

Deweyville

Population in 1940: 950.

Owner: Perry-Moore Lumber Co.

Source of information:
C. D. Allen, Perry-Moore Lumber Co.
April 15, 1942

Source of supply: Well drilled in 1927 by Geo. Glidden, depth 105 feet, diameter 8 inches, screen from 75-105 feet; deep-well turbine pump and 30-horsepower electric motor; static water level reported 12 feet below land surface in 1942; yield 350 gallons a minute.

Pumpage (estimated): Average 375,000 gallons a day; used to supply town and saw mill.

Number of customers: 125.

Deweyville -- Continued

Treatment: None.

Analysis of water:

Date of collection: Apr. 15, 1942 Analyzed by E. W. Lohr

	Well 1	
	Parts per million	Equivalents per million
Calcium (Ca)	20	1.00
Magnesium (Mg)	4.6	.38
Sodium and Potassium (Na+K)	40	1.74
Bicarbonate (HCO_3)	146	2.40
Sulfate (SO_4)	3	.06
Chloride (Cl)	22	.62
Fluoride (F)	.3	.02
Nitrate (NO_3)	0.0	.00
Total dissolved solids	162	
Total hardness as $CaCO_3$	68	

Newton

Population in 1940: 1,200.

Ownership: Municipal.

Source of information: Fred Bailey April 10, 1941

Source of supply: Well across railroad tracks west of courthouse, drilled in 1938 by McMasters-Pomeroy Company, depth 200 feet, diameter 6 to 5 inches; deep-well turbine pump and electric motor; static water level 11 feet below land surface in 1938; yield 55 gallons a minute.

Pumpage: Average 55,000 gallons a day.

Storage: Ground reservoir, 35,000 gallons; elevated tank, 55,000 gallons.

Number of customers: 112.

Treatment: None.

Newton -- Continued

Analysis of water:

Date of collection: Apr. 10, 1941 Analyzed by E. W. Lohr

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	24	
Iron (Fe)	.02	
Calcium (Ca)	5.9	.294
Magnesium (Mg)	1.2	.099
Sodium and Potassium (Na+K)	6.3	.274
Bicarbonate (HCO_3)	26	.426
Sulfate (SO_4)	2.1	.044
Chloride (Cl)	7.0	.197
Fluoride (F)	0.0	.000
Nitrate (NO_3)	.0	.000
Total dissolved solids	62	
Total hardness as $CaCO_3$	20	
pH	6.5	

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sand	3	3	Sand and shale	30	94
Clay	4	7	Clay	21	115
Sand	21	28	Shale	37	152
Clay	4	32	Sand and gravel	37	189
Sand	26	58	Shale	11	200
Shale	6	64			

Wiergate

Population in 1940: 1,000.

Source of information: Wier Long Leaf Lumber Company May 21, 1942

Owner: Wier Long Leaf Lumber Co.

Source of supply: Well drilled in 1925 by McMasters-Pomeroy, depth 232 feet, diameter 6 to 4 inches, screen at 190-222 feet, air lift; present static water level reported 30 feet below land surface; yield 500 gallons a minute.

Storage: 2 elevated tanks, 20,000 gallons each.

Number of customers: 425.

Treatment: None.

Newton County

Wiergate -- Continued

Analysis of water:

Date of collection: May 21, 1942 Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Calcium (Ca)	4.0	.200
Magnesium (Mg)	1.5	.123
Sodium and Potassium (Na+K)	3.0	.130
Bicarbonate (HCO_3)	12	.197
Sulfate (SO_4)	3	.062
Chloride (Cl)	6.0	.169
Fluoride (F)	.3	.016
Nitrate (NO_3)	0.0	.000
Total dissolved solids	24	
Total hardness as $CaCO_3$	16	

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Cinders	3	3	Clay	11	100
Surface sand	12	15	Sand	18	118
Gravel	15	30	Clay	64	182
Sand	21	51	Sand and gravel	39	221
Clay	15	66	Clay	11	232
Sand	23	89			

Orange County

Orange

Population:
1940 7,472
1944 (estimated) 45,000

Source of information:
D. O. Gideon, Water Superintendent
April 13, 1944.

Owner: Gulf States Utilities Co.

Source of supply: 5 wells.

Well 1. Drilled by Layne-Texas Company, depth 685 feet, diameter 16 to 6 inches, screens at 326-348 and 645-685 feet, deep-well turbine pump, well flows 30 gallons a minute; yield 422 gallons a minute with reported drawdown of 9 feet; temperature 76°F.

Orange -- Continued

Well 2. Depth 650 feet, diameter 8 inches; centrifugal pump; well was flowing in February 1941.

Well 3. Drilled in 1924, depth 755 feet, diameter 16 to 8 inches, deep-well turbine pump; screen from 672 to 737 feet; well flows.

Well 4. Drilled in 1941 by Layne-Texas Company, depth 749 feet, diameter 16 to 8-5/8 inches, screen from 613 to 734 feet; deep-well turbine pump; static water level 0.57 feet above ground on September 22, 1941.

Well 5. Drilled in 1943 by Layne-Texas Company, depth 740 feet, diameter 20 to 10-3/4 inches, screens at 442-473 and 560-740 feet; yield 2,089 gallons a minute with drawdown of 81 feet.

Pumpage: (Average in gallons a day)

Month	1938	1939	1940	1941	1942	1943	1944
Jan.	481,600	329,600	531,900	549,200	1,004,000	2,028,000	2,801,000
Feb.	411,100	329,300	439,000	567,100	1,016,000	1,762,000	3,096,000
Mar.	399,800	349,700	457,400	631,300	1,379,000	1,966,000	2,916,000
Apr.	363,200	368,800	481,600	757,400	1,249,000	2,093,000	3,378,000
May	387,200	431,700	536,500	758,300	1,446,000	2,238,000	
June	397,900	502,800	492,900	784,400	1,527,000	2,727,000	
July	389,300	506,600	493,500	817,000	1,433,000	2,687,000	
Aug.	402,000	472,200	475,900	936,900	1,610,000	2,699,000	
Sept.	436,100	521,200	493,200	934,900	1,461,000	2,682,000	
Oct.	373,500	496,900	515,300	927,500	1,844,000	2,633,000	
Nov.	351,100	516,500	456,700	851,900	1,871,000	2,738,000	
Dec.	336,100	393,900	473,600	921,900	1,932,000	2,726,000	

Storage: 2 ground storage reservoirs, 75,000 gallons each; 2 elevated tanks, 100,000 and 500,000 gallons.

Treatment: Chlorination.

Number of customers: 3,000.

Orange -- Continued

Analyses of water:

Date of collection: April 12, 1941 Analyzed by J. W. Yett and E. W. Lohr

	Well 1		Well 4	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	51		48	
Iron (Fe)	.39		.34	
Calcium (Ca)	9.2	.46	8.6	.43
Magnesium (Mg)	3.0	.25	2.0	.16
Sodium & Potassium (Na+K)	92	3.57	105	4.58
Bicarbonate (HCO_3)	168	2.75	198	3.25
Sulfate (SO_4)	2.2	.05	1.6	.03
Chloride (Cl)	52	1.47	67	1.89
Fluoride (F)	-	-	-	-
Nitrate (NO_3)	.4	.01	.3	.00
Total dissolved solids	286		335	
Total hardness as $CaCO_3$	35		30	

Drillers' logs:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Clay	60	60	Coarse-grained sand	25	349
Sand	53	113	Gumbo	91	440
Clay	3	116	Sandy shale	40	480
Sand	47	163	Gumbo	50	530
Coarse-grained sand	7	170	Hard fine-grained sand	110	640
Gumbo	154	324	Coarse-grained sand	45	685

Well 3

Clay	50	50	Shale	35	480
Sand	35	85	Gumbo	60	540
Clay	13	98	Fine-grained sand	61	601
Sand	85	183	Sand	39	640
Gumbo	220	403	Sand and some gravel	30	670
Hard fine-grained sand	32	435	Gravel	30	700
Fine-grained sand	10	445	Coarse gravel	55	755

Orangefield

Population in 1940: 500.

Owner: Rufus Webb.

Source of information:
John Denney, Water Superintendent
April 13, 1944

Source of supply: Well, depth 400 feet, diameter 4 inches; temperature 76½°F.

Storage: Pressure tank, 500 gallons.

Treatment: None.

Number of customers: 150.

Analysis of water:

Date of collection: April 13, 1944 Analyzed by M. L. Begley

	Well 1	
	Parts per million	Equivalents per million
Calcium (Ca)	2.4	0.120
Magnesium (Mg)	0.7	0.058
Sodium & Potassium (Na+K)	111	4.819
Bicarbonate (HCO_3)	180	2.950
Sulfate (SO_4)	2	0.042
Chloride (Cl)	71	2.002
Nitrate (NO_3)	0.2	0.003
Total dissolved solids	321	
Total hardness as $CaCO_3$	9	

Orangefield (East of Cow Bayou)

Population in 1940: 500.

Owner: Sun Oil Company.

Source of information:
V. F. Kesmer
April 13, 1944

Source of supply: Well drilled in 1923 by Sun Oil Company, depth 659 feet, diameter 6 inches, screen from 564 to 651 feet; equipped with deep-well turbine pump; well was flowing in February, 1941; temperature 78½°F.

Pumpage: Estimated minimum 5,000 gallons a day; maximum 10,000 gallons a day; average 6,000 gallons a day.

Storage: Steel pressure tank, 5,000 gallons.

Treatment: None.

Number of customers: 28.

Panola County

Carthage

Population in 1940: 2,178.

Ownership: Municipal.

Source of information:
H. A. Gillis, Water Superintendent
March 20, 1942

Source of supply: 2 wells.

Well 1. At waterworks plant ½ block north of courthouse; drilled with cable tools in 1919, depth 255 feet, diameter 8 inches; air-lift; screen from 215 to 255 feet; yield reported 250 gallons a minute; used as standby well.

Well 2. At waterworks plant ½ block north of courthouse and about 100 feet from well 1; drilled in 1926, depth 255 feet, diameter 8 inches, screen from 215 to 255 feet; air-lift; yield reported 175 gallons a minute.

Pumpage (estimated): 160,000 gallons a day.

Storage: Ground reservoir 100,000 gallons; elevated steel tank, 50,000 gallons.

Number of customers: 482.

Treatment: None.

Analysis of water:

Date of collection: November 3, 1943 Analyzed by J. H. Rowley

	Well 2	
	Parts per million	Equivalents per million
Silica (SiO_2)	22	
Iron (Fe)	0.11	
Calcium (Ca)	11	0.549
Magnesium (Mg)	2.8	0.230
Sodium (Na)	72	3.120
Potassium (K)	2.6	0.066
Bicarbonate (HCO_3)	207	3.393
Sulfate (SO_4)	3	0.062
Chloride (Cl)	17	0.480
Fluoride (F)	0.2	0.011
Nitrate (NO_3)	1.2	0.019
Total dissolved solids	246	
Total hardness as $CaCO_3$	39	
pH	7.6	

Panola County

Carthage -- Continued

Driller's log:

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface sand	2	2	Sand	40	255
Clay and layers of sand	68	70	Lignite		255
Gumbo	145	215			

Polk County

Camden

Population in 1940: 500.

Owner: W. T. Carter Lumber Co.

Source of information: Saw mill Superintendent October, 1941

Source of supply: Well at saw mill of Carter Lumber Company, drilled in 1935 by Layne-Texas Company, depth 404 feet, diameter 12 to 8 inches, screen from 362 to 402 feet; deep-well turbine pump and electric motor; yield 120 gallons a minute.

Pumpage: No record available. Well supplies saw mill, company buildings, company houses and public school.

Storage: Elevated tank, 12,000 gallons.

Treatment: None.

Analysis of water:

Date of collection: Oct. 23, 1941 Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	48	
Iron (Fe)	.14	
Calcium (Ca)	13	.64
Magnesium (Mg)	2.4	.20
Sodium and Potassium (Na+K)	29	1.27
Bicarbonate (HCO_3)	79	1.30
Sulfate (SO_4)	12	.25
Chloride (Cl)	19	.54
Fluoride (F)	0.3	.02
Nitrate (NO_3)	0	0
Total dissolved solids	163	
Total hardness as $CaCO_3$	42	

Camden -- Continued

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil and clay	34	34	Shale	226	363
Broken sand and clay	103	137	Sand	41	404

Corrigan

Population in 1940: 1,402.

Ownership: Municipal.

Source of information:
A. B. Knox, Water Superintendent
Oct. 23, 1941.

Source of supply: Well across road from railroad station, drilled in 1937 by A. E. Fawcett, depth 200 feet; deep-well turbine pump and 7½-horsepower electric motor; static water level 35 feet below pump base when drilled; yield 175 gallons a minute.

Pumpage (estimated): Average, 30,000 gallons a day.

Storage: Ground reservoir, 50,000 gallons; elevated tank, 50,000 gallons.

Treatment: None.

Analysis of water:

Date of collection: Oct. 23, 1941 Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	72	
Iron (Fe)	.15	
Calcium (Ca)	19	.94
Magnesium (Mg)	3.6	.30
Sodium and Potassium (Na+K)	31	1.33
Bicarbonate (HCO_3)	37	.60
Sulfate (SO_4)	61	1.28
Chloride (Cl)	24	.68
Fluoride (F)	0.1	.005
Nitrate (NO_3)	0	0
Total dissolved solids	229	
Total hardness as $CaCO_3$	62	

Goodrich

Population in 1940: 200.

Owner: E. D. Edmonds.

Source of information:
E. D. Edmonds
Oct. 23, 1941

Source of supply: Well drilled, depth 370 feet, diameter 4 inches; screen from 342 to 370 feet; deep-well cylinder and electric motor driven pump jack; static water level 2 feet below top of casing; yield 10 gallons a minute.

Pumpage: Average 7,500 gallons a day.

Storage: Elevated tank, 1,700 gallons; elevated tank, 2,000 gallons.

Number of customers: 65.

Treatment: None.

Analysis of water:

Date of collection: Oct. 23, 1941 Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	19	
Iron (Fe)	.13	
Calcium (Ca)	17	.84
Magnesium (Mg)	2.4	.20
Sodium and Potassium (Na+K)	87	3.77
Bicarbonate (HCO_3)	244	4.00
Sulfate (SO_4)	12	.25
Chloride (Cl)	18	.51
Fluoride (F)	1.0	.05
Nitrate (NO_3)	0	0
Total dissolved solids	277	
Total hardness as $CaCO_3$	52	

Livingston

Population in 1940: 1,851.

Ownership: Municipal.

Source of information:
Luther Mays, Water Superintendent
Oct. 24, 1941

Source of supply: 2 wells.

Well 1. Drilled in 1938 by Layne-Texas Company, depth 232 feet, diameter 16 to 8-5/8 inches, screen from 183 to 232 feet; deep-well turbine pump and electric motor; static water level 80 feet below pump base on April 9, 1938; present yield 235 gallons a minute.

Well 2. Drilled in 1939 by Layne-Texas Company, depth 268 feet, diameter 16 to 8-5/8 inches; deep-well turbine pump and electric motor; static water level 106.5 feet below pump base on Oct. 24, 1941; present yield 250 gallons a minute.

Livingston -- Continued

Pumpage: (Average in gallons a day)

Month	1939	1940	1941
Jan.	165,000	170,000	170,000
Feb.	200,000	195,000	-
Mar.	150,000	195,000	205,000
Apr.	200,000	210,000	200,000
May	250,000	198,000	194,000+
June	275,000	250,000	210,000
July	225,000	260,000	228,000
Aug.	230,000	200,000	241,000
Sept.	200,000	200,000	-
Oct.	190,000	180,000	
Nov.	200,000	170,000	
Dec.	190,000	150,000	

Storage: Ground reservoir, 34,000 gallons; elevated tank, 50,000 gallons; elevated tank, 75,000 gallons.

Number of customers: 710.

Treatment: None.

Analyses of water:

Date of collection: Oct. 24, 1941 Analyzed by W. W. Hastings

	Well 1		Well 2	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	27		25	
Iron (Fe)	.06		.06	
Calcium (Ca)	36	1.80	221	11.06
Magnesium (Mg)	7.3	.60	21	1.70
Sodium and Potassium (Na+K)	69	2.94	80	3.48
Bicarbonate (HCO_3)	259	4.25	305	5.00
Sulfate (SO_4)	12	.25	8	.17
Chloride (Cl)	31	.87	392	11.06
Fluoride (F)	.1	.005	.2	.01
Nitrate (NO_3)	.25	.004	0	0
Total dissolved solids	311		897	
Total hardness as $CaCO_3$	120		638	

Livingston -- Continued

Drillers' logs:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	1	1	Gummy shale	34	165
Clay	84	85	Hard muddy sand	20	185
Hard shale	20	105	White sand (good)	47	232
Sand	26	131			

Well 2

Surface soil	1	1	Sand with hard layers of shale	35	229
Clay	67	68	Brittle shale	12	241
Sand with layers of clay	40	108	Hard shale	27	268
Shale	86	194			

New Willard

Population in 1940: 700.

Source of information: Saw mill Manager

Owner: Texas Longleaf Lumber Co. Oct. 23, 1941

Source of supply: Well drilled in 1912, depth 412 feet, diameter 8 inches; pumped with air.

Pumpage: No record. Supplies saw mill company houses and buildings.

Storage: Elevated tank.

Treatment: None.

Analysis of water:

Date of collection: Oct. 23, 1941 Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	60	
Iron (Fe)	.04	
Calcium (Ca)	37	1.86
Magnesium (Mg)	3.4	.28
Sodium and Potassium (Na+K)	29	1.27
Bicarbonate (HCO_3)	128	2.10
Sulfate (SO_4)	8	.17
Chloride (Cl)	40	1.13
Fluoride (F)	.2	.01
Nitrate (NO_3)	0	0
Total dissolved solids	241	
Total hardness as $CaCO_3$	107	

Red River County

Annona

Population in 1940: 446.

Owner: Texas and Pacific Railroad.

Source of information:
R. L. Harvey, Water Superintendent
September 22, 1943

Source of supply: Impounding reservoir northwest of town, capacity 90,000,000 gallons. (City attempted to develop ground-water supply; a well was drilled in 1936 by B. J. Harper to a depth of 873 feet, but yielded salty water from sand between 839 and 872 feet).

Pumpage: Average 6,000 gallons a day.

Storage: Elevated tank, 30,000 gallons.

Number of customers: 45.

Treatment: Coagulation with alum, pressure filter, and chlorination.

Analysis of water:

Date of collection: Sept. 22, 1943 Analyzed by J. H. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	7.1	
Iron (Fe)	0.94	
Calcium (Ca)	46	2.296
Magnesium (Mg)	2.1	.173
Sodium (Na)	6.0	0.263
Potassium (K)	4.8	.123
Bicarbonate (HCO_3)	159	2.606
Sulfate (SO_4)	5.9	.123
Chloride (Cl)	3.0	.085
Fluoride (F)	0.6	.032
Nitrate (NO_3)	0.8	.013
Total dissolved solids	167	
Total hardness as $CaCO_3$	124	
pH	8.0	

Driller's log:

Abandoned well

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil	6	6	Shale and boulders	133	563
Shale	100	106	Rock	2	565
White rock	30	136	Shale	159	724
Hard shale	124	260	Rock	3	727
White marl	5	265	Shale	5	732
Hard sandy shale	21	286	Rock	27	759
Hard white lime	102	388	Sandy shale	78	837
Broken shale	18	406	Soft rock	2	839
Hard lime and shale	19	425	Sand (salty water)	33	872
Hard lime	5	430	Shale	1	873

Red River County

Avery

Population in 1940: 477.

Ownership: Municipal.

Source of information:
W. G. Bryan, Postmaster
September 22, 1943

Source of supply: Impounding reservoir half a mile north of town; built in 1936, 17 acres under water; well drilled for city in 1934 by Layne-Texas Company to a depth of 1,320 feet encountered salt water at 1,180 feet and was filled and abandoned.

Pumpage: Average 12,500 gallons a day.

Storage: Elevated tank, 50,000 gallons.

Number of customers: 81.

Treatment: Coagulation, pressure filter, and chlorination.

Analysis of water:

Date of collection: Sept. 22, 1943 Analyzed by J. H. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	5.0	
Iron (Fe)	0.12	
Calcium (Ca)	32	1.597
Magnesium (Mg)	2.7	.222
Sodium (Na)	15	.633
Potassium (K)	5.3	.136
Bicarbonate (HCO_3)	67	1.098
Sulfate (SO_4)	23	0.479
Chloride (Cl)	35	0.987
Fluoride (F)	0.2	0.011
Nitrate (NO_3)	0.8	0.013
Total dissolved solids	170	
Total hardness as $CaCO_3$	91	
pH	7.3	

Bogata

Population in 1940: 800.

Ownership: Municipal.

Source of information:
W. C. Kelly, Water Superintendent
September 21, 1943

Source of supply: 1 main well and 4 feeder wells at northeast edge of town; dug in 1937, depth of main well 30 feet, diameter 24 feet; feeder wells are 200 to 500 feet from main well, depth 30 feet, diameter about 6 feet; centrifugal pump and 7½-horsepower electric motor; yield 100 gallons a minute; temperature 76°F.

Pumpage: Maximum, 25,000 gallons; average, 15,000 gallons a day.

Bogata -- Continued

Storage: Concrete ground reservoir, 10,000 gallons; elevated tank, 50,000 gallons.

Number of customers: 96.

Treatment: Aeration and chlorination.

Analysis of water: (Raw water)

Date of collection: Sept. 21, 1943 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	46	
Iron (Fe)	0.03	
Calcium (Ca)	4.9	.245
Magnesium (Mg)	1.0	.082
Sodium (Na)	9.3	.404
Potassium (K)	3.4	.087
Bicarbonate (HCO_3)	27	.443
Sulfate (SO_4)	7.4	.154
Chloride (Cl)	6.0	.169
Fluoride (F)	0.0	.000
Nitrate (NO_3)	3.2	.052
Total dissolved solids	114	
Total hardness as $CaCO_3$	16	
pH	6.8	

Clarksville

Population in 1940: 4,095.

Ownership: Municipal.

Source of information: W. C. Pinson, Jr., Water Superintendent September 21, 1943

Source of supply: 3 wells in northwestern part of town.

Well 1. Drilled in 1902, depth 602 feet, diameter 6 to 5 inches; air lift; static water level 55 feet below land surface in 1907 and 144 feet in 1930; yield 160 gallons a minute; used as stand-by.

Well 2. Drilled in 1902, depth 602 feet, diameter 4 inches; air lift; yield 105 gallons a minute; used as stand-by.

Well 3. Drilled in 1930 by Layne-Texas Company, depth 602 feet, diameter 16 to 8 inches, screen from 523 to 600 feet; deep-well turbine pump and 75-horsepower electric motor; pump set at 430 feet; static water level 144 feet below land surface on May 23, 1930; yield 507 gallons a minute with drawdown of 276 feet when drilled; present yield reported 650 gallons a minute; temperature 73°F.

Clarksville -- Continued

Pumpage: Average, 250,000 gallons a day in summer and 175,000 gallons a day in winter.

Storage: 2 concrete ground reservoirs, 350,000 gallons; elevated tank, 75,000 gallons.

Number of customers: 1,006.

Treatment: None.

Analysis of water:

Date of collection: Sept. 21, 1943 Analyzed by J. H. Rowley

	Well 3	
	Parts per million	Equivalents per million
Silica (SiO_2)	15	
Iron (Fe)	0.04	
Calcium (Ca)	5.3	.26
Magnesium (Mg)	1.0	.08
Sodium (Na)	384	16.70
Potassium (K)	4.8	.12
Bicarbonate (HCO_3)	437	7.18
Sulfate (SO_4)	201	4.18
Chloride (Cl)	204	5.75
Fluoride (F)	0.4	.02
Nitrate (NO_3)	2.0	.03
Total dissolved solids	1,033	
Total hardness as $CaCO_3$	17	
pH	8.4	

Driller's log:

Well 3

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil	2	2	Hard flintrock	9	283
Clay and lime	10	12	Hard shale	177	460
Lime rock	30	42	Hard black sand	12	472
Hard shale	120	162	Hard soapstone	51	523
Hard shale and soapstone	87	249	Hard packsand	13	536
			Hard sand rock	2	538
Hard shale	25	274	Hard packsand	64	602

Bremond

Population in 1940: 1,106.

Source of information:
Charles Clark, Water Superintendent
February 11, 1943

Ownership: Municipal.

Source of supply: Well at pumping station, drilled in 1942 by Layne-Texas Company; active static water level reported 121 feet below land surface; yield 84 gallons a minute with pumping level at 190 feet in July 1942.

Pumpage (estimated): About 25,000 gallons a day.

Storage: Elevated tank, 50,000 gallons.

Number of customers: 166.

Treatment: None.

Analysis of water:

Date of collection: Feb. 11, 1943 Analyzed by P. A. Witt

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	19	
Iron (Fe)	0.05	
Calcium (Ca)	42	2.10
Magnesium (Mg)	8.2	.67
Sodium (Na)	65	2.81
Potassium (K)	6.6	.17
Bicarbonate (HCO_3)	205	3.36
Sulfate (SO_4)	28	.58
Chloride (Cl)	63	1.78
Fluoride (F)	0.2	.01
Nitrate (NO_3)	1.0	.02
Total dissolved solids	334	
Total hardness as $CaCO_3$	138	
pH	8.3	

Calvert

Population in 1940: 2,366.

Source of information:
J. L. Crouch, Water Superintendent
February 11, 1943

Owner: Gulf States Utilities Co.

Source of supply: 2 wells across street from railroad station.

Well 1. Depth 680 feet, diameter 8 inches; air lift; yield 200 gallons a minute.

Well 2. Drilled in 1927, depth 679 feet, diameter 16 to 10 inches, screens at 534-578, 616-637, and 659-679 feet; deep-well turbine pump and electric motor; during test in 1927, static water level was 7.8 feet below measuring point and yield 248 gallons a minute with drawdown of 24 feet; in 1942, static water level was 14 feet and yield 200 gallons a minute with drawdown of 45 feet.

Calvert -- Continued

Pumpage: Average, 70,000 gallons; maximum, 120,000 gallons a day.

Storage: Standpipe, 90,000 gallons; ground reservoir, 26,000 gallons.

Number of customers: 367.

Treatment: None.

Analysis of water:

Date of collection: Feb. 11, 1943 Analyzed by P. A. Witt

	Well 2	
	Parts per million	Equivalents per million
Silica (SiO_2)	16	
Iron (Fe)	0.02	
Calcium (Ca)	6.3	0.31
Magnesium (Mg)	1.5	0.12
Sodium (Na)	321	13.97
Potassium (K)	6.0	0.15
Bicarbonate (HCO_3)	692	11.34
Sulfate (SO_4)	1.6	0.03
Chloride (Cl)	111	3.13
Fluoride (F)	0.4	.02
Nitrate (NO_3)	2.0	.03
Total dissolved solids	807	
Total hardness as $CaCO_3$	22	
pH	8.3	

Driller's log:

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Clay	20	20	Sand	24	225
White sand	10	30	Sandy shale	36	261
Clay	10	40	Sand	68	329
Sand	3	43	Rock	1	330
Rock	2	45	Sand	65	395
Clay	10	55	Hard brittle shale	75	470
Brittle clay	51	106	Clay with streaks of sand	64	534
Blue soapstone	25	131	Sand	50	584
Lignite	14	145	Clay	12	596
Hard packsand	10	155	Sand	20	614
Rock	5	160	Boulders	2	616
Clay	10	170	Sand	49	665
Hard sandy shale	26	196	Boulders	1	666
Sandstone	5	201	Sand	1	667

Robertson County

Franklin

Population in 1940: 1,087.

Owner: Gulf States Utilities Co.

Source of information:
G. S. Stobart, Water Superintendent
February 12, 1943

Source of supply: Well on south side of railroad, about 1 block west of railroad station, drilled about 1923, depth 176 feet; air lift.

Pumpage (estimated): Average 58,000 gallons a day.

Storage: Ground reservoir, 50,000 gallons; elevated tank, 35,000 gallons.

Number of customers: 284.

Treatment: Lime, chlorinated lime and hexameta phosphate fed into well, sedimentation, sand filtration, and chlorination.

Analysis of water:

Date of collection: Feb. 12, 1943 Analyzed by P. A. Witt

	Treated water	
	Parts per million	Equivalents per million
Silica (SiO_2)	13	
Iron (Fe)	0.02	
Calcium (Ca)	36	1.797
Magnesium (Mg)	1.9	0.156
Sodium (Na)	11	0.473
Potassium (K)	4.6	0.118
Bicarbonate (HCO_3)	81	1.327
Sulfate (SO_4)	30	0.625
Chloride (Cl)	21	0.592
Fluoride (F)	0.0	0.000
Nitrate (NO_3)	0.0	0.000
Total dissolved solids	158	
Total hardness as $CaCO_3$	98	
pH	8.2	

Hearne

Population in 1940: 3,511.

Ownership: Municipal.

Source of information:
W. A. Wilkerson, Water Superintendent
February 11, 1943

Source of supply: 2 wells at pumping station in Hearne.

Hearne -- Continued

Well 1. Drilled in 1911 by Taylor-Robertson Company, depth 768 feet, diameter 8 to 6 inches, screen from 708-768 feet; air lift; flowed when drilled; static water level about 17 feet below land surface in 1943; used as standby.

Well 2. Drilled in 1935 by Layne-Texas Company, depth 1,275 feet, diameter 12 to 6 inches, screen from 1,125-1,275 feet; deep-well turbine pump and electric motor; yield 675 gallons a minute.

Pumpage: Average from April 1, 1942 to March 1, 1943, 116,000 gallons a day.

Storage: 2 elevated tanks, 50,000 and 150,000 gallons.

Number of customers: 780.

Treatment: None.

Analyses of water:

Date of collection: Feb. 11, 1943 Analyzed by P. A. Witt

	Well 1		Well 2	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	10		6.2	
Iron (Fe)	.31		.12	
Calcium (Ca)	5.3	0.26	4.8	0.24
Magnesium (Mg)	1.1	0.09	.8	0.07
Sodium (Na)	173	7.52	175	7.63
Potassium (K)	5.8	0.15	7.6	0.19
Bicarbonate (HCO_3)	406	6.66	410	6.73
Sulfate (SO_4)	3.0	0.06	2.9	0.06
Chloride (Cl)	44	1.24	46	1.30
Fluoride (F)	0.2	0.01	0.2	0.01
Nitrate (NO_3)	3.0	0.05	2.0	0.03
Total dissolved solids	446		448	
Total hardness as $CaCO_3$	18		16	
pH	8.3		8.3	

Hearne -- Continued

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface clay	12	12	Gray sand and boulders	10	483
Sand	28	40	Packsand	12	495
Clay and gravel	28	68	Fine-grained sand	10	505
Clay, gravel, boulders and rock	57	125	Clay and boulders	15	520
Packsand	25	150	Gravel, sand, and boulders	15	535
Gumbo	40	190	Clay and boulders	11	546
Sand	10	200	Rock	2	548
Gravel	40	240	Packsand	22	570
Clay and gravel	145	385	Gravel and boulders	8	578
Gravel	20	405	Clay and boulders	52	630
Clay and boulders	40	445	Gravel and boulders	30	660
Gravel and boulders	5	450	Hard packsand	10	670
Rock	4	454	Water sand and gravel	78	748
Packsand	19	473			

Well 2

Surface soil	2	2	Rock	2	516
Yellow clay	14	16	Sand	35	551
Coarse-grained sand	12	28	Sandy shale	97	648
Hard shale	62	90	Rock	1	849
Sandy shale	25	115	Hard shale	7	856
Rock	1	116	Rock	3	859
Sandy shale	15	131	Shale and boulders	11	870
Sand	10	141	Sand	92	762
Shale	44	185	Sandy shale	57	819
Sand	51	236	Rock	3	822
Sandy shale	53	289	Sand	62	884
Sand	22	311	Shale and lignite	53	937
Shale	57	368	Hard shale	113	1050
Rock	1	369	Sandy shale	18	1068
Sand	20	389	Sand	23	1091
Shale	48	437	Lignite	21	1112
Lignite	11	448	Fine-grained sand	17	1129
Sand	45	493	Good coarse-grained sand	146	1275
Shale	21	514			

Rockwall

Population in 1940: 1,318.

Ownership: Municipal.

Source of information:
W. M. McCoulskey, Water Superintendent.
July 31, 1941

Source of supply: 2 wells.

Well 1. Drilled in 1902 by Deering Drilling Company, depth 1,840 feet, diameter 6 to 3½ inches; deep-well turbine pump and 10-horsepower electric motor; yield 35 gallons a minute.

Well 2. Drilled in 1941 by Layne-Texas Company, depth 3,347 feet, diameter 8-5/8 to 4½ inches, screen from 3,242 to 3,342 feet; deep-well turbine pump and 20-horsepower electric motor; static water level was 123 feet below pump base on Sept. 18, 1941; yield was 134 gallons a minute with drawdown of 127 feet on Sept. 18, 1941.

Pumpage (estimated): Maximum, 20,000 gallons a day.

Storage: Elevated tank, 50,000 gallons.

Number of customers: 225.

Treatment: None.

Analyses of water:

Date of collection: Nov. 16, 1942 Analyzed by W. W. Hastings and J. Yett

	Well 1		Well 2	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)			26	
Iron (Fe)			.04	
Calcium (Ca)	10	.50	2.9	1.45
Magnesium (Mg)	4.4	.36	1.2	.10
Sodium and Potassium (Na+K)	1,527	66.39	311	13.52
Bicarbonate (HCO_3)	1,080	17.70	598	9.82
Sulfate (SO_4)	43	.90	199	4.14
Chloride (Cl)	1,725	48.65	36	1.02
Fluoride (F)	-	-	1.7	.09
Nitrate (NO_3)	-	-	.1	.00
Total dissolved solids	3,840		912	
Total hardness as $CaCO_3$	43		78	
pH	-		8.6	

Rockwall -- Continued

Drillers' logs:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil and clay	15	15	Blue Shale	335	1385
Blue rock	120	135	Fine sand	5	1390
Shale	505	640	Blue shale	432	1822
White limestone	410	1050	Sand (water)	20	1844

Well 2

White clay	25	25	Shale	11	2322
Blue shale	730	755	Sandy shale	22	2344
Chalk and shale	48	803	Red and blue shale	64	2408
Chalk	140	943	Hard lime	12	2420
Chalk and shale	428	1371	Red and blue shale	34	2454
Shale	163	1534	Lime	8	2462
Sticky shale	6	1540	Shale and lime	147	2509
Shale	313	1853	Lime	40	2549
Hard shale	27	1880	Shale and lime	203	2852
Tough shale	5	1885	Lime	34	2886
Hard shale	11	1896	Lime and shale	153	3039
Sand	5	1901	Shale (cored at 3044-3058 feet)	57	3096
Hard shale	21	1922	Shale and lime	118	3214
Sand	18	1940	Red bed	12	3226
Hard shale	8	1948	Red bed and layers hard lime	21	3242
Shale	12	1960	Shale and lime	8	3255
Sand	7	1967	Sand (cored)	16	3271
Shale	19	1986	Hard shale - thin layers sand	17	3288
Sand	10	1996	Shale and sand	17	3305
Shale (cored at 2100-2110 feet)	204	2200	Sandy shale and sand	20	3325
Sand (cored at 2219-2235 feet)	40	2240	Hard shale	4	3329
Shale	2	2242	Sandy shale and sand	11	3340
Sand	6	2248	Hard shale	2	3342
Shale	47	2295			
Sandy shale	16	2311			

Rusk County

Henderson

Population in 1940: 6,437

Ownership: Municipal.

Source of information:
J. L. Horner, Water Superintendent
Nov. 3, 1943

Source of supply: 2 wells (Nos. 4 and 6)

Well 4. Drilled in 1936 by Layne-Texas Company, depth 583 feet, diameter 12 inches; deep-well turbine pump and 40-horsepower electric motor; static water level 148 feet below land surface in November 1940; yield 375 gallons a minute with pumping level at 235 feet on Feb. 1, 1943, and 340 gallons a minute with pumping level at 270 feet on Aug. 30, 1943; yield and pumping level measured after 6 hours of pumping.

Well 6. Drilled in 1942 by Layne-Texas Company, depth 609 feet, diameter 16 to 10-3/4 inches, screen from 487 to 592 feet; deep-well turbine pump and 40-horsepower electric motor, pump set at 300 feet; yield 274 gallons a minute with pumping level at 263 feet on Feb. 1, 1943, and 230 gallons a minute with pumping level at 289 feet on August 30, 1943, yield and pumping level measured after six hours of pumping; temperature 70° F.

Pumpage:

(Average in gallons a day)

	1942	1943
Jan.	347,500	317,000
Feb.	330,000	315,000
Mar.	336,700	307,500
Apr.	335,000	323,000
May	358,000	368,000
June	401,000	446,500
July	470,000	473,000
Aug.	436,000	594,500
Sept.	350,000	446,500
Oct.	327,000	363,500
Nov.	295,000	
Dec.	292,000	

(Maximum daily pumpage 775,000 gallons)

Storage: 3 concrete ground reservoirs, 150,000 gallons each; 2 elevated tanks, 50,000 and 250,000 gallons.

Number of customers: 1,400.

Treatment: Chlorination.

Rusk County

Henderson -- Continued

Analyses of water: Analyzed by E. W. Lohr and W. W. Hastings

Date of collection: June 19, 1936 Aug. 1942

	Well 4		Well 6	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Calcium (Ca)	3	.15	5	.25
Magnesium (Mg)	2	.16	2	.16
Sodium and Potassium (Na+K)	63	2.74	88	3.83
Bicarbonate (HCO_3)	171	2.80	201	3.29
Sulfate (SO_4)	Less than 10	--	6	.12
Chloride (Cl)	10	.28	7	.20
Fluoride (F)	--	--	0.4	.04
Nitrate (NO_3)	--	--	0.4	.01
Total dissolved solids	162		230	
Total hardness as $CaCO_3$	17		21	
pH	--		--	

Driller's logs:

Well 4

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Clay	10	10	Rock	1	316
Yellow sand	10	20	Sandy shale	49	365
Sandy shale	80	100	Shale	35	400
Shale and lignite	45	145	Gray sand	12	412
Fine-grained sand	15	160	Shale	15	427
Sandy shale and lignite	92	252	Sand	52	479
Fine-grained sand	16	268	Shale	3	482
Shale and lignite	27	295	Sand	78	560
Sand	20	315	Brown shale and lignite	23	583

Well 6

Soil	3	3	Shale	4	206
Yellow clay	30	33	Fine-grained sand and lignite	188	394
Blue sand and shale	61	94	Fine-grained packsand	30	424
Sand and layers lignite	17	111	Sand (good)	22	446
Fine-grained sand	15	126	Shale	23	469
Shale and layers sand	65	191	Sand (good)	130	599
Fine-grained sand	10	201	Hard lignite	7	606
Soft rock	1	202	Sand	3	609

Rusk County

Overton

Population in 1940: 2,313

Ownership: Municipal.

Source of information:
Joe Singleton, City Secretary
Oct. 7, 1941

Source of supply: 2 wells (Nos. 1 and 3)

Well 1. Drilled in 1931 by Layne-Texas Company, depth 889 feet, diameter 10 inches, screens at 247-268, 283-328, 484-505, and 841-863 feet; deep-well turbine pump and 25-horsepower electric motor; static water level 143 feet below land surface in November 1940; reported yield 175 gallons a minute.

Well 3. Drilled in 1941 by Layne-Texas Company, depth 338 feet, diameter $10\frac{3}{4}$ inches, screens at 246-288 and 309-330 feet; deep-well turbine pump and 30-horsepower electric motor; pump set at 230 feet, static water level reported 158 feet below land surface when drilled; yield 300 gallons a minute with drawdown of 36 feet.

Pumpage (estimated): Average 200,000 gallons a day.

Number of customers: Unknown.

Treatment: Aeration, coagulation; sedimentation; chlorination.

Analyses of water: Analyzed by E. W. Lohr and J. Yett

Date of collection:	Mar. 18, 1936		Oct. 7, 1941	
	Well 1		Well 3	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Calcium (Ca)	--	--	11	0.54
Magnesium (Mg)	--	--	3.6	0.30
Sodium and Potassium (Na+K)	--	--	32	1.40
Bicarbonate (HCO_3)	134	2.20	24	0.40
Sulfate (SO_4)	67	1.39	61	1.28
Chloride (Cl)	24	.68	20	0.56
Fluoride (F)	--	--	0	0
Nitrate (NO_3)	--	--	0	0
Total dissolved solids	366		140	
Total hardness as $CaCO_3$	110		42	
pH	--		--	

Rusk County

Overton -- Continued

Driller's logs:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sandy clay	10	10	Sandy shale	15	289
Sand	10	20	White sand	42	331
Shale	7	27	Sandy shale and lignite	154	485
Muddy sand	52	79	Green sand	40	525
Shale and boulders	79	158	Shale and boulders	20	545
Sandy shale	23	181	Rock	5	550
Green sand	20	201	Sandy shale and lime	65	615
Shale	5	206	Shale and boulders	65	680
White sand	27	233	Rock	3	683
Shale	7	240	Shale and lignite	113	796
White sand	34	274	Shale	23	819
			Sand	70	889

Well 3

Sandy clay	15	15	Rock	1	170
Sand	12	27	Hard green sand	9	179
Sandy shale	10	37	Rock	1	180
Brown shale	69	106	Sandy green shale	10	190
Rock	1	107	Shale	4	194
Brown shale	43	150	Sandy shale and boulders	10	204
Rock	1	151	Sandy shale and shale	15	219
Shale	3	154	White sand, streaks shale		
Rock	1	155	and lignite	85	304
Shale and sandy shale	8	163	Sandy shale and lignite	3	307
Hard green sand	6	169	White sand	21	328
			Shale	10	338

Tatum

Population in 1940: 427.

Ownership: Municipal.

Source of information:
W. F. Daniels, City Secretary
Nov. 3, 1943

Source of supply: Well near elevated tank, drilled in 1938 by Layne-Texas Company, depth 427 feet; deep-well turbine pump and 10-horsepower electric motor; static water level 43.6 below land surface on Nov. 3, 1943; yield 200 gallons a minute with drawdown of 60 feet.

Pumpage: Average 12,500 gallons a day.

Rusk County

Tatum -- Continued

Storage: Elevated tank, 50,000 gallons.

Number of customers: 63.

Treatment: None.

Analysis of water:

Date of collection: Nov. 3, 1943 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	12	
Iron (Fe)	0.01	
Calcium (Ca)	1.7	0.08
Magnesium (Mg)	0.6	0.05
Sodium (Na)	336	14.61
Potassium (K)	7.4	0.19
Bicarbonate (HCO_3)	650	10.65
Sulfate (SO_4)	7.2	0.15
Chloride (Cl)	143	4.03
Fluoride (F)	1.0	0.05
Nitrate (NO_3)	3.2	0.05
Total dissolved solids	832	
Total hardness as $CaCO_3$	6	
pH	8.3	

Sabine County

Hemphill

Population in 1940: 739.

Ownership: Municipal.

Source of information: City Secretary May 8, 1942

Source of supply: Well 2 blocks east of courthouse, drilled in 1928 by W. K. Banker, depth 631 feet, diameter 8 to 6 inches, screen from 595 to 631 feet; deep-well turbine pump and 7½-horsepower electric motor; static water level 101.35 feet below measuring point, which is 1.6 feet above land surface, on May 8, 1942, measurement made 15 hours after pumping stopped; yield 40 gallons a minute; temperature 80° F.

Pumpage (estimated): Average, 20,000 gallons a day.

Storage: Ground reservoir, 50,000 gallons; elevated tank, 75,000 gallons.

Sabine County

Hemphill -- Continued

Treatment: None.

Number of customers: 80.

Analysis of water:

Date of collection: May 22, 1942 Analyzed by B. Irelan

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	16	
Iron (Fe)	.09	
Calcium (Ca)	2.0	.10
Magnesium (Mg)	1.0	.08
Sodium (Na))	514	22.34
Potassium (K))		
Bicarbonate (HCO_3)	1,040	17.06
Sulfate (SO_4)	3	.06
Chloride (Cl)	191	5.39
Fluoride (F)	--	--
Nitrate (NO_3)	0.5	.01
Total dissolved solids	1,261	
Total hardness as $CaCO_3$	9	
pH		--

Pineland

Population in 1940: 267.

Owner: Temple Lumber Company.

Source of information: H. H. Newton, Superintendent May 19, 1942

Source of supply: 3 wells at saw mill.

Well 1. Drilled in 1918 by J. D. Adams, depth 597 feet, diameter 8 to 4½ inches, screen from 552 to 597 feet; deep-well turbine pump and 15-horsepower electric motor; present static water level reported 110 feet below land surface; yield 200 gallons a minute.

Well 2. (Unused) Drilled in 1927 by J. D. Adams, depth 479 feet, diameter 6 to 4½ inches, screen from 439 to 479 feet; air lift; static water level 86.6 feet below land surface on May 19, 1942; yield 150 gallons a minute.

Well 3. Drilled in 1938 by F. R. Balcar, depth 557 feet, diameter 8 to 4½ inches, screens at 450-492 and 505-535 feet; deep-well turbine pump and 15-horsepower electric motor; present static water level reported 130 feet below land surface; yield 125 gallons a minute; used to supply water for swimming pool and stand-by for city.

Sabine County

Pineland -- Continued

Pumpage (estimated): Average, 240,000 gallons a day.

Storage: 4 ground reservoirs, 45,000 gallons.

Treatment: None.

Analysis of water:

Date of collection: May 19, 1942 Analyzed by J. W. Yett, Jr.

	Well 1		Well 3	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	56		22	
Iron (Fe)	.02		.05	
Calcium (Ca)	5.4	.27	3.0	0.15
Magnesium (Mg)	1.8	.15	1.0	0.08
Sodium (Na)) Potassium (K))	248	10.78	292	12.68
Bicarbonate (HCO_3)	256	4.20	200	6.57
Sulfate (SO4)	202	4.21	207	4.31
Chloride (Cl)	98	2.76	71	2.00
Fluoride (F)	.1	.01	.6	.03
Nitrate (NO_3)	1.0	.02	.0	.00
Total dissolved solids	752		800	
Total hardness as $CaCO_3$	21		12	
pH	--		--	

Driller's log:

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Clay	51	51	Rock	2	297
Rock	2	53	Shale and gumbo	138	435
Gumbo	27	80	Rock	11	446
Shale	73	153	Shale and sand	12	458
Fine black sand	4	157	Sand	13	471
Coarse gravel	2	159	Rock	1	472
Gumbo	120	279	Sand	20	492
Rock	2	281	Gumbo	38	530
Gumbo	14	295	Sand	20	557

San Augustine County

San Augustine

Population in 1940: 304.

Ownership: Municipal.

Source of information: Power Plant Operator May 6, 1942

Source of supply: 2 wells.

Well 1. Drilled in 1911 to depth of about 900 feet and later deepened to 1,200 feet, well did not yield sufficient water and was later shot with dynamite at about 600 feet; air lift; static water level 108.69 feet below measuring point on May 6, 1942; yield 75 gallons a minute; temperature 75° F.

Well 2. Drilled in 1925 by W. K. Banker, depth 625 feet, diameter 6 inches, screened about 479 to 520 feet; deep-well turbine pump and 20-horsepower electric motor; static water level 102.37 feet below measuring point on May 6, 1942; yield 145 gallons a minute; temperature 75° F.

Pumpage: --

Storage: Ground reservoir and elevated tank, capacity unknown.

Treatment: None.

Analyses of water:

Date of collection: May 6, 1942 Analyzed by J. W. Yett, Jr.

	Well 1		Well 2	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	14		13	
Iron (Fe)	2.6		1.0	
Calcium (Ca)	.9	0.04	.4	0.02
Magnesium (Mg)	1.1	0.09	.9	0.07
Sodium (Na)) Potassium (K))	366	15.91	385	16.74
Bicarbonate (HCO_3)	956	15.67	980	16.07
Sulfate (SO_4)	6.1	.13	20	0.42
Chloride (Cl)	7.0	.20	10	0.28
Fluoride (F)	.7	.04	1.1	0.06
Nitrate (NO_3)	.0	.00	0.0	0.00
Total dissolved solids	890		931	
Total hardness as $CaCO_3$	6		4	
pH	--		--	

San Augustine County

San Augustine -- Continued

Driller's log:

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface clay	18	18	Blue gypsum	8	307
Soft limerock	13	31	Shale	7	314
Green shale	4	35	Gumbo and boulders	34	340
Limerock	8	43	Lignite	5	353
Shale showing oil	4	47	Brown gumbo	57	410
Mixed green sand and shale	30	77	Brown soapstone	7	417
Hard limerock	4	81	Brown gumbo	60	477
Artesian water strata, flowed small stream	8	89	Water sand and gravel	45	522
Brown shale	22	111	Very hard blue gumbo	24	546
Limerock, hard	2	113	Soft limestone	3	549
Brown shale	57	170	Tough gumbo	11	560
Gumbo	12	182	Very hard rock	2	562
Brown muck	108	290	Tough gumbo	4	566
Soapstone	9	299	Shale showing oil	9	575
			Gumbo	50	625

San Jacinto County

Cold Spring

Population in 1940: 500.

Source of information: Owner
October 23, 1941

Ownership: Private.

Source of supply: Spring about one-fourth mile north of courthouse; water is pumped from spring to elevated tank by 3-inch centrifugal pump and gasoline engine.

Pumpage (estimated): Average, 2,500 gallons a day.

Storage: Elevated tank, 5,000± gallons.

Treatment: None.

Number of customers: 70.

San Jacinto County

Cold Spring -- Continued

Analysis of water:

Date of collection: Oct. 1941 — Analyzed by W. W. Hastings

	Spring	
	Parts per million	Equivalents per million
Silica (SiO_2)	12	
Iron (Fe)	.16	
Calcium (Ca)	4.2	.210
Magnesium (Mg)	2.0	.165
Sodium (Na)) Potassium (K))	1.2	.052
Bicarbonate (HCO_3)	6.0	.098
Sulfate (SO_4)	3	.062
Chloride (Cl)	8.0	.226
Fluoride (F)	0.3	.016
Nitrate (NO_3)	5.0	.081
Total dissolved solids	39	
Total hardness as $CaCO_3$	22	
pH		--

Oakhurst

Population in 1940: 500.

Owner: Texas Long Leaf Lumber Company.

Source of information: Texas Long Leaf Lumber Company October 23, 1941

Source of supply: Well drilled about 1911, depth 250 feet, diameter 6 inches; deep-well cylinder pump and gasoline engine; static water level 114 feet below land surface in 1940; yield 30 gallons a minute.

Pumpage: Not known.

Storage: Elevated tank, 20,000 gallons.

Number of customers: 30.

Treatment: None.

San Jacinto County

Oakhurst -- Continued

Analysis of water:

Date of collection: Oct. 1941 Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	61	
Iron (Fe)	.18	
Calcium (Ca)	55	2.75
Magnesium (Mg)	3.6	.30
Sodium (Na))	56	2.44
Potassium (K))		
Bicarbonate (HCO_3)	268	4.39
Sulfate (SO_4)	12	.25
Chloride (Cl)	28	.79
Fluoride (F)	.4	.02
Nitrate (NO_3)	0.0	.00
Total dissolved solids	366	
Total hardness as $CaCO_3$	152	
pH	--	

Shelby County

Center

Population in 1940: 3,010.

Source of information: Eros Carriker, Water Superintendent June 15, 1944

Ownership: Municipal.

Source of supply: Mill creek, at small division dam 5 miles southwest of Center.

Pumpage: Maximum 200,000 gallons; average 150,000 gallons a day. Capacity of treating plant, 500,000 gallons a day.

Storage: 2 elevated tanks, 50,000 gallons and 100,000 gallons.

Number of customers: 700.

Treatment: Coagulation, sedimentation, and chlorination.

Shelby County

Center -- Continued

Analysis of water:

Date of collection: June 15, 1944 — Analyzed by J. H. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	16	
Iron (Fe)	1.3	
Calcium (Ca)	5.0	0.250
Magnesium (Mg)	2.4	0.197
Sodium (Na)	5.7	0.248
Potassium (K)	1.8	0.046
Bicarbonate (HCO_3)	22	0.361
Sulfate (SO_4)	6.6	0.137
Chloride (Cl)	5.0	0.141
Fluoride (F)	1.7	0.089
Nitrate (NO_3)	0.8	0.013
Total dissolved solids	75	
Total hardness as $CaCO_3$	22	
pH	7.2	

Tenaha

Population in 1940: 608.

Ownership: Municipal.

Source of information: Lem Hill, City Secretary April 4, 1942

Source of supply: Well near elevated tank, drilled in 1941 by Layne-Texas Company, depth 519 feet, diameter 10-3/4 to 6-5/8 inches, screens at 407-429 and 456-508 feet, gravel-walled; deep-well turbine pump and 10-horsepower electric motor, pump set at 160 feet; static water level 110 feet below land surface when drilled; reported yield 75 gallons a minute with drawdown of about 16 feet.

Pumpage (reported estimate): Average 10,000 gallons a day.

Storage: Elevated tank 50,000 gallons.

Number of customers: 125.

Treatment: None.

Shelby County

Tenaha -- Continued

Analysis of water:

Date of collection: 1941. Analyzed by Texas State Department of Health

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	26	
Iron (Fe)	0.56	
Sulfate (SO_4)	10	.28
Chloride (Cl)	151	4.26
Fluoride (F)	2.8	.14
Nitrate (NO_3)	--	
Total dissolved solids	971	
Total hardness as $CaCO_3$	33	
pH	8.8	

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sand and clay	28	28	Sandy shale	11	197
Lignite	7	35	Sand	13	210
Sand and shale	16	51	Sandy shale and lignite	154	364
Sand	15	66	Rock	2	366
Shale	20	86	Shale and boulders	37	403
Sandy shale	94	180	Sand	107	510
Shale	6	186	Shale	9	519

Timpson

Population in 1940: 1,494.

Ownership: Municipal.

Source of information: H. C. Meador, Water Supt. April 3, 1942.

Source of supply: 2 wells.

Well 1. One block north of depot, drilled about 1907, depth 677 feet, diameter 10 inches, 67 feet of screen reported near bottom of well; air lift; yield about 60 gallons a minute after several hours pumping.

Well 2. Two blocks east of depot, drilled in 1940 by Layne-Texas Company, depth drilled to 691 feet and plugged back to 421 feet, diameter 13-5/8 to 6-5/8 inches, screen from 359 to 421 feet, gravel-walled; deep-well turbine pump and 20-horsepower electric motor, pump set at 180 feet; static water level reported 113 feet below land surface when drilled; yield 90 gallons a minute with drawdown of 140 feet; temperature 70° F.

Shelby County

Timpson -- Continued

Pumpage: Maximum, 100,000 gallons; minimum, 30,000 gallons; average 65,000 gallons a day.

Storage: Elevated tank 75,000 gallons.

Number of customers: 300.

Treatment: None.

Analyses of water:

Date of collection: July 25, 1941 Analyzed by Texas State Department of Health

	Well 1		Well 2	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	--		--	
Iron (Fe)	0.06		0.1	
Calcium (Ca)	6		5	
Magnesium (Mg)	2		2	
Sodium and Potassium (Na+K)	198		309	
Bicarbonate (HCO_3)	397		634	
Sulfate (SO_4)	38		2	
Chloride (Cl)	28		71	
Fluoride (F)	0.6		1.4	
Nitrate (NO3)	0.5		2.7	
Total dissolved solids	468		772	
Total hardness as $CaCO_3$	23		20	
pH	--		--	

Driller's log:

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Clay	11	11	Fine-grained gray sand	25	374
Hard sandy shale	58	69	Rock	1	375
Shale	10	79	Fine-grained gray sand	42	417
Rock	4	83	Shale	25	442
Sandy shale	34	117	Shale and lignite	20	462
Shale and lignite	30	147	Shale	14	476
Shale	29	176	Sand	32	508
Rock	2	178	Shale	32	540
Shale	42	220	Rock	1	541
Sand and shale	34	254	Sand and sandy shale	26	567
Fine-grained gray sand	32	286	Shale	12	579
Hard shale and lignite	36	322	Rock	1	580
Rock	2	324	Sand and layers of rock	18	598
Shale	17	341	Hard sand	19	617
Sand	7	348	Hard shale and layers of rock	15	632
Rock	1	349	Sand	59	691

Smith County

Arp

Population in 1940: 1,139.

Ownership: Municipal.

Source of information:
D. H. Mason, Water Superintendent
July 20, 1943

Source of supply: 2 wells.

Well 1. 2 blocks west of railroad depot, drilled in 1935 by Neil Scroggins, depth 368 feet, diameter 10 to 8 inches; deep-well turbine pump and electric motor; static water level 160.9 feet below land surface on July 20, 1943; used as stand-by.

Well 2. 20 feet north of well 1, drilled in 1940 by J. C. Boling, depth 525 feet, screen below 380 feet; deep-well turbine pump and 15-horsepower electric motor, pump set at 290 feet; static water level 234.8 feet below land surface one hour after shutdown on July 20, 1943; yield 100 gallons a minute with pumping level at 263 feet after 3 hours pumping.

Pumpage: No record.

Storage: Elevated tank, 50,000 gallons.

Number of customers: 134.

Treatment: None.

Analysis of water:

Date of collection: July 20, 1943 — Analyzed by W. W. Hastings

	Well 2	
	Parts per million	Equivalents per million
Silica (SiO_2)	17	
Iron (Fe)	0.33	
Calcium (Ca)	2.9	0.14
Magnesium (Mg)	0.4	0.03
Sodium (Na)	133	5.80
Potassium (K)	3.0	0.08
Bicarbonate (HCO_3)	260	4.28
Sulfate (SO_4)	67	1.39
Chloride (Cl)	12	0.34
Fluoride (F)	0.4	0.02
Nitrate (NO_3)	1.0	0.02
Total dissolved solids	372	
Total hardness as $CaCO_3$	8	
pH	8.6	

Smith County

Arp -- Continued

Drillers' logs:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sand and clay	30	30	Blue sand	23	153
Water sand	30	60	Hard sand	12	165
Hard sand	10	70	Sand rock	27	192
Water sand	30	100	Hard sand	76	268
Hard sand	30	130	Water sand	100	368

Well 2

Clay	50	50	Quicksand	112	312
Sand (water)	3	53	Shale	75	387
Shale	109	162	Sand (water)	25	412
Sand (water)	5	167	Shale	28	440
Shale	33	200	Sand (water)	85	525

Lindale

Population in 1940: 820.

Ownership: Municipal.

Source of information:
C. E. Cannon, Water Superintendent
July 26, 1943

Source of supply: Well at southwest corner of school ground, drilled in 1939 by Layne-Texas Company, depth 753 feet, diameter 10 to 5½ inches; deep-well turbine pump and 25-horsepower electric motor, pump set at 350 feet; static water level 219 feet below land surface in 1939; yield 116 gallons a minute with drawdown of 97 feet.

Pumpage: Average 35,000 gallons a day.

Storage: Elevated tank, 50,000 gallons.

Number of customers: 156.

Treatment: None.

Smith County

Lindale -- Continued

Analysis of water:

Date of collection: July 26, 1943 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	13	
Iron (Fe)	0.12	
Calcium (Ca)	10	0.499
Magnesium (Mg)	2.9	0.238
Sodium (Na)	38	1.673
Potassium (K)	4.8	0.123
Bicarbonate (HCO_3)	126	2.065
Sulfate (SO_4)	14	0.291
Chloride (Cl)	4.0	0.113
Fluoride (F)	0.6	0.032
Nitrate (NO_3)	2.0	0.032
Total dissolved solids	152	
Total hardness as $CaCO_3$	37	
pH	8.2	

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Yellow sand and streaks of shale	56	56	Shale	18	495
Shale and hard layers	14	70	Sand	10	505
Rock	1	71	Shale	17	522
Hard green shale and fine-grained sand	44	115	Sand	13	535
			Shale	8	543
Sand	22	137	Sand	10	553
Sand and layers of shale	45	182	Shale and lignite	29	582
Shale	11	193	Sand and breaks of shale and lignite	27	609
Lignite	18	211	Shale	27	626
Shale and streaks of sand	76	287	Rock	1	627
			Shale	28	655
Sandy shale	38	325	Sand	8	663
Sand	98	423	Sandy shale	26	689
Shale	43	466	Sand	20	709
Sand	10	476	Shale	23	732
Hard rock	1	477	Rock	1	733
			Shale	20	753

Smith County

Troup

Population in 1940: 1,526.

Source of information:
Will S. Fite, City Secretary
July 20, 1943

Ownership: Municipal.

Source of supply: Well at old pumping station near west edge of city, drilled in 1940 by Layne-Texas Company, depth 342 feet, diameter 8-5/8 inches, deep-well turbine pump and 20-horsepower electric motor, pump set at 230 feet; static water level 105 feet below land surface in September 1940; yield 250 gallons a minute with drawdown of 88 feet.

Pumpage (estimated): Average 85,000 gallons a day.

Storage: Concrete ground reservoir, 100,000 gallons; elevated tank, 50,000 gallons.

Number of customers: 275.

Treatment: Aeration, charcoal filter.

Analysis of water:

Date of collection: July 20, 1943 Analyzed by J. H. Rowley

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	10	
Iron (Fe)	1.8	
Calcium (Ca)	34	1.70
Magnesium (Mg)	15	1.23
Sodium (Na)	100	4.34
Potassium (K)	7.0	0.18
Bicarbonate (HCO_3)	109	1.79
Sulfate (SO_4)	233	4.85
Chloride (Cl)	28	0.79
Fluoride (F)	0.4	0.02
Nitrate (NO_3)	0.0	0.00
Total dissolved solids	489	
Total hardness as $CaCO_3$	146	
pH	7.3	

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface sand	2	2	Sand	32	293
Clay	20	22	Shale	7	300
Sand	2	24	Rock	1	301
Shale	237	261	Sand	30	331
			Shale	11	342

Smith County

Tyler

Population in 1940: 28,279.

Source of information:
J. M. Lloyd, Water Superintendent

Ownership: Municipal.

Source of supply: Impounding reservoir and three wells. (Nos. 2, 3, and 4).

Bellwood Lake. On Indian Creek is about 4 miles southwest of courthouse; estimated storage 1,770 acre-feet (about 555,000,000 gallons).

Well 2. At intersection of Robert Street and Glenwood Blvd., drilled in 1937 by Layne-Texas Company, depth 1,086 feet, diameter 16 to 8-5/8 inches, screen from 928 to 1,066 feet; deep-well turbine pump and 60-horsepower electric motor, pump set at 430 feet; static water level 258 feet below land surface in July 1937; yield 350 gallons a minute with drawdown of 118 feet; temperature 77° F.

Well 3. On Robertson Avenue near the southern city limits, drilled in 1938 by Layne-Texas Company, depth 1,057 feet, diameter 13-3/8 to 6-5/8 inches, screen from 785 to 950 feet; deep-well turbine pump and 100-horsepower electric motor, pump set at 420 feet; static water level 219 feet below land surface in 1938; yield 350 gallons a minute with drawdown of 140 feet.

Well 4. Near intersection of Fifth Street and the I. & G. N. Railroad, drilled in 1939 by Layne-Texas Company, depth 1,042 feet, diameter 13-3/8 to 6-5/8 inches, screen from 844 to 1,030 feet; deep-well turbine pump and 100-horsepower electric motor, pump set at 400 feet; static water level 263 feet below land surface in July 1939; yield 650 gallons a minute with drawdown of 75 feet.

Pumpage: Minimum 1,600,000 gallons, maximum 4,500,000 gallons, average 2,800,000 gallons a day; entire supply obtained from lake in winter, two-thirds of supply from lake and one-third from wells in summer.

Storage: Standpipe, 750,000 gallons; elevated tank, 500,000 gallons.

Number of customers: 7,456.

Treatment: Surface water; Aeration, coagulation with alum and lime, sedimentation, rapid sand filter, and chlorination.

Well 4; Aeration, coagulation with alum and lime, pressure filter, and chlorination.

Smith County

Tyler -- Continued

Analyses of water:

Date of collection: Aug. 3, 1943 — Analyzed by J. H. Rowley

	Well 2		Well 3	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	11		13	
Iron (Fe)	0.01		0.06	
Calcium (Ca)	8.4	0.419	10	0.499
Magnesium (Mg)	1.7	0.140	2.3	0.189
Sodium (Na)	29	1.243	30	1.296
Potassium (K)	4.0	0.102	3.8	0.097
Bicarbonate (HCO_3)	94	1.541	108	1.770
Sulfate (SO_4)	8.3	0.173	8.5	0.177
Chloride (Cl)	6.0	0.169	4.0	0.113
Fluoride (F)	0.4	0.021	0.4	0.021
Nitrate (NO_3)	0.0	0.000	0.0	0.000
Total dissolved solids	115		125	
Total hardness as $CaCO_3$	28		34	
pH	8.1		8.2	

Date of collection: July 27, 1943 — July 26, 1943

	Well 4		Raw lake water	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	14		8.6	
Iron (Fe)	3.5		0.04	
Calcium (Ca)	28	1.398	5.2	0.260
Magnesium (Mg)	4.5	0.370	2.0	0.164
Sodium (Na)	53	2.318	4.5	0.194
Potassium (K)	6.8	0.174	2.8	0.072
Bicarbonate (HCO_3)	93	1.524	20	0.328
Sulfate (SO_4)	61	1.270	2	0.042
Chloride (Cl)	50	1.410	9.0	0.254
Fluoride (F)	1.0	0.053	1.0	0.053
Nitrate (NO_3)	0.2	0.003	0.8	0.013
Total dissolved solids	276		56	
Total hardness as $CaCO_3$	88		21	
pH	7.2		7.0	

Smith County

Tyler -- Continued

Drillers' logs:

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	3	3	Broken fine-grained sand and shale	34	691
Red sandy clay	38	41	Rock	1	692
Soft blue shale	18	59	Fine-grained broken sand and shale	10	702
Soft rock	1	60	Rock	1	703
Soft blue shale	36	96	Fine-grained sand and shale	28	731
Fine-grained gray sand with broken soft shale	75	171	Soft shale	18	749
Soft gray shale	20	191	Fine-grained gray sand	36	785
Coarse-grained white sand with lignite	79	270	Rock	1	786
Soft shale	11	281	Shale with thin layers sand	17	803
Hard rock	1	282	Gray and brown shale	20	823
Soft shale and layers rock	10	292	Rock	1	824
Soft green and brown shale with some lignite	20	312	Hard shale and thin layers sand	22	846
Fine-grained gray sand	13	325	Rock	1	847
Fine-grained gray sand shale and lignite	31	356	Soft shale	14	861
Good gray sand and lignite	25	381	Hard fine-grained gray sand	35	896
Soft gray shale and layers lignite	27	408	Shale	3	899
Soft shale	10	418	Rock	1	900
Fine-grained silty sand	30	448	Hard fine-grained gray sand	10	910
Brown shale	32	480	Shale	5	915
Sand	9	489	Rock	1	916
Soft shale	4	493	Hard shale	6	922
Sand	127	620	Rock	1	923
Gray and brown shale with breaks of sand	10	630	Soft shale	11	934
Shale with breaks of sand	10	640	Hard fine-grained sand	17	951
Sand (finer than 127')	17	657	Shale and layers sand	13	964
			Medium white sand with thin shale breaks in top	78	1042
			Rock	1	1043
			Sand and lignite breaks	21	1064

Smith County

Tyler -- Continued

Well 3

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	4	4	Sand	12	577
Red clay	14	18	Soft shale	5	582
Soft blue shale	127	145	Coarse-grained white sand	24	606
Coarse-grained white sand	34	179	Rock	1	607
Soft shale, thin layers rock, lignite	43	222	Fine-grained gray sand	22	629
Fine-grained dark gray sand	10	232	Hard shale	12	641
Hard brown shale	38	270	Rock	1	642
Soft brown shale, sand and lignite	22	292	Hard sand	8	650
Sand, soft, shale, and lignite	28	320	Rock	15	665
Soft shale, thin layers, fine-grained sand and lignite	50	370	Gray sand with mica	32	697
Hard shale and fine-grained sand	57	427	Soft shale	8	705
Gray sand and thin layers shale	20	447	Rock	1	706
Good gray sand and some lignite	38	485	Shale	2	708
Soft gray shale and layers lignite	17	502	Rock	1	709
Soft shale, sand and lignite	23	525	Hard shale	40	749
Soft shale	40	565	Soft shale and thin layers sand	28	777
			Fine-grained sand with shale breaks	43	820
			Rock	1	821
			Soft shale	14	835
			Gray sand with lignite	18	853
			Soft shale and layers sand	29	882
			Hard shale	15	897
			Fine-grained gray sand	53	950
			Hard shale	12	962
			Soft shale and lignite layers	95	1057

Smith County

Tyler -- Continued

Well 4

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Red sand and clay	28	28	Rock	1	579
Gray shale and layers gray sand	25	53	Soft shale	7	586
Rock	1	54	Hard fine-grained silty sand	24	610
Soft shale and sand	22	76	Soft brown shale, layers of sand and lignite	40	650
Rock	1	77	Hard fine-grained sand	16	666
Soft shale	5	82	Hard rock	1	667
Gray sand and shale	14	96	White sand	21	688
White sand	32	128	Soft shale	6	694
Soft shale, lignite and sand	82	210	Rock	1	695
Coarse-grained white sand, some lignite	25	235	Soft brown shale, sand breaks	29	724
Shale and breaks sand	12	247	Fine-grained gray sand, mica and lignite	23	747
Coarse-grained white sand	13	260	Hard shale	7	754
Rock	1	261	Hard rock	1	755
Hard brown shale, layers hard rock	30	291	Fine-grained sand and shale	13	768
Soft brown shale, layers fine-grained sand	50	341	Soft shale	14	782
Hard brown shale	36	377	Rock	1	783
Fine-grained sand	11	388	Soft shale	7	790
Soft shale, thin layers sand	16	404	Rock	1	791
Hard rock	1	405	Soft brown shale	46	837
Hard shale	11	416	Fine-grained gray sand and lignite	26	863
Soft shale, layers sand	68	484	Soft shale	5	868
Rock	1	485	Rock	1	869
Soft shale, layers sand	43	528	Soft shale	9	878
Hard fine-grained sand and shale	50	578	Rock	1	879
			Soft shale	11	890
			Fine-grained gray sand and lignite	136	1026

Titus County

Mount Pleasant

Population in 1940: 4,528

Source of information:
Bill Lyle, plant operator
November 18, 1943

Ownership: Municipal.

Source of supply: 2 impounding reservoirs; old reservoir built in 1901, area 31.4 acres, capacity 120,000,000 gallons; new reservoir built 1938, area 140 acres; capacity 500,000,000 gallons.

Pumpage: Maximum 720,000 gallons; minimum 200,000 gallons; average 400,000 gallons a day.

Storage: Standpipe, 99,000 gallons.

Number of customers: 1,085.

Treatment: Coagulation, sedimentation, rapid sand filter, and chlorination.

Analysis of water:

Date of collection: Nov. 18, 1943 — Analyzed by J. H. Rowley

	Raw water		Treated water	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	1.6		0.9	
Iron (Fe)	0.67		0.12	
Calcium (Ca)	11	0.549	15	0.749
Magnesium (Mg)	6.0	0.493	5.9	0.485
Sodium (Na)	21	0.899	20	0.879
Potassium (K)	4.2	0.107	4.6	0.118
Bicarbonate (HCO_3)	42	0.688	36	0.590
Sulfate (SO_4)	13	0.271	28	0.583
Chloride (Cl)	37	1.044	37	1.044
Fluoride (F)	0.6	0.032	0.2	0.011
Nitrate (NO3)	0.8	0.013	0.2	0.003
Total dissolved solids	129		140	
Total hardness as $CaCO_3$	52		62	
pH	6.7		6.7	

Talco

Population in 1940: 912

Source of information:
J. B. Osborn, Mayor
May 21, 1942

Ownership: Municipal

Titus County

Talco -- Continued

Source of supply: Well 3½ miles northwest of Talco in Red River County, drilled in 1937 by Layne-Texas Company, depth 408 feet, diameter 20 to 10¾ inches, screen from 281 to 404 feet; deep-well turbine pump and 60-horsepower electric motor; natural flow 23 gallons a minute on May 21, 1942 after pump had been off 22 hours; pump yield 500 gallons a minute with pumping level at 180 feet; temperature 68° F.

Pumpage: Average 40,000 gallons a day.

Storage: Concrete ground reservoir, 22,000 gallons; elevated tank, 22,000 gallons.

Treatment: None.

Analysis of water:

Date of collection: May 21, 1942 Analyzed by B. Irelan

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	15	
Iron (Fe)	0.05	
Calcium (Ca)	2.8	0.14
Magnesium (Mg)	1.0	0.08
Sodium and Potassium (Na+K)	413	17.95
Bicarbonate (HCO_3)	544	8.92
Sulfate (SO_4)	2	0.04
Chloride (Cl)	326	9.19
Fluoride (F)	0.3	0.02
Nitrate (NO_3)	0.2	0.001
Total dissolved solids	1,028	
Total hardness as $CaCO_3$	11	
pH	--	

Driller's log:

Well 1

	Thickness (feet)	Depth (feet)
Yellow clay	10	10
White sand	5	15
Yellow clay	13	28
Rock	1	29
Sandy shale	85	114
Sand	22	136
Shale	148	284
Rock	2	286
Sand (good)	100	386
Sandy shale	22	408

Trinity County

Groveton

Population in 1940: 940.

Source of information: Miss Willie Evans, City Secretary and W. H. Parker, Pump operator. June 23, 1943.

Ownership: Municipal.

Source of supply: 2 wells 116 feet apart near elevated tank.

Well 1. Drilled in 1926 by J. H. Kimball, depth 467 feet, diameter 16 to 8 inches, screens at 166-171, 207-213, 260-295, and 420-465 feet; deep-well turbine pump and electric motor, pump set at 185 feet; yield 155 gallons a minute.

Well 2. Drilled in 1936 by A. E. Fawcett, depth 476 feet, diameter 13 to 8 inches; deep-well turbine pump and electric motor; static water level 125 feet below measuring point on August 4, 1936; yield 100 gallons a minute.

Pumpage (estimated): Average 20,000 gallons a day.

Storage: Ground reservoir 35,000 gallons; elevated tank, 30,000 gallons.

Number of customers: 325.

Treatment: Chlorination.

Analysis of water:

Date of collection: June 23, 1943 — Analyzed by J. H. Rowley

	Composite sample from wells 1 and 2	
	Parts per million	Equivalents per million
Silica (SiO_2)	44	
Iron (Fe)	0.18	
Calcium (Ca)	6.8	0.34
Magnesium (Mg)	1.0	0.08
Sodium (Na)	282	12.28
Potassium (K)	10	.26
Bicarbonate (HCO_3)	339	5.56
Sulfate (SO_4)	216	4.50
Chloride (Cl)	102	2.88
Fluoride (F)	0.4	.02
Nitrate (NO_3)	0.3	.00
Total dissolved solids	845	
Total hardness as $CaCO_3$	21	
pH	7.8	

Trinity County

Groveton--Continued

Drillers' logs:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sandy clay	30	30	Sand	3	200
Black shale	4	34	Gumbo	3	203
Blue sandy shale	13	47	Sand	13	216
Shale and lignite	4	51	Sandstone	4	220
Sandy shale	12	63	Soapstone	35	255
Fine-grained blue sand	5	68	Sand	40	295
Shale and lignite	12	80	Gumbo	8	303
Fine-grained gray sand	6	86	Sandstone	4	307
Shale and lignite	25	111	Gumbo and boulders	14	321
Sandstone	1	112	Shale and lignite	30	351
Shale and lignite	17	129	Sand and gumbo	11	362
Sand	6	135	Gumbo and lignite	28	390
Soapstone	6	141	Hard rock	1	391
Sand and soapstone	31	172	Tough gumbo	13	404
Soapstone	13	185	Shale and lignite	15	419
Sandstone	2	187	Sandstone	1	420
Gray sand	5	192	Gray sand	47	467
Soapstone	5	197			

Well 2

Sandy soil	17	17	Gumbo	9	257
Shale	3	20	Sand	38	295
Sand	42	62	Gumbo	11	306
Lignite and shale	19	81	Rock	3	309
Hard shale	25	106	Gumbo	22	331
Soapstone	29	135	Hard sandy shale	19	350
Sand	6	141	Sand	10	360
Shale	9	150	Gumbo	28	388
Soapstone	5	155	Shale	2	390
Lignite and shale	9	164	Rock	1	391
Soapstone	10	174	Shale	26	417
Lignite and shale	16	190	Soapstone	2	419
Gumbo	50	240	Gumbo	5	424
Rock	1	241	Sand	52	476
Hard shale	7	248			

Trinity County

Trinity

Population in 1940: 2,217.

Source of information:
J. A. Henner, City Manager
June 1943

Ownership: Municipal.

Source of supply: 2 wells about 3 miles south and 1½ miles west of Trinity.

Well 1. Drilled in 1925 by Layne-Texas Company, depth 445 feet, diameter 10 inches, screens at 215-236, 258-298, 320-340, and 404-422 feet, well flowed 10 gallons a minute when drilled; air lift; yield 177 gallons a minute with pumping level at 40 feet.

Well 2. Drilled in 1941 by A. E. Fawcett, depth 452 feet, diameter 13 to 6 inches; air lift; screens at 225-248, 259-274, 286-295, 314-352, 366-379, and 409-431 feet; static water level in 1941 reported 60 feet below land surface; yield 500 gallons a minute when pumped with three air compressors; present yield 300 gallons a minute.

Pumpage (estimated): Average 150,000 gallons a day.

Storage: Ground storage at wells, 100,000 gallons; 2 elevated tanks in Trinity, 50,000 gallons.

Number of customers: 375.

Treatment: None.

Analyses of water:

Date of collection: June 1943 — Analyzed by J. H. Rowley

	Well 1		Well 2	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	54		48	
Iron (Fe)	0.02		0.04	
Calcium (Ca)	12	0.60	12	0.60
Magnesium (Mg)	0.5	0.04	0.8	0.07
Sodium (Na)	250	10.89	262	11.41
Potassium (K)	12	.31	12	.31
Bicarbonate (HCO_3)	324	5.31	334	5.47
Sulfate (SO_4)	2	0.04	2	0.04
Chloride (Cl)	228	6.43	242	6.83
Fluoride (F)	1.0	0.05	0.2	0.01
Nitrate (NO_3)	0.5	0.01	2.2	0.04
Total dissolved solids	739		758	
Total hardness as $CaCO_3$	32		34	
pH	7.7		7.7	

Trinity County

Trinity--Continued

Drillers' logs:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil	2	2	Fine-grained gray sand	33	299
Clay	12	14	Gumbo	8	307
Sand and gravel	10	24	Fine-grained sand with shale	37	344
Soapstone	2	26	Gumbo	10	354
Fine-grained gray sand	5	31	Sand and lignite	18	372
Soapstone	9	40	Gumbo	8	380
Lignite	5	45	Sand	10	390
Soapstone	17	62	Sandstone	4	394
Hard fine-grained sand	5	67	Gumbo	11	405
Tough gumbo	135	202	Sandstone	3	408
Lignite	6	208	Hard packsand	20	428
Sand	25	233	Sandstone	4	432
Gumbo	12	245	Fine-grained sand	10	442
Lignite and shale	15	260	Sandstone	3	445

Well 2

Surface clay and sand	18	18	Sand and shale	4	279
Sand	16	34	Sand	4	283
Shale, sand and clay	8	42	Sand and shale	3	286
Sand and gravel	11	53	Sand	11	297
Lignite and sand	3	56	Lignite and shale	20	317
Lignite	4	60	Sand	33	350
Lignite and sand	15	75	Sand and shale	6	356
Sandy shale	13	88	Lignite and hard shale	10	366
Shale	30	118	Sand with shale streaks	13	379
Rock	2	120	Shale	6	385
Hard sand and shale	6	126	Sand and lignite	8	393
Sand and shale	6	132	Hard sand, lignite and shale	7	400
Sand	4	136	Sand and shale	8	408
Sand and shale	37	173	Sand	4	412
Hard shale	23	196	Sand and shale	3	415
Hard shale and lignite	19	215	Sand	15	430
Sand, shale and lignite	10	225	Hard shale	2	432
Sand and gravel	27	252	Rock	4	436
Sand and shell	3	255	Hard sand and shale	12	448
Shale and lignite	5	260	Rock	4	452
Sand	15	275			

Tyler County

Doucette

Population in 1940: 250.

Source of information: Postmaster October 23, 1941

Owner: Thirty local citizens.

Source of supply: Well drilled by Paul Atchinson, depth 334 feet, diameter 6 inches; deep-well cylinder pump and 1½-horsepower electric motor; static water level 143 feet below land surface in October 1941; yield 10 gallons a minute.

Pumpage(estimated): Average 2,000 gallons a day.

Storage: Elevated tank, 10,000 gallons.

Number of customers: 30.

Treatment: None.

Analysis of water:

Date of collection: Oct. 23, 1941 Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	31	
Iron (Fe)	.12	
Calcium (Ca)	29	1.448
Magnesium (Mg)	2.3	.189
Sodium (Na))	15	.652
Potassium (K))		
Bicarbonate (HCO_3)	110	1.803
Sulfate (SO_4)	8	.167
Chloride (Cl)	21	.592
Fluoride (F)	.4	.021
Nitrate (NO_3)	0.0	.000
Total dissolved solids	183	
Total hardness as $CaCO_3$	96	

Woodville

Population in 1940: 1,521.

Source of information: City Secretary October 23, 1943

Ownership: Municipal.

Source of supply: Well drilled in 1934 by Layne-Texas Company, depth 402 feet, diameter 8 to 4½ inches, screen from 359-402 feet; deep-well turbine pump and electric motor; static water level 90 feet below land surface April 9, 1941; reported yield 140 gallons a minute with drawdown of 11.5 feet.

Pumpage (estimated): Average 42,000 gallons a day.

Tyler County

Woodville--Continued

Storage: Ground reservoir, 50,000 gallons; elevated tank, 50,000 gallons.

Number of customers: 225.

Treatment: Aeration, sedimentation.

Analysis of water:

Date of collection: Apr. 9, 1941 — Analyzed by E. W. Lohr

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	46	
Iron (Fe)	.11	
Calcium (Ca)	36	1.797
Magnesium (Mg)	2.3	.189
Sodium (Na)) Potassium (K))	15	.672
Bicarbonate (HCO_3)	112	1.836
Sulfate (SO_4)	7.0	.146
Chloride (Cl)	24	.677
Fluoride (F)	0.0	.000
Nitrate (NO_3)	0.0	.000
Total dissolved solids	197	
Total hardness as $CaCO_3$	99	
pH	6.5	

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil	2	2	Lime and soapstone	71	274
Clay	17	19	Shale	28	302
Coarse-grained sand	36	55	Hard shale	10	312
Clay	16	71	Sandy shale	27	339
Sand with streaks of clay	35	106	Fine-grained sand and shale	20	359
Clay	34	140	Good coarse-grained sand	43	402
Sand and limestone	53	193	Clay	2	404
Clay	10	203			

Upshur County

Big Sandy

Population in 1940: 609.

Source of information:
John W. Prothro, Water Superintendent
November 25, 1941

Ownership: Municipal.

Source of supply: Well in western part of town, drilled in 1935 by the Austin Bridge Company, depth 409 feet, diameter 8 to 6-5/8 inches, slotted casing from 284 to 409 feet; deep-well turbine pump and 5-horsepower electric motor, pump set at 100 feet; static water level reported 60 feet below land surface in 1935; yield 90 gallons a minute with drawdown of 30 feet.

Pumpage (estimated): Average 25,000 gallons a day.

Storage: Concrete reservoir, 50,000 gallons; elevated tank, 50,000 gallons.

Treatment: None.

Analysis of water:

Date of collection: Nov. 25, 1941 — Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Calcium (Ca)	24	1.198
Magnesium (Mg)	3.9	.321
Sodium (Na)) Potassium (K))	48	2.087
Bicarbonate (HCO_3)	134	2.196
Sulfate (SO_4)	7	.146
Chloride (Cl)	6.0	.169
Fluoride (F)	0.0	0.000
Nitrate (NO_3)	-	-
Total dissolved solids	133	
Total hardness as $CaCO_3$	22	

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Red sand	28	28	Sand	10	296
Red clay and sand	48	76	Sand and gravel	112	408
Sand	208	284	Sandstone	1	409
Cap rock	2	286			

Upshur County

Gilmer

Population in 1940: 3,138.

Source of information:
Ed Gooch, Water Superintendent
November 25, 1941

Owner: East Texas Public Service Company.

Source of supply: 3 wells (nos. 1, 3, and 4.)

Well 1. Between Harrison and Tyler Streets east of Cotton Belt Railroad, drilled in 1925 by Layne-Texas Company, depth 450 feet, diameter 10 to 8 inches, screen from 380 to 446 feet; deep-well turbine pump and 10-horsepower electric motor, pump set at 150 feet; static water level 104 feet below land surface on January 30, 1937; yield 130 gallons a minute with drawdown of 34 feet.

Well 2. Abandoned.

Well 3. At south end of city park, drilled in 1937 by Layne-Texas Company, depth 554 feet, diameter 10 inches, screen from 328 to 433 feet; deep-well turbine pump and 40-horsepower electric motor, pump set at 280 feet; static water level 96 feet below land surface on April 18, 1937; yield 480 gallons a minute with drawdown of 93 feet; temperature 68½° F.

Well 4. Between Cross and Taylor Streets, west of Cotton Belt Railroad, drilled in 1940 by Layne-Texas Company, depth 517 feet, diameter 10 inches, screen from 304 to 497 feet; deep-well turbine pump and 40-horsepower electric motor, pump set at 280 feet; static water level reported 110 feet below land surface on January 8, 1941; yield 500 gallons a minute with drawdown of 134 feet.

Pumpage:

(Average in gallons a day)

	1942	1943
Jan.	242,000	275,000
Feb.	208,000	273,000
Mar.	215,000	263,000
Apr.	216,000	306,000
May	288,000	304,000
June	257,000	351,000
July	345,000	452,000
Aug.	299,000	382,000
Sept.	301,000	339,000
Oct.	288,000	
Nov.	257,000	
Dec.	258,000	

Storage: Concrete reservoir, 100,000 gallons; elevated tank, 75,000 gallons.

Number of customers: 742.

Treatment: None.

Upshur County

Gilmer--Continued

Analysis of water:

Date of collection: Nov. 18, 1943 — Analyzed by W. W. Hastings

	Well 1	
	Parts per million	Equivalents per million
Silica (SiO_2)	13	
Iron (Fe)	.04	
Calcium (Ca)	3.0	0.150
Magnesium (Mg)	0.7	.058
Sodium (Na)	102	4.435
Potassium (K)	3.4	.087
Bicarbonate (HCO_3)	213	3.491
Sulfate (SO_4)	33	.687
Chloride (Cl)	18	.508
Fluoride (F)	.2	.011
Nitrate (NO_3)	2.2	.035
Total dissolved solids	281	
Total hardness as $CaCO_3$	10	
pH	7.2	

Drillers' logs:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface clay and sand	20	20	Sand and lime	24	238
Red clay	10	30	Hard sand rock	1	239
Sand	10	40	Sand and boulders	16	255
Clay	20	60	Gumbo	17	272
Water sand	52	112	Lignite	2	274
Sand	10	122	Sand	7	281
Clay	25	147	Gumbo	57	338
Packsand	19	166	Gumbo and boulders	3	341
Sand rock	1	167	Gumbo	13	354
Water sand	13	180	Shale, lime and boulders	31	385
Sand	1	181	Water sand	64	449
Sand and boulders	12	193	Gumbo	5	454
Sand	6	199	Water sand	36	490
Gumbo	7	206	Gumbo	1	491
Sand	8	214			

Upshur County

Gilmer--Continued

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	8	8	Rock	1	246
Clay	7	15	Sandy shale and boulders	47	293
Sand	10	25	Gray sand	15	308
Sandy clay	37	62	Shale	42	350
Sand	41	103	Good sand	132	482
Shale and boulders	81	184	Sticky shale	4	486
Hard sand	61	245			

Well 3

Yellow clay	5	5	Brown shale	11	230
Red sandy clay	10	15	Packsand	20	250
Black shale	36	51	Rock	1	251
Sand	45	96	Sand and lignite	2	253
Black shale	42	138	Packsand	10	263
Rock	1	139	Shale	13	276
Black shale	14	153	Fine-grained sand and boulders	44	320
Rock	2	155	Sand	134	454
Brown shale	63	218	Gumbo	100	554
Rock	1	219			

Well 4

Surface sand	14	14	Sand	3	198
Clay	3	17	Sandy shale	10	208
Yellow sand	10	27	Shale and lignite	83	291
Brown shale	21	48	Sandy shale	7	298
Sandy shale	21	69	Sandy shale and lignite	29	327
Rock	1	70	Brown sand	8	335
Sand	27	97	Hard shale	29	364
Rock	1	98	Hard sandy lime	7	371
Sand	17	115	Sand	30	401
Hard sandy shale and lignite	12	127	Sand and shale	14	415
Shale	38	165	Sand	28	443
Rock	1	166	Shale and sand	12	455
Sandy shale	13	179	Sand	9	464
Rock	2	181	Shale	5	469
Sand	6	187	Sand and shale	25	494
Shale	8	195	Shale	23	517

Van Zandt County

Canton

Population in 1940: 715.

Source of information:
Z. W. Moore, Mayor and A. M. Graham, Water Superintendent
September 10, 1943

Ownership: Municipal.

Source of supply: Impounding reservoir half a mile west of town, constructed about 1923, drainage area, 100 acres, area within flow line 35 acres, maximum depth, 25 feet. (City attempted to obtain ground-water supply in 1923 but was unsuccessful.)

Pumpage (estimated): Maximum 75,000 gallons, average 50,000 gallons a day.

Storage: 3 concrete reservoirs 25,000 gallons each; elevated tank, 75,000 gallons.

Number of customers: 280.

Treatment: Coagulation, sedimentation, and chlorination.

Analysis of water:

Date of collection: Sept. 10, 1943 — Analyzed by J. H. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	2.5	
Iron (Fe)	0.02	
Calcium (Ca)	5.0	.250
Magnesium (Mg)	2.0	.164
Sodium (Na)	4.0	.172
Potassium (K)	2.6	.067
Bicarbonate (HCO_3)	28	.459
Sulfate (SO_4)	3	.062
Chloride (Cl)	4.0	.113
Fluoride (F)	0.2	.011
Nitrate (NO_3)	0.5	.008
Total dissolved solids	42	
Total hardness as $CaCO_3$	21	
pH	6.8	

Edgewood

Population in 1940: 738.

Source of information:
B. B. Brandon, Mayor
September 10, 1943

Ownership: Municipal.

Source of supply: Impounding reservoir 1 mile south of town, built in 1923, area within flow line 20 acres, capacity 23,000,000 gallons.

Van Zandt County

Edgewood--Continued

Pumpage (estimated): Maximum, 75,000 gallons, average 35,000 gallons a day.

Storage: 3 concrete reservoirs 25,000 gallons each; elevated tank, 50,000 gallons.

Treatment: Coagulation with alum and lime, sedimentation, and chlorination.

Analysis of water:

Date of collection: Sept. 10, 1943 — Analyzed by J. H. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	9.3	
Iron (Fe)	0.05	
Calcium (Ca)	17	0.849
Magnesium (Mg)	7.1	0.584
Sodium (Na)	24	1.053
Potassium (K)	4.8	0.123
Bicarbonate (HCO_3)	53	0.869
Sulfate (SO_4)	31	0.645
Chloride (Cl)	37	1.044
Fluoride (F)	0.6	0.032
Nitrate (NO_3)	1.2	0.019
Total dissolved solids	159	
Total hardness as $CaCO_3$	72	
pH	7.6	

Grand Saline

Population in 1940: 1,641.

Source of information:
R. L. Simmons, Water Superintendent
September 10, 1943

Ownership: Municipal.

Source of supply: Impounding reservoir northwest of town, built in 1924, drainage area 2 square miles, area within flow line 55 acres, capacity 399 acre-feet.

Pumpage (estimated): Maximum 200,000 gallons; minimum 80,000 gallons; average 125,000 gallons a day.

Storage: Elevated tank, 104,000 gallons.

Number of customers: 600.

Treatment: Coagulation with alum and lime, sedimentation and chlorination.

Grand Saline--Continued

Analysis of water:

Date of collection: Sept. 10, 1943 Analyzed by J. H. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	7.5	
Iron (Fe)	0.02	
Calcium (Ca)	13	0.649
Magnesium (Mg)	6.7	0.551
Sodium (Na)	12	.537
Potassium (K)	3.2	0.082
Bicarbonate (HCO_3)	43	0.705
Sulfate (SO_4)	17	0.354
Chloride (Cl)	26	0.733
Fluoride (F)	0.2	0.011
Nitrate (NO_3)	1.0	0.016
Total dissolved solids	120	
Total hardness as $CaCO_3$	60	
pH	7.2	

Wills Point

Population in 1940: 1,976.

Ownership: Municipal.

Source of information:
H. G. Turner, Water Superintendent
September 10, 1943

Source of supply: Impounding reservoir north of town, built about 1915, area under water 50 acres.

Pumpage: No record.

Storage: 4 concrete reservoirs 450,000 gallons, elevated tank, 56,000 gallons.

Number of customers: 620.

Treatment: Coagulation with alum and lime, sedimentation and chlorination.

Van Zandt County

Wills Point--Continued

Analysis of water:

Date of collection: Sept. 10, 1943 — Analyzed by J. H. Rowley

	Raw water	
	Parts per million	Equivalents per million
Silica (SiO_2)	6.1	
Iron (Fe)	0.08	
Calcium (Ca)	10	0.499
Magnesium (Mg)	4.6	0.378
Sodium (Na)	5.9	.256
Potassium (K)	3.2	0.082
Bicarbonate (HCO_3)	60	0.983
Sulfate (SO_4)	7.1	0.148
Chloride (Cl)	1.0	0.028
Fluoride (F)	0.4	0.021
Nitrate (NO_3)	2.2	0.035
Total dissolved solids	75	
Total hardness as $CaCO_3$	44	
pH	7.8	

Walker County

Huntsville

Population in 1940: 5,108

Ownership: Municipal.

Source of supply: 2 wells.

Source of information: R. H. Perry, Acting Water Superintendent October 22, 1941.

Well 1. Drilled in 1936 by Layne-Texas Company, depth 680 feet, diameter 14 inches; deep-well turbine pump; static water level 200 feet below land surface on November 3, 1937; yield 480 gallons a minute with drawdown of 82 feet.

Well 2. Drilled in 1940 by Layne-Texas Company, depth 739 feet, diameter 16 inches; deep-well turbine pump; static water level 178 feet below land surface on June 24, 1940; yield 725 gallons a minute.

Walker County

Huntsville--Continued

Pumpage:

(Average in gallons a day)

	1939	1940	1941
Jan.	311,000	302,000	307,000
Feb.	362,000	349,000	345,000
Mar.	310,000	309,000	270,000
Apr.	326,000	347,000	308,000
May	324,000	319,000	333,000
June	415,000	364,000	347,000
July	380,000	353,000	337,000
Aug.	410,000	378,000	364,000
Sept.	475,000	371,000	375,000
Oct.	358,000	328,000	
Nov.	371,000	379,000	
Dec.	312,000	312,000	

Storage: Concrete ground reservoir, 135,000 gallons; 2 elevated tanks, 85,000 gallons and 400,000 gallons.

Treatment: Softening through zeolite filter.

Number of customers: 1,000.

Analyses of water: (Raw water)

Date of collection: Oct. 22, 1941 Analyzed by W. W. Hastings

	Well 1		Well 2	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	57		52	
Iron (Fe)	.09		.07	
Calcium (Ca)	96	4.79	90	4.49
Magnesium (Mg)	3.0	.25	2.7	.22
Sodium (Na)) Potassium (K))	52	2.26	51	2.22
Bicarbonate (HCO_3)	317	5.20	287	4.70
Sulfate (SO_4)	14	.29	20	.42
Chloride (Cl)	63	1.78	60	1.69
Fluoride (F)	.3	.02	.1	.01
Nitrate (NO_3)	.5	.01	.2	.00
Total dissolved solids	476		440	
Total hardness as $CaCO_3$	253		231	
pH				

Huntsville--Continued

Drillers' logs:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Red clay	2	2	Sand and shale	16	331
Sandy clay	8	10	Shale and sand	26	357
White sandy clay	23	33	Sand with shale breaks	40	397
Sand with breaks	22	55	Shale and sand	49	446
Clay	3	58	Sand and shale	40	486
Sand	3	61	Shale	24	510
White clay	26	87	Sand and shale	42	552
Yellow clay	71	158	Shale and sand	63	615
Sand	7	165	Sand and shale	36	651
Shale	60	225	Shale	4	655
Rock	1	226	Sand	6	661
Yellow and blue shale	44	270	Shale	72	733
Sand and shale	38	308	Shale and sand	18	751
Shale	7	315	Shale	23	774

Well 2

Filled in gravel, cinder and clay sand	15	15	Sandy shale	5	479
Sand	16	31	Hard shale	13	492
White clay	25	56	Hard shale and sand	75	567
Brown and white clay	27	83	Good sand	29	596
Sandy clay	7	90	Shale	5	601
Clay	12	102	Sand and shale	38	639
Clay and sandy clay	24	126	Sand	9	648
Sandy shale	16	142	Shale and strips sand	20	668
Sand with shale	41	183	Shale and sand	37	705
Sand and shale	18	201	Shale	7	712
Shale	18	219	Sand	5	717
Sand and shale	23	242	Sandy shale	14	731
Shale	5	247	Shale	7	738
Sand	10	257	Sand and shale	10	748
Shale	13	270	Shale	8	756
Sandy shale	5	275	Shale and thin layers sand	31	787
Shale	5	280	Shale	15	802
Sand	8	288	Hard shale	20	822
Shale	10	298	Sandy shale	22	844
Blue shale and layers sand	24	322	Hard sand	11	855
Blue shale with hard layers	14	336	Sandy shale	51	906
Shale	25	361	Fine-grained sand	11	917
Shale and strips of sand	32	393	Sandy shale	12	929
Shale	11	404	Hard shale	5	934
Shale and thin layers sand	24	428	Sandy shale	9	943
Hard shale	17	445	Sand	6	949
Shale and layers sand	15	460	Shale	12	961
Hard shale	14	474	Good sand	18	979
			Rock	1	980
			Hard shale	12	992
			Hard sandy shale	24	1016
			Hard shale	8	1024

Waller County

Hempstead

Population in 1940: 1,674

Ownership: Municipal.

Source of information:
J. C. Calhoun, Water Superintendent
April 5, 1944.

Source of supply: 2 wells.

Well 1. Drilled in 1930 by Layne-Texas Company, depth 868 feet; deep-well turbine pump; standby only.

Well 2. About 80 feet southwest of well 1, drilled in 1939 by Layne-Texas Company, depth 745 feet, diameter 10 to 5½ inches, gravel walled, screens at 487-515 and 669-709 feet; deep-well turbine pump; static water level 56.9 feet below measuring point on February 14, 1939; reported yield 200 gallons a minute with drawdown of 48 feet after 12 hours pumping; temperature 80° F.

Pumpage (estimated): Minimum 52,000 gallons, maximum 60,000 gallons, average 55,000 gallons a day.

Storage: Concrete ground reservoir, 100,000 gallons; elevated tank, 100,000 gallons.

Treatment: Aeration.

Number of customers: 376.

Analysis of water:

Date of collection: April 5, 1944 — Analyzed by J. H. Rowley

	Treated water Well 2	
	Parts per million	Equivalents per million
Silica (SiO_2)	19	
Iron (Fe)	0.06	
Calcium (Ca)	30	1.50
Magnesium (Mg)	6.1	0.50
Sodium (Na)	118	5.15
Potassium (K)	6.6	0.17
Bicarbonate (HCO_3)	370	6.06
Sulfate (SO_4)	6.0	0.12
Chloride (Cl)	39	1.10
Fluoride (F)	0.8	0.04
Nitrate (NO_3)	0.2	0.00
Total dissolved solids	408	
Total hardness as $CaCO_3$	100	
pH	7.2	

Waller County

Hempstead--Continued

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Soil	2	2	Sand	60	272
Clay	47	49	Rock	1	273
Sand	38	87	Gumbo	84	357
Clay	20	107	Sand	19	376
Fine-grained sand	12	119	Gumbo	12	388
Clay	8	127	Sand	14	402
Soft rock	9	136	Gumbo	26	428
Clay	34	170	Sand	19	447
Rock	1	171	Gumbo	34	481
Clay	8	179	Sand	33	514
Rock	1	180	Gumbo	169	683
Sand	31	211	Sand	36	719
Rock	1	212	Gumbo	149	868

Washington County

Brenham

Population in 1940: 6,435.

Source of information: City Engineer
June 23, 1942

Ownership: Municipal.

Source of supply: 3 wells and spring.

Well 5. Drilled in 1933 by Layne-Texas Company, depth 1,515 feet, diameter 12½ to 8 inches, screens at 1,210-1,240, 1,295-1,320, and 1,440-1,500 feet; deep-well turbine pump and 20-horsepower electric motor; static water level 42 feet in 1933; yield 508 gallons a minute with drawdown of 243 feet in 1933; temperature 91° F; used as standby well.

Well 6. Drilled in 1935 by J. W. Jackson, depth 200 feet, diameter 10 inces; deep-well turbine pump and 5-horsepower electric motor; yield 240 gallons a minute; temperature 71½° F.

Well 8. Drilled in 1934 by J. W. Jackson, depth 198 feet, diameter 10 inches; deep-well turbine pump and 5-horsepower electric motor; yield 180 gallons a minute; temperature 72½° F.

Spring. In creek valley, used as auxiliary supply; yield estimated at 375,000 gallons a day.

Pumpage:

(Average in gallons a day)

1935	1936	1937	1938	1939	1940	1941
271,000	310,000	321,000	289,000	326,000	351,000	339,000

Brenham--Continued Washington County

Storage: Ground storage reservoir 625,000 gallons; standpipe, 114,000 gallons.

Treatment: Coagulation, sedimentation and chlorination.

Number of customers: 1,500.

Analyses of water:

Date of collection: June 23, 1942 Analyzed by J. W. Yett and B. Irelan

	Well 5		Well 6	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	59		19	
Iron (Fe)	0.07		.08	
Calcium (Ca)	33	1.65	133	6.64
Magnesium (Mg)	1.1	.09	3.5	.29
Sodium (Na)) Potassium (K))	113	4.93	25	1.10
Bicarbonate (HCO_3)	358	5.87	361	5.92
Sulfate (SO_4)	13	.27	20	.42
Chloride (Cl)	18	.51	42	1.18
Fluoride (F)	0.3	.00	0.2	.01
Nitrate (NO_3)	.0	.02	31	.50
Total dissolved solids	425		473	
Total hardness as $CaCO_3$	87		346	
pH	7.7		7.3	

	Well 8		Spring	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Silica (SiO_2)	24		18	
Iron (Fe)	.08		.04	
Calcium (Ca)	128	6.39	136	6.79
Magnesium (Mg)	3.4	.28	2.7	.22
Sodium (Na)) Potassium (K))	19	.82	21	.90
Bicarbonate (HCO_3)	360	5.90	316	5.18
Sulfate (SO_4)	3	.06	31	.65
Chloride (Cl)	49	1.38	34	.96
Fluoride (F)	0.3	.02	0.1	.01
Nitrate (NO_3)	8.0	.13	69	1.11
Total dissolved solids	446		519	
Total hardness as $CaCO_3$	334		350	
pH	7.3		7.7	

Washington County

Brenham--Continued

Drillers' logs:

Well 5

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	11	11	Shale and lime	89	818
Sand	10	21	Sand and shale (cored)	15	833
Sandy clay and boulders	92	113	Shale	63	896
Yellow clay	30	143	Sticky shale	30	926
Hard sand	11	154	Shale	290	1216
Sandy clay	27	181	Sand	10	1226
Hard sand	15	196	Hard green shale	34	1260
Hard sandy clay	40	236	Hard shale	40	1300
Sandy clay	80	315	Sand	6	1306
Sandy lime	26	341	Tough shale	68	1374
Clay	17	358	Hard shale	65	1439
Hard lime	18	376	Sand and shale	15	1454
Lime	5	381	Sand	39	1493
Brown and gray shale	105	486	Hard shale	117	1610
Sand	15	501	Shale	66	1676
Shale	53	554	Sandy shale	20	1696
Sand	12	566	Shale	299	1995
Shale	93	659	Black shale	115	2110
Broken sand, shale and lime	40	699	Lignite and shale	82	2192
Shale	30	729	Plugged back to 1515		

Well 6

Surface black soil	15	15	Coarse-grained sand	16	108
Sand and lime	12	27	Lime-rock	4	112
Lime rock	16	43	Coarse-grained sand-water	16	128
Lime-clay	15	58	Tough clay	57	185
Coarse-grained sand	5	63	Sandy clay-water	15	200
Tough clay	19	82			

Wharton County

El Campo

Population in 1940: 3,906.

Source of information:
Local Manager, Central Power and Light Company
April 1940

Owner: Central Power and Light Company.

Source of supply: 2 wells.

El Campo--Continued

Well 1. Drilled in 1926 by McMasters and Pomeroy; depth 1,188 feet, diameter 17 to 6 inches; screens at 856-878, 990-1,011, and 1,051-1,072 feet, (deepened in 1936 by Layne-Texas Company, additional screen setting not known); deep-well turbine pump and 20-horsepower electric motor: static water level 43.33 feet below pump base on April 19, 1935; yield 250 gallons a minute.

Well 2. Drilled in 1929, depth 1,098 feet; deep-well turbine pump and electric motor; yield 550 gallons a minute.

Pumpage (estimated): Average 260,000 gallons a day.

Storage: Ground storage reservoir; elevated tank.

Number of customers: 925.

Analyses of water:

Date of collection: Apr. 13, 1940 Analyzed by E. W. Lohr

	Well 1		Well 2	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Bicarbonate (HCO_3)	270	4.43	266	4.37
Sulfate (SO_4)	7	.15	7	.15
Chloride (Cl)	81	2.28	74	2.09
Nitrate (NO_3)	0	0.00	0	.00
Total dissolved solids	364		351	
Total hardness as $CaCO_3$	50		52	

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	8	8	Sand and boulders	132	601
Sand	22	30	Hard rock	5	606
Sand, water	10	40	Sand and boulders	18	624
Red sand	50	90	Gumbo	6	630
Yellow clay	30	120	Packsand	25	655
Sand	10	130	Gumbo	22	677
Yellow clay	20	150	Sand and boulders	20	697
Sand, water	30	180	Packsand	10	707
Clay	10	190	Sand, shale and boulders	15	722
Sand	14	204	Gumbo	12	734
Packsand	16	220	Sand and boulders	20	754
Gumbo	14	234	Gumbo	27	781
Sand, water	30	264	Sand and boulders	40	821
Gumbo	66	330	Gumbo	31	852
Sand and boulders	50	380	Sand and gravel	24	876
Gumbo and boulders	59	439	Gumbo	5	881
Sand and boulders	21	460	Shale	10	891
Hard rock	3	463	Sand rock	6	897
Sand rock	6	469	(Continued on next page)		

Wharton County

El Campo--Continued

Well 1--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sandy shale	20	917	Blue gumbo	25	1045
Gumbo	12	929	Sand and boulders	38	1083
Shale	35	964	Gumbo	25	1118
Hard sand	20	984	Brown shale	30	1148
Sand, water	26	1010	Sand, water	22	1170
Shale	10	1020	Gumbo	18	1188

Wharton

Population in 1940: 4,386.

Source of information: A. H. Whidden, Asst. Superintendent March 1940.

Ownership: Municipal.

Source of supply: 2 wells.

Well 1. Drilled in 1926 by McMasters and Pomeroy, depth 940 feet, diameter 18 to 12 inches; deep-well turbine pump and 40-horsepower electric motor; static water level 25.01 feet below pump base, March 11, 1940; yield 675 gallons a minute.

Well 2. Drilled in 1931 by Layne-Texas Company, depth 413 feet; diameter 16 to 12 inches; screens at 212-222, 278-299, 311-333, and 350-393 feet; deep-well turbine pump and 75-horsepower electric motor; static water level 26.65 feet below pump base, June 4, 1934; yield 800 gallons a minute.

Pumpage (estimated): Average 300,000 gallons a day.

Storage: Ground reservoir, 60,000 gallons; elevated tank, 300,000 gallons.

Treatment: None.

Wharton--Continued

Wharton County

Analyses of water:

Date of collection: Mar. 11, 1940 — Analyzed by E. W. Lohr

	Well 1		Well 2	
	Parts per million	Equivalents per million	Parts per million	Equivalents per million
Iron (Fe)	.12			
Calcium (Ca)	37	1.85		
Magnesium (Mg)	13	1.07		
Sodium (Na))	70	3.05	37	1.63
Potassium (K))				
Bicarbonate (HCO_3)	253	4.15	250	4.10
Sulfate (SO_4)	23	.48	14	.29
Chloride (Cl)	47	1.33	44	1.24
Fluoride (F)	0	0	-	-
Nitrate (NO_3)	.36	.01	1.2	.02
Total dissolved solids	315		300	
Total hardness as $CaCO_3$	146		201	

Drillers' log:

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	13	13	Clay	11	311
Sand and gravel	91	104	Sand and gravel	11	322
Clay	14	118	Rock	2	324
Sand	10	128	Sand and gravel	13	337
Clay	80	208	Clay	18	355
Sand	14	222	Sand	39	394
Clay	13	235	Rock	6	400
Sand	7	242	Sand	8	408
Clay	40	282	Clay	5	413
Sand	18	300			

Wood County

Alba

Population in 1940: 675.

Ownership: Municipal.

Source of supply: Well drilled in 1915, depth about 500 feet, diameter 8 inches; pumped with air; present static water level reported about 85 feet below land surface.

Pumpage: Average 15,000 gallons a day.

Wood County

Alba--Continued

Storage: Ground collecting reservoir; elevated tank.

Number of customers: 150.

Treatment: None.

Analysis of water:

Date of collection: Jan. 31, 1942 Analyzed by J. W. Yett, Jr.

	Well 1	
	Parts per million	Equivalents per million
Calcium (Ca)	11	.56
Magnesium (Mg)	1.9	.16
Sodium (Na)) Potassium (K))	296	12.87
Bicarbonate (HCO_3)	342	5.61
Sulfate (SO_4)	5	.10
Chloride (Cl)	279	7.87
Fluoride (F)	.1	.01
Nitrate (NO_3)	2.0	.03
Total dissolved solids	763	
Total hardness as $CaCO_3$	36	

Hawkins

Population in 1940: 1,200.

Ownership: Municipal. Jan. 26, 1942

Source of supply: Well 2½ blocks north and 2 blocks east of railroad station, drilled in 1941 by C. G. Vaught, depth 400 feet, diameter 8 inches; deep-well turbine pump and gasoline motor; yield 250 gallons a minute.

Pumpage: No record. Only a part of Hawkins supplied by city.

Storage: Elevated tank, about 20,000 gallons.

Number of customers: 35.

Treatment: None.

Wood County

Hawkins--Continued

Analysis of water:

Date of collection: Jan. 26, 1942 Analyzed by J. W. Yett, Jr.

	Well 1	
	Parts per million	Equivalents per million
Calcium (Ca)	0.8	.040
Magnesium (Mg)	3	.058
Sodium (Na))	7.8	.339
Potassium (K))		
Bicarbonate (HCO_3)	18	.295
Sulfate (SO_4)	2	.042
Chloride (Cl)	3.5	.099
Fluoride (F)	0	0
Nitrate (NO_3)	0	0
Total dissolved solids	25	
Total hardness as $CaCO_3$	5	

Drillers' log:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface sand	50	50	Shale with sandy streaks	94	274
White sand (water)	20	70	Sand (water)	42	316
Sand	20	90	Shale	20	336
Sand and shale	50	140	Sand	64	400
Sandy shale	40	180			

Mineola

Population in 1940: 3,223.

Source of information: Mr. Blandford, Manager February 26, 1942

Owner: Southwestern Gas and Electric Company.

Source of supply: 2 wells at power and ice plant.

Well 1. Drilled in 1924 by Layne-Texas Company, depth 452 feet, diameter 12 to 8 inches, screens at 122-152, 269-289, 308-328, 368-383, and 406-447 feet; deep-well turbine pump and 20-horsepower electric motor; static water level 58 feet below pump base on April 1, 1939; yield 410 gallons a minute.

Well 2. Drilled in 1927 by Layne-Texas Company, depth 455 feet, diameter 12 to 8 inches, screens at 296-339, 374-391, and 423-455 feet; deep-well turbine pump and 15-horsepower electric motor; yield 375 gallons a minute.

Wood County

Mineola--Continued

Pumpage (estimated): Average 160,000 gallons a day.

Storage: Ground reservoir, 255,000 gallons; elevated tank.

Treatment: Aeration and chlorination.

Analysis of water:

Date of collection: Feb. 26, 1942 Analyzed by J. W. Yett, Jr.

	Well 1	
	Parts per million	Equivalents per million
Iron (Fe)	0.3	
Calcium (Ca)	5.6	.28
Magnesium (Mg)	1.7	.14
Sodium (Na))	44	1.91
Potassium (K))		
Bicarbonate (HCO_3)	110	1.80
Sulfate (SO_4)	12	.25
Chloride (Cl)	10	.28
Fluoride (F)	.1	.005
Nitrate (NO_3)	1.0	.016
Total dissolved solids	129	
Total hardness as $CaCO_3$	21	

Drillers' logs:

Well 1

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil and sand	6	6	Gumbo and boulders	45	275
Red clay	4	10	Water sand	21	296
Sand	60	70	Gumbo	10	306
Brown clay	10	80	Water sand	26	332
Clay	16	96	Lignite	11	343
Water sand	57	153	Gumbo	11	354
Clay	7	160	Lignite	16	370
Sand rock	1	161	Water sand	15	385
Packsand	13	174	Gumbo and lignite	8	393
Sand rock	1	175	Gumbo	28	421
Clay	7	182	Water sand	30	451
Clay and gumbo	48	230	Gumbo	1	452

Mineola--Continued

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Surface soil	5	5	Shale	20	255
Clay	10	15	Shale and fine-grained sand	45	300
Sand	44	59	White sand	39	339
Clay	48	107	Gumbo	43	382
Sand	51	158	Rock	1	383
Clay	7	165	Fine-grained sand	15	398
Rock	3	168	Gumbo	27	425
Sand	10	178	Sand	30	455
Rock	1	179			
Gumbo and lignite	56	235			

Quitman

Population in 1940: 800.

Source of information:
A. C. Wright
February 17, 1942

Owner: Thomas and Ware Water Company.

Source of supply: Well drilled in 1937 by J. C. Boling, depth 365 feet, diameter 12 to 8 inches; screen from 345 to 365 feet; deep-well turbine pump and 7½-horsepower electric motor; yield 160 gallons a minute.

Pumpage (estimated): 84,000 gallons a day.

Storage: Elevated tank, 20,000 gallons.

Number of customers: 140.

Treatment: None.

Analysis of water:

Date of collection: Feb. 17, 1942 Analyzed by J. W. Yett, Jr.

	Well 1	
	Parts per million	Equivalents per million
Iron (Fe)	.05	
Calcium (Ca)	4.8	.240
Magnesium (Mg)	2.4	.197
Sodium (Na)) Potassium (K))	69	3.000
Bicarbonate (HCO_3)	122	2.000
Sulfate (SO_4)	52	1.083
Chloride (Cl)	9.0	0.254
Fluoride (F)	0	0
Nitrate (NO_3)	6.0	.097
Total dissolved solids	203	
Total hardness as $CaCO_3$	22	

Wood County

Winnsboro

Population in 1940: 2,092.

Source of information:
W. W. Butler, City Secretary
February 1942

Ownership: Municipal.

Source of supply: 2 wells.

Well 1. Drilled in 1926 by Layne-Texas Company, depth 155 feet, diameter 36 to 8 inches, screen from 140 to 155 feet; deep-well turbine pump and 15-horsepower electric motor; yield 250 gallons a minute.

Well 2. Drilled in 1940 by Texas Water Supply Corporation, depth 216 feet, diameter 13-3/8 inches, screen from 185 to 210 feet; deep-well turbine pump and 20-horsepower electric motor; static water level 90 feet below pump base on February 14, 1942; yield 370 gallons a minute; temperature 64° F.

Pumpage (estimated): Average 100,000 gallons a day.

Storage: Ground reservoir 120,000 gallons; elevated tank, 85,000 gallons.

Treatment: Aeration.

Analysis of water:

Date of collection: Feb. 14, 1942 Analyzed by J. W. Yett, Jr.

	Well 2	
	Parts per million	Equivalents per million
Iron (Fe)	.05	
Calcium (Ca)	8.8	.439
Magnesium (Mg)	3.6	.296
Sodium (Na))	12	.522
Potassium (K))		
Bicarbonate (HCO_3)	18	.295
Sulfate (SO_4)	7	.146
Chloride (Cl)	10	.282
Fluoride (F)	.1	.005
Nitrate (NO_3)	32	.516
Total dissolved solids	82	
Total hardness as $CaCO_3$	37	

Wood County

Winnsboro--Continued

Drillers' log: (Test log)

Well 2

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Sandy clay	20	20	Hard brittle shale	21	372
Sand and black shale	41	61	Sand	45	417
Fine-grained sand (sampled)	83	144	Sticky shale	5	422
Cavity	6	150	Sand	6	428
Fine-grained sand (sampled)	18	168	Hard shale	26	454
Sticky shale	6	174	Sand	15	469
Fine-grained sand (sampled)	19	193	Sticky shale	64	533
Coarse-grained sand (sampled)	17	210	Sand, streaks of shale	3	536
Sticky blue shale	6	216	Sand	17	553
Blue sandy shale	61	277	Hard rock	1	554
Gray sandy shale	74	351	Sand	26	580
			Gumbo	53	633

I N D E X

A

	Page		Page
Abbott	4, 249	Annona	395
Alba	6, 453	Appleby	6, 368
Alto	6, 59	Aquilla	34, 250
Alvin	10, 35	Arp	6, 420
Anahuac	10, 56	Athens	6, 245
Anderson	8, 189	Atlanta	6, 51
Angleton	10, 37	Avenger	6, 52
Anna	4, 64	Avery	396

B

Barry	4, 373	Blossom	298
Bastrop	6, 28	Blue Ridge	4, 64
Bay City	10, 336	Bogata	5, 396
Baytown	9, 10, 16, 200	Boles Orphan Home	274
Beaumont	9, 10, 286	Bonham	4, 117
Bedias	8, 189	Brandon	4, 251
Bellaire	10, 201	Bremond	6, 399
Bells	4, 169	Brenham	8, 16, 448
Bellville	24	Brookhaven	203
Bessmay	10, 283	Bruceville	341
Big Sandy	6, 437	Bryan	8, 15, 16, 41
Blessing	10, 338	Buffalo	6, 312
Blooming Grove	4, 374	Bynum	4, 252

C

Caddo Mills	274	Coady-Oakland Estates	204
Caldwell	8, 46	Cold Springs	414
Call Junction	10, 382	Collinsville	4, 170
Calvert	6, 399	Columbus	8, 75
Camden	8, 390	Commerce	5, 16, 276
Cameron	356	Como	6, 267
Canton	441	Conroe	8, 359
Carrollton	4, 80	Coolidge	324
Carthage	6, 389	Cooper	99
Celeste	275	Corrigan	8, 391
Celina	4, 66	Corsicana	376
Center	10, 416	Cove	10, 57
Centerville	6, 213	Crandall	4, 291
Channelview	203	Crawford	3, 4, 343
Chilton	4, 112	Crockett	8, 270
China Springs	4, 342	Crosby	205
Clarksville	5, 397	Cumby	5, 268
Cleveland	8, 318	Cushing	6, 368
Clinton Park	204		

(See Volume I for pages 1-237 and Volume II for pages 238-459)

D

Page

Daingerfield 6, 16, 364
Daisetta 10, 320
Dallas 3, 4, 10, 81
Dawson 377
Dayton 10, 321
De Kalb 31
Denison 10, 171
Deport 298
Deweyville 10, 382
Dickinson 10, 149
Dime Box 307
Dodd City 4, 119
Douoette 8, 435

E

Eagle Lake 10, 76
Ector 4, 120
Eddy 4, 344
Edgewood 441
Edna 10, 280
El Campo 10, 450
Elkhart 6, 18
Elgin 6, 29
Emhouse 4, 378
Ennis 4, 101
Eustace 6, 247

F

Fairfield 6, 143
Farmersville 67
Fayetteville 8, 132
Ferris 4, 103
Flatonia 8, 16, 131
Forney 4, 292
Forreston 4, 104
Foster Place 206
Fostoria 8, 361
Franklin 6, 401
Frankston 6, 19
Freeport 10, 16, 39
Frisco 4, 67
Frost 4, 380

G

Galena Park 206
Galveston 10, 15, 16, 150
Ganado 10, 281
Garden Oaks 207
Garden Villas 209
Garland 3, 4, 84
Garrison 6, 370
Genoa 210
Giddings 308
Gilmer 6, 438
Gladewater 6, 16, 182
Goodrich 8, 392
Goose Creek 10, 211
Grand Prairie 4, 16, 88
Grand Saline 442
Grapeland 6, 272
Greens Bayou 213
Greenville 278
Groesbeck 325
Groveton 8, 431
Gunter 4, 171

H

Halletsville 8, 301
Hallsville 6, 238
Hawkins 7, 454
Hearne 7, 401
Hemphill 8, 410
Hempstead 8, 447
Henderson 7, 406
Hewitt 4, 345
Highlands 10, 213
Highlands Farms and Willow Grove Addition 214
Hillsboro 3, 4, 253
Honey Grove 4, 120
Honey Island 10, 195
Houston 9, 10, 15, 215
Howe 4, 172
Hubbard 3, 259
Hughes Springs 7, 16, 53
Humble 10, 223
Huntsville 8, 444

(See Volume I for pages 1-237 and Volume II for pages 238-459)

	Page
Iola	8, 191
Irene	4, 260
Irving	4, 93
Italy	4, 105
Itasca	3, 4, 260
Jacksonville	10, 60
Jasper	16, 284
Jefferson	7, 334
Jewett	7, 314

K

Karnack	7, 239
Kashmere Gardens	225
Kaufman	294
Kemah	10, 159
Kemp	294
Kerens	3[illegible]0
Kilgore	7, 185
Kirbyville	8, 285
Kosse	7, 326
Kountze	10, 196

L

Ladenia	4, 123
LaGrange	8, 133
Lamarque	10, 16, 160
Lancaster	4, 94
LaPorte	10, 226
League City	10, 162
Leonard	4, 124
LeRoy	446
Lexington	7, 311
Liberty	10, 322
Lindale	7, 421
Lindale Park	225
Linden	7, 54
Livingston	8, 392
Longview	10, 16, 187
Lorena	4
Lott	4, 113
Lovelady	8, 273
Lufkin	7, 15, 16, 22

M

Mabank	295
Madisonville	8, 332
Malakoff	7, 248
Malone	5, 262
Marlin	16, 113
Marshall	7, 240
Mart	348
McGregor	4, 17, 349
McKinney	4, 68
Meadow Brook Addition	227
Melissa	5, 70
Mertens	5, 263
Mesquite	5, 95
Mexia	5, 327
Midlothian	3, 5, 106
Midway	8, 333
Milford	5, 107
Mineola	7, 455
Mont Belvieu	10, 57
Montgomery	8, 362
Moody	5, 351
Moulton	8, 303
Mount Calm	264
Mount Pleasant	429
Mount Vernon	7, 142

N

Nacogdoches	7, 371
Naples	7, 366
Navasota	8, 16, 192
Nederland	10, 287
New Boston	5, 32
Newton	8, 383
New Willard	8, 394
Normangee	7, 17, 316

(See Volume I for pages 1-237 and Volume II for pages 238-459)

O

	Page
Oakhurst	8, 415
Oakwood	7, 317
Oakwood and Airline	227
Omaha	7, 366
Orange	10, 385
Orangefield	10, 388
Overton	408

P

	Page
Palacios	10, 339
Palestine	6, 7, 17, 19
Palmer	5, 108
Paris	299
Pasadena	9, 10, 228
Pecan Gap	99
Pelly	229
Pineland	8, 411
Pittsburg	7, 49
Port Arthur	9, 10, 288
Port Neches	9, 10, 289
Prairie Hill	330
Princeton	5, 71
Prosper	5, 72

Q

	Page
Quinlan	5, 278
Quitman	7, 457

R

	Page
Red Oak	5, 109
Richardson	5, 96
Richmond	10, 138
Rockdale	7, 357
Rockwall	5, 404
Rosebud	114
Rosenberg	10, 139
Ross	5, 351
Roxton	5, 300
Rusk	10, 61

S

	Page
San Augustine	7, 413
Savoy	5, 126
Schulenberg	8, 136
Seagoville	5, 97
Sealy	10, 25
Sherman	5, 173
Shiner	9, 303
Shiro	9, 192
Silsbee	10, 198
Smithville	7, 30
Somerville	9, 17, 47
Sour Lake	10, 199
South Houston	231
Southside Place	231
Speegleville	5, 352
Streetman	145
Sugarland	10, 141
Sulphur Springs	268

T

	Page
Talco	5, 429
Tatum	7, 409
Teague	146
Tehuacana	5, 330
Tenaha	7, 417
Terrell	296
Texarkana	5, 10, 17, 33
Texas City	10, 17, 163
Texas City Heights	10, 167
Thorndale	358
Thornton	7, 331
Timpson	7, 418
Tomball	10, 233
Tom Bean	5, 178
Trenton	5, 127
Trinidad	7, 248
Trinity	9, 433
Troup	7, 423
Tyler	6, 7, 10, 424

(See Volume I for pages 1-237 and Volume II for pages 238-459)

V

	Page
Van Alstyne	5, 178
Voth	10, 290

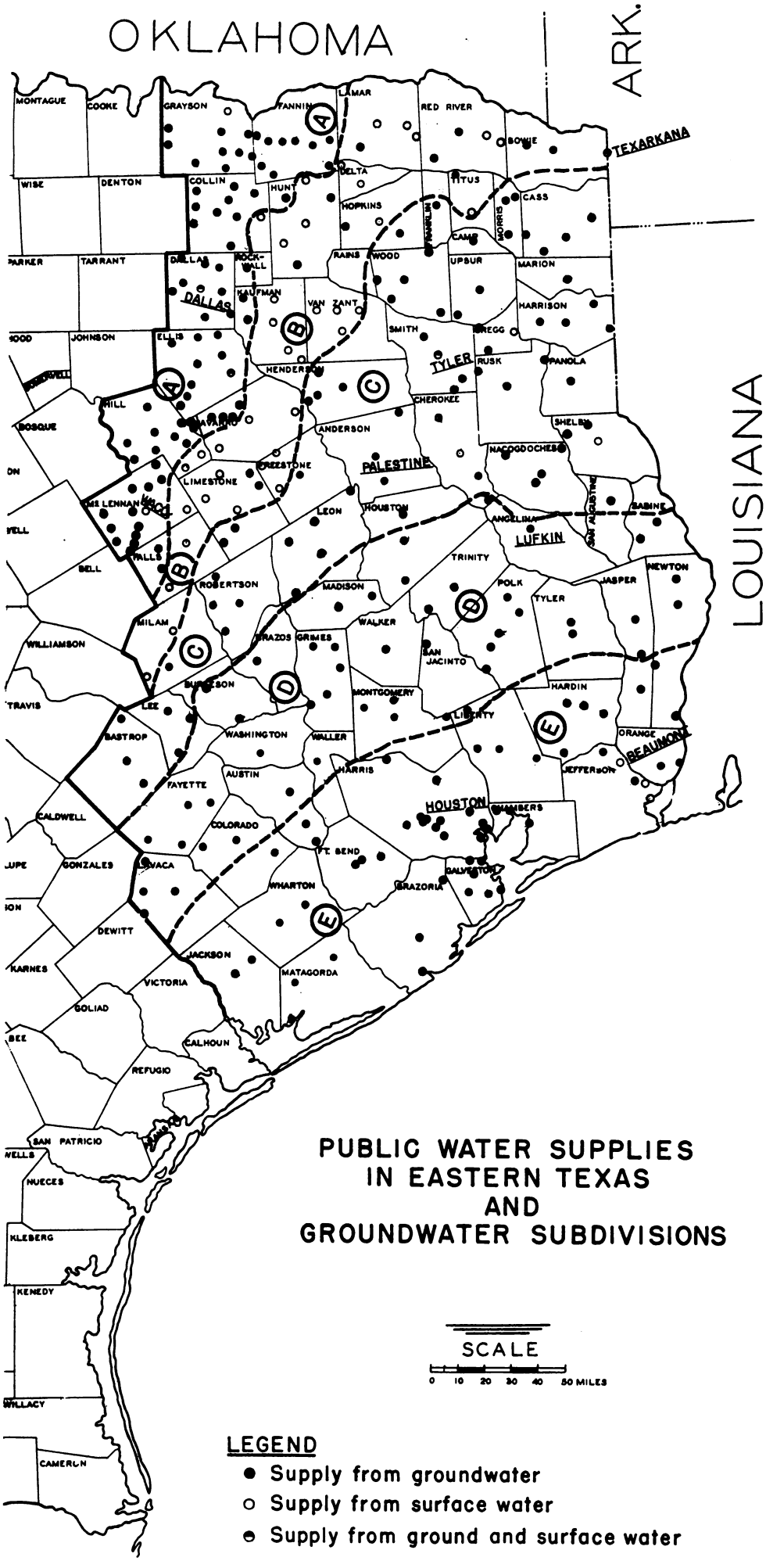
W

	Page
Waco	10, 17, 353
Wallis	10, 27
Waskom	7, 244
Waxahachie	3, 5, 110
Weimar	9, 78
Wells	62
West	5, 356
West Oaks	234
West University Place	235
Wharton	10, 452
Whitesboro	3, 5, 179
Whitewright	5, 181
Whitney	3, 5, 265
Wiergate	9, 384
Willis	9, 363
Wills Point	443
Windom	5, 129
Winnsboro	7, 458
Wolf City	279
Woodville	9, 435
Wortham	147
Wylie	5, 73

Y

	Page
Yoakum	9, 305

(See Volume I for pages 1-237 and Volume II for pages 238-459)



PUBLIC WATER SUPPLIES IN EASTERN TEXAS AND GROUNDWATER SUBDIVISIONS

SCALE

0 10 20 30 40 50 MILES

LEGEND

- ● Supply from groundwater
- ○ Supply from surface water
- ⊖ Supply from ground and surface water