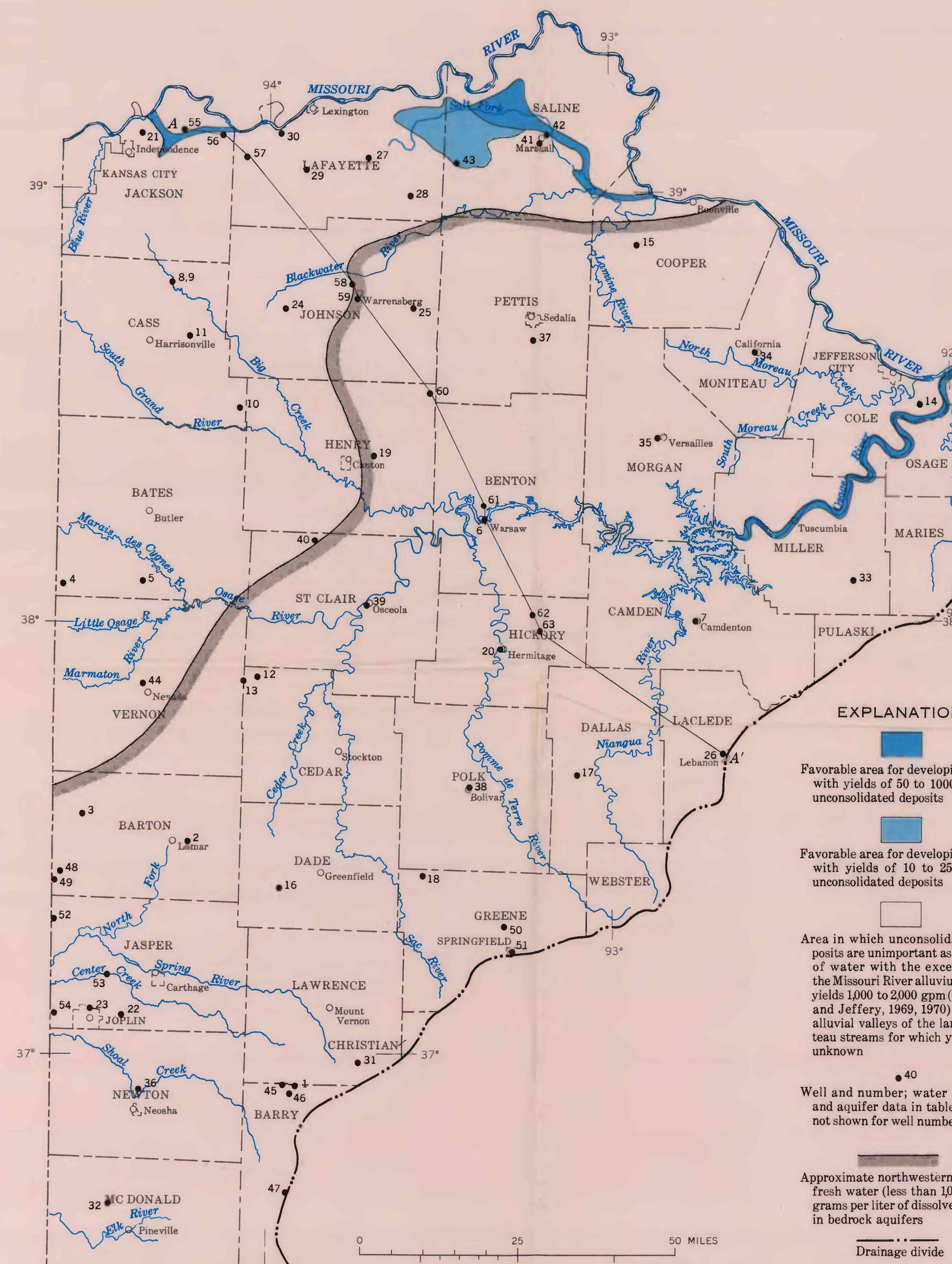
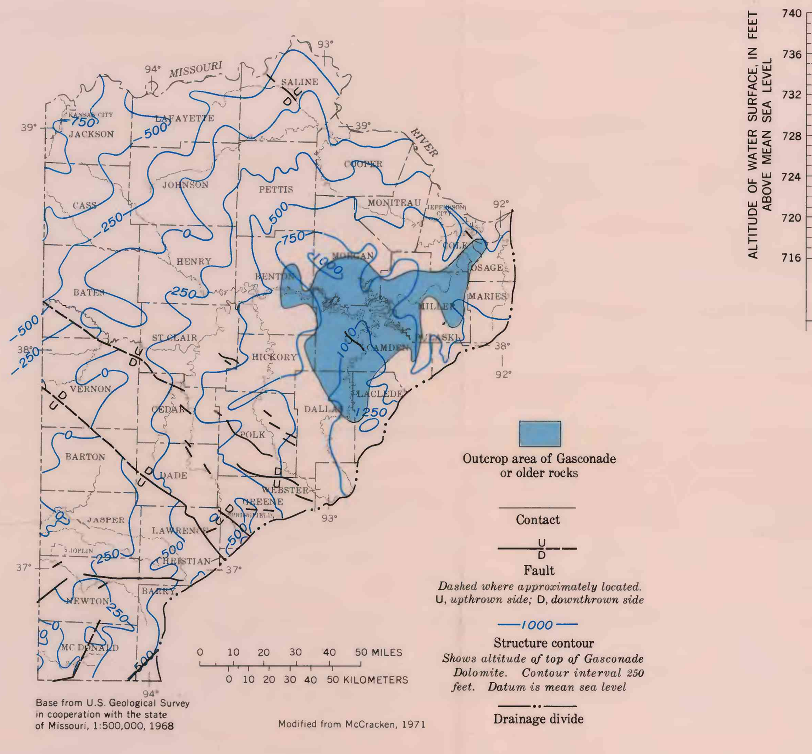
GROUND-WATER AVAILABILITY

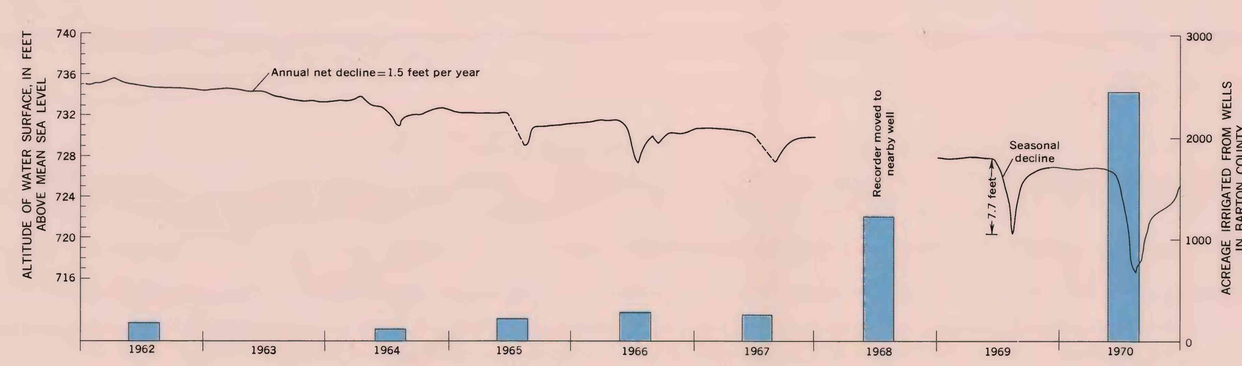
Aquifers in west-central Missouri may be classified in two groups, (1) unconsolidated aquifers (glacial drift and alluvium), and (2) bedrock aquifers. With the exception of the Missouri River alluvium, which is excluded from the present study, unconsolidated aquifers in the area are limited in extent. These aquifers are present primarily in two buried bedrock valleys and glacial drift deposits in the north and in the alluvial deposits in the valleys of the lower Osage River and the larger streams in the Plateaus. Bedrock aquifers are the more important source of ground water and these aquifers are emphasized in this atlas. Shallow bedrock aquifers yield sufficient water for domestic supplies in most areas; however, water from shallow aquifers in the northwest may be objectionable because of high mineral content.



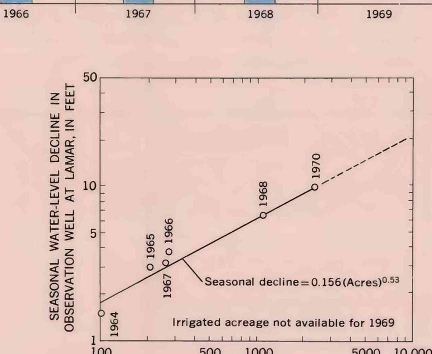
WELL-LOCATION MAP

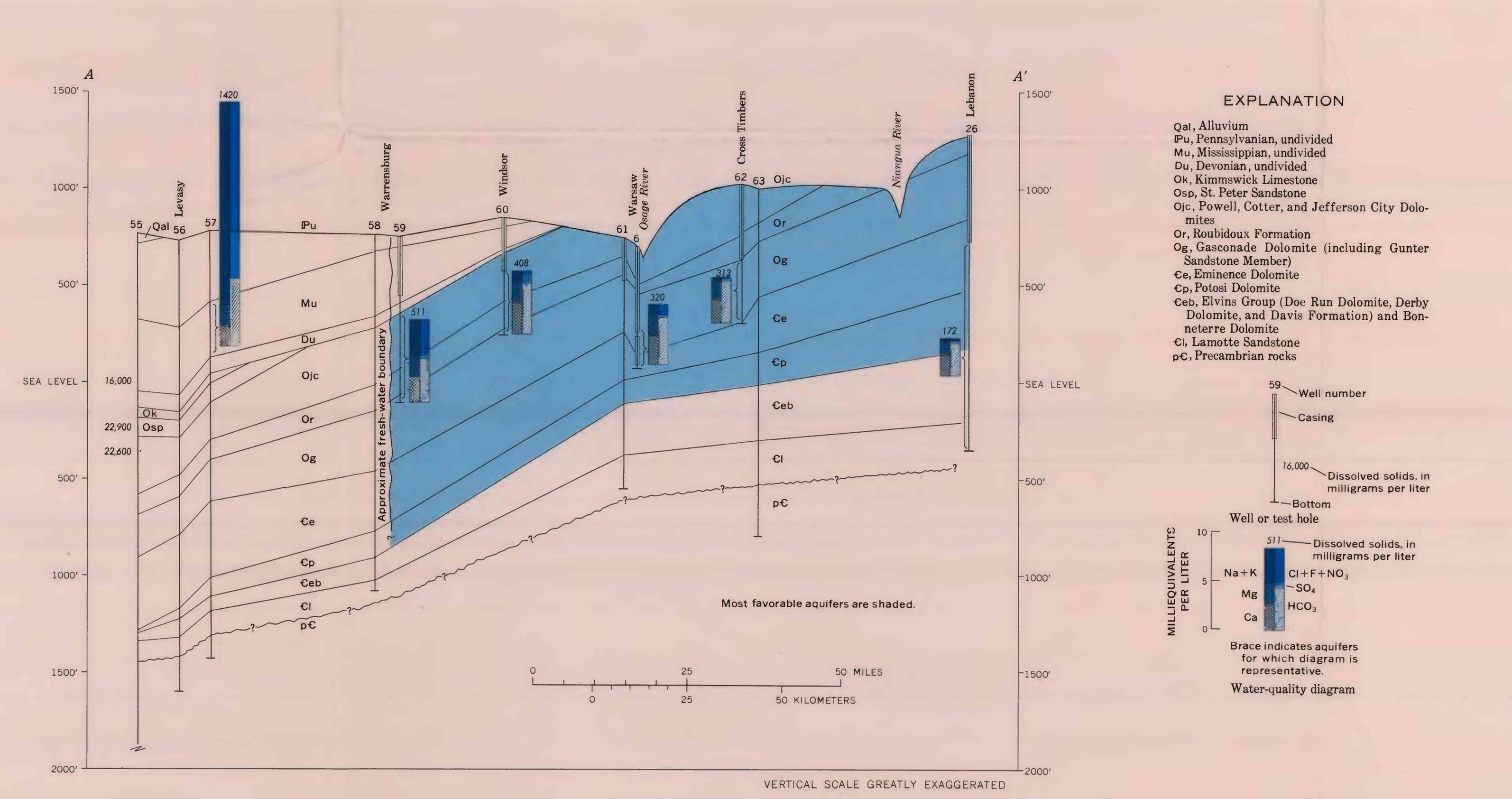


ESTIMATES OF DEPTHS TO SELECTED AQUIFERS CAN BE OBTAINED FROM STRUCTURE AND TOPOGRAPHIC MAPS.—*Estimates of depth to the top of the Gasconade Dolomite are obtained by subtracting altitudes interpolated from the above map from land-surface altitudes obtained from a topographic map of the desired site. Comparison of the above map with the bedrock geologic map on sheet 1 suggests that faulting is more extensive in rocks of Ordovician age in the west-central part of the area than in rocks of Mississippian and Pennsylvanian age. The faulting partly explains the higher specific capacities of wells as shown on the specific capacity map.*



WATER-LEVEL RECORDS FOR AN OBSERVATION WELL AT LAMAR REFLECT INCREASED PUMPAGE FOR IRRIGATION FROM ORDOVICIAN AQUIFERS.—*An annual net decline in water level of about 1.5 feet per year has occurred in the observation well since the beginning of record collection in 1957. Increased pumpage for irrigation in Barton County has resulted in a seasonal water-level decline during the summer months that has ranged from about 1.5 feet in 1964 to 9.7 feet in 1970. However, recovery of water levels after the irrigation season is sufficient to prevent a yearly decline in excess of 1.5 feet prior to the beginning of the next irrigation season. Increased pumping in the future from Ordovician aquifers in the area will increase the seasonal water-level decline. The adjacent graph, for example, suggests that if acreage irrigated from wells in Barton County is increased to 9,000 acres, the resulting seasonal water-level decline in the observation well at Lamar will be about 20 feet. Future pumping at an increased rate may also shift the fresh-water boundary southeastward resulting in increased salinity of water from wells in Ordovician rocks (dissolved-solids map).*





AQUIFER EVALUATION
[Most favorable aquifers are shaded]

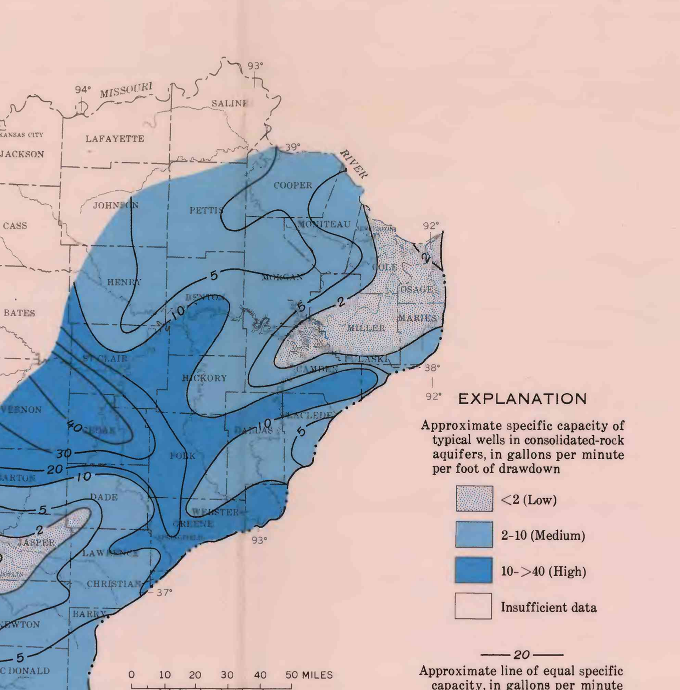
System	Series	Geological unit	Thickness (feet)	Lithology	Water-bearing properties: Southeast of fresh-water boundary	Water-bearing properties: Northwest of fresh-water boundary
Quaternary	Holocene	Alluvium	0-70	Clay, silt, sand, and gravel.	Holocene alluvium in larger Plateau stream valleys locally important for domestic supplies. Pleistocene alluvium and drift important in northern part of area where yields of 10-400 gpm are locally available. Terrace deposits in northwestern part of Saline County yield 550-1000 gpm.	
	Pleistocene	Alluvium and drift	0-200			
Pennsylvanian	Missouri	Lansing Group Kansas City Group Pleasanton Formation Warrensburg Sandstone Member	0-570	Limestone, shale, and sandstone-siltstone.	Source of domestic water supplies. Yields are commonly low (1-3 gpm). Warrensburg Sandstone member, which occupies north-south channel passing through Warrensburg, yields 1-50 gpm. Dissolved solids may be high (more than 1000 mg/l) at any depth.	
	Des Moines	Marmaton Group Cherokee Group	0-550	Shale, siltstone, sandstone, coal, and limestone.	Locally mineralized. Yields adequate only for domestic purposes (1-3 gpm).	
	Atoka	Riverton Formation of Abernathy (1937)[a] Burgner Formation of Searight and Palmer (1957)[a]	0-90 0-45	Shale, coal. Coal, black siltstone, limestone.	Possible source of small (1-3 gpm) domestic water supplies. Water probably high in dissolved solids.	
	Morrow	Hale Formation	0-65	Sandstone.	Found only in Barry County. Not important as an aquifer.	
Mississippian	Chester	Fayetteville Shale Batesville Sandstone Hindsville Limestone Carterville Formation	0-200	Shale, limestone, sandstone, siltstone.	Formations do not have wide areal distribution and are, at best, possible sources of small (1-10 gpm) domestic supplies.	
	Meramec	Ste. Genevieve Limestone St. Louis Limestone Salem Limestone Warsaw Formation	0-185	Limestone with minor amounts of shale.	Yields generally adequate for most domestic purposes. Yields of 100 gpm or more may be obtained from collapsed sink deposits, "hog-chaw," in Joplin area. Maintains high base flows of many streams on Springfield Plateau.	Analysis from widely scattered wells indicate that water in these units is highly mineralized (more than 1000 mg/l dissolved solids).
	Osage	Keokuk Limestone Burlington Limestone Elsey Formation of Robertson (1967)[a] Reeds Spring Limestone Pierson Formation of Weller (1901)[a]	0-400	Limestone, cherty limestone, some dolomite.		
	Kinderhook	Northview Shale Sedalia Limestone Compton Limestone Bachelor Formation of Mehl (1960)[a]	0-100	Limestone, cherty limestone, siltstone, shale, and sandstone.	Not important as an aquifer.	
Devonian	Upper and Middle	Chattanooga Shale Fortune Formation of Grohskopf and others (1943)[a]	0-30 0-6	Shale, carbonaceous. Shale, bedded chert, limestone.	Not important as an aquifer.	
Ordovician	Middle and Lower	Kimmswick Limestone St. Peter Sandstone Powell Dolomite Cotter Dolomite Jefferson City Dolomite Roubidoux Formation Gasconade Dolomite Gunter Sandstone Member	700-1,000	Dolomite and sandstone.	Lower part of series most productive. Average yields from Roubidoux, Gasconade, and Gunter range from 25-600 gpm.	Few analysis available, but these units probably yield highly mineralized water. May be important in future for desalinization.
Cambrian	Upper	Eminence Dolomite Potosi Dolomite Elvins Group Bonneterre Dolomite Lamotte Sandstone	210-325 375-425	Dolomite. Dolomite, shale, and sandstone.	Upper two units have yields comparable to lower Ordovician. Potosi thins to west and southwest and loses importance as an aquifer. Very little data available on Elvins, Bonneterre, and Lamotte.	
Precambrian				Igneous and metamorphic rocks.	Not important as a source of water.	

[a]Not adopted by U.S. Geological Survey.

AQUIFER CHARACTERISTICS

Map number on well-location map	Well owner	Aquifer-test data: Total depth (feet)	Series[1]	Static water level (feet)	Pumping water level (feet)	Drawdown (feet)	Pumping rate (gallons per minute)	Specific capacity (gallons per minute per foot of drawdown)	Transmissivity (square feet per day)	Storage coefficient	Length of test (hours)	Remarks
45	Town of Monett, No. 9	1,525	UЄ	160	179	19	600	31	4,000	—	13	Well in shear zone
46	Town of Monett, No. 10	1,475	UЄ	249	550	301	210	.7	38	—	.8	
47	Fred Vollenweider	1,400	UЄ	225	266	41	361	8.8	2,400	—	1.7	
48	Merle Barker, No. 1	1,090	LO	231	241	10	500	50	59,000	—	2.5	
49	S. R. Widner, No. 3	1,100	LO	239	263	24	525	22	6,200	—	3.3	
50	City of Springfield, No. 5	1,401	UЄ	85	123	38	600	16	4,600	0.0001	48	Four observation wells
51	American Laundry	1,250	UЄ	405	419	14	180	13	3,200	—	1.7	
52	Asbury Farm	185	MO	147	149	2	305	152	19,000	—	1	
53	Town of Webb City, No. 2	850	LO	148	276	128	257	2	280	0.00004	24	Three observation wells
54	Farmers Chemical Co.	1,500	UЄ	117	449	332	305	.9	270	—	22	

[1]UЄ, Upper Cambrian; LO, Lower Ordovician; MO, Mississippian-Osage Series.

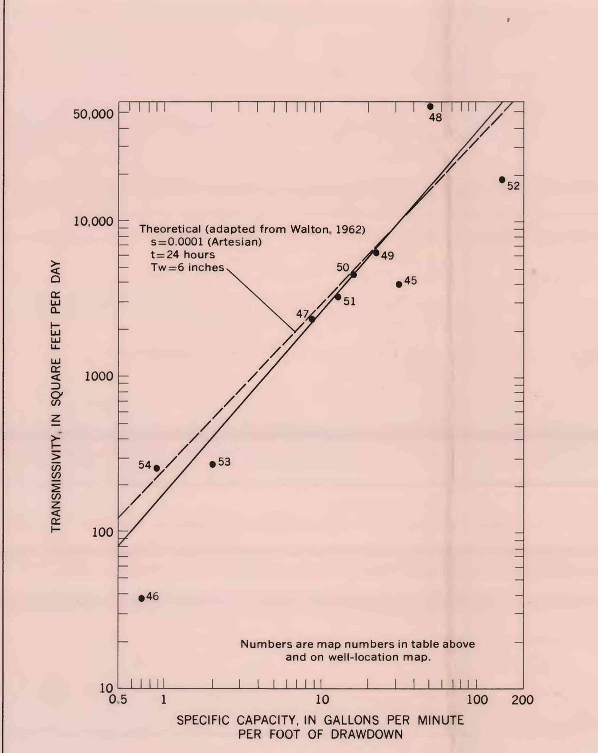


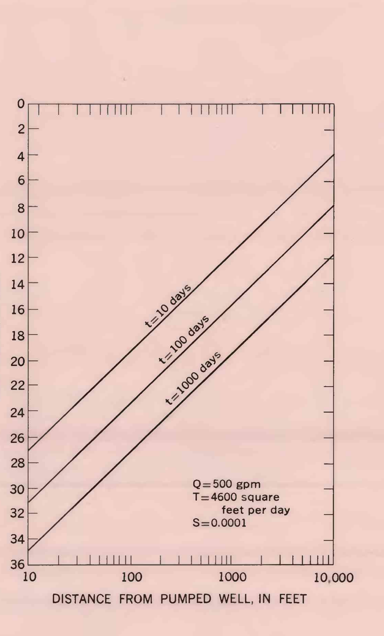
KNOWLEDGE OF HYDRAULIC CHARACTERISTICS OF AQUIFERS IS USEFUL IN DETERMINING THE OPTIMUM LOCATION AND SPACING OF WELLS.—*Characteristics of the Ordovician and Cambrian aquifers may differ greatly over short distances, as indicated by the above aquifer-test data for the two wells at Monett. At Springfield, where aquifer characteristics are more uniform, the transmissivity (T) in a well field covering about 1 square mile ranged from 4,000 to 6,300 square feet per day, averaging 4,600 square feet per day, and specific capacities ranged from 6 to 47 gpm per foot of drawdown, averaging 16 gpm per foot of drawdown. [Note: Transmissivity is the rate at which water is transmitted through a unit width of an aquifer under a hydraulic gradient of 100 percent. One square foot per day equals 7.48 gallons per day per foot].*

Specific capacity (a measure of the ability of a well to yield water) is indicative of the amount of drawdown to be expected in a well producing at a selected rate. For example, a well with a specific capacity of 2 gpm per foot of drawdown will yield 20 gpm with 10 feet of drawdown and a well with a specific capacity of 40 gpm per foot of drawdown will yield 400 gpm with 10 feet of drawdown. The specific capacity of a well is related to the transmissivity of the aquifer or aquifers which the well penetrates, and to other factors such as storage coefficient, pumping rate, length of test, well diameter, and screen size. Assuming that aquifer transmissivity is the primary factor affecting the specific capacity of a well, the adjacent graph plotted from data in the above table can be used to estimate transmissivity when specific capacity is known. A theoretical relation adapted from Walton (1962) is shown on this graph for comparison.

Although the hydraulic characteristics of aquifers are very different in different parts of area, time-distance-drawdown graphs based on typical hydraulic characteristics and a selected pumping rate are useful in predicting the amount of drawdown to be expected at various distances from a pumping well. For example, the graph below, based on aquifer data from the well field at Springfield, indicates that the drawdown in an observation well located 100 feet from a well that has been pumping at a constant rate of 500 gpm for 10 days will be about 19.5 feet.

Owing to the range of aquifer characteristics in the area, aquifer tests are recommended before final design of well fields.





GROUND-WATER QUALITY

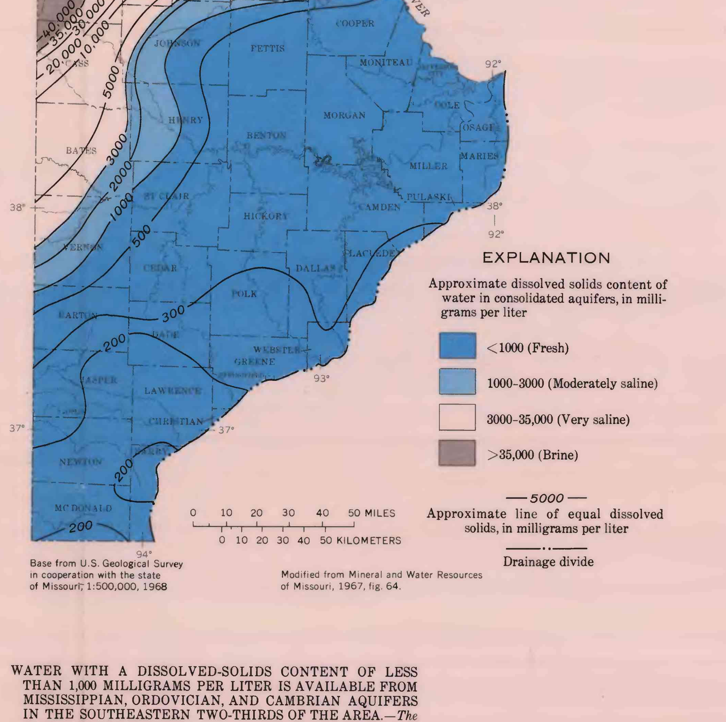
REPRESENTATIVE WELL DATA
[Analysis by Missouri Geological Survey and Water Resources and Missouri Division of Health]

Map number on above map	Well owner	County	Section	Township (N)	Range (W)	Sampling depth or total depth (feet)	Depth of casing (feet)	System[1]	Rate of pumping (gpm)	Specific capacity (gpm per foot of drawdown)	Date of collection	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180° C)	Hardness as $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	pH
1	Town of Monett, No. 6	Barry	32	26	27	1,550	500	Є	100	1	9-1-61	8.0	0.05	—	37	21	2.8	—	206	12	4.5	—	—	208	180	14	7.6
2	Water Supply District No. 1	Barton	27	32	30	940	542	O	400	—	11-12-70	9.5	.52	0.02	32	14	6.0	1.5	168	8.8	3.2	0.2	0.0	177	135	0	7.9
3	Town of Liberal, No. 2	Barton	2	32	33	820	—	O	306	17	6-1-66	8.0	.3	—	45	18	92	4.0	291	17	93	.6	.0	469	186	0	7.3
4	Town of Hume	Bates	8	38	33	620	228	P	35	3.2	7-28-70	10	.20	0.	121	54	1,110	33	336	83	1,790	1.2	.0	3,700	276	258	7.7
5	Town of Rich Hill	Bates	8	38	31	800	—	O	275	—	10-24-69	8.0	.09	0.	87	44	500	17	276	82	857	.9	.2	2,090	226	164	7.7
6	Town of Warsaw	Benton	17	40	22	622	603	O	250	.6	11-26-52	6.0	.2	—	59	29	18	—	296	17	25	—	—	320	243	21	7.4
7	Town of Camdenton, No. 2	Camden	25	38	17	794	80	Є	150	—	3-14-66	8.0	.01	—	58	33	3.2	1.3	333	4.5	6.4	.1	2.8	308	273	5	7.3
8	Public Service, No. 0	Cass	19	46	30	1,600	402	Є	264	1.8	7-1-55	11	.09	.00	891	793	9,960	—	173	824	18,100	—	—	34,700	5,890	5,340	7.6
9	Public Service, No. 2	Cass	19	46	30	650	402	M	—	—	5-9-55	5.0	1.8	.00	106	67	3,370	—	214	42	5,190	—	.1	9,250	541	365	7.6
10	Town of Creighton	Cass	24	43	29	276	229	P	30	.5	4-8-69	9.0	.04	.00	16	13	880	13	770	1.9	1,020	2.4	.0	2,630	94	0	7.9
11	Town of East Lynne	Cass	34	45	30	170	—	P	30	—	2-4-66	10	.4	—	14	9.2	242	11	699	.0	23	.9	.0	768	74	0	8.0
12	Town of Eldorado Springs	Cedar	21	36	28	1,047	512	O	388	43	5-8-70	6.0	.06	0.	46	16	82	5.2	196	21	147	.5	0.	508	161	21	8.0
13	Whiteman Air Force Base, No. 1	Cedar	30	36	28	300	212	M	10	.1	8-18-67	7.7	.06	.02	36	19	41	4.1	229	24	29	.9	.4	269	168	0	7.8
14	Water Supply District No. 4	Cole	1	43	11	820	307	Є	146	3.6	10-10-69	10	.25	0.	33	3.4	6.4	1.2	352	26	4.5	.1	.2	405	289	19	7.8
15	Town of Pilot Grove	Cooper	5	47	18	950	300	O	180	5.0	12-13-68	8.0	.04	0.	58	28	9.6	2.8	329	16	6.7	.3	.2	321	261	0	7.3
16	Town of Lockwood, No. 3	Dade	36	31	28	1,300	625	Є	400	—	1-26-70	4.0	.17	.0	44	19	10	1.6	174	62	9.8	.1	.0	342	189	46	7.9
17	Town of Buffalo, No. 3	Dallas	26	34	20	1,050	360	Є	183	2.6	2-21-67	9.0	.05	—	45	26	1.9	1.7	266	12	4.4	.1	.3	233	220	2	7.4
18	Town of Walnut Grove	Greene	14	31	24	1,162	453	O	214	43	11-6-63	8.0	.10	—	36	20	2.0	1.0	183	14	5.8	—	0.	190	172	22	7.6
19	Tommy Kenyon	Henry	28	42	25	275	—	P	12	—	9-22-65	4.3	.05	.00	7.9	4.4	354	—	730	.8	152	1.8	.0	944	38	0	8.1
20	Town of Hermitage	Hickory	22	37	22	802	230	Є	197	8	4-28-69	8.0	.1	0.	54	26	4.4	1.0	278	22	6.2	.1	.2	330	228	16	7.9
21	M. Palett, Triplett No. 1	Jackson	19	50	31	670	—	P	—	—	1-21-36	3.2	.08	—	270	107	6,070	—	273	11	9,950	1.0	.0	17,800	1,110	890	—
22	Athletic Mine	Jasper	3	27	32	245	—	M	—	—	2-5-64	10	2.7	.6	254	8.4	9.9	.8	219	508	4.5	.5	.1	980	669	489	7.3
23	Joplin Rendering Company	Jasper	35	28	33	260	—	M	390	4.5	4-29-64	9.6	.09	.00	125	8.8	26	3.0	339	53	48	.0	.6	518	348	70	7.8
24	Whiteman Air Force Base, No. M-1	Johnson	6	45	27	423	275	P	8	.1	8-18-67	8.0	2.4	.07	28	15	723	15	799	264	580	1.8	.5	2,060	132	0	8.0
25	Whiteman Air Force Base, No. 2	Johnson	33	46	24	1,025	503	O	300	2.4	8-18-67	4.4	2.3	.09	34	21	36	3.9	237	14	29	.6	.0	227	172	0	7.9
26	Town of Lebanon, No. 3	Laclede	11	34	16	1,625	542	Є	495	3.3	8-25-58	14	.09	—	48	16	3.5	—	215	6.2	6.9	.1	.8	172	186	10	7.5
27	Canterbury Ice	Lafayette	6	49	25	457	—	P	—	—	—	11	—	—	23	6.4	732	—	—	17	981	—	—	—	84	—	—
28	Town of Concordia, No. 3	Lafayette	5	48	24	545	365	O	45	.4	2-21-67	6.0	.12	—	31	12	258	17	370	24	297	3.7	.0	862	129	0	7.6
29	Town of Mayview	Lafayette	13	49	27	350	—	P	25	—	3-22-61	—	4.6	—	—	—	—	—	475	6.1	4,180	1.4	.2	7,520	—	—	8.0
30	Town of Wellington	Lafayette	15	50	28	53	—	Q	300	50	4-11-67	27	4.0	3.7	157	56	41	7.4	836	2.6	13	.3	2.5	724	623	0	7.6
31	Town of Aurora, No. 1	Lawrence	12	26	26	1,240	327	O	350	6	1-10-62	8.0	.0	—	44	22	2.4	—	240	3.7	3.9	.1	.1	263	200	6	7.5
32	Town of Anderson, No. 2	McDonald	12	22	33	975	178	O	145	3	1-22-69	6.0	.04	.0	22	11	18	1.5	137	16	9.3	.7	.0	171	100	0	7.8
33	Town of Iberia, No. 2	Miller	19	39	12	915	280	Є	188	1.7	8-11-70	10	2.0	0.	70	34	1.1	1.2	383	7.0	1.6	.1	.4	396	315	1	7.9
34	Town of California, No. 7	Moniteau	26	45	15	1,140	440	Є	1,002	7.8	9-8-66	12	.14	—	55	30	3.4	1.9	324	5.8	4.5	.1	.2	340	262	0	7.1
35	Town of Versailles, No. 3	Morgan	1	42	18	1,100	—	Є	425	10	3-25-70	7.0	.02	0.	90	54	4.3	.5	288	18	18	.1	.0	375	296	152	7.8
36	Town of Granby	Newton	6	25	31	968	337	O	150	—	5-15-62	8.0	.07	—	38	18	6.1	—	203	13	6.9	.1	.0	201	168	4	7.6
37	Sedalia Water and Light Co., No. 9	Pettis	22	45	21	1,530	525	Є	602	5.7	3-15-60	10	.3	—	49	26	9.0	—	269	17	8.6	.1	—	279	221	7	7.6
38	Town of Bolivar, No. 2	Polk	1	33	23	1,018	365	Є	535	20	1-31-69	8.0	.01	.0	41	24	1.5	.4	238	7.6	2.7	.1	.2	261	202	6	7.9
39	Missouri Public Service Comm.	St. Clair	20	38	25	852	252	Є	301	2.3	11-25-68	8.0	.1	0.	55	32	17	2.4	260	46	28	.1	0.	373	213	54	7.3
40	Whiteman Air Force Base, No. G-1	St. Clair	2	39	27	292	199	M	10	.4	8-18-67	8.0	.24	.72	99	85	168	18	448	573	21	.4	1.9	1,250	597	230	7.7
41	Town of Marshall	Saline	15	50	21	131	—	Q	—	—	7-8-69	22	.18	.0	65	15	20	.7	299	21	8.0	.1	.7	366	224	0	8.0
42	Missouri State School at Marshall	Saline	11	50	21	1,650	920	Є	—	—	11-30-40	2.8	—	—	1200	801	10,100	—	200	1,550	18,000	1.0	—	37,400	6,300	6,130	—
43	Whiteman Air Force Base, No. A-1	Saline	4	49	23	584	256	O	13	.05	8-17-67	10	.09	.02	185	70	142	12	477	593	44	.6	.2	1,390	750	359	7.7
44	Nevada Hospital, No. 3	Vernon	33	36	31	1,100	288	O	510	40	9-20-55	8.0	.06	—	85	39	304	—	264	72	519	—	—	1,410	217	155	7.3

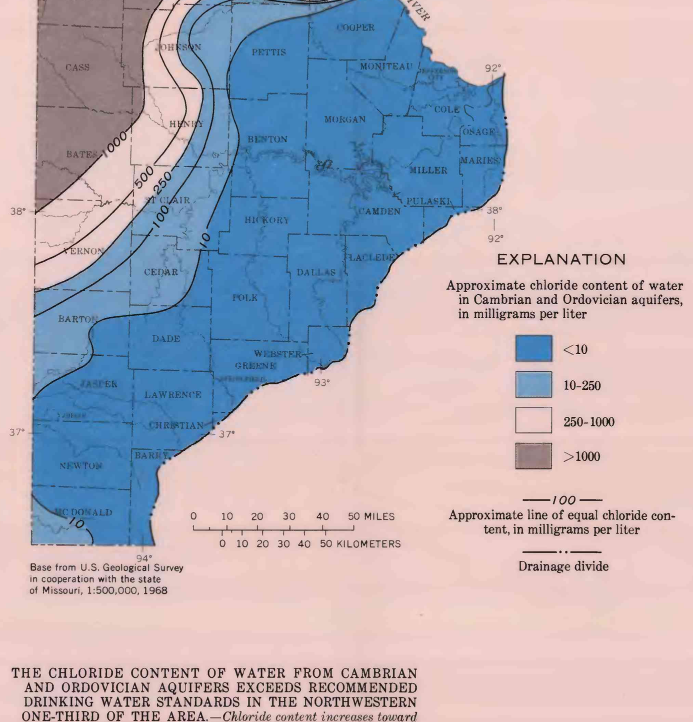
[1]System: Q, Quaternary; P, Pennsylvanian; M, Mississippian; O, Ordovician; Є, Cambrian

Water from buried bedrock valleys and glacial drift deposits in the northern part of the area is a calcium bicarbonate type, with a dissolved-solids content less than about 500 milligrams per liter. No water analyses are available for the alluvial deposits of the lower Osage Valley and for other Plateau stream valleys; however, water in these aquifers should be similar chemically to water in the adjacent stream during periods of base flow and is probably a calcium bicarbonate or calcium magnesium bicarbonate type with a dissolved-solids content less than about 300 milligrams per liter.

Water from Cambrian and Ordovician aquifers in the southeastern two-thirds of the area is a calcium magnesium bicarbonate type and water from Mississippian aquifers in the southern part of the area is a calcium bicarbonate type. Water from consolidated aquifers in the northwestern part of the area is a sodium chloride type and is highly mineralized.

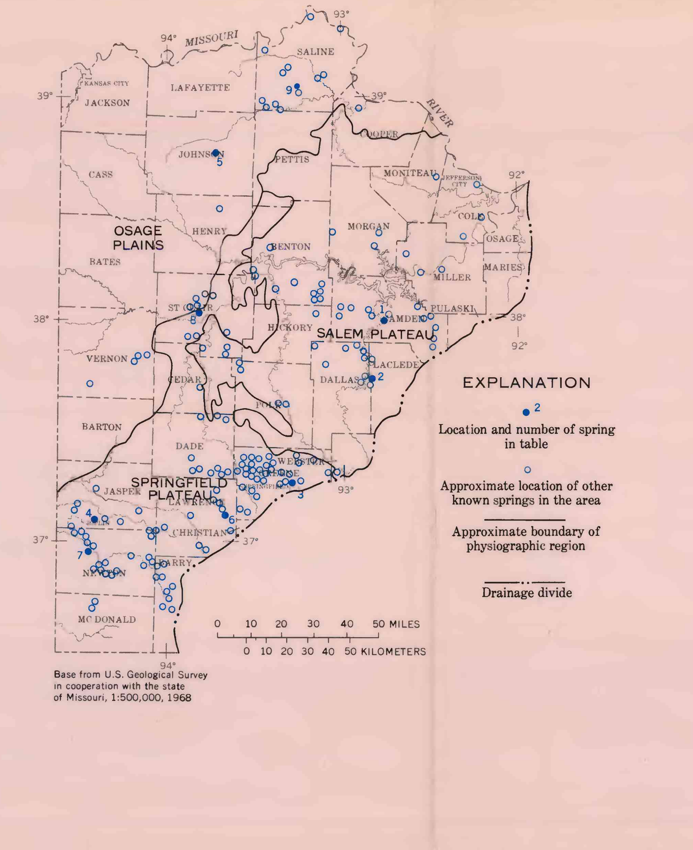


WATER WITH A DISSOLVED-SOLIDS CONTENT OF LESS THAN 1,000 MILLIGRAMS PER LITER IS AVAILABLE FROM MISSISSIPPIAN, ORDOVICIAN, AND CAMBRIAN AQUIFERS IN THE SOUTHEASTERN TWO-THIRDS OF THE AREA.—*The northwestern limit of fresh water generally follows the contact between Mississippian and Pennsylvanian rocks (compare with bedrock geologic map, sheet 1). The dissolved-solids content of ground water increases rapidly toward the northwest from 500 milligrams per liter to more than 40,000 milligrams per liter. With the application of desalinization techniques, these moderately saline to brine waters may become an important resource in the future provided aquifer yields are similar to those in the southeastern part of the area.*



THE CHLORIDE CONTENT OF WATER FROM CAMBRIAN AND ORDOVICIAN AQUIFERS EXCEEDS RECOMMENDED DRINKING WATER STANDARDS IN THE NORTHWESTERN ONE-THIRD OF THE AREA.—*Chloride content increases toward the northwest from less than 5 to more than 18,000 milligrams per liter. The chloride content of some Ordovician aquifers in the northern part of Saline County is less than 100 milligrams per liter. U.S. Public Health Service (1962) drinking-water standards recommend that chloride content not exceed 250 milligrams per liter.*

SPRINGS



THE SIGNIFICANCE OF SPRINGS AS SOURCES OF WATER DEPENDS ON THEIR NUMBER, SIZE, FLOW CHARACTERISTICS, AND WATER QUALITY.—*Springs are few and small on the Osage Plains, generally yielding less than 10,000 gallons per day (0.0155 cfs). Many springs of intermediate size (10,000 to 100,000 gallons per day) issue from limestone crevices on the Springfield Plateau. Springs are small near the Plains-Plateau boundary and larger and more numerous in the southeastern part of the area. Large springs such as Bennett and Hahatonka on the Salem Plateau rise in streambeds from cavernous, dolomitic rocks beneath the surface. Springflow is the primary source of base flow to streams in the Springfield Plateau and in the southern part of the Salem Plateau.*

Water from springs in the northern part of the Osage Plains is highly mineralized, the dissolved-solids content of some springs exceeding 20,000 milligrams per liter. Plateau springs are less mineralized with a dissolved-solids content generally less than 300 milligrams per liter. Water from springs on the Springfield Plateau is a calcium bicarbonate type and water from springs on the Salem Plateau is a calcium magnesium bicarbonate type. The nitrate content of water from springs on the Springfield Plateau is generally higher than that from springs on the Salem Plateau, possibly owing to more intensive farming on the Springfield Plateau.

Water from mineral springs such as Blue Lick Spring in Saline County and Monegaw (Black Sulfur) Spring in St. Clair County was used to supply spas in the late 1800's and early 1900's. Today (1971) these spas are nonexistent and most mineral springs are unused. Many of the fresh-water springs in the Plateaus are used to supply water to fish hatcheries. Few springs are used for municipal and industrial purposes, although Fulbright Spring furnishes part of the water supply for Springfield. Many small springs in the area supply water for domestic and stock uses on farms.

REPRESENTATIVE SPRING DATA
[Analysis by Missouri Geological Survey and Water Resources]

Map number on above map	County	Section	Township (N)	Range (W)	Spring name	System[1]	Range of observed discharges (cfs)	Use	Date of collection	Discharge (cfs)	Temperature (°C)	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180° C)	Hardness as $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25° C)	pH	Color
1	Camden	2	37	17	Hahatonka[2]	Є	40-136	None	11-8-65	64	15	10	0.05	0.00	37	20	2.5	1.1	207	5.0	2.2	0.0	4.3	181	175	5	335	7.5	3
2	Dallas	1	34	18	Bennett[2]	O	55-1700	Fish hatchery	11-9-65	90	15	10	.01	.00	37	21	2.5	.9	210	4.4	2.5	.0	5.8	185	179	7	341	7.5	0
3	Greene	2	29	22	Fulbright	M	3.4-15	Municipal	4-9-71	15	—	8.0	.11[3]	.01	62	4.0	3.6	1.1	197	8.0	13	.0	.7	238	170	2	—	7.5	—
4	Jasper	1	27	32	Scotland	M	2.7-3.1[4]	Industrial	8-27-64	2.7	14.5	6.4	.02	.00	56	3.8	5.2[6]	—	165	10	4.8	.1	9.9	185	154	—	310	7.1	—
5	Johnson	36	46	26	Pertle	P	.03[5]	None	11-11-65	.03	13	19	4.7	1.0	69	19	20	1.5	287	49	7.1	.6	.0	342	250	15	550	7.3	4
6	Lawrence	21	28	25	Chesapeake[2]	O	0.28-9.0	Fish hatchery	11-9-65	1.7	15	11	.00	.00	54	15	4.2	.6	224	3.4	6.6	.0	13	210	196	12	387	7.7	0
7	Newton	28	26	32	Ozark Trout Farm[2]	M	.70-1.9	Fish hatchery	11-9-65	1.5	15.5	10	.00	.00	56	1.4	3.8	.6	158	4.0	4.3	.0	18	178	146	16	292	7.4	0
8	St. Clair	30	38	26	Monegaw Spring	M	.01-.04	Formerly spa	11-11-65	.04	17	10	.03	1.0	86	36	225	15	261	80	400	.4	4.0	998	363	149	1,780	7.6	0
9	Saline	17	49	21	Blue Lick	M	.05[5]	Formerly spa	11-9-65	.05	14	8.8	1.1	1.0	1,120	432	7,000	79	212	1,150	13,300	2.2	—	23,400	4,580	4,400	35,300	7.0	0

[1] Є, Cambrian; M, Mississippian; O, Ordovician; P, Pennsylvanian.
[2] Spectographic analysis available for same date as analysis shown.
[3] Total iron.
[4] Estimated as 0.8 cfs in 1964.
[5] Only one determination of flow available.
[6] Sodium and potassium combined.

WATER RESOURCES OF WEST-CENTRAL MISSOURI

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