Geohydrologic Framework and an Analysis of a Well-Plugging Program, Lee County, Florida

By Henry R. La Rose

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CONVERSION FACTORS

The inch-pound units used in this report may be converted to metric (International Systems) units by the following factors:

Multiply inch-pound unit	By	To obtain metric unit
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
square mile (mi^2)	2.590	square kilometer (km^2)
gallon per minute (gal/min)	0.06309	liter per second (L/s)

ADDITIONAL ABBREVIATION

mg/L = milligrams per liter

Sea level: In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)--a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called "Sea Level Datum of 1929."

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Abstract

Many deep artesian wells were drilled in southwest Florida before the 1970's. The wells were usually completed with only a short length of casing through the unconsolidated sediments near land surface and used mainly for agricultural irrigation purposes. Water from these deep artesian wells with short casings exceeded drinking water standards of 250 milligrams per liter chloride concentration.

Over the years, land use changed from agricultural to residential, and consequently, the demand for potable water increased. To meet the demand, many wells were drilled into shallow, freshwater-bearing surficial and intermediate aquifer systems. Saline water from deep artesian wells with short casings flowed up the uncased wellbores and entered the overlying freshwater aquifers, causing saline-water intrusion. In places, chloride concentrations in water from the freshwater aquifers increased from about 100 to 250 milligrams per liter.

To abate the saline-water intrusion problem in Lee County, the South Florida Water Management District began a program, in August 1979, of plugging deep artesian wells with short or corroded casings. Results indicate a slight decrease in chloride concentrations on a local scale.

INTRODUCTION

Ground water is the major source of water supply in Lee County, southwest Florida. Through the years, land use changed in the county from an undeveloped coastal plain to an agricultural area. The agricultural era of the first half of the 20th century led to drilling many deep (about 400-1,200 feet), flowing artesian wells that tap the lower Hawthorn aquifer, Suwannee aquifer, or both aquifers for crop irrigation purposes. In the second half of the 20th century, land use in Lee County shifted from agricultural to residential. New residents tried using water from the old agricultural wells for domestic supply, but found that chloride concentrations in the water ranged from about 500 to 1,000 mg/L (milligrams per liter), which exceeded the drinking water standard of 250 mg/L (U.S. Environmental Protection Agency, 1983). To meet the demand for potable water, shallower wells were drilled into the mid-Hawthorn aquifer, which contained water with "acceptable" chloride concentrations--from about 80 to 150 mg/L (Boggess and others, 1977, p. 1).

Over the years, problems resulted from development and utilization of the ground water from the mid-Hawthorn aquifer. Water quality deteriorated in some parts of Lee County and had the potential for deterioration in other areas. These problems resulted from a lack of knowledge of the subsurface flow systems when the early irrigation wells were drilled and from well-casing corrosion over time. Saline-water intrusion has occurred because: (1) agricultural wells drilled to tap or penetrate the deep saline aquifers were hydraulically connected through open wellbores or, more recently, by corroded well casings to the overlying freshwater-bearing mid-Hawthorn aquifer; and (2) the head in the mid-Hawthorn aquifer at the well site is below that in the hydraulically connected underlying lower Hawthorn and Suwannee aquifers.

Saline-water intrusion in the mid-Hawthorn aquifer eventually became an apparent threat to the fresh ground-water supply in Lee County. In August 1979, the South Florida Water Management District (SFWMD) began a program to plug about 2,000 deep artesian wells with short or corroded casings in Lee County. In 1984, the U.S. Geological Survey, in cooperation with SFWMD, conducted a pilot study to determine the effects of the well-plugging program on chloride concentrations in water from the mid-Hawthorn aquifer.

Purpose and Scope

The purpose of this report is to describe the geohydrology of the aquifer systems in Lee County and the effects of the well-plugging program to reduce interconnection of these systems. The report presents the geohydrologic framework; well inventory data including well number, well-completion details, specific conductance measurements and chloride concentrations, aquifer designation, and date a particular deep well was plugged; and trends in chloride concentrations in water from wells completed in the mid-Hawthorn aquifer since the completion of well plugging.

Description of Study Area

The study area encompasses about 22 mi^2 (square miles) in central Lee County and is delineated by the northern and southern boundaries of Township 45 south, State Road 41 to the east, and the Caloosahatchee River to the west (fig. 1). This area was selected because it has a high density of wells, which can provide information on the effects of the well-plugging program.

Methods of Data Collection

Water samples were collected from both old and new inventoried wells and were analyzed for chloride concentration and specific conductance. Some old wells were plugged or abandoned because of the high-chloride concentration in the water; others are no longer in use because of the availability of a municipal water supply, deteriorated pumps, or the declining heads. As a result, not all of the inventoried wells could be resampled.

Identification of the aquifer to which a well was drilled was difficult and involving. Techniques such as examination of lithologic logs, geophysical logs, and records of heads and well depths and communication with the owner were used. Several inventoried wells were deleted from this report because it could not be determined whether the well tapped the mid-Hawthorn aquifer or a shallower aquifer.

Previous Investigations

Previous investigators that have reported on well plugging, its effects, and procedures in Lee County are most notably Boggess (1973) and Burns (1983). Investigations concerning saline-water intrusion from deep artesian sources in southern Florida have been conducted by Sproul and others (1972) and Fitzpatrick (1982; 1986).

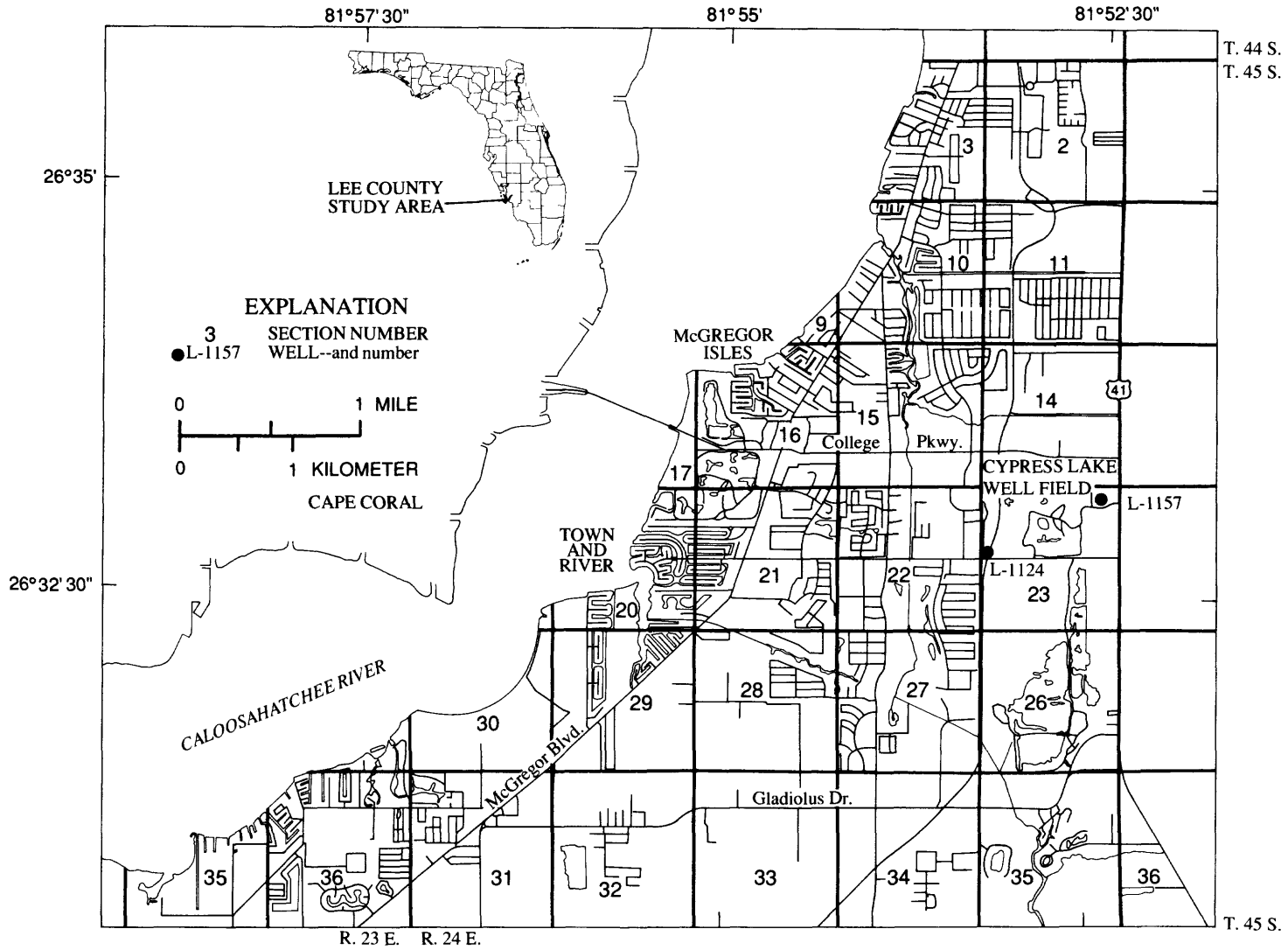

Figure 1. Location of the study area in Lee County.

GEOHYDROLOGIC FRAMEWORK

The upper 1,200 feet of sediments in the study area (fig. 2) comprise the surficial aquifer system, intermediate aquifer system, and upper part of the Floridan aquifer system (Southeastern Geological Society Ad Hoc Committee on Florida Hydrostratigraphic Unit Definition, 1986). These three aquifer systems include the following locally recognized aquifers that yield water for public supply, irrigation, industrial, and domestic uses: the surficial aquifer, sandstone aquifer, mid-Hawthorn aquifer, lower Hawthorn aquifer, and Suwannee aquifer (upper part of the Floridan aquifer system). The relation of the local aquifers to the hydrostratigraphic units is shown in figure 2.

Surficial Aquifer System

The surficial aquifer system, as the name implies, is the permeable geohydrogeologic unit exposed at land surface. It mostly consists of unconsolidated to poorly indurated clastic deposits of Pliocene, Pleistocene, and Holocene age (fig. 2). The surficial aquifer system underlying the study area contains the water table and water within it is mainly unconfined.

The surficial aquifer, previously termed the water-table aquifer, is the only water-bearing unit within the surficial aquifer system in the study area. The surficial aquifer is composed of undifferentiated deposits; that is, primarily unconsolidated fine- to medium-grained quartz

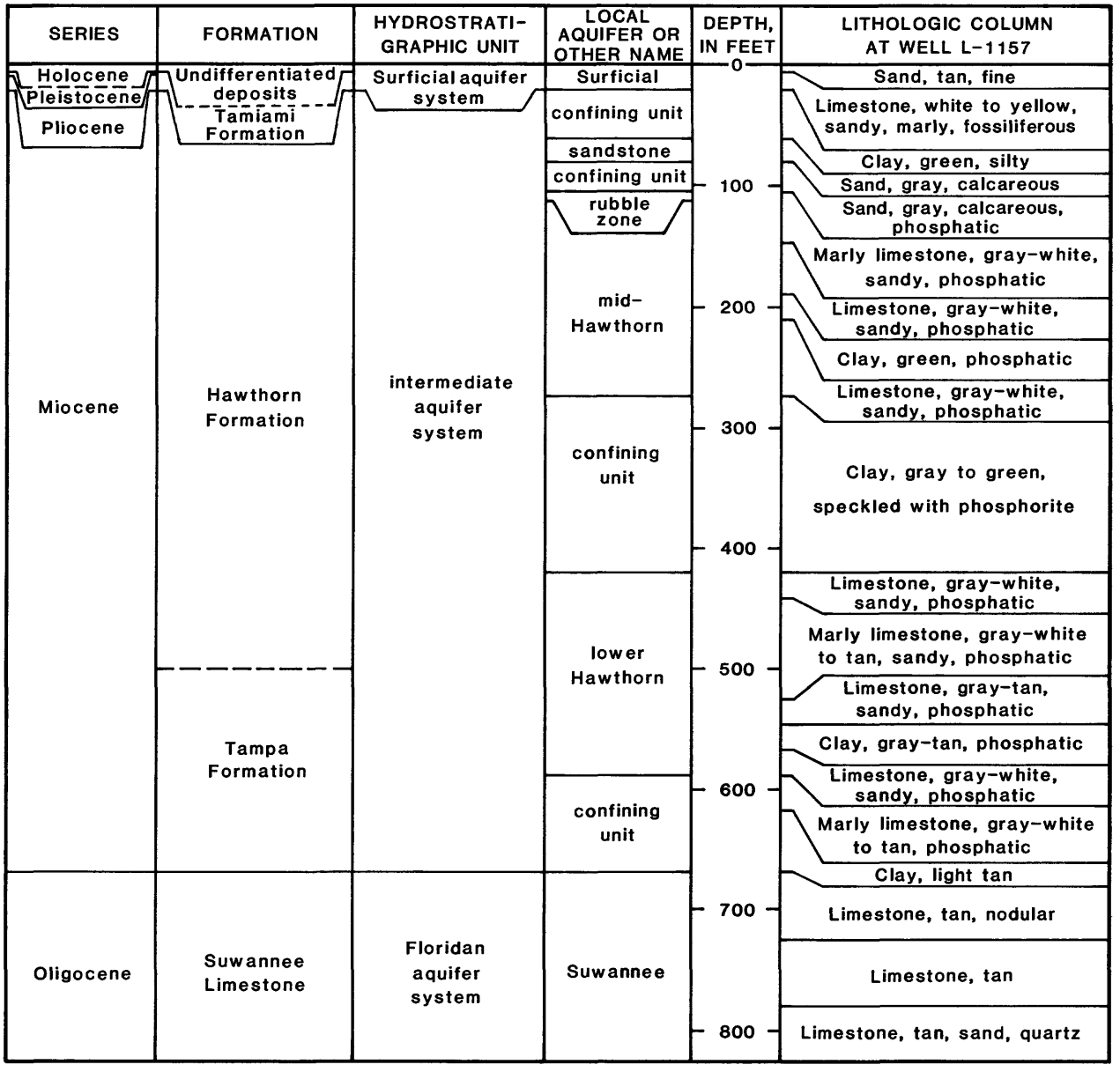

Figure 2. Relation of aquifer system to geologic units and lithology at well L-1157.

sand with interbedded sandy-limestone and shell units. The thickness of the aquifer ranges from about 5 to 30 feet. Heads in wells tapping the surficial aquifer vary seasonally, generally from altitudes of 5 to 6 feet above sea level in high areas (May to October) to altitudes of 2 to 3 feet in low areas (November to March).

Intermediate Aquifer System

The top of the intermediate aquifer system consists of a regionally extensive, confining, silty, green clay and coincides with the base of the surficial aquifer system (fig. 2). The base of the intermediate aquifer system is at the top of the permeable carbonate section that comprises the Floridan aquifer system where clastic layers of substantial thickness are absent and permeable carbonate rocks are dominant. The aquifers in the intermediate aquifer system contain water under confined conditions and are, in order of increasing depth: the sandstone aquifer, the mid-Hawthorn aquifer, and the lower Hawthorn aquifer.

Sandstone Aquifer

The sandstone aquifer is composed of gray, calcareous sandstone and loose quartz sand that grades downward in places into a sandy limestone. The top of this confined aquifer occurs between 50 and 85 feet below land surface, and its thickness ranges from a few feet to about 25 feet (fig. 2). The thinness and clastic nature of the aquifer cause its yield to be low.

Recharge to the sandstone aquifer in most of Lee County occurs by way of leakage from the surficial aquifer through the confining layer that separates the aquifers (Boggess and Watkins, 1986). In the low-lying part of the study area, however, such as along the Caloosahatchee River, no downward recharge occurs because the potentiometric surface of the sandstone aquifer is equal to or higher than the water table in the surficial aquifer.

Mid-Hawthorn Aquifer

The mid-Hawthorn aquifer, previously termed the upper Hawthorn aquifer by the U.S. Geological Survey, is composed of gray-white phosphatic limestone and occurs in the Hawthorn Formation of Miocene age (fig. 2). The mid-Hawthorn aquifer and the sandstone aquifer are separated by 30 feet or more of a confining layer of sandy, phosphatic marl and marly, phosphatic limestone. The top of the mid-Hawthorn aquifer is overlain by an erosional layer, the locally named "rubble zone," which consists of a mixture of phosphate nodules, quartz sand, clay, lime mud, shells, and sharks teeth. The top of the aquifer occurs between 105 and 150 feet below land surface, and the base occurs between 200 and 300 feet below land surface.

Recharge to the mid-Hawthorn aquifer occurs northeast of the study area. In that area, the mid-Hawthorn aquifer and the surficial aquifer are in contact or, as with the sandstone aquifer and surficial aquifer, leakage occurs across the confining bed separating them (figs. 3 and 4).

The mid-Hawthorn aquifer is the principal source of water for domestic supply where there is no municipal supply available and is a major source of supply for irrigation water. The Cypress Lake Well Field, located in the vicinity of College Parkway and U.S. Highway 41 (fig. 1), has curtailed its use of the mid-Hawthorn aquifer for municipal supply since 1975 because of a steady decline in heads in the aquifer (fig. 5). The Green Meadows Well Field (not shown) that taps the sandstone aquifer has now replaced the Cypress Lake Well Field as the source for municipal supply in central Lee County.

Lower Hawthorn Aquifer

The lower Hawthorn aquifer is comprised of the lower part of the Hawthorn Formation and the upper part of the Tampa Formation, consisting of gray-white, yellow, and tan phosphatic limestones (fig. 2). The aquifer is about 170 feet thick, but many clay stringers are evident throughout, and as a result, the water-yielding part is less than 100 feet thick in places. The top of the aquifer, which is overlain by a thick sequence of clay, generally occurs about 400 feet below land surface, and the aquifer is underlain by a thick sequence of light-tan clay. Recharge to the lower Hawthorn aquifer occurs northeast of the study area where the upper confining unit pinches out and the mid-Hawthorn aquifer is in contact with the lower Hawthorn aquifer (fig. 4).

The lower Hawthorn aquifer has sufficient permeability and high enough heads to provide a natural flow of saline water at 300 to 500 gal/min (gallons per minute) to large-diameter wells (Sproul and others, 1972). The artesian flow was a major source of water for irrigation of citrus groves, flower farms, truck crops, and livestock watering. Although the amount of water available from the lower Hawthorn aquifer is abundant, water from this aquifer contains chloride in concentrations that exceed 250 mg/L; thus, lower Hawthorn water is not desirable for domestic use. However, Lee County presently has three water companies (Island Water Association--Sanibel, Cape Coral Utilities, and Greater Pine Island Water Association) that use saline water from the lower Hawthorn aquifer to feed their reverse-osmosis desalinization plants.

Floridan Aquifer System

The term "Floridan aquifer system" replaces the term "Floridan aquifer," which had previously been applied to this unit (Miller, 1986). In the Floridan aquifer system, one or more aquifers can be designated on the basis of vertical variations in water-bearing properties. Only the uppermost

part of the aquifer system, the locally called Suwannee aquifer, is of interest in the study area (fig. 2).

The Suwannee aquifer consists of a tan limestone that contains quartz-sand beds of Oligocene age and no phosphorite (fig. 2). The aquifer is confined above and below by relatively impermeable beds of clay and marly limestone. The Suwannee aquifer is readily identified on gamma-ray logs by its low radioactivity and from test-hole data by the absence of phosphorite. Wedderburn and others (1982) indicated that the top of the Suwannee aquifer occurs between 650 and 725 feet below sea level, and Sproul and others (1972) indicated that the thickness of the aquifer is about 100 feet.

Recharge to the Suwannee aquifer occurs north to northeast of the study area in central Florida (Cooke and Mansfield, 1936). The permeability and natural flow characteristics of the aquifer are similar to those of the lower Hawthorn aquifer. Generally, wells that were drilled into the Suwannee aquifer were short cased (that is, wells were usually completed with only a short length of casing through unconsolidated sediments near land surface), and the open wellbores hydraulically connect the Suwannee aquifer and lower Hawthorn aquifer. In recent years, the Suwannee aquifer has also been used as a source of water to feed reverse-osmosis desalinization plants.

SALINE-WATER INTRUSION

Saline-water intrusion, which is responsible for the increased chloride concentrations in water from the mid-Hawthorn aquifer, is defined herein as the upward flow of saline water through open wellbores of deep artesian wells, with short or corroded casings, in areas where the head of the deeper aquifer is greater than that of the mid-Hawthorn aquifer. This saline water spreads laterally through the mid-Hawthorn aquifer. The highest chloride concentrations in waters from the mid-Hawthorn aquifer are

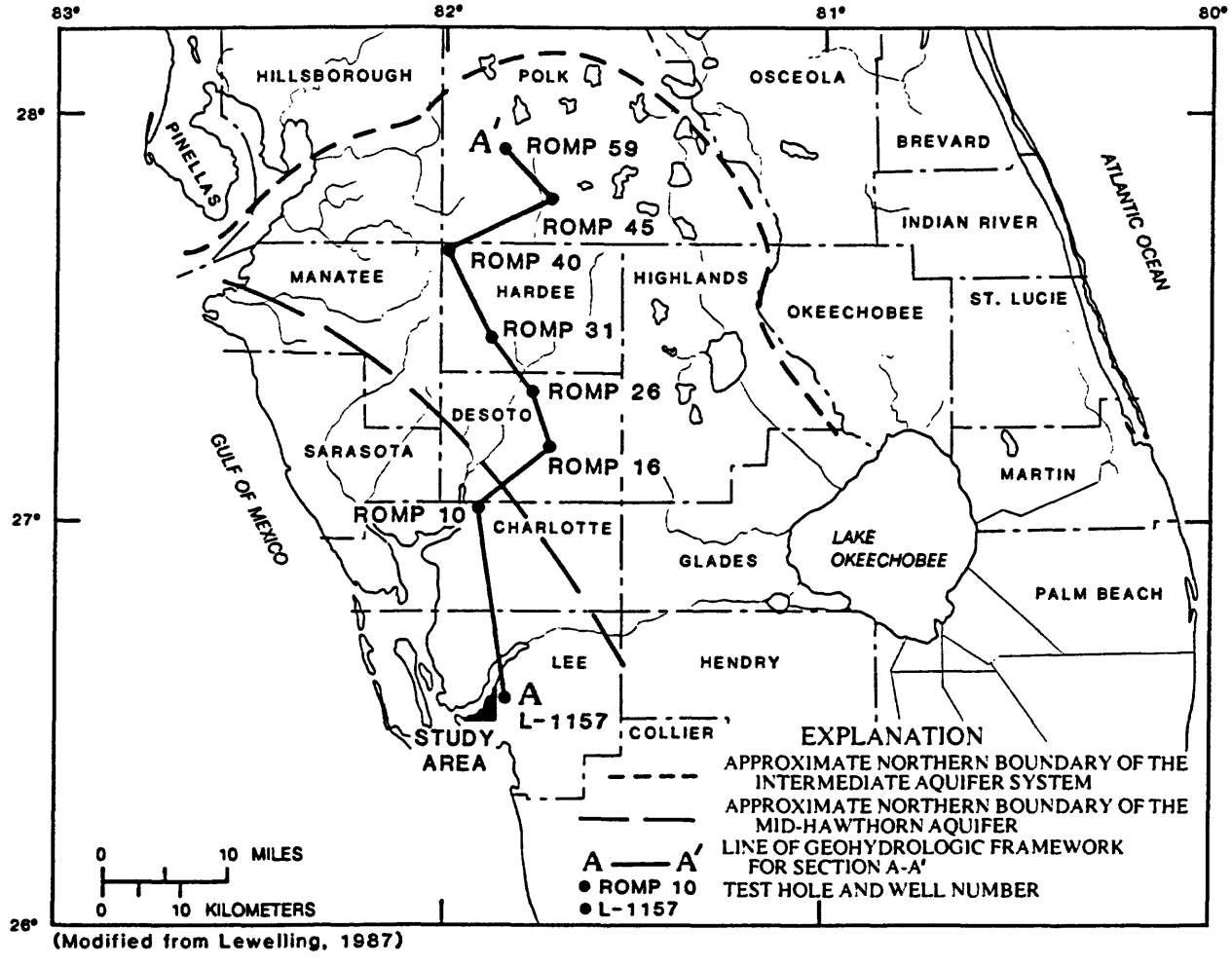

Figure 3. Approximate northern boundary of the intermediate aquifer system, approximate northern boundary of the mid-Hawthorn aquifer, and location of geohydrologic framework for section A-A'.

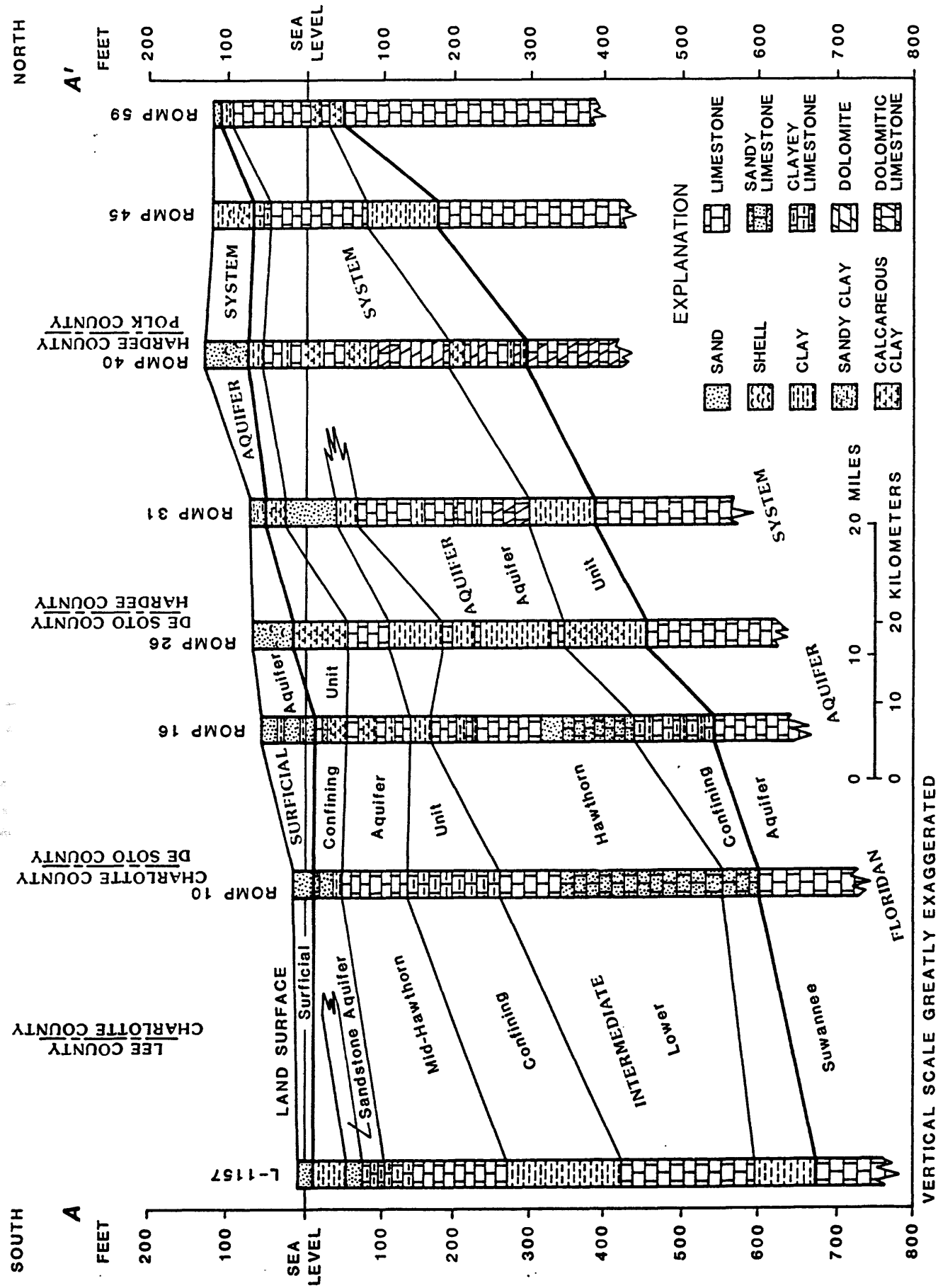

Figure 4. Generalized geohydrologic framework for section A-A'.

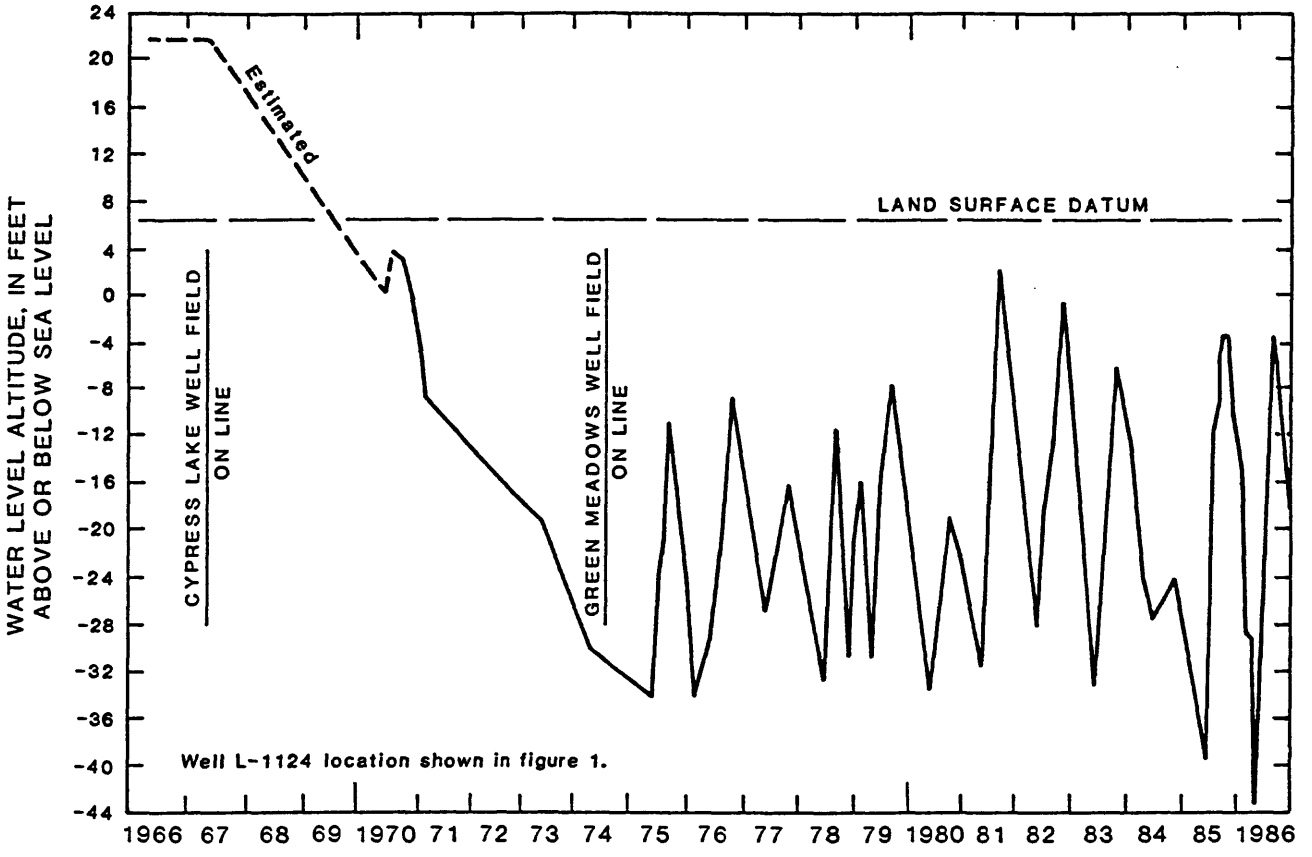

Figure 5. Hydrograph showing heads in well L-1124 tapping the mid-Hawthorn aquifer, from prior to major well-field withdrawals to 1986 (1966-70 heads estimated).

found near the deep wells. Chloride concentrations in water from mid-Hawthorn wells decrease, with increasing distance, from the deep wells. The lateral spread of saline water in the intermediate aquifer system is controlled in part by head gradients, permeability distribution, and subsurface barriers.

The increased water use and the resulting declining heads of the mid-Hawthorn aquifer during the 1970's led to increasing concern and attention to the problem of saline-water intrusion, particularly in southwest Florida. In 1979, the SFWMD began a well-plugging program in an attempt to remedy this problem.

ANALYSIS OF WELL-PLUGGING PROGRAM

Historically, land owners attempted to stop artesian flow from deep wells by jamming a cypress log into the well casing at land surface. This method stopped the flow at land surface but did not stop the interaquifer flow and has since been discontinued. Filling the wellbore with cement, either fully (fig. 6) or with bridging plugs between the aquifers, is the method currently used to plug wells. Plugging the deep artesian wells with short or corroded casings stops water flow between the deep saline aquifers and the shallow freshwater aquifers. This can eliminate or greatly reduce the degradation of the water quality of the freshwater aquifers as shown by Boggess and others (1977) in areas near flowing wells.

Effects of Plugging

Data were collected for 635 wells in the study area (pl. 1, figs. 7-9, table 1). Of this total, 211 wells were designated as tapping the lower Hawthorn or Suwannee aquifers. Of the 211 wells that tap the deeper aquifers, 35 were known to be plugged prior to 1979 when the SFWMD began its plugging program, and 82 wells were plugged between 1979 and 1985. The SFWMD is continuing its well-plugging program and plans to plug the 94 remaining wells with short or corroded casings.

Many factors make it difficult to assess regional trends of water quality in relation to well plugging. Some of these factors are noted and discussed below.

- *Water intruding into the mid-Hawthorn aquifer.*--From the deep saline aquifer wells the volume of water is small in comparison to the volume of water contained in the mid-Hawthorn aquifer.

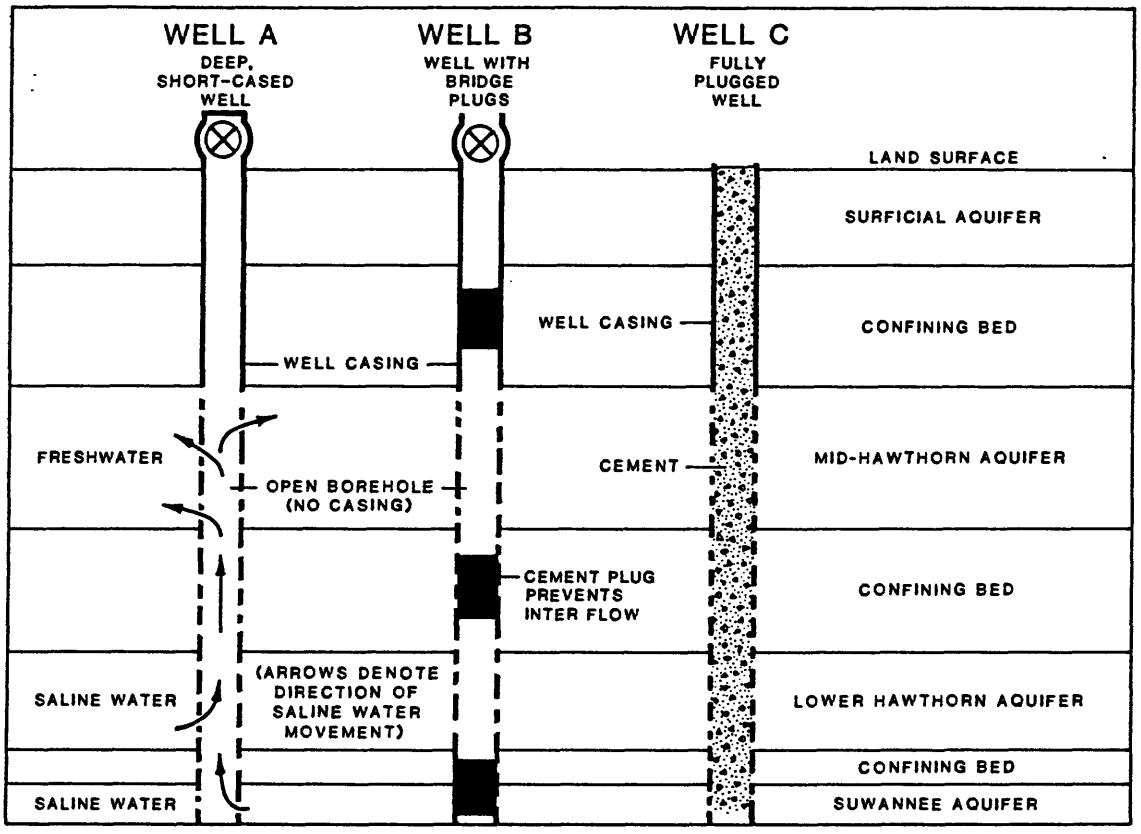

Figure 6. Diagram showing mechanism of saline-water intrusion and two methods of plugging wells.

- *Spacing of the deep saline aquifer wells.*--Where many deep aquifer wells are clustered together, the extent of saline-water intrusion is increased.

- *Time required to reverse a long-term trend of saline-water intrusion.*--In some areas, saline-water intrusion has been occurring for more than 50 years. The response to stopping saline-water intrusion by plugging the responsible well is not immediate, and it may take years for the mid-Hawthorn aquifer to become fresh again.

- *Few wells completed in the mid-Hawthorn aquifer where water is highly saline due to saline-water intrusion.*--Land owners, preferring not to use saline water for domestic supply or irrigation purposes, abandoned or plugged the mid-Hawthorn aquifer wells, and few mid-Hawthorn wells are drilled in areas of known saline-water intrusion. As a result, the number of wells available to monitor the effects of plugging a deep well is greatly reduced.

McGregor Isles

One area in which saline-water intrusion has been of particular concern is in the vicinity of McGregor Isles, a residential community along the Caloosahatchee River (fig. 1) on the western edge of the study area. This area has many wells that tap the mid-Hawthorn aquifer. Water from these wells, once used for domestic supply, is now used only for lawn irrigation. Many deep wells were drilled in the lower Hawthorn aquifer and Suwannee aquifer when the area was first cultivated for agricultural purposes. Boggess and others (1977) previously cited this area as an example of extensive saline-water intrusion from deep wells.

Some of the wells at McGregor Isles that tap the mid-Hawthorn aquifer, which were previously sampled in 1969 and 1970 (Boggess and others, 1977), were resampled in 1985 (fig. 10). Some wells sampled in 1969 and 1970 could not be resampled because they no longer exist or have been abandoned. In those instances, new wells nearby were sampled. Data collected from some of these wells indicate that plugging, in December 1978, of deep wells L-1719 and

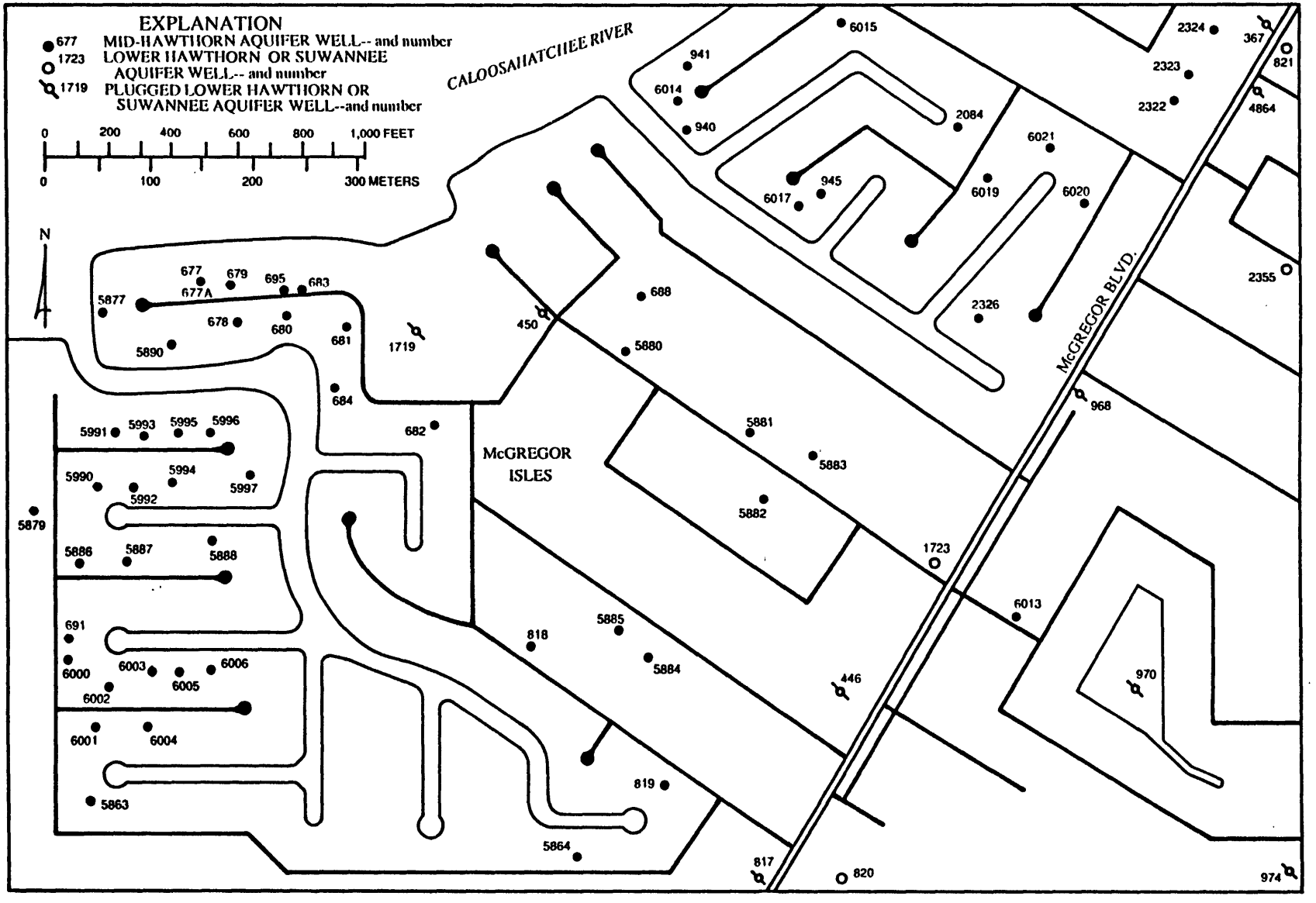

Figure 7. Location of inventoried wells in inset A (see plate 1).

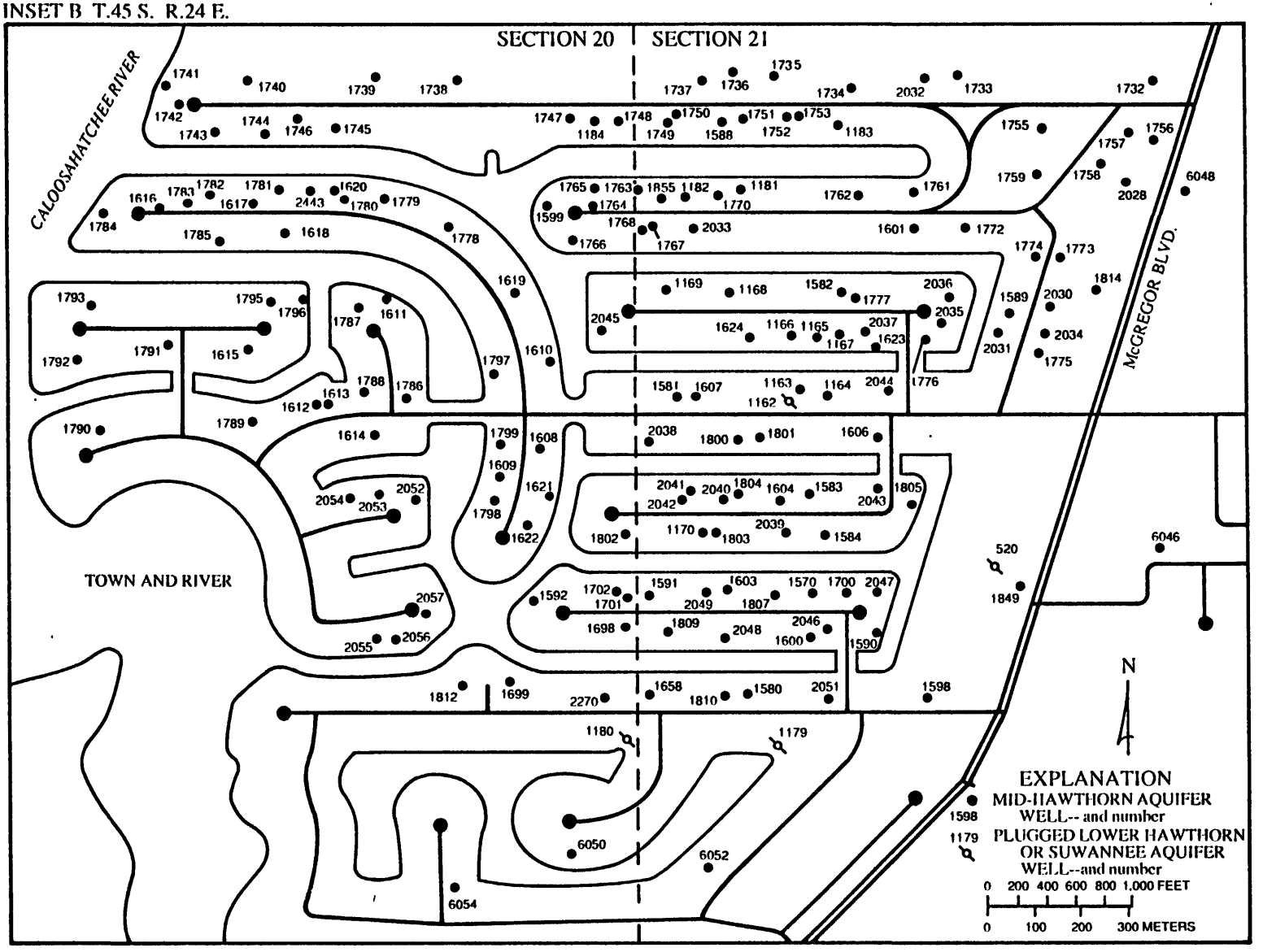

Figure 8. Location of inventoried wells in inset B (see plate 1).

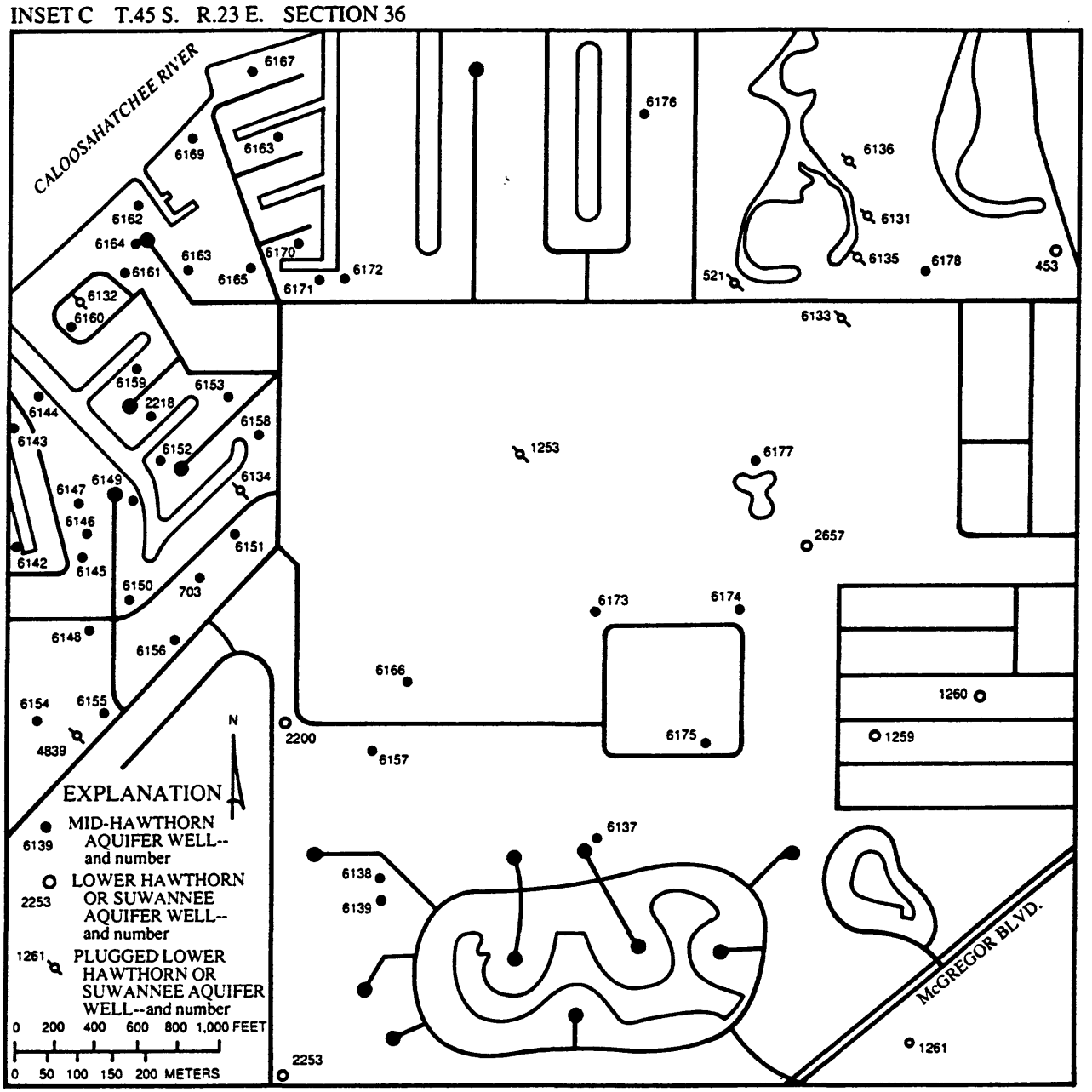

Figure 9. Location of inventoried wells in inset C (see plate 1).

L-450, which tap the lower Hawthorn aquifer, has had a beneficial effect on the water quality of the mid-Hawthorn aquifer. Chloride concentrations in water from mid-Hawthorn aquifer well L-677 and well L-677A, a replacement well, decreased from 780 to 282 mg/L, and those from well L-678 decreased from 1,060 to 600 mg/L between 1969 and 1985. Water samples from a few other mid-Hawthorn aquifer wells in the area indicate a similar trend.

Table 1. Well inventory data

[Specific conductance measurements are in microsiemens per centimeter and chloride concentrations are in milligrams per liter. Aquifer: MH, mid-Hawthorn aquifer; LH, lower Hawthorn aquifer; SU, Suwannee aquifer. >, greater than the value. Dash indicates no data.]

Well number	Section	Township (south)	Range (east)	Date of collection	Specific conductance	Chloride	Well depth (feet)	Casing depth (feet)	Well diameter (inches)	Aquifer	Date plugged/ remarks
L-330	26	45 S	24 E	9/12/44	--	--	500	--	3	LH	--
L-331	35	45 S	24 E	5/1/85	2,350	680	--	--	6	SU	--
L-332	35	45 S	24 E	6/23/73	--	880	900	--	6	SU	--
L-355	31	45 S	24 E	11/5/46	--	620	--	--	6	LH	9/15/50
L-357	32	45 S	24 E	7/28/80	--	894	759	122	5	SU	--
L-366	9	45 S	24 E	9/12/50	--	910	600	--	6	LH	--
L-367	16	45 S	24 E	6/5/69	3,000	1,300	1,106	120	6	SU	10/15/69
L-368	16	45 S	24 E	6/20/72	--	3,300	950	120	6	SU	1972
L-369	16	45 S	24 E	4/7/46	3,660	920	540	--	6	LH	9/23/82
L-370	21	45 S	24 E	9/12/50	--	462	--	--	6	LH	--
L-371	31	45 S	24 E	12/23/85	2,000	460	907	--	6	SU	--
L-372	30	45 S	24 E	10/15/82	1,030	900	--	--	6	SU	--
L-373	30	45 S	24 E	9/25/44	--	911	--	--	6	SU	--
L-374	35	45 S	23 E	2/20/51	--	742	647	--	6	LH	--
L-446	16	45 S	24 E	11/30/78	21,700	7,960	764	170	6	SU	12/78
L-447	3	45 S	24 E	1/17/85	2,080	769	660	100	4	SU	1/25/85
L-450	16	45 S	24 E	4/8/46	5,410	1,520	583	142	4	LH	12/78
L-451	31	45 S	24 E	4/8/46	--	525	440	142	5	LH	3/2/73
L-452	31	45 S	24 E	4/8/46	--	545	700	168	5	SU	3/2/73
L-453	36	45 S	23 E	7/18/73	--	820	758	199	5	SU	--
L-454	28	45 S	24 E	4/8/46	--	495	786	160	6	SU	--
L-455	31	45 S	24 E	4/27/83	4,400	1,250	849	172	6	SU	5/26/83
L-456	33	45 S	24 E	8/23/55	--	315	543	146	6	LH	4/27/82
L-457	28	45 S	24 E	4/8/46	--	680	697	170	6	SU	--
L-514	22	45 S	24 E	9/12/50	--	163	280	--	4	MH	--
L-515	22	45 S	24 E	9/12/50	--	415	640	137	6	LH	1/19/83
L-516	22	45 S	24 E	9/12/50	--	520	640	137	6	LH	1/19/83
L-517	22	45 S	24 E	12/9/82	--	669	--	--	6	SU	1/27/83
L-518	22	45 S	24 E	4/16/68	--	1,280	559	172	6	LH	--
L-519	22	45 S	24 E	9/12/50	--	555	626	130	6	LH	--
L-520	21	45 S	24 E	11/12/70	--	1,425	820	160	6	SU	1/71
L-521	36	45 S	23 E	11/18/82	3,500	1,110	805	87	6	SU	2/16/83
L-524	21	45 S	24 E	9/13/50	--	610	700	150	6	LH	--
L-525	22	45 S	24 E	9/13/50	--	700	897	172	6	SU	1972
L-526	22	45 S	24 E	9/13/50	--	--	740	160	6	SU	--
L-527	22	45 S	24 E	8/14/84	2,540	868	504	147	6	LH	8/15/84
L-530	10	45 S	24 E	9/14/50	--	780	720	147	5	SU	9/70
L-531	20	45 S	24 E	9/13/50	--	390	180	--	3	MH	--
L-532	33	45 S	24 E	9/13/50	--	625	720	--	6	SU	7/19/82
L-533	35	45 S	24 E	9/14/50	--	--	1,100	120	6	SU	--
L-534	33	45 S	24 E	9/14/50	--	565	1,140	170	6	SU	--
L-535	28	45 S	24 E	9/14/50	--	--	840	160	6	SU	--
L-536	28	45 S	24 E	6/8/82	2,650	718	1,090	160	6	SU	1/16/85
L-537	21	45 S	24 E	9/15/78	870	240	180	--	6	MH	--
L-538	21	45 S	24 E	4/2/67	--	700	938	146	5	SU	--
L-539	21	45 S	24 E	12/5/73	--	480	800	158	6	SU	--
L-540	21	45 S	24 E	9/14/50	--	545	938	148	4	SU	8/10/82
L-545	10	45 S	24 E	9/15/50	--	800	800	--	6	SU	--
L-548	34	45 S	24 E	9/14/50	--	665	900	160	6	SU	--
L-554	26	45 S	24 E	2/21/50	--	795	750	--	6	LH	--
L-555	35	45 S	24 E	2/21/51	--	--	700	--	4	SU	--
L-556	34	45 S	24 E	1/19/82	2,290	821	800	122	6	SU	2/24/83
L-557	34	45 S	24 E	10/24/50	--	--	--	--	6	LH	--
L-562	35	45 S	24 E	2/21/51	--	635	>127	--	3	MH	--

Table 1. Well inventory data—Continued

Well number	Section	Township (south)	Range (east)	Date of collection	Specific conductance	Chloride	Well depth (feet)	Casing depth (feet)	Well diameter (inches)	Aquifer	Date plugged/ remarks
L-563	29	45 S	24 E	2/22/51	--	164	200	92	3	MH	--
L-568	33	45 S	24 E	3/11/82	3,750	1,040	--	168	6	SU	6/24/82
L-595	2	45 S	24 E	2/28/80	--	1,050	685	180	6	LH	2/28/80
L-677	16	45 S	24 E	5/12/69	1,800	780	180	--	2	MH	--
L-677A	16	45 S	24 E	4/28/85	1,390	282	200	--	4	MH	Same site as L-677.
L-678	16	45 S	24 E	12/10/70	3,380	1,060	190	--	2	MH	--
				3/26/85	2,300	600					
L-679	16	45 S	24 E	5/12/69	3,700	1,980	190	--	2	MH	--
L-680	16	45 S	24 E	5/12/69	2,250	1,020	200	--	2	MH	--
L-681	16	45 S	24 E	5/12/69	3,750	1,900	180	--	2	MH	--
L-682	16	45 S	24 E	5/12/69	1,350	500	150	--	2	MH	--
L-683	16	45 S	24 E	5/12/69	2,050	920	180	--	2	MH	--
L-684	16	45 S	24 E	5/12/69	1,100	420	185	--	2	MH	--
L-688	16	45 S	24 E	5/13/69	2,300	1,100	167	--	2	MH	--
L-691	16	45 S	24 E	5/14/69	625	180	189	169	2	MH	--
				3/26/85	820	160					
L-695	16	45 S	24 E	5/12/69	3,500	1,980	185	--	2	MH	--
L-703	36	45 S	23 E	8/6/66	3,000	730	188	63	2	MH	--
L-742	14	45 S	24 E	5/13/70	--	93	225	138	8	MH	--
				10/24/84	505	60					
L-758	36	45 S	24 E	3/26/68	1,500	625	600	140	5	LH	1968
L-759	36	45 S	24 E	8/20/68	1,600	640	164	--	2	MH	--
L-761	35	45 S	24 E	8/2/68	--	105	160	142	2	MH	--
L-763	36	45 S	24 E	8/20/68	1,050	375	--	--	5	MH	--
L-764	35	45 S	24 E	8/20/68	1,350	475	--	--	5	LH	--
L-765	36	45 S	24 E	8/20/68	2,900	885	700	140	6	SU	--
L-766	35	45 S	24 E	1/27/69	--	850	--	--	6	LH	--
L-767	35	45 S	24 E	8/20/68	2,000	800	--	--	--	LH	--
L-768	36	45 S	24 E	4/3/68	1,100	385	175	--	--	MH	--
L-771	36	45 S	24 E	1/27/69	--	220	270	171	4	MH	--
L-817	16	45 S	24 E	8/24/69	--	4,400	516	132	6	LH	4/11/78
L-818	16	45 S	24 E	6/5/69	--	1,100	190	--	2	MH	--
				12/10/85	3,100	840					
L-819	16	45 S	24 E	8/24/69	--	1,580	220	183	2	MH	--
L-820	16	45 S	24 E	4/18/85	10,000	2,900	600	--	6	LH	--
L-821	16	45 S	24 E	7/18/76	--	720	997	--	6	SU	--
L-822	15	45 S	24 E	8/24/69	1,240	240	200	140	4	MH	--
				12/11/85	2,900	720					
L-898	22	45 S	24 E	12/17/85	2,900	660	675	151	6	LH	--
L-899	22	45 S	24 E	2/19/69	--	225	155	126	3	MH	--
L-928	14	45 S	24 E	9/20/67	--	132	186	134	8	MH	--
L-940	16	45 S	24 E	7/23/69	1,980	975	200	--	2	MH	--
L-941	16	45 S	24 E	7/23/69	1,550	695	168	147	2	MH	--
				12/10/85	1,640	375					
L-944	9	45 S	24 E	7/24/69	1,250	512	168	120	2	MH	--
L-945	16	45 S	24 E	7/24/69	1,500	575	--	--	--	MH	--
				12/10/85	1,450	260					
L-946	16	45 S	24 E	7/24/69	2,200	1,080	200	--	--	MH	--
L-947	16	45 S	24 E	7/24/69	1,200	440	150	--	2	MH	--
L-948	16	45 S	24 E	7/24/69	600	212	150	140	2	MH	--
L-951	3	45 S	24 E	12/12/85	2,500	540	600	--	4	LH	--
L-966	17	45 S	24 E	4/4/68	6,800	1,960	682	137	6	LH	--
L-967	15	45 S	24 E	4/3/68	--	1,250	861	119	6	SU	--
L-968	16	45 S	24 E	4/2/68	23,200	7,700	797	125	4	SU	1978
L-970	16	45 S	24 E	4/11/78	--	13,200	582	138	6	LH	1978
L-972	10	45 S	24 E	6/28/71	--	750	880	150	6	SU	--
L-973	15	45 S	24 E	4/6/68	--	4,550	626	130	6	LH	6/71

Table 1. Well inventory data—Continued

Well number	Section	Township (south)	Range (east)	Date of collection	Specific conductance	Chloride	Well depth (feet)	Casing depth (feet)	Well diameter (inches)	Aquifer	Date plugged/ remarks
L-974	16	45 S	24 E	4/4/68	--	7,500	657	126	6	LH	6/71
L-976	22	45 S	24 E	4/20/67	--	1,680	596	148	6	LH	--
L-977	28	45 S	24 E	4/17/67	2,500	800	1,047	128	6	SU	--
L-979	16	45 S	24 E	1/19/71	--	14,300	710	252	6	LH	1978
L-981	16	45 S	24 E	10/21/70	1,250	640	165	141	2	MH	--
L-1000	20	45 S	24 E	12/24/74	--	2,220	582	136	6	LH	1/75
L-1001	21	45 S	24 E	9/6/78	6,500	1,880	538	121	6	LH	9/6/78
L-1002	15	45 S	24 E	11/19/69	--	1,900	640	246	6	LH	--
L-1024	23	45 S	24 E	12/1/65	--	260	240	126	4	MH	--
L-1025	23	45 S	24 E	12/29/69	--	145	220	126	4	MH	--
L-1026	23	45 S	24 E	12/29/69	--	350	200	126	4	MH	--
L-1028	23	45 S	24 E	12/29/69	--	360	200	126	4	MH	--
L-1029	23	45 S	24 E	12/29/69	--	95	200	126	4	MH	--
L-1030	14	45 S	24 E	12/29/69	--	120	200	126	4	MH	--
L-1031	14	45 S	24 E	12/29/69	--	69	270	126	4	MH	--
L-1070	23	45 S	24 E	4/2/70	--	183	225	128	8	MH	--
L-1071	14	45 S	24 E	5/22/70	--	141	183	130	8	MH	--
L-1072	14	45 S	24 E	5/22/70	--	81	197	124	8	MH	--
L-1073	14	45 S	24 E	5/22/70	--	105	184	127	8	MH	--
L-1074	14	45 S	24 E	5/22/70	--	87	206	130	8	MH	--
L-1075	14	45 S	24 E	5/22/70	--	87	225	126	8	MH	--
L-1076	14	45 S	24 E	5/22/70	--	135	187	134	8	MH	--
L-1079	14	45 S	24 E	5/22/70	--	132	265	138	8	MH	--
L-1080	14	45 S	24 E	5/22/70	--	102	225	136	8	MH	--
L-1082	22	45 S	24 E	6/5/80	--	2,740	540	170	6	LH	8/14/81
L-1083	23	45 S	24 E	6/21/83	2,359	736	614	--	5	LH	6/21/83
L-1084	23	45 S	24 E	8/17/82	3,500	1,200	922	151	6	SU	1/5/83
L-1085	23	45 S	24 E	10/28/82	4,850	1,620	648	128	6	LH	--
L-1093	23	45 S	24 E	7/17/70	1,900	740	645	141	6	LH	--
L-1100	16	45 S	24 E	8/19/70	--	351	241	126	2	MH	--
L-1122	26	45 S	24 E	8/20/70	--	666	230	126	2	MH	--
L-1124	23	45 S	24 E	8/19/70	--	690	230	126	2	MH	--
				10/8/85	900	196					
L-1125	23	45 S	24 E	8/19/70	--	690	230	126	4	MH	--
L-1126	14	45 S	24 E	8/19/70	--	111	238	126	2	MH	--
L-1127	14	45 S	24 E	8/19/70	--	90	--	--	2	MH	--
L-1128	14	45 S	24 E	8/19/70	--	225	251	126	2	MH	--
L-1129	15	45 S	24 E	8/19/70	--	285	229	126	2	MH	--
				5/1/85	690	164					
L-1132	2	45 S	24 E	3/21/80	--	2,650	775	--	6	LH	4/6/82
L-1156	14	45 S	24 E	11/9/84	670	96	--	--	2	MH	--
L-1157	23	45 S	24 E	5/4/71	--	685	740	584	4	SU	1/10/83
L-1162	21	45 S	24 E	11/10/70	--	1,350	600	129	8	LH	12/22/70
L-1163	21	45 S	24 E	11/10/70	--	1,275	190	147	2	MH	--
L-1164	21	45 S	24 E	11/10/70	--	1,200	190	--	2	MH	--
L-1165	21	45 S	24 E	11/10/70	--	1,025	190	--	2	MH	--
				2/25/85	--	600					
L-1166	21	45 S	24 E	11/10/70	--	1,200	190	--	2	MH	--
L-1167	21	45 S	24 E	11/10/70	--	900	200	--	2	MH	--
				2/25/85	2,400	620					
L-1168	21	45 S	24 E	11/10/70	--	725	190	--	2	MH	--
L-1169	21	45 S	24 E	11/10/70	--	625	190	--	2	MH	--
				2/25/85	3,200	860					

Table 1. Well inventory data—Continued

Well number	Section	Township (south)	Range (east)	Date of collection	Specific conductance	Chloride	Well depth (feet)	Casing depth (feet)	Well diameter (inches)	Aquifer	Date plugged/ remarks
L-1170	21	45 S	24 E	11/10/70	--	325	190	--	2	MH	--
				2/21/85	1,580	480					
L-1179	21	45 S	24 E	5/8/73	--	1,200	697	130	6	LH	6/14/73
L-1180	20	45 S	24 E	5/8/73	--	1,100	482	136	6	LH	6/25/73
L-1181	21	45 S	24 E	11/12/70	--	575	190	--	2	MH	--
L-1182	21	45 S	24 E	11/12/70	--	350	194	--	2	MH	--
L-1183	21	45 S	24 E	11/12/70	--	225	197	--	2	MH	--
L-1184	20	45 S	24 E	11/12/70	--	100	200	--	2	MH	--
L-1254	25	45 S	23 E	1/17/69	--	1,200	--	--	4	LH	--
L-1255	25	45 S	23 E	1/20/69	--	1,000	658	--	4	LH	--
L-1256	35	45 S	23 E	1/23/69	--	800	--	--	7	SU	--
L-1257	35	45 S	23 E	1/23/69	--	820	--	--	7	SU	--
L-1258	36	45 S	23 E	4/15/80	3,480	850	538	148	6	LH	4/15/82
L-1259	36	45 S	23 E	1/24/69	--	780	967	--	6	SU	--
L-1260	36	45 S	23 E	1/24/69	--	580	900	--	4	SU	--
L-1261	36	45 S	23 E	2/3/82	3,500	923	--	--	5	LH	5/18/82
L-1262	27	45 S	24 E	1/13/69	--	300	364	130	4	MH	--
L-1263	27	45 S	24 E	2/4/82	2,600	601	959	108	6	SU	5/11/82
L-1264	27	45 S	24 E	7/14/82	--	495	944	148	6	SU	7/14/82
L-1265	28	45 S	24 E	1/8/69	--	190	--	--	4	MH	--
L-1266	28	45 S	24 E	1/9/69	--	200	--	--	6	MH	--
L-1267	28	45 S	24 E	1/9/69	--	560	855	--	6	SU	--
L-1268	28	45 S	24 E	7/12/82	--	876	660	132	6	LH	--
L-1269	28	45 S	24 E	1/7/69	--	660	919	--	6	SU	--
L-1270	31	45 S	24 E	1/24/69	--	910	400	--	6	LH	--
L-1271	31	45 S	24 E	1/18/69	--	740	--	--	6	LH	--
L-1272	31	45 S	24 E	1/24/69	--	740	975	--	5	SU	5/12/82
L-1273	32	45 S	24 E	4/14/69	--	900	>144	78	6	LH	8/8/84
L-1274	33	45 S	24 E	1/20/82	2,260	700	1,108	188	5	SU	6/23/82
L-1275	33	45 S	24 E	1/15/69	--	800	1,038	--	6	SU	--
L-1442	15	45 S	24 E	7/20/71	35,200	13,300	1,161	648	4	SU	1978
L-1460	11	45 S	24 E	6/28/71	--	950	614	158	--	LH	--
L-1462	10	45 S	24 E	8/2/71	3,200	750	925	145	4	SU	--
L-1463	15	45 S	24 E	6/1/71	--	6,900	734	121	6	SU	6/71
L-1464	27	45 S	24 E	8/2/71	--	1,490	977	362	6	SU	--
L-1465	27	45 S	24 E	8/2/71	--	920	585	--	7	LH	--
L-1469	16	45 S	24 E	9/10/84	4,250	1,140	606	242	6	LH	--
L-1471	11	45 S	24 E	8/26/85	2,700	700	961	735	6	SU	--
L-1474	31	45 S	24 E	10/27/71	--	525	226	118	4	MH	--
L-1557	3	45 S	24 E	12/29/71	--	550	575	168	5	LH	1972
L-1570	21	45 S	24 E	3/13/85	3,100	820	190	--	2	MH	--
L-1580	21	45 S	24 E	6/9/72	--	1,020	197	--	2	MH	--
				2/21/85	3,070	1,020					
L-1581	21	45 S	24 E	12/9/71	--	860	200	--	--	MH	--
				12/16/85	3,300	840					
L-1582	21	45 S	24 E	12/9/71	--	470	185	--	2	MH	--
				2/25/85	1,480	340					
L-1583	21	45 S	24 E	12/9/71	--	460	189	--	2	MH	--
				2/21/85	2,600	660					
L-1584	21	45 S	24 E	12/9/71	--	460	190	--	2	MH	--
L-1588	21	45 S	24 E	6/12/72	--	190	190	--	2	MH	--
L-1589	21	45 S	24 E	6/12/72	--	390	200	--	2	MH	--

Table 1. Well inventory data—Continued

Well number	Section	Township (south)	Range (east)	Date of collection	Specific conductance	Chloride	Well depth (feet)	Casing depth (feet)	Well diameter (inches)	Aquifer	Date plugged/ remarks
L-1590	21	45 S	24 E	6/12/72	--	630	--	--	--	MH	--
				6/13/85	--	820					
L-1591	21	45 S	24 E	12/1/74	--	980	--	--	--	MH	--
				3/13/85	4,300	1,180					
L-1592	20	45 S	24 E	3/15/85	3,800	1,020	200	135	4	MH	--
L-1598	21	45 S	24 E	7/10/72	--	800	176	137	2	MH	--
				4/1/85	--	290					
L-1599	20	45 S	24 E	2/25/85	650	74	190	--	2	MH	--
L-1600	21	45 S	24 E	7/6/72	--	800	205	--	4	MH	--
				3/13/85	3,750	1,000					
L-1601	21	45 S	24 E	6/12/72	--	220	190	--	2	MH	--
				3/15/85	1,360	280					
L-1603	21	45 S	24 E	7/6/72	--	840	210	--	2	MH	--
				3/13/85	4,400	1,180					
L-1604	21	45 S	24 E	12/1/74	--	720	--	--	--	MH	--
L-1606	21	45 S	24 E	7/6/72	--	580	189	--	2	MH	--
				1/25/85	4,000	1,120					
L-1607	21	45 S	24 E	8/14/73	--	1,120	204	--	2	MH	--
L-1608	20	45 S	24 E	1/25/85	1,650	400	206	148	2	MH	--
L-1609	20	45 S	24 E	1/25/85	1,490	360	206	147	2	MH	--
L-1610	20	45 S	24 E	12/1/74	--	270	210	155	2	MH	--
L-1611	20	45 S	24 E	1/24/85	605	82	215	155	2	MH	--
L-1612	20	45 S	24 E	1/24/85	620	130	200	156	2	MH	--
L-1613	20	45 S	24 E	1/24/85	990	204	210	147	2	MH	--
L-1614	20	45 S	24 E	1/24/85	1,300	310	210	--	2	MH	--
L-1615	20	45 S	24 E	8/16/73	--	120	210	156	2	MH	--
L-1616	20	45 S	24 E	8/15/73	--	90	--	--	--	MH	--
L-1617	20	45 S	24 E	1/25/85	630	86	167	--	2	MH	--
L-1618	20	45 S	24 E	8/15/73	--	90	--	--	--	MH	--
L-1619	20	45 S	24 E	1/24/85	750	130	205	147	2	MH	--
L-1620	20	45 S	24 E	7/12/72	600	100	200	--	--	MH	--
L-1621	20	45 S	24 E	7/12/72	975	220	--	--	--	MH	--
L-1622	20	45 S	24 E	1/25/85	2,520	680	189	--	2	MH	--
L-1623	21	45 S	24 E	7/12/72	--	675	--	--	--	MH	--
				2/25/85	1,700	420					
L-1624	21	45 S	24 E	7/12/72	--	900	200	--	2	MH	--
				2/25/85	4,200	1,220					
L-1658	21	45 S	24 E	12/5/72	--	1,030	210	--	2	MH	--
				12/16/85	4,550	1,200					
L-1697	22	45 S	24 E	6/29/73	--	110	250	147	4	MH	--
L-1698	20	45 S	24 E	3/13/85	2,000	400	205	145	--	MH	--
L-1699	20	45 S	24 E	2/21/85	3,150	840	218	166	4	MH	--
L-1700	21	45 S	24 E	5/2/73	--	690	189	--	4	MH	--
L-1701	20	45 S	24 E	5/2/73	--	800	180	160	2	MH	--
L-1702	20	45 S	24 E	3/13/85	4,200	1,120	206	154	4	MH	--
L-1705	16	45 S	24 E	7/10/73	--	--	540	270	4	LH	--
L-1707	10	45 S	24 E	6/11/58	--	740	--	--	4	LH	--
L-1708	10	45 S	24 E	6/11/58	--	736	>342	120	4	LH	6/22/83
L-1709	10	45 S	24 E	4/10/68	--	940	--	--	6	LH	--
L-1711	15	45 S	24 E	10/12/78	2,900	750	1,024	--	8	SU	10/21/78
L-1712	15	45 S	24 E	4/1/67	--	5,250	--	--	6	LH	4/67
L-1713	27	45 S	24 E	7/16/84	3,400	1,140	719	--	6	SU	8/2/84
L-1714	22	45 S	24 E	10/29/68	--	2,000	629	128	6	LH	--

Table 1. Well inventory data—Continued

Well number	Section	Township (south)	Range (east)	Date of collection	Specific conductance	Chloride	Well depth (feet)	Casing depth (feet)	Well diameter (inches)	Aquifer	Date plugged/ remarks
L-1715	22	45 S	24 E	4/16/68	--	2,300	901	135	4	SU	7/1/81
L-1716	22	45 S	24 E	8/10/79	--	1,790	600	145	6	LH	3/18/80
L-1717	22	45 S	24 E	4/16/68	--	660	--	--	6	LH	--
L-1718	21	45 S	24 E	7/1/74	3,950	1,080	803	--	6	SU	7/74
L-1719	16	45 S	24 E	12/4/78	30,000	11,400	602	130	6	LH	12/5/78
L-1720	10	45 S	24 E	8/21/68	--	920	>380	--	5	LH	1970
L-1721	15	45 S	24 E	4/27/77	--	2,240	484	133	6	LH	4/77
L-1723	16	45 S	24 E	9/17/57	--	1,920	--	--	5	LH	--
L-1724	15	45 S	24 E	11/1/83	--	2,935	482	132	6	LH	7/23/84
L-1728	15	45 S	24 E	8/8/79	--	4,360	637	125	6	LH	4/15/80
L-1732	21	45 S	24 E	8/1/73	--	750	--	--	--	MH	--
				3/15/85	1,550	366					
L-1733	21	45 S	24 E	8/1/73	--	320	--	--	--	MH	--
				3/15/85	1,060	170					
L-1734	21	45 S	24 E	8/6/73	--	780	--	--	--	MH	--
L-1735	21	45 S	24 E	8/1/73	--	260	--	--	--	MH	--
				3/15/85	1,220	260					
L-1736	21	45 S	24 E	8/1/73	--	90	--	--	2	MH	--
				3/15/85	--	46					
L-1737	21	45 S	24 E	8/1/73	--	90	185	--	2	MH	--
L-1738	20	45 S	24 E	8/1/73	670	100	190	--	2	MH	--
L-1739	20	45 S	24 E	2/21/85	810	146	--	--	--	MH	--
L-1740	20	45 S	24 E	8/1/73	546	100	>155	--	--	MH	--
L-1741	20	45 S	24 E	2/21/85	610	82	189	--	2	MH	--
L-1742	20	45 S	24 E	8/6/73	600	90	188	--	2	MH	--
L-1743	20	45 S	24 E	8/6/73	668	80	200	--	2	MH	--
L-1744	20	45 S	24 E	2/21/85	680	116	--	--	--	MH	--
L-1745	20	45 S	24 E	2/21/85	850	168	--	--	--	MH	--
L-1746	20	45 S	24 E	8/6/73	558	90	--	--	2	MH	--
L-1747	20	45 S	24 E	2/21/85	1,100	242	210	--	2	MH	--
L-1748	20	45 S	24 E	2/21/85	1,100	242	--	--	2	MH	--
L-1749	21	45 S	24 E	8/6/73	--	100	--	--	--	MH	--
				2/25/85	630	92					
L-1750	21	45 S	24 E	8/7/73	--	160	--	--	--	MH	--
				3/15/85	235	44					
L-1751	21	45 S	24 E	3/18/85	550	59	--	--	--	MH	--
L-1752	21	45 S	24 E	8/7/73	--	240	--	--	--	MH	--
				3/15/85	1,560	400					
L-1753	21	45 S	24 E	8/7/73	--	240	--	--	--	MH	--
				3/15/85	1,510	340					
L-1755	21	45 S	24 E	8/7/73	--	500	--	--	--	MH	--
L-1756	21	45 S	24 E	8/7/73	--	520	185	--	2	MH	--
L-1757	21	45 S	24 E	8/7/73	550	--	--	--	--	MH	--
L-1758	21	45 S	24 E	8/8/73	--	520	200	--	2	MH	--
				2/25/85	1,250	230					
L-1759	21	45 S	24 E	8/8/73	--	470	--	--	--	MH	--
L-1761	21	45 S	24 E	8/8/73	--	240	198	--	2	MH	--
				3/15/85	1,560	400					
L-1762	21	45 S	24 E	8/8/73	--	260	--	--	2	MH	--
				3/15/85	1,400	304					
L-1763	21	45 S	24 E	8/8/73	--	260	197	--	2	MH	--
				3/15/85	850	140					
L-1764	20	45 S	24 E	8/8/73	805	150	--	--	--	MH	--

Table 1. Well inventory data—Continued

Well number	Section	Township (south)	Range (east)	Date of collection	Specific conductance	Chloride	Well depth (feet)	Casing depth (feet)	Well diameter (inches)	Aquifer	Date plugged/ remarks
L-1765	20	45 S	24 E	3/13/85	740	122	--	--	--	MH	--
L-1766	20	45 S	24 E	3/13/85	740	124	190	--	2	MH	--
L-1767	21	45 S	24 E	8/9/73	--	340	--	--	--	MH	--
				3/13/85	860	150					
L-1768	21	45 S	24 E	8/9/73	--	340	--	--	--	MH	--
				3/25/85	980	188					
L-1770	21	45 S	24 E	8/9/73	--	450	--	--	--	MH	--
				3/15/85	1,530	260					
L-1772	21	45 S	24 E	8/9/73	--	340	>200	--	2	MH	--
L-1773	21	45 S	24 E	8/13/73	--	360	210	--	2	MH	--
				2/25/85	--	1,550					
L-1774	21	45 S	24 E	8/13/73	--	340	--	--	--	MH	--
L-1775	21	34 S	24 E	8/13/73	--	590	--	--	--	MH	--
				2/25/85	1,850	460					
L-1776	21	45 S	24 E	8/13/73	--	510	185	--	4	MH	--
				2/25/85	2,000	460					
L-1777	21	45 S	24 E	8/13/73	--	570	--	--	--	MH	--
				2/25/85	1,480	340					
L-1778	20	45 S	24 E	1/24/85	600	80	190	--	2	MH	--
L-1779	20	45 S	24 E	8/15/73	600	90	>180	--	2	MH	--
L-1780	20	45 S	24 E	4/11/77	--	15,700	190	--	2	MH	--
L-1781	20	45 S	24 E	1/25/85	215	42	--	--	--	MH	--
L-1782	20	45 S	24 E	1/25/85	610	80	--	--	--	MH	--
L-1783	20	45 S	24 E	1/25/85	600	70	--	--	--	MH	--
L-1784	20	45 S	24 E	1/25/85	1,020	220	256	--	2	MH	--
L-1785	20	45 S	24 E	1/25/85	600	64	220	--	2	MH	--
L-1786	20	45 S	24 E	8/15/73	640	100	220	--	2	MH	--
L-1787	20	45 S	24 E	1/24/85	620	80	--	--	--	MH	--
L-1788	20	45 S	24 E	1/24/85	750	125	210	147	2	MH	--
L-1789	20	45 S	24 E	1/24/85	1,030	224	225	--	4	MH	--
L-1790	20	45 S	24 E	1/24/85	600	130	231	--	2	MH	--
L-1791	20	45 S	24 E	1/24/85	570	72	225	--	4	MH	--
L-1792	20	45 S	24 E	1/24/85	570	74	225	--	4	MH	--
L-1793	20	45 S	24 E	1/24/85	1,780	436	205	--	4	MH	--
L-1795	20	45 S	24 E	1/24/85	620	80	180	--	4	MH	--
L-1796	20	45 S	24 E	1/24/85	1,850	450	200	--	4	MH	--
L-1797	20	45 S	24 E	8/16/73	785	150	260	--	4	MH	--
L-1798	20	45 S	24 E	1/24/85	2,000	420	185	--	4	MH	--
L-1799	20	45 S	24 E	1/24/85	1,680	400	206	--	4	MH	--
L-1800	21	45 S	24 E	8/17/73	--	910	210	--	2	MH	--
L-1801	21	45 S	24 E	8/17/73	--	980	225	--	4	MH	--
				3/13/85	3,010	800					
L-1802	20	45 S	24 E	8/17/73	1,500	380	189	147	2	MH	--
L-1803	21	45 S	24 E	8/17/73	--	420	210	--	2	MH	--
				2/21/85	2,650	680					
L-1805	21	45 S	24 E	8/20/73	3,940	1,090	185	--	2	MH	--
L-1807	21	45 S	24 E	8/20/73	--	530	--	--	--	MH	--
L-1809	21	45 S	24 E	8/21/73	--	950	205	--	3	MH	--
				3/13/85	4,450	1,200					
L-1810	21	45 S	24 E	8/21/73	--	940	220	--	2	MH	--
L-1812	20	45 S	24 E	8/21/73	770	150	>200	--	4	MH	--
L-1814	21	45 S	24 E	8/21/73	--	480	182	--	2	MH	--
L-1849	21	45 S	24 E	12/12/73	--	1,170	205	152	6	MH	--
L-1855	21	45 S	24 E	2/26/74	--	550	--	--	2	MH	--
L-1953	15	45 S	24 E	8/21/85	5,040	1,380	185	105	4	MH	--
L-1954	15	45 S	24 E	8/20/85	10,300	3,200	200	126	4	MH	--
L-2028	21	45 S	24 E	12/1/74	--	320	--	--	--	MH	--

Table 1.--Well inventory data—Continued

Well number	Section	Township (south)	Range (east)	Date of collection	Specific conductance	Chloride	Well depth (feet)	Casing depth (feet)	Well diameter (inches)	Aquifer	Date plugged/ remarks
L-2030	21	45 S	24 E	12/1/74	--	350	210	--	4	MH	--
				2/25/85	1,530	360					
L-2031	21	45 S	24 E	12/1/74	--	400	200	--	2	MH	--
				2/25/85	1,570	440					
L-2032	21	45 S	24 E	12/1/74	--	1,020	--	--	--	MH	--
L-2033	21	45 S	24 E	12/1/74	--	580	185	--	4	MH	--
				3/15/85	--	380					
L-2034	21	45 S	24 E	12/1/74	--	550	205	--	4	MH	--
				2/25/85	1,030	200					
L-2035	21	45 S	24 E	12/1/74	--	350	220	--	--	MH	--
				2/25/85	1,460	300					
L-2036	21	45 S	24 E	12/1/74	--	300	220	--	2	MH	--
				2/25/85	920	164					
L-2037	21	45 S	24 E	12/1/74	--	510	>140	--	2	MH	--
				2/25/85	2,000	460					
L-2038	21	45 S	24 E	12/1/74	--	680	220	--	2	MH	--
				1/25/85	2,640	620					
L-2039	21	45 S	24 E	12/1/74	--	780	189	--	2	MH	--
L-2040	21	45 S	24 E	12/1/74	--	560	200	--	4	MH	--
				2/21/85	2,850	760					
L-2041	21	45 S	24 E	12/1/74	--	440	187	--	2	MH	--
L-2042	21	45 S	24 E	12/1/74	--	360	203	--	4	MH	--
				2/21/85	--	580					
L-2043	21	45 S	24 E	12/1/74	--	1,140	230	--	--	MH	--
				2/21/85	4,020	1,280					
L-2044	21	45 S	24 E	12/1/74	--	540	205	--	--	MH	--
L-2045	20	45 S	24 E	12/13/74	--	380	185	145	4	MH	--
L-2046	21	45 S	24 E	12/1/74	--	900	180	--	4	MH	--
				3/13/85	4,000	960					
L-2047	21	45 S	24 E	12/1/74	--	690	210	--	4	MH	--
				3/13/85	1,550	380					
L-2048	21	45 S	24 E	12/1/74	--	980	220	--	4	MH	--
				3/13/85	4,600	1,180					
L-2049	21	45 S	24 E	12/1/74	--	830	205	--	4	MH	--
				3/13/85	3,020	840					
L-2051	21	45 S	24 E	12/1/74	--	840	180	--	4	MH	--
L-2052	20	45 S	24 E	1/24/85	1,450	350	--	--	--	MH	--
L-2053	20	45 S	24 E	1/24/85	1,570	360	--	--	--	MH	--
L-2054	20	45 S	24 E	1/24/85	1,750	420	--	--	--	MH	--
L-2055	20	45 S	24 E	1/24/85	1,520	340	200	--	4	MH	--
L-2056	20	45 S	24 E	3/13/85	1,400	318	--	--	--	MH	--
L-2057	20	45 S	24 E	1/24/85	2,800	740	215	--	4	MH	--
L-2084	16	45 S	24 E	12/10/85	1,280	265	--	--	4	MH	--
L-2115	21	45 S	24 E	5/13/76	--	850	750	610	6-8	SU	--
L-2218	36	45 S	23 E	10/5/77	2,370	570	196	--	2	MH	--
L-2200	36	45 S	23 E	11/4/75	--	760	--	--	6	LH	--
L-2253	36	45 S	23 E	11/4/75	--	780	--	--	6	LH	--
L-2264	3	45 S	24 E	1/16/85	2,000	768	465	160	6	LH	4/3/85
L-2265	34	45 S	24 E	2/4/76	--	Salty	571	--	6	LH	--
L-2266	34	45 S	24 E	2/4/76	--	Salty	210	--	2	MH	--
L-2270	20	45 S	24 E	2/9/76	--	500	225	185	4	MH	--
L-2322	16	45 S	24 E	9/3/76	--	750	--	--	--	MH	--
L-2323	16	45 S	24 E	9/2/76	--	720	--	--	--	MH	--
L-2324	16	45 S	24 E	9/3/76	--	750	--	--	--	MH	--
L-2325	9	45 S	24 E	4/17/85	2,050	480	--	--	2	MH	--
L-2326	16	45 S	24 E	4/15/85	2,800	800	--	--	4	MH	--
L-2355	16	45 S	24 E	10/6/76	--	400	600	300	4	LH	--
L-2357	11	45 S	24 E	9/9/80	--	1,430	471	126	6	LH	5/13/82

Table 1. Well inventory data—Continued

Well number	Section	Township (south)	Range (east)	Date of collection	Specific conductance	Chloride	Well depth (feet)	Casing depth (feet)	Well diameter (inches)	Aquifer	Date plugged/ remarks
L-2438	11	45 S	24 E	1/5/83	3,000	787	859	144	6	SU	1/6/83
L-2443	20	45 S	24 E	4/11/77	--	3,000	165	--	2	MH	--
L-2453	21	45 S	24 E	5/13/77	--	135	189	--	4	MH	--
L-2568	15	45 S	24 E	12/12/77	1,500	350	180	--	2	MH	--
L-2569	15	45 S	24 E	12/13/77	2,120	520	180	--	--	MH	--
L-2570	15	45 S	24 E	12/13/77	1,520	370	180	--	2	MH	--
L-2571	15	45 S	24 E	12/12/77	7,500	2,300	--	--	2	MH	--
L-2624	15	45 S	24 E	6/1/67	--	1,900	--	--	6	LH	3/7/78
L-2625	15	45 S	24 E	3/7/78	--	--	590	100	6	LH	--
L-2626	16	45 S	24 E	7/1/57	--	1,400	--	--	6	LH	--
L-2647	15	45 S	24 E	1/5/78	--	600	200	135	6	MH	--
L-2648	15	45 S	24 E	1/5/78	--	300	192	140	2	MH	--
L-2650	15	45 S	24 E	1/5/78	--	550	200	130	8	MH	--
L-2657	36	45 S	23 E	7/30/80	--	802	916	162	6	LH	--
L-2658	16	45 S	24 E	8/24/78	--	--	--	--	6	LH	8/28/78
L-3223	3	45 S	24 E	8/1/79	3,700	940	496	170	6	LH	5/10/80
L-3261	16	45 S	24 E	8/7/79	21,300	7,250	700	580	6	LH	11/83
L-3262	21	45 S	24 E	8/7/79	4,100	1,100	--	--	--	LH	--
L-3266	28	45 S	24 E	9/4/79	--	--	--	--	6	LH	--
L-3267	29	45 S	24 E	10/16/51	--	775	874	190	6	SU	9/29/81
L-3268	33	45 S	24 E	1/21/82	--	--	>144	--	6	LH	6/23/82
L-3291	2	45 S	24 E	6/2/82	3,000	797	775	130	6	SU	5/24/83
L-3292	3	45 S	24 E	11/19/79	--	600	--	--	6	LH	--
L-3298	32	45 S	24 E	7/23/81	--	630	575	135	6	LH	4/7/82
L-4839	36	45 S	24 E	1/7/80	2,400	347	550	141	8	LH	9/19/80
L-4840	3	45 S	24 E	3/12/80	2,400	611	710	130	6	LH	3/12/80
L-4847	31	45 S	24 E	10/15/82	3,180	763	>349	150	4	LH	--
L-4854	10	45 S	24 E	5/12/80	1,420	325	--	--	--	MH	--
L-4855	10	45 S	24 E	12/11/85	1,140	208	221	--	4	MH	--
L-4856	10	45 S	24 E	12/11/85	1,580	360	--	--	--	MH	--
L-4858	20	45 S	24 E	6/18/80	3,700	840	800	600	6	SU	1981
L-4862	33	45 S	24 E	9/13/79	--	786	--	--	--	LH	7/20/82
L-4864	16	45 S	24 E	3/19/80	--	726	920	138	4	SU	3/19/80
L-4865	2	45 S	24 E	4/29/80	--	795	>230	--	6	LH	5/27/82
L-4866	2	45 S	24 E	4/29/80	--	713	849	150	6	SU	7/3/81
L-4868	29	45 S	24 E	6/4/80	--	751	874	125	4	SU	1/23/85
L-4869	23	45 S	24 E	6/5/80	--	1,680	599	--	8	LH	8/20/81
L-4870	2	45 S	24 E	4/29/80	--	1,369	796	172	6	SU	7/24/81
L-4897	10	45 S	24 E	9/11/80	3,460	960	467	205	6	LH	9/15/81
L-4898	3	45 S	24 E	9/11/80	--	720	681	148	6	LH	--
L-4899	17	45 S	24 E	9/17/80	--	--	--	--	--	LH	--
L-5600	17	45 S	24 E	9/3/80	--	1,400	453	203	6	LH	9/17/81
L-5601	10	45 S	24 E	10/14/80	--	792	920	114	6	SU	6/22/82
L-5602	28	45 S	24 E	10/15/80	--	630	966	192	6	SU	4/2/84
L-5603	28	45 S	24 E	3/28/84	--	--	>306	--	4	LH	3/28/84
L-5618	17	45 S	24 E	1/31/80	--	4,130	627	160	6	LH	1980
L-5696	31	45 S	24 E	12/23/85	3,400	840	905	385	6	SU	--
L-5697	31	45 S	24 E	4/21/83	3,250	820	888	150	6	SU	10/83
L-5809	3	45 S	24 E	9/11/85	1,850	420	--	--	4	MH	--
L-5818	3	45 S	24 E	1/10/83	3,500	851	--	--	--	LH	1/24/83
L-5819	3	45 S	24 E	9/10/85	1,700	380	--	--	--	MH	--

Table 1. Well inventory data—Continued

Well number	Section	Township (south)	Range (east)	Date of collection	Specific conductance	Chloride	Well depth (feet)	Casing depth (feet)	Well diameter (inches)	Aquifer	Date plugged/ remarks
L-5820	3	45 S	24 E	9/10/85	2,500	560	--	--	--	LH	--
L-5821	3	45 S	24 E	9/10/85	1,300	380	--	--	--	MH	--
L-5822	3	45 S	24 E	12/12/85	1,710	365	--	--	--	MH	--
L-5823	3	45 S	24 E	12/12/85	1,850	380	--	--	--	MH	--
L-5824	3	45 S	24 E	8/22/85	2,180	440	>100	--	--	MH	--
L-5825	3	45 S	24 E	8/22/85	1,850	400	180	--	--	MH	--
L-5826	3	45 S	24 E	9/10/85	1,750	400	180	--	--	MH	--
L-5830	3	45 S	24 E	9/11/85	1,580	360	--	--	--	MH	--
L-5833	3	45 S	24 E	9/11/85	1,690	360	--	--	--	MH	--
L-5834	2	45 S	24 E	9/16/85	1,900	380	--	--	2	MH	--
L-5835	2	45 S	24 E	9/16/85	2,150	500	--	--	4	MH	--
L-5840	10	45 S	24 E	9/11/85	1,600	420	190	--	2	MH	--
L-5841	10	45 S	24 E	4/19/85	1,800	400	220	--	4	MH	--
L-5842	10	45 S	24 E	4/19/85	950	166	190	--	4	MH	--
L-5843	10	45 S	24 E	4/19/85	2,150	480	150	--	4	MH	--
L-5844	10	45 S	24 E	4/19/85	2,750	640	200	--	4	MH	--
L-5845	10	45 S	24 E	4/19/85	1,220	192	--	--	4	MH	--
L-5846	10	45 S	24 E	4/17/85	2,220	600	280	--	4	MH	--
L-5847	9	45 S	24 E	4/17/85	1,700	420	185	--	2	MH	--
L-5848	11	45 S	24 E	8/2/82	--	--	--	--	--	LH	8/2/82
L-5850	11	45 S	24 E	8/26/85	1,780	380	160	--	4	MH	--
L-5851	11	45 S	24 E	8/26/85	1,420	320	--	--	2	MH	--
L-5854	10	45 S	24 E	8/6/85	1,650	340	160	--	4	MH	--
L-5855	11	45 S	24 E	8/26/85	2,050	520	--	--	4	MH	--
L-5856	11	45 S	24 E	8/26/85	1,850	460	--	--	2	MH	--
L-5857	11	45 S	24 E	8/26/85	1,300	260	160	--	4	MH	--
L-5859	10	45 S	24 E	8/26/85	1,600	320	160	--	4	MH	--
L-5861	17	45 S	24 E	4/1/85	1,420	400	--	--	4	MH	--
L-5862	17	45 S	24 E	4/1/85	1,210	268	--	--	--	MH	--
L-5863	16	45 S	24 E	12/11/85	930	186	--	--	--	MH	--
L-5864	16	45 S	24 E	12/11/85	1,240	220	--	--	--	MH	--
L-5867	23	45 S	24 E	12/17/85	3,300	800	500	--	--	LH	--
L-5869	22	45 S	24 E	12/14/85	1,090	135	--	--	4	MH	--
L-5870	14	45 S	24 E	12/17/85	2,600	660	--	--	--	LH	--
L-5873	22	45 S	24 E	12/17/85	1,040	280	>130	--	--	MH	--
L-5874	22	45 S	24 E	1/2/86	2,650	600	--	--	--	LH	--
L-5877	16	45 S	24 E	3/20/85	950	210	--	--	--	MH	--
L-5879	16	45 S	24 E	3/26/85	1,020	224	--	--	4	MH	--
L-5880	16	45 S	24 E	3/25/85	940	182	--	--	--	MH	--
L-5881	16	45 S	24 E	3/25/85	950	190	--	--	--	MH	--
L-5882	16	45 S	24 E	3/25/85	2,800	740	--	--	--	MH	--
L-5883	16	45 S	24 E	3/25/85	3,000	820	--	--	--	MH	--
L-5884	16	45 S	24 E	3/25/85	1,540	440	--	--	--	MH	--
L-5885	16	45 S	24 E	3/25/85	2,600	720	--	--	--	MH	--
L-5886	16	45 S	24 E	3/26/85	980	218	--	--	2	MH	--
L-5887	16	45 S	24 E	3/26/85	8,000	2,640	--	--	2	MH	Casing decay.
L-5888	16	45 S	24 E	3/26/85	1,420	332	170	--	2	MH	--
L-5890	16	45 S	24 E	4/23/85	1,320	304	180	--	4	MH	--
L-5990	16	45 S	24 E	3/26/85	1,080	244	--	--	2	MH	--
L-5991	16	45 S	24 E	3/26/85	900	190	--	--	2	MH	--

Table 1. Well inventory data—Continued

Well number	Section	Township (south)	Range (east)	Date of collection	Specific conductance	Chloride	Well depth (feet)	Casing depth (feet)	Well diameter (inches)	Aquifer	Date plugged/ remarks
L-5992	16	45 S	24 E	3/26/85	960	204	--	--	2	MH	--
L-5993	16	45 S	24 E	3/26/85	940	194	184	--	2	MH	--
L-5994	16	45 S	24 E	3/26/85	950	206	--	--	2	MH	--
L-5995	16	45 S	24 E	3/26/85	870	166	--	--	2	MH	--
L-5996	16	45 S	24 E	3/26/85	560	116	--	--	2	MH	--
L-5997	16	45 S	24 E	3/26/85	1,650	420	180	--	4	MH	--
L-6000	16	45 S	24 E	3/26/85	820	164	180	--	2	MH	--
L-6001	16	45 S	24 E	3/26/85	820	164	186	--	2	MH	--
L-6002	16	45 S	24 E	3/26/85	800	154	--	--	2	MH	--
L-6003	16	45 S	24 E	3/26/85	3,020	900	>125	--	2	MH	Casing decay.
L-6004	16	45 S	24 E	3/26/85	790	150	--	--	4	MH	--
L-6005	16	45 S	24 E	3/26/85	800	164	--	--	4	MH	--
L-6006	16	45 S	24 E	3/26/85	1,040	230	--	--	2	MH	--
L-6008	16	45 S	24 E	3/26/85	2,150	520	--	--	2	MH	--
L-6013	16	45 S	24 E	4/1/85	2,900	760	180	--	4	MH	--
L-6014	16	45 S	24 E	4/15/85	1,850	460	--	--	4	MH	--
L-6015	16	45 S	24 E	4/15/85	1,280	212	--	--	4	MH	--
L-6017	16	45 S	24 E	4/15/85	1,320	276	--	--	2	MH	--
L-6019	16	45 S	24 E	4/15/85	1,900	360	--	--	2	MH	--
L-6020	16	45 S	24 E	4/15/85	1,360	264	--	--	2	MH	--
L-6021	16	45 S	24 E	4/15/85	1,950	380	--	--	3	MH	--
L-6022	15	45 S	24 E	8/22/85	2,900	640	--	--	2	MH	--
L-6024	15	45 S	24 E	8/22/85	--	960	164	--	--	MH	--
L-6025	15	45 S	24 E	8/23/85	1,030	200	165	--	4	MH	--
L-6026	15	45 S	24 E	8/23/85	1,020	200	--	--	4	MH	--
L-6027	15	45 S	24 E	8/23/85	1,060	200	--	--	4	MH	--
L-6028	15	45 S	24 E	8/23/85	1,120	220	200	--	4	MH	--
L-6031	15	45 S	24 E	8/20/85	860	116	180	--	2	MH	--
L-6032	15	45 S	24 E	8/20/85	1,460	240	--	--	4	MH	--
L-6036	14	45 S	24 E	9/16/85	720	88	--	--	4	MH	--
L-6037	14	45 S	24 E	9/16/85	1,100	220	--	--	4	MH	--
L-6038	14	45 S	24 E	9/16/85	1,400	200	--	--	2	MH	--
L-6039	14	45 S	24 E	9/16/85	1,300	260	--	--	--	MH	--
L-6040	14	45 S	24 E	9/17/85	1,400	220	--	--	4	MH	--
L-6041	14	45 S	24 E	12/19/85	760	98	--	--	--	MH	--
L-6042	14	45 S	24 E	12/19/85	--	--	--	--	--	LH	--
L-6043	14	45 S	24 E	5/1/70	--	--	--	--	--	LH	5/70
L-6044	14	45 S	24 E	7/1/78	--	--	--	--	--	LH	1978
L-6045	14	45 S	24 E	8/23/85	1,950	420	--	--	4	MH	--
L-6046	21	45 S	24 E	12/16/85	1,850	440	200	--	4	MH	--
L-6048	21	45 S	24 E	4/16/85	1,650	350	--	--	--	MH	--
L-6049	21	45 S	24 E	12/16/85	2,310	500	--	--	4	MH	--
L-6050	20	45 S	24 E	12/16/85	1,950	440	--	--	4	MH	--
L-6051	21	45 S	24 E	12/16/85	1,200	218	--	--	4	MH	--
L-6052	21	45 S	24 E	4/16/85	1,850	440	--	--	--	MH	--
L-6054	20	45 S	24 E	4/16/85	1,700	380	300	--	--	MH	--
L-6056	9	45 S	24 E	4/15/85	2,850	780	--	--	2	MH	--
L-6057	9	45 S	24 E	4/17/85	2,250	640	--	--	2	MH	--
L-6058	10	45 S	24 E	4/17/85	2,050	480	--	--	2	MH	--
L-6059	10	45 S	24 E	4/14/85	2,100	480	--	--	2	MH	--
L-6060	10	45 S	24 E	4/17/85	1,800	400	--	--	4	MH	--
L-6061	9	45 S	24 E	4/18/85	1,950	420	--	--	4	MH	--
L-6062	10	45 S	24 E	4/17/85	1,850	440	--	--	2	MH	--

Table 1. Well inventory data—Continued

Well number	Section	Township (south)	Range (east)	Date of collection	Specific conductance	Chloride	Well depth (feet)	Casing depth (feet)	Well diameter (inches)	Aquifer	Date plugged/ remarks
L-6064	10	45 S	24 E	4/18/85	1,040	230	180	--	4	MH	--
L-6065	10	45 S	24 E	4/18/85	1,360	332	--	--	--	MH	--
L-6066	10	45 S	24 E	4/17/85	1,000	260	--	--	2	MH	--
L-6068	22	45 S	24 E	8/22/85	1,800	380	--	--	4	MH	--
L-6069	22	45 S	24 E	1/7/86	890	148	160	--	4	MH	--
L-6072	27	45 S	24 E	9/17/85	940	100	--	--	--	MH	--
L-6073	27	45 S	24 E	9/17/85	1,220	240	180	--	2	MH	--
L-6075	27	45 S	24 E	9/17/85	3,200	780	>200	--	4	LH	--
L-6076	27	45 S	24 E	9/17/85	1,500	300	194	--	4	MH	--
L-6077	27	45 S	24 E	9/17/85	1,280	260	200	--	4	MH	--
L-6078	27	45 S	24 E	12/17/85	3,400	840	--	--	--	LH	--
L-6079	27	45 S	24 E	1/2/86	1,800	355	--	--	2	MH	--
L-6081	28	45 S	24 E	12/18/85	1,500	300	250	--	--	MH	--
L-6082	28	45 S	24 E	12/18/85	770	114	185	--	--	MH	--
L-6083	28	45 S	24 E	12/18/85	630	74	250	--	--	MH	--
L-6084	28	45 S	24 E	8/26/82	--	--	500	--	--	LH	8/26/82
L-6085	28	45 S	24 E	7/12/82	2,800	658	1,080	120	6	SU	1/24/85
L-6086	29	45 S	24 E	1/7/86	750	112	210	--	--	MH	--
L-6087	29	45 S	24 E	12/23/85	700	94	200	--	--	MH	--
L-6088	29	45 S	24 E	1/7/86	800	120	208	--	--	MH	--
L-6089	29	45 S	24 E	12/18/85	1,060	206	200	--	--	MH	--
L-6090	20	45 S	24 E	1/7/86	660	70	220	--	--	MH	--
L-6091	29	45 S	24 E	7/18/84	--	--	771	--	--	SU	7/18/84
L-6092	31	45 S	24 E	12/23/85	2,600	600	>120	--	--	MH	--
L-6093	25	45 S	23 E	12/23/85	1,650	375	--	--	--	MH	--
L-6095	30	45 S	24 E	4/20/83	3,500	852	905	--	8	SU	--
L-6096	30	45 S	24 E	4/20/83	2,750	625	600	--	4	LH	5/25/83
L-6097	30	45 S	24 E	4/19/83	3,700	976	690	142	6	SU	5/24/83
L-6098	31	45 S	24 E	5/5/81	--	1,480	--	--	5	LH	--
L-6099	31	45 S	24 E	9/16/81	--	--	--	--	6	LH	9/16/81
L-6100	31	45 S	24 E	9/23/81	--	479	831	148	6	SU	9/25/81
L-6101	31	45 S	24 E	4/27/83	3,750	954	835	104	4	SU	--
L-6102	31	45 S	24 E	1/20/82	3,050	884	589	162	6	LH	1/7/85
L-6104	31	45 S	24 E	12/23/85	2,070	440	250	--	--	MH	--
L-6106	31	45 S	24 E	12/23/85	1,380	385	--	--	2	MH	--
L-6107	32	45 S	24 E	12/20/85	1,250	270	--	--	2	MH	--
L-6109	32	45 S	24 E	12/23/85	4,000	1,060	>130	--	--	MH	--
L-6110	32	45 S	24 E	12/20/85	1,300	290	--	--	--	MH	--
L-6111	32	45 S	24 E	6/29/82	--	--	--	--	--	LH	6/29/82
L-6112	32	45 S	24 E	9/24/82	--	--	--	--	--	LH	9/24/82
L-6113	32	45 S	24 E	8/13/84	--	--	--	--	--	LH	8/13/84
L-6114	32	45 S	24 E	11/26/84	1,660	680	596	134	6	LH	1/14/85
L-6115	33	45 S	24 E	1/2/86	2,130	500	>100	--	--	MH	--
L-6116	34	45 S	24 E	1/12/82	3,080	680	1,132	142	2	SU	3/15/83
L-6117	34	45 S	24 E	8/23/84	3,780	1,200	928	124	6	SU	8/27/84
L-6118	34	45 S	24 E	3/10/82	--	741	>138	--	6	LH	--
L-6119	34	45 S	24 E	1/2/86	2,200	500	--	--	--	MH	--
L-6120	34	45 S	24 E	1/2/86	1,370	278	200	--	--	MH	--
L-6121	34	45 S	24 E	1/2/86	2,060	460	200	--	--	MH	--
L-6124	34	45 S	24 E	1/2/86	2,050	460	200	--	--	MH	--
L-6125	35	45 S	24 E	12/3/84	2,650	887	713	140	5	SU	1/8/85
L-6126	35	45 S	24 E	1/3/86	2,400	620	--	--	--	MH	--
L-6127	35	45 S	24 E	1/3/86	1,250	250	250	--	--	MH	--
L-6128	35	45 S	24 E	1/3/86	1,400	328	250	--	--	MH	--
L-6129	35	45 S	24 E	1/3/86	980	172	--	--	--	MH	--

Table 1. Well inventory data—Continued

Well number	Section	Township (south)	Range (east)	Date of collection	Specific conductance	Chloride	Well depth (feet)	Casing depth (feet)	Well diameter (inches)	Aquifer	Date plugged/ remarks
L-6131	36	45 S	23 E	7/30/80	--	770	453	150	4	LH	4/7/82
L-6132	36	45 S	23 E	7/15/81	--	642	479	82	4	LH	8/31/81
L-6133	36	45 S	23 E	8/26/81	--	697	662	146	6	LH	4/15/82
L-6134	36	45 S	23 E	6/3/82	3,000	800	552	134	5	LH	6/17/82
L-6135	36	45 S	23 E	11/17/82	3,100	835	>320	--	4	LH	3/1/83
L-6136	36	45 S	23 E	11/17/82	3,600	988	720	140	4	SU	3/1/83
L-6137	36	45 S	23 E	8/8/85	1,420	260	--	--	4	MH	--
L-6138	36	45 S	23 E	8/8/85	3,150	620	150	--	4	MH	--
L-6139	36	45 S	23 E	8/8/85	3,200	720	--	--	4	MH	--
L-6140	35	45 S	23 E	8/14/85	2,550	440	--	--	2	MH	--
L-6141	35	45 S	23 E	8/19/85	2,950	600	--	--	2	MH	--
L-6142	36	45 S	23 E	8/15/85	2,900	600	--	--	2	MH	--
L-6143	36	45 S	23 E	8/15/85	3,050	660	--	--	2	MH	--
L-6144	36	45 S	23 E	8/15/85	2,900	666	--	--	2	MH	--
L-6145	36	45 S	23 E	8/15/85	3,200	700	--	--	--	MH	--
L-6146	36	45 S	23 E	8/15/85	3,100	700	163	--	2	MH	--
L-6147	36	45 S	23 E	8/15/85	3,050	680	--	--	4	MH	--
L-6148	36	45 S	23 E	8/15/85	3,200	720	--	--	4	MH	--
L-6149	36	45 S	23 E	8/15/85	2,950	660	--	--	2	MH	--
L-6150	36	45 S	23 E	8/15/85	3,200	700	190	--	2	MH	--
L-6151	36	45 S	23 E	8/15/85	1,900	400	--	--	2	MH	--
L-6152	36	45 S	23 E	8/15/85	2,700	380	180	--	2	MH	--
L-6153	36	45 S	23 E	8/15/85	1,400	220	--	--	--	MH	--
L-6154	36	45 S	23 E	8/15/85	3,000	640	--	--	--	MH	--
L-6155	36	45 S	23 E	8/15/85	2,900	640	--	--	4	MH	--
L-6156	36	45 S	23 E	8/15/85	2,950	700	--	--	4	MH	--
L-6157	36	45 S	23 E	8/15/85	2,800	620	--	--	4	MH	--
L-6158	36	45 S	23 E	8/16/85	2,150	440	--	--	2	MH	--
L-6159	36	45 S	23 E	8/16/85	2,550	560	--	--	2	MH	--
L-6160	36	45 S	23 E	8/16/85	2,550	560	--	--	4	MH	--
L-6161	36	45 S	23 E	8/15/85	2,000	460	160	--	2	MH	--
L-6162	36	45 S	23 E	8/15/85	1,900	400	--	--	4	MH	--
L-6163	36	45 S	23 E	8/15/85	2,200	480	--	--	4	MH	--
L-6164	36	45 S	23 E	8/15/85	1,800	400	--	--	2	MH	--
L-6165	36	45 S	23 E	8/15/85	2,050	440	--	--	2	MH	--
L-6166	36	45 S	23 E	8/16/85	2,200	460	--	--	--	MH	--
L-6167	36	45 S	23 E	8/16/85	2,650	560	--	--	4	MH	--
L-6168	36	45 S	23 E	8/16/85	2,600	560	--	--	4	MH	--
L-6169	36	45 S	23 E	8/16/85	2,200	480	--	--	2	MH	--
L-6170	36	45 S	23 E	8/16/85	2,100	440	--	--	4	MH	--
L-6171	36	45 S	23 E	8/16/85	2,200	500	--	--	2	MH	--
L-6172	36	45 S	23 E	8/16/85	1,950	400	--	--	4	MH	--
L-6173	36	45 S	23 E	8/16/85	1,750	380	--	--	2	MH	--
L-6174	36	45 S	23 E	8/10/85	2,950	640	--	--	4	MH	--
L-6175	36	45 S	23 E	8/16/85	1,140	180	220	--	4	MH	--
L-6176	36	45 S	23 E	8/17/85	2,000	420	--	--	2	MH	--
L-6177	36	45 S	23 E	8/19/85	3,550	740	--	--	--	MH	--
L-6178	36	45 S	23 E	8/14/85	2,250	460	--	--	3	MH	--
L-6179	25	45 S	23 E	8/19/85	1,800	360	--	--	--	MH	--
L-6180	25	45 S	23 E	8/19/85	2,100	440	240	--	2	MH	--
L-6181	25	45 S	23 E	8/19/85	2,300	500	--	--	2	MH	--
L-6182	31	45 S	24 E	8/19/85	2,120	440	--	--	2	MH	--
L-6183	21	45 S	24 E	4/18/85	2,300	500	200	--	4	MH	--
L-6187	35	45 S	23 E	9/11/85	3,500	820	450	--	6	LH	--

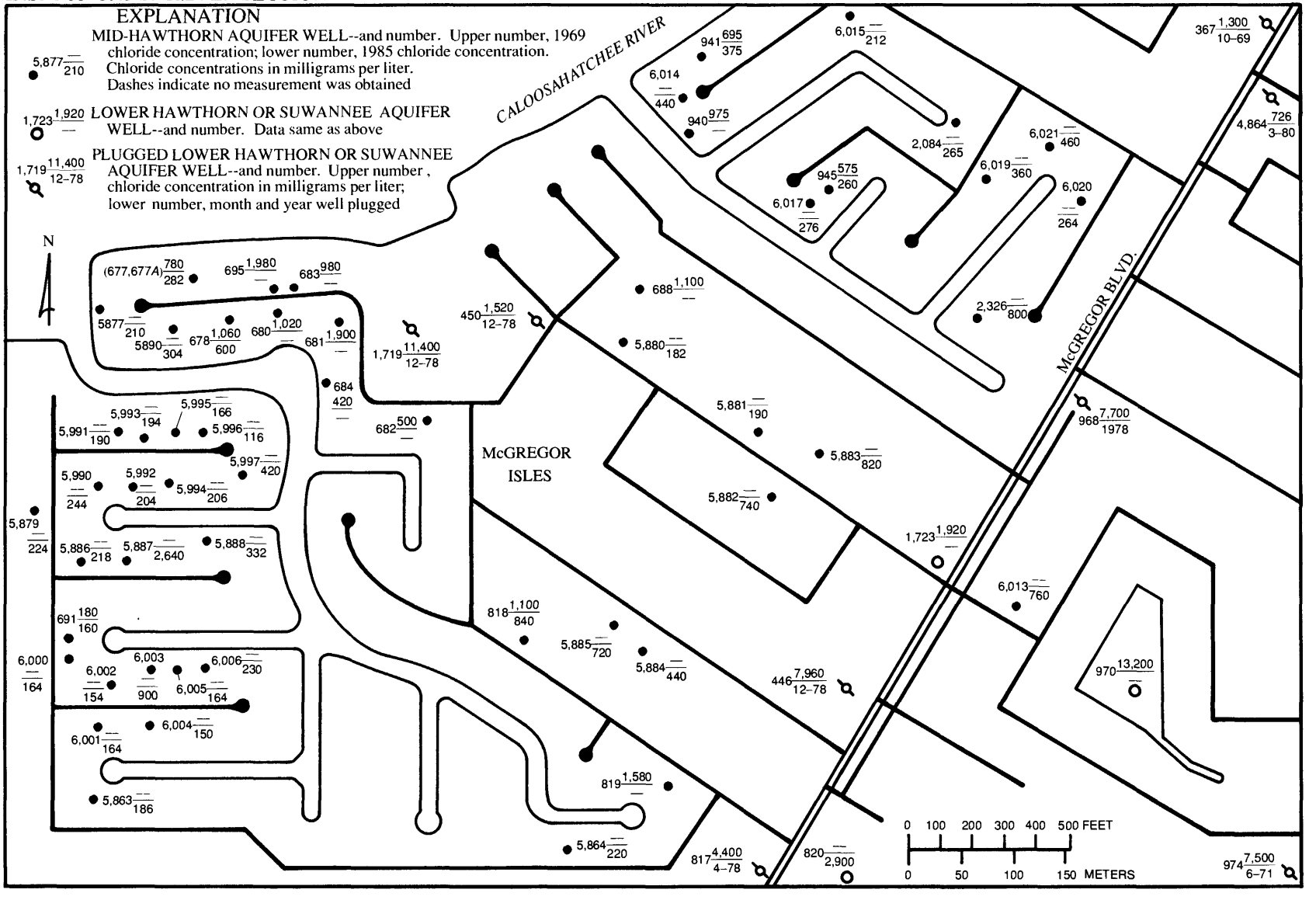

Figure 10. McGregor Isles area showing location of wells in the mid-Hawthorn, lower Hawthorn, and Suwannee aquifers and concentrations of chloride in water from those wells before (1969) and after (1985) the plugging of deep saline aquifer wells.

SUMMARY AND CONCLUSIONS

A well-plugging program was begun by the SFWMD in August 1979. The program, which constituted the plugging of numerous deep artesian wells with short or corroded casings, was designed to reduce saline-water intrusion to the surficial aquifer, the sandstone aquifer, and the mid-Hawthorn aquifer. In October 1984, the U.S. Geological Survey, in cooperation with the SFWMD, conducted an investigation to determine the effects of the well-plugging program in central Lee County. The following are the results:

- Of the 211 deep artesian wells with short or corroded casings inventoried within the study area, 35 wells were plugged prior to the start of the well-plugging program in 1979, and 82 wells were plugged between 1979 and 1985. The SFWMD is continuing its well-plugging program and plans to plug the 94 remaining deep wells.

- The overall effects of the program on a regional scale are inconclusive due to the short sampling period of the investigation and the slow movement of water through the aquifers.

- There has been some freshening of water in mid-Hawthorn aquifer wells in the vicinity of plugged deep wells in McGregor Isles.

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