

WATER-LEVEL DATA FOR THE ALBUQUERQUE BASIN, CENTRAL NEW MEXICO, PERIOD OF RECORD THROUGH 1997

By Dale R. Rankin

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U.S. GEOLOGICAL SURVEY
Thomas J. Casadevall, Acting Director

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For additional information write to:

District Chief
U.S. Geological Survey
Water Resources Division
4501 Indian School Road NE, Suite 200
Albuquerque, NM 87110-3929

Copies of this report can be purchased
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CONVERSION FACTORS AND VERTICAL DATUM

	Multiply	By	To obtain
	foot	0.3048	meter
	mile	1.609	kilometer
	acre	0.4047	hectare

WATER-LEVEL DATA FOR THE ALBUQUERQUE BASIN, CENTRAL NEW MEXICO, PERIOD OF RECORD THROUGH 1997

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Abstract

The Albuquerque Basin, located in central New Mexico, is about 100 miles long and 25 to 40 miles wide. The basin is defined as the extent of Cenozoic deposits that encompass the structural Rio Grande Rift within the basin. Drinking-water supplies throughout the Albuquerque Basin are obtained solely from ground-water resources. The population of the basin grew from 419,000 in 1980 to 563,600 in 1990, a 34-percent increase, and resulted in increases in water demand and ground-water pumpage. Between April 1982 and September 1983, a network of wells was established to monitor changes in ground-water levels throughout the Albuquerque Basin. Water-level data were collected at 85 wells and piezometers for the period of record through 1997. Water-level data currently (1997) are collected annually at sites 11 and 53-57; semiannually at sites 1-10, 75, and 82; quarterly at sites 12-52, 64-74, 76, 77, 79-81, 84, and 85; monthly at sites 58-60, 78, and 83; and hourly at sites 61-63.

INTRODUCTION

The Albuquerque Basin is located in central New Mexico and is about 100 miles long and 25 to 40 miles wide (fig. 1). The basin is defined as the extent of Cenozoic deposits that encompass the structural Rio Grande Rift within the basin (Thorn and others, 1993). The study area extends from Bernalillo south to San Acacia and from Tijeras Canyon west to near the intersection of Interstate 40 and the Bernalillo/Cibola County line. Parts of Sandoval, Bernalillo, Valencia, and Socorro Counties are located within the study area. The only perennial stream is the southward-flowing Rio Grande, which approximately bisects the basin.

The Albuquerque metropolitan area includes a population of 502,100 (U.S. Department of Commerce, 1991) (fig. 2). Although the majority of people are concentrated within the Albuquerque city limits, the basinwide population grew from 419,000 in 1980 to 563,600 in 1990 (U.S. Bureau of the Census, 1980, 1991), an increase of 34 percent. The demand for ground water has likewise increased because drinking-water supplies throughout the Albuquerque Basin are obtained solely from ground-water resources (Kues, 1987).

This report, prepared in cooperation with the City of Albuquerque, presents information about a water-level monitoring network, cooperatively operated by the City of Albuquerque (City) and the U.S. Geological Survey (USGS), in the Albuquerque Basin, central New Mexico (Wilkins, 1986; Anderholm and Bullard, 1987; and Kues, 1987). The data are from the period of record through 1997.

Well-Numbering System

The system of numbering wells in New Mexico is based on the common subdivision of public lands into sections (fig. 3). The well number, in addition to designating the well, locates its position to the nearest 10-acre tract in the land network. This number is divided into four segments. The first segment denotes the township north of the New Mexico base line, the second denotes the range east of the New Mexico principal meridian, and the third denotes the section. The fourth segment of the number, which consists of three digits, denotes the 160-, 40-, and 10-acre tracts, respectively, in which the well is situated. For this purpose, the section is divided into four quarters, numbered 1, 2, 3, and 4, in the normal reading order, for the northwest, northeast, southwest, and southeast quarters. The first digit of the fourth segment gives the quarter section, which is a tract of 160 acres. Similarly, the quarter section is divided into four 40-acre tracts numbered in the same manner, and the second digit

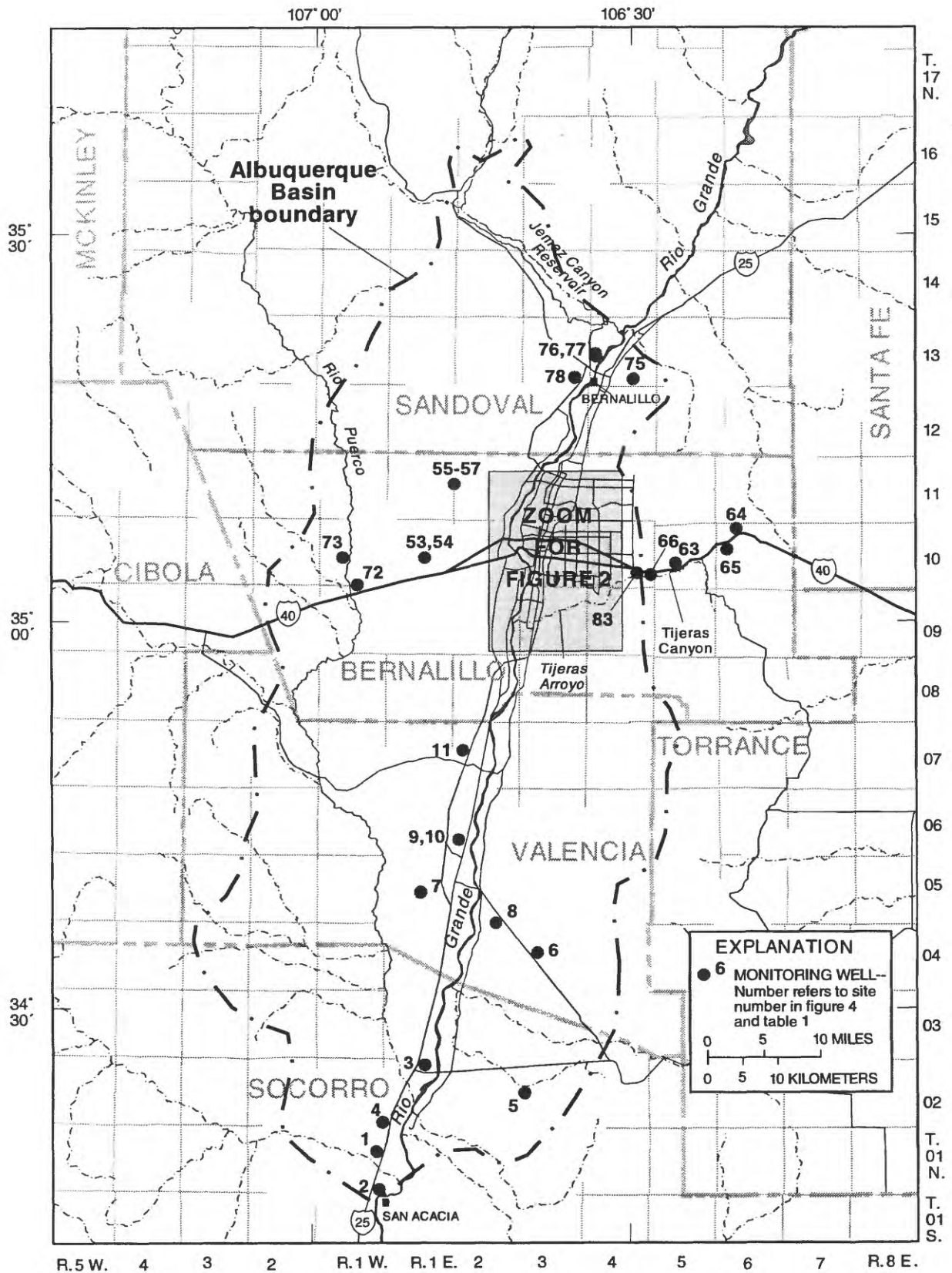


Figure 1. -- Location of study area and monitoring wells.

denotes the 40-acre tract. Finally, the 40-acre tract is divided into four 10-acre tracts, and the third digit denotes the 10-acre tract. For example, well 09N.03E.07.131A is in the NW 1/4 of the SW 1/4 of the NW 1/4 of section 7, T. 09 N., R. 03 E. (fig. 3). Letters A, B, C, and so on are added to the last segment of the well number to designate the second, third, fourth, and succeeding wells in the same 10-acre tract.

Methods

Water-level data were collected by U.S. Geological Survey personnel. Currently (as of October 1, 1997), water-level data are collected annually at sites 11 and 53-57; semiannually at sites 1-10, 75, and 82; quarterly at sites 12-52, 64-74, 76, 77, 79-81, 84, and 85; monthly at sites 58-60, 78, and 83; and hourly at sites 61-63. Electric and steel tapes are used to collect water-level data at sites 1-60 and 64-85. Fischer-Porter recorders are used to collect water-level data at sites 61-63. Recorded data (sites 61-63) are incomplete because of recorder malfunction or temporary removal of the recorder for geophysical logging or sampling.

WATER-LEVEL AND OTHER DATA

Well and piezometer data are listed in table 1; these data include site number and identifier, local identifier, owner, other identifier, total depth, and screened interval. Hydrographs of water-level data for the period of record through 1997 are shown in figure 4. The data presented in the hydrographs include depth to water and hydraulic head.

Water-level data through September 30, 1995, are presented in three previous USGS Open-File Reports. The first such report (Kues, 1987) includes water-level data collected through September 30, 1985; the second report (Rankin, 1994) includes water-level data collected from October 1, 1985, through September 30, 1990; the third and most recent report (Rankin, 1996) includes water-level data collected from the period of record through September 30, 1995.

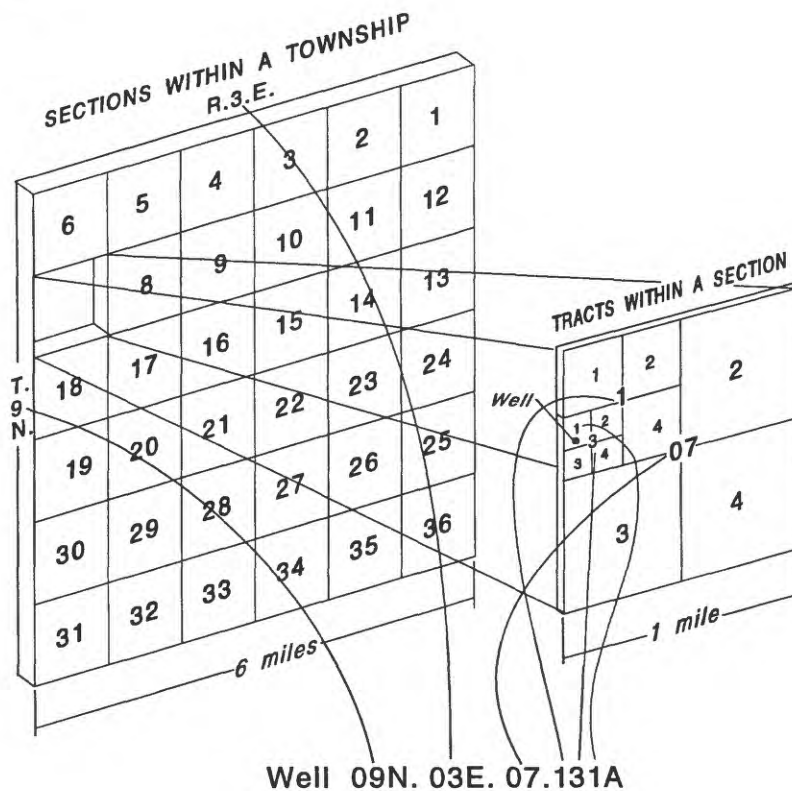


Figure 3.--Well-numbering system in New Mexico.

Table 1.--Well and piezometer data for the Albuquerque Basin, New Mexico

[--, no data]

Site number (figs. 1 and 2)	Site identifier	Local identifier	Owner	Other identifier	Total depth (feet below land surface)	Screened interval (feet)
1	341839106531601	01N.01W.13.244	NM Highway Dept.	Rest Area Windmill	212	173-212
2	341528106533301	01S.01W.01.213	Herkenhoff	--	38	--
3	342513106500301	02N.01E.04.444	Salas	--	107	99-106
4	342107106530401	02N.01E.31.313	Sevilleta National Wildlife Refuge	Sevilleta Refuge Headquarters	223	210-220
5	342406106394501	02N.03E.18.232	Sevilleta National Wildlife Refuge	Black Butte	346	--
6	343428106383301	04N.02E.17.244	Richardson	--	355	335-355
7	343853106494101	05N.01E.22.141	City of Belen	Belen Airport	620	453-483
8	343706106422301	05N.01E.35.143	Faust	--	375	353-373
9	344258106460901	06N.02E.30.412A	Estes	Estes 1	135	125-130
10	344258106460902	06N.02E.30.412B	Estes	Estes 5	300	265-270
11	345000106455501	07N.02E.18.422	Webb	Grasslands	407	150-230
12	350137106410501	--	City of Albuquerque	Rio Bravo Piezometer Nest 1	148.5	138.5-143.5
13	350137106410502	--	City of Albuquerque	Rio Bravo Piezometer Nest 1	103.8	93.8-98.8
14	350137106410503	--	City of Albuquerque	Rio Bravo Piezometer Nest 1	38.4	28.4-33.4
15	350138106395501	09N.03E.07.131A	City of Albuquerque	Rio Bravo Piezometer Nest 2	153.5	143.5-148.5

Table 1.--Well and piezometer data for the Albuquerque Basin, New Mexico--Continued

Site number (figs. 1 and 2)	Site identifier	Local identifier	Owner	Other identifier	Total depth (feet below land surface)	Screened interval (feet)
16	350138106395502	09N.03E.07.131B	City of Albuquerque	Rio Bravo Piezometer Nest 2	91.1	81.1-86.1
17	350138106395503	09N.03E.07.131C	City of Albuquerque	Rio Bravo Piezometer Nest 2	48.6	38.6-43.6
18	350138106393201	09N.03E.07.241A	City of Albuquerque	Rio Bravo Piezometer Nest 3	148	138-143
19	350138106393202	09N.03E.07.241B	City of Albuquerque	Rio Bravo Piezometer Nest 3	101	91-96
20	350138106393203	09N.03E.07.241C	City of Albuquerque	Rio Bravo Piezometer Nest 3	49.3	39.3-44.3
21	350135106390601	09N.03E.08.144A	City of Albuquerque	Rio Bravo Piezometer Nest 4	149.4	139.4-144.4
22	350135106390602	09N.03E.08.144B	City of Albuquerque	Rio Bravo Piezometer Nest 4	124.2	114.2-119.2
23	350135106390603	09N.03E.08.144C	City of Albuquerque	Rio Bravo Piezometer Nest 4	49.3	39.3-44.3
24	350138106401102	09N.03E.07.114A	City of Albuquerque	Rio Bravo Piezometer Nest 5	515	
25	350138106401101	09N.03E.07.114	City of Albuquerque	Rio Bravo Piezometer Nest 5	150	
26	350138106401103	09N.03E.07.114B	City of Albuquerque	Rio Bravo Piezometer Nest 5	22	
27	350836106395601	--	City of Albuquerque	Montaño Piezometer Nest 2	147	137-142
28	350836106395602	--	City of Albuquerque	Montaño Piezometer Nest 2	99	89-94

Table 1.--Well and piezometer data for the Albuquerque Basin, New Mexico--Continued

Site number (figs. 1 and 2)	Site identifier	Local identifier	Owner	Other identifier	Total depth (feet below land surface)	Screened interval (feet)
29	350836106395603	--	City of Albuquerque	Montaño Piezometer Nest 2	39	29-34
30	350827106391301	--	City of Albuquerque	Montaño Piezometer Nest 3	149	139-144
31	350827106391302	--	City of Albuquerque	Montaño Piezometer Nest 3	99	89-94
32	350827106391303	--	City of Albuquerque	Montaño Piezometer Nest 3	49	39-44
33	350821106383701	--	City of Albuquerque	Montaño Piezometer Nest 4	131	121-126
34	350821106383702	--	City of Albuquerque	Montaño Piezometer Nest 4	93	83-88
35	350821106383703	--	City of Albuquerque	Montaño Piezometer Nest 4	50	40-45
36	350859106401603	11N.03E.30.313B	City of Albuquerque	Montaño Piezometer Nest 5	150	
37	350859106401602	11N.03E.30.313A	City of Albuquerque	Montaño Piezometer Nest 5	75	
38	350859106401601	11N.03E.30.313	City of Albuquerque	Montaño Piezometer Nest 5	25	
39	350836106395401	11N.03E.31.21311A	City of Albuquerque	Montaño Piezometer Nest 6	983	
40	350836106395402	11N.03E.31.21311B	City of Albuquerque	Montaño Piezometer Nest 6	836	

Table 1.--Well and piezometer data for the Albuquerque Basin, New Mexico--Continued

Site number (figs. 1 and 2)	Site identifier	Local identifier	Owner	Other identifier	Total depth (feet below land surface)	Screened interval (feet)
41	350836106395403	11N.03E.31.21311C	City of Albuquerque	Montaño Piezometer Nest 6	568	
42	350836106395404	11N.03E.31.21311D	City of Albuquerque	Montaño Piezometer Nest 6	182	
43	351059106385903	11N.03E.17.141B	City of Albuquerque	Paseo del Norte Nest 1	600	
44	351059106385901	11N.03E.17.141	City of Albuquerque	Paseo del Norte Nest 1	150	
45	351059106385902	11N.03E.17.141A	City of Albuquerque	Paseo del Norte Nest 1	25	
46	351057106384201	11N.03E.17.233	City of Albuquerque	Paseo del Norte Nest 2	150	
47	351057106384202	11N.03E.17.233A	City of Albuquerque	Paseo del Norte Nest 2	95	
48	351057106384203	11N.03E.17.233B	City of Albuquerque	Paseo del Norte Nest 2	45	
49	351057106384204	11N.03E.17.233D	City of Albuquerque	Paseo del Norte Nest 2	23	
50	351035106364703	11N.03E.15.344C	City of Albuquerque	Paseo del Norte Nest 3	544	
51	351035106364702	11N.03E.15.344B	City of Albuquerque	Paseo del Norte Nest 3	144	
52	351035106364701	11N.03E.15.344A	City of Albuquerque	Paseo del Norte Nest 3	69	
53	350449106493103	10N.01E.22.322C	City of Albuquerque	West Mesa 1A	1,175	None
54	350449106493102	10N.01E.22.322B	City of Albuquerque	West Mesa 1A	1,049	None
55	351046106464704	11N.02E.18.313D	City of Albuquerque	West Mesa 2	1,500	1,525-1,545 1,630-1,695 1,735-1,795

Table 1.--Well and piezometer data for the Albuquerque Basin, New Mexico--Continued

Site number (figs. 1 and 2)	Site identifier	Local identifier	Owner	Other identifier	Total depth (feet below land surface)	Screened interval (feet)
56	351046106464703	11N.02E.18.313C	City of Albuquerque	West Mesa 2	1,330	1,275-1,345 1,390-1,410
57	351046106464702	11N.02E.18.313B	City of Albuquerque	West Mesa 2	1,250	800-830 925-955
58	351051106395304	11N.03E.18.411D	City of Albuquerque	West Mesa 3	980	870-980
59	351051106395303	11N.03E.18.411C	City of Albuquerque	West Mesa 3	760	710-760
60	351051106395302	11N.03E.18.411B	City of Albuquerque	West Mesa 3	660	350-390 490-590
61	350256106390801	10N.03E.32.314	City of Albuquerque	San Jose 9	765	188-764
62	350346106322301	10N.04E.29.413	KAFB 5	KAFB 5	1,004	504-1,004
63	350359106254701	10N.05E.29.114	NM Highway Dept.	Dead Man's Curve Junction	--	--
64	350655106194501	10N.06E.05.332	NM Highway Dept.	Home Oil	--	--
65	350602106210401	10N.05E.12.434	NM Highway Dept.		54	--
66	350343106280901	10N.04E.25.324	NM Highway Dept.	Granite Hill	--	--
67	350548106383901	10N.03E.17.232	City of Albuquerque	City 1	149	138-148
68	350824106375301	11N.03E.33.143	City of Albuquerque	City 2	150	140-150
69	350837106393801	11N.03E.31.214	City of Albuquerque	City 3	152	142-152
70	350646106403601	10N.02E.12.241	City of Albuquerque	City 4	150	140-150
71	345940106393401	09N.03E.19.243	Guzman, Sal	Chava	125	113-123
72	350204106562301	09N.01W.04.424	Collier	Rio Puerco Trading Post	150	--
73	350454106570401	10N.01W.21.134	Cañoncito Pueblo	C1	117	--
74	350620106392401	10N.03E.07.434	BIA	--	--	--
75	351843106294501	13N.04E.34.422	Deaver	Tierra Mirage	703	693-703

Table 1.--Well and piezometer data for the Albuquerque Basin, New Mexico--Concluded

Site number (figs. 1 and 2)	Site identifier	Local identifier	Owner	Other identifier	Total depth (feet below land surface)	Screened interval (feet)
76	352029106330601	13N.04E.19.421	Santa Ana Pueblo	Santa Ana 1	108	--
77	352032106330601	13N.04E.19.243	Santa Ana Pueblo	Santa Ana 2	200	180-200
78	351852106344901	13N.03E.36.132A	San Miguel	--	206	--
79	351019106404001	11N.02E.24.223	Nelson	--	274	258-273
80	350829106420401	11N.02E.35.142	Ovenwest Corp.	La Luz del Sol	250	230-245
81	351100106341201	11N.03E.13.242	Shoemaker	--	460	380-400
82	351108106333601	11N.04E.18.124	--	Spanish Assembly of God	575	--
83	350339106294001	10N.04E.26.331	City of Albuquerque	Four Hills	--	--
84	351009106344701	11N.03E.24.142	City of Albuquerque	Pino Yard	--	--
85	350259106315801	10N.04E.32.422	City of Albuquerque	Eubank	--	--

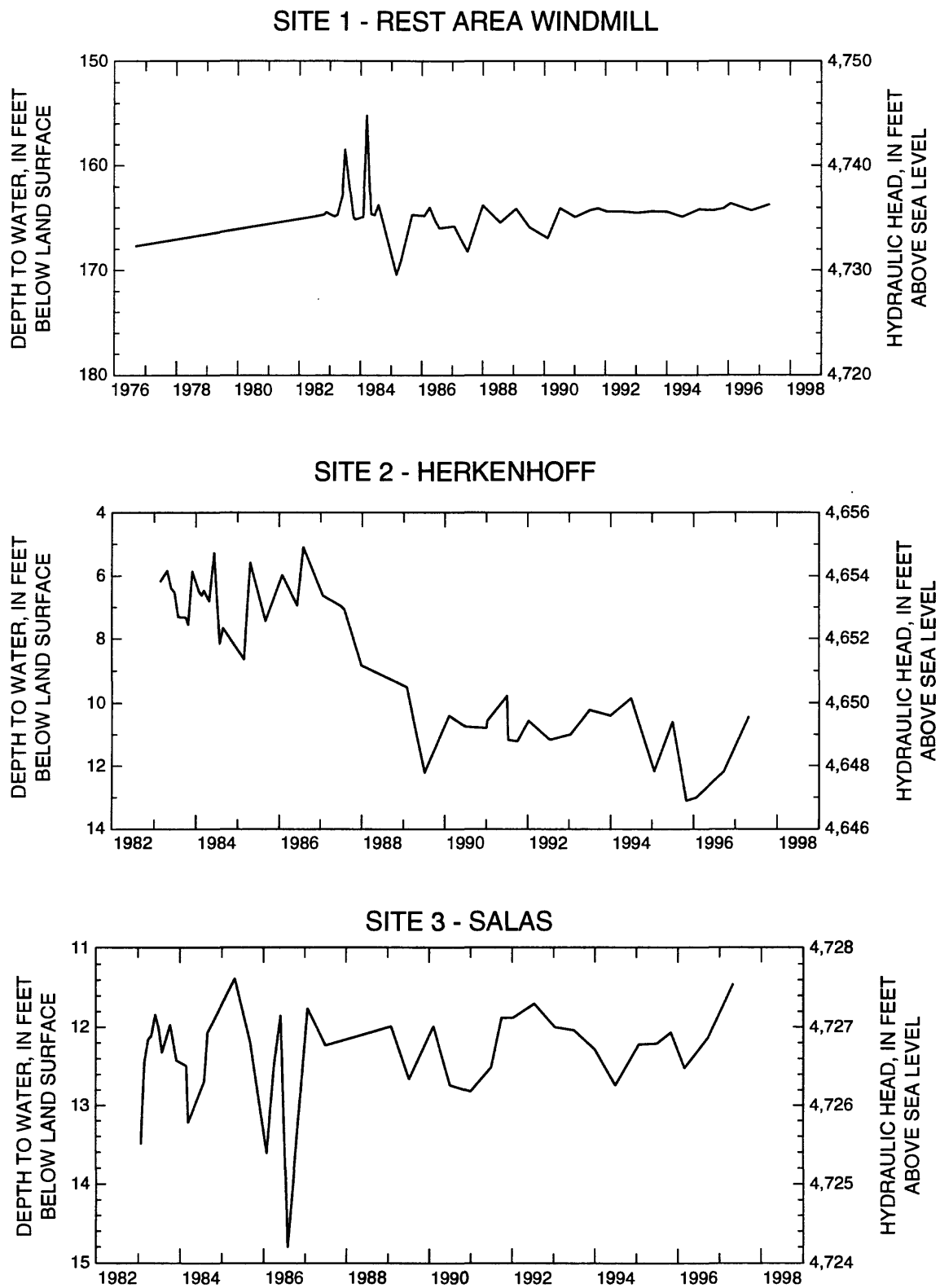
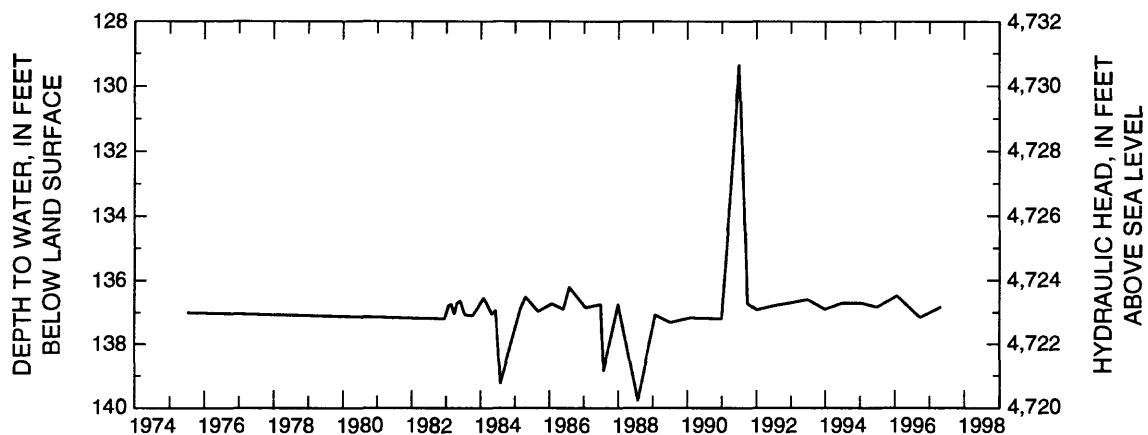
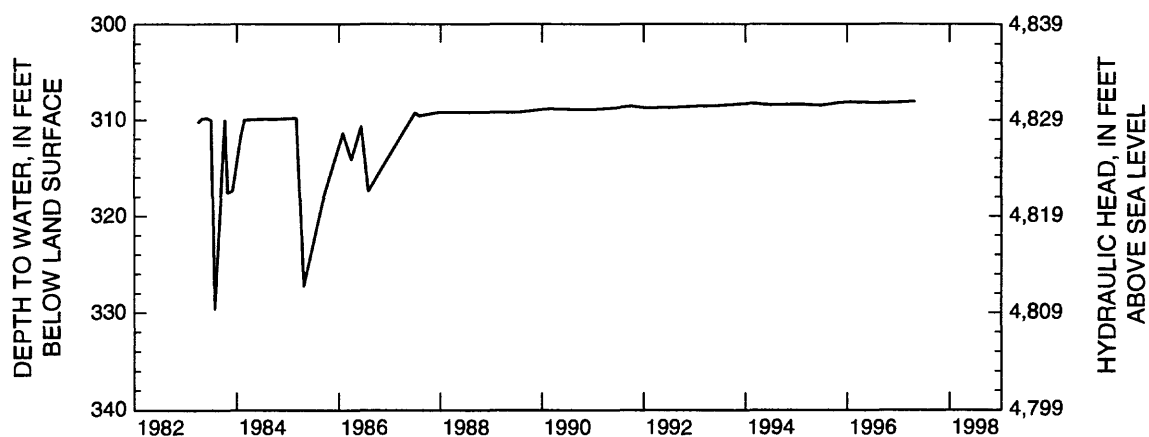


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin.

SITE 4 - SEVILLETA REFUGE HEADQUARTERS



SITE 5 - BLACK BUTTE



SITE 6 - RICHARDSON



Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Continued.

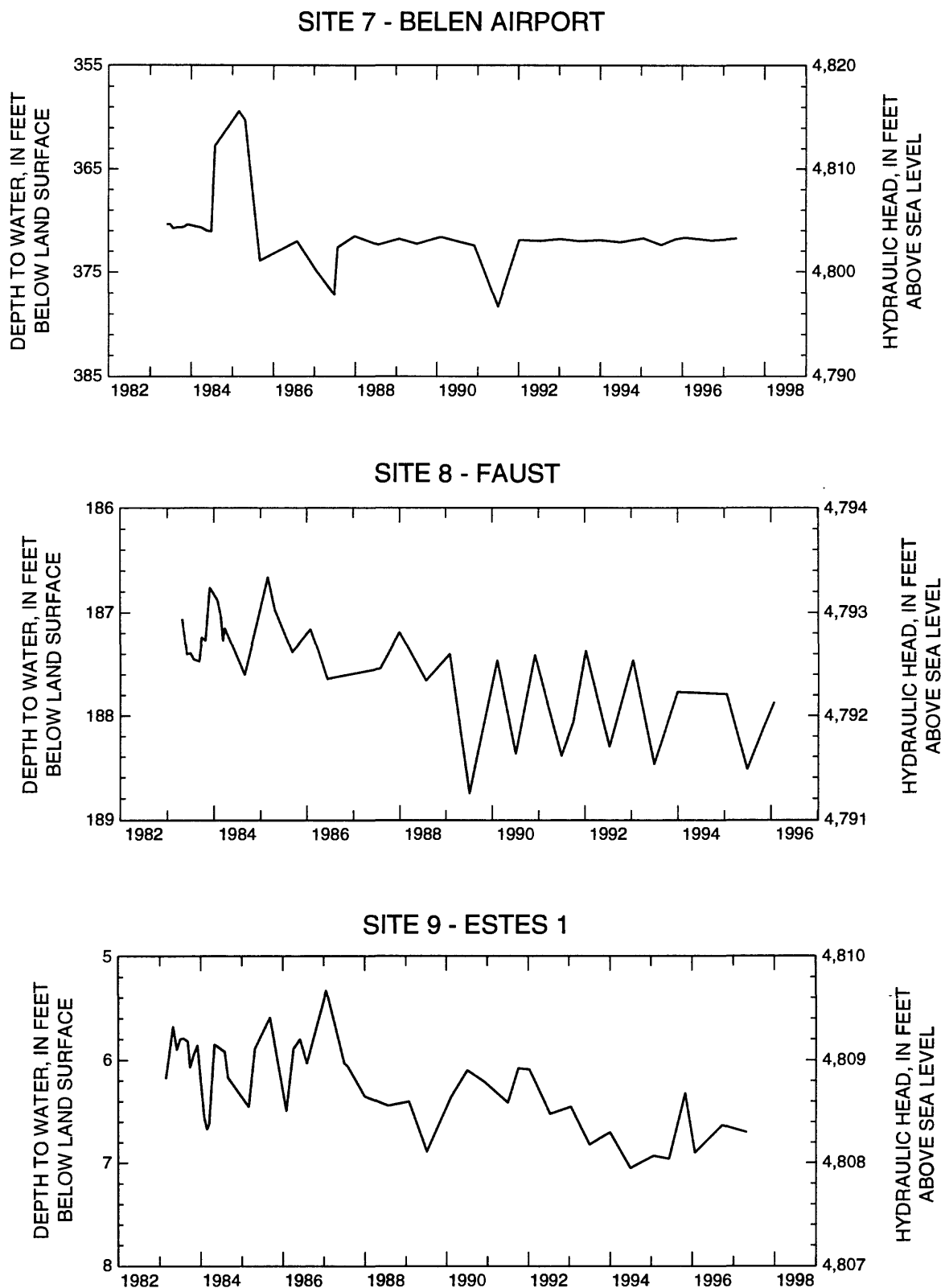


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Continued.

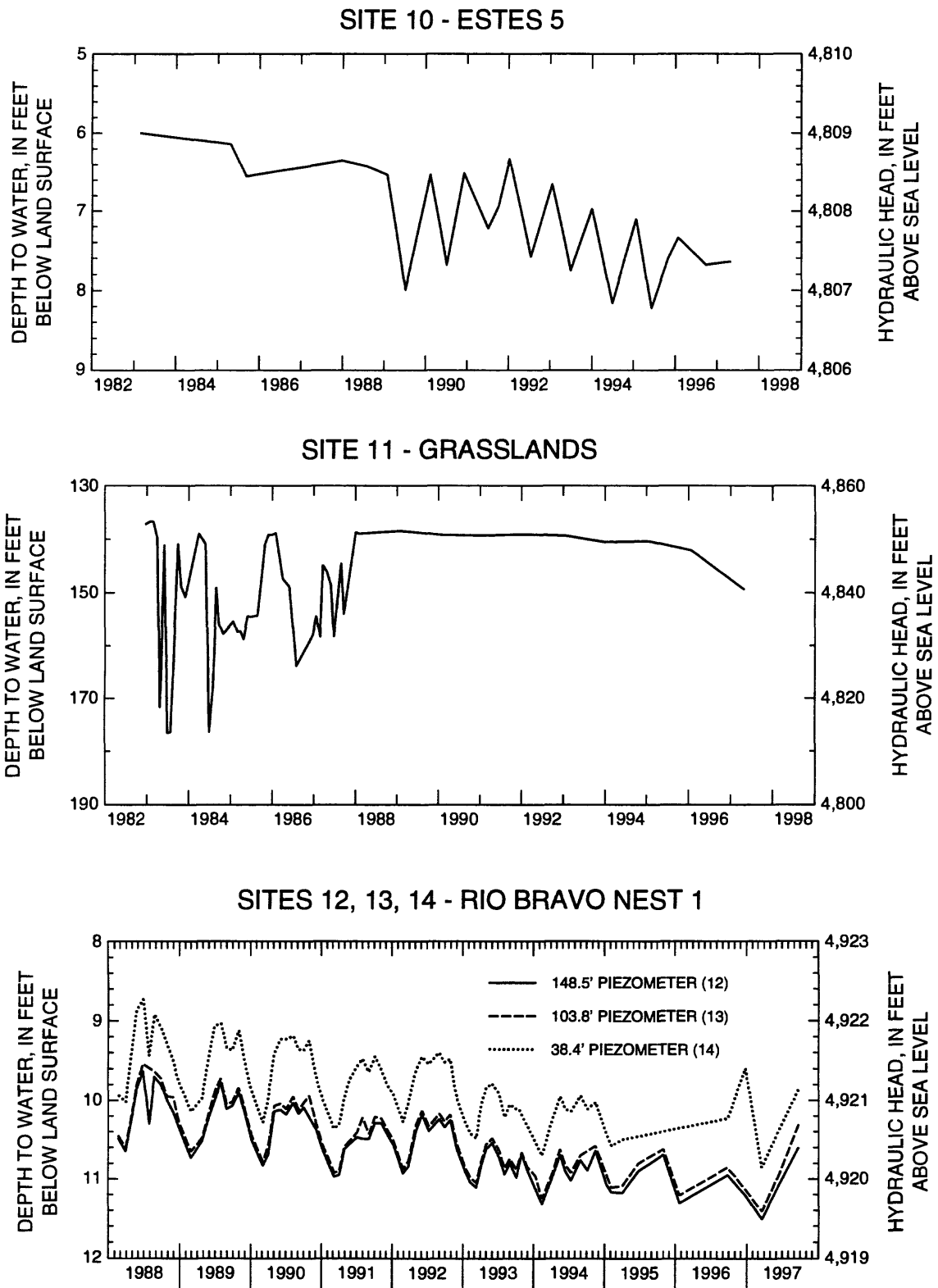


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Continued.

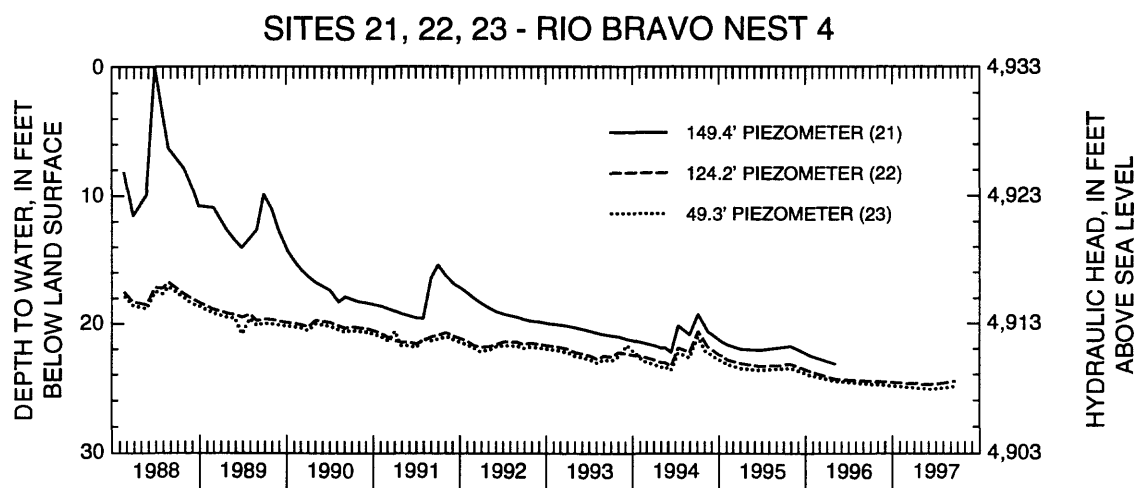
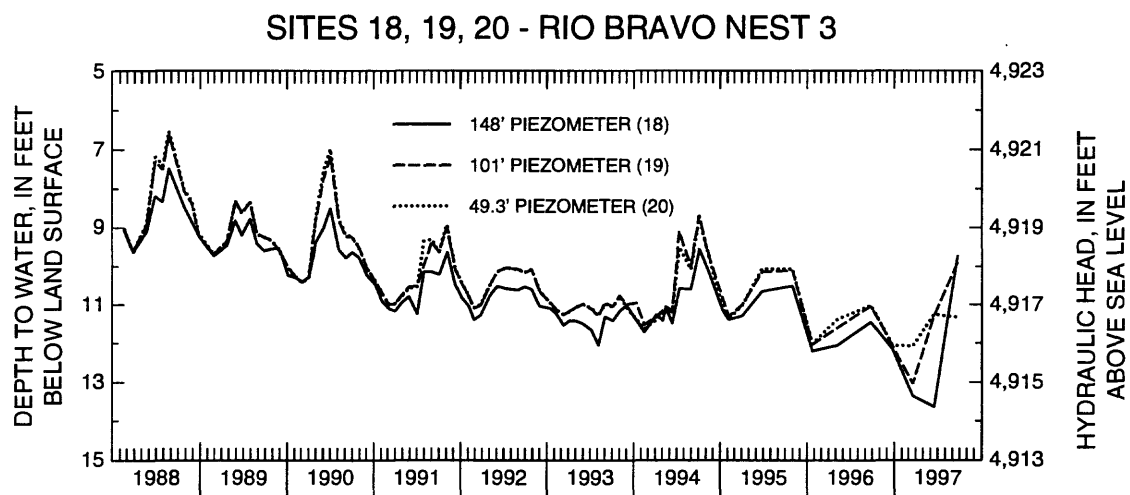
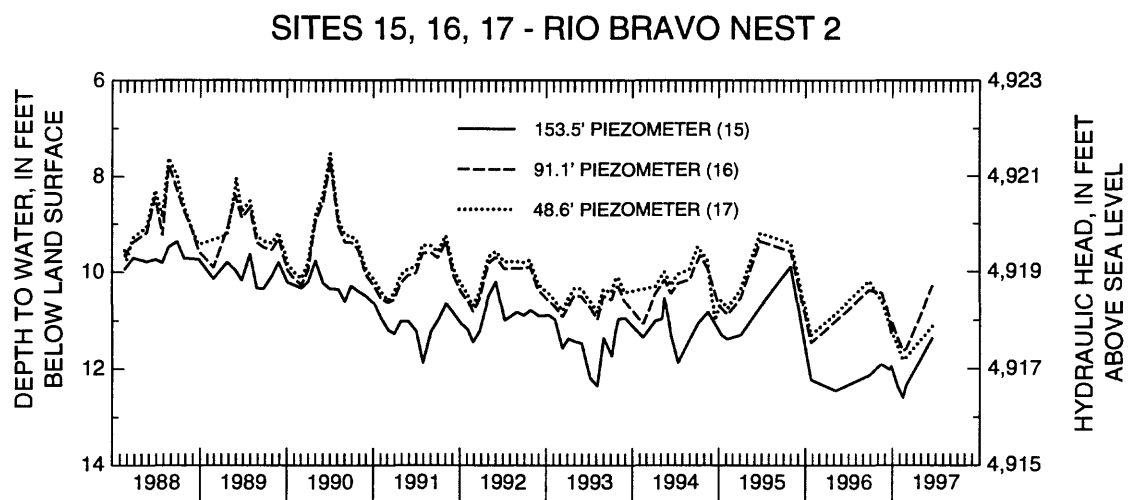
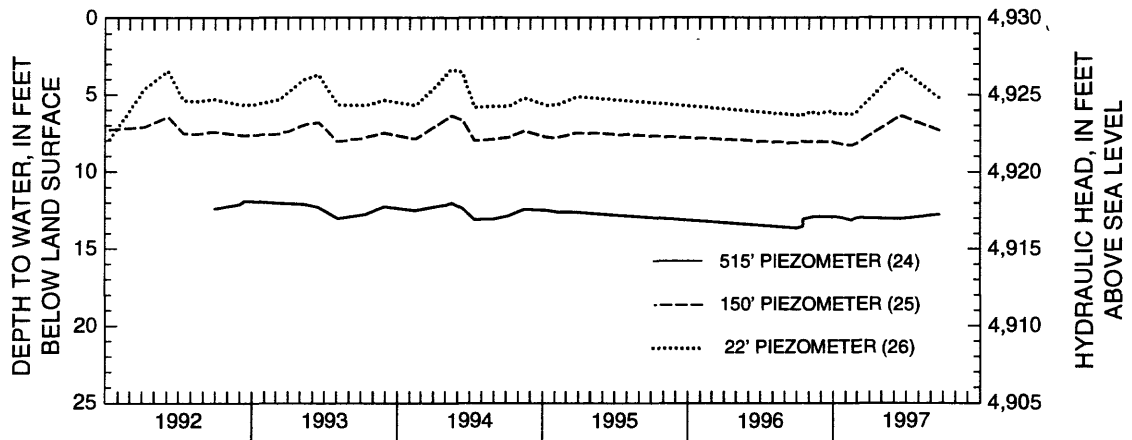
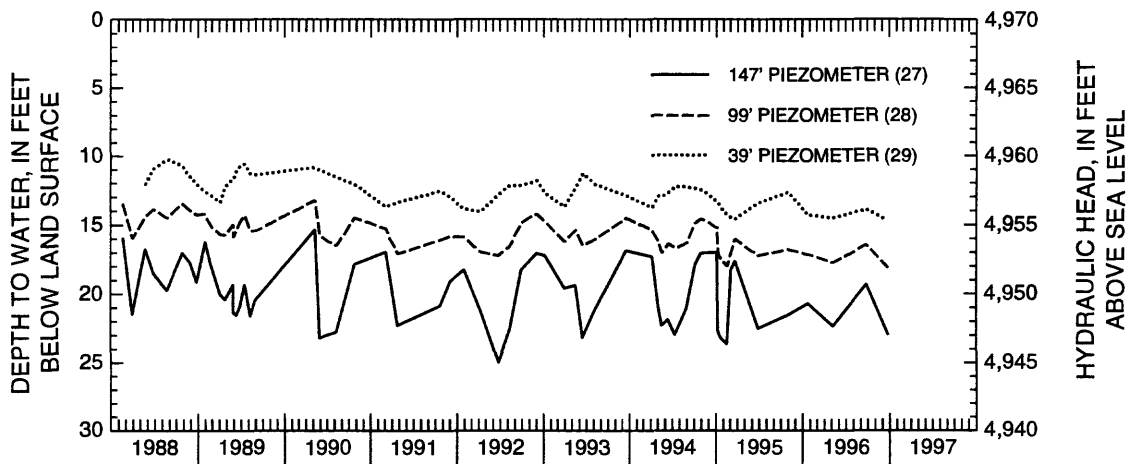


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Continued.

SITES 24, 25, 26 - RIO BRAVO NEST 5



SITES 27, 28, 29 - MONTAÑO NEST 2



SITES 30, 31, 32 - MONTAÑO NEST 3

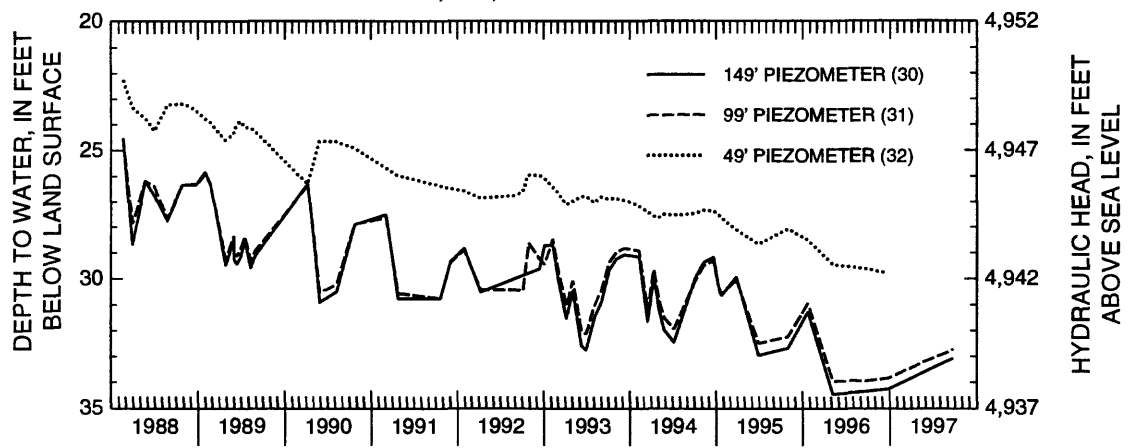


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Continued.

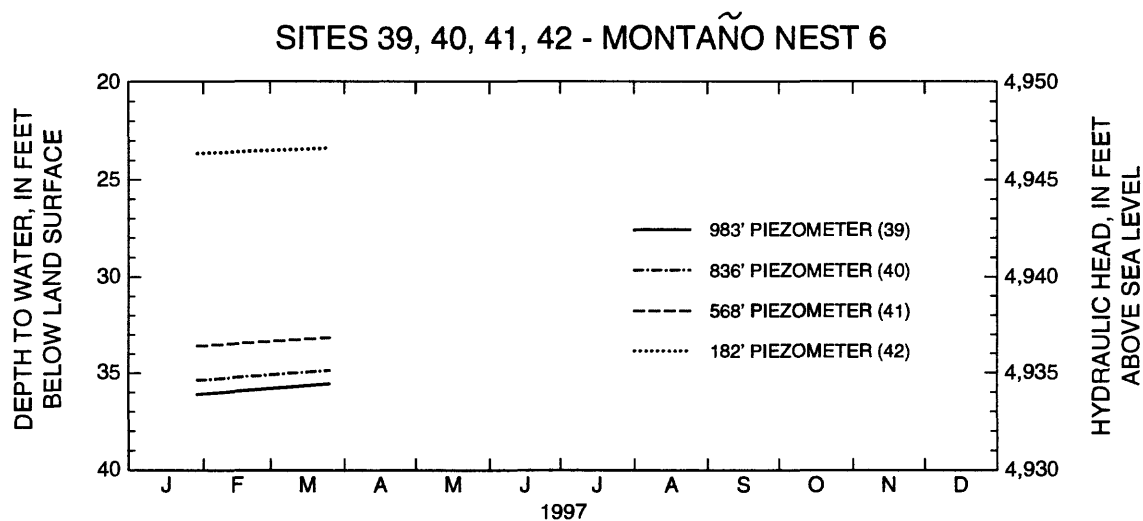
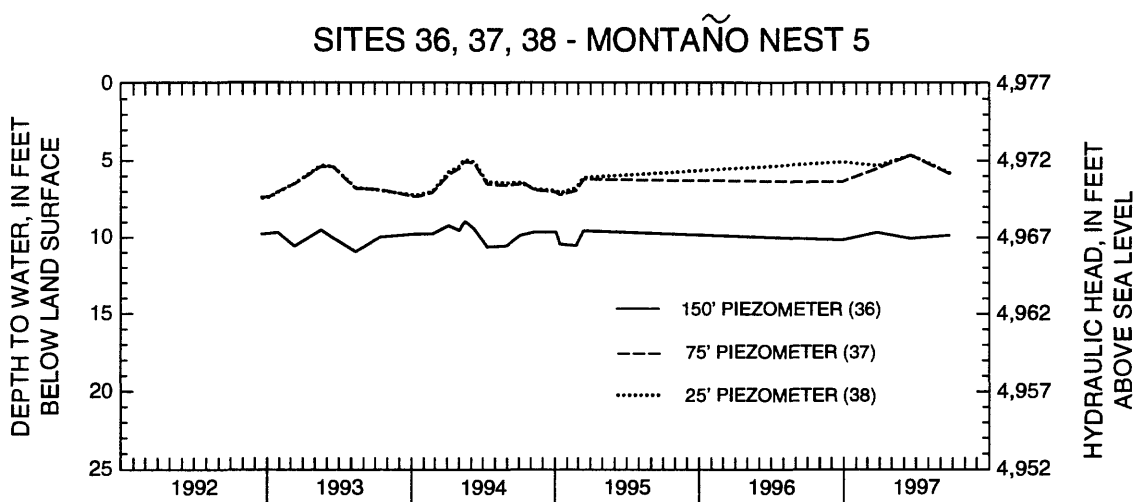
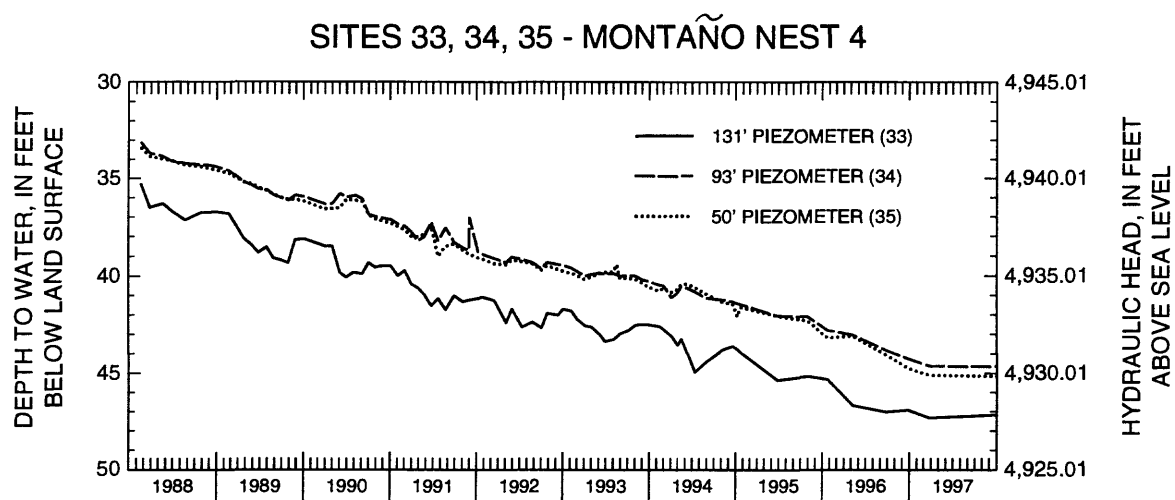


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Continued.

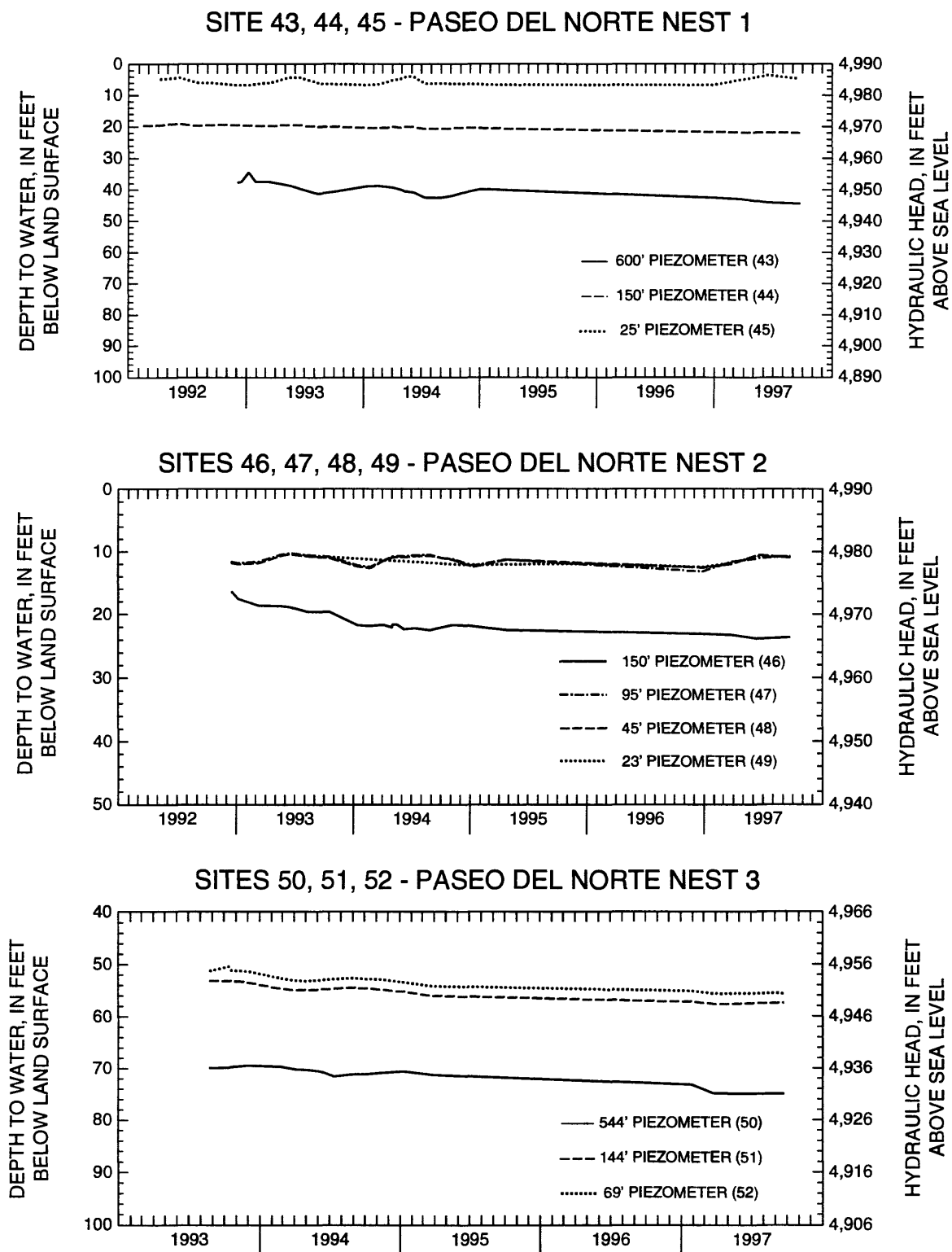


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Continued.

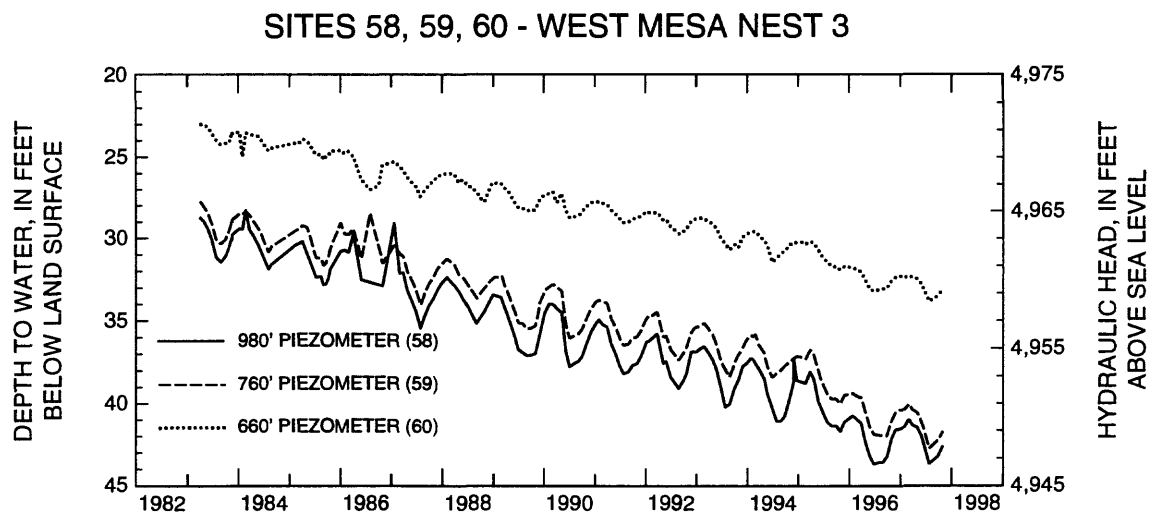
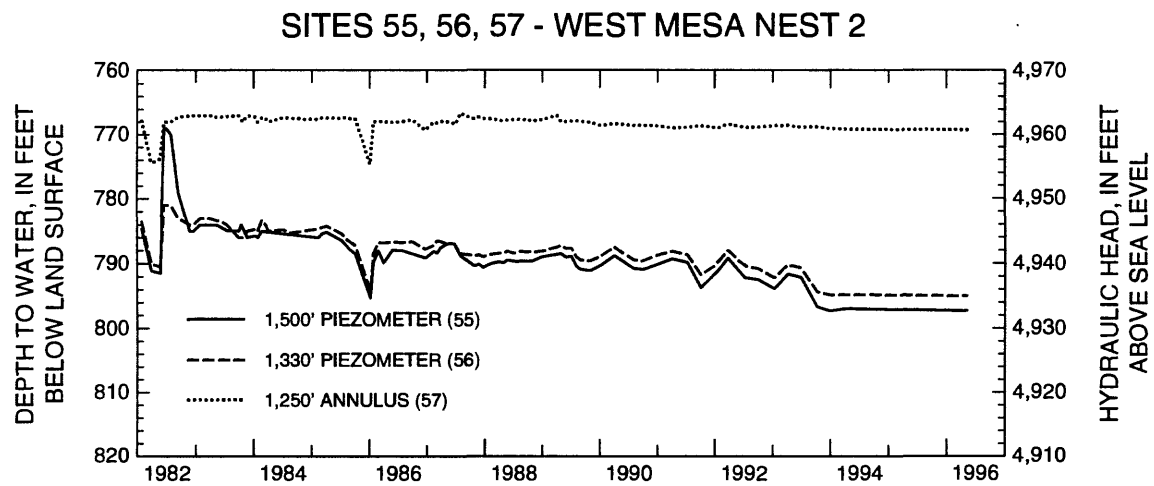
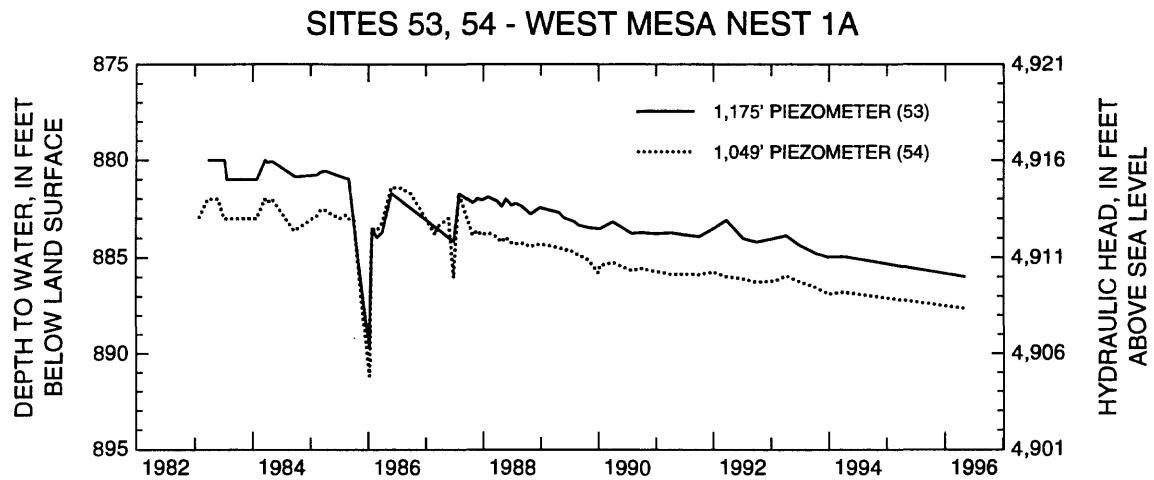


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Continued.

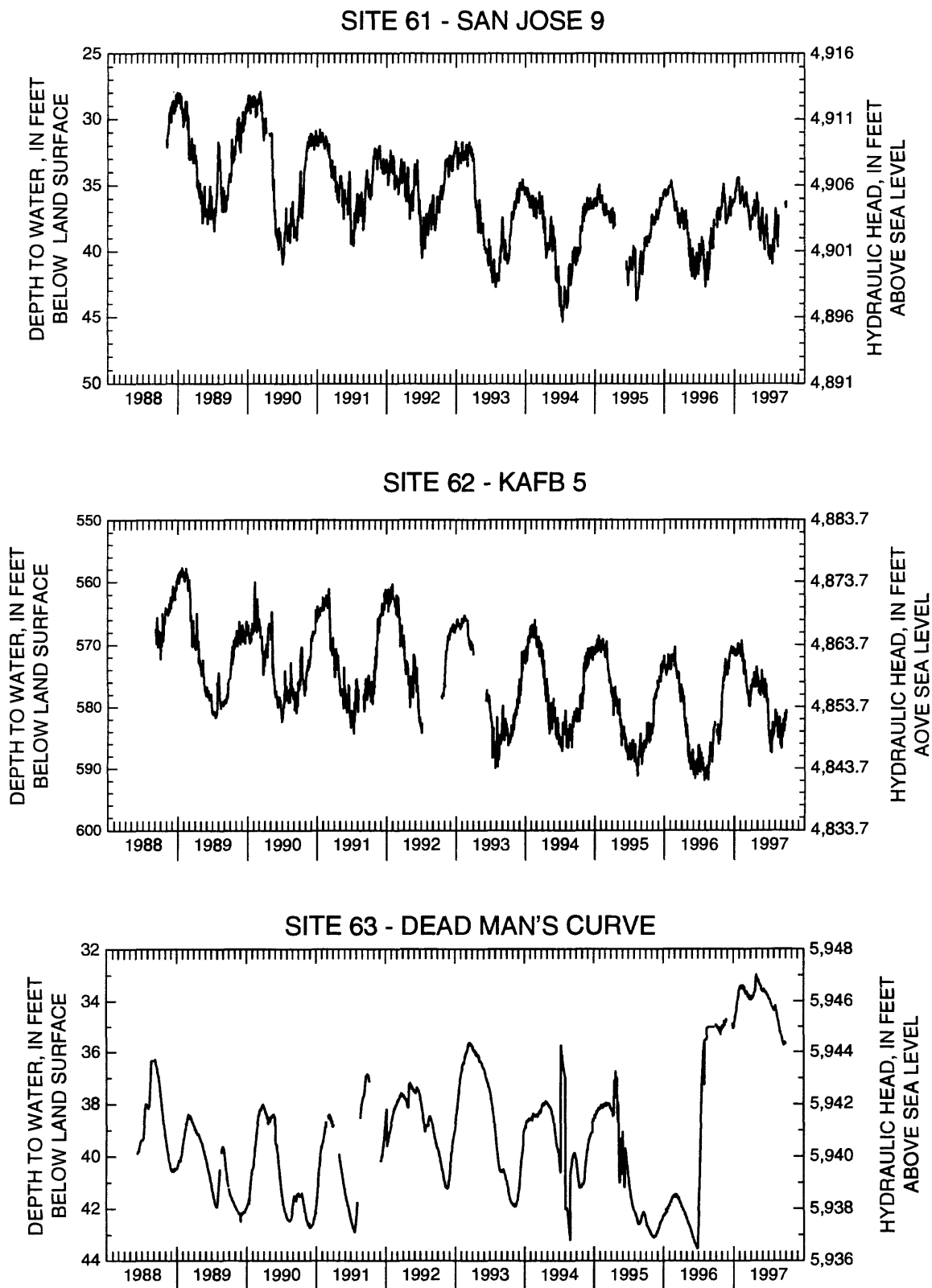


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Continued.

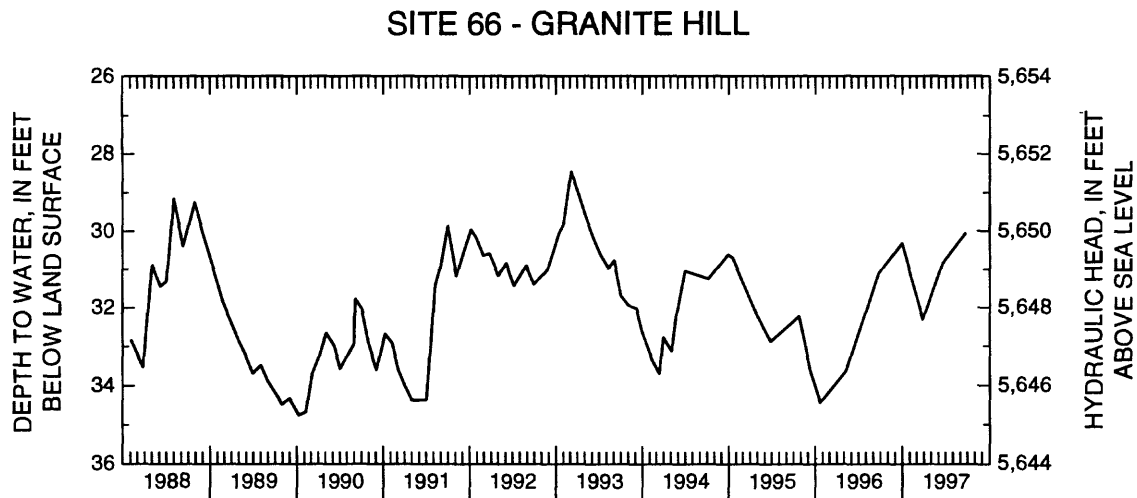
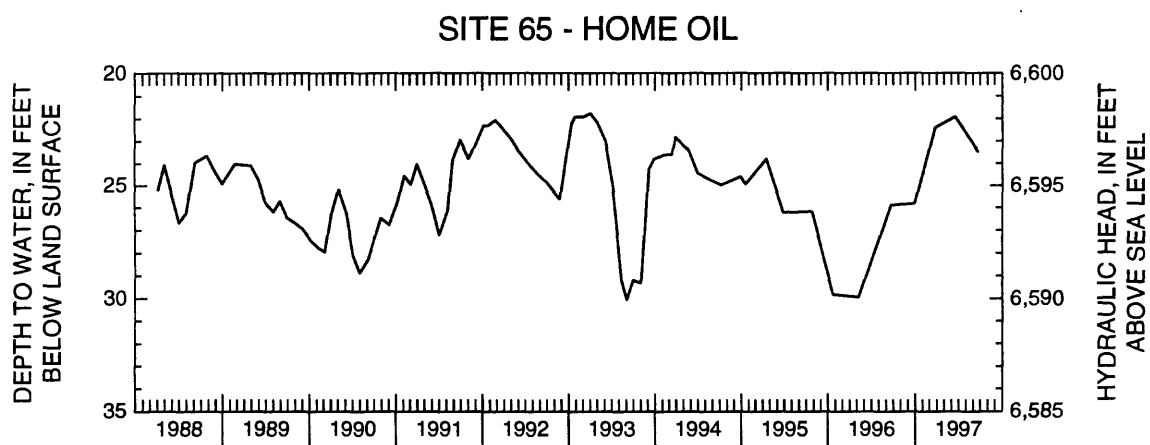
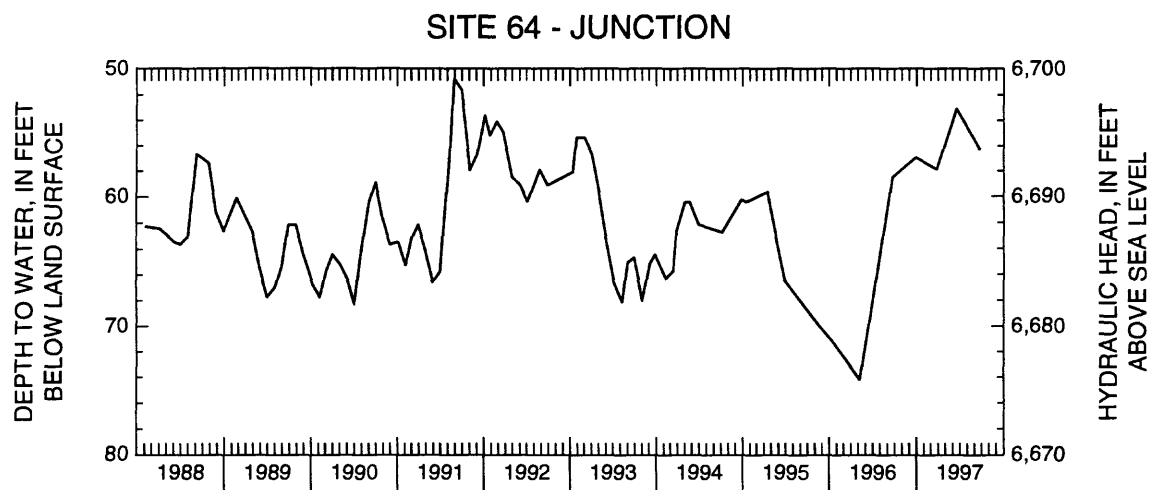
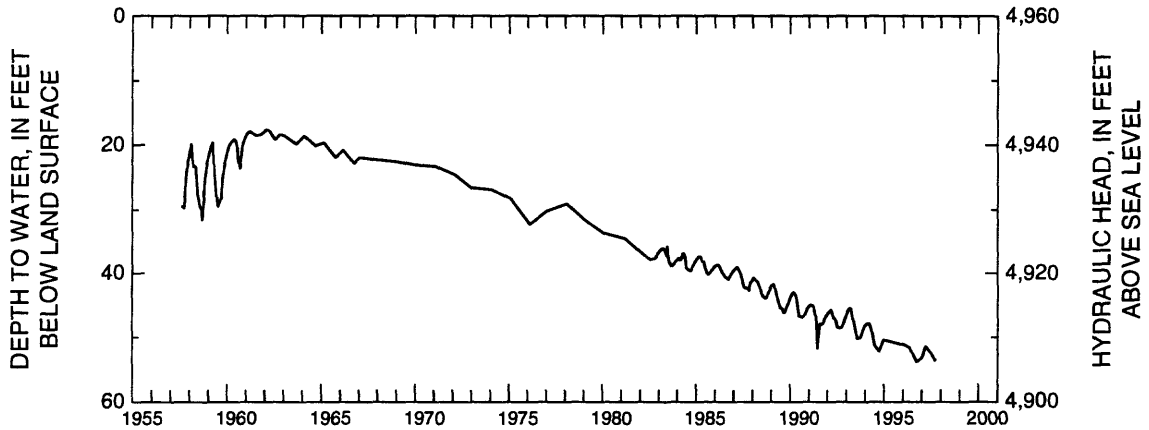
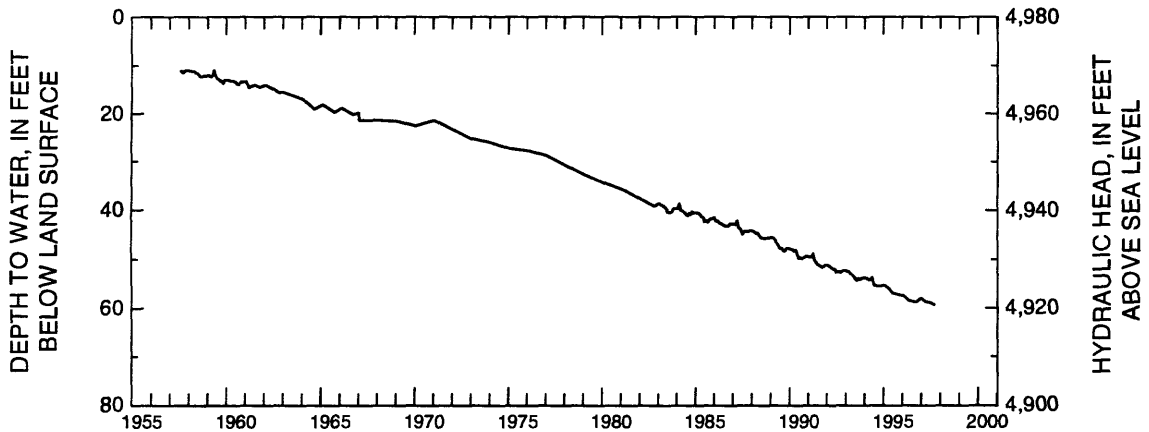


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Continued.

SITE 67 - CITY 1



SITE 68 - CITY 2



SITE 69 - CITY 3

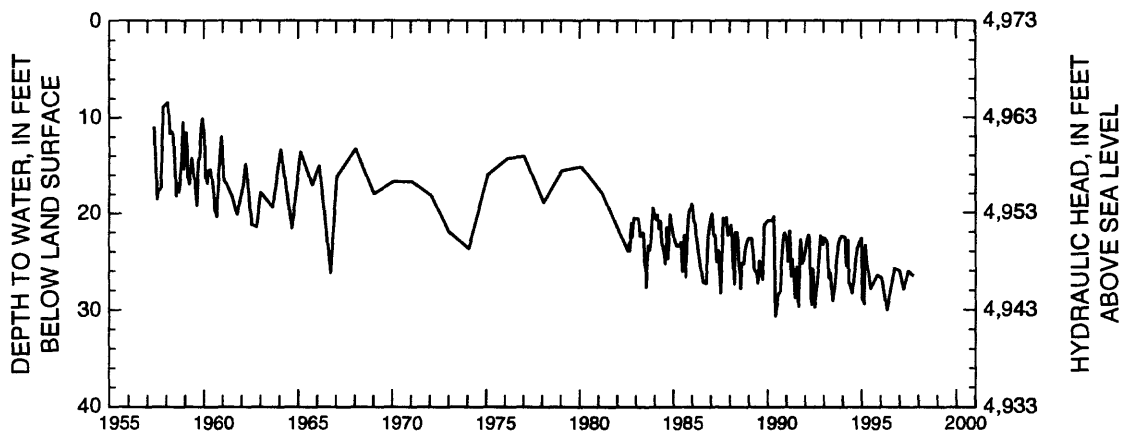


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Continued.

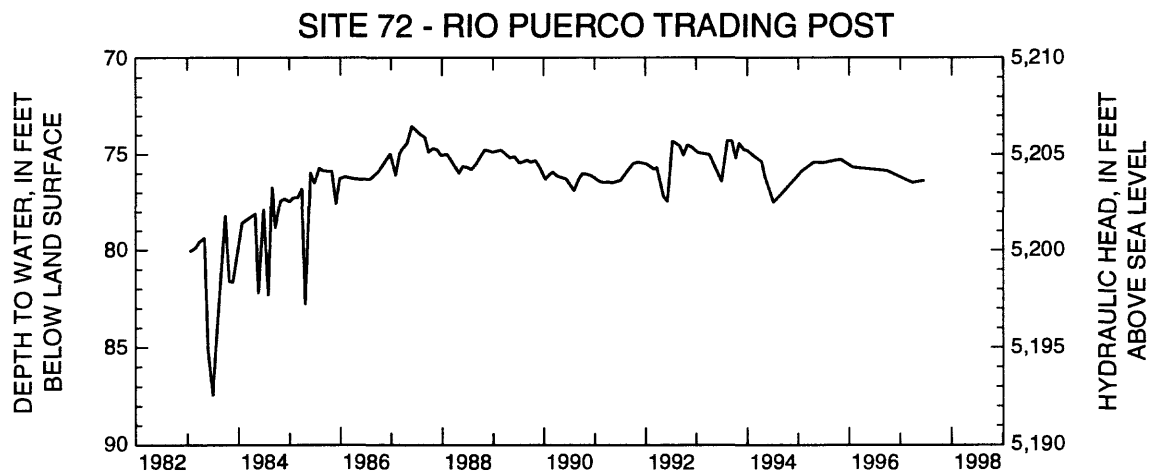
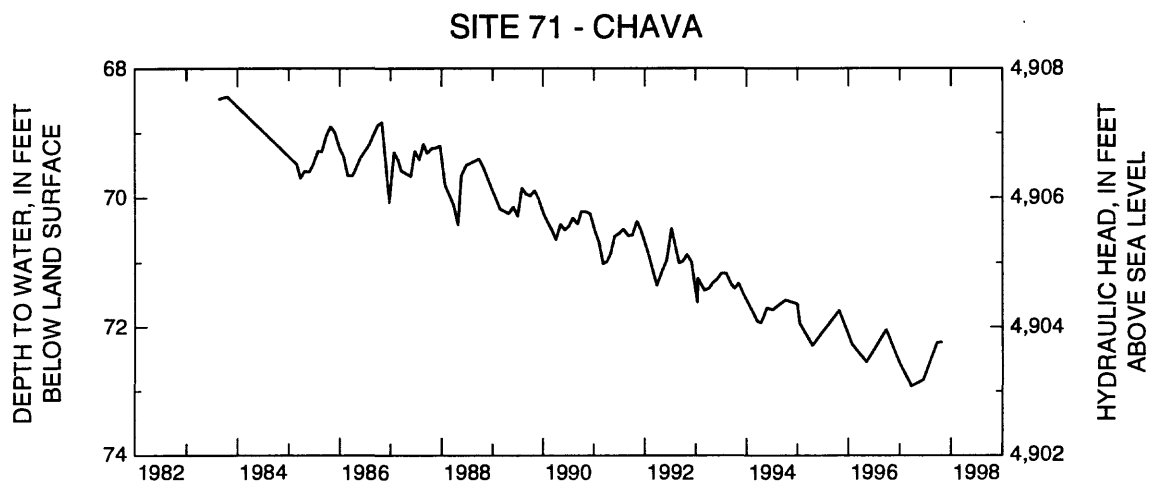
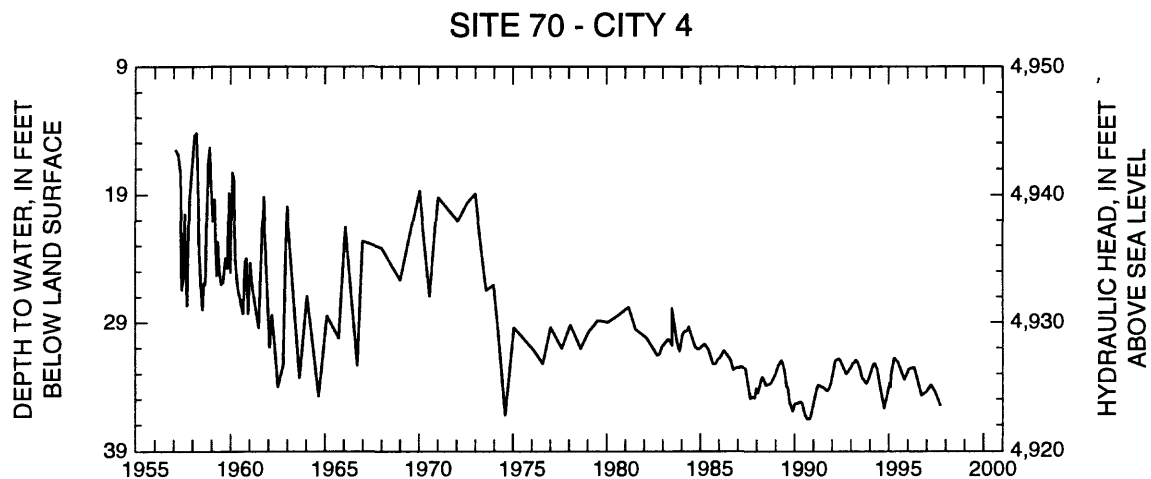


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Continued.

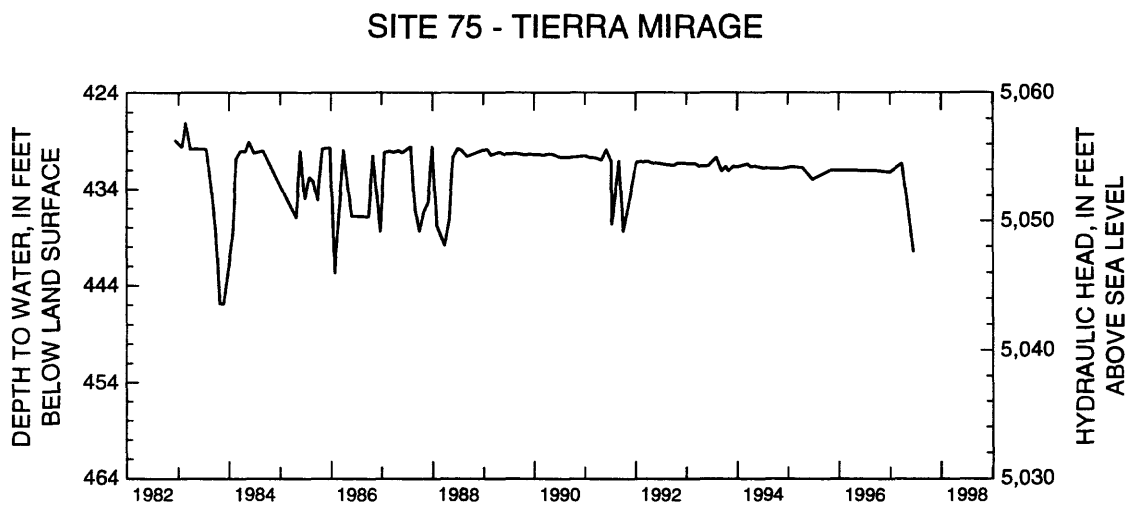
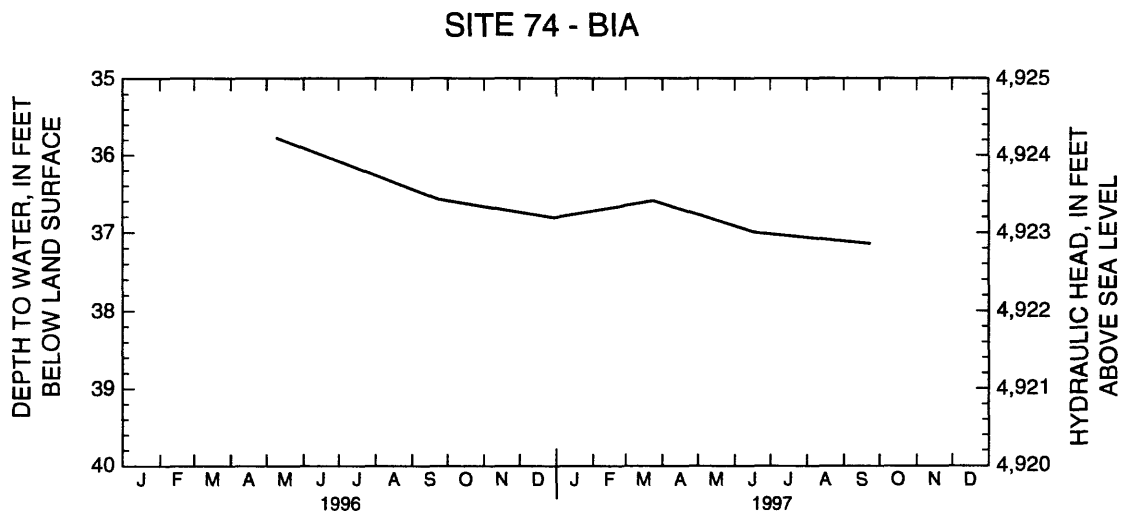
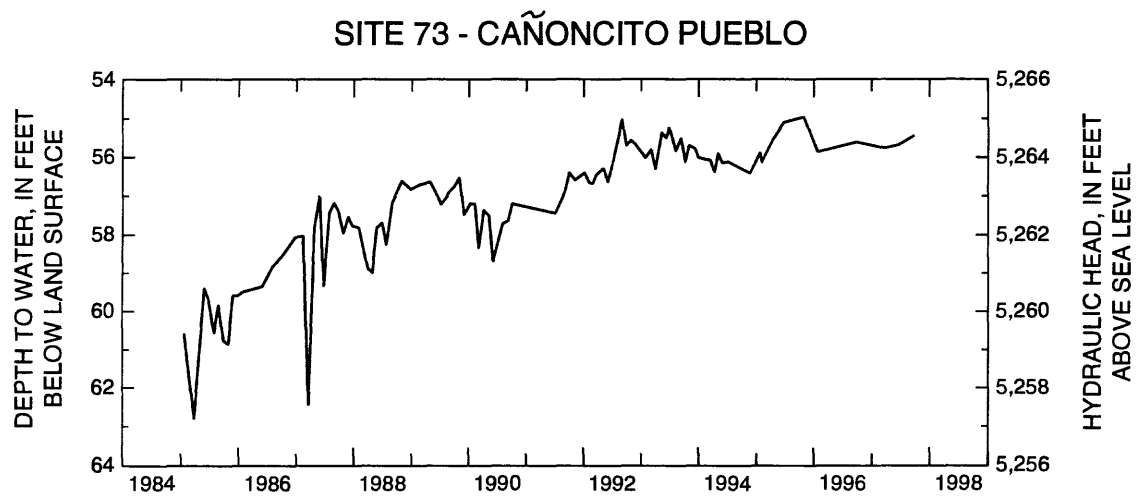


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Continued.

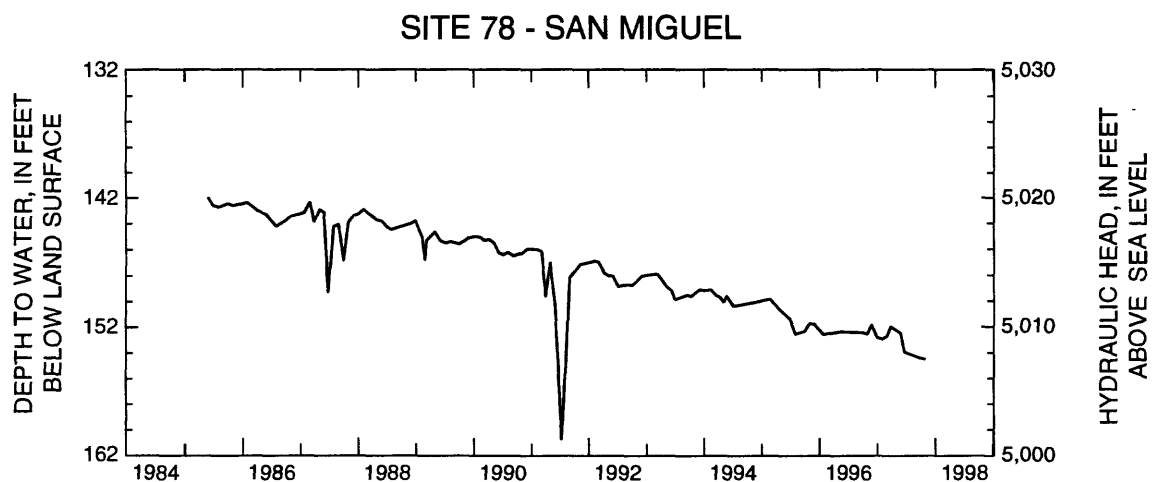
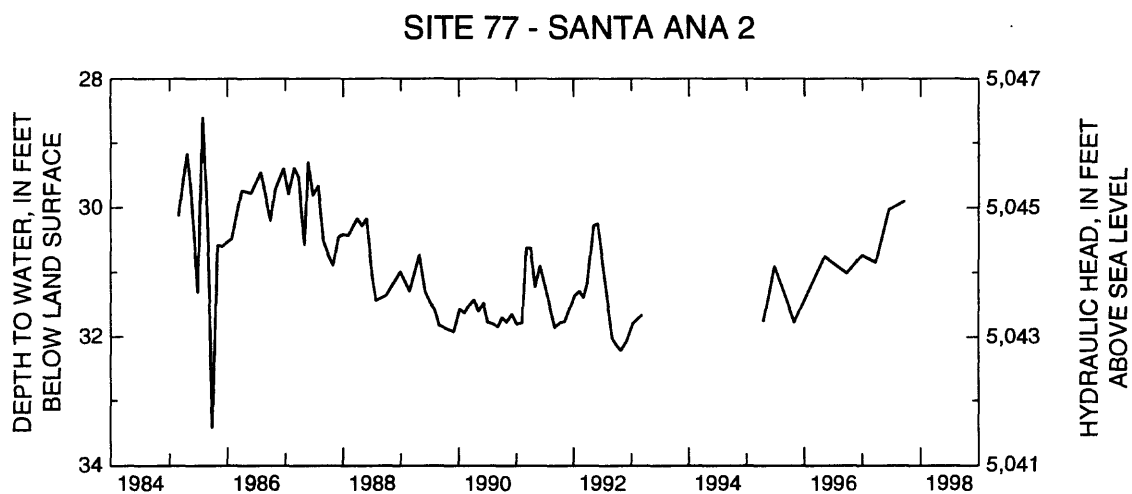
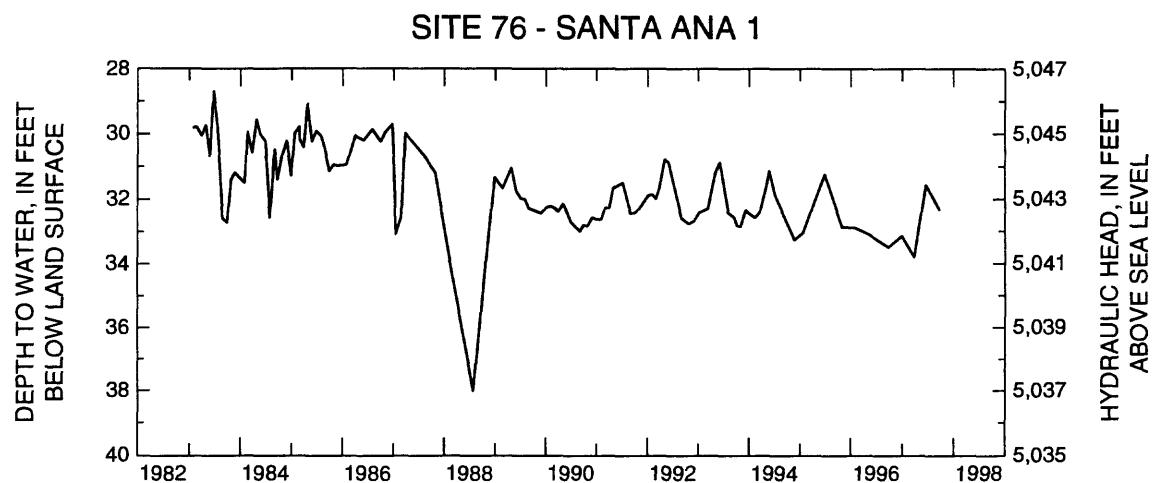
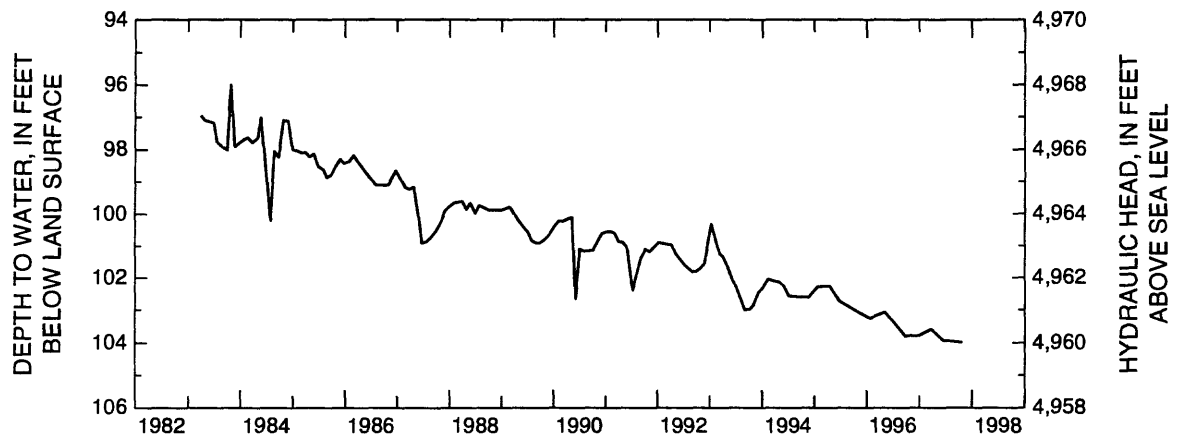
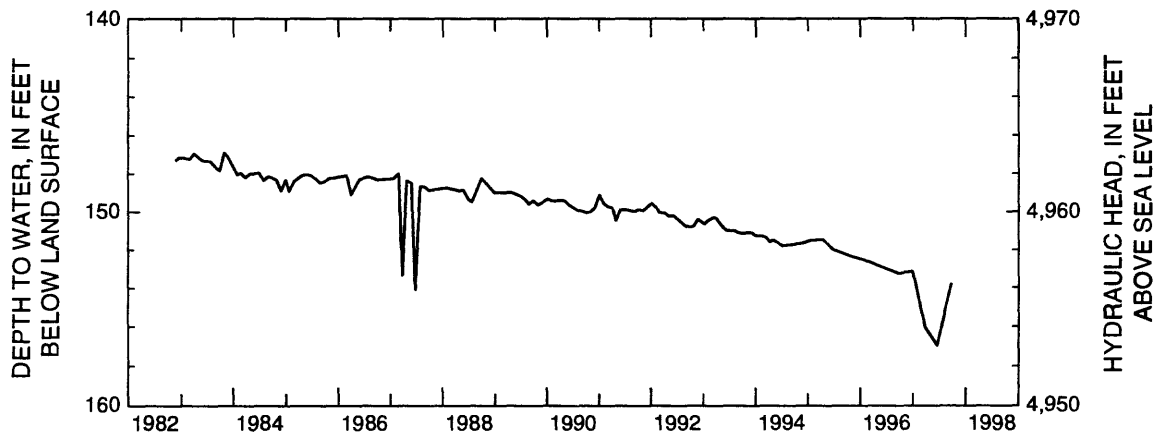


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Continued.

SITE 79 - NELSON



SITE 80 - LA LUZ DEL SOL



SITE 81 - SHOEMAKER

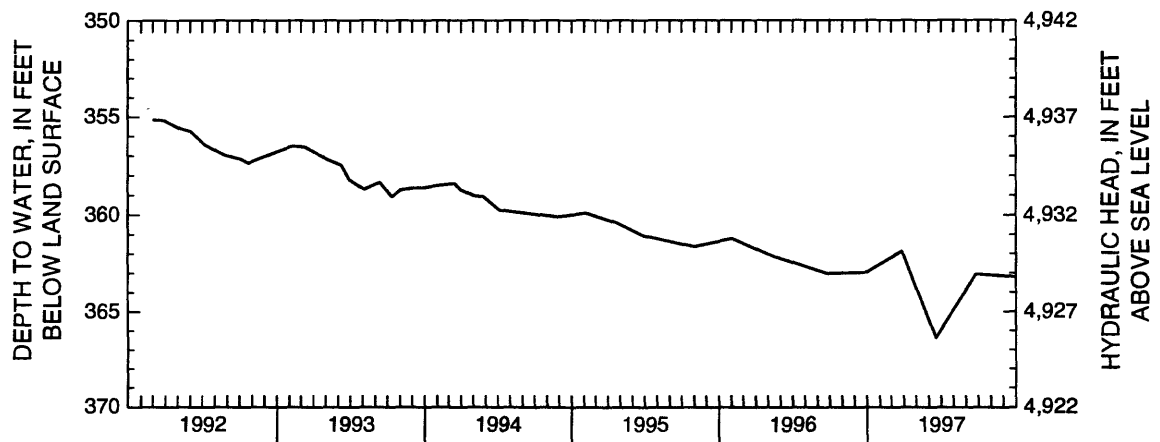


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Continued.

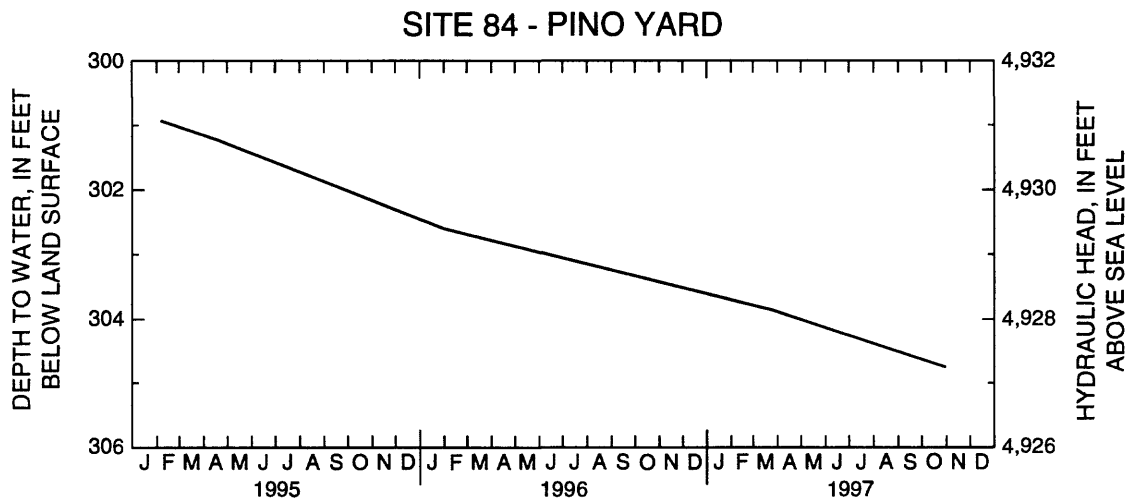
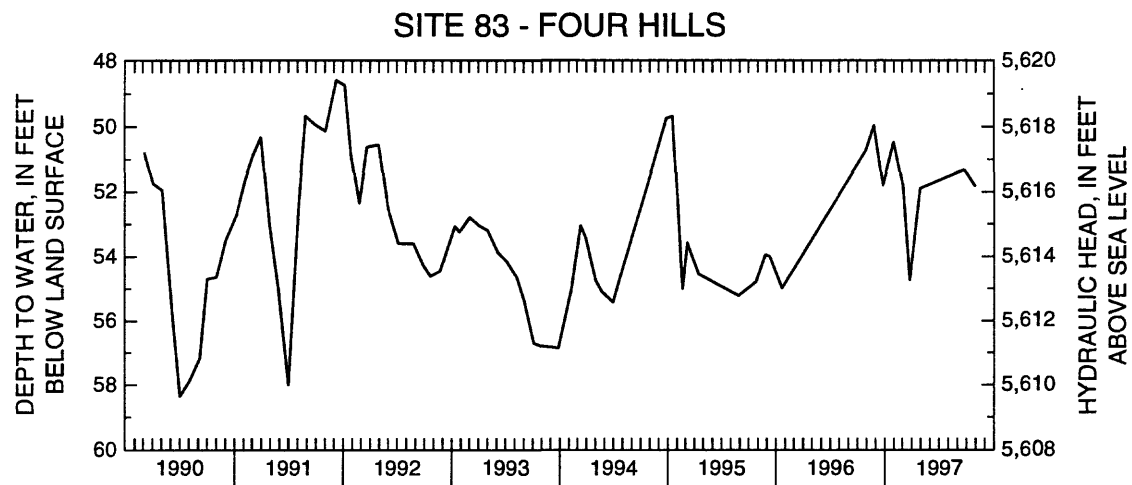
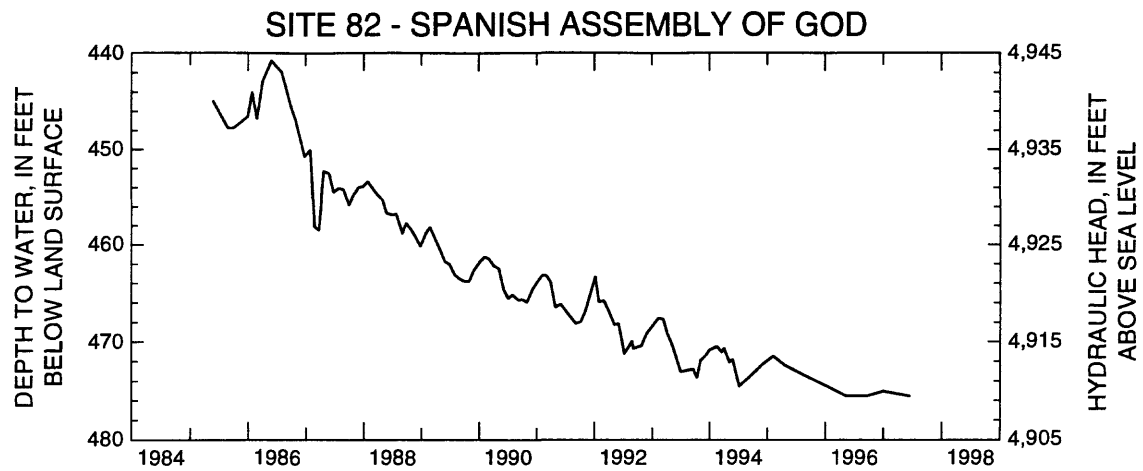


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Continued.

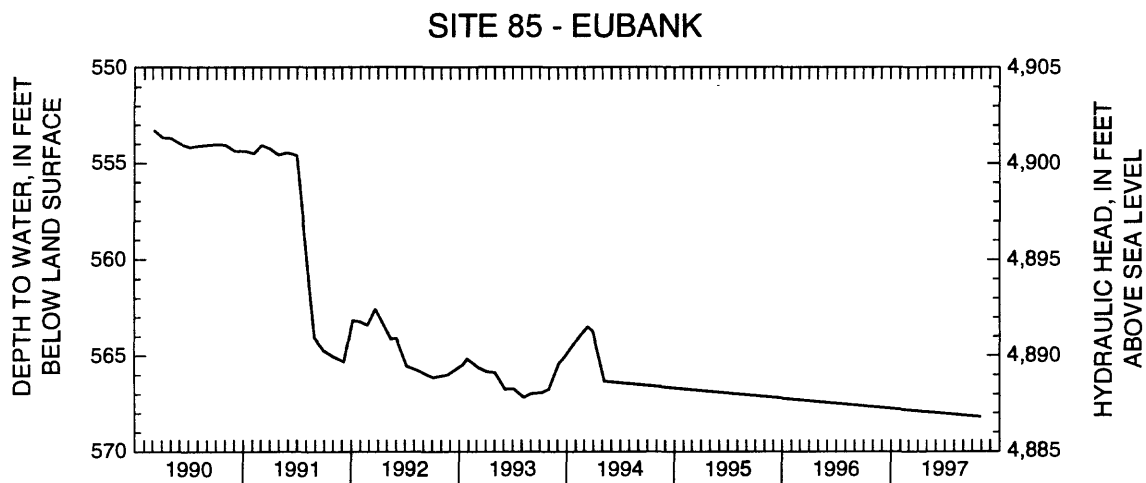


Figure 4.--Water-level data for selected wells and piezometers in the Albuquerque Basin--Concluded.

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