UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

OPEN FILE 77-330

ANNUAL WATER-RESOURCES REVIEW

WHITE SANDS MISSILE RANGE

1976

A BASIC-DATA REPORT

Prepared in cooperation with
White Sands Missile Range

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WHITE SANDS MISSILE RANGE, 1976

- A BASIC-DATA REPORT -

By R. R. Cruz

Open-File Report 77-330

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Albuquerque, New Mexico

April 1977

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By R. R. Cruz

Introduction

This report presents water-resources information that was collected at White Sands Missile Range during 1976 by personnel of the U.S. Geological Survey. Data on ground-water pumpage and resulting water-level fluctuation, and chemical quality are summarized in the report. The data were obtained as a result of the continuing water-resources basic-data collection program sponsored by the Facilities Engineering Directorate, White Sands Missile Range.

In this report figures are given both in English units and in metric units (with the exception of tables, which contain English units only). The following list contains selected conversion factors of the dual system of metric "The International System of Units (SI)" and English Units:

English	Multiplied by	Metric
Inches (in)	25.4	Millimeters (mm)
Feet (ft)	0.3048	Meters (mm)
Miles (mi)	1.609	Kilometers (km)
Gallons (gal)	0.003785	Cubic meters (m^3)
Acre-feet (acre-feet)	1233	Cubic Meters (m^3)

Continuing observations

The program to collect basic data on the water resources of White Sands Missile Range has been continuous since 1953. It has expanded from the original program of water-level observations in 5 test wells in the Post Headquarters area to the present program of semi-annual water sampling in 8 test wells; periodic measurements in 16 supply wells, 24 test and observation wells, and 23 boreholes in widely scattered areas on the missile range (fig. 1).

The 1967 report and reports prior to 1967 received administrative release only. The 1968 report and subsequent annual reports are open-file reports and are available for inspection at the U.S. Geological Survey, Water Resources Division, Albuquerque District Office.

Pumpage and water-level fluctuations

Total ground-water pumpage* at White Sands Missile Range in 1976, according to records furnished by the Facilities Engineering Directorate, was 668,914,400 gallons (2,531,841 m^3). The Post Headquarters well field produced 657,655,000 gallons (2,489,224 m^3); well HTA-1, 466,800 gallons (1,767 m^3); wells MAR-1 and 2, 962,800 gallons (3,644 m^3); SMR-1, 1,415,800 gallons (5,359 m^3); and wells SRC-1 and 2, 8,414,000 gallons (31,847 m^3).

Figure 2 shows pumpage by month and total gallons pumped per year during 1962 through 1976 in the Post Headquarters well field, and the fluctuation of water level in the Main Gate well through 1975. Figure 3 shows the combined monthly pumpage of supply wells 17, 18, 19, and 20 in the Post Headquarters well field and water-level fluctuation in test well T-7. These wells produced almost half the total yearly pumpage from the well field in 1976. Test well T-7 is located about 0.7 mile (1.1 km) east of the supply wells. Water-level fluctuations in test well T-7 (fig. 3) are principally the result of withdrawals from the northern part of the well field. Graphs on figure 4 show the water-level fluctuations in test wells T-8, T-10, and T-11. Hourly water-level fluctuations are recorded in test wells T-7, T-8, T-10, and T-11.

*The pumpage figures used in this report are to be considered as preliminary figures and may be subject to revision.

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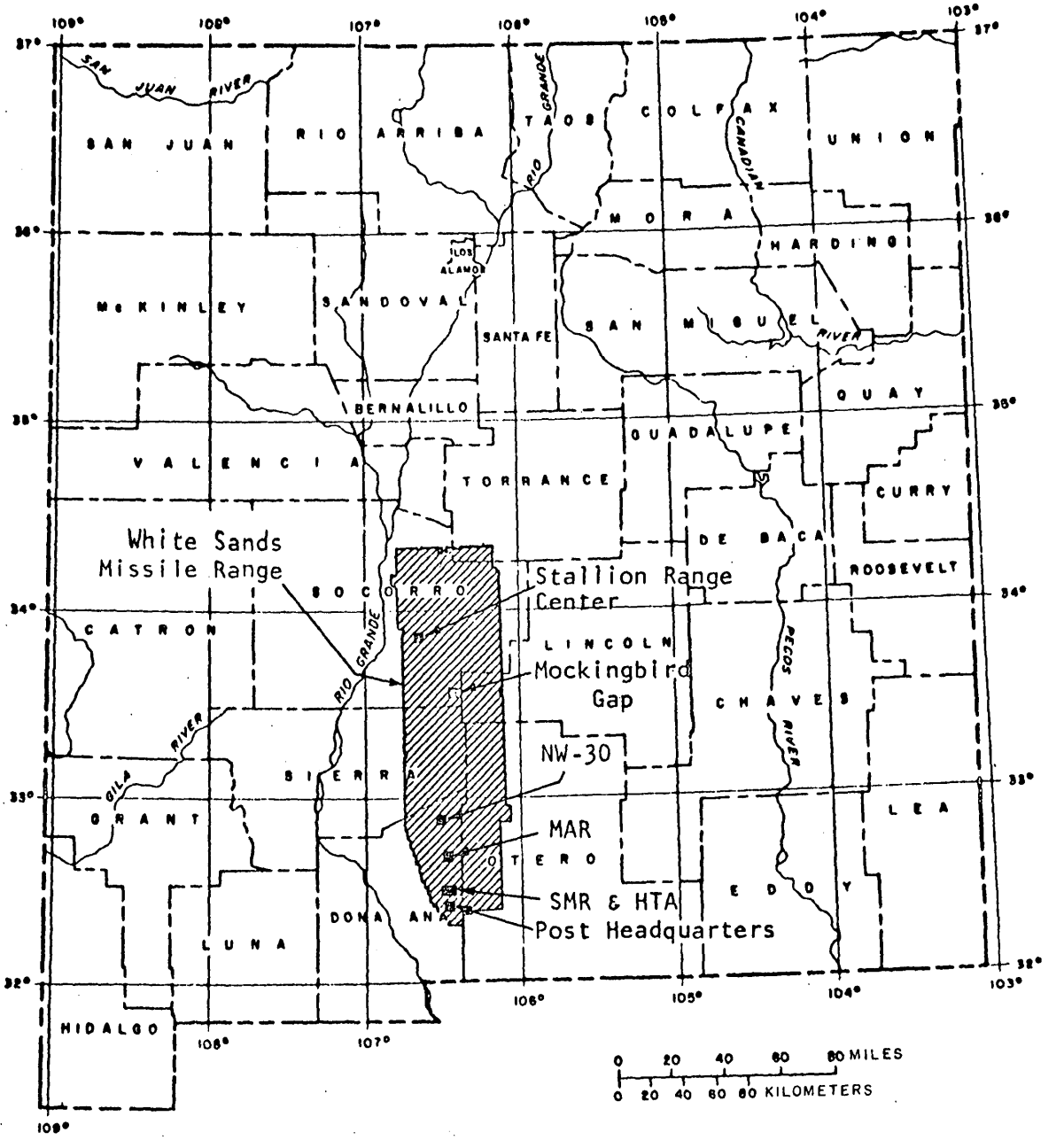

Figure 1.--Areas of hydrologic observations, White Sands Missile Range, New Mexico.

New figures

Figure. Contour Map of Water Table, 1977

Figure Hydrographs & graphs

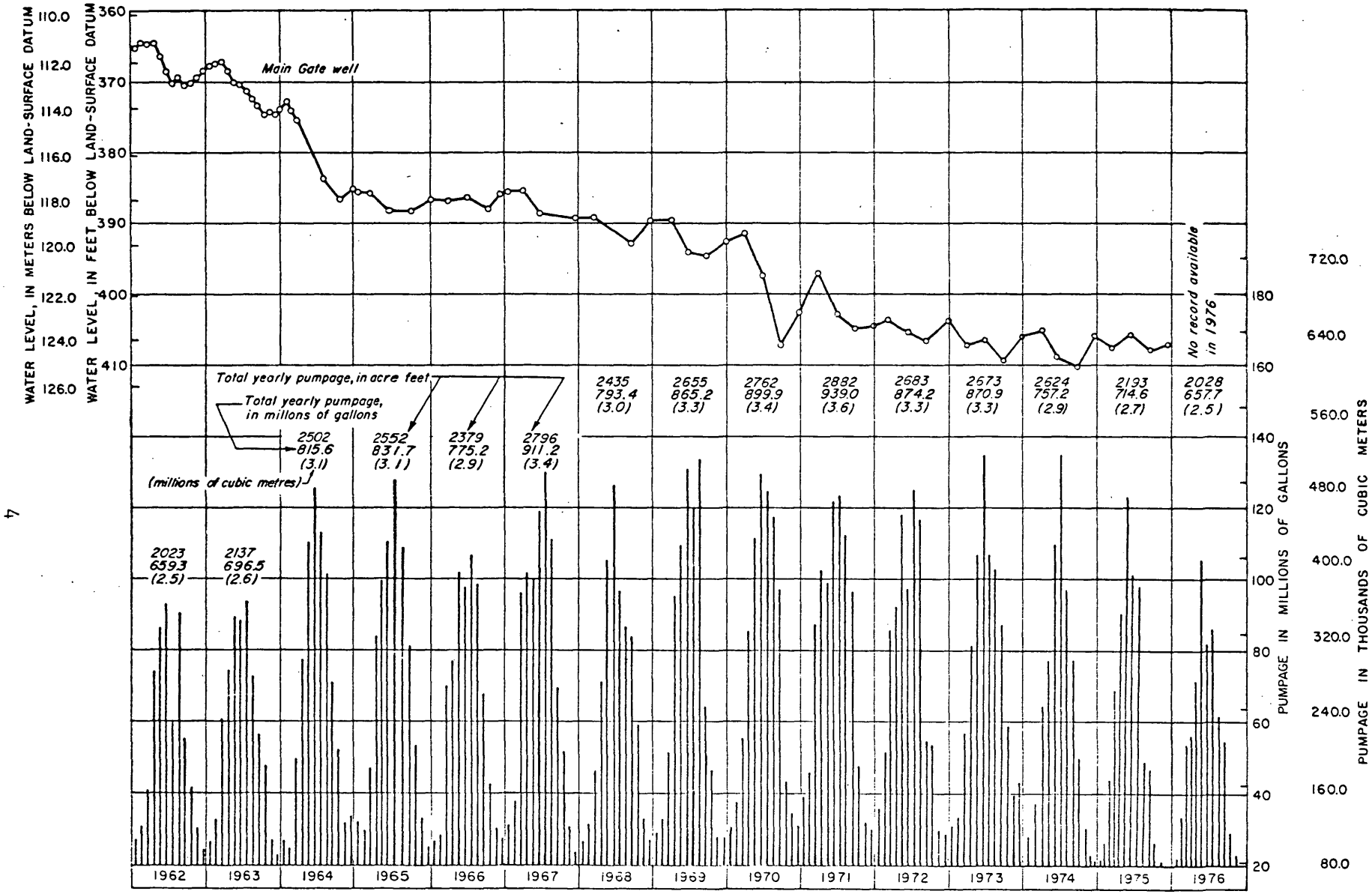

Figure 2.--Monthly and yearly pumpage in the Post Headquarters well field, and water-level fluctuation in the Main Gate well, 1962 through 1976.

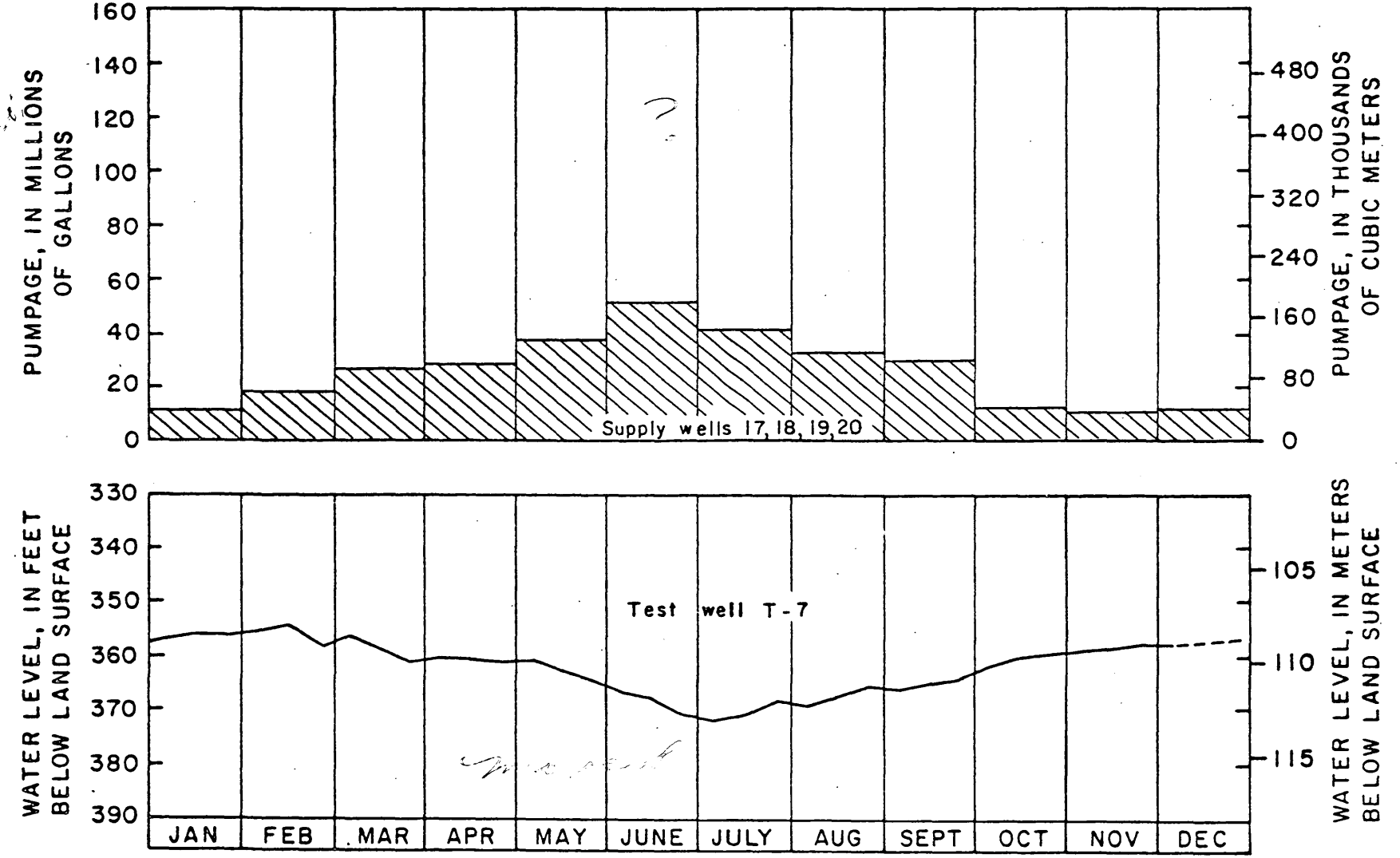

Figure 3.--Combined monthly pumpage of supply wells 17, 18, 19, and 20, and water-level fluctuation in test well T-7, 1976.

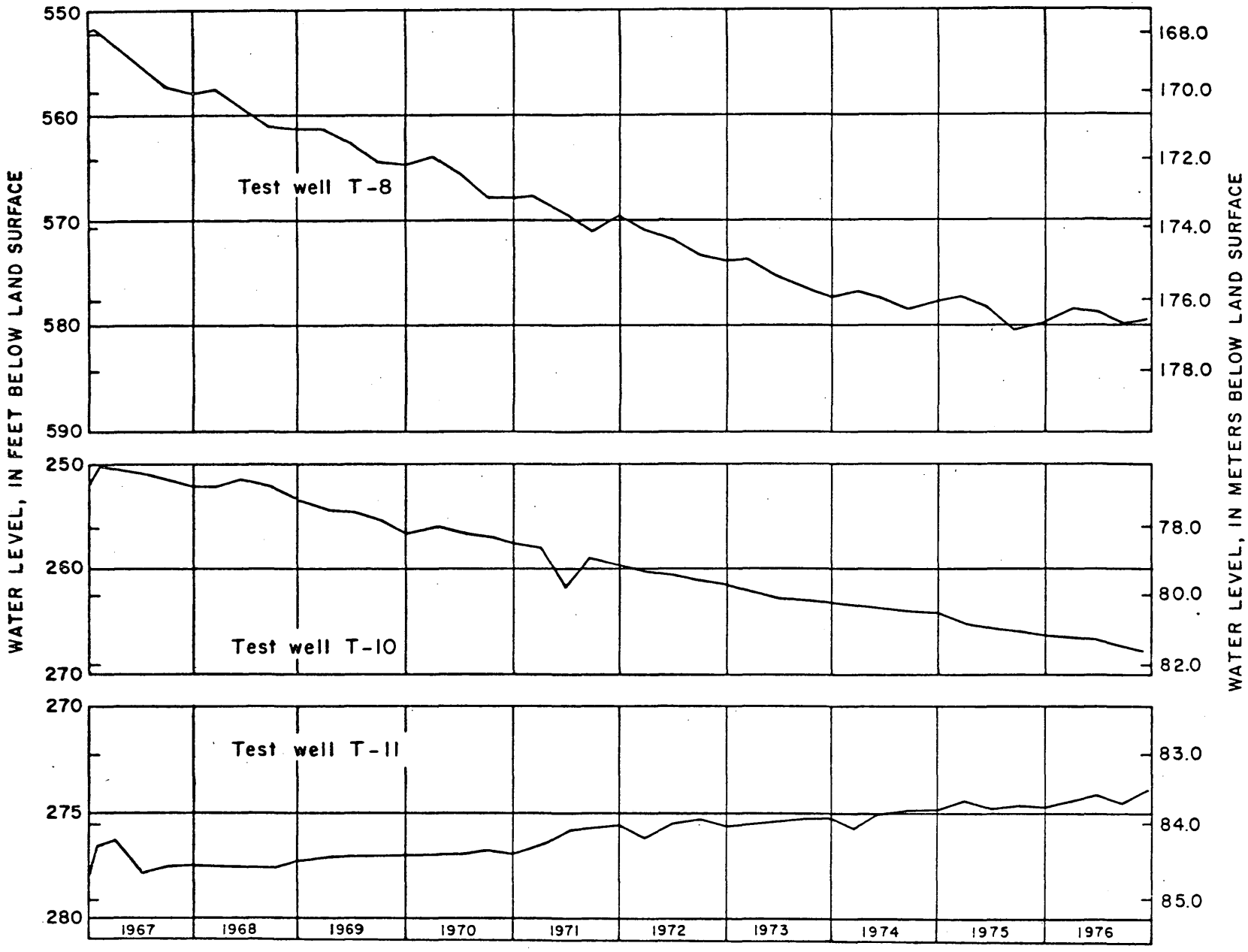

Figure 4.--Water-level fluctuations in test wells T-8, T-10, and T-11, 1967 through 1976.

Water-level measurements in supply wells

Annual depth-to-water measurements are made in 11 supply wells in the Post Headquarters well field (fig. 5), 1 supply well in the SMR area (fig. 6), 2 supply wells in the MAR area (fig. 6), and 2 supply wells at Stallion Range Center (fig. 7). Well HTA-1, which was drilled as a test well and is indicated as such in figure 7, is sealed so that water-level measurements cannot be obtained.

The depths to water and net changes listed in table 1 are based on measurements made during December 1975 and December 1976, or as otherwise footnoted.

Supply wells 21 and 22 in the Post Headquarters well field were drilled in July 1976 and August 1976, and acceptance test completed in December 1976. There will not be any net change listed in this report for these two wells.

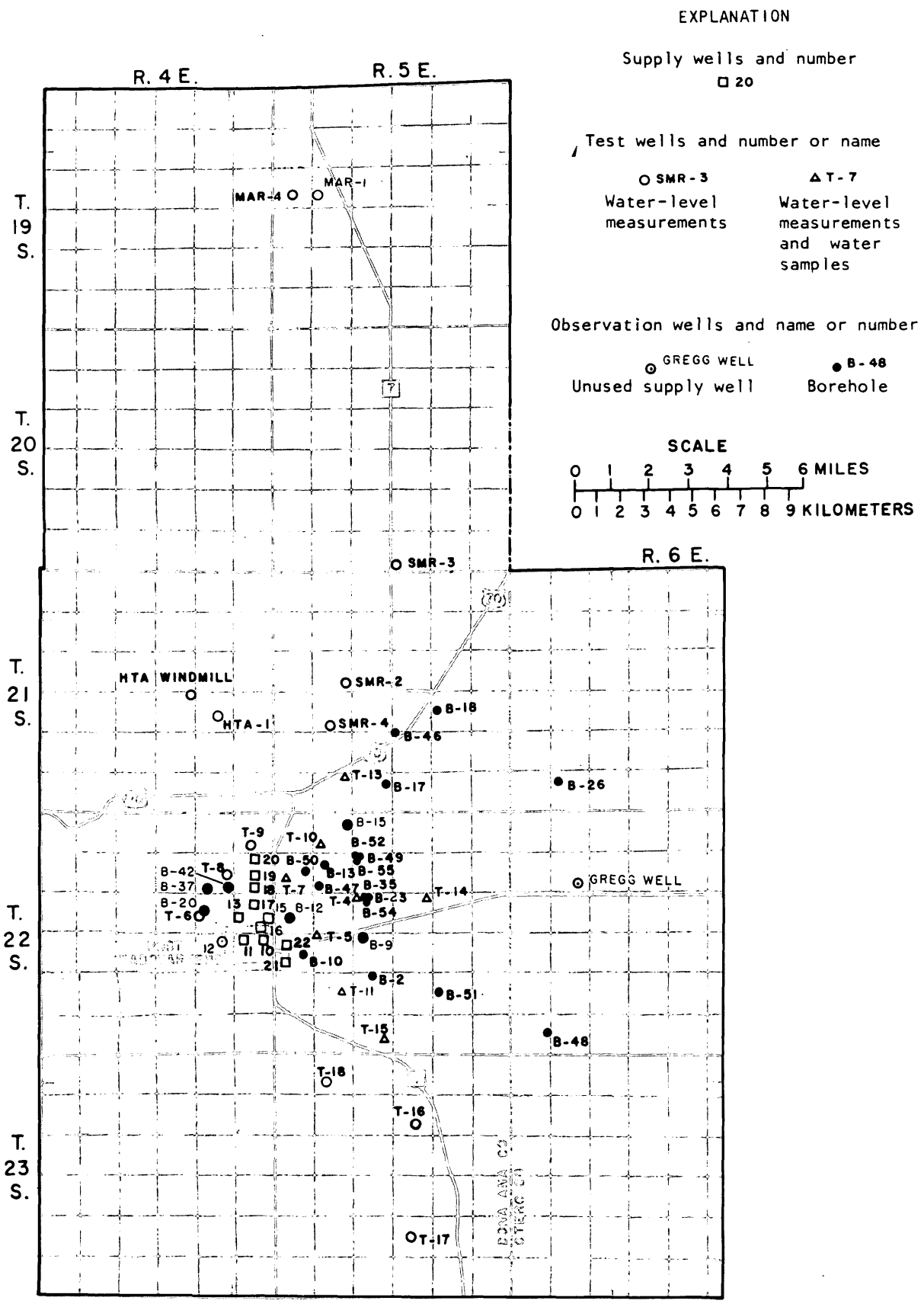

Figure 5.--Location of supply wells, test wells, observation wells, and boreholes at the Post Headquarters and adjacent areas.

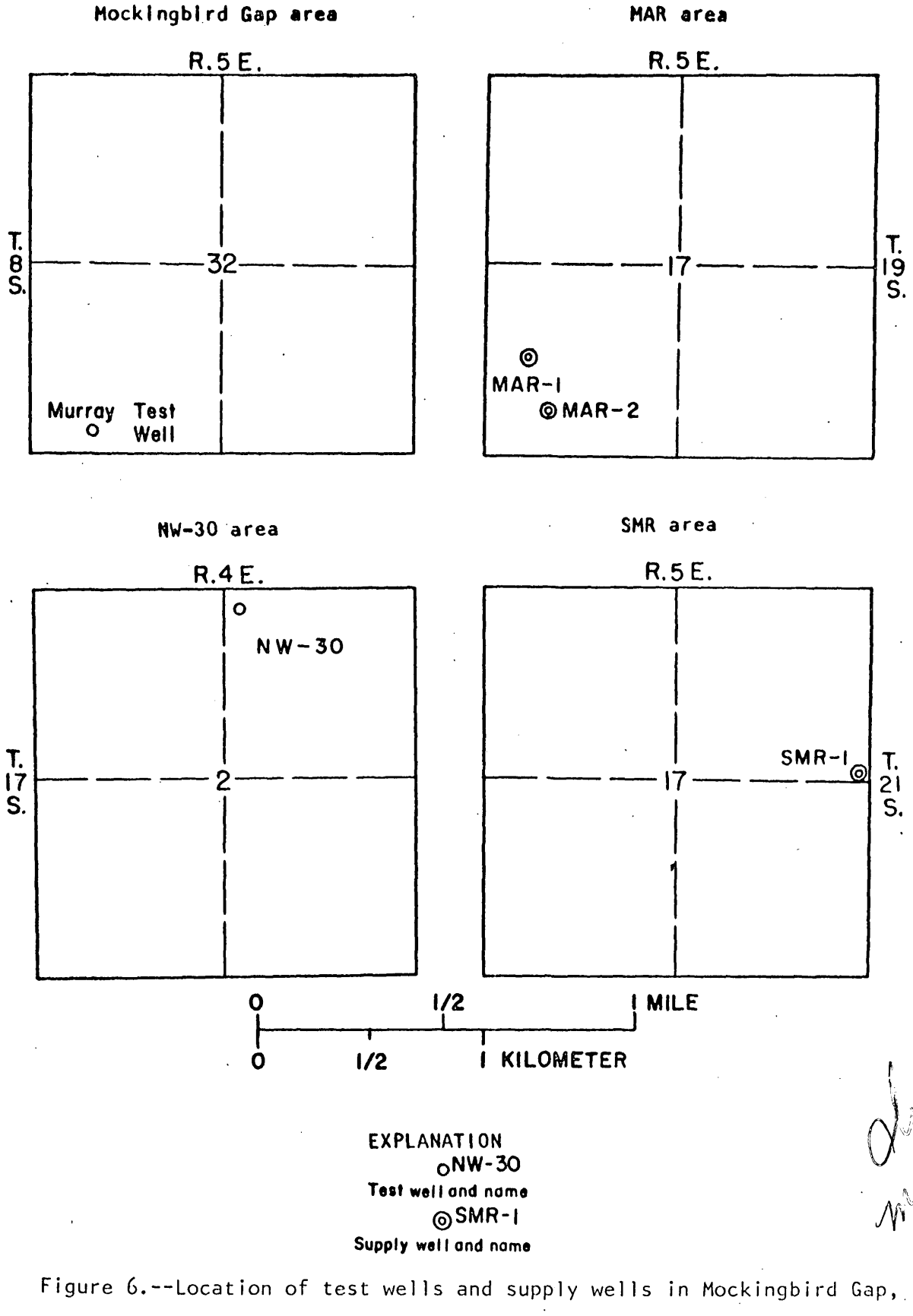

Figure 6.--Location of test wells and supply wells in Mockingbird Gap, MAR, NW-30, and SMR areas.

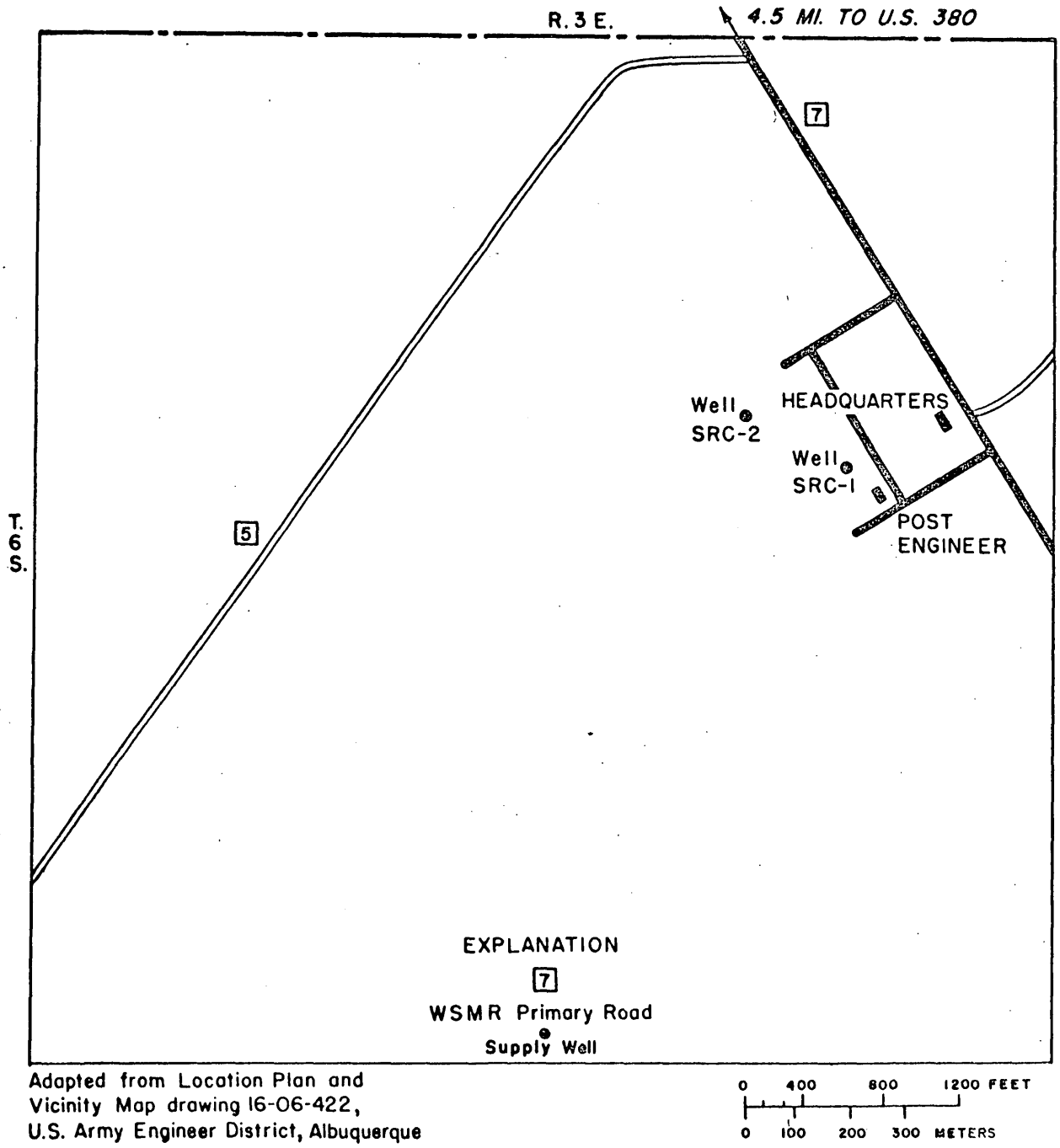

Figure 7.--Location of supply wells, Stallion Range Center.

Table 1.--Depth to water in supply wells, and change of water level from December 1975 to December 1976

Well	Depth to water, in feet		Net change in water level[a/]
	12-75	12-76	
10a	424.79	423.79	+1.00
11	*291.00	[1/] *357.63	-66.63
13	296.70	297.63	- .93
15	*435.00	*432.95	+2.05
16	*448.00	*447.95	+ .05
17	440.13	438.32	+1.81
18	426.15	424.38	+1.77
19	449.90	449.63	+ .27
20	510.06	509.47	+ .59
21	-	[2/] 351.22	-
22	-	[2/] 372.21	-
MAR-1	214.30	213.99	+ .31
MAR-2	219.93	218.67	+1.26
SMR-1	290.08	294.37	-4.29
SRC-1	213.75	204.84	+8.91
SRC-2	209.00	212.20	-3.20

a/ Water-level rise (+) or decline (-) in feet
* Air-line gage reading
1/ January 1977 reading
2/ 1st measurement in 1976

Water-level measurements in test wells, observation wells, and boreholes

Quarterly measurements were made in 16 wells in the Post Headquarters area, 1 well in HTA area, 3 wells in the SMR area, 2 wells in the MAR area (fig. 5), 1 well in the NW-30 area, and 1 well in the Mockingbird Gap area (fig. 6). Depth-to-water measurements made at quarterly intervals during 1976 in the Post Headquarters area are given in table 2. Annual measurements made in 23 boreholes in and around the Post Headquarters area (fig. 5) are given in table 3. Four of the test wells in the Post Headquarters area were equipped with continuous-recording gages. The continuous hydrograph (1962 through 1976) of the Main Gate well, a key well in the observation well program because of its location in relation to the supply wells and length of record, cannot be continued in the 1976 report. The Main Gate well has filled in to a point above the water-level where neither a continuous recording gage may be used or water-level measurements may be obtained. Our strong recommendation is that a new well be drilled at or near the same location as the Main Gate well and a rehabilitation program should begin as soon as possible on other test and observation wells where filling has occurred.

The depth-to-water and change in water levels in test and observation wells in 1976 are shown in table 2.

Table 2.--Depth to water in test and observation wells, and change of water level in 1976

Well number	Date of measurement	Depth to water, in feet below land surface	Change in water level 1975-76	Remarks
T-4	3-22-76	225.87	-0.42	
	6- 8-76	225.27	+ .49	
	9-14-76	225.83	- .11	
	12- 7-76	225.79	+ .11	
T-5	3-22-76	274.98	- .88	
	6- 8-76	274.59	+6.07	
	9-14-76	275.13	- .41	
	12- 7-76	275.11	- .08	
T-6	3-23-76	209.57	- .29	
	6- 7-76	209.54	- .37	
	9-14-76	209.80	- .25	
	12- 6-76	209.59	- .26	
T-7	3-22-76	358.97	-2.61	Equipped with recorder
	6- 8-76	367.16	+7.04	
	9-14-76	365.29	+2.88	
	12- 7-76	358.05	+2.74	
T-8	3-22-76	578.32	- .47	Equipped with recorder
	6- 7-76	578.64	- .23	
	9-20-76	580.08	+ .33	
	12- 7-76	579.40	+ .65	

Table 2.--Depth to water in test and observation wells, and change of water level in 1976 - Continued

Well number	Date of measurement	Depth to water, in feet below land surface	Change in water level 1975-76	Remarks
T-9	3-22-76	396.76	-2.12	
	6- 7-76	397.07	-1.90	
	9-14-76	397.05	-1.75	
	12- 6-76	397.79	-1.27	
T-10	3-22-76	266.59	-1.41	Equipped with
	6- 8-76	266.90	-1.28	recorder
	9-14-76	267.22	-1.33	
	12- 7-76	267.40	-1.08	
T-11	3-23-76	274.20	+ .38	Equipped with
	6- 8-76	274.12	+ .58	recorder
	9-15-76	274.12	+ .33	
	12- 7-76	273.91	+ .53	
T-13	3-22-76	210.54	- .99	
	6- 8-76	210.66	- .32	
	9-14-76	210.67	- .42	
	12- 7-76	210.67	- .20	
T-14	3-22-76	131.83	+ .28	
	6- 8-76	131.42	+7.37	
	9-15-76	131.87	+ .18	
	12- 7-76	131.90	+ .21	

Table 2.--Depth to water in test and observation wells, and change of water level in 1976 - Continued

Well number	Date of measurement	Depth to water, in feet below land surface	Change in water level 1975-76	Remarks
T-15	3-23-76	178.80	-0.05	
	6- 8-76	178.52	+ .38	
	9-15-76	178.78	.17	
	12- 7-76	178.65	+ .21	
T-16	3-23-76	186.38	- .16	
	6- 8-76	186.28	- .07	
	9-15-76	186.06	+ .12	
	12- 7-76	185.94	+ .41	
T-17	3-23-76	242.40	- .36	
	6- 8-76	242.24	- .15	
	9-15-76	242.25	+ .06	
	12- 7-76	242.18	+ .09	
T-18	3-23-76	241.37	+ .74	
	6- 8-76	241.37	+ .46	
	9-15-76	240.82	+ .61	
	12- 7-76	240.47	+1.22	
Old Supply	3-23-76	249.59	+1.71	
Well 12	6- 7-76	249.37	+1.28	
	9-15-76	249.69	+1.45	
	12- 6-76	249.27	+1.35	

Table 2. Depth to water in test and observation wells, and change of water level in 1976 - Continued

Well number	Date of measurement	Depth to water, in feet below land surface	Change in water level 1975-76	Remarks
Gregg well	3-22-76	214.36	-0.16	
	6- 8-76	214.32	- .01	
	9-15-76	214.37	- .04	
	12- 7-76	214.28	+ .19	
HTA windmill	3-22-76	40.84	+1.61	
	6- 8-76	41.30	-	
	10-14-76	41.91	+ .27	
	12- 8-76	41.23	- .31	
SMR-2	3-22-76	314.97	-1.20	
	6-10-76	314.97	- .99	
	9-17-76	315.24	-1.37	
	12-10-76	314.99	+ .31	
SMR-3	3-22-76	296.95	- .07	
	6-10-76	296.15	+ .63	
	9-17-76	295.99	+1.07	
	12-10-76	296.06	+ .89	
SMR-4	3-22-76	282.86	-1.23	
	6- 9-76	282.97	- .98	
	9-17-76	283.22	-1.02	
	12-10-76	283.40	-1.00	

Table 2.--Depth to water in test and observation wells, and change of water level in 1976 - Concluded

Well number	Date of measurement	Depth to water, in feet below land surface	Change in water level 1975-76	Remarks
MAR-1	3-22-76	220.95	+0.37	
(test)	6-10-76	220.91	+ .30	
	9-17-76	220.83	+ .98	
	12- 9-76	220.59	+ .51	
MAR-4	3-22-76	304.03	+ .23	
	6-10-76	303.83	+ .34	
	9-17-76	303.74	+ .55	
	12- 9-76	303.50	+ .69	
NW-30	3-22-76	211.92	- .18	
	6-10-76	211.98	- .24	
	9-16-76	211.95	- .39	
	12- 9-76	211.99	- .14	
Murray test well	3-22-76	176.76	- .23	
	6-10-76	176.59	- .20	
	9-16-76	176.60	+ .05	
	12- 9-76	176.50	+ .26	

Table 3.--Depth to water in boreholes, and change of water level in 1976

Borehole number	Location	Date of measurement	Depth to water in feet below land surface	Change in water level, 1975-76
	T.21 S., R.5 E.			
B-18	SE¼SW¼NW¼ sec. 23	6-9-76	103.84	-0.04
B-46	NW¼NW¼NW¼ sec. 27	6-9-76	134.17	- .68
B-17	NW¼SE¼NE¼ sec. 33	6-8-76	109.06	+ .88
	T.21 S., R.6 E.			
B-26	SE¼NW¼NW¼ sec. 32	6-9-76	140.74	.00
	T.22 S., R.4 E.			
B-37	SE¼SE¼SW¼ sec. 11	6-8-76	412.47	+1.08
B-42	SE¼SE¼SE¼ sec. 11	6-8-76	386.23	-1.02
B-20	SE¼SW¼NW¼ sec. 14	6-8-76	344.05	-3.45
	T.22 S., R.5 E.			
B-15	NE¼SE¼NE¼ sec. 5	6-9-76	169.88	- .76
B-50	NE¼SE¼NE¼ sec. 7	6-9-76	298.11	-1.89
B-13	NW¼SE¼NW¼ sec. 8	6-9-76	238.33	- .67
B-47	SE¼SW¼SW¼ sec. 8	6-8-76	270.66	- .38
B-49	SW¼NW¼NW¼ sec. 9	6-9-76	198.10	- .78
B-52	SW¼NW¼NW¼ sec. 9	6-9-76	209.23	- .31
B-55	SW¼NW¼NW¼ sec. 9	6-9-76	213.72	- .09
B-23	NW¼NW¼NW¼ sec. 16	6-8-76	224.00	- .31
B-35	NW¼NW¼NW¼ sec. 16	6-8-76	226.93	- .12
B-54	NW¼NW¼NW¼ sec. 16	6-8-76	228.29	- .06
B-12	NE¼NE¼SW¼ sec. 18	6-8-76	259.93	-1.51
B-10	SE¼NW¼SE¼ sec. 19	6-8-76	303.30	+ .25
B-9	NW¼NW¼NE¼ sec. 21	6-8-76	225.85	+ .02
B-51	NE¼NW¼SW¼ sec. 26	6-8-76	146.89	+ .33

Table 3.--Depth to water in boreholes, and change of water level in 1976 - Concluded

Borehole number	Location	Date of measurement	Depth to water in feet below land surface	Change in water level, 1975-76
	T.22 S., R.5 E.			
B-2	SE¼NE¼NW¼ sec. 28	6-8-76	196.92	-0.64
	T.22 S., R.6 E.			
B-48	NE¼NE¼SE¼ sec. 31	6-8-76	206.59	-2.09

Chemical quality

Eight test wells (T-4, T-5, T-7, T-10, T-11, T-13, T-14, and T-15) (fig. 5) were sampled in June 1976 and in December 1976 to monitor any changes in the chemical quality of ground water that may occur in the area east of the Post Headquarters well field.

The samples were collected with an electrical sampling tube operated from the surface. The tube was lowered to the desired depth in each well and ports on the tube were opened until the tube was full. The ports were then closed and the tube containing the water sample was raised to the surface. Each sample was then put in appropriate containers for transportation to the laboratory. This technique was used for collection of all water samples.

The chemical analyses of water from the test wells are given in table 4.

Table 4.--Chemical analyses of water from test wells, Post Headquarters area, 1976

Analyses by Geological Survey, United States Department of the Interior

(Milligrams per liter)

Test well	T-4	T-4	T-5	T-5		
Laboratory number	761253	770414	761254	770415		
Date of collection	6-8-76	12-13-76	6-8-76	12-13-76		
Depth sampled (feet)	328	326	330	330		
Silica (SiO_2)	22	21	33	33		
Iron* (Fe)	60	20	60	20		
Manganese* (Mn)	0	10	0	10		
Calcium (Ca)	27	25	35	35		
Magnesium (Mg)	4.0	3.7	6.7	5.8		
Sodium (Na)	23	24	33	26		
Potassium (K)	2.2	2.4	2.0	2.0		
Bicarbonate (HCO_3)	86	78	107	100		
Carbonate (CO_3)	0	0	0	0		
Alkalinity as $CaCO_3$	71	64	88	82		
Sulfate (SO_4)	47	42	61	54		
Chloride (Cl)	13	14	22	16		
Fluoride (F)	.3	.4	.4	.3		
Nitrate (NO_3) / Nitrite (NO_2)	1.3	1.1	2.8	2.7		
Phosphorous, ortho, Dissolved as P	.03	.01	.02	.02		
Boron* (B)	30	30	20	20		
Dissolved Solids (calculated)	187	176	258	233		
Hardness as $CaCO_3$	84	78	120	110		
Noncarbonate hardness as $CaCO_3$	13	14	27	29		
Sodium Adsorption Ratio (SAR)	1.1	1.2	1.3	1.1		
Specific conductance (micromhos at 25°C)	257	288	383	366		
pH	8.2	8.0	8.1	7.9		
Temperature, °Celsius (C)	25.0	25.0	25.5	25.0		

* Micrograms per liter

Table 4.--Chemical analyses of water from test wells, Post Headquarters area, 1976 - Continued

Analyses by Geological Survey, United States Department of the Interior

(Milligrams per liter)

Test well	T-7	T-7	T-10	T-10
Laboratory number	761255	770468	761256	770469
Date of collection	6-9-76	12-13-76	6-9-76	12-13-76
Depth sampled (feet)	444	444	513	513
Silica (SiO_2)	30	29	36	33
Iron* (Fe)	40	10	100	110
Manganese* (Mn)	0	20	0	0
Calcium (Ca)	32	29	32	29
Magnesium (Mg)	4.4	3.7	7.4	6.8
Sodium (Na)	33	35	23	23
Potassium (K)	1.9	2.0	2.1	2.0
Bicarbonate (HCO_3)	127	115	123	110
Carbonate (CO_3)	0	0	0	0
Alkalinity as $CaCO_3$	104	94	101	90
Sulfate (SO_4)	50	43	50	42
Chloride (Cl)	11	12	11	11
Fluoride (F)	.4	.4	.3	.3
Nitrate (NO_3) / Nitrite (NO_2)	1.7	1.6	1.2	.95
Phosphorous, ortho, Dissolved as P	.04	.02	.03	.02
Boron* (B)	30	30	20	20
Dissolved Solids (calculated)	233	218	228	206
Hardness as $CaCO_3$	98	88	110	100
Noncarbonate hardness as $CaCO_3$	0	0	9	10
Sodium Adsorption Ratio (SAR)	1.5	1.6	1.0	1.0
Specific conductance (micromhos at 25°C)	314	343	322	316
pH	7.9	7.7	8.0	8.0
Temperature, °Celsius (C)	25.5	24.5	25.5	25.5

* Micrograms per liter

Table 4.--Chemical analyses of water from test wells, Post Headquarters area, 1976 - Continued

Analyses by Geological Survey, United States Department of the Interior

(Milligrams per liter)

Test well	T-11	T-11	T-13	T-13		
Laboratory number	761257	770470	761258	770471		
Date of collection	6-8-76	12-13-76	6-9-76	12-13-76		
Depth sampled (feet)	570	570	513	513		
Silica (SiO_2)	26	25	37	37		
Iron* (Fe)	90	20	40	30		
Manganese* (Mn)	30	90	0	20		
Calcium (Ca)	27	29	52	51		
Magnesium (Mg)	7.5	6.2	12	13		
Sodium (Na)	24	23	33	32		
Potassium (K)	2.2	2.1	3.5	3.8		
Bicarbonate (HCO_3)	99	99	141	138		
Carbonate (CO_3)	0	0	0	0		
Alkalinity as $CaCO_3$	81	81	116	113		
Sulfate (SO_4)	54	42	88	81		
Chloride (Cl)	17	12	26	26		
Fluoride (F)	.3	.3	.8	.8		
Nitrate (NO_3) / Nitrite (NO_2)	.12	.41	2.2	2.0		
Phosphorous, ortho, Dissolved as P	.03	.01	.04	.02		
Boron* (B)	30	20	40	40		
Dissolved Solids (calculated)	208	190	332	322		
Hardness as $CaCO_3$	98	98	180	180		
Noncarbonate hardness as $CaCO_3$	17	17	64	68		
Sodium Adsorption Ratio (SAR)	1.1	1.0	1.1	1.0		
Specific conductance (micromhos at 25°C)	314	305	487	500		
pH	7.8	7.0	7.9	7.8		
Temperature, °Celsius (C)	26.5	26	26.5	26.0		

* Micrograms per liter

Table 4.--Chemical analyses of water from test wells, Post Headquarters area, 1976 - Concluded

Analyses by Geological Survey, United States Department of the Interior

(Milligrams per liter)

Test well	T-14	T-14	T-15	T-15
Laboratory number	761259	770472	761260	770473
Date of collection	6-8-76	12-14-76	6-8-76	12-14-76
Depth sampled (feet)	300	300	400	400
Silica (SiO_2)	9.1	9.3	1.1	1.5
Iron* (Fe)	120	70	30	10
Manganese* (Mn)	10	0	20	30
Calcium (Ca)	6.8	6.8	32	31
Magnesium (Mg)	.3	.1	1.1	.9
Sodium (Na)	530	510	100	95
Potassium (K)	6.4	6.1	4.7	4.5
Bicarbonate (HCO_3)	48	15	16	24
Carbonate (CO_3)	28	45	0	0
Alkalinity as $CaCO_3$	86	87	13	20
Sulfate (SO_4)	340	300	100	99
Chloride (Cl)	550	550	130	130
Fluoride (F)	.6	.6	.6	.9
Nitrate (NO_3) + Nitrite (NO_2)	.00	.12	.04	.01
Phosphorous, ortho, Dissolved as P	.01	.01	.00	.00
Boron* (B)	120	130	30	40
Dissolved Solids (calculated)	1,500	1,440	378	375
Hardness as $CaCO_3$	18	17	84	81
Noncarbonate hardness as $CaCO_3$	0	0	71	61
Sodium Adsorption Ratio (SAR)	54	53	4.7	4.6
Specific conductance (micromhos at 25°C)	2,500	2,510	725	688
pH	9.7	9.8	8.5	8.5
Temperature, °Celsius (C)	24.5	24.0	24.0	24.0

* Micrograms per liter

The specific conductance of water samples collected from test wells in December 1975 and December 1976 is compared in the following table:

Test well	Specific conductance (micromhos/cm at 25°C)	
	1975	1976
T- 4	287	288
T- 5	378	366
T- 7	349	343
T-10	328	316
T-11	292	305
T-13	517	500
T-14	2,780	2,510
T-15	774	688

Summary

Ground-water pumpage* totaled 657,655,000 gallons (2,489,224 m^3) or 2,019 acre-feet at the Post Headquarters well field in 1975. This was 56,925,000 gallons (215,461 m^3) or 175 acre-feet less than pumpage in 1975. Wells MAR-1 and MAR-2 produced 962,800 gallons (3,644 m^3) or 3.0 acre-feet in 1976, 457,200 gallons (1,731 m^3) or 1.4 acre-feet more than in 1975. Well SMR-1 produced 1,415,800 gallons (5,358 m^3) or 4.3 acre-feet in 1976, 106,100 gallons (402 m^3) or 0.3 acre-feet less than in 1975. Wells SRC-1 and SRC-2 produced 8,414,000 gallons (31,847 m^3) or 25.8 acre-feet in 1976, 733,000 gallons (2,774 m^3) or 2.3 acre-feet more than in 1975. Total pumpage at White Sands Missile Range in 1976, including 466,800 gallons (1,767 m^3) or 1.4 acre-feet by the HTA well, was 668,914,400 gallons (2,531,841 m^3) or 2,053 acre-feet.

Water-level declines were observed in two of the nine pumped supply wells in the Post Headquarters well field during the period of December 1975 to December 1976. The declines ranged from 66.63 feet (20.31 m) in supply well 11 to less than one foot in supply well 13. Water levels in supply wells 10a, 15, 16, 17, 18, 19, and 20 were higher in December 1976 than in December 1975. These ranged from 2.05 feet (0.62 m) in supply well 15, to less than one foot in supply wells 16, 19, and 20.

Water-level rises were observed in suppy wells in MAR-1 and MAR-2. The water levels in MAR-1 and MAR-2 were 0.31 feet (0.09 m) and 1.26 feet (0.38 m) higher in December 1976 than in December 1975. The water level in SMR-1 was 4.29 feet (1.31 m) lower in December 1976 than in December 1975.

Depth-to-water measurements made at quaterly intervals in test and observation wells during 1975 indicate that declines of water levels occurred in all wells located within a radius of about 1 mile (1.6 km) from the approximate center of sec. 13, (fig. 5), which is near the middle of the Post Headquarters well field. The magnitude of observed water-level changes was the greatest in test wells T-7, T-9, and in T-10 (table 2).

The chemical quality of the water samples collected during 1976 was similar to that of samples collected from the same sources in 1975.

*The pumpage figures used in this report are to be considered as preliminary figures and may be subject to revision.

Selected references

Cruz, R. R., 1976, Annual water-resources review, White Sands Missile Range, 1975: U.S. Geol. Survey open-file report, 39 p.

Kelly, T. E., 1973, Summary of ground-water data, Post Headquarters and adjacent areas, White Sands Missile Range, 1973: U.S. Geol. Survey open-file report, 66 p.