Department of Energy
Field Office, Albuquerque
Los Alamos Area Office
Los Alamos, New Mexico 87544

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0001 General

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. William K. Honker, P.E., Chief
RCRA Permits Branch
U. S. Environmental Protection Agency
Region 6
1445 Ross Ave., Suite 1200
Dallas, Texas 75202-2733

Dear Mr. Honker:

Subject: Water Level Maps for Los Alamos National Laboratory (LANL)

In accordance with your letters of July 19, 1994, and September 1, 1994, the U. S. Department of Energy and LANL are submitting the following information in support of the HSWA portion of the LANL's RCRA Permit.

1. Narrative entitled "Piezometric Maps for Los Alamos National Laboratory" with attachments.

2. Map entitled "LANL Main Aquifer Piezometric Surface for 31 December 1993."

3. Map entitled "LANL Main Aquifer Piezometric Surface for 1949 (Pre-development)."

4. Map entitled "LANL Intermediate Aquifer Well Locations."

5. Narrative entitled "Historic Trends of Water Levels in Main Aquifer Wells at Los Alamos" with attachments.

Please note that the enclosed maps have been developed on LANL's FIMAD System and may be enlarged if desired. Please call me at (505) 665-5027, or Bruce Gallaher of LANL's Water Quality and Hydrology Group at (505) 667-3040, if you or your staff have any questions regarding these items.

Sincerely,

for Joseph C. Vozella
Acting Asst. Area Manager
Office of Environment and Projects

LAAMEP:2JV-027

Enclosures

cc:
See page 2

12562

TL/CM

DEC 2 7 1994

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LANL, MS-K497
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J. White, ESH-19, LANL, MS-K497
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WQ&H File, LANL, MS-K497
CRM-4, LANL, MS-A150
K. McAda, EPD, AL

PIEZOMETRIC MAPS FOR LOS ALAMOS NATIONAL LABORATORY

A piezometric, or potentiometric, map is a two-dimensional representation of the piezometric surface for a specific hydrogeologic unit or aquifer. A recent piezometric map for the main aquifer beneath Los Alamos National Laboratory is shown in Figure 1, and was constructed from water level measurements taken on December 31, 1993. These water level data were obtained from test wells, production wells during non-pumping periods, and from springs that penetrate into the main aquifer. These water level data are summarized in Table 1. Figure 2 depicts the piezometric map for the main aquifer on or about 1949 (i.e., prior to Laboratory development), and was constructed from a regional piezometric map previously developed by the U.S. Geological Survey, Water Resources Division, Albuquerque. It is important to realize that both Figures 1 and 2 were constructed from a limited data set. Furthermore, most of these data are from water supply wells that represent vertically averaged "static" water levels over long screened intervals within the main aquifer. The remaining data are from test wells and springs that penetrate only the upper portions of the main aquifer. It should also be noted that a 1949 water level measurement from test well H-19 was used in Figure 1 because water levels in test well TW-4, located approximately one-half mile to the east, had not changed significantly in the last 45 years. Hence it was felt that levels in H-19 had probably not changed either. Unfortunately, well H-19 was abandoned and plugged shortly after it was drilled. Finally, it should be noted that well TW-2A was used in the construction of Figure 1 even though this well is tentatively listed as an intermediate perched aquifer well. If well TW-2A is omitted from Figure 1, no significant differences are observed.

The combined long-term influence of municipal water supply wells completed into the main aquifer can be inferred by a comparison of Figures 1 and 2. In general, this comparison suggests that the respective locations of the 5600, 5700, and 5800 foot piezometric contour lines have been displaced westward from their original positions. Near wells PM-1, PM-3, and O-1, and farther north toward wells G-1 through G-6, these contour line displacements vary between one and two miles. Historical water level trends confirm these general observations, as discussed elsewhere in this letter report. It is apparent that piezometric contour lines in the western and southern portions of the Laboratory are much closer to their original pre-development positions. In fact, one might even conclude that these small positional differences could be attributable to data interpretation. Likewise, the vertical differences in water levels in individual wells are much smaller in this region of the Laboratory. We conclude that, in general, piezometric contour lines have been displaced westward in response to municipal pumpage. Furthermore, these displacements are more pronounced in areas adjacent to production wells, and decrease as one moves laterally away from these production wells.

Confirmation of the above statements is reflected in recent pump test data. For example, a 1992 seven-day pump test at the LA-2 production well used LA-3 and LA-1B as observation wells. These observation wells are located 950 and 1200 feet, respectively, from LA-2. Drawdown data in these wells confirm that main aquifer cones of depression can be areally extensive and numerically significant. A complete description of this pump test is available in the Water Supply Report for 1992. Long-term recovery data from observation well LA-1B is even more significant, however, because it demonstrates that artesian conditions can be re-established within 12-24 months of well field abandonment, as suggested in Figure 3.

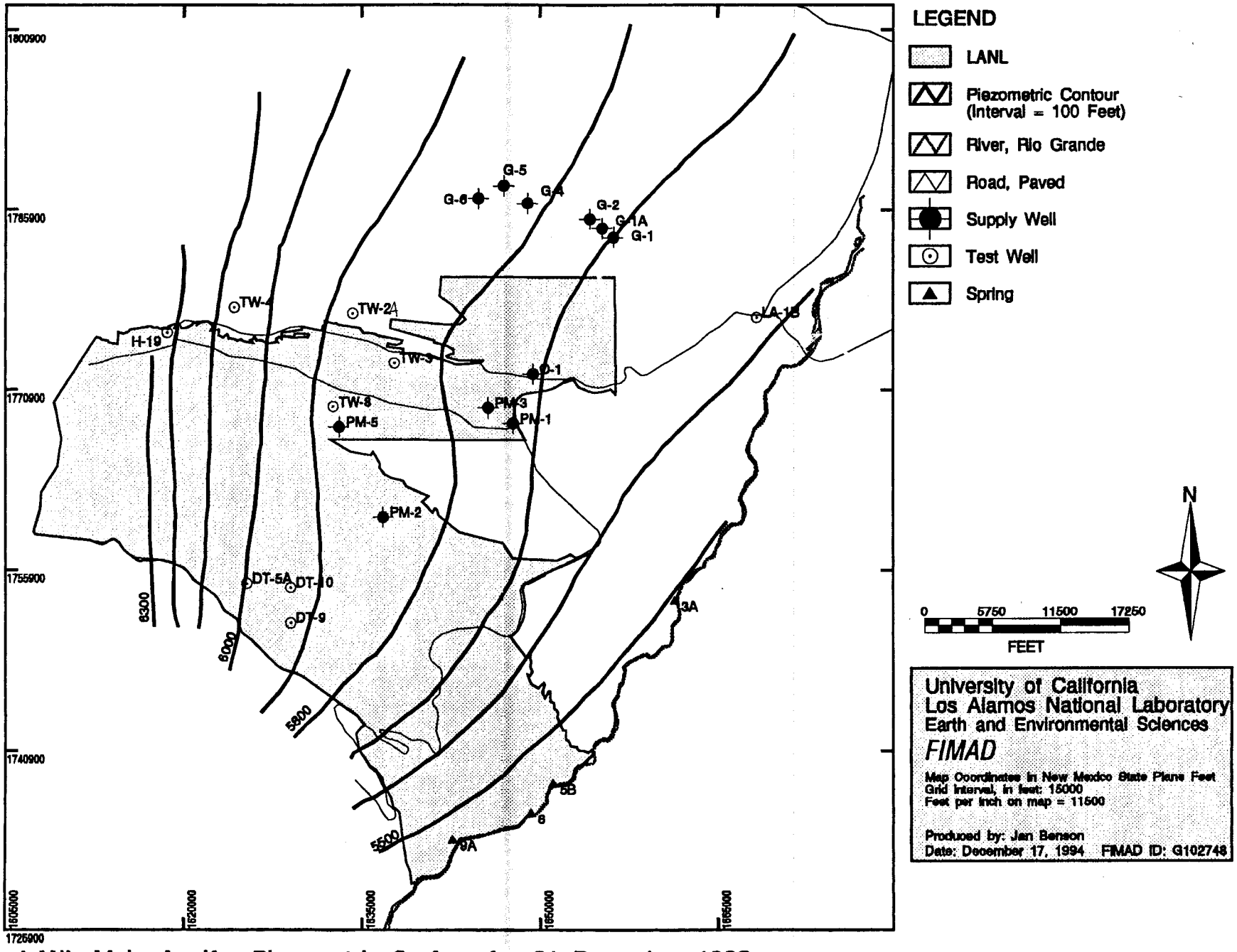
It is well known that the main aquifer below Los Alamos County is the only local aquifer that is capable of municipal water supply. As seen in Figure 1, the piezometric surface for the main aquifer rises westward from the Rio Grande within the Santa Fe Group, and extends into the lower part of the Puye Conglomerate beneath the central and western part of Pajarito Plateau. Depth-to-water in the main aquifer decreases from about 1200 feet along the western margin of the Laboratory, to about 600 feet at the eastern margin. Within the Laboratory boundary, this main aquifer is separated from water located within the alluvium and intermediate perched aquifer water by 350 to 620 feet of unsaturated tuff and volcanic sediments. These alluvial waters tend to be concentrated in stream channel deposits located within the upper reaches of Bayo, Pueblo, Los Alamos, Sandia, Mortendad, and Pajarito Canyons. Other canyons that cross Laboratory lands tend to contain little to no alluvial aquifer waters because ephemeral surface flows can not sustain them.

Water within the main aquifer is under artesian conditions near the Rio Grande, and under water table conditions in the western and central portions of Pajarito Plateau. There is a transition zone where the main aquifer goes from confined or partially confined to phreatic conditions; however, this transition zone has not been fully mapped. In addition, artesian pressure tends to increase with depth within the Santa Fe Group sediments below the Laboratory. According to Figure 1, the recharge area for the main aquifer is located along the western perimeter of the Laboratory. Historically, this recharge area has been considered to be located within the Sierra de los Valles, and to a lesser extent, within canyons cut into the western flanks of Pajarito Plateau. All of this information at least tentatively suggests that net annual recharge rates to the main aquifer are approximately equal to or slightly less than annual municipal water production volumes.

The areal extent of the intermediate perched aquifer within the Laboratory is currently undefined. In fact, only three wells are currently completed into this intermediate zone as seen in Figure 4 (i.e., wells TW-1A, TW-2A and LADP-3). Because of this general lack of information for the intermediate perched aquifer, no piezometric map was constructed for this hydrogeologic unit.

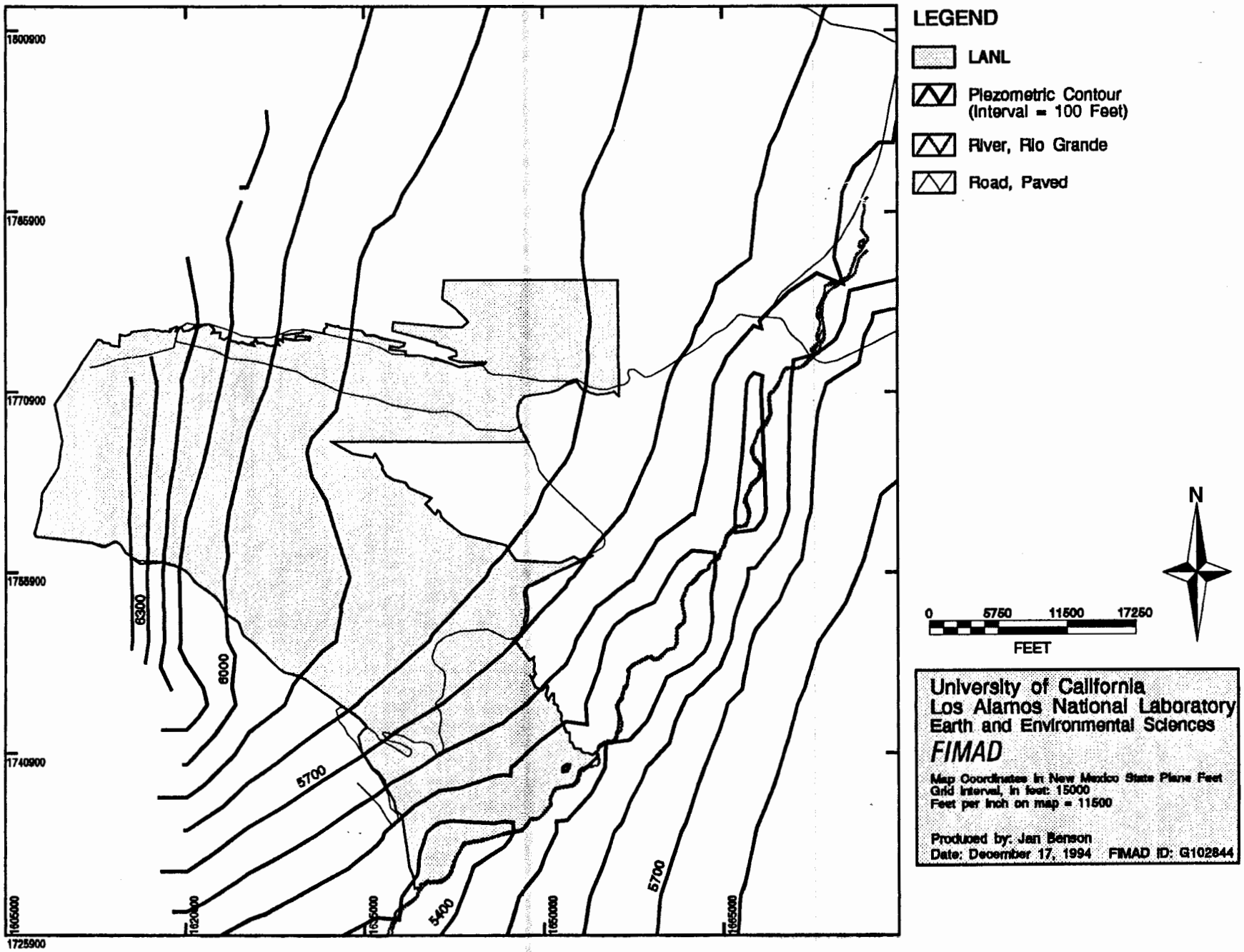
Table 1. Main aquifer water levels on 31 December 1993. All measurements are in feet above mean sea level.

Well No.	Water Level	Spring	Ground Level
G-1	5688	3A	5500
G-1A	5699	4A	5690
G-2	5697	5B	5480
G-4	5860	6	5480
G-5	5843	9A	5520
G-6	5850		
PM-1	5764		
PM-2	5845		
PM-3	5869		
PM-5	5873		
O-1	5692		
LA-1B	5631		
TW-2	5855		
TW-3	5818		
TW-4	6070		
TW-8	5885		
DT-5A	5961		
DT-9	5921		
DT-10	5923		
H-19	6228 (recorded Sept 1949)		



LANL Main Aquifer Piezometric Surface for 31 December 1993

Figure 1.



LANL Main Aquifer Piezometric Surface for 1949 (Pre-development)

Figure 2.

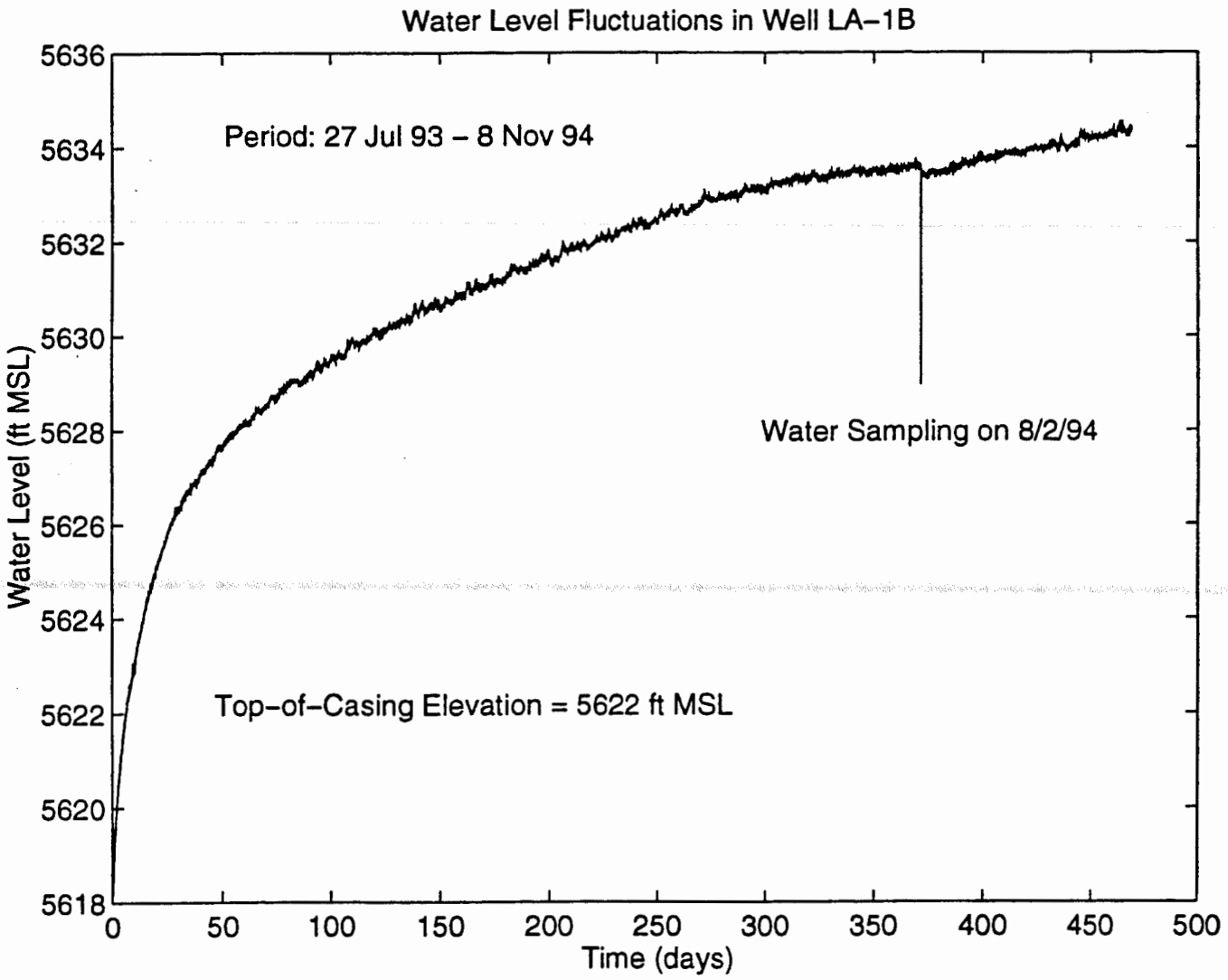
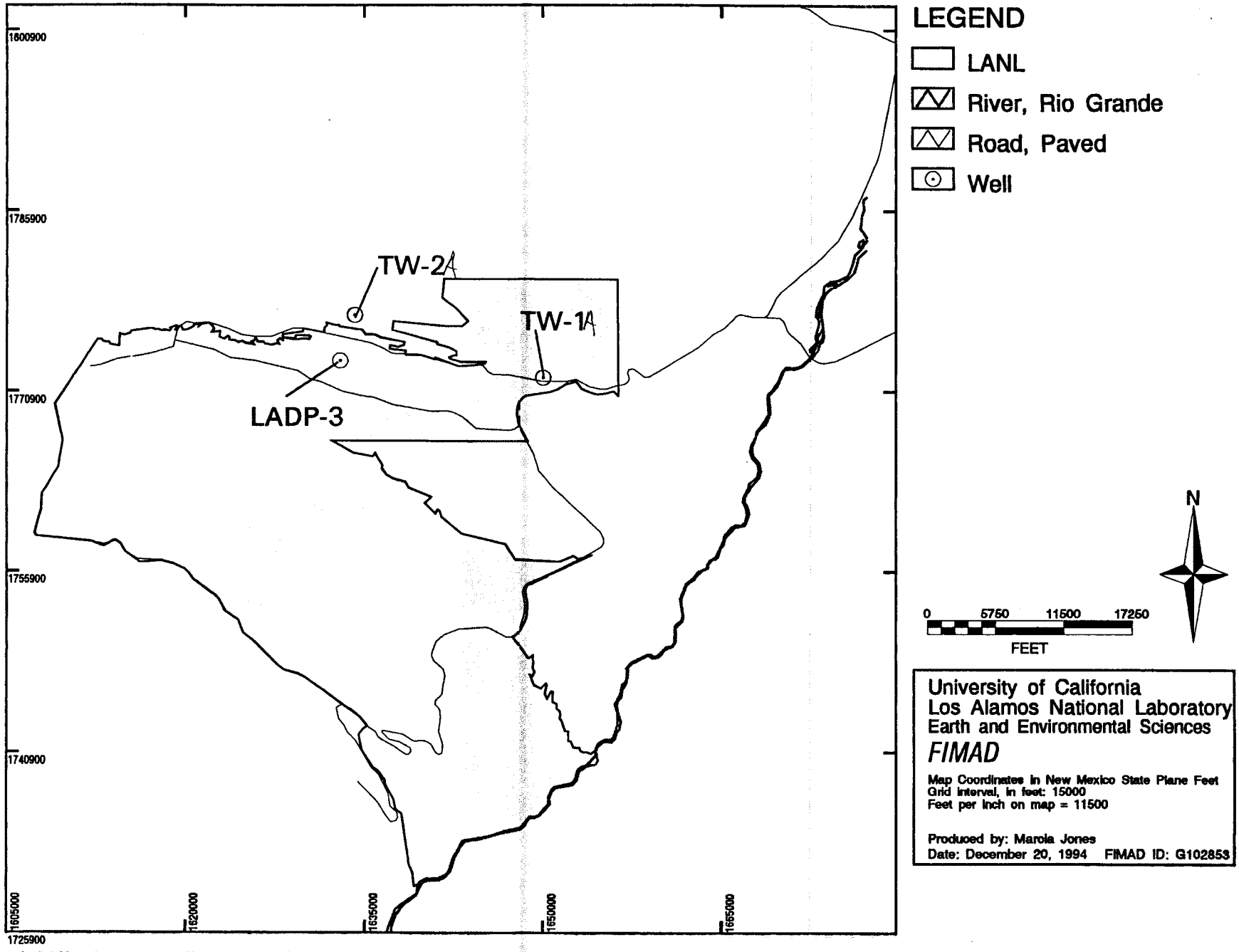

Water Level Fluctuations in Well LA–1B
Period: 27 Jul 93 – 8 Nov 94
Water Sampling on 8/2/94
Top–of–Casing Elevation = 5622 ft MSL
Water Level (ft MSL)
5636
5634
5632
5630
5628
5626
5624
5622
5620
5618
0
50
100
150
200
250
300
350
400
450
500
Time (days)

Figure 3.



LANL Intermediate Aquifer Well Locations

Figure 4.

Historic Trends Of Water Levels in Main Aquifer Wells at Los Alamos

Water levels have generally declined in wells in the main aquifer since the late 1940s when the first exploratory wells were drilled by the U. S. Geological Survey. These data have been documented in various reports over the years. This attachment compiles all the available water level data and summarizes the changes in graphic form.

The detailed data on water supply wells are presented as a series of tables in the "Appendix: Annual Statistics on Aquifer Characteristics." There is one table for each of the wells used as a water supply well at Los Alamos. Each table includes annual average information on the water produced as well as both non-pumping and pumping water levels. Notes on each table indicate information about the water level at time of completion of the well.

Two additional tables summarize the data for the Test Wells reaching the main aquifer. One table presents the annual static water levels as measured; the other table shows the calculated change in water level as compared to the level at time of completion.

A summary of the water level changes since the late 1940s is presented in several graphs. The water supply well field graphs are for the Los Alamos, Guaje, and Pajarito Well Fields. (No graph is available for the Otowi field as only one year of data is available for the single well Otowi-4, see tables.)

The levels in the Los Alamos Well field generally ranged from about 40 to 140 feet below initial levels until 1990 when the field was taken out of production. Since then levels have trended back toward initial conditions. The easternmost wells, which were artesian at completion have regained most of their levels; LA-1B has again become artesian.

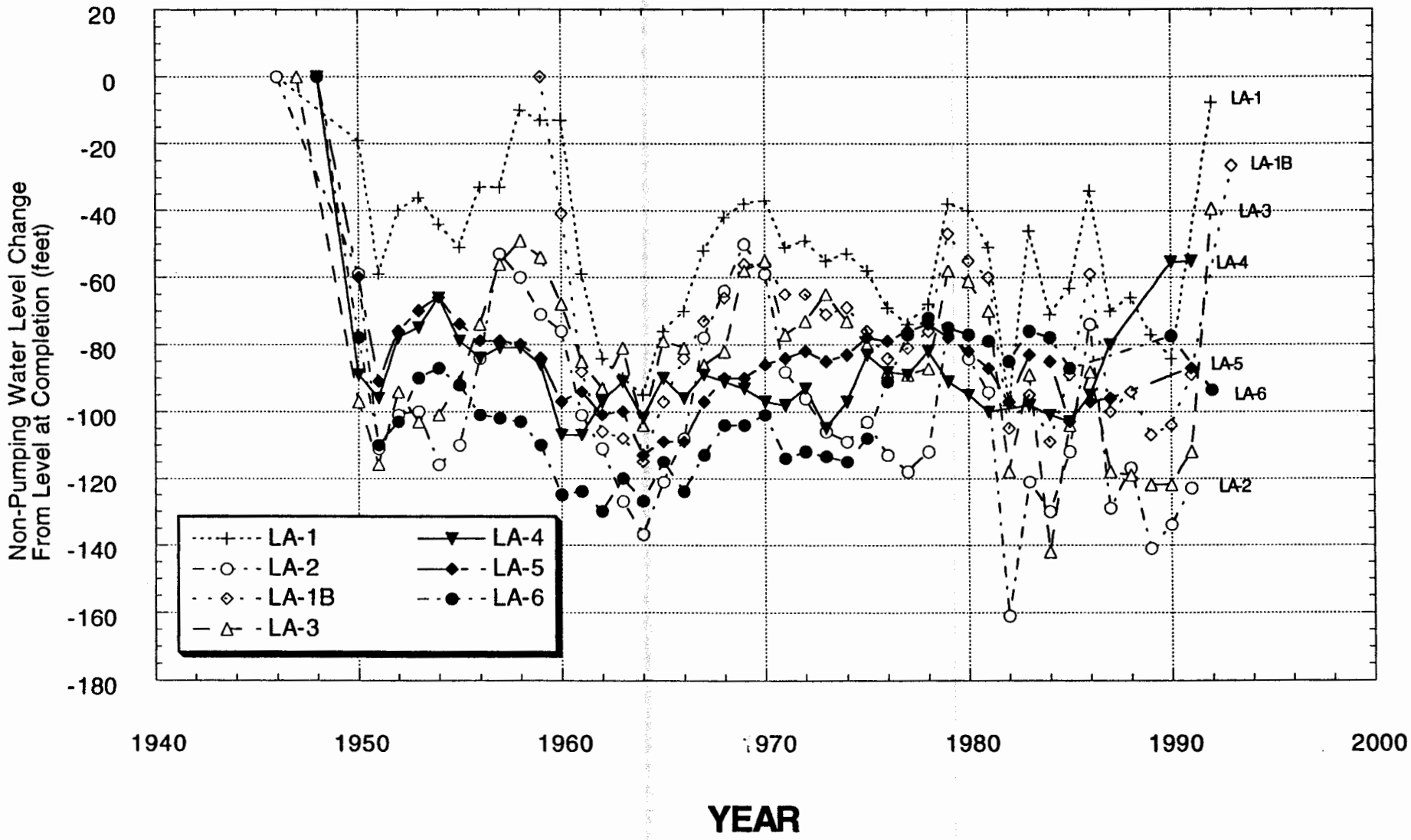
The levels in the Guaje field have ranged from almost no decline to about 120 feet of decline since 1950. In this field the westernmost wells show the least decline overall, and have recovered significantly in recent years with somewhat lower production. Wells G-4 and G-6 recovered significantly in the year 1993 when they were not pumped.

The Pajarito Field wells have always been the best producers, with generally much higher specific capacities. As expected, they show the least decline in water levels; since 1990 about 20 to 40 feet.

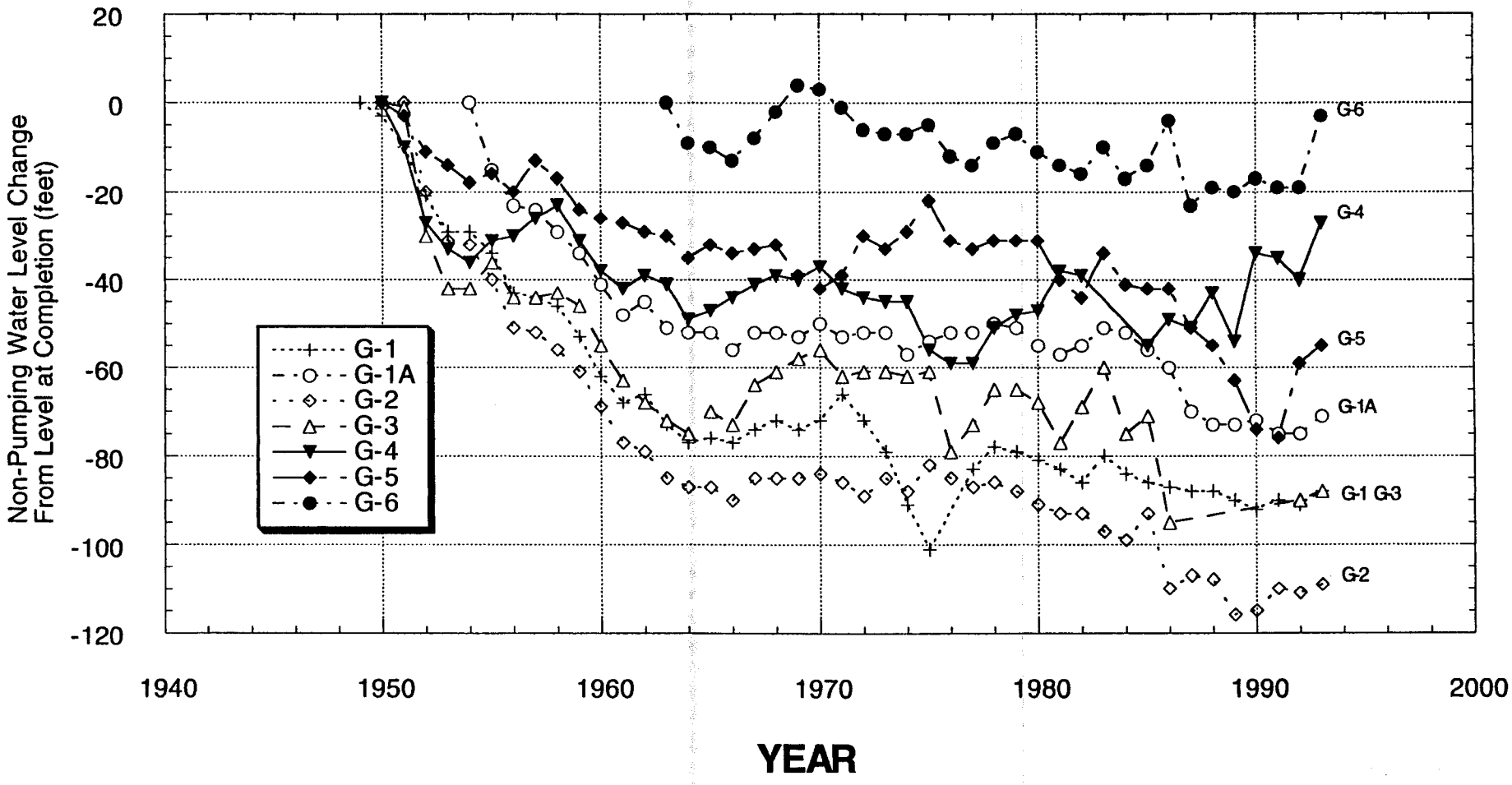
The test wells penetrating to the main aquifer show declines of less than 10 to about 35 feet over the 45-year period of record. They fall into geographic groups. The westernmost well, TW-4, shows less that 10 feet of change. The southernmost group of wells, DT-5A, DT-9, and DT-10, all located near TA-49, show a consistent decline of about 10 to 15 feet since 1960. The one well in the central part of the plateau, TW-8, shows a decline of about 25 feet, within the range of declines shown by the Pajarito Field supply wells. The north-central wells, TW-2 and TW-3, both show about 35 feet of decline over the 45-year period of record.

One test well, TW-1, shows an apparent increase in water level, and is depicted on a separate graph. The anomalous behavior of this well is not understood, and is under investigation. A detailed discussion of some preliminary tests to determine possible reason for its behavior are discussed in the two most recently published Environmental Surveillance Reports for Los Alamos. There is some indication of communication with the surface as reflected by low level tritium measurements (Sec VII.C.1, "Environmental Surveillance at Los Alamos During 1992," Los Alamos National Laboratory Report LA-12764-ENV, issued July 1994.)

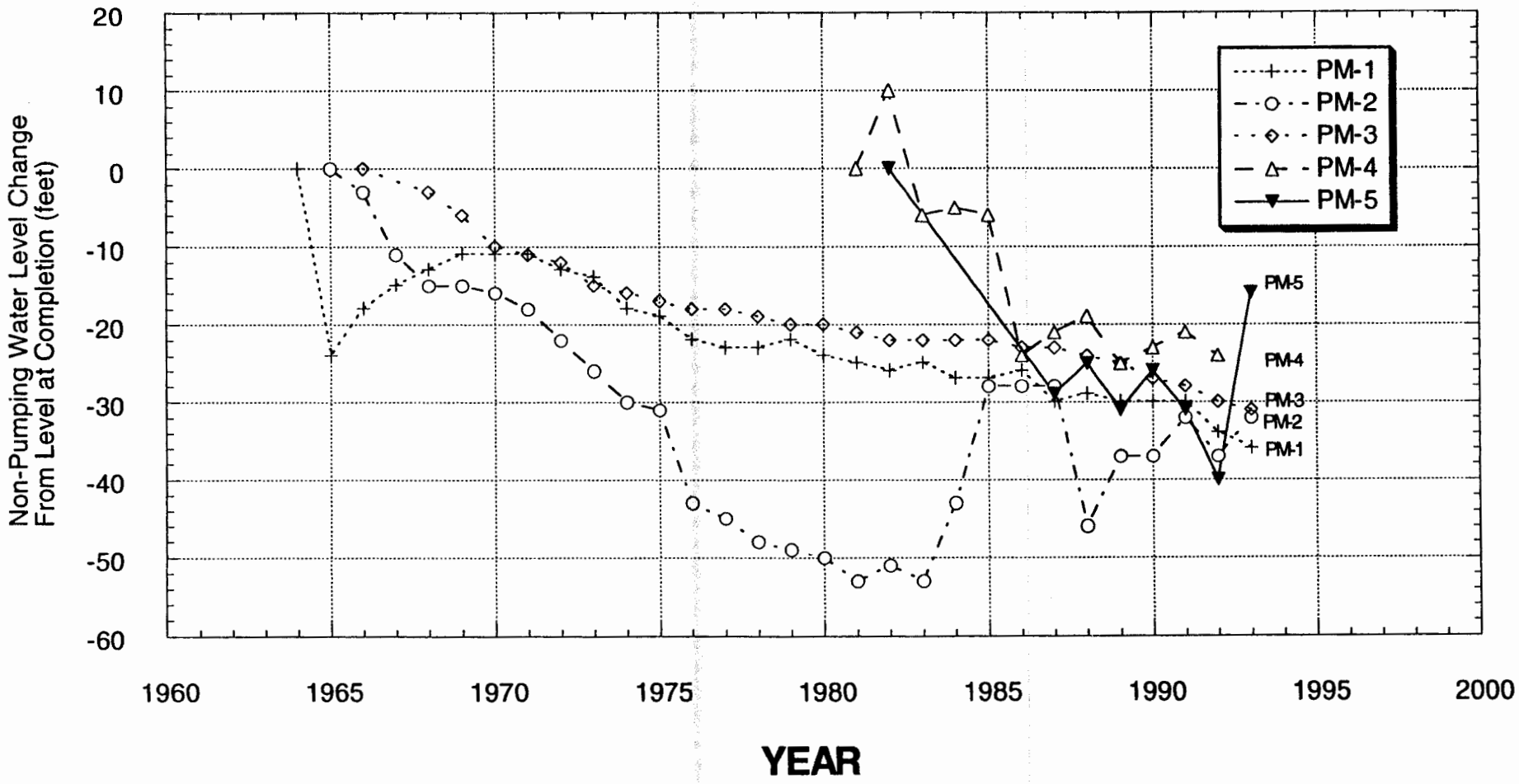
Los Alamos Well Field

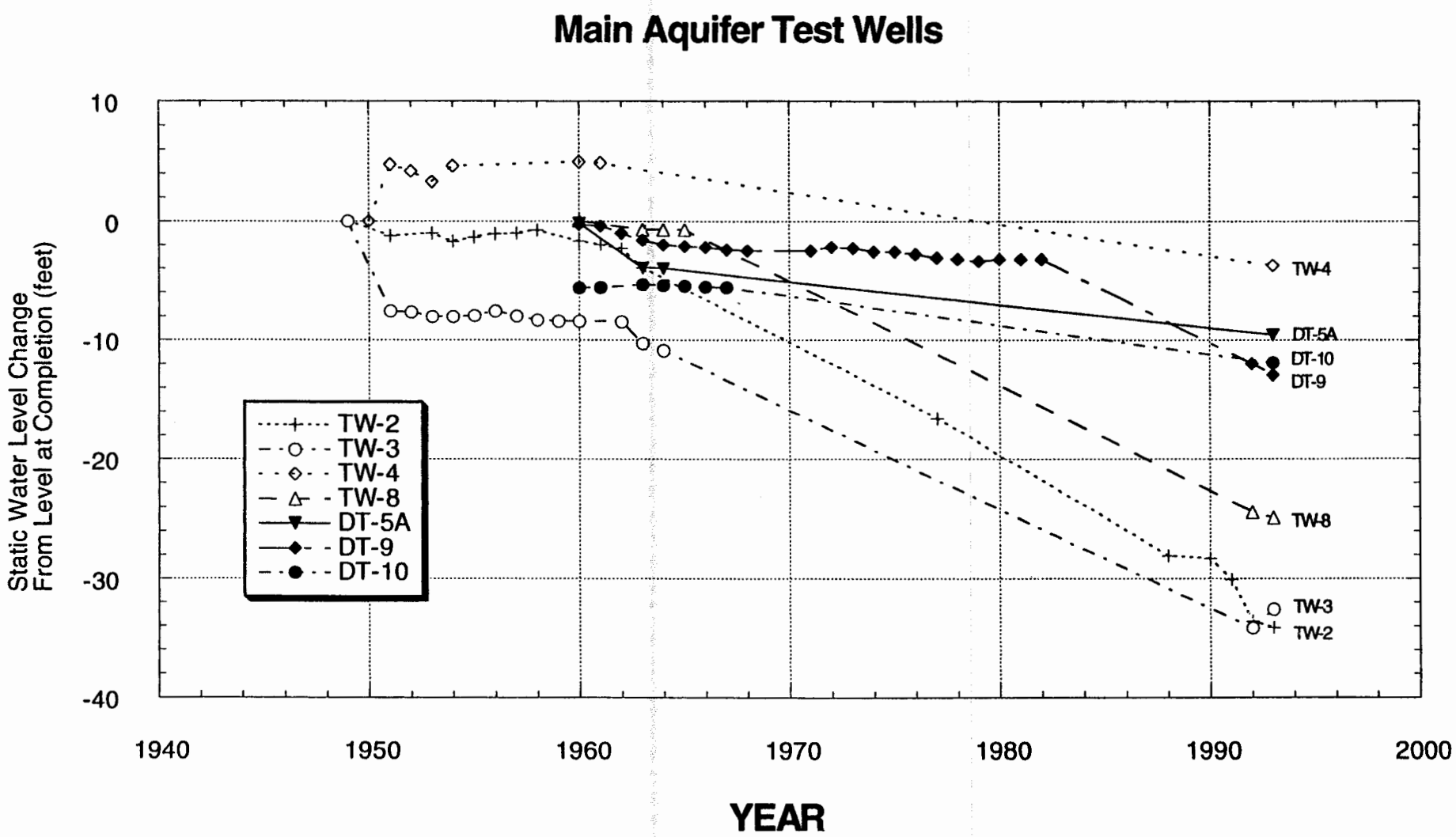


Guaje Well Field

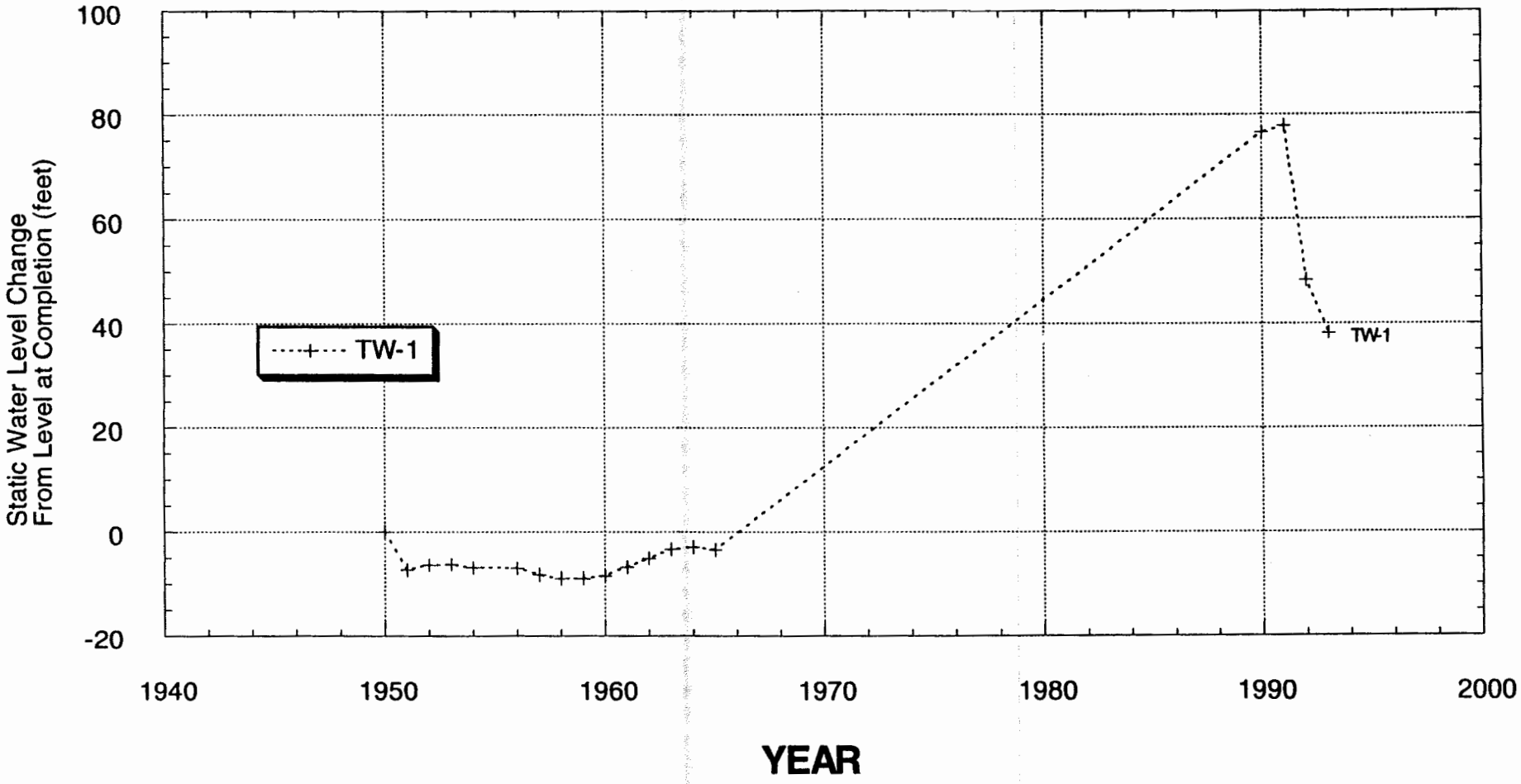


Pajarito Well Field




Main Aquifer Test Wells
Static Water Level Change
From Level at Completion (feet)
10
0
-10
-20
-30
-40
1940
1950
1960
1970
1980
1990
2000
YEAR
TW-2
TW-3
TW-4
TW-8
DT-5A
DT-9
DT-10
TW-4
DT-5A
DT-10
DT-9
TW-8
TW-3
TW-2

Main Aquifer Test Well 1



Appendix

Annual Statistics on Aquifer Characteristics

Well LA-1

Year	Pumping Time (h)	Production (10^6 gal.)	Pumping Rate (gpm)	Water Level (Nonpumping) (ft)
1947	3,468	54.0	259.5	›
1948	2,988	34.7	193.6	›
1949	1,361	26.7	327.0	›
1950	563	10.5	310.8	19.0
1951	1,215	14.6	200.3	59.0
1952	286	3.4	198.1	40.0
1953	0	0.0	0.0	36.0
1954	0	0.0	0.0	44.0
1955	690	9.7	234.3	51.0
1956	39	0.0	0.0	33.0
1957	0	0.0	0.0	33.0
1958	0	0.0	0.0	10.0
1959	0	0.0	0.0	13.0
1960	0	0.0	0.0	13.0
1961	0	0.0	0.0	59.0
1962	0	0.0	0.0	84.0
1963	0	0.0	0.0	90.0
1964	0	0.0	0.0	95.0
1965	0	0.0	0.0	76.0
1966	0	0.0	0.0	70.0
1967	0	0.0	0.0	52.0
1968	0	0.0	0.0	42.0
1969	0	0.0	0.0	38.0
1970	0	0.0	0.0	37.0
1971	0	0.0	0.0	51.0
1972	0	0.0	0.0	49.0
1973	0	0.0	0.0	55.0
1974	0	0.0	0.0	53.0
1975	0	0.0	0.0	58.0
1976	0	0.0	0.0	69.0
1977	0	0.0	0.0	74.0
1978	0	0.0	0.0	68.0
1979	0	0.0	0.0	38.0
1980	0	0.0	0.0	40.0
1981	0	0.0	0.0	51.0
1982	0	0.0	0.0	98.0
1983	0	0.0	0.0	46.0
1984	0	0.0	0.0	71.0
1985	0	0.0	0.0	63.0
1986	0	0.0	0.0	34.0
1987	0	0.0	0.0	70.0
1988	0	0.0	0.0	66.0
1989	0	0.0	0.0	77.0
1990	0	0.0	0.0	84.0

NOTE: Well completed Nov. 1946; initial water level: flowing; surface elev. 5624. Air line and recorder were removed in 1990; water level on 3/12/92 was 7.61 ft below top of brass valve. Facility was demolished in 1990 and the well plugged in 1993.

Well LA-1B

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1960	415	36.3	1,457.8	7.0	111.0	104.0	14.0
1961	3,727	124.7	557.6	54.0	154.0	100.0	5.6
1962	3,936	129.1	546.7	72.0	169.0	97.0	5.6
1963	3,649	117.4	536.2	74.0	170.0	96.0	5.6
1964	4,174	130.3	520.3	81.0	183.0	102.0	5.1
1965	3,007	97.9	542.6	63.0	170.0	107.0	5.1
1966	2,589	83.9	540.1	50.0	169.0	119.0	4.5
1967	2,519	84.9	561.7	39.0	153.0	114.0	4.9
1968	2,183	74.0	565.0	32.0	147.0	115.0	4.9
1969	2,244	75.7	562.2	22.0	142.0	120.0	4.7
1970	2,369	79.7	560.7	22.0	143.0	121.0	4.6
1971	2,633	89.1	564.0	31.0	162.0	131.0	4.3
1972	2,215	75.3	566.6	31.0	163.0	132.0	4.3
1973	2,628	87.2	553.0	37.0	170.0	133.0	4.2
1974	2,282	73.9	539.7	35.0	161.0	126.0	4.3
1975	2,308	74.4	537.3	42.0	168.0	126.0	4.3
1976	2,521	79.6	526.2	50.0	176.0	126.0	4.2
1977	2,782	84.2	504.4	47.0	167.0	120.0	4.2
1978	2,306	75.6	546.3	42.0	162.0	120.0	4.6
1979	1,354	45.9	564.6	13.0	134.0	121.0	4.7
1980	1,955	62.9	536.3	21.0	146.0	125.0	4.3
1981	2,299	73.9	537.7	26.0	144.0	118.0	4.5
1982	3,707	108.1	486.0	71.0	180.0	109.0	4.5
1983	407	12.1	495.0	61.0	160.0	99.0	5.0
1984	2,673	96.9	604.0	75.0	201.0	126.0	4.8
1985	1,919	68.5	595.0	55.0	179.0	124.0	4.8
1986	1,598	54.9	573.0	25.0	144.0	119.0	4.8
1987	2,753	97.3	589.0	66.0	187.0	121.0	4.9
1988	2,187	75.4	574.0	60.0	192.0	132.0	4.4
1989	2,864	97.8	569.0	73.0	197.0	124.0	4.6
1990	2,072	68.6	552.0	70.0	196.0	126.0	4.4
1991	1,488	50.4	565.0	55.0	180.0	125.0	4.5

NOTE: Well completed Mar. 1960; initial water level: +34 ft artesian pressure; surface elev. 5622. Well was out of service in 1992; the well and pump were transfered to San Ildefonso Pueblo in 1992.

Well LA-2

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1947	963	27.6	477.7				
1948	3,659	59.3	270.1				
1949	1,654	41.8	421.2				
1950	614	15.6	423.5	59.0	285.0	226.0	1.9
1951	2,415	57.7	398.2	111.0	305.0	194.0	2.1
1952	1,980	46.3	389.7	101.0	300.0	199.0	2.0
1953	2,201	47.2	357.4	100.0	301.0	201.0	1.8
1954	2,601	56.8	364.0	116.0			
1955	2,223	49.4	370.4	110.0			
1956	1,805	44.2	408.1	84.0			
1957	1,066	29.6	462.8	53.0	277.0	224.0	2.1
1958	1,166	31.1	444.5	60.0	270.0	210.0	2.1
1959	1,599	40.7	424.2	71.0	303.0	232.0	1.8
1960	2,169	51.6	396.5	76.0	305.0	229.0	1.7
1961	2,149	44.4	344.3	101.0	313.0	212.0	1.6
1962	1,823	35.7	326.4	111.0	314.0	203.0	1.6
1963	1,999	40.7	339.3	127.0	332.0	205.0	1.7
1964	1,924	34.2	296.3	137.0	347.0	210.0	1.4
1965	1,911	39.8	347.1	121.0	330.0	209.0	1.7
1966	1,070	21.4	333.3	108.0	340.0	232.0	1.4
1967	238	4.9	343.1	78.0	304.0	226.0	1.5
1968	502	11.3	375.2	64.0	305.0	241.0	1.6
1969	155	3.8	408.6	50.0	297.0	247.0	1.7
1970	341	7.2	351.9	59.0	310.0	251.0	1.4
1971	1,787	31.8	296.6	88.0	318.0	230.0	1.3
1972	2,189	39.3	299.2	96.0	322.0	226.0	1.3
1973	2,625	46.7	296.5	106.0	334.0	228.0	1.3
1974	2,033	36.8	301.7	109.0	325.0	216.0	1.4
1975	2,310	40.2	290.0	103.0	320.0	217.0	1.3
1976	2,488	39.9	267.3	113.0	322.0	209.0	1.3
1977	2,775	42.5	255.3	118.0	314.0	196.0	1.3
1978	2,299	39.5	286.4	112.0	338.0	226.0	1.3
1979	1,353	26.2	323.0	75.0	316.0	241.0	1.3
1980	1,960	33.8	287.4	84.0	318.0	234.0	1.2
1981	1,991	34.4	300.0	94.0	336.0	242.0	1.2
1982	3,174	51.2	269.0	161.0	348.0	187.0	1.4
1983	2,752	54.5	330.0	121.0	321.0	200.0	1.6
1984	2,753	53.7	325.0	130.0	323.0	193.0	1.7
1985	2,027	37.1	305.0	112.0	291.0	179.0	1.7
1986	1,289	24.1	312.0	74.0	252.0	178.0	1.8
1987	2,619	39.6	252.0	129.0	319.0	190.0	1.3
1988	1,936	33.0	284.0	117.0	296.0	179.0	1.6
1989	2,647	43.2	272.0	141.0	329.0	188.0	1.4
1990	2,399	40.3	280.0	134.0	330.0	196.0	1.4
1991	1,705	32.7	320.0	123.0	333.0	210.0	1.5
1992		13.4					
1993		3.6					

NOTE: Well completed Dec. 1946; initial water level: flowing; surface elev. 5651.
In 1992 the well was out of service to supply water to Los Alamos; 1992 production was for road construction; the well and pump were transfered to San Ildefonso Pueblo in 1992.

Well LA-3

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1947	1,476	64.9	732.8				
1948	3,647	82.5	377.0				
1949	1,505	41.7	461.8				
1950	2,793	57.8	344.9	97.0	231.0	134.0	2.6
1951	3,554	66.9	313.7	116.0	233.0	117.0	2.7
1952	2,514	58.6	388.5	94.0	218.0	124.0	3.1
1953	3,104	69.7	374.2	103.0	229.0	126.0	3.0
1954	2,595	57.3	368.0	101.0	225.0	124.0	3.0
1955	2,195	48.7	369.8	91.0	226.0	135.0	2.7
1956	1,849	42.1	379.5	74.0	222.0	148.0	2.6
1957	1,080	26.1	402.8	56.0	219.0	163.0	2.5
1958	1,612	33.6	347.4	49.0	225.0	176.0	2.0
1959	1,821	35.0	320.3	54.0	231.0	177.0	1.8
1960	2,174	38.4	294.4	68.0	230.0	162.0	1.8
1961	1,939	34.7	298.3	85.0	189.0	104.0	2.9
1962	2,361	45.4	320.5	93.0	192.0	99.0	3.2
1963	2,128	42.5	332.9	81.0	197.0	116.0	2.9
1964	2,574	50.4	326.3	104.0	217.0	113.0	2.9
1965	1,961	43.3	368.9	79.0	220.0	141.0	2.6
1966	2,236	46.1	343.6	81.0	219.0	138.0	2.5
1967	2,274	47.4	347.4	86.0	218.0	132.0	2.6
1968	2,127	42.7	334.6	82.0	251.0	169.0	2.0
1969	2,072	40.1	322.6	58.0	246.0	188.0	1.7
1970	2,303	44.0	318.4	55.0	241.0	186.0	1.7
1971	2,556	45.4	296.0	77.0	250.0	173.0	1.7
1972	2,205	39.7	300.1	73.0	251.0	178.0	1.7
1973	977	20.3	346.3	65.0	248.0	183.0	1.9
1974	2,291	43.5	316.5	73.0	244.0	171.0	1.9
1975	2,306	43.3	313.0	80.0	253.0	173.0	1.8
1976	2,474	42.3	285.0	88.0	260.0	172.0	1.7
1977	2,779	47.3	283.7	89.0	248.0	159.0	1.8
1978	2,308	42.4	306.4	87.0	250.0	163.0	1.9
1979	1,343	28.1	348.1	58.0	243.0	185.0	1.9
1980	1,952	35.1	299.9	61.0	237.0	176.0	1.7
1981	2,297	41.5	301.1	70.0	240.0	170.0	1.8
1982	3,691	54.9	247.0	118.0	246.0	128.0	1.9
1983	949	14.7	258.0	89.0	203.0	129.0	2.0
1984	838	16.6	329.0	142.0	301.0	159.0	2.0
1985	2,078	41.9	336.0	104.0	280.0	176.0	1.9
1986	1,328	26.9	338.0	88.0	255.0	167.0	2.0
1987	2,710	50.9	313.0	118.0	289.0	171.0	1.8
1988	2,130	40.1	313.0	119.0	272.0	153.0	2.0
1989	2,808	51.9	308.0	122.0	298.0	176.0	1.8
1990	2,461	44.6	302.0	122.0	295.0	173.0	1.8
1991	1,398	23.4	278.0	112.0	284.0	172.0	1.6

NOTE: Well completed May 1947; initial water level: flowing; surface elev. 5672.
Air line and recorder were removed in late 1991; water level on 3/13/92 was 39.55 ft below brass valve.
Well was out of service in 1992; the facility was demolished in 1992; well was transfered to San Ildefonso in 1992 and was plugged in 1993.

Well LA-4

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1948	1,570	42.7	453.3				
1949	940	37.5	664.9				
1950	4,350	164.9	631.8	278.0	353.0	75.0	8.4
1951	4,909	173.6	589.4	285.0	357.0	72.0	8.2
1952	3,429	119.6	581.3	267.0	339.0	72.0	8.1
1953	3,034	109.1	599.3	264.0	335.0	71.0	8.4
1954	2,133	78.2	611.0	255.0	329.0	74.0	8.3
1955	2,647	94.5	595.0	268.0	341.0	73.0	8.2
1956	3,402	120.0	588.9	273.0	346.0	73.0	8.1
1957	2,844	105.4	617.7	270.0	345.0	75.0	8.2
1958	2,973	110.3	618.3	270.0	342.0	72.0	8.6
1959	3,084	113.5	613.4	275.0	346.0	71.0	8.6
1960	4,084	145.6	594.2	296.0	365.0	69.0	8.6
1961	3,687	129.7	586.3	296.0	365.0	69.0	8.5
1962	3,688	129.3	584.3	286.0	359.0	73.0	8.0
1963	3,718	130.5	585.0	280.0	351.0	71.0	8.2
1964	4,500	155.0	574.1	291.0	361.0	70.0	8.2
1965	3,110	111.4	597.0	279.0	349.0	70.0	8.5
1966	3,279	115.6	587.6	285.0	356.0	71.0	8.3
1967	2,127	77.1	604.1	278.0	350.0	72.0	8.4
1968	2,276	81.7	598.3	280.0	351.0	71.0	8.4
1969	1,694	61.8	608.0	282.0	358.0	76.0	8.0
1970	2,333	83.5	596.5	286.0	363.0	77.0	7.7
1971	2,519	89.0	588.9	287.0	373.0	86.0	6.8
1972	2,322	82.6	592.9	282.0	367.0	85.0	7.0
1973	2,616	92.4	588.7	294.0	377.0	83.0	7.1
1974	2,306	82.2	594.1	286.0	367.0	81.0	7.3
1975	2,319	82.3	591.5	272.0	355.0	83.0	7.1
1976	2,802	98.2	584.1	277.0	373.0	96.0	6.1
1977	2,741	96.4	586.2	278.0	374.0	96.0	6.1
1978	2,248	80.1	594.2	271.0	368.0	97.0	6.1
1979	2,964	104.6	587.9	280.0	376.0	96.0	6.1
1980	3,322	115.3	578.5	284.0	385.0	101.0	5.7
1981	2,573	89.4	579.1	289.0	393.0	104.0	5.6
1982	0	0	0				
1983	1,840	61.5	577.0	287.0	392.0	105.0	5.3
1984	2,695	87.1	539.0	290.0	383.0	93.0	5.8
1985	2,667	86.4	540.0	292.0	378.0	86.0	6.3
1986	1,172	38.8	552.0	284.0	377.0	93.0	5.9
1987	38	1.6		269.0	357.0	88.0	

NOTE: Well completed Aug. 1948; initial water level 189 ft.; surface elev. 5975.
Well out of service in 1988. Air line and recorder were removed in 1990; water level was 244.4 ft on 6/22/90 and 244.2 ft on 3/11/91, both measurements were below top of brass valve. Facilities demolished in 1992 and well was transferred to San Ildefonso Pueblo in 1992.

Well LA-5

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1948	1,171	40.4	575.0				
1949	1,763	58.5	553.0				
1950	4,052	130.1	535.1	131.0	254.0	123.0	4.4
1951	6 004	187.4	520.2	162.0	272.0	110.0	4.7
1952	3,425	109.6	533.3	147.0	259.0	112.0	4.8
1953	3,278	103.9	528.3	141.0	257.0	116.0	4.6
1954	2,546	80.1	524.4	137.0	259.0	122.0	4.3
1955	3,158	97.3	513.5	145.0	267.0	122.0	4.2
1956	3,476	104.5	501.1	150.0	276.0	126.0	4.0
1957	2,868	86.0	499.8	150.0	277.0	127.0	3.9
1958	3,009	89.9	498.0	151.0	277.0	126.0	4.0
1959	3,088	93.5	504.6	155.0	280.0	125.0	4.0
1960	4,088	119.1	485.6	168.0	288.0	120.0	4.0
1961	3,534	100.3	473.0	165.0	288.0	123.0	3.8
1962	3,735	107.7	480.6	172.0			
1963	3,726	105.0	469.7	171.0			
1964	4,236	118.8	467.4	184.0			
1965	1,740	50.5	483.7	180.0			
1966	2,817	79.3	469.2	180.0			
1967	2,533	73.7	484.9	168.0			
1968	2,233	63.3	472.5	161.0	300.0	139.0	3.4
1969	2,402	68.5	475.3	161.0	298.0	137.0	3.5
1970	2,353	66.1	468.2	157.0	300.0	143.0	3.3
1971	2,659	74.4	466.3	155.0	302.0	147.0	3.2
1972	2,301	64.4	466.5	153.0	304.0	151.0	3.1
1973	2,476	68.3	459.7	156.0	308.0	152.0	3.0
1974	1,903	52.5	459.8	154.0	306.0	152.0	3.0
1975	2,318	63.9	459.4	149.0	309.0	160.0	2.9
1976	2,799	77.6	462.1	150.0	310.0	160.0	2.9
1977	2,665	74.8	467.8	147.0	303.0	156.0	3.0
1978	2,274	64.9	475.8	145.0	299.0	154.0	3.1
1979	2,964	84.0	472.4	149.0	301.0	152.0	3.1
1980	3,316	92.2	463.6	153.0	300.0	147.0	3.2
1981	3,523	96.5	456.5	158.0	304.0	146.0	3.1
1982	3,654	102.3	467.0	168.0	299.0	136.0	3.4
1983	2,842	78.1	458.0	154.0	295.0	141.0	3.2
1984	2,889	72.1	416.0	156.0	281.0	125.0	3.1
1985	2,153	55.8	432.0	174.0	308.0	134.0	3.2
1986	1,376	34.6	419.0	168.0	310.0	142.0	2.9
1987	1,148	27.9	405.0	167.0	314.0	147.0	2.8
1988	351	9.9	406.0				
1989	1,074	26.5	411.0				
1990	1,388	33.3	400.0				
1991	783	18.5	394				

NOTE: Well completed Sept. 1948; initial e\water level 71 ft.; surface elev. 5840.
Air line and recorder were removed in late 1991; water level on 12/4/91 (TV Log) was 158 ft below top of pump base (5,856.5 ft). Well out of service in 1992; well and pump transfered to San Ildefonso Pueblo in 1992.

Well LA-6

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1948	116	4.9	704.0				
1949	2,451	95.8	651.4				
1950	4,490	167.9	623.2	83.0	136.0	53.0	11.8
1951	5 882	201.6	571.2	115.0	160.0	45.0	12.7
1952	3,168	110.3	580.3	108.0	151.0	43.0	13.5
1953	3,177	113.8	597.0	95.0	139.0	44.0	13.6
1954	2,894	107.1	616.8	92.0	135.0	43.0	14.3
1955	2,911	108.0	618.3	97.0	140.0	43.0	14.4
1956	3,438	125.8	609.9	106.0	149.0	43.0	14.2
1957	2,833	102.4	602.4	107.0	152.0	45.0	13.4
1958	2,957	106.9	602.5	108.0	131.0	43.0	14.0
1959	3,096	108.3	583.0	115.0	158.0	43.0	13.6
1960	4,084	138.6	565.6	130.0	172.0	42.0	13.5
1961	3,284	112.5	571.0	129.0	171.0	42.0	13.6
1962	3,886	129.4	555.0	135.0	175.0	40.0	13.9
1963	2,953	102.9	580.8	125.0	171.0	46.0	12.6
1964	4,244	138.3	543.1	132.0	172.0	40.0	13.6
1965	3,145	103.8	550.1	120.0	160.0	40.0	13.8
1966	3,173	104.0	546.3	129.0	169.0	40.0	13.7
1967	2,511	85.4	566.8	118.0	158.0	40.0	14.2
1968	2,111	71.6	565.3	109.0	150.0	41.0	13.8
1969	2,402	81.6	566.2	109.0	151.0	42.0	13.5
1970	2,337	79.1	564.1	106.0	149.0	43.0	13.1
1971	2,472	82.5	556.2	119.0	160.0	41.0	13.6
1972	2,317	79.2	569.7	117.0	155.0	38.0	15.0
1973	2,638	90.6	572.4	118.4	155.0	37.0	15.5
1974	2,337	79.8	569.1	120.0	156.0	36.0	15.8
1975	1,571	51.9	550.6	113.0	151.0	38.0	14.5
1976	175	5.1	485.7	96.0			
1977	›	›	›	82.0			
1978	33	1.1	572.7	77.0	142.0	65.0	8.8
1979	6	0.2	555.6	80.0	146.0	66.0	8.4
1980	4	0.1	520.8	82.0	142.0	60.0	8.7
1981	2.3	0.08	579.8	84.0	141.0	57.0	10.2
1982				90.0			
1983				81.0			
1984				83.0			
1985				92.0			
1986							
1987		<0.1					
1988		<0.1					
1989		<0.1					
1990							

NOTE: Well completed Dec. 1948; initial water level 5 ft.; surface elev. 5770.
Airline and recorder were removed in 1990; water level on 5/9/90 was ~82.5 ft below LSD (5,770 ft); on 3/11/92 it was 98.35 below brass valve. Well out of service in 1977, but has been pumped since that time for quality of water samples. The pump was removed in 1990, the facility demolished in 1991, the well transfered to San Ildefonso Pueblo in 1992, and plugged in 1993.

Well G-1

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1950	0	2.80	0.0	195.0			
1951	1,168	37.70	538.0	202.0	309.0	107.0	5.0
1952	2,476	75.50	508.2	213.0	295.0	82.0	6.2
1953	3,275	97.30	495.2	221.0	292.0	71.0	7.0
1954	2,616	77.80	495.7	221.0	290.0	69.0	7.2
1955	2,406	70.50	448.4	226.0	295.0	69.0	7.1
1956	2,958	83.20	468.8	235.0	303.0	68.0	6.9
1957	2,098	55.90	444.1	236.0	307.0	71.0	6.3
1958	2,460	68.10	461.4	238.0	308.0	70.0	6.6
1959	2,952	82.40	465.2	245.0	314.0	69.0	6.7
1960	3,564	96.00	448.9	254.0	325.0	71.0	6.3
1961	4,236	112.40	442.2	260.0	333.0	73.0	6.1
1962	3,431	93.60	454.7	258.0	342.0	84.0	5.4
1963	4,519	114.90	423.8	265.0	348.0	83.0	5.1
1964	4,374	113.80	433.6	269.0	352.0	83.0	5.2
1965	3,530	90.70	428.2	268.0	352.0	84.0	5.1
1966	4,074	102.60	419.7	269.0	363.0	94.0	4.5
1967	2,615	69.90	445.5	266.0	362.0	96.0	4.6
1968	2,996	78.90	438.9	264.0	366.0	102.0	4.3
1969	2,657	68.30	428.4	266.0	376.0	110.0	3.9
1970	2,712	64.70	397.6	264.0	377.0	113.0	3.5
1971	2,908	67.90	389.2	258.0	378.0	120.0	3.2
1972	2,865	66.10	384.5	264.0	389.0	125.0	3.1
1973	2,997	67.50	375.4	271.0	403.0	132.0	2.8
1974	2,767	62.30	375.3	283.0	412.0	129.0	2.9
1975	2,467	55.70	376.3	293.0	411.0	118.0	3.2
1976	2,962	65.10	366.3				
1977	2,734	57.90	353.0	275.0	426.0	151.0	2.3
1978	2,656	56.00	351.4	270.0	419.0	149.0	2.4
1979	2,998	61.70	342.9	271.0	422.0	151.0	2.3
1980	3,459	68.30	329.0	273.0	428.0	155.0	2.1
1981	4,427	81.60	307.2	275.0	444.0	169.0	1.8
1982	3,678	69.00	313.0	278.0	443.0	165.0	1.9
1983	2,871	52.20	303.0	272.0	443.0	171.0	1.8
1984	3,804	62.80	275.0	276.0	448.0	172.0	1.5
1985	3,004	48.30	268.0	278.0	450.0	172.0	1.6
1986	2,027	30.30	249.0	279.0	450.0	171.0	1.5
1987	2,070	29.20	235.0	280.0	451.0	171.0	1.4
1988	395	5.40	227.0	280.0	445.0	165.0	1.4
1989	2,010	26.90	223.0	282.0	451.0	169.0	1.3
1990	2,121	30.80	242.0	284.0	454.0	170.0	1.4
1991	1,730	20.90	201.0	282.0	451.0	169.0	1.2
1992	1,077	12.00	186.0	283.0	439.0	156.0	1.2
1993	2.5	0.03	200.0	280.0			

NOTE: Well completed July 1950; initial water level 192 ft.; surface elev. 5973.

Well G-1A

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1954	108	4.6	709.0	›			
1955	1,531	53.0	577.0	265.0	316.0	51.0	11.3
1956	3,130	107.7	573.5	273.0	323.0	50.0	11.5
1957	2,470	87.0	587.0	274.0	327.0	53.0	11.1
1958	2,670	92.5	577.4	279.0	331.0	52.0	11.1
1959	2,965	102.7	577.3	284.0	333.0	49.0	11.8
1960	3,641	122.8	562.1	291.0	342.0	51.0	11.0
1961	4,297	147.3	571.3	298.0	350.0	52.0	11.0
1962	3,972	136.1	571.1	295.0	344.0	49.0	11.7
1963	4,525	149.7	551.4	301.0	350.0	49.0	11.3
1964	3,852	129.3	559.4	302.0	353.0	51.0	11.0
1965	3,505	116.5	554.0	302.0	353.0	51.0	10.9
1966	3,964	133.4	560.9	306.0	355.0	49.0	11.4
1967	2,720	91.3	559.4	302.0	351.0	49.0	11.4
1968	3,089	103.2	556.8	302.0	352.0	50.0	11.1
1969	2,695	90.7	560.9	303.0	356.0	53.0	10.6
1970	2,772	92.5	556.2	300.0	357.0	57.0	9.8
1971	3,313	111.8	562.4	303.0	361.0	58.0	9.7
1972	2,879	94.0	544.2	302.0	361.0	59.0	9.2
1973	2,760	87.9	530.8	302.0	362.0	60.0	8.8
1974	2,974	92.7	519.5	307.0	355.0	48.0	10.8
1975	2,740	85.3	518.9	304.0	351.0	47.0	11.0
1976	2,983	91.6	511.8	302.0	350.0	48.0	10.7
1977	2,942	88.7	502.5	302.0	350.0	48.0	10.5
1978	2,631	77.9	493.5	300.0	345.0	45.0	11.0
1979	2,974	88.0	493.9	301.0	345.0	44.0	11.0
1980	3,480	103.2	494.4	305.0	345.0	40.0	12.4
1981	4,212	131.2	519.1	307.0	347.0	40.0	13.0
1982	3,618	109.7	505.0	305.0	347.0	42.0	12.0
1983	2,901	86.7	498.0	301.0	336.0	35.0	14.2
1984	3,789	113.9	501.0	302.0	345.0	43.0	11.7
1985	4,430	128.4	483.0	306.0	348.0	42.0	11.5
1986	4,644	130.4	468.0	310.0	351.0	41.0	11.4
1987	4,468	122.5	457.0	320.0	362.0	42.0	10.9
1988	5,016	133.5	443.0	323.0	364.0	41.0	10.8
1989	4,663	131.5	470.0	323.0	359.0	36.0	13.1
1990	4,860	145.5	499.0	322.0	362.0	40.0	12.5
1991	5,120	150.2	489.0	325.0	361.0	36.0	13.6
1992	4,676	134.1	478.0	325.0	361.0	36.0	13.3
1993	3,862	108.2	467.0	321.0	355.0	34.0	13.7

NOTE: Well completed Dec. 1954; initial water level 250 ft.; surface elev. 6014.

Well G-2

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1951	123	3.9	528.5	259.0			›
1952	2,372	78.3	550.2	279.0	327.0	48.0	11.5
1953	3,254	105.6	540.9	290.0	334.0	44.0	12.3
1954	2,682	86.3	536.3	291.0	335.0	44.0	12.2
1955	2,487	78.8	528.1	299.0	345.0	46.0	11.5
1956	3,109	95.8	513.6	310.0	357.0	47.0	10.9
1957	2,458	76.1	516.0	311.0	360.0	49.0	10.5
1958	2,707	80.1	493.2	315.0	361.0	46.0	10.7
1959	2,938	84.6	479.9	320.0	363.0	43.0	11.2
1960	3,535	96.6	455.4	328.0	370.0	42.0	10.8
1961	3,982	105.3	440.7	336.0	375.0	39.0	11.3
1962	4,076	99.8	408.1	338.0	374.0	36.0	11.3
1963	4,563	105.7	386.1	344.0	379.0	35.0	11.0
1964	4,541	105.3	386.5	346.0	380.0	34.0	11.4
1965	3,535	82.6	389.4	346.0	381.0	35.0	11.1
1966	3,994	94.7	395.2	349.0	383.0	34.0	11.6
1967	2,743	67.6	410.7	344.0	379.0	35.0	11.7
1968	2,732	66.5	405.7	344.0	379.0	35.0	11.6
1969	2,679	68.6	426.8	344.0	381.0	37.0	11.5
1970	2,431	62.8	430.5	343.0	381.0	38.0	11.3
1971	3,420	87.4	425.9	345.0	384.0	39.0	10.9
1972	2,887	73.4	423.7	348.0	388.0	40.0	10.6
1973	2,816	72.4	428.5	344.0	385.0	41.0	10.5
1974	3,056	82.0	447.2	347.0	390.0	43.0	10.4
1975	2,724	74.5	455.8	341.0	384.0	43.0	10.6
1976	2,990	81.1	452.1	344.0	388.0	44.0	10.3
1977	2,981	80.4	449.5	346.0	388.0	42.0	10.7
1978	2,562	71.6	451.9	345.0	386.0	41.0	11.0
1979	2,975	80.0	448.0	347.0	388.0	41.0	11.0
1980	3,478	92.4	443.0	350.0	389.0	39.0	11.4
1981	1,432	38.3	445.8	352.0	390.0	38.0	11.7
1982	2,833	25.7	476.0	352.0	399.0	47.0	10.1
1983	624	16.5	441.0	356.0	399.0	43.0	10.3
1984	2,018	43.7	361.0	358.0	385.0	27.0	13.4
1985	4,339	96.6	371.0	352.0	381.0	29.0	12.8
1986	4,769	109.3	382.0	369.0	395.0	26.0	14.7
1987	4,526	109.7	404.0	366.0	399.0	33.0	12.2
1988	4,836	132.8	457.0	367.0	400.0	33.0	13.9
1989	4,820	133.9	463.0	375.0	408.0	33.0	14.0
1990	5,060	134.5	443.0	374.0	407.0	33.0	13.4
1991	4,792	123.3	428.0	369.0	401.0	32.0	13.4
1992	5,075	129.0	424.0	370.0	401.0	31.0	13.7
1993	3,871	97.1	418.0	368.0	399.0	31.0	13.5

NOTE: Well completed Aug. 1951; initial water level 259 ft.; surface elev. 6056.

Well G-3

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1951	192	7.3	633.7	281.0	›	›	›
1952	2,379	65.4	458.2	310.0	358.0	48.0	9.5
1953	3,192	76.4	398.9	322.0	360.0	38.0	10.5
1954	2,675	66.1	411.8	322.0	370.0	48.0	8.6
1955	2,369	69.4	488.3	316.0	368.0	52.0	9.4
1956	3,149	87.9	465.2	324.0	380.0	56.0	8.3
1957	2,517	70.2	464.8	324.0	385.0	61.0	7.6
1958	2,562	69.5	452.1	323.0	386.0	63.0	7.2
1959	2,931	74.6	424.2	326.0	395.0	69.0	6.1
1960	3,591	82.5	382.9	335.0	407.0	72.0	5.3
1961	3,612	79.9	368.7	343.0	414.0	71.0	5.2
1962	4,057	83.7	343.9	348.0	418.0	70.0	4.9
1963	4,555	86.7	317.2	352.0	422.0	70.0	4.5
1964	4,487	78.6	292.0	355.0	424.0	69.0	4.2
1965	3,498	65.6	312.6	350.0	419.0	69.0	4.5
1966	3,991	73.7	307.8	353.0	420.0	67.0	4.6
1967	2,752	52.9	320.4	344.0	418.0	74.0	4.3
1968	3,086	56.5	305.1	341.0	418.0	77.0	4.0
1969	2,672	50.8	316.9	338.0	417.0	79.0	4.0
1970	2,736	55.4	337.5	336.0	419.0	83.0	4.1
1971	3,337	64.2	320.6	342.0	423.0	81.0	4.0
1972	2,838	50.9	298.9	341.0	421.0	80.0	3.7
1973	2,843	47.3	277.3	341.0	418.0	77.0	3.6
1974	3,006	49.3	273.3	342.0	424.0	82.0	3.3
1975	2,632	43.1	272.9	341.0	428.0	87.0	3.1
1976	2,971	82.6	463.4	359.0	447.0	88.0	5.3
1977	2,961	78.9	444.1	353.0	448.0	95.0	4.7
1978	2,590	66.4	427.5	345.0	443.0	98.0	4.4
1979	3,014	69.0	381.0	345.0	450.0	105.0	3.6
1980	3,448	61.8	298.6	348.0	453.0	105.0	2.8
1981	4,315	66.6	257.2	357.0	467.0	110.0	2.3
1982	3,550	51.0	239.0	349.0	459.0	110.0	2.2
1983	2,183	31.3	239.0	340.0	463.0	123.0	1.9
1984	1,211	19.0	267.0	355.0	475.0	120.0	2.2
1985	1,587	22.1	232.0	351.0	470.0	119.0	2.0
1986	2,266	26.7	196.0	375.0	492.0	117.0	1.7
1987	›¶	<0.1					›
1988	›¶	3.4					›
1989	›¶	<0.1					›
1990	›¶	›					›
1991	›¶	›					›

NOTE: Well completed July 1951; initial water level 280; surface elev. 6139.
Well out of service in 1989 due to pumpage of excessive sand.

Well G-4

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1951	›¶	12.5	›	357.0	477.0	120.0	›
1952	2,401	56.9	395.0	374.0	474.0	100.0	3.9
1953	2,677	55.2	343.7	380.0	472.0	92.0	3.7
1954	2,256	58.8	434.4	383.0	526.0	143.0	3.0
1955	1,172	22.7	322.8	378.0	481.0	103.0	3.1
1956	1,800	33.9	313.9	377.0	491.0	114.0	2.8
1957	1,324	24.2	304.6	373.0	498.0	125.0	2.4
1958	1,970	35.9	303.7	370.0	490.0	120.0	2.5
1959	1,819	31.6	289.5	378.0	494.0	116.0	2.5
1960	2,457	37.0	251.0	385.0	509.0	124.0	2.0
1961	2,787	45.0	269.1	389.0	512.0	123.0	2.2
1962	2,738	41.7	253.8	386.0	505.0	119.0	2.1
1963	3,519	46.4	219.8	388.0	504.0	116.0	1.9
1964	3,561	42.9	200.8	396.0	499.0	103.0	1.9
1965	2,100	23.8	188.9	394.0	492.0	98.0	1.9
1966	2,219	33.6	252.4	391.0	498.0	107.0	2.4
1967	2,690	44.8	277.6	388.0	509.0	121.0	2.3
1968	2,083	31.4	251.2	386.0	509.0	123.0	2.0
1969	1,309	17.4	221.5	387.0	505.0	118.0	1.9
1970	606	7.7	211.8	384.0	504.0	120.0	1.8
1971	1,640	21.0	213.4	389.0	503.0	114.0	1.9
1972	2,840	33.3	195.4	391.0	507.0	116.0	1.7
1973	3,006	37.2	206.3	392.0	521.0	129.0	1.6
1974	2,672	34.3	213.9	392.0	519.0	127.0	1.7
1975	1,977	41.0	345.6	403.0	559.0	156.0	2.2
1976	2,859	57.8	336.9	406.0	571.0	165.0	2.0
1977	2,954	62.4	352.1	406.0	589.0	183.0	1.9
1978	2,607	49.5	316.5	398.0	589.0	191.0	1.7
1979	2,974	52.9	296.4	395.0	586.0	191.0	1.6
1980	2,235	35.6	265.7	394.0	580.0	186.0	1.4
1981	432	8.2	316.4	385.0	573.0	188.0	1.7
1982	3,657	65.2	297.0	386.0	578.0	192.0	1.5
1983	2,604	42.2	270.0				›
1984	3,766	49.7	220.0				›
1985	1,747	21.7	207.0	402.0	572.0	170.0	1.2
1986	2,678	33.9	211.0	396.0	574.0	178.0	1.2
1987	2,011	25.1	208.0	398.0	573.0	175.0	1.2
1988	301	4.1	227.0	390.0	545.0	155.0	1.4
1989	1,739	21.6	207.0	401.0	562.0	161.0	1.3
1990	1,539	16.8	182.0	381.0	564.0	183.0	1.0
1991	1,254	13.7	181.0	382.0	559.0	177.0	1.0
1992	1,116	12.0	179.0	387.0	544.0	157.0	1.1
1993	›¶	›		374.0			›

NOTE: Well completed May 1951; initial water level 347 ft.; surface elev. 6229.

Well G-5

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1951	>¶	6.7		414.0			
1952	2,579	73.8	476.9	422.0	480.0	58.0	8.2
1953	1,433	37.8	439.6	425.0	467.0	42.0	10.5
1954	2,617	80.9	515.2	429.0	473.0	44.0	11.7
1955	2,529	80.4	529.9	427.0	472.0	45.0	11.8
1956	3,052	97.0	529.7	431.0	478.0	47.0	11.3
1957	2,385	64.1	447.9	424.0	466.0	42.0	10.7
1958	1,523	49.1	537.3	428.0	477.0	49.0	11.0
1959	2,917	101.7	581.1	435.0	495.0	60.0	9.7
1960	2,828	98.0	577.6	437.0	501.0	64.0	9.0
1961	3,908	134.0	571.5	438.0	507.0	69.0	8.3
1962	4,186	142.0	565.4	440.0	511.0	71.0	8.0
1963	4,528	151.0	555.8	441.0	513.0	72.0	7.7
1964	4,532	150.4	553.1	446.0	516.0	70.0	7.9
1965	3,520	117.1	554.5	443.0	516.0	73.0	7.6
1966	2,555	83.2	542.7	445.0	520.0	75.0	7.2
1967	2,405	80.0	554.4	444.0	519.0	75.0	7.4
1968	2,513	81.2	538.5	443.0	517.0	74.0	7.3
1969	2,649	83.3	524.1	450.0	520.0	70.0	7.5
1970	2,771	88.9	534.7	453.0	521.0	68.0	7.9
1971	2,657	88.3	553.9	450.0	521.0	71.0	7.8
1972	2,902	92.4	530.7	441.0	514.0	73.0	7.3
1973	3,003	97.5	541.1	444.0	515.0	71.0	7.6
1974	2,054	69.0	559.9	440.0	513.0	73.0	7.7
1975	2,266	74.7	549.4	433.0	500.0	67.0	8.2
1976	2,955	95.0	535.8	442.0	504.0	62.0	8.6
1977	2,836	92.1	541.3	444.0	504.0	60.0	9.0
1978	2,608	84.2	538.4	442.0	502.0	60.0	9.0
1979	2,766	86.5	521.5	442.0	502.0	60.0	8.7
1980	2,896	89.0	512.4	442.0	502.0	60.0	8.5
1981	2,124	66.7	523.4	451.0	528.0	77.0	6.8
1982	1,219	38.2	522.0	455.0	510.0	55.0	9.5
1983	2,904	73.2	420.0	445.0	492.0	47.0	8.9
1984	3,838	115.4	501.0	452.0	507.0	55.0	9.4
1985	2,193	67.9	516.0	453.0	509.0	56.0	9.2
1986	2,219	52.5	394.0	453.0	494.0	41.0	9.6
1987	5,732	116.7	379.0	462.0	504.0	42.0	9.0
1988	4,841	115.3	396.0	466.0	507.0	41.0	9.7
1989	4,715	110.9	392.0	474.0	514.0	40.0	9.8
1990	5,094	119.2	390.0	485.0	526.0	41.0	9.5
1991	4,981	113.0	378.0	487.0	534.0	47.0	8.0
1992	5,006	114.4	376.0	470.0	508.0	38.0	9.9
1993	3,859	92.2	398.0	466.0	503.0	37.0	10.8

NOTE: Well completed May 1951; initial water level 411 ft.; surface elev. 6306.

Well G-6

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1964	1,912	45.0	392.3	581.0	659.0	78.0	5.0
1965	3,200	74.9	390.1	582.0	660.0	78.0	5.0
1966	3,931	92.2	390.9	585.0	658.0	73.0	5.4
1967	2,454	57.8	392.6	580.0	653.0	73.0	5.4
1968	2,597	56.2	360.7	574.0	647.0	73.0	4.9
1969	2,698	55.6	343.5	568.0	636.0	68.0	5.1
1970	2,765	51.0	307.4	569.0	634.0	65.0	4.7
1971	2,932	42.8	243.3	573.0	629.0	56.0	4.3
1972	2,516	57.0	377.6	578.0	670.0	92.0	4.1
1973	2,991	65.3	363.9	579.0	667.0	88.0	4.1
1974	2,950	63.8	360.5	579.0	665.0	86.0	4.2
1975	2,717	56.7	347.8	577.0	659.0	82.0	4.2
1976	2,966	57.8	324.8	584.0	662.0	78.0	4.2
1977	2,954	54.4	306.9	586.0	659.0	73.0	4.2
1978	2,218	38.4	288.9	581.0	645.0	64.0	4.5
1979	1,030	18.2	295.1	579.0	645.0	66.0	4.8
1980	1,789	34.5	321.5	583.0	670.0	87.0	3.7
1981	4,302	76.5	296.4	586.0	673.0	87.0	3.4
1982	3,763	63.6	281.0	588.0	669.0	81.0	3.5
1983	1,960	35.4	301.0	582.0	668.0	86.0	3.5
1984	3,010	55.3	306.0	589.0	666.0	77.0	3.9
1985	3,980	71.4	299.0	586.0	664.0	78.0	3.8
1986	4,420	76.7	293.0	576.0	654.0	78.0	3.8
1987	5,100	81.4	266.0	595.0	671.0	76.0	3.5
1988	5,121	82.1	267.0	591.0	669.0	78.0	3.4
1989	5,000	81.6	272.0	592.0	669.0	77.0	3.5
1990	5,202	84.9	272.0	589.0	670.0	81.0	3.4
1991	5,063	81.2	267.0	591.0	674.0	83.0	3.2
1992	4,382	70.2	268.0	591.0	673.0	82.0	3.3
1993	›¶	›	›	575.0			

NOTE: Well completed Mar. 1964; initial water level 572 ft.; surface elev. 6422.

Well PM-1

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1965	2,754	99.2	600.3	746.0	786.0	40.0	15.0
1966	3,086	108.0	583.3	740.0	779.0	39.0	15.0
1967	2,870	111.0	644.6	737.0	781.0	44.0	14.6
1968	1,846	68.1	614.8	735.0	769.0	34.0	18.1
1969	951	34.4	602.9	733.0	766.0	33.0	18.3
1970	1,781	66.2	619.5	733.0	769.0	36.0	17.2
1971	2,728	101.0	617.1	733.0	766.0	33.0	18.7
1972	2,415	84.9	585.9	735.0	762.0	27.0	21.7
1973	1,688	46.5	459.1	736.0	755.0	19.0	24.2
1974	2,649	96.3	605.9	740.0	768.0	28.0	21.6
1975	2,567	94.8	615.5	741.0	766.0	25.0	24.6
1976	2,933	106.8	606.9	744.0	767.0	23.0	26.4
1977	2,969	105.4	591.7	745.0	767.0	22.0	26.9
1978	2,544	90.6	593.3	745.0	767.0	22.0	27.0
1979	2,350	83.4	591.5	744.0	766.0	22.0	26.9
1980	2,786	98.5	588.6	746.0	769.0	23.0	25.7
1981	2,789	98.5	588.6	747.0	769.0	22.0	26.8
1982	2,820	99.6	589.0	748.0	770.0	22.0	26.8
1983	2,464	86.5	585.0	747.0	769.0	22.0	26.6
1984	2,667	92.8	580.0	749.0	772.0	23.0	25.6
1985	2,760	95.4	576.0	749.0	770.0	21.0	27.4
1986	2,130	73.9	578.0	748.0	770.0	22.0	26.3
1987	2,912	102.4	586.0	752.0	773.0	21.0	27.9
1988	2,758	98.0	592.0	751.0	775.0	24.0	24.7
1989	3,014	104.9	580.0	752.0	774.0	22.0	26.4
1990	2,620	88.2	561.0	752.0	772.0	20.0	28.0
1991	2,600	88.6	568.0	752.0	774.0	22.0	25.8
1992	2,503	92.7	617.0	756.0	780.0	24.0	25.7
1993	1,802	63.9	591.0	758.0	779.0	21.0	28.1

NOTE: Well completed Mar. 1965; initial water level 722.1 ft.; surface elev. 6520.

Well PM-2

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1966	221	18.9	1,425.3	826.0	889.0	63.0	22.6
1967	4,336	370.0	1,422.2	834.0	888.0	54.0	26.3
1968	3,865	328.2	1,415.3	838.0	889.0	51.0	27.8
1969	3,304	279.9	1,411.9	838.0	890.0	52.0	27.2
1970	3,529	300.6	1,419.7	839.0	893.0	54.0	26.3
1971	4,035	339.5	1,402.3	841.0	898.0	57.0	24.6
1972	4,611	385.3	1,392.7	845.0	902.0	57.0	24.4
1973	4,571	380.6	1,387.7	849.0	907.0	58.0	23.9
1974	5,443	450.9	1,380.7	853.0	912.0	59.0	23.4
1975	4,644	385.3	1,382.8	854.0	913.0	59.0	23.4
1976	5,382	442.0	1,368.8	866.0	924.0	58.0	23.6
1977	3,306	272.8	1,375.3	868.0	924.0	56.0	24.6
1978	4,743	388.4	1,364.9	871.0	928.0	57.0	23.9
1979	4,671	381.8	1,262.2	872.0	924.0	52.0	26.2
1980	5,023	409.6	1,359.2	873.0	931.0	58.0	23.4
1981	4,551	370.1	1,355.4	876.0	934.0	58.0	23.4
1982	4,319	359.3	1,386.0	874.0	934.0	60.0	23.1
1983	1,922	157.9	1,369.0	876.0	935.0	59.0	23.2
1984	996	81.6	1,365.0	866.0	930.0	64.0	21.7
1985	1,749	143.3	1,365.0	851.0	916.0	65.0	21.0
1986	1,036	84.4	1,359.0	851.0	915.0	64.0	21.2
1987	351	28.3	1,340.0	851.0	907.0	56.0	23.9
1988	1,843	146.8	1,328.0	869.0	931.0	62.0	21.4
1989	1,639	130.0	1,322.0	860.0	920.0	60.0	22.0
1990	3,164	250.4	1,319.0	860.0	928.0	68.0	19.4
1991	2,141	170.7	1,329.0	855.0	918.0	63.0	21.1
1992	3,486	277.7	1,328.0	860.0	929.0	69.0	19.2
1993	3,420	267.8	1,305.0	855.0	924.0	69.0	18.9

NOTE: Well completed July 1965; initial water level 823 ft.; surface elev. 6715.

Well PM-3

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1968	2,327	187.4	1,342.2	743.0	771.0	28.0	47.9
1969	3,241	254.7	1,309.8	746.0	772.0	26.0	50.4
1970	2,905	227.8	1,306.9	750.0	774.0	24.0	54.5
1971	2,774	216.3	1,299.6	751.0	774.0	23.0	56.5
1972	2,445	192.1	1,309.5	752.0	775.0	23.0	56.9
1973	3,256	257.8	1,319.6	755.0	778.0	23.0	57.4
1974	3,241	255.3	1,312.9	756.0	779.0	23.0	57.1
1975	3,421	269.3	1,312.0	757.0	780.0	23.0	57.0
1976	3,171	268.3	1,410.2	758.0	784.0	26.0	54.2
1977	2,792	235.5	1,405.8	758.0	784.0	26.0	54.1
1978	2,516	211.0	1,397.6	759.0	784.0	25.0	55.9
1979	2,359	197.2	1,393.0	760.0	784.0	24.0	58.0
1980	2,796	234.4	1,397.2	760.0	785.0	25.0	55.9
1981	2,784	232.4	1,391.3	761.0	786.0	25.0	55.6
1982	2,831	238.1	1,402.0	762.0	785.0	23.0	60.9
1983	2,496	207.6	1,386.0	762.0	785.0	23.0	60.3
1984	3,317	275.6	1,385.0	762.0	787.0	25.0	55.4
1985	2,643	221.2	1,395.0	762.0	784.0	22.0	63.4
1986	2,920	244.8	1,397.0	763.0	787.0	24.0	58.2
1987	2,984	250.2	1,397.0	763.0	788.0	25.0	55.9
1988	2,766	232.0	1,397.0	764.0	788.0	24.0	58.2
1989	2,656	221.0	1,386.0	765.0	791.0	26.0	53.3
1990	2,949	244.6	1,382.0	767.0	790.0	23.0	60.0
1991	2,752	229.5	1,385.0	768.0	791.0	23.0	60.2
1992	3,610	307.4	1,419.0	770.0	794.0	24.0	59.1
1993	2,018	168.5	1,391.0	771.0	797.0	26.0	53.5

NOTE: Well completed Nov. 1966; initial water level 740 ft.; surface elev. 6640.

Well PM-4

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1982	869	76.2	1,460	1,050	1,091	41	35.6
1983	5,267	452.5	1,432	1,066	1,101	35	40.9
1984	4,059	325.8	1,338	1,065	1,104	39	34.3
1985	4,759	379.2	1,328	1,066	1,101	35	37.9
1986	3,925	307.4	1,305	1,084	1,119	35	37.3
1987	5,071	392.2	1,289	1,081	1,117	36	35.8
1988	2,435	218.7	1,313	1,079	1,117	38	34.6
1989	5,387	418.9	1,296	1,085	1,122	37	35.0
1990	2,827	219.3	1,293	1,083	1,123	40	32.3
1991	2,832	219.5	1,292	1,081	1,123	42	30.8
1992	2,064	158.3	1,278	1,084	1,125	41	31.2
1993	3,901	249.7	1,295				

NOTE: Well completed Aug. 1981; initial water level 1060 ft.; surface elev. 6920.

Well PM-5

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1985	›¶	2.0	›¶				
1986	2,047	147.3	1,199				
1987	1,620	118.6	1,220	1,237	1,345	108	11.3
1988	1,754	128.6	1,221	1,233	1,345	112	10.9
1989	1,184	86.2	1,213	1,239	1,352	113	10.7
1990	1,611	121.0	1,252	1,234	1,347	113	11.1
1991	1,497	112.1	1,248	1,239	1,346	107	11.7
1992	2,823	208.4	1,233	1,248	1,345	97	12.7
1993	1,709	126.0	1,229	1,224	1,321	97	12.6

NOTE: Well completed Sept. 1982; initial water level 1208 ft.; surface elev. 7095.

Well O-4

Year	Pump Time (h)	Production (10^6 gal.)	Pump Rate (gpm)	Water Level Nonpumping (ft)	Water Level Pumping (ft)	Drawdown (ft)	Specific Capacity (gpm/ft)
1993	2,942	283.8	1,603	861	889	2.8	57.3

NOTE: Well completed Mar. 1990; initial water level 780 ft.; surface elev. 6627.

Main Aquifer Test Wells
Static Water Levels (feet below surface)

Well	TW-1	TW-2	TW-3	TW-4	TW-8	DT-5A	DT-9	DT-10
Completion Information								
Surface Elevation	6369.19	6647.63	6595.31	7244.56	6877.62	7143.86	6936.71	7019.92
Initial WL	584.9	758.9	743.3	1170.8	968	1173	1003	1085
Date	1/1950	11/1949	11/1949	3/1950	12/1960	12/1959	2/1960	3/1960
Static Water Levels								
Year								
1949		758.9	743.3					
1950	584.9			1170.8				
1951	592.31	760.09	750.87	1166.08				
1952	591.38		750.98	1166.62				
1953	591.2	759.91	751.37	1167.51				
1954	591.81	760.6	751.36	1166.2				
1955		760.25	751.27					
1956	592	759.93	750.87					
1957	593.1	759.88	751.33					
1958	593.82	759.68	751.68					
1959	593.92		751.77					
1960	593.36	760.53	751.75	1165.86	968	1173.16	1003.29	1090.65
1961	591.8	760.85		1165.93			1003.4	1090.58
1962	589.96	761.19	751.8				1004	
1963	588.26	762.85	753.62		968.72	1176.92	1004.6	1090.34
1964	587.85		754.21		968.7	1176.98	1005	1090.4
1965	588.38				968.7		1005.1	1090.47
1966							1005.2	1090.57
1967							1005.4	1090.59
1968							1005.5	
1969								
1970								
1971							1005.5	
1972							1005.2	
1973							1005.3	
1974							1005.6	
1975							1005.6	
1976							1005.8	
1977		775.5					1006.1	
1978							1006.2	
1979							1006.4	
1980							1006.2	
1981							1006.2	
1982							1006.2	
1983								
1984								
1985								
1986								
1987								
1988		787						
1989								
1990	508.37	787.2						
1991	507	789						
1992	536.5	792.52	777.5		992.45		1015.01	
1993	546.77	793.04	775.92	1174.52	992.9	1182.58	1015.96	1096.92

Main Aquifer Test Wells
Decline from Initial Level (feet)

Year	TW-1	TW-2	TW-3	TW-4	TW-8	DT-5A	DT-9	DT-10
1945								
1946								
1947								
1948								
1949		0.00	0.00					
1950	0.00			0.00				
1951	-7.41	-1.19	-7.57	4.72				
1952	-6.48		-7.68	4.18				
1953	-6.30	-1.01	-8.07	3.29				
1954	-6.91	-1.70	-8.06	4.60				
1955		-1.35	-7.97					
1956	-7.10	-1.03	-7.57					
1957	-8.20	-0.98	-8.03					
1958	-8.92	-0.78	-8.38					
1959	-9.02		-8.47					
1960	-8.46	-1.63	-8.45	4.94	0.00	-0.16	-0.29	-5.65
1961	-6.90	-1.95		4.87			-0.40	-5.58
1962	-5.06	-2.29	-8.50				-1.00	
1963	-3.36	-3.95	-10.32		-0.72	-3.92	-1.60	-5.34
1964	-2.95		-10.91		-0.70	-3.98	-2.00	-5.40
1965	-3.48				-0.70		-2.10	-5.47
1966							-2.20	-5.57
1967							-2.40	-5.59
1968							-2.50	
1969								
1970								
1971							-2.50	
1972							-2.20	
1973							-2.30	
1974							-2.60	
1975							-2.60	
1976							-2.80	
1977		-16.60					-3.10	
1978							-3.20	
1979							-3.40	
1980							-3.20	
1981							-3.20	
1982							-3.20	
1983								
1984								
1985								
1986								
1987								
1988		-28.10						
1989								
1990	76.53	-28.30						
1991	77.90	-30.10						
1992	48.40	-33.62	-34.20		-24.45		-12.01	
1993	38.13	-34.14	-32.62	-3.72	-24.90	-9.58	-12.96	-11.92