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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Albuquerque, New Mexico

ESTIMATED AVAILABILITY OF SURFACE AND GROUND WATER IN THE
POJOAQUE RIVER DRAINAGE BASIN, SANTA FE COUNTY, NEW MEXICO

By

Louis J. Reiland and Francis C. Koopman

Open-file report 74-151

Prepared by the U.S. Geological Survey in cooperation
with the U.S. Bureau of Indian Affairs

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Contents

	Page
Introduction -----	6
Purpose and scope -----	8
Surface water -----	9
Streamflow data for selected sites along the	
Pojoaque River -----	10
Sites 1 and 2 -----	10
Sites 3 and 4 -----	14
Sites 4a -----	17
Site 5 -----	19
Site 6 -----	21
Streamflow data for Rio Grande at Otowi Bridge near	
San Ildefonso -----	23
Summary of streamflow data -----	26
Ground water -----	28
Depth to water -----	29
Estimated volume of ground water in storage recoverable	
by lowering the water level -----	31
Summary of ground-water data -----	34
References cited -----	35

Illustrations

Page

Figure 1.--Map showing the Pojoaque River drainage basin,

Santa Fe County, New Mexico ----- In pocket

2.--Diagram showing depth to water in the Pojoaque

River drainage basin ----- 30

TABLES

	Page
Table 1.--Mean-monthly and annual discharge, in acre-feet, of Rio Nambe at Nambe Falls, near Nambe (Site 1) -----	12
2.--Mean-monthly and annual discharge, in acre-feet, of Rio Nambe near Nambe, plus Nambe canal (Site 2) -----	13
3.--Mean-monthly and annual discharge, in acre-feet, of Rio En Medio at Nambe Pueblo boundary (Site 3) -----	15
4.--Mean-monthly and annual discharge, in acre-feet, of Rio Chupadero at Nambe Pueblo boundary (Site 4) -----	16
4a.--Mean-monthly and annual discharge, in acre-feet, of Tesuque Creek above diversions, near Santa Fe (Site 4a) -----	18
5.--Mean-monthly and annual discharge, in acre-feet, of Rio Tesuque at Tesuque Pueblo boundary (Site 5) -----	20
6.--Estimated natural mean-monthly and annual discharge, in acre-feet, of Pojoaque River at mouth (Site 6) -----	22

TABLES - Concluded

Page

Table 7.--Mean-monthly and annual discharge, in 1,000's of acre-feet, of Rio Grande at Otowi Bridge near San Ildefonso (Station 08313000) -----	24
8.--Mean-monthly and annual discharge, in acre-feet, of Santa Cruz River at Cundiyo (Station 08291000)	25

ESTIMATED AVAILABILITY OF SURFACE AND GROUND WATER IN THE POJOAQUE
RIVER DRAINAGE BASIN, SANTA FE COUNTY, NEW MEXICO

By

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Introduction

This report was prepared in cooperation with, and at the request of, the U.S. Bureau of Indian Affairs as a result of litigation--
State of New Mexico, ex rel. S. E. Reynolds, State Engineer,
United States of America, et al., v R. Lee Aamodt, et al.,
Civil No. 6639, U.S.D.C., N. M.,--involving the use of water in the Pojoaque River drainage basin, Santa Fe County, New Mexico (fig. 1).

The section of the report dealing with surface-water runoff was prepared by L. J. Reiland; the ground-water section was prepared by F. C. Koopman.

This report supplements a reconnaissance report (Trauger, 1967) that provides a general description of the geology and hydrology of the Pojoaque River system. It also supplements a report (Koopman, 1975) that discusses quantitative aspects of the ground-water system in the drainage basin, and a report (Reiland, 1974) that discusses quantitative aspects of the surface-water system in the drainage basin.

In this report figures for measurements are given both in English units and in metric units (with the exception of tables, which contain English units only). The English units used may be converted to metric units by the following conversion factors:

foot x 0.3048 = metre (m)

mile x 1.609 = kilometre (km)

square mile x 2.590 = square kilometre (km²)

acre-foot x 1233 = cubic metre (m³)

acre-foot x 1.233×10^{-3} = cubic hectometres (hm³)

Purpose and scope

The purpose of this report is to compute the natural-flow records of the Pojoaque River at several points along its course on a monthly basis for the period 1935-72; to tabulate the recorded flow of the Rio Grande at Otowi gaging station on a monthly basis for the period 1935-72; and to estimate the total volume of ground water that could be developed along the Pojoaque River drainage by lowering the water level in the aquifer evenly over the basin to various depths below land surface. Natural flow is defined for the report as the flow that would have occurred if there were no manmade changes.

Surface water

In order to compute the natural flow of the Pojoaque River, estimates of mean-monthly and annual runoff were made at several selected sites along the course of the river (fig. 1). These sites are:

<u>Site no.</u>	<u>Description</u>
1.	Rio Nambe at Nambe Falls, near Nambe
2.	Rio Nambe near Nambe, plus Nambe canal
3.	Rio En Medio at Nambe Pueblo boundary
4.	Rio Chupadero at Nambe Pueblo boundary
4a.	Tesuque Creek above diversions, near Santa Fe
5.	Rio Tesuque at Tesuque Pueblo boundary
6.	Pojoaque River at mouth

The flow of the Santa Cruz River at Cundiyo (Station 08291000) was tabulated from recorded values to assist in computing the estimate for Site 1, and recorded values were tabulated for the flow of the Rio Grande at Otowi Bridge near San Ildefonso (Station 08313000).

Streamflow data for selected sites along the Pojoaque River

Sites 1 and 2

Natural-flow records are available at Site 1 (Station 08294300) for the period 1963-72 and at Site 2 for the period 1935-51 as the sum of flow in Nambe canal near Nambe (Station 08294500) and Rio Nambe near Nambe (Station 08295000). The intervening drainage area is only 4.2 square miles (10.9 square kilometres). The runoff-elevation relation indicates that the area contributes only 1.2 percent of the mean annual flow at Site 2.

Monthly values of runoff at Site 1 for the period January 1935 to September 1951 were computed to be 98.8 percent of recorded flow at Site 2. Monthly values of runoff at Site 2 for the period March 1963 to December 1972 were computed to be 101.2 percent of recorded flow at Site 1.

Linear-regression analysis of the monthly flow at Site 1 versus the corresponding flow for the Santa Cruz River at Cundiyo (Station 08291000) during the period of concurrent record on a monthly basis was used to estimate flows for the period October 1951 to February 1963 at Site 1. The relations were found to vary seasonally. Therefore, those months that seemed to have similar relationships were grouped. Logarithms of monthly flow in acre-feet were used and the lines of best fit were determined by the method of least squares. The grouping of the months and the resulting equations are as follows:

November, December, January, and February

$$\text{Log. Nambe} = 0.87812 \log. \text{ Santa Cruz} + 0.0008$$

March, April, May, and June

$$\text{Log. Nambe} = 0.86620 \log. \text{ Santa Cruz} - 0.0021$$

July, August, September, and October

$$\text{Log. Nambe} = 0.89870 \log. \text{ Santa Cruz} + 0.0014$$

Monthly records for Site 2 were then computed as being 101.2 percent of the values as defined above for Site 1.

Table 1 lists the mean-monthly and annual discharge at Site 1, table 2 lists similar data for Site 2, and table 8 lists similar data for Station 08291000.

Table 1.--Mean-monthly and annual discharge, in acre-feet, of
Rio Nambe at Nambe Falls, near Nambe (Site 1)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1935	266	204	288	609	1,960	3,710	1,020	1,330	1,240	567	371	303	11,870
1936	239	196	306	956	1,650	779	469	744	608	719	493	298	7,460
1937	294	266	349	1,460	2,240	2,060	1,030	515	537	459	313	274	9,800
1938	192	171	268	638	1,410	975	648	416	642	648	407	317	6,730
1939	298	217	498	1,140	1,500	726	351	394	387	395	262	215	6,380
1940	221	209	482	1,030	2,110	1,350	494	442	399	433	305	277	7,750
1941	243	248	501	1,090	6,480	5,710	2,860	1,380	1,430	1,610	1,150	611	23,310
1942	445	293	454	3,210	4,960	3,330	846	420	690	408	304	211	15,570
1943	212	198	307	981	1,400	719	360	378	311	281	224	174	5,540
1944	202	172	238	550	2,420	1,990	1,240	782	420	511	351	272	9,150
1945	280	257	467	1,170	3,460	2,060	774	431	319	305	221	167	9,910
1946	185	128	255	868	738	297	321	793	399	477	384	311	5,160
1947	261	201	266	449	1,340	591	262	423	292	283	230	206	4,790
1948	183	178	255	1,030	2,260	1,730	676	454	231	239	211	206	7,650
1949	195	177	218	613	1,850	1,890	1,110	789	419	344	243	158	8,010
1950	206	159	186	385	374	278	232	173	142	146	93	66	2,440
1951	59	69	95	227	559	229	103	535	465	295	238	222	3,100
1952	245	231	362	1,100	2,380	2,040	722	485	394	290	227	227	8,700
1953	265	253	372	593	1,430	1,300	722	373	252	273	257	219	6,310
1954	217	216	271	692	1,040	564	482	464	306	283	218	202	4,960
1955	217	241	214	360	1,130	825	698	1,410	845	391	273	280	6,880
1956	245	241	298	324	415	186	192	159	89	133	141	144	2,570
1957	173	182	261	901	1,750	1,930	1,060	1,820	1,140	648	503	396	10,760
1958	312	319	496	1,970	4,050	2,550	820	565	484	422	291	261	12,540
1959	213	171	197	393	788	525	332	807	329	318	228	210	4,510
1960	232	195	1,060	1,920	1,760	1,610	1,180	609	378	368	251	227	9,790
1961	222	205	276	1,000	1,600	1,060	609	837	631	464	339	272	7,520
1962	241	314	369	1,340	1,770	679	543	322	267	303	251	234	6,630
1963	226	244	450	976	1,100	568	300	458	597	441	321	253	5,930
1964	214	188	195	517	1,130	747	384	524	355	300	270	223	5,050
1965	251	204	281	801	1,920	2,230	1,170	986	815	571	459	469	10,160
1966	316	246	486	895	1,530	987	622	890	479	391	309	235	7,390
1967	226	222	248	364	516	412	275	770	691	428	349	275	4,780
1968	254	226	321	496	1,210	1,590	879	1,170	586	368	261	268	7,630
1969	223	342	273	900	1,850	1,640	650	549	578	446	386	290	8,130
1970	240	236	296	293	1,100	932	659	918	624	451	325	256	6,330
1971	217	197	269	349	470	419	373	734	498	525	417	390	4,860
1972	277	220	452	444	617	665	337	337	434	527	486	424	5,220
Total	9,007	8,236	12,880	33,034	66,267	51,883	25,805	25,586	19,703	16,466	12,362	10,043	291,272
Mean	237	217	339	869	1,744	1,365	679	673	518	433	325	264	7,665

Note: Records for period January 1935 to September 1951 were computed as 98.8 percent of flow at site 2; those for period October 1951 to February 1963 were computed by regression analyses with records for Santa Cruz River.

Table 2.--Mean-monthly and annual discharge, in acre-feet, of
Rio Nambe near Nambe, plus Nambe canal (Site 2)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1935	269	206	292	616	1,980	3,760	1,030	1,350	1,250	574	375	307	12,010
1936	242	198	310	968	1,670	788	475	753	615	728	499	302	7,550
1937	298	269	353	1,480	2,270	2,080	1,040	521	544	465	317	277	9,910
1938	194	173	271	646	1,430	987	656	421	650	656	412	321	6,820
1939	302	220	504	1,150	1,520	735	355	399	392	400	265	218	6,460
1940	224	212	488	1,040	2,140	1,370	500	447	404	438	309	280	7,850
1941	246	251	507	1,100	6,560	5,780	2,890	1,400	1,450	1,630	1,160	a 618	23,590
1942	a 450	a 297	460	3,250	5,020	3,370	856	425	698	413	308	a 214	15,760
1943	a 215	a 200	311	993	1,420	728	364	383	315	284	a 227	a 176	5,620
1944	a 204	a 174	241	557	2,450	2,010	1,250	792	425	517	355	a 275	9,250
1945	283	a 260	a 473	a 1,180	3,500	2,080	783	436	a 323	309	224	a 169	10,020
1946	a 187	a 130	a 258	a 879	747	301	325	803	404	483	389	315	5,220
1947	264	203	269	454	1,350	598	265	428	296	286	233	208	4,850
1948	185	180	258	1,040	2,290	1,750	684	460	234	242	214	208	7,740
1949	197	179	221	620	1,870	1,910	1,120	799	424	348	246	160	8,090
1950	209	161	188	390	379	281	235	175	144	148	94	67	2,470
1951	60	70	96	230	566	232	104	542	471	299	241	225	3,140
1952	248	234	366	1,110	2,410	2,060	731	491	399	293	230	230	8,800
1953	268	256	376	600	1,450	1,320	731	377	255	276	260	222	6,390
1954	220	219	274	700	1,050	571	488	470	310	286	221	204	5,010
1955	220	244	217	364	1,140	835	706	1,430	855	396	276	283	6,970
1956	248	244	302	328	420	188	194	161	90	140	143	146	2,600
1957	175	184	264	912	1,770	1,950	1,070	1,840	1,150	656	509	401	10,880
1958	316	323	502	1,990	4,100	2,580	830	572	490	427	294	264	12,690
1959	216	173	199	398	797	531	336	817	333	322	231	213	4,570
1960	235	197	1,070	1,940	1,780	1,630	1,190	616	383	372	254	230	9,900
1961	225	207	279	1,010	1,620	1,070	616	847	639	470	343	275	7,600
1962	244	318	373	1,360	1,790	687	550	326	270	307	254	237	6,720
1963	229	247	455	988	1,110	575	304	463	604	446	325	256	6,000
1964	217	190	197	523	1,140	756	389	530	359	304	273	226	5,100
1965	254	206	284	811	1,940	2,260	1,180	998	825	578	464	475	10,280
1966	320	249	492	906	1,550	999	629	901	485	396	313	238	7,480
1967	229	225	251	368	522	417	278	779	699	433	353	278	4,830
1968	257	229	325	502	1,220	1,610	890	1,180	594	372	264	271	7,710
1969	226	346	276	911	1,870	1,660	658	556	585	451	391	293	8,220
1970	243	239	300	297	1,110	943	667	929	631	456	329	259	6,400
1971	220	199	272	353	476	424	377	743	504	531	422	395	4,920
1972	280	223	457	449	624	673	341	341	439	533	492	429	5,280
Total	9,119	8,335	13,031	33,413	67,051	52,499	26,087	25,901	19,938	16,665	12,509	10,165	294,704
Mean	240	219	343	879	1,764	1,382	686	682	525	439	329	267	7,755

Note: Records for period October 1951 to February 1963 were computed as 101.2 percent of flow at Nambe Falls, which was obtained by regression analysis from Santa Cruz River; those after February 1963 were computed as 101.2 percent of flow at Nambe Falls.

a = Flow in canal estimated.

Sites 3 and 4

No streamflow records are available at either Site 3 or Site 4; however, the area upstream from Site 3 is adjacent to the area upstream from Site 2 and the runoff-elevation relations are almost identical. The runoff-elevation relation for Site 4 is also almost the same as for Site 2. For this report, it was assumed that the yields per unit area were the same and the monthly values for Site 3 were computed as being 22.5 percent of those for Site 2, the percentage figure being the ratios of the drainage areas. Rio En Media is a perennial stream at Site 3 but becomes ephemeral a short distance downstream due to the change in geologic structure.

Rio Chupadero is an ephemeral stream in the 2-mile (3.2 kilometre) reach upstream from Site 4. Losses to ground-water storage are significant in this reach. In a previous report (Reiland, 1974) the annual loss in this reach was estimated as 100 acre-feet per year (123,300 cubic metres per year) and the resulting mean-annual runoff at Site 4 as 300 acre-feet per year (369,900 cubic metres per year). Monthly estimates of flow at Site 4 were obtained by using 5 percent of flow at Site 2, but were reduced by 8 acre-feet (9,860 cubic metres) to allow for loss to ground-water storage. This corresponds to an annual loss of 96 acre-feet (118,400 cubic metres). The resulting mean-annual runoff at Site 4 for the period 1935-72 is 292 acre-feet per year (360,000 cubic metres per year).

Tables 3 and 4 list the mean-monthly and annual discharge at Sites 3 and 4.

Table 3.--Mean-monthly and annual discharge, in acre-feet, of

Rio En Medio at Nambe Pueblo boundary (Site 3)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1935	61	46	66	139	446	846	232	304	281	129	84	69	2,700
1936	54	45	70	218	376	177	107	169	138	164	112	68	1,700
1937	67	61	79	333	511	468	234	117	122	105	71	62	2,230
1938	44	39	61	145	322	222	148	95	146	148	93	72	1,540
1939	68	50	113	259	342	165	80	90	88	90	60	49	1,450
1940	50	48	110	234	482	308	113	101	91	99	70	63	1,770
1941	55	56	114	248	1,476	1,301	650	315	326	367	261	139	5,310
1942	101	67	104	731	1,130	758	193	96	157	93	69	48	3,550
1943	48	45	70	223	320	164	82	86	71	64	51	40	1,260
1944	46	39	54	125	551	452	281	178	96	116	80	62	2,080
1945	64	59	106	266	788	468	176	98	73	70	50	38	2,260
1946	42	29	58	198	168	68	73	181	91	109	88	71	1,180
1947	59	46	61	102	304	135	60	96	67	64	52	47	1,090
1948	42	41	58	234	515	394	154	104	53	54	48	47	1,740
1949	44	40	50	140	421	430	252	180	95	78	55	36	1,820
1950	47	36	42	88	85	63	53	39	32	33	21	15	554
1951	14	16	22	52	127	52	23	122	106	66	54	50	704
1952	55	52	81	248	536	459	162	109	89	65	51	51	1,960
1953	60	57	84	133	322	293	162	84	57	61	58	49	1,420
1954	49	49	61	156	234	127	108	104	69	64	49	45	1,120
1955	49	54	48	81	254	186	157	317	190	88	61	63	1,550
1956	55	54	67	73	93	42	43	36	20	31	32	32	578
1957	39	41	59	203	394	434	239	410	257	146	113	89	2,420
1958	70	72	112	443	911	574	185	127	109	95	65	59	2,820
1959	48	38	44	88	177	118	75	182	74	72	51	47	1,010
1960	52	44	239	432	396	362	266	137	85	83	56	51	2,200
1961	50	46	62	225	360	239	137	188	142	104	76	61	1,690
1962	54	71	83	302	398	153	122	72	60	68	56	53	1,490
1963	51	55	102	222	250	129	68	104	136	100	73	58	1,350
1964	49	43	44	118	257	170	88	119	81	68	61	51	1,150
1965	57	46	64	182	437	509	266	225	186	130	104	107	2,310
1966	72	56	111	204	349	225	142	203	109	89	70	54	1,680
1967	52	51	56	83	117	94	63	175	157	97	79	63	1,090
1968	58	52	73	113	275	362	200	266	134	84	59	61	1,740
1969	51	78	62	205	421	374	148	125	132	101	88	66	1,850
1970	55	54	68	67	250	212	150	209	142	103	74	58	1,440
1971	50	45	61	79	107	95	85	167	113	119	95	89	1,100
1972	63	50	103	101	140	151	77	77	99	120	111	97	1,190
Total	2,045	1,871	2,922	7,493	15,042	11,779	5,854	5,807	4,474	3,737	2,801	2,280	66,105
Mean	53.8	49.2	76.9	197	396	310	154	153	118	98.3	73.7	60.0	1,740

Table 4.--Mean-monthly and annual discharge, in acre-feet, of
Rio Chupadero at Nambe Pueblo boundary (Site 4)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1935	6	2	7	23	91	180	44	60	55	21	11	7	507
1936	4	2	8	40	76	31	16	30	23	28	17	7	282
1937	7	5	10	66	106	96	44	18	19	15	8	6	400
1938	2	1	6	24	64	41	25	13	25	25	13	8	247
1939	7	3	17	50	68	29	10	12	12	12	5	3	228
1940	3	3	16	44	99	61	17	14	12	14	7	6	296
1941	4	5	17	47	320	281	137	62	65	64	50	23	1,075
1942	14	7	15	155	243	161	35	13	27	13	7	3	693
1943	3	2	8	42	63	28	10	11	8	6	3	1	185
1944	2	1	4	20	115	93	55	32	13	18	10	6	369
1945	6	5	16	51	167	96	31	14	8	7	3	0	404
1946	1	0	5	36	29	7	8	32	12	16	11	8	165
1947	5	2	5	15	60	22	5	13	7	6	4	2	146
1948	1	1	5	44	107	80	26	15	4	4	3	2	292
1949	2	1	3	23	86	88	48	32	13	9	4	0	309
1950	2	0	1	12	11	6	4	1	0	0	0	0	37
1951	0	0	0	4	20	4	0	19	16	7	4	3	77
1952	4	4	10	47	111	94	28	16	12	7	3	3	339
1953	5	5	1	22	64	57	28	11	5	6	5	3	212
1954	3	3	6	27	44	20	16	15	7	6	3	2	152
1955	3	4	3	10	49	33	27	63	34	12	6	6	250
1956	4	4	7	8	13	1	2	0	0	0	0	0	39
1957	1	1	5	37	80	89	45	83	49	24	17	12	443
1958	8	8	17	91	195	120	41	20	16	13	7	5	541
1959	3	1	2	12	31	18	17	32	8	8	3	3	138
1960	4	2	45	88	80	73	51	22	11	10	5	3	394
1961	3	2	6	42	72	45	22	34	24	15	9	6	280
1962	4	8	10	59	81	26	19	8	5	7	5	4	236
1963	3	4	15	41	48	21	7	15	22	14	8	5	203
1964	3	2	2	18	49	30	11	19	9	7	6	3	159
1965	6	2	6	33	89	105	51	42	33	21	15	16	419
1966	8	4	17	37	70	42	23	37	16	12	8	4	278
1967	3	3	5	10	18	13	6	31	27	14	10	6	146
1968	5	3	8	17	73	73	37	51	22	11	5	6	311
1969	3	9	6	38	86	75	25	20	21	15	12	7	317
1970	4	4	7	7	48	39	25	38	24	15	8	5	224
1971	3	2	6	10	16	13	11	29	17	19	13	12	151
1972	6	3	15	14	23	26	9	9	14	19	17	13	168
Total	155	118	342	1,364	3,065	2,317	1,016	986	695	520	325	209	11,112
Mean	4.08	3.11	9.00	35.9	80.7	61.0	26.7	26.0	18.3	13.7	8.55	5.50	292

Site 4a

Natural-flow records are available at Site 4a (Tesuque Creek above diversions, near Santa Fe, Station 08302500) for the period April 1936 to December 1951.

Linear regression analysis of monthly flow at Site 4a versus the corresponding flow at Site 2 during the period of concurrent record was used as the basis for computing the records at Site 4a for the periods January 1935 to March 1936 and January 1952 to December 1972. The relations were found to vary seasonally but plotting on log paper indicated some similarity among some months. The months as grouped and the resulting relations are as follows:

November, December, and January

$$\text{Log. Tesuque} = 1.8638 \log. \text{Nambe} - 0.5844$$

February and March

$$\text{Log. Tesuque} = 1.2397 \log. \text{Nambe} - 1.0550$$

April

$$\text{Log. Tesuque} = 1.3171 \log. \text{Nambe} - 1.4180$$

May and June

$$\text{Log. Tesuque} = 1.1967 \log. \text{Nambe} - 1.2238$$

July and August

$$\text{Log. Tesuque} = 1.1277 \log. \text{Nambe} - 1.0864$$

September and October

$$\text{Log. Tesuque} = 1.1723 \log. \text{Nambe} - 1.1538$$

The discharges for Site 4a are listed in table 4a.

Table 4a.--Mean-monthly and annual discharge, in acre-feet, of
Tesuque Creek above diversions, near Santa Fe (Site 4a)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1935	75	65	100	180	527	1,130	205	278	300	120	108	87	3,180
1936	68	63	108	300	437	215	98	174	134	160	126	82	1,960
1937	46	69	144	474	673	646	161	56	80	97	87	54	2,590
1938	63	46	77	170	270	177	128	132	125	132	83	70	1,470
1939	68	54	260	470	527	224	76	66	88	136	86	59	2,110
1940	55	60	266	415	589	289	95	74	73	98	59	68	2,140
1941	58	73	233	459	2,280	1,610	472	226	264	634	393	163	6,860
1942	124	110	159	1,570	1,480	720	138	68	104	82	65	63	4,680
1943	61	72	110	285	303	168	61	46	43	52	43	38	1,280
1944	48	40	84	255	729	471	342	210	89	111	83	77	2,540
1945	74	75	152	416	1,150	496	139	70	75	57	40	49	2,790
1946	49	43	103	223	148	77	61	170	90	103	82	81	1,230
1947	66	63	87	120	426	181	67	67	53	50	55	56	1,290
1948	58	53	97	332	573	494	143	72	38	65	58	55	2,040
1949	57	41	85	307	719	590	336	183	73	64	52	51	2,560
1950	57	48	49	65	50	32	25	20	21	23	23	21	434
1951	21	27	26	45	75	48	18	125	104	58	43	37	627
1952	68	75	131	387	656	546	137	88	77	54	62	62	2,340
1953	74	85	135	172	357	318	137	65	46	50	71	60	1,570
1954	59	69	92	210	244	117	87	83	58	53	59	55	1,190
1955	59	79	68	89	269	185	132	292	189	77	76	78	1,590
1956	68	79	103	77	81	31	31	25	14	23	37	38	607
1957	46	56	87	298	454	511	211	389	269	139	148	114	2,720
1958	88	112	193	834	1,240	713	158	104	99	84	81	72	3,780
1959	58	52	62	100	175	108	57	156	63	60	63	57	1,010
1960	64	61	496	806	458	411	239	113	74	69	70	62	2,920
1961	61	65	94	341	408	249	113	162	134	93	96	76	1,890
1962	66	110	134	502	460	146	99	55	49	57	70	64	1,810
1963	62	81	174	336	263	120	52	83	128	90	92	71	1,550
1964	59	60	62	145	272	166	68	97	69	57	76	62	1,190
1965	70	65	97	259	514	617	239	198	184	121	137	140	2,640
1966	90	83	192	300	393	232	117	176	99	78	88	66	1,910
1967	63	73	83	91	107	82	47	149	151	87	101	78	1,110
1968	71	74	115	138	295	411	174	239	125	72	73	75	1,860
1969	62	130	94	302	492	426	123	102	123	91	113	82	2,140
1970	67	79	104	69	263	217	125	182	134	92	93	72	1,500
1971	60	63	92	85	96	83	66	142	103	110	122	113	1,140
1972	78	72	175	119	132	142	59	59	88	110	145	125	1,300
Total	2,441	2,625	4,923	11,746	18,585	13,399	5,036	4,996	4,030	3,709	3,359	2,733	77,548
Mean	64.2	69.1	130	309	489	353	133	131	106	97.6	88.4	71.9	2,042

Note: Records for periods January 1935 to March 1936 and January 1952 to December 1972 computed from regression with records for Site 2.

Site 5

The simplest and best approach to the problem of defining monthly values of natural flow at Site 5 is to develop a relation based on the partial inflow as defined at Site 4a which is 3 miles upstream. Such a relation was developed using log values of inflow at Site 4a versus outflow at station Rio Tesuque near Tesuque (Station 08305500) and two ditch stations (Stations 08303500 and 08304000) adjusted for an estimated additional loss of 50 acre-feet (61,650 cubic metres) per month between the station near Tesuque and Site 5. The graphically determined equation of the line representing such a relation is

$$\text{Log. (Site 5 + 100)} = \text{Log. Site 4a.}$$

Values for Site 5 were picked from the plotted line corresponding to inflow values at Site 4a.

The mean-annual flow at Site 5 for the period 1935-72 was 849 acre-feet (1.05 cubic hectometres) which compares with the estimate of 700 acre-feet (0.86 cubic hectometres) as reported previously (Reiland, 1974).

Table 5 lists the discharges for Site 5.

Table 5.--Mean-monthly and annual discharge, in acre-feet, of

Rio Tesuque at Tesuque Pueblo boundary (Site 5)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1935	0	0	0	61	350	840	82	143	163	8	0	0	1,650
1936	0	0	0	164	276	90	0	55	21	43	13	0	662
1937	0	0	30	306	470	448	44	0	0	0	0	0	1,300
1938	0	0	0	52	137	58	16	18	13	18	0	0	312
1939	0	0	128	302	350	98	0	0	0	22	0	0	900
1940	0	0	133	256	400	153	0	0	0	0	0	0	942
1941	0	0	106	293	1,730	1,220	303	100	132	438	240	47	4,610
1942	12	0	43	1,180	1,120	505	25	0	0	0	0	0	2,880
1943	0	0	0	150	165	50	0	0	0	0	0	0	365
1944	0	0	0	124	515	303	197	86	0	1	0	0	1,230
1945	0	0	61	257	850	325	25	0	0	0	0	0	1,520
1946	0	0	0	97	33	0	0	52	0	0	0	0	182
1947	0	0	0	8	266	61	0	0	0	0	0	0	335
1948	0	0	0	188	388	323	29	0	0	0	0	0	928
1949	0	0	0	167	505	400	192	63	0	0	0	0	1,330
1950	0	0	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	0	0	0	0	0	13	0	0	0	0	13
1952	0	0	18	235	455	365	23	0	0	0	0	0	1,100
1953	0	0	22	53	210	177	23	0	0	0	0	0	485
1954	0	0	0	86	115	7	0	0	0	0	0	0	208
1955	0	0	0	0	137	65	18	155	68	0	0	0	443
1956	0	0	0	0	0	0	0	0	0	0	0	0	0
1957	0	0	0	160	290	338	87	236	136	25	33	4	1,310
1958	0	2	73	600	930	512	42	0	0	0	0	0	2,160
1959	0	0	0	0	56	0	0	40	0	0	0	0	96
1960	0	0	325	580	294	254	110	3	0	0	0	0	1,570
1961	0	0	0	197	251	119	3	45	21	0	0	0	636
1962	0	0	21	330	294	31	0	0	0	0	0	0	676
1963	0	0	55	192	130	8	0	0	16	0	0	0	401
1964	0	0	0	31	137	48	0	0	0	0	0	0	216
1965	0	0	0	127	340	422	110	71	63	10	22	26	1,190
1966	0	0	71	164	240	104	7	57	0	0	0	0	643
1967	0	0	0	0	0	0	0	34	35	0	0	0	69
1968	0	0	4	25	157	254	55	110	13	0	0	0	618
1969	0	17	0	164	322	266	12	0	12	0	3	0	796
1970	0	0	0	0	130	92	13	61	21	0	0	0	317
1971	0	0	0	0	0	0	0	27	0	0	10	3	40
1972	0	0	56	8	18	27	0	0	0	0	31	13	153
Total	12	19	1,146	6,557	12,061	7,963	1,416	1,369	714	565	352	93	32,267
Mean	0.3	.5	30	173	317	210	37	36	18	15	9.3	2.4	849

Site 6

The mean-annual, natural, runoff at Site 6 was previously found (Reiland, 1972) to be about 10,700 acre-feet (13.19 cubic hectometres). The sum of the mean-annual flows at Sites 2, 3, 4, and 5 was found to be 10,900 acre-feet (13.44 cubic hectometres) in this study. The ratio of these two values (0.98) was used to convert the sum of the individual inflow values for Sites 2, 3, 4, and 5 into an outflow value for Site 6.

Table 6 lists the discharges for Site 6.

Table 6.--Estimated natural mean-monthly and annual discharge,
in acre-feet, of Pojoaque River at mouth (Site 6)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1935	329	249	358	822	2,810	5,510	1,360	1,820	1,710	717	461	375	16,520
1936	294	240	380	1,360	2,350	1,060	586	987	781	944	628	369	9,980
1937	365	328	463	2,140	3,290	3,030	1,330	643	671	573	388	338	13,560
1938	235	209	331	850	1,910	1,280	828	536	817	830	508	393	8,730
1939	369	268	747	1,730	2,230	1,010	436	491	482	514	323	265	8,860
1940	271	258	732	1,540	3,060	1,850	617	551	497	540	378	342	10,640
1941	299	306	729	1,650	9,880	8,410	3,900	1,840	1,930	2,450	1,680	810	33,880
1942	565	364	610	5,210	7,360	4,700	1,090	523	864	509	376	260	22,430
1943	261	242	381	1,380	1,930	951	447	470	386	347	275	213	7,280
1944	247	210	293	809	3,560	2,800	1,750	1,070	523	639	436	336	12,670
1945	346	318	643	1,720	5,200	2,910	995	537	396	378	271	203	13,920
1946	225	156	315	1,190	957	368	398	1,050	497	596	478	386	6,620
1947	321	246	328	567	1,940	800	323	526	363	349	283	252	6,300
1948	223	218	315	1,290	3,230	2,500	875	567	285	294	260	252	10,310
1949	238	216	269	931	2,820	2,770	1,580	1,050	521	426	299	192	11,310
1950	253	193	226	480	466	343	286	211	172	177	113	80	3,000
1951	73	84	116	280	700	282	124	682	581	361	290	270	3,840
1952	298	281	462	1,600	3,410	2,900	916	598	485	355	275	275	11,860
1953	323	309	469	734	1,990	1,790	916	459	308	333	314	266	8,210
1954	264	263	331	942	1,400	704	594	571	374	346	265	244	6,300
1955	264	293	260	442	1,540	1,090	882	1,910	1,110	481	333	342	8,950
1956	298	293	365	397	510	224	232	191	107	166	170	172	3,120
1957	209	220	318	1,270	2,460	2,740	1,400	2,500	1,550	826	653	491	14,640
1958	382	393	684	3,040	5,960	3,680	1,070	698	597	519	356	318	17,700
1959	259	206	238	483	1,030	647	416	1,040	403	390	276	255	5,640
1960	282	236	1,640	2,960	2,480	2,250	1,570	756	465	452	306	275	13,670
1961	270	248	337	1,430	2,240	1,430	756	1,080	802	571	416	332	9,910
1962	293	385	473	1,990	2,490	871	670	394	325	370	306	285	8,850
1963	274	297	614	1,410	1,510	718	371	570	762	549	398	313	7,790
1964	264	230	238	676	1,550	984	478	655	440	371	333	274	6,490
1965	311	249	347	1,130	2,750	3,230	1,570	1,310	1,080	724	593	612	13,910
1966	392	303	677	1,280	2,160	1,340	785	1,170	598	487	383	290	9,860
1967	278	273	306	452	644	514	340	999	900	533	433	340	6,010
1968	314	278	402	644	1,690	2,250	1,160	1,570	748	458	321	331	10,170
1969	274	441	337	1,290	2,640	2,330	826	687	735	556	484	359	10,960
1970	296	291	368	364	1,510	1,260	838	1,210	802	563	403	316	8,220
1971	268	241	332	433	587	521	464	947	621	656	529	489	6,090
1972	342	270	618	560	789	859	418	418	541	659	638	541	6,650
Total	11,069	10,105	17,052	47,476	95,033	72,906	33,597	33,287	25,229	21,009	15,632	12,456	394,851
Mean	291	266	449	1,249	2,501	1,919	884	876	664	553	411	328	10,390

Streamflow data for Rio Grande at
Otowi Bridge near San Ildefonso

The monthly and annual flows listed in table 7 for the Rio Grande at Otowi Bridge near San Ildefonso, (Station 08313000) are the actual recorded values.

Table 7.--Mean-monthly and annual discharge, in 1,000's of acre-feet, of
Rio Grande at Otowi Bridge near San Ildefonso (Station 08313000)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1935	34.16	31.29	29.05	55.81	200.90	363.10	88.30	80.29	63.76	54.60	55.08	40.57	1,097.00
1936	36.32	45.62	65.82	248.90	235.30	79.90	61.26	77.74	60.54	55.61	59.20	44.98	1,072.00
1937	36.31	65.27	125.20	320.20	522.90	222.60	100.60	80.95	69.15	41.77	33.87	34.89	1,654.00
1938	35.46	38.89	51.25	138.20	328.90	273.40	126.60	96.65	63.77	71.05	54.53	51.08	1,330.00
1939	44.06	38.99	136.90	151.40	121.00	72.23	68.72	47.33	31.39	26.77	20.73	27.46	787.00
1940	30.23	33.21	46.29	54.70	78.81	68.81	67.43	47.46	52.53	36.05	32.47	36.49	584.50
1941	36.79	51.79	83.27	128.80	896.80	609.20	240.40	88.71	69.67	165.10	144.00	77.87	2,593.00
1942	60.62	54.43	115.40	436.10	675.80	437.60	95.14	73.19	69.42	46.13	32.53	43.43	2,140.00
1943	41.59	42.84	48.13	99.96	92.19	87.59	67.08	64.78	51.09	38.08	32.58	36.05	702.00
1944	35.00	41.00	58.86	71.58	406.50	309.50	115.70	81.84	60.65	43.34	37.91	42.11	1,304.00
1945	41.43	49.43	51.12	94.00	433.60	152.10	74.41	64.78	55.57	43.20	37.53	34.31	1,131.00
1946	35.21	34.63	39.33	47.36	48.17	58.69	30.54	28.41	18.82	26.88	77.60	88.35	534.00
1947	35.37	38.86	41.01	50.32	151.10	68.56	63.18	59.89	29.20	42.22	109.90	74.12	763.70
1948	38.93	44.31	65.02	170.80	313.80	360.10	55.27	49.91	28.55	24.66	30.73	37.28	1,228.00
1949	36.30	76.63	136.30	102.70	235.00	370.70	158.70	50.62	43.89	36.65	38.47	41.39	1,327.00
1950	44.30	121.70	114.40	65.60	39.95	55.86	42.83	38.93	23.36	23.14	21.13	29.23	620.40
1951	31.34	59.97	29.35	22.35	50.68	51.10	32.95	30.97	13.17	14.46	20.48	39.26	396.10
1952	46.66	34.61	64.30	166.50	378.80	335.50	148.20	109.10	29.30	24.71	30.26	40.31	1,408.00
1953	42.09	47.34	58.84	61.63	66.42	115.30	25.51	24.82	11.37	17.50	27.64	31.73	530.20
1954	30.65	38.26	36.76	55.33	95.39	37.27	36.65	16.77	26.63	19.12	19.20	23.35	435.40
1955	28.48	27.38	33.78	21.78	88.75	47.81	30.90	54.91	36.51	16.42	21.59	28.84	437.20
1956	35.58	30.76	41.99	59.44	57.40	37.13	18.24	16.55	15.19	10.30	16.72	22.17	359.50
1957	24.71	30.60	30.16	69.41	217.50	300.70	266.40	203.40	105.40	57.99	99.07	58.30	1,464.00
1958	45.44	55.03	70.91	242.30	537.40	235.00	31.77	52.58	39.71	23.90	97.13	76.94	1,508.00
1959	36.86	36.42	37.23	39.85	59.78	25.54	25.71	33.17	17.26	30.55	46.30	35.84	424.50
1960	34.86	34.04	93.06	191.50	132.70	138.00	31.42	26.76	26.02	23.49	36.22	30.67	798.80
1961	28.32	34.99	43.88	83.65	187.80	76.06	35.27	53.97	41.31	32.42	98.42	69.92	786.00
1962	41.10	65.64	70.44	249.50	233.80	88.18	36.03	27.31	26.85	23.48	90.90	90.27	1,043.00
1963	40.86	44.80	73.43	99.23	35.57	17.15	13.03	15.98	15.06	14.51	34.07	21.83	425.50
1964	26.39	26.13	34.82	41.54	88.37	26.70	18.56	29.00	21.75	14.37	40.00	26.15	393.80
1965	42.46	38.67	50.58	131.40	255.50	268.90	184.50	77.61	47.86	64.03	105.70	117.00	1,384.00
1966	54.26	47.98	107.50	141.00	153.10	70.95	24.02	42.82	16.37	18.65	71.13	44.81	792.60
1967	35.02	37.67	48.41	30.28	65.85	64.88	29.46	97.04	37.30	21.15	62.11	37.56	566.70
1968	38.68	40.25	57.23	61.82	163.50	172.30	46.95	130.90	23.27	21.77	72.70	36.49	865.90
1969	51.74	43.64	56.26	143.50	231.00	206.90	62.85	59.30	52.21	83.61	93.56	80.06	1,165.00
1970	50.52	53.66	59.70	68.68	164.60	120.80	42.05	25.60	63.65	48.42	84.50	47.49	829.70
1971	44.33	48.72	70.13	72.27	55.20	31.45	34.95	28.48	23.58	55.95	68.52	45.21	578.80
1972	42.31	49.59	78.31	44.07	26.63	27.97	24.21	24.02	26.74	42.39	60.71	45.16	492.10
Total	1,474.74	1,735.04	2,454.42	4,333.46	8,126.46	6,094.53	2,655.79	2,212.54	1,507.87	1,454.44	2,115.19	1,788.97	35,953.45
Mean	38.8	45.7	64.6	114	214	160	69.9	58.2	39.7	38.3	55.7	47.1	946.14

Table 8.--Mean-monthly and annual discharge, in acre-feet, of
Santa Cruz River at Cundiyo (Station 08291000)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1935	450	461	1,050	2,550	8,440	9,500	2,160	2,950	2,100	1,100	829	837	32,430
1936	615	567	1,010	3,160	5,270	2,140	1,150	1,400	900	1,140	772	588	18,710
1937	561	619	1,290	5,290	7,380	4,980	3,150	1,270	1,000	873	595	546	27,550
1938	417	380	681	2,270	4,390	2,230	1,140	786	1,510	1,820	928	722	17,270
1939	635	623	2,120	4,730	5,800	2,050	982	756	800	715	439	380	20,030
1940	418	415	1,960	3,530	6,770	3,150	1,120	858	876	1,100	608	651	21,460
1941	742	684	2,010	4,000	20,260	13,890	4,450	3,800	2,230	3,770	2,580	1,390	59,800
1942	1,120	940	1,480	12,220	16,220	9,040	1,880	1,170	1,770	1,020	697	584	48,140
1943	662	787	1,180	3,850	4,060	1,590	865	1,070	803	732	478	563	16,640
1944	480	587	770	2,410	8,750	5,670	2,090	1,040	637	853	650	587	24,520
1945	555	667	1,560	4,180	10,780	4,980	1,690	1,190	850	740	519	413	28,120
1946	434	467	745	2,570	1,900	763	588	784	608	692	549	521	10,620
1947	519	516	732	1,240	3,610	1,250	562	820	658	685	586	601	11,780
1948	582	686	1,290	4,920	8,040	4,620	1,540	988	563	601	494	417	24,740
1949	483	463	716	3,110	6,400	5,000	3,520	1,350	512	578	524	397	23,050
1950	415	359	501	1,220	976	437	407	313	339	294	283	235	5,780
1951	292	328	429	787	1,440	737	383	1,180	670	557	507	469	7,780
1952	525	491	905	3,280	7,950	6,660	1,510	971	770	548	481	482	24,570
1953	573	543	932	1,600	4,420	3,950	1,510	724	468	513	554	461	16,250
1954	458	455	648	1,910	3,070	1,510	964	924	581	532	460	422	11,930
1955	458	514	494	910	3,350	2,340	1,450	3,170	1,800	764	594	612	16,460
1956	525	515	722	795	1,060	419	347	281	147	239	279	286	5,620
1957	352	374	620	2,590	5,580	6,260	2,310	4,230	2,500	1,340	1,190	906	28,250
1958	692	708	1,300	6,390	14,740	8,600	1,740	1,150	968	823	639	565	38,320
1959	448	349	448	993	2,220	1,390	637	1,710	631	606	484	441	16,360
1960	492	405	3,120	6,220	5,610	5,060	2,610	1,250	736	714	538	480	27,230
1961	468	429	673	2,940	5,020	3,120	1,250	1,780	1,300	924	763	592	19,250
1962	515	696	925	4,090	5,640	1,870	1,100	614	499	575	539	498	17,560
1963	477	521	1,820	3,020	3,030	1,090	557	725	1,020	698	533	509	14,020
1964	413	356	511	2,250	3,270	1,820	794	802	768	587	512	512	12,600
1965	555	496	891	3,380	6,170	5,900	3,320	2,720	2,210	1,440	1,040	1,160	29,290
1966	887	643	1,890	3,100	5,390	2,550	1,380	2,050	940	797	660	587	20,880
1967	556	487	768	1,190	1,440	1,030	772	2,180	1,660	1,020	579	565	12,230
1968	546	466	772	1,580	4,300	3,780	1,390	2,430	1,130	785	660	589	18,440
1969	586	567	734	3,360	5,160	3,760	1,470	1,080	958	686	574	570	19,510
1970	364	413	466	1,050	2,750	1,520	1,190	1,560	1,010	885	701	628	12,540
1971	536	485	657	838	1,290	936	730	1,180	968	1,190	1,100	964	10,880
1972	752	599	1,230	1,160	1,610	1,360	611	714	872	1,140	1,000	875	11,940
Total	20,558	20,061	40,050	114,683	213,546	136,952	55,319	53,970	38,762	34,076	25,918	22,605	782,550
Mean	541	528	1,054	3,018	5,620	3,640	1,456	1,420	1,020	897	682	595	20,593

Summary of streamflow data

The mean-monthly and annual runoff, for the seven selected sites along the Pojoaque River drainage, the Rio Grande at Otowi Bridge near San Ildefonso (Station 08313000) and the Santa Cruz River at Cundiyo (Station 08291000) are listed below. Records in acre-feet are for the period 1935-72.

Month	Site 1	Site 2	Site 3	Site 4	Site 4a	Site 5	Site 6	Station 08291000	Station 08313000
Jan.	237	240	53.8	4.08	64.2	0.3	291	541	38,800
Feb.	217	219	49.2	3.11	69.1	.5	266	528	45,700
Mar.	339	343	76.9	9.00	130	30	449	1,054	64,600
Apr.	869	879	197	35.9	309	173	1,249	3,018	114,000
May	1,744	1,764	396	80.7	489	317	2,501	5,620	214,000
June	1,365	1,382	310	61.0	353	210	1,919	3,640	160,000
July	679	686	154	26.7	133	37	884	1,456	69,900
Aug.	673	682	153	26.0	131	36	876	1,420	58,200
Sept.	518	525	118	18.3	106	18	664	1,020	39,700
Oct.	433	439	98.3	13.7	97.6	15	553	897	38,300
Nov.	325	329	73.7	8.55	88.4	9.3	411	682	55,700
Dec.	<u>264</u>	<u>267</u>	<u>60.0</u>	<u>5.50</u>	<u>71.9</u>	<u>2.4</u>	<u>328</u>	<u>595</u>	<u>47,100</u>
Annual	7,665	7,755	1,740	292	2,042	849	10,390	20,593	946,140

Annual runoff values for six of the seven sites along the Pojoaque River were estimated by Reiland (1974). The values in this report and their ratio of the values for the period 1935-72 to the values listed in the 1972 report are:

<u>Site</u>	<u>Acre-feet</u>	<u>Ratio</u>
1.--	8,000	0.958
2.--	8,100	.957
3.--	1,800	.967
4.--	300	.973
5.--	700	1.21
6.--	10,700	.973

Ground water

Estimates of the total amount of ground water that could be removed by lowering the water level in the aquifer in the basin to depths of 500, 1,000, and 1,500 feet (152, 305, 457 metres) below the land surface in the Pojoaque River drainage basin were made, assuming the following conditions:

- 1.--The Pojoaque River drainage basin boundaries are considered to be no-flow boundaries for the ground-water system in all but the eastern part where the crystalline rock forms the boundary.
- 2.--Stream-flow depletion is not considered.
- 3.--Storage coefficient (0.2) is considered constant with depth.

Depth to water

A depth-to-water map for the Pojoaque River drainage basin (fig. 2) was prepared using land-surface contour data from Geological Survey 7½ minute quadrangles and altitude of the water table contours from Trauger (1967, fig. 1).

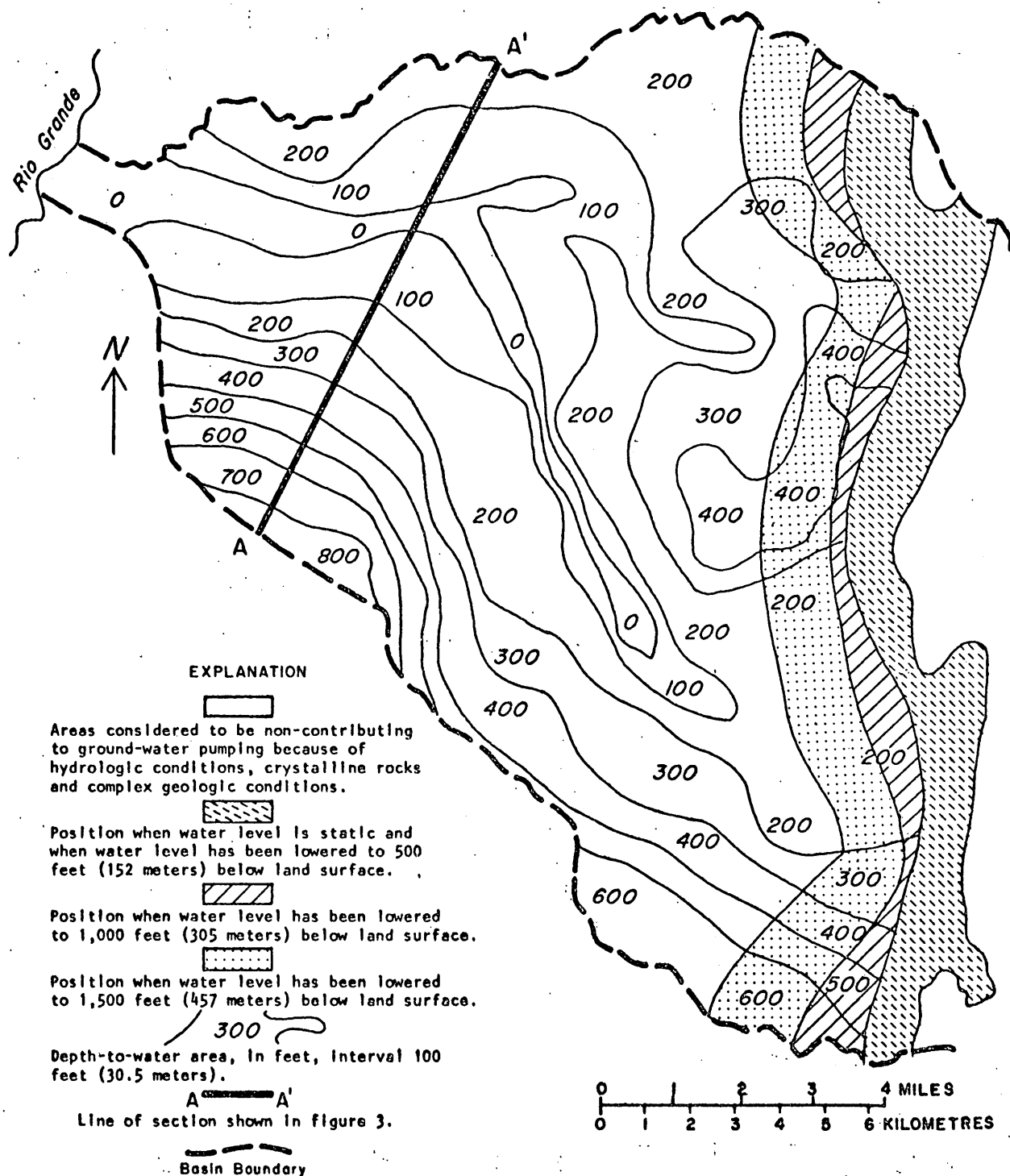


Figure 2.--Depth to water in the Pojoaque River drainage basin.

Estimated volume of ground water in storage recoverable
by lowering the water level

The depth to water in the Pojoaque River drainage basin ranges from 0 to 800 feet (0 to 244 metres) below land surface (fig. 2). If the water level were lowered throughout the basin to a depth of 500 feet (152 metres) below land surface, the aquifer would be drained in that part of the basin northeast of the 500-foot (152 metres) depth-to-water area shown on figure 2. Each depth-to-water area was planimetered to obtain its area in square miles. The total acres involved for each area were then calculated to obtain acre-feet of saturated material. The volume of water, in acre-feet, that would be removed using a storage coefficient of 0.2, was then calculated.

Computations are given below:

Depth-to-water areas (feet)	Area (square miles)	Acres	Volume of saturated material (acre-feet)	Volume of water (acre-feet)
0 to 100	6.2706	4,013	2,006,600	401,320
100 to 200	17.5452	11,229	4,491,600	898,310
200 to 300	37.2069	23,812	7,143,700	1,428,740
300 to 400	17.7104	11,335	2,266,900	453,390
400 to 500	12.1715	7,790	779,000	155,800

Total volume of water that could be removed by lowering the water level to a depth of 500 feet below the land surface	3,337,560
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If the water level were lowered to a depth of 1,000 feet (305 metres) below land surface over the basin, the boundary of the noncontributing area on the east would move westward as shown on figure 2. Northeastward of the 600-foot (183 metres) depth-to-water area shown on figure 2, the water level would be lowered 500 feet (152 metres). To the southwest, the water level would be lowered between 200 to 400 feet (61 to 122 metres). The volume of water that could be withdrawn from the basin, assuming a depth to water of 1,000 feet (305 metres) below land surface, was calculated in the same way as when a depth to water of 500 feet (152 metres) was assumed. Computations are given below:

Depth-to-water areas (feet)	Area (square miles)	Acres	Volume of saturated material (acre-feet)	Volume of water (acre-feet)
200 to 300	1.7781	1,138	227,600	45,520
300 to 400	2.2265	1,425	427,500	85,500
400 to 500	2.4626	1,576	630,400	126,090
500 to 600	92.0770	58,929	29,464,640	5,892,930

Total volume of water that could be removed by lowering the water level from 500 feet to 1,000 feet below land surface	6,150,040
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If the water level were lowered to a depth of 1,500 feet (457 metres) evenly over the basin, the boundary of the non-contributing area on the east would move westward as shown on figure 2. Depletions of 500 feet (152 metres) would occur over the entire area westward from the boundary of the noncontributing area. Calculations were made as for the previously assumed depths to water of 500 and 1,000 feet (152 and 305 metres). Computations are given below:

Area (square miles)	Acres	Volume of saturated material (acre-feet)	Volume of water (acre-feet)
85.2557	54,563	27,281,800	5,456,400
Total volume of water that could be removed by lowering the water level from 1,000 feet to 1,500 feet below land surface			5,456,400

Summary of ground-water data

Computations made to determine the volume of water that could be withdrawn from the Pojoaque River drainage basin, assuming drainage of the aquifer to depths of 500, 1,000, and 1,500 feet (152, 305, and 457 metres) were made. The results indicate that 3.3×10^6 acre-feet (4,069 cubic hectometres) of water could be withdrawn by draining the aquifer to a depth of 500 feet (152 metres); 9.5×10^6 (117,135 cubic hectometres) by draining the aquifer to a depth of 1,000 feet (305 metres); and 14.9×10^6 (18,372 cubic hectometres) by draining the aquifer to a depth of 1,500 feet (457 metres).

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ESTIMATED AVAILABILITY OF SURFACE AND GROUND WATER IN THE POJOAQUE
RIVER DRAINAGE BASIN, SANTA FE COUNTY, NEW MEXICO

By

Louis J. Reiland and Francis C. Koopman

Figure 1.--Map showing the Pojoaque River drainage basin,
Santa Fe County, New Mexico.