

A GEOCHEMICAL AND HYDROLOGICAL INVESTIGATION OF GROUNDWATER
RECHARGE IN THE ROSWELL BASIN OF NEW MEXICO: SUMMARY OF
RESULTS AND UPDATED LISTING OF TRITIUM DETERMINATIONS

by

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ABSTRACT

For the investigation of recharge and flow patterns in the Roswell (N.M.) artesian basin we have used different approaches. Isotope determinations (tritium, deuterium, and oxygen-18) have been made as a function of time and space. Observation well levels, springflow, and precipitation have been analyzed by stochastic and numerical methods. A hydrogeologic survey of representative springs in the recharge zone along the western flank of the basin has been performed. A detailed discussion of various phases of this work has been given in separate Partial Completion Reports. In the present report, we summarize and integrate the results. An updated listing is presented of tritium activity determinations in precipitation, surface water, springs, and groundwater from over 120 sampling points in the basin. Several distinct recharge components have been recognized in the basin. The accumulated evidence indicates that recharge to the Principal Aquifer from the surface of the Principal Intake Area has been overestimated in the past. In order to account for the groundwater budget of the basin, substantial contributions from deep leakage must be included. These are primarily supplied by the Glorieta Sandstone and the Yeso Formation of the western basin flank.

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Mr. Ray Wyche, manager of the Pecos Valley Artesian Conservancy District, played a key role. With his vast experience he provided guidance, technical advice, and hydrologic data. We are particularly indebted to him for making available the PVACD observation well records.

Mr. and Mrs. Charles Mulcock gave their permission to install recording equipment for monitoring the discharge of Paul Spring. They also supplied precipitation samples and records from the Elk weather station which they operate. Mr. Dolph Jones provided us with water samples from the Hope (N.M.) city well. Mr. Bruce Griffith sampled Agua Fria Spring (Ruidoso Downs, N.M.). Messrs. Don Menefee and T. E. Vandiver of Artesia, N. M., assisted us with sampling wells on their properties. Mr. R. O. Anderson (Roswell) allowed us access to wells on his ranch in the Hondo valley. Equally helpful were the occupants of the Dick Corn and Tom Corn ranches north of Roswell. We are deeply appreciative of the assistance from many ranchers and farmers in the basin.

Professor Gary Landis (Geology Department, University of New Mexico) performed deuterium analyses. Staff members of the National Weather Bureau (NOAA) office in Roswell collected precipitation samples for this project.

INTRODUCTION

In an earlier report (Gross et al., 1976) we presented evidence for the existence of several identifiable recharge components in the groundwater circulation of the Roswell basin. By recharge components we mean contributions to groundwater flow originating from different elevations, or in different seasons, or which have traveled specific routes before being incorporated into the Principal Aquifer, the San Andres Formation. The evidence was tentative and based primarily on measurements of environmental tritium activity in natural waters. We stated that this was too narrow an approach to permit a quantitative characterization of recharge in this extensive and hydrologically complex basin. For this reason, specific questions pertaining to recharge in the basin were formulated and methods for their solution were proposed. Tritium activity measurements were to be supplemented by determinations of other isotopes, especially of oxygen-18 and deuterium; by the stochastic and statistical analysis of water levels in observation wells, of precipitation, and of stream runoff; by the geologic investigation of recharge; and, ultimately, by numerical modeling.

In the present report, we summarize the progress made in all but the last of these topics. Attempts at modeling parts of the basin have just begun. The investigation is continuing in a new Matching Grant Project, B-059-NMEX (Recharge in Semiarid Mountain Environments).

In the earlier report (Gross et al., 1976) we have presented a hydrogeological description of the basin and of the then status of the hydrologic investigation. This material is necessary background for what follows, however it will not be repeated here.

STATEMENT OF THE PROBLEM

Groundwater in the Principal Aquifer, the San Andres Formation, is apparently supplied by six sources and/or processes. Of these six contributions, the first four ones to be named below are natural while the last two are induced by man's activities.

(1) Winter and summer precipitation falling on the western flank of the Roswell basin (Capitan Mountains, Sierra Blanca, Sacramento Mountains - see Figure 1) is transmitted eastward into the basin by the Yeso Formation and the Glorieta Sandstone near the base of the San Andres Formation. Eventually it reappears as deep leakage in the Principal Aquifer. The transition into the San Andres Formation is thought to occur under the Principal Intake Area (Figure 1).

(2) Some of this groundwater from the upper Yeso Formation/Glorieta Sandstone reappears at the surface as base flow and springs. This is the case of the Rio Peñasco in its upper course between Mayhill and Hope, near the western edge of the basin, and of the Rio Felix (DeWilde, 1961). The base flow thus created runs off along the surface drainages and is absorbed into the groundwater system where these drainages cross the Principal Intake Area.

(3) Snowmelt and, to a lesser extent, flashfloods from summer thunderstorms run off along the main surface drainages (which are, from north to south: Arroyo del Macho, Salt Creek, Rio Hondo, Rio Felix, Rio Peñasco). Runoff from this source is absorbed into the groundwater system mainly where the drainages cross the Principal Intake Area (Fiedler and Nye, 1933; Gross et al., 1976). The Principal Intake Area is underlain by the karstic San Andres Formation. Its solution features

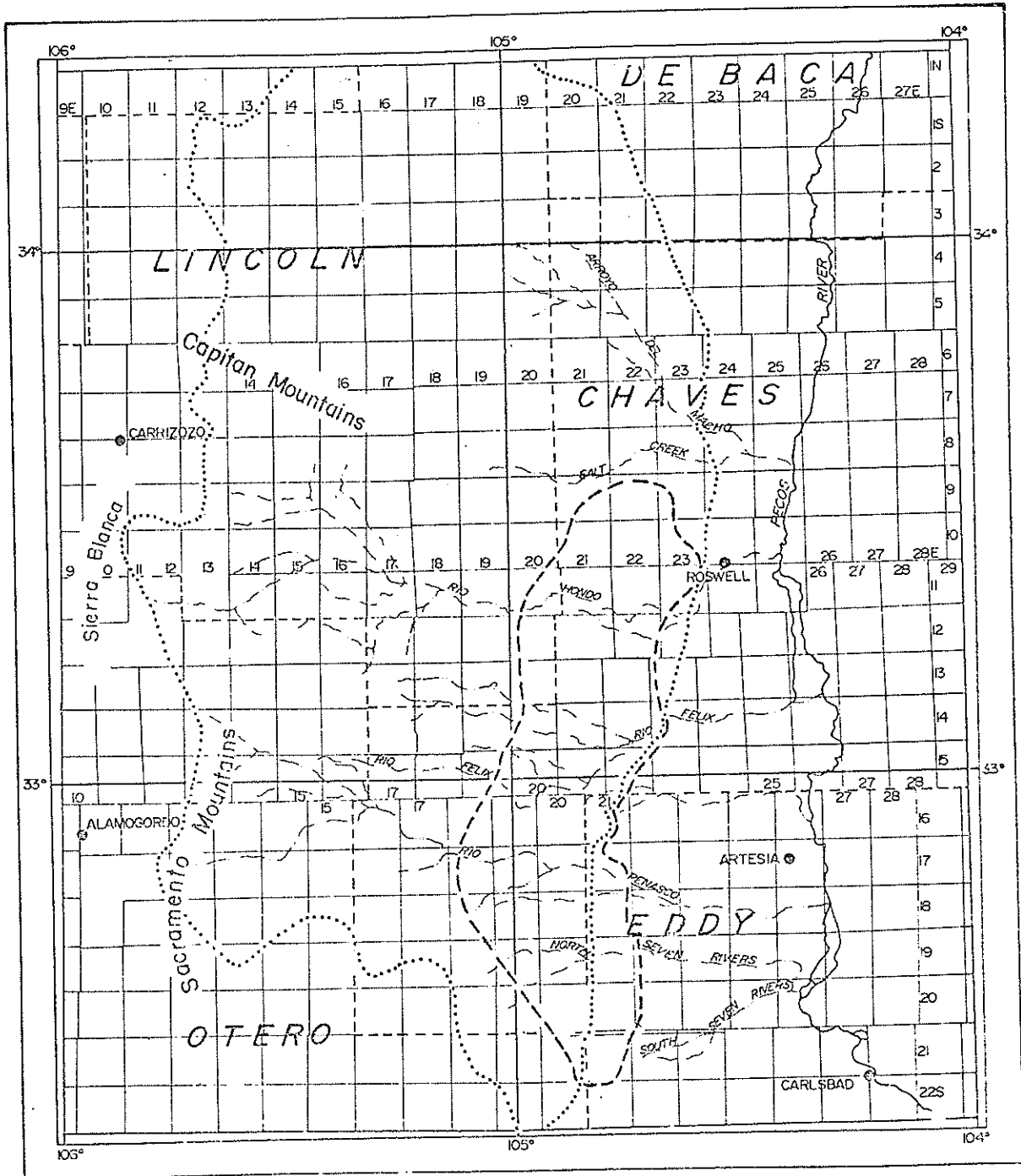


Fig. 1. Outline of the basin. Dotted line: total intake area (after Bean, 1949). Dashed line: Principal Intake Area (after Fiedler and Nye, 1933).

are enhanced by the existence of narrow zones of complex faulting and folding. These "structure zones" (Kelley, 1971; Gross et al., 1976) cut diagonally across the Principal Intake Area from southwest to northeast. They are believed to facilitate the infiltration of surface waters and precipitation; however, the water table is rarely shallower than 300 ft below the land surface and in many instances as deep as 500-600 ft.

(4) Precipitation, principally from summer thunderstorms, falls directly upon the Principal Recharge Area and is absorbed into the groundwater system. We believe that this source accounts for only a small fraction of the recharge to the Principal Aquifer.

There are two additional contributions to the Principal Aquifer's water budget; they are consequences of the lowering of the piezometric head caused by seasonal pumping. They are the main reason for the deteriorating water quality in the basin.

(5) Water from the Shallow (or Alluvium) Aquifer along the Pecos River mingles with irrigation returns and leaks into the Principal Aquifer during the pumping season.

(6) Northeast of Roswell, saltwater is invading the Principal Aquifer in a southwesterly direction. The precedence of this saltwater is not well understood. It presently threatens to impair the municipal water supply of the City of Roswell and the agricultural operations north and northeast of Roswell.

Our work has been primarily aimed at the five first-named groundwater contributions. Ultimately, we would like to be able to estimate their relative proportions in the makeup of the water in the Principal Aquifer; as well as the sources, flow paths, and mean residence times

of each of these contributions. Also to be considered are fluctuations of these different components as a result of climatic and man-made factors.

Stable-isotope studies, presently in progress, may give some hints concerning the sources and nature of Contribution Six.

It is not unreasonable to expect that even modest progress toward the broad objectives here outlined will lead to a more quantitative understanding of all six contributions and their interaction in the basin.

APPROACH

Systematic tritium measurements have been continued. Their primary purpose is to help identify natural recharge components and shallow aquifer leakage.

Stochastic analysis of observation well and streamflow records was used to estimate the fast recharge contribution from the drainages of Rio Hondo and Rio Peñasco.

A hydrogeologic survey of springs along the western edge of the basin actually led to identification of the second component. This spring survey was supplemented by a more detailed hydrologic study of Paul Spring which was equipped with a water level recorder.

The stable isotopes deuterium and oxygen-18 were measured in selected samples. This was an attempt to distinguish between groundwaters derived from summer thunderstorms and winter snows, and/or between precipitation contributions produced at different elevations in the basin.

Several aspects of the work are described separately in three Partial Technical Completion Reports to WRI (Duffy et al., 1978; Gross et al., 1979; Davis et al., 1979).

The several phases of the work are summarized in the following.

TRITIUM ACTIVITY IN BASIN WATERS

Tritium activity measured in water from precipitation, springs, rivers, and wells plays an important part in all phases of this study. Examples of the use of tritium activity data in hydrologic analysis are given below. Our systematic sampling program, conducted for over twenty years, has been described in a previous report (Gross et al., 1976). In the Appendix to the present report, we give a corrected and updated listing which supersedes one given there.

The present listing not only includes activity determinations since the previous listing was published but all values have been recalculated with an improved background correction and a counting statistical standard deviation (see Appendix for details). This recalculation does not significantly affect the conclusions based on previous values.

Several new sampling points, which are strategic for the basin analysis, have been added.

A detailed interpretation of the tritium data remains to be done. It can be expected to yield answers to such questions as: How does pumpage in the basin affect the leakage of deeper (older) water; what is the residence time of groundwater in the southern (Artesia) part of the basin; what is the role of the structure zones (Border Hill, Six Mile, Y-0) in recharge to the Principal Aquifer?

STOCHASTIC ANALYSIS OF OBSERVATION WELL RECORDS

This study has been issued as a Partial Technical Completion Report (Duffy et al., 1978).

In agreement with conclusions reached from tritium results, the stochastic analysis indicates that a rapid recharge component is linked to seasonal runoff through the drainage basins of the rivers Hondo and Peñasco where they cross Fiedler and Nye's (1933) Principal Intake Area. Direct rapid infiltration of summer precipitation over the Principal Intake Area seems secondary as a source of recharge, even in the vicinity of the highly fractured Border Hills structural zone where two PVACD* observation wells (Nos. 2 and 3) provide good control.

The average recharge contribution from Rio Hondo was found to be 17,425 acre-feet/year, in reasonable agreement with Bean's (1949) estimate of 19,400 acre-feet/year, based purely on stream-gauge data of a small number of years.

The storativity/transmissivity ratio in the Hondo valley, an important hydrologic parameter, was estimated at a mean value of 4.38×10^{-5} days/ft². Unfortunately, data on porosity are lacking. Therefore, it is not possible at present to estimate storativity and transmissivity separately.

The lag between runoff and recharge was found to fall in the range 0 to 6 months, in agreement with the high tritium values observed in PVACD Observation Well No. 8.

Channel losses where the Hondo crosses the Principal Intake Area (466 to 486 ft³/month per foot of channel) are more than twice as high

* Pecos Valley Artesian Conservancy District, Roswell, NM.

as in the channel west of the Principal Intake Area (220 ft³/month per foot of channel).

The data for Rio Peñasco are much less certain. No quantitative estimates were obtained but the results clearly show that channel leakage in the lower course of the Peñasco makes an important recharge contribution. Bean (1949) estimated it at 9000 acre-feet/year. The reconnaissance work by DeWilde (1961) indicates that hydrologic conditions are similar in the Rio Felix drainage.

More work is needed to compute the Peñasco's contribution and, of course, those by Arroyo del Macho and Rio Felix. In those drainages we are hampered by the lack of suitable observation wells and of stream gauges.

Observation wells located in the interfluvial highlands between the drainage basins show a completely different hydrologic behavior. Well level fluctuation is dominated by a long-term response (Duffy et al., 1978, Fig. 4). This long-term response may be related to changes in mean annual rainfall, changes in groundwater pumpage in the Pecos Valley, or a combination of these two factors. Groundwater samples from the interfluves are characterized by low tritium values.

The study underscores the importance of deep recharge, that is, underflow to the San Andres Formation through the Yeso Formation and the Glorieta Sandstone aquifers. This contribution is estimated at 133,000 acre-feet/year for a 100 mile (N-S) length of the basin (Duffy et al., 1978, p. 58).

HYDROGEOLOGIC SPRING SURVEY

This study has been submitted as a separate report (Davis et al., 1979). It is concerned with hydrologic conditions west of Fiedler and Nye's Principal Intake Area (Figure 1).

Most springs to the west of the Principal Intake Area are related to the Yeso Formation and to the Glorieta Sandstone. This provides independent evidence for a deep recharge component supplied by these formations. The springs enable us to sample and investigate this deep component.

Springs are fed by three types of groundwater systems:

(1) Perched, rather localized systems characterized by relatively high tritium contents. They account for 62% of the studied springs.

(2) Springs fed by valley underflow; these groundwater systems are more extensive.

(3) A very few springs are apparently related to a regional water table, which in this western zone is as deep as 1000 feet below the land surface.

The tritium content of the springs generally decreases as the groundwater system increases in size.

The Rio Hondo is primarily fed by snowmelt while the Rio Peñasco receives a substantial contribution from perched and underflow springs in its upper course. This is the likely reason why Peñasco waters are substantially lower in tritium.

Rio Felix seems to derive much of its water from a rather extensive confined and possibly perched groundwater system, the Flying-H aquifer

(DeWilde, 1961). Its tritium activity is also much lower than the runoff through Rio Hondo.

These differences are important for an understanding of the hydrology of different parts of the basin because they could help explain the apparently longer residence times in the southern (Artesia) part of the basin as opposed to the northern Roswell section (Rabinowitz et al., 1977). Based on tritium ratios alone, the makeup of the recharge supplied by the Hondo is primarily snowmelt; the recharge supplied by the Peñasco (and the Felix) is, to a considerable degree, groundwater from the Yeso Formation and from the Glorieta Sandstone that supplies the base flow of these rivers (see p. 2, Recharge Component Two).

PAUL SPRING

The Paul Spring perched aquifer was selected for more detailed study as a representative example of recharge processes in the basin. This work is described in a separate report (Gross et al., 1979). Springflow was continuously monitored for 453 days (between January 1977 and April 1978). A detailed geohydrologic map of the area was prepared. Tritium was measured in spring discharge and precipitation. Numerical and stochastic analysis and cross-correlation were performed on the data. The results suggest that a deep flow component plays an important role, hitherto underestimated, in the groundwater recharge to the basin. This deep component is transmitted by the Permian Yeso Formation and the Glorieta Sandstone Member of the San Andres Formation. At Paul Spring, this may account for as much as 80% of the discharge.

It appears that the quality of the records is poor, and important questions remain unresolved, especially one about the character of the aquifer response to recharge. For these reasons, the measuring setup has been improved, and we have recently started to record springflow again. A considerably longer series is needed to correlate these springflow data with other basin parameters, such as water level fluctuations in observation wells of the Principal Recharge Area. On the whole, this work supports the conclusions drawn from the hydrogeologic spring survey.

OXYGEN-18 AND DEUTERIUM MEASUREMENTS

Subtle differences in isotope content characterize waters of different condensation, precipitation, and infiltration (percolation) history. The following statements set down the broad principles involved. For details, the reader is referred to a textbook by Faure (1977).

(1) During condensation of cloud moisture, the heavier isotopes (oxygen-18 and deuterium) tend to fall out first. Consequently, the higher the elevation (as along a mountain front) the isotopically lighter is the precipitation. Since mean air temperature decreases with elevation, a positive correlation exists between mean air temperature and oxygen-18 (and deuterium) content of precipitation.

(2) During evaporation, the heavier isotopes tend to remain in the liquid. During melting, the heavier isotopes are enriched in the solid.

(3) As a rule, snow and snowmelt are isotopically lighter than water derived from summer thunderstorms.

(4) Oxygen-18 and deuterium content of precipitation are correlated; the per mil difference from Standard Mean Ocean Water (SMOW) of deuterium, plotted against that of oxygen-18, yields the "meteoric line" (Craig, 1961). As a result of strong evaporation (such as in playas of closed basins in arid regions) or of interaction with bedrock, the isotope composition of a given water sample will be displaced with respect to the meteoric line because oxygen-18 is enriched more strongly than deuterium. This displacement is a valuable aid in unraveling the water's history and path. Frequently a correlation is found between

oxygen-18 enrichment and salt content of water that underwent strong evaporation.

(5) If (as in the Roswell basin) calcium carbonate is the predominant aquifer material, isotopic exchange may occur between water and bedrock, but only the oxygen will be affected. This leads to the water becoming enriched in oxygen-18. For this "oxygen shift" to be appreciable, high temperatures and/or very long residence times are required. Thermal waters are frequently characterized by an oxygen shift.

(6) Groundwater that neither has undergone strong evaporation during infiltration nor interaction with the aquifer matrix conserves the characteristic composition inherited from its meteoric "parent", that is, its isotopic makeup is a function of air temperature, elevation, and condensation history. Hence, groundwater may "remember" past climate in its isotopic makeup.

Preliminary results have been obtained in the Roswell basin. They are summarized below. A detailed report is to be prepared in the course of the current project (B-059-NMEX).

Rain and snow waters show the characteristic correlation between oxygen-18 content and mean air temperature. Most surface and all groundwater samples fall close to the meteoric line.

Isotope exchange with the aquifer matrix was not observed.

Well samples from the Peñasco drainage area are slightly "heavier" than from wells in the Hondo basin. This seems to bear out the different origin of the recharge water as discussed in a previous section.

The Clardy wells (Sampling points WP4 on Figure 3), which are the only wells still flowing in the Roswell area, show also a slightly heavier oxygen-18 makeup. The reason for this is not clear at this time.

CONCLUSION

The accumulated evidence indicates that the contribution of the Principal Intake Area to the basin recharge has been overestimated in the past. In order to establish a realistic groundwater budget for the basin, substantial contributions from deep water must be included. These are primarily supplied by the Glorieta Sandstone and the Yeso Formation.

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APPENDIX

List of Erratas

In a previous report (Gross et al., 1976) two errors need to be corrected.

(1) Figures 4a and 4b must be exchanged. The figure labeled 4a (p. 33) shows tritium activity in the long-record wells (Elk, Pollard, Woods, Allison, Clardy, Patterson). Figure 4b (p. 38) shows the PVACD observation wells (numbered 1 to 9).

(2) On p. 23 it is stated that of 10 observation wells originally drilled, six have been maintained with water level recorders. The number presently in operation is seven. (Well No. 7 collapsed in 1975 but was restored by PVACD in 1977 or 1978). They are those shown in Appendix B of that report (Nos. 1, 2, 3, 4, 7, 8, 9). Well No. 5 is equipped with an electric pump and has been sampled.

Updated Listing of Tritium Activity in Precipitation,
Springs, Surface Runoff, and Subsurface Waters

This listing supersedes and continues that given by Gross et al. (1976).

Units of Tritium Measurements

Tritium measurements are reported in Tritium Units (TU).

$$\begin{aligned} 1 \text{ TU} &= 1 \text{ tritium atom per } 10^{18} \text{ hydrogen atoms} \\ &= 7.2 \times 10^{-3} \text{ dpm/ml} \\ &= 3.24 \times 10^{-15} \text{ Ci/ml} \end{aligned}$$

Background Correction and Counting Statistics

A water sample is converted to hydrogen gas. Its net activity, in tritium units, as determined in our internal gas counter, is

$$A_s = (T/P_s) \cdot (R_s/V_e) \cdot 481.3 ,$$

where

- T = temperature in °K.
- P_s = hydrogen pressure in mm Hg.
- R_s = net counting rate in counts per minute.
- V_e = effective counting volume in liters (an instrumental constant).

481.3 = constant of proportionality.

This expression indicates that the counting rate is a function of the hydrogen pressure.

The net counting rate

$$R_s = R_g - R_b ,$$

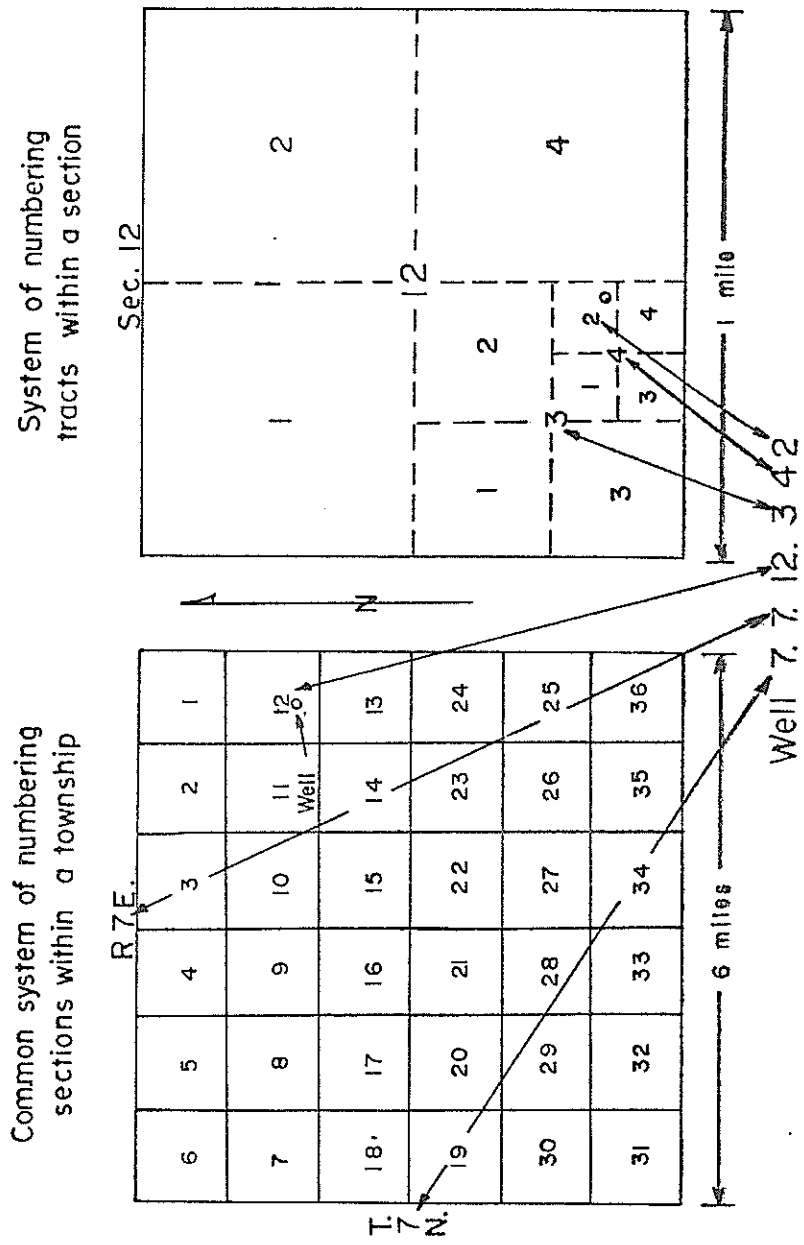


Fig. 2. Coordinate system used for sampling locations.

the difference between the gross and background counting rates.

The background counting rate is determined periodically by counting a sample of hydrogen gas prepared from "dead" water.

In the new listing presented in this report, the background counting rate is adjusted to the sample pressure

$$R_b' = R_b (P_s/P_b) .$$

This correction is especially significant for samples counting at less than 10 TU.

The standard deviation of R_s is (Williams and Florkowski, 1967):

$$\sigma_s = \pm\sqrt{\sigma_g^2 + \sigma_b^2} = \pm\sqrt{R_g/T_g + R_b/T_b}$$

T_g, T_b = gross and background counting times in minutes.

Coordinate System

The coordinate system used for reporting the location of sampling points is the standard Land Survey coordinate system illustrated in Figure 2.

Most irrigation wells have this coordinate location affixed to the water meter, in addition to the well permit number. This number (preceded by the letters RA) is also given in the listing if it was available.

Listing Categories and Symbols

Sampling points are shown in the map of Figure 3. Each sampling point is labeled with a letter symbol designating its category, and with a number. The categories and symbols used in this report are as follows:

<u>Listing category</u>	<u>Symbol</u>
Precipitation	None
Socorro (incl. Condensed Water)	
Langmuir Lab	
Elk (Charles Mulcock)	
Roswell Airport	
Fort Stanton	
Surface Water	S
Springs	F
Observation Wells	O
Windmills	M
(locations mostly in the Recharge Belt but includes a few in the Discharge Belt)	
Wells in the Recharge Area	WR
(includes irrigation wells, house wells, Hope municipal supply)	
Wells Producing from the Alluvium Aquifer	WA
Wells Producing from the Principal Aquifer	WP
Wells Producing from the Alluvium and Principal Aquifers both	WAP

The description of wells was taken from driller's logs made available by the New Mexico State Engineer Office in Roswell. For further geological detail, the reader is referred to Gross et al., 1976, Appendix A.

CONDENSED WATER

PRECIPITATION: 'M' MOUNTAIN STATION
SOCOPRO, N.M.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
06/27/63	1589.9+/-20.2	1438	TRACE PRECIPITATION
07/04/63	1346.5+/-14.2	1481	RELATIVE HUMIDITY 34%
07/06/63	1119.7+/-15.4	1482	RELATIVE HUMIDITY 34%
07/07/63	2245.1+/-8.7	1483	RELATIVE HUMIDITY 38-58%
07/10/63	1342.3+/-11.7	1480	

PRECIPITATION

PRECIPITATION: LANGMUIR LABORATORY
 17 MILES WEST OF SOCORRO, N.M.
 ELEVATION: 10,783 FT.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
10/20-21/72	62.6+/-	1445	SNOW MELT
07/06-31/74	68.6+/-	1735	RAIN
08/01-27/74	43.7+/-	1736	COMPOSITE
12/08/74	63.5+/-	1737	SNOW
07/05-29/75	70.6+/-	1864	RAIN
07/12/75	105.5+/-	1865	TRACE
07/13-27/75	98.8+/-	1866	COMPOSITE
08/08-28/75	64.8+/-	1942	RAIN
07/12-28/78	64.0+/-	2576	RAIN
08/07-24/78	43.4+/-	2577	RAIN
			TOTAL: 5.09 INCHES
			TOTAL: 2.24 INCHES
			TOTAL: 3.01 INCHES
			TOTAL: 3.65 INCHES
			TOTAL: 0.13 INCHES
			TOTAL: 0.75 INCHES
			TOTAL: 1.59 INCHES

PRECIPITATION

PRECIPITATION: MULCOCK WEATHER STATION
EAST OF FLK, N.M.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS	INCHES
07/74	49.6+	1727	RAIN	4 TO 4.5
08/74	49.6+	1726	RAIN	TOTAL: 1.03
08/24-30/74	33.6+	1728	RAIN	TOTAL: 0.54
09/74	37.6+	1932	RAIN	TOTAL: 0.39
03/12/75 & 03/30/75	68.8+	1933	RAIN	TOTAL: 1.11
05/11-30/75	56.3+	1934	RAIN	TOTAL: 1.65
07/03-10/75	68.6+	1935	RAIN	TOTAL: 1.90
07/11/75	57.0+	1936	RAIN	TOTAL: 1.10
7/12-27/75 & 7/29-30/75	58.2+	2029	RAIN	TOTAL: 1.15
08/75	27.7+	2174	RAIN	TOTAL: 0.86
06/06-27/76	41.0+	2175	RAIN	TOTAL: 1.01
07/12-29/76	27.9+	2186	RAIN	TOTAL: 1.30
07/24-29/76	30.9+	2357	RAIN	TOTAL: 1.14
08/01-05/76	45.3+	2369	RAIN	TOTAL: 0.45
11/12-28/76	55.0+	2372	RAIN	TOTAL: 1.33
04/13-14/77	74.5+	2395	RAIN	TOTAL: 1.82
01/77-03/77	26.5+	2400	RAIN	TOTAL: 2.30
05/12-13/77	31.1+	2392	RAIN	TOTAL: 0.65
06/08-27/77	29.7+	2393	RAIN	TOTAL: 0.54
07/06-28/77	29.0+	2402	RAIN	TOTAL: 0.65
08/08-31/77	149.3+	2409	RAIN	TOTAL: 0.65
09/01-14/77		2540	RAIN	TOTAL: 0.65
10/03-06/77				
11/77-01/78				
03/07/78				

PRECIPITATION

PRECIPITATION: ROSWELL-WEATHER BUREAU
 ROSWELL, N.M.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
05/26/66	568.4+/	1447	RAIN
07/18-20/72	84.8+/	1431	RAIN
07/18-20/72	88.0+/	1451	RAIN
07/20/72	70.4+/	1432	RAIN
08/72	65.7+/	1452	RAIN
08/06-07/72	66.3+/	1434	RAIN
08/08/72	40.6+/	1436	RAIN
08/08-09/72	45.9+/	1442	RAIN
08/26/72	51.4+/	1443	RAIN
09/06/72	87.1+/	1453	RAIN
04/24-30/74	52.7+/	1444	RAIN
08/26/74	108.6+/	1724	RAIN
FALL TO WINTER 1974	35.5+/	1867	RAIN
04/10/75	25.9+/	1931	RAIN
07/04-27/75	63.6+/	1930	RAIN
08/02-26/75	57.3+/	1938	RAIN
07-08/76	29.8+/	2242	RAIN
02/-030-05/77	26.0+/	2561	RAIN
07/77	29.4+/	2557	RAIN
08/11-22/77	75.3+/	2523	RAIN
01/30-31/78	28.7+/	2541	RAIN
02/-03/-05/78	46.7+/	2541	RAIN
	73.9+/	2559	RAIN

COMPOSITE FOR JULY 1972 TOTAL: 4.97 INCHES
 PARTIAL OF 4.27 INCHES
 COMPOSITE FOR AUGUST 1972
 0.62 INCHES FROM 1000 TO 1150 HRS.
 COLLECTED OF 0.88 INCHES
 PARTIAL OF 0.97 INCHES
 COMPOSITE FOR SEPTEMBER 1972
 PARTIAL OF 0.97 INCHES
 COMPOSITE TOTAL: 4.11 INCHES
 SNOW COMPOSITE TOTAL: 0.50 INCHES
 COMPOSITE TOTAL: 0.99 INCHES
 COMPOSITE TOTAL: 2.69 INCHES
 COMPOSITE TOTAL: 1.24 INCHES
 COMPOSITE RAIN TOTAL: 1.17 INCHES
 COMPOSITE RAIN TOTAL: 0.31 INCHES
 COMPOSITE TOTAL: 0.44 INCHES
 COMPOSITE TOTAL: 1.28 INCHES

PRECIPITATION

PRECIPITATION: FLYING H RANCH

APPROXIMATELY 20 MILES EAST OF MAYHILL, N.M.

DATE COLLECTED

T.U.

SAMPLE #

COMMENTS

10/29/76

21.94/1.3

2268

SNOW SAMPLE

SURFACE WATER

MAP SYMBOL IS S#

MAP # S5

DESCRIPTION LOCATION # 11.17.04.120 RIO BONITO
 AT BRIDGE ON US 70 ABOVE CONFLUENCE WITH RIO RUIDOSO IN HONDO, N.M. THE RIVER
 AT THIS POINT IS OFTEN DRY EVEN THOUGH IT IS FLOWING FARTHER UPSTREAM.
 LOCATED IN THE RECHARGE AREA.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
08/26/74	32.9 +/- .9	1720	FLOW=20 GPM (ESTIMATE) T=20.3 C
12/16/74	28.6 +/- .9	1751	
03/26/75	50.1 +/- .6	1778	HIGH FLOW
06/10/75	45.3 +/- 1.3	1890	
08/26/75	29.4 +/- .9	1916	
08/12/76	24.5 +/- 1.2	2220	
10/01/76	20.1 +/- .5	2089	

SURFACE WATER

MAP SYMBOL IS S#

MAP # S6
 DESCRIPTION LOCATION # 11.17.05.000 RIO RUIDOSO
 AT BRIDGE ON SMALL SIDE ROAD SOUTH OFF US 70, JUST WEST OF BRIDGE OVER RIO
 BONITO ON US 70, ABOVE CONFLUENCE WITH RIO BONITO IN HONDO, N.M.
 LOCATED IN THE RECHARGE AREA.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
05/27/73	101.7+/3.2	1599	PH=8.00
03/24/74	150.4+/0.8	1619	RIO BONITO DRY AT CONFLUENCE T=13.5 C
06/12/74	28.2+/1.6	1644	RIO BONITO DRY AT CONFLUENCE
12/16/74	42.9+/1.3	1750	HIGH FLOW
03/26/75	60.3+/0.6	1821	
06/10/75	51.5+/0.6	1891	
08/26/75	48.1+/1.1	1915	
12/12/75	36.3+/0.5	2016	
04/09/76	34.8+/0.6	2074	
06/02/76	47.3+/0.5	2086	
08/12/76	33.7+/1.9	2221	
09/30/76	38.8+/0.4	2090	
10/31/76	40.8+/2.2	2284	

MAP # S7
 DESCRIPTION LOCATION # 11.17.11.300 RIO HONDO
 CROSSING ON NM 395, APPROXIMATELY 2 MILES EAST OF HONDO, N.M., SOUTH OF US 380.
 LOCATED IN THE RECHARGE AREA.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
01/01/73	70.3+/1.5	1464	

SURFACE WATER

MAP SYMBOL IS S#

MAP # S8

DESCRIPTION LOCATION # 11.18.07.000 RIO HONDO
NEAR THE KIMRELL WELLS, 2 MILES EAST OF TIMNIE, N.M.
RIVER IS APPROXIMATELY 300 FT FROM THE WELL.
LOCATED IN THE RECHARGE AREA.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
05/26/73	82.1+/-.9	1597	PH=8.3

MAP # S8

DESCRIPTION LOCATION # 11.18.16.000 RIO HONDO
AT TURNOFF TO R.O. ANDERSON RANCH, APPROXIMATELY 1.5 MILES WEST OF
PICACHO, N.M. ON US 380.
LOCATED IN THE RECHARGE AREA.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
10/01/76	26.5+/-0.5	2092	
10/31/76	28.5+/-1.6	2283	
11/19/76	28.3+/-1.4	2446	
06/23/78	15.9+/-0.7	2513	

SURFACE WATER

MAP SYMBOL IS S#

MAP # S9
 DESCRIPTION LOCATION # 11,21,29,400 RIO HONDO
 AT THE INTERSECTION OF US 380 AND THE ROAD TO P.V.A.C.D. OBSERVATION WELL #4,
 APPROXIMATELY 24 MILES WEST OF ROSWELL, N.M. THE RIVER SELDOM FLOWS AT
 THIS CROSSING.
 LOCATED IN THE 'RECHARGE AREA'.

DATE COLLECTED T.U. SAMPLE # COMMENTS

12/17/74 20.7 +/- .7 1756
 11/18/78 38.9 +/- 1.7 2567

RUNNING HIGH

39

MAP # S10
 DESCRIPTION LOCATION # 10,25,34,334 PECOS RIVER
 BRIDGE ON US 380, EAST OF ROSWELL, N.M.

DATE COLLECTED T.U. SAMPLE # COMMENTS

07/12/73 139.7 +/- .7 1600
 03/26/75 36.0 +/- .9 1786
 08/27/75 25.8 +/- .9 1925
 12/21/75 33.2 +/- .4 2010
 03/29/76 41.6 +/- 1.3 2062
 06/03/76 36.6 +/- .4 2114
 10/02/76 55.1 +/- .5 2100
 11/12/76 41.0 +/- 1.5 2289
 04/01/78 40.7 +/- 2.0 2562

REALLY FULL

SURFACE WATER

MAP SYMBOL IS S#

MAP # S11
DESCRIPTION LOCATION # 11.26.27.000 BOTTOMLESS LAKES NORTH SIDE OF THE MAIN LAKE.
APPROXIMATELY 5 MILES EAST OF ROSWELL, N.M.

DATE COLLECTED T.U. SAMPLE # COMMENTS

07/06/71 107.1 +/- 2.0 1371
07/06/71 120.5 +/- 1.1 1372
06/03/76 35.9 +/- .9 2226

MAP # S12
DESCRIPTION LOCATION # 15.26.27.000 PECOS RIVER
EAST OF LAKE ARTHUR, N.M.

DATE COLLECTED T.U. SAMPLE # COMMENTS

07/12/73 129.1 +/- .9 1604 PH=8.20 T=24.8 C SHALLOW FLOW, CLEAR WATER

SURFACE WATER

MAP SYMBOL IS S#

MAP # S14
DESCRIPTION

LOCATION # 17, 20, 18, 434 RIO PENASCO
SOUTH OF P.V.A.C.D. OBSERVATION WELL #7. TURNOFF TO THE WELL IS APPROXIMATELY
11 MILES WEST OF HOPKINS, N.M., SOUTH OFF US 82.
LOCATED IN THE RECHARGE AREA.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
12/19/74	17.7 +/- 1.7	1772	
03/28/75	16.1 +/- .4	1827	
08/28/75	13.8 +/- .4	1964	
12/19/75	8.7 +/- .7	1999	
03/27/76	10.2 +/- .7	2040	
10/29/76	10.3 +/- .8	2270	
12/17/77	6.2 +/- .7	2524	
04/02/78	7.9 +/- .9	2531	FLASHFLOOD

SURFACE WATER

MAP SYMBOL IS S#

MAP # S15

DESCRIPTION LOCATION # 15.18.16.000 RIO FELIX AS IT FLOWS THROUGH THE FORMER
SAMPLER AT DIFFERENT LOCATIONS ON THE RANCH IS APPROXIMATELY 20 MILES EAST OF MAYHILL, N.M
FLYING H RANCH. TURNOFF TO RANCH IS APPROXIMATELY 60 AND 61. RANCH IS APPROXIMATELY 10 MILES NORTH
ON US 82, BETWEEN HWY MARKERS 60 AND 61. RANCH IS APPROXIMATELY 10 MILES NORTH
OF US 82, ON DIRT ROAD.
LOCATED IN THE RECHARGE AREA.

DATE COLLECTED T.U. SAMPLE # COMMENTS

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/11/73	2.6 +/- .7	1595	T=18.2 C PH=7.50
12/19/74	6.7 +/- .9	1773	
08/28/75	12.1 +/- .9	1967	
12/19/75	7.1 +/- .7	1998	
03/27/76	9.0 +/- .8	2039	
10/25/76	10.1 +/- 1.0	2266	

SURFACE WATER

MAP SYMBOL IS S#

MAP # S16
 DESCRIPTION LOCATION # 16.16.11.240 RIO PENASCO
 APPROXIMATELY 3 MILES EAST OF ELK, N.M. CLOSE TO HWY MARKER 51 ON US 82, NEAR
 MULCOCK'S TRAILER.
 LOCATED IN THE RECHARGE AREA.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/11/73	30.3+/-.9	1594	T=18.6 C PH=7.87
04/08/74	7.9+/-.7	1622	T=14.2 C
12/19/74	5.7+/-.6	1787	
02/21/75	8.9+/-.5	1804	
08/28/75	14.1+/-.7	1970	FLASHFLOOD
12/19/75	9.2+/-.7	1994	
03/27/76	8.1+/-.4	2035	
06/05/76	5.3+/-.5	2145	
08/10/76	10.4+/-.8	2171	
10/29/76	11.9+/-.9	2262	
01/04/77	5.7+/-.9	2556	

MAP # S17
 DESCRIPTION LOCATION # 16.14.24.000 RIO PENASCO
 APPROXIMATELY 2 MILES EAST OF MAXHILL, N.M. ON US 82.
 LOCATED IN THE RECHARGE AREA.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/11/73	29.2+/-.7	1593	T=14.1 C PH=8.10
01/15/79	13.8+/-.1	2549	

SURFACE WATER

MAP SYMBOL IS S#

MAP # S18

DESCRIPTION LOCATION # 11.13.15.000 RIO RUIDOSO
0.3 MILES ON NM 37 FROM STOP LIGHT AT JUNCTION OF NM 37 AND ROAD PAST AIRSTRIP
IN RUIDOSO, N.M. STOP #8 ON ROSWELL GEOLOGICAL SOCIETY FIELD TRIP ON
OCTOBER 27, 1971.
LOCATED IN THE RECHARGE AREA.

DATE COLLECTED T.U. SAMPLE # COMMENTS

10/27/71 104.9 +/- 1.9 1403

MAP # S19

DESCRIPTION LOCATION # 10.13.18.220 RIO BONITO
AT HWY BRIDGE JUST SOUTH OF INTERSECTION OF NM 48 AND FOREST ROAD
TO BONITO LAKE.
LOCATED IN THE RECHARGE AREA.

DATE COLLECTED T.U. SAMPLE # COMMENTS

09/30/76 58.7 +/- .5 2099
10/28/76 55.8 +/- 1.2 2254
01/03/77 53.2 +/- 1.0 2554

SURFACE WATER

MAP SYMBOL IS S#

MAP # S19 LOCATION # 10.12.00.000 RIO BONITO
 DESCRIPTION ABOVE BONITO LAKE, APPROXIMATELY 8 MILES NORTH OF RUIDOSO, N.M. ON NM 48.
 LOCATED IN THE 'RECHARGE AREA'.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
06/10/75	75.2 +/- 1.6	1892	
12/18/75	44.4 +/- 0.3	1989	
03/26/76	53.7 +/- 0.5	2030	
06/05/76	53.3 +/- 0.5	2149	
08/10/76	60.5 +/- 1.8	2167	
09/30/76	65.5 +/- 0.6	2097	
10/28/76	51.8 +/- 1.3	2248	
01/16/79	41.7 +/- 1.4	2552	

MAP # S19 LOCATION # 10.12.00.000 BONITO LAKE
 DESCRIPTION AT BONITO DAM, APPROXIMATELY 8 MILES NORTH OF RUIDOSO, N.M. ON NM 48.
 LOCATED IN THE 'RECHARGE AREA'.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/10/73	119.2 +/- 1.5	1582	T=WARM PH=9.45?

SURFACE WATER

MAP SYMBOL IS S#

MAP # S19 LOCATION # 10.12.00.000 RIO BONITO
DESCRIPTION BELOW PONTO DAM, APPROXIMATELY 8 MILES NORTH OF RUIDOSO, N.M. ON NM 48,
LOCATED IN THE 'RECHARGE AREA'.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/10/73	109.5 +/- 1.0	1583	T=13.0 C PH=7.3
06/10/75	81.0 +/- 1.3	1893	
12/18/75	62.4 +/- .4	1990	
03/26/76	67.3 +/- .6	2031	
06/05/76	59.1 +/- .5	2150	
08/10/76	60.5 +/- 1.8	2166	
09/30/76	64.6 +/- .5	2098	
10/28/76	56.9 +/- 2.0	2249	
01/03/77	57.8 +/- 1.2	2553	

MAP # S20 LOCATION # 10.16.21.000 RIO RUIDOSO
DESCRIPTION ABOUT 6 MILES ON US 70 ABOVE INTERSECTION OF RIO RUIDOSO AND RIO BONITO
IN RUIDOSO, N.M.
LOCATED IN THE 'RECHARGE AREA'.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/10/73	80.4 +/- 1.0	1587	TEMP WARM PH=8.00

SURFACE WATER

MAP SYMBOL IS S#

MAP # S21
 DESCRIPTION LOCATION # 10.15.33.333 RIO RUIDOSO
 ON US 70 AT HWY MARKER 270. ACROSS FROM FOX CAVE, 3.6 MILES WEST
 OF GLENCOE, N.M.
 LOCATED IN THE RECHARGE AREA.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
10/01/76	31.7 +/- .5	2088	
06/23/78	46.6 +/- 1.6	2564	
12/01/78	50.0 +/- 2.1	2568	

MAP # S22
 DESCRIPTION LOCATION # 12.23.05.000 RIO HONDO AT PATTERSON
 ON PATTERSON RANCH APPROXIMATELY 7 MILES SOUTHWEST OF ROSWELL, N.M.
 LATE 1975 SOLD TO HENDERSON

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
05/26/73	68.2 +/- 1.8	2252	PROBABLY FLASHFLOOD

SPRINGS

MAP SYMBOL IS F#

MAP # F1

DESCRIPTION

LOCATION # 10.16.26.441 PETER HURD SPRING
ON SOUTH SIDE OF RIO RUIDOSO AT SAN PATRICIO, N.M. ISSUES FROM ALLUVIUM
APPROXIMATELY 5 FT. ABOVE THE CHANNEL. ALLUVIUM DIRECTLY ADJACENT TO HILLSIDE
COMPOSED OF YESO ROCK. SPRING COULD BE FROM YESO FORMATION (PERCHED SYSTEM) OR
VALLEY ALLUVIUM (UNDERFLOW SYSTEM).
LOCATED IN THE RECHARGE AREA.

DATE COLLECTED

T.U.

SAMPLE #

COMMENTS

05/06/77

44.5+/-1.6

2372

06/26/77

40.0+/-1.7

2431

SPRINGS

MAP SYMBOL IS F#

MAP # F2.
DESCRIPTION

LOCATION # 16.11.34213 PAUL SPRING
ON ROP BANK OPPOSITE MULCOCK'S HOUSE. APPROXIMATELY 3 MILES
EAST OF ELK, N. M. ISSUES FROM FRACTURE IN HIGHLY BRECCIATED SAN ANDRES
LIMESTONE CONTAINING TUFFA AND TRAVERTINE; APPARENTLY A PERCHED SYSTEM. YESO
FORMATION OUTCROPS APPROXIMATELY 20 FT. ABOVE THE SPRING; YESO
FORMATION OUTCROPS APPROXIMATELY 50 FT. BELOW SPRING. SPRING FLOW
CONTINUOUSLY RECORDED WITH V-WATCH WEIR FROM JANUARY 1977 TO MARCH 1978.
LOCATED IN THE RECHARGE AREA

DATE COLLECTED

T. U.

SAMPLE #

COMMENTS

FLOW=35 TO 45 GPM (ESTIMATE) T=15.6 C PH=7.7

T=13.1 C

T=15.2 C

T=9.0 C

19.7+/- .4

19.0+/- .6

13.5+/- .9

11.6+/- .7

6.5+/- .7

21.6+/- .4

16.8+/- .8

10.8+/- .6

15.1+/- .7

4.8+/- .7

6.1+/- .9

7.4+/- .0

2.5+/- .9

3.7+/- .2

14.6+/- .7

13.6+/- .8

11.6+/- .9

15.4+/- .8

2.1+/- .7

11.9+/- .6

11.4+/- .7

12.3+/- .7

10.9+/- .7

11.1+/- .7

03.1+/- .5

04.0+/- .8

SPRINGS

MAP SYMBOL IS F#

MAP # F3

DESCRIPTION LOCATION # 16° 16' 2" 323 CLEVE'S SPRING
 APPROXIMATELY 2 MILES EAST OF ELK, N.M., BETWEEN HWY MARKERS 49 AND 50 ON US 82.
 SPRING LOCATED IN A GROVE OF TREES ON HILLSIDE A FEW HUNDRED FEET
 NORTH OF ROAD ANDRES LIMESTONE, APPARENTLY A PERCHED SYSTEM.
 MEMBERS OF SAN ANDRES LIMESTONE, AND WEATHERED CLAY OUTCROPS JUST BELOW SILTSTONE.
 CROPS JUST BELOW RECHARGE AREA LOCATED IN THE

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
04/08/74	7.5+	1579	
06/15/74	6.1+	1684	
08/23/74	8.9+	1687	T=15.5 C
12/19/74	8.4+	1788	T=16.7 C
02/21/75	9.8+	1796	
08/28/75	16.1+	1992	
12/19/75	8.2+	2033	
03/27/76	6.1+	2147	
06/05/76	15.6+	2168	
08/10/76	11.1+	2260	
10/29/76	11.2+	2339	
12/02/76	4.5+	2341	
12/22/76	3.1+	2343	
01/04/77	7.7+	2346	
01/28/77	5.9+	2364	
03/18/77	6.5+	2368	
05/05/77	6.2+	2432	
06/30/77	3.8+	2434	
09/16/77	3.6+	2539	
01/15/78			

SPRINGS

MAP SYMBOL IS F#

MAP # F4
 DESCRIPTION LOCATION # 10.15.00.000 NOSKER SPRING
 ON RIO RUIDOSO, APPROXIMATELY 11 MILES WEST OF HONDO, N.M. ON US 70.
 LOCATED IN THE RECHARGE AREA

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/10/73	64.5+/1.4	1588	COLDER THAN RIVER PH=7.2

MAP # F5
 DESCRIPTION LOCATION # 20.26.27.100 BOILING (OR BUBBLING) SPRING
 ON PFCOS RIVER, APPROXIMATELY 20 MILES SOUTH OF ARTESIA, N.M. ON US 285.
 IF RIVER HAS HIGH FLOW, SPRING IS COVERED BY RIVER WATER SUCH THAT A
 PROPER SAMPLE CANNOT BE OBTAINED.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
06/05/76	61.2+/1.5	2140	
10/30/76	44.1+/1.7	2272	
12/03/76	53.5+/1.2	2358	LARGE FLOW FROM SPRING
01/05/77	44.9+/1.3	2360	
03/25/77	44.4+/1.4	2366	
09/17/77	39.1+/1.6	2435	
04/01/78	34.6+/1.6	2563	RIVER REALLY HIGH, OVER SPRING

SPRINGS

MAP SYMBOL IS F#

MAP # F6
DESCRIPTION LOCATION # 16.14.26.343 POSEY SPRINGS
APPROXIMATELY 1 MILE WEST OF MAYHILL, N.M.
SPRING FORMS LARGE POND IN RIO PENASCO VALLEY BOTTOM.

DATE COLLECTED T.U. SAMPLE # COMMENTS
06/03/77 7.2+/ .5 2302

MAP # F6
DESCRIPTION LOCATION # 16.14.31.113 MICKISON SPRING
APPROXIMATELY 2 MILES NORTH OF MAYHILL, N.M.
ISSUES FROM ALLUVIUM ON APPARENT STREAM TERRACE. ANOTHER SPRING ISSUES FROM
ALLUVIUM IN VALLEY FLOOR. SPRING DEPOSITING TUFA.

DATE COLLECTED T.U. SAMPLE # COMMENTS
06/03/77 21.6+/ .4 2301

MAP # F6
DESCRIPTION LOCATION # 17.11.11.23 PENASCO HEAD SPRING.
APPROXIMATELY 8 MILES SOUTH OF CLOUDCROFT N.M. ON DIRT ROAD.
ISSUES THROUGHOUT LARGE MARSHY AREA.

DATE COLLECTED T.U. SAMPLE # COMMENTS
05/75/77 19.2+/ .5 2296

SPRINGS

MAP SYMBOL IS F#

MAP # F6

DESCRIPTION LOCATION # 17, 12, 17 (14, 23) BLUFF SPRINGS OF CLOUDCROFT, N.M. ON DIRT ROAD.
ON RIO PENASCO, APPROXIMATELY 14 MILES SOUTH OF CLOUDCROFT, N.M. ON DIRT ROAD.
ISSUES FROM COLLUVIUM, SOME RED AND YELLOW CLAY AND SILTSTONES OF YESO LOCALLY
EXPOSED. SPRING HAS DEPOSITED LARGE AMOUNT OF TUFA.

DATE COLLECTED T.U. SAMPLE # COMMENTS

05/24/77 27.4+/- .4 2295

MAP # F6

DESCRIPTION LOCATION # 17, 12, 16, 431 APPROXIMATELY 12 MILES SOUTH OF CLOUDCROFT, N.M. ON DIRT ROAD.
ON RIO PENASCO, APPROXIMATELY 12 MILES SOUTH OF CLOUDCROFT, N.M. ON DIRT ROAD.
ISSUES ABOUT 30 FT. ABOVE THE BASE OF RIO BONITO MEMBER OF SAN ANDRES
LIMESTONE. APPEARS FLAT-LYING BUT LIMESTONE TOO MASSIVE AND TUFA COVERED FOR
MEASUREMENT.

DATE COLLECTED T.U. SAMPLE # COMMENTS

05/24/77 15.1+/- .4 2294

SPRINGS

MAP SYMBOL IS F #

MAP # F6

DESCRIPTION LOCATION # 17.13.25.441
NEAR SACRAMENTO, N.M.
ISSUES FROM JOINT IN LIMESTONE UNDERLAIN BY RED AND YELLOW SILTSTONE AND CLAY.
BELOW BOTH UNITS, 50 FT. OF BRECCIATED LIMESTONE.

COMMENTS

SAMPLE #

T.U.

DATE COLLECTED

05/25/77

17.2+/ .6

2297

MAP # F6

DESCRIPTION LOCATION # 18.12.1.331
APPROXIMATELY 10 MILES SOUTHWEST OF WEEDE, N.M.
ISSUES FROM FLAT-LYING TABULAR TO THICKLY BEDDED LIMESTONE OVERLAIN BY
RED SILTSTONE.

COMMENTS

SAMPLE #

T.U.

DATE COLLECTED

05/27/77

34.1+/ .6

2298

SPRINGS

MAP SYMBOL IS F#

MAP # F6

DESCRIPTION LOCATION # 18.12.26.423 BARREL SPRING
 NEAR AGUA CHICUITA CREEK, APPROXIMATELY 28 MILES SOUTH OF CLOUDCROFT, N.M.
 ON DIRT ROAD. ISSUES FROM BASE OF THICKLY BEDDED, HORIZONTAL GLORIETA
 SANDSTONE OUTCROP. APPARENTLY A PERCHED SYSTEM, ANOTHER SPRING (SAND SPRING)
 IS LOCATED APPROXIMATELY 1/4 MILE FROM THIS SPRING AND ISSUES FROM SAME
 TYPE OF OUTCROP.
 LOCATED IN THE RECHARGE AREA.

DATE COLLECTED T.U. SAMPLE # COMMENTS

05/27/77 55.9 +/- .5 2299
 08/18/77 42.7 +/- 1.5 2433

MAP # F7

DESCRIPTION LOCATION # 11.14.28.312 GRIFFITH (RUIDOSO DOWNS) SPRING
 PROVIDES THE DOMESTIC WATER SUPPLY FOR RUIDOSO DOWNS, N.M.
 ISSUES FROM HIGHLY JOINTED, TILTED, AND PROBABLY COLLAPSED LIMESTONE OF YESO
 FORMATION. APPARENTLY A PERCHED SYSTEM.
 LOCATED IN THE RECHARGE AREA.

DATE COLLECTED T.U. SAMPLE # COMMENTS

08/12/77 4.9 +/- .5 2310

SPRINGS

MAP SYMBOL IS F#

MAP # F7
 DESCRIPTION LOCATION # 11.14.14.2(1,3) SEEPING SPRINGS
 NEAR RIO RUIDOSO, APPROXIMATELY 3 MILES NORTHEAST OF RUIDOSO DOWNS, N.M.
 ON US 70. ISSUES IN AN AREA OF QUATERNARY ALLUVIUM THOUGHT TO BE UNDERLAIN BY
 YESO FORMATION; APPARENTLY AN UNDERFLOW SYSTEM.
 LOCATED IN THE 'RECHARGE AREA'.

DATE COLLECTED T.U. COMMENTS

08/12/77 39.4+/ .5 2309

MAP # F7

DESCRIPTION LOCATION # 11.13.14.312 BOGG SPRING
 APPROXIMATELY 2 MILES NORTHEAST OF RUIDOSO, N.M.
 ISSUES FROM ROAD FLAT AREA OF ALLUVIUM; APPARENTLY AN UNDERFLOW SYSTEM.
 SANTA ROSA SANDSTONE, DAKOTA SANDSTONE, AND MANCOS SHALE OUTCROP ON
 ADJACENT HILLS.
 LOCATED IN THE 'RECHARGE AREA'.

DATE COLLECTED T.U. COMMENTS

08/12/77 54.8+/ .5 2311

SPRINGS

MAP SYMBOL IS F#

MAP # F8

DESCRIPTION LOCATION # 10.12.24.431
 NORTHWEST OF RUIDOSO, N.M.
 APPARENTLY A PERCHED SYSTEM
 LOCATED IN THE RECHARGE AREA

DATE COLLECTED T.U. SAMPLE # COMMENTS
 08/09/77 63.3+/- .5 2303

MAP # F8

DESCRIPTION LOCATION # 10.12.12.413
 NORTHWEST OF RUIDOSO, N.M.
 ISSUES IN AN AREA OF QUATERNARY COLLUVIUM THOUGHT TO BE UNDERLAIN BY
 TERTIARY IGNEOUS ROCKS; APPARENTLY A PERCHED SYSTEM
 LOCATED IN THE RECHARGE AREA

DATE COLLECTED T.U. SAMPLE # COMMENTS
 08/09/77 54.0+/- .5 2304

SPRINGS

MAP SYMBOL IS F #

MAP # F9

DESCRIPTION LOCATION # 9.13.32.223 LAMAX SPRING
 SOUTHWEST OF RUIDOSO, N.M. ISSUES FROM PIPE SET IN ALLUVIUM WHICH PROBABLY
 HAS SANDSTONE UNDERNEATH. SANDSTONE OUTCROPS 20 FT. EAST OF SPRING
 UNDERPLAIN BY 1 FT. THICK MAFIC, CRYSTALLINE SILL; APPARENTLY AN
 UNDERFLOW SYSTEM.
 LOCATED IN THE RECHARGE AREA.

DATE COLLECTED T.O. SAMPLE # COMMENTS
 08/09/77 7.8 +/- .6 2305

MAP # F10

DESCRIPTION LOCATION # 7.16.07.434 MACHU SPRING # 1
 APPROXIMATELY 15 MILES NORTHEAST OF CAPITAN, N.M. ON NM 48 AND 3 MILES NORTH
 OF NM 48 ON DIRT ROAD. NEAR THE HEAD OF ARROYO DEL MACHO.
 ISSUES FROM ALLUVIUM UNDERLAIN BY FOUR MILE DRAW MEMBER OF SAN ANDRES LIMESTONE;
 APPARENTLY A REGIONAL SYSTEM. FLOWS UP AT BOTTOM OF 6 FT. DEEP POND.
 LOCATED IN THE RECHARGE AREA.

DATE COLLECTED T.O. SAMPLE # COMMENTS
 08/10/77 9.3 +/- .6 2306

SPRINGS

MAP SYMBOL IS F#

MAP # F10 LOCATION # 7.16.07.431 MACHO SPRING # 2
DESCRIPTION IN THE SAME AREA AS MACHO SPRING # 1. THICK BEDS OF
SAN ANDRES LIMESTONE; APPARENTLY A REGIONAL SYSTEM.
LOCATED IN THE RECHARGE AREA.

DATE COLLECTED T.U. COMMENTS

08/10/77 7.4+/ .5 2307

MAP # F10 LOCATION # 7.16.22.443 KYLE HARRISON SPRING
DESCRIPTION NEAR APROYO SECO, APPROXIMATELY 17 MILES NORTHEAST OF CAPITAN, N.M. ON
NM 48 AND 3 MILES SOUTHEAST OF NM 48 ON DIRT ROAD. MEMBER OF SAN ANDRES
ISSUES THROUGH SOIL COVER UNDERLAIN BY RIO BONITO REGIONAL SYSTEM.
LIMESTONE; APPARENTLY A REGIONAL SYSTEM.
LOCATED IN THE RECHARGE AREA.

DATE COLLECTED T.U. COMMENTS

08/10/77 5.1+/ .5 2308

OBSERVATION WELLS

MAP SYMBOL IS O#

MAP # 01

DESCRIPTION

LOCATION # 7.20.16.333 NORTH OF ROSWELL, N.M. ON US 285 AND 24 MILES WEST OF
 APPROXIMATELY 17 MILES ROAD
 US 285 ON CORN RANG. K. TO 464 FT. AND FROM 475 TO 657 FT., AUGUST THROUGH OCTOBER 1955 T.D.: 750 FT.
 DRILLING: 5 1/2 IN. WATER: 450 TO 471 FT. 473 FT. 480 TO 510 FT. PERFORATED FROM 530 FT.
 CASING: 5 1/2 IN. WATER: 450 TO 471 FT. OPEN INTERVAL: 464 TO 475 FT. AND
 TO BOTTOM DEPTH UPON COMPLETION: 450 FT. SAN ANDRES FORMATION (390 TO
 530 FT. TO BOTTOM LITHOLOGY: 0 TO 515 FT., YESO FORMATION
 515 FT., GLORIETA SANDSTONE); 515 FT. TO BOTTOM, YESO FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
04/10/74	3.4	1575	T=18.5 C
09/20/75	1.8	1974	WATER LEVEL=459.59 FT.
12/20/75	4.7	2007	WATER LEVEL=461.08 FT. SAMPLE BETWEEN 470 & 530 F
04/10/76	5.4	2076	
06/13/76	4.2	2164	
08/27/76	5.5	2247	

OBSERVATION WELLS

MAP SYMBOL IS O#

MAP # 02

DESCRIPTION LOCATION # 10. 20. 16. 444 P. V. A. C. D. OBSERVATION WELL # 2

APPROXIMATELY 24 MILES WEST OF US 285 IN ROSWELL, N.M. ON US 380 AND 5 MILES
 NORTH OF MILLER, DECEMBER 1955 AND JANUARY 1956 T.D.: 503 FT.
 DRILLER'S LOG: TO K 503 FT. PERFORATED FROM 435 TO 500 FT. WATER: 437 TO 462
 CASING: 7 IN. 470 FT. TO 480 FT. TO SAN ANDRÉS FORMATION (325 TO 440 FT., GLÓRIETA
 FT. HOLCGY: 0 440 FT. TO BOTTOM, YESO FORMATION

DATE COLLECTED	T. U.	SAMPLE #	COMMENTS
03/22/74	3.6 + / = 1.5	16406	WATER LEVEL = 424 FT. FT. T = 18.6 C
06/12/74	3.1 + / = .68	16419	WATER LEVEL = 424.2 FT. FT.
08/25/74	3.6 + / = .88	17553	WATER LEVEL = 426.0 FT. FT.
12/1/74	1.2 + / = .5	18233	WATER LEVEL = 423.5 FT. FT.
03/27/75	10.5 + / = .8	19115	WATER LEVEL = 422.3 FT. FT.
08/26/75	12.0 + / = .5	20699	
12/21/75	6.5 + / = .5	20871	
06/02/76	6.3 + / = 1.0		
08/26/76	4.4 + / = 1.0		

OBSERVATION WELLS
 MAP SYMBOL IS O#

MAP # 03

DESCRIPTION LOCATION # 10, 21, 16, 222 P. V. A. C. D. OBSERVATION WELL # 3 ON US 380 AND 6 MILES
 APPROXIMATELY 18 MILES WEST OF US 285 IN ROSWELL, N.M.
 NORTH OF US 380 ON DIRT ROAD. JANUARY THROUGH MARCH 1956 T.D.: 672 FT.
 DRILLER'S LOG: K.G. MILLER, IN. TO 670 FT. (INSIDE 10 IN. CASING), OPEN INTERVAL;
 CASING: 10 IN. TO 40 FT. WATER: 600 TO 610 FT.; LIMESTONE RUBBLE; 90 TO 630 FT., SAN
 FROM 585 TO 668 FT. LITHOLOGY: 0 TO 90 FT., LIMESTONE RUBBLE; 90 TO 630 FT., YESO
 585 TO 668 FT. ANDRES FORMATION (500 TO 630 FT., GLORIETA SANDSTONE); 630 FT. TO BOTTOM, YESO
 FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
12/16/74	0.6+	1752	WATER LEVEL=581.75 FT. T=18.2-C
03/27/75	6.4+	1825	
08/26/75	5.2+	1920	
12/21/75	2.2+	2013	
03/29/76	5.9+	2067	
06/11/76	6.5+	2152	WATER LEVEL=591.86 FT. SAMPLE TAKEN AT 650 FT.
08/26/76	3.2+	2235	
10/31/76	8.3+	2279	

OBSERVATION WELLS

MAP SYMBOL IS O#

MAP # 04

DESCRIPTION LOCATION # 13.20; 13.222 WEST OF U.S. A.C.D. OBSERVATION WELL # 4 ON US 380 AND 18 MILES
 APPROXIMATELY 18 MILES WEST OF U.S. 285 IN ROSWELL, N.M.
 SOUTH OF US 380 ON DIRT ROAD, NOVEMBER AND DECEMBER 1955 T.D.: 386.5 FT. TO
 DRILLER'S LOG: K.G. MILLER, PERFORATED FROM 238 TO 386.5 FT. OPEN INTERVAL: 238 TO 386.5 FT. TO
 CASING: 7 IN. TO 290 FT., 3.5 IN. TO 355 FT., LIMESTONE RUBBLE; 20 TO 380 FT., SAN ANDRES FORMATION
 268 FT. LOG: 0 TO 20 FT., GLORIA (TA SANDSTONE); 380 FT. TO BOTTOM, YESO FORMATION
 LITHOLOGY: (243 TO 380 FT., GLORIA (TA SANDSTONE); 380 FT. TO BOTTOM, YESO FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
03/22/74	3.4 +/- .6	1581	WATER LEVEL=260.75 FT.
06/13/74	8.6 +/- 1.1	1655	WATER LEVEL=260.92 FT.
08/25/74	2.3 +/- .5	1757	WATER LEVEL=261.62 FT.
12/17/74	3.5 +/- .5	1826	WATER LEVEL=258.82 FT.
03/28/75	3.7 +/- .4	1928	WATER LEVEL=260 FT.
08/27/75	1.9 +/- .5	2012	
12/21/75	6.3 +/- .9	2060	
03/28/76	6.5 +/- .7	2153	
06/11/76	4.0 +/- 1.0	2233	
08/26/76			WATER LEVEL=255 FT. SAMPLE TAKEN @ 350 FT.

OBSERVATION WELLS

MAP SYMBOL IS O#

MAP # 05

DESCRIPTION LOCATION # 16.20.18.333 OBSERVATION WELL # 5
APPROXIMATELY 8 MILES WEST OF HOPE, N.M. ON NM 83, 4 MILES NORTH OF NM-83-ON
NM 13, AND 3 MILES WEST OF NM 13 ON DIRT ROAD.
DRILLER'S LOG: K. G. MILLER, APRIL THROUGH JULY 1956 T.D.: 767 FT.
CASING: 5/8 IN. TO 610.5 FT. PERFORATED FROM 555.5 FT. TO 610.5 FT.
WATER: 600 TO 615 FT. LITHOLOGY: 0 FT. TO 694 FT. OPEN INTERVAL: 555.5
FT. TO BOTTOM GLORIETA SANDSTONE) 694 TO 711 FT. SAN ANDRES FORMATION (675 FT.
TO BOTTOM, APRIL 1974, WELL BORE CAVED IN. WELL NOW EQUIPPED WITH WINDMILL AND
USED FOR STOCK.

66

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
04/08/74	4.0 +/- .7	1624	T=16.7 C
08/16/76	3.9 +/- .8	2189	

OBSERVATION WELLS

MAP SYMBOL IS O#

MAP # 07

DESCRIPTION LOCATION # 17.20.18.434 P.V.A.C.D. OBSERVATION WELL # 7
 APPROXIMATELY 8 MILES WEST OF HOPE, N.M. ON NM 83, AND 2 MILES SOUTH OF NM 83
 ON DIRT ROAD. A.H. LEWIS, JANUARY AND FEBRUARY, 1957 T.D.: 801 FT.
 DRILLER'S LOG: TO 801 FT. PERFORATED FROM 680 TO 800 FT. WATER: 160 TO 164
 CASING: 7 IN. OPEN INTERVAL: 680 TO 800 FT. LITHOLOGY: 0 FT. TO
 FT. 680 TO 801 FT. BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
04/08/74	11.6+	1626	WATER LEVEL=460.19 FT. T=16.3 C
12/19/74	18.3+	1771	WATER LEVEL < 460.9 FT. T=16.0 C
09/17/77	16.0+	2534	SAMPLED @ 750 FT.
12/17/77	11.1+	2538	SAMPLED @ 750 FT.
04/02/78	11.8+	2530	SAMPLED @ 750 FT.

OBSERVATION WELLS

MAP SYMBOL IS 0#

MAP # 08

DESCRIPTION LOCATION # 11, 21, 18, 333 P. V. A. C. D. OBSERVATION WELL # 8
 APPROXIMATELY 18 MILES WEST OF ROSWELL, N.M. ON US 380 AND 2 MILES SOUTHWEST OF
 US 380 ON DIRT ROAD. LEWIS, FEBRUARY AND MARCH 1957 T.D.: 524 FT. WATER: 410 TO 470
 DRILLER'S LOG: A. 524 FT. TO 489 FT. LITHOLOGY: 0 FT. TO BOTTOM, SAN
 CASING: 7 IN. INTERVAL: 410 TO 489 FT. TO BOTTOM, GLORIETA SANDSTONE)

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
03/22/74	58.0+/- .5	1607	WATER LEVEL=399.4 FT.
06/16/74	44.9+/- .5	1657	WATER LEVEL=399.7 FT.
08/26/74	49.1+/- .8	1718	T=17.8 C
12/17/74	43.5+/- 1.2	1754	
03/17/75	47.7+/- 1.4	1824	
08/26/75	51.2+/- 1.6	1918	
12/21/75	40.8+/- .5	2014	WATER LEVEL=389.02 FT.
03/29/76	45.6+/- .6	2068	
06/11/76	31.1+/- 1.2	2132	
08/26/76	21.2+/- 1.3	2232	
11/12/76	41.0+/- 1.0	2291	
06/25/78	34.9+/- 1.5	2518	

SAMPLED @ 450 FT.

OBSERVATION WELLS

MAP SYMBOL IS O#

MAP # 09

DESCRIPTION LOCATION # 4, 21.33, 111 P. V. A. C. D. OBSERVATION WELL # 9
 APPROXIMATELY 36 MILES NORTH OF ROSWELL, N.M. ON US 285 AND 8 MILES WEST OF
 US 285 ON DIRT ROAD. LEWIS, APRIL THROUGH JUNE 1957 T. D. 760 FT. WATER: 620 TO 720
 DRILLER'S LOG; A. H. TO 760 FT. PERFORATED FROM 620 TO 720 FT. LITHOLOGY: 0 TO 20 FT. ALLUVIUM; -20
 CASING: 7 IN. INTERVAL: 620 TO 720 FT. SAN ANDRES FORMATION (540 TO 720
 FT. 190 FT. ARTESIA GROUP; 190 TO 720 FT. TO BOTTOM, YESO FORMATION.
 FT., GLORIETA SANDSTONE); 720 FT. TO BOTTOM, YESO FORMATION.

DATE COLLECTED	T. U.	SAMPLE #	COMMENTS
03/23/74	7.4 +/- .8	1608	WATER LEVEL=590.6 FT.
06/13/74	3.7 +/- .6	1653	WATER LEVEL=590.6 FT.
08/25/74	2.2 +/- .4	1714	WATER LEVEL=590.6 FT. T=19.8 C
12/16/74	3.5 +/- .5	1760	WATER LEVEL=590.6 FT. T=17.3 C
03/27/75	9.0 +/- .6	1822	WATER LEVEL=590.6 FT.
10/04/75	5.1 +/- .4	1988	WATER LEVEL=590.64 FT. SAMPLE TAKEN AT 670 FT.
12/20/75	2.5 +/- .5	2009	
04/10/76	4.0 +/- .6	2081	
06/12/76	6.0 +/- .8	2156	
08/26/76	3.8 +/- .8	2236	

WINDMILLS

MAP SYMBOL IS M#

MAP # M1

DESCRIPTION LOCATION # 11.20.16.222 BORDER HILL WINDMILL SOUTH SIDE OF US 380.
 ON THE J.P. WHITE RANCH (FORMERLY THE DIAMOND A RANCH). TURNOFF TO THE WELL IS
 ACROSS FROM TURNOFF TO P.V.A.C. ROSEWELL, N.M. ON US 380. STOP #2 ON ROSWELL
 APPROXIMATELY 22 MILES WEST OF ROSWELL, N.M. ON OCTOBER 27, 1971.
 GEOLOGICAL SOCIETY FIELD TRIP, ON OCTOBER 27, 1971.
 LOCATED IN THE 'RECHARGE AREA'.

DATE COLLECTED T.U. SAMPLE # COMMENTS

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
03/23/73	41.6 +/- .7	1545	T=18.3 C PH=7.24
05/20/75	25.5 +/- 1.1	1841	
07/21/75	13.3 +/- .7	1911	
04/09/76	12.3 +/- .5	2075	
06/02/76	24.2 +/- .5	2113	
08/27/76	20.9 +/- 1.1	2241	
10/01/76	18.6 +/- .5	2094	

WINDMILLS

MAP SYMBOL IS M #

MAP # M2

DESCRIPTION LOCATION # 13° 20' 12" 443 JOHNSON WINDMILL
APPROXIMATELY 24 MILES SOUTHWEST OF ROSWELL, N.M., 100 FT. FROM P.V.A.C.D.
ABSEVATION WEL #4
LOCATED IN THE RECHARGE AREA.
IN DECEMBER 1974, REPORTED AS SURROUNDED BY SAN ANDRES CLIFFS AND LOCATED IN
ALLOUVIAL-FILLED SMALL VALLEY WHICH SHOULD CONCENTRATE RECHARGE. DEPTH REPORTED
AS 275 FT. IN MARCH 1975.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
03/22/74	8.9 +/- 1.1	1580	
06/13/74	2.8 +/- 0.6	1654	
12/17/74	2.0 +/- 0.8	1758	
08/27/75	22.1 +/- 0.9	1929	SAMPLE TAKEN FROM STOCK TANK SINCE NO WIND
03/28/76	9.1 +/- 0.9	2061	
06/11/76	6.1 +/- 0.6	2154	
08/26/76	8.4 +/- 0.9	2234	

WINDMILLS

MAP SYMBOL IS M#

MAP # M3

DESCRIPTION LOCATION # 11.21.24.411 SILVER MAPLE WINDMILL
 ALSO KNOWN AS ARCHIE'S WELL, ON WOODS RANCH, OPERATED BY SONNY WRIGHT,
 APPROXIMATELY 14 MILES WEST OF ROSWELL, N.M.
 LOCATED IN THE RECHARGE AREA
 DEPTH REPORTED AS 600 FT. IN SAN ANDRES FORMATION IN MARCH 1975.

DATE COLLECTED T.U. SAMPLE # COMMENTS

03/26/75 10.8 +/- .6 1782
 08/26/75 15.9 +/- .4 1924
 03/29/76 16.6 +/- .5 2066
 08/12/76 17.3 +/- 1.1 2219

MAP # M4

DESCRIPTION LOCATION # 11.21.13.422 MIDDLE WINDMILL OR 'PEARL' WINDMILL
 ON WOODS RANCH, OPERATED BY SONNY WRIGHT, APPROXIMATELY 14 MILES WEST OF
 ROSWELL, N.M.
 LOCATED IN THE RECHARGE AREA
 DEPTH REPORTED AS 500 TO 600 FT. IN SAN ANDRES FORMATION IN MARCH 1975.

DATE COLLECTED T.U. SAMPLE # COMMENTS

03/26/75 2.7 +/- .7 1781
 08/26/75 9.0 +/- .4 1923
 03/29/76 7.6 +/- .7 2065

WINDMILLS

MAP SYMBOL IS M4

MAP # NOT GIVEN ONE DUE TO INSUFFICIENT LOCATION.
 DESCRIPTION LOCATION # 10.21 OR 22.00.000 MARLEY WHITNEY WINDMILL
 ON MARLEY WHITNEY RANCH, APPROXIMATELY 14 MILES WEST OF ROSWELL, N.M., NORTH OF
 US 380.
 LOCATED IN THE 'RECHARGE AREA'.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
03/23/73	23.9+/-.8	1547	

MAP # M5

DESCRIPTION LOCATION # 11.22.18.211 APACHE WINDMILL RA 3562
 ON WOODS RANCH, OPERATED BY SONNNY WRIGHT, ABOUT 14 MILES WEST OF ROSWELL, N.M.
 LOCATED IN THE 'RECHARGE AREA'.
 DRILLER'S LOG: H.R. DAVIS, MAY 1956 T.D.: 780 FT. CASING 8 IN. TO 15 FT.
 WATER: 525 TO 560 FT. OPEN INTERVAL: 15 FT. TO BOTTOM LITHOLOGY: 0 TO
 20 FT., CALICHE AND GRAVEL; 20 FT. TO BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
10/26/71	8.2+/-.1.1	1411	
03/26/75	2.7+/-.7	1780	
05/20/75	7.4+/-.8	1842	
08/26/75	11.3+/-.5	1922	
08/29/76	12.8+/-.9	2024	
06/11/76	4.7+/-.6	2155	
08/12/76	14.6+/-.9	2218	

WINDMILLS

MAP SYMBOL IS M#

MAP # M6

DESCRIPTION LOCATION # 12.23.06.222 RED HOUSE WINDMILL
 ON PATTERSON RANCH, APPROXIMATELY 7 MILES SOUTHWEST OF ROSWELL, N.M. LATE 1975,
 RANCH SOLD TO HENDERSON. RECHARGE AREA
 LOCATED IN THE RECHARGE AREA
 IN NOVEMBER 1974, REPORTED AS DEEPENED APPROXIMATELY 50 FT. TO
 452 FT. TOTAL DEPTH.

DATE COLLECTED T.U. SAMPLE # COMMENTS

03/24/74 26.7 +/- .5 1614
 11/02/74 2.0 +/- .8 1744 T=17.5 C

MAP # NOT GIVEN ONE DUE TO INSUFFICIENT LOCATION, THE FLAT, WINDMILL
 DESCRIPTION LOCATION # NOT KNOWN, APPROXIMATELY 7 MILES SOUTHWEST OF ROSWELL, N.M. LATE 1975,
 ON PATTERSON RANCH, APPROXIMATELY 1 MILE FROM THE RED HOUSE WINDMILL.
 SOLD TO HENDERSON. RECHARGE AREA.

DATE COLLECTED T.U. SAMPLE # COMMENTS

06/14/74 4.8 +/- .9 1777

WINDMILLS

MAP SYMBOL IS M#

MAP # M7 LOCATION # 7.22.36.422 CORN WINDMILL
DESCRIPTION ON TOM CORN RANCH, APPROXIMATELY 20 MILES NORTHWEST OF ROSWELL, N.M.
LOCATED IN THE RECHARGE AREA.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
03/24/74	5.0 +/- .6	1611	
05/20/75	2.5 +/- .8	1845	
07/21/75	13.5 +/- 1.1	1900	
06/12/76	4.2 +/- .4	2157	
08/27/76	5.7 +/- .8	2237	

WINDMILLS

MAP SYMROL IS M#

MAP # M8
 DESCRIPTION LOCATION # 8.22.13.223 CORN WINDMILL
 ON DICK CORN RANCH, APPROXIMATELY 20 MILES NORTHWEST OF ROSWELL, N.M.
 LOCATED IN THE RECHARGE AREA.
 DEPTH REPORTED AS 450 FT. IN MARCH 1973 AND AS 500 FT. IN DECEMBER 1974.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
03/24/73	14.3+/= .7	1492	PUMPING 2 GPM (ESTIMATE) PH=7.50
05/26/73	11.3+/= .3	1543	T=20.5 C PH=7.55
03/24/74	6.1+/= .6	1610	
08/25/74	27.3+/= .9	1746	PUMPING 0.25 GPM (ESTIMATE) T=19.8 C RUSTY WATER
11/02/74	3.5+/= .7	1762	
12/18/74	6.4+/= .8	1846	
05/20/75	7.9+/= .7	1899	
09/21/75	9.4+/= .4	1978	
04/10/76	6.9+/= .8	2078	
08/27/76	4.1+/= .8	2240	

MAP # NOT ONE GIVEN DUE TO INSUFFICIENT LOCATION
 DESCRIPTION LOCATION: NO NAME WINDMILL
 4.5 MILES WEST OF EDDY COUNTY LN. 490 FEET DEEP

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/11/73	21.0+/= .5	1528	

WINDMILLS

MAP SYMBOL IS M#

MAP # M9

DESCRIPTION LOCATION # 8.23.16.111 CORN WINDMILL RA 4680
 ON DICK CORN RANCH, APPROXIMATELY 20 MILES NORTHWEST OF ROSWELL, N.M.
 LOCATED IN THE RECHARGE AREA.
 DRILLER'S LOG: CLEAN-OUT, CONRAD G. KEYES, AUGUST 1962 T.D.: 585 FT.
 CASING: 8 5/8 IN. TO 14 FT. OPEN INTERVAL: 14 FT. TO BOTTOM LITHOLOGY:
 OLD OIL TEST HOLE, HOWEVER, NO FORMATION RECORDS AVAILABLE.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
03/24/73	9.0 +/- .4	1491	PUMPING 3-5 GPM (ESTIMATE) PH=6.94
05/26/73	2.5 +/- 1.0	1572	T=24.0 C PH=7.00
03/23/74	7.1 +/- .8	1609	
08/25/74	3.3 +/- .8	1715	PUMPING 1 GPM (ESTIMATE) T=20.0 C
11/02/74	0.1 +/- .4	1745	
05/20/75	7.9 +/- .8	1843	
09/21/75	37.9 +/- 1.5	1977	
04/10/76	5.1 +/- .6	2077	

MAP # M10

DESCRIPTION LOCATION # 14.25.08.411 WINDMILL
 APPROXIMATELY 8 MILES WEST OF HAGERMAN, N.M. ON ROAD TO CHAVES COUNTY CATTLE CO.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/21/75	7.5 +/- .7	1909	

WINDMILLS

MAP SYMBOL IS M#

MAP # M11 LOCATION # 15.26.09.133 WINDMILL APPROXIMATELY 5 MILES SOUTH OF HAGERMAN, N.M. ON NM 2 AND 1/4 MILE EAST OF NM 2.

DATE COLLECTED T.U. SAMPLE # COMMENTS

07/21/75 18.1 +/- .9 1905

MAP # M12

DESCRIPTION LOCATION # 17.26.12.142 HAND DUG WINDMILL APPROXIMATELY 4 MILES EAST OF ARTESIA, N.M. ON US 82 AND 1 MILE NORTH OF US 82 ON DIRT ROAD ON THE FLOOD PLAIN OF THE PECOS RIVER. PROBABLY VERY SHALLOW SINCE ORIGINALLY DUG BY HAND.

DATE COLLECTED T.U. SAMPLE # COMMENTS

04/09/74 86.2 +/- .6 1633 T=17.5 C
03/28/75 93.9 +/- .5 1829
08/27/75 98.5 +/- .4 1957
03/27/76 94.4 +/- 1.7 2044
06/04/76 94.8 +/- 1.7 2136
08/11/76 75.7 +/- 1.9 2198

WINDMILLS

MAP SYMBOL IS M#

MAP # M13

DESCRIPTION LOCATION # 16.20.16.241 R.H. MCASHAN WINDMILL
APPROXIMATELY 12 MILES WEST OF HOPE, N.M. ON US 82 AND 5 MILES NORTH OF US 82
ON NM 13, CLOSE TO THE ROAD.
LOCATED IN THE 'RECHARGE AREA'.

DATE COLLECTED T.U. SAMPLE # COMMENTS

04/08/74 12.5 +/- .5 1625
02/21/75 10.3 +/- .7 1798
08/10/76 9.9 +/- .9 2188
04/02/78 5.6 +/- .8 2544

WINDMILLS

MAP SYMBOL IS M#

MAP # M14
DESCRIPTION

LOCATION # 16.08.121 BATES WINDMILL, APPROXIMATELY 1 MILE SOUTH OF ELK, N.M.
 BETWEEN HWY MARKERS 46 AND 47 ON US 82, STAR ROUTE EAST MAYHILL, N.M. 88339
 ADDRESS: MRS. CARLE S. BATES, RECHARGE AREA,
 LOCATED IN THE SAN ANDRES FORMATION. IN APRIL 1974, WINDMILL
 TOTAL DEPTH: 140 FT. IN SAN ANDRES FORMATION. IN APRIL 1974, WINDMILL
 DISCONNECTED AND ELECTRIC PUMP INSTALLED.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
04/08/74	12.7 +/- .6	1621	T=13.2 C
06/15/74	14.5 +/- .7	1685	
08/23/74	13.7 +/- .7	1686	T=13.5 C
12/19/74	13.1 +/- .6	1789	
02/21/75	19.6 +/- .6	1803	T=14.0 C
08/23/75	17.4 +/- .8	1973	
12/19/75	13.7 +/- .4	1991	
03/27/76	18.4 +/- .5	2032	
06/05/76	10.8 +/- .5	2148	
08/10/76	10.3 +/- .7	2109	
10/29/76	14.5 +/- 1.0	2259	
01/04/77	15.6 +/- 1.0	2555	

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # WR1

DESCRIPTION LOCATION # 11.20.20.440 R.C. NUNEZ WELL RA 150-H
 APPROXIMATELY 23 MILES WEST OF US 285 IN ROSWELL, N.M. ON US 380 AND 2 MILES
 SOUTH OF US 380 ON UNMARKED ROAD
 DRILLER'S LOG: CLEAN-OUT AND DEEPEN ELZY PERRY, JR., APRIL 1955
 T.D.: 561 FT. CASING: 6 IN. TO 17 FT. WATER: 530 TO 561 FT.
 WATER DEPTH UPON COMPLETION: 520 FT. OPEN INTERVAL: 17 FT. TO BOTTOM
 LITHOLOGY: 0 TO 530 FT., NO RECORD; 530 TO 545 FT., LIMESTONE; 545 TO 561 FT.,
 SANDSTONE BOTH UNITS IN SAN ANDRES FORMATION

DATE COLLECTED T.U. SAMPLE # COMMENTS
 03/23/73 50.1 +/- .4 1536 PUMPING 3-4 GPM (ESTIMATE)

MAP # WR2

DESCRIPTION LOCATION # 10.21.25.111 MARLEY WHITNEY WELL RA NOT KNOWN
 APPROXIMATELY 13 MILES WEST OF US 285 IN ROSWELL, N.M. ON US 380 AND 3 MILES
 NORTH OF US 380 ON DIRT ROAD
 DEPTH REPORTED IN JANUARY 1972 AS 703 FT. WITH CASING FROM 0 TO 60 FT.

DATE COLLECTED T.U. SAMPLE # COMMENTS
 01/12/72 19.6 +/- 1.0 A=3
 03/23/73 21.8 +/- .6 1546 PUMPING

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # WK3
DESCRIPTION

LOCATION # 11.22.09.321
APPROXIMATELY 1.11 MILES WEST OF US 285 IN ROSWELL, N.M. ON US 380, AND 3 MILES SOUTH OF THE SEVEN LONG ROAD RECORD, WELLS OF THE LAST REPORT.
ONE OF THE SEVEN LONG ROAD RECORDS DISSENTATION 1972: LOCATED 100 FT. EAST OF ABANDONED WOODS DAN WELL. WATER LEVEL AT COMPLETION WAS 420 FT. BELOW SURFACE, WHICH MAY EXPLAIN THE DRILLING OF THE NEW WELL SINCE THE TOTAL DEPTH OF THE OLD WOODS WELL WAS 435 FT. DRILLING OF THE NEW WELL (PERFORATED CASING), PUMPS AT 578 FT. BELOW SURFACE PRODUCTION INTERVAL: 511 TO 578 FT. ELEVATION: 3954 FT. DEPTH: 555 FT. USUALLY SAMPLED FROM OUTSIDE TAP AT HOUSE. FORMATION: SAN ANDRES LIMESTONE DATE DRILLED: 10/64

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
10/09/68	3.4+/-1.0	1808	SUPPLEMENTAL TO LAST REPORT. DISCHARGE=2500 GPD FROM TAP T=20.5 C
07/16/72	24.1+/-1.5	1427	
03/24/74	9.7+/-0.6	1617	
06/13/74	8.2+/-0.6	1712	
08/25/74	6.3+/-0.8	1753	
12/16/74	3.7+/-0.7	1779	
03/26/75	1.4+/-0.9	1921	
08/21/75	15.1+/-0.5	2063	
03/29/76	6.1+/-0.6	2167	
06/12/76	8.1+/-0.8	2210	
08/12/76	9.9+/-1.0	2290	
11/12/76	4.2+/-0.5	2510	
12/18/77	5.0+/-0.8	2517	

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # WR4
 DESCRIPTION LOCATION # 11.22.22.111 RA NOT KNOWN
 APPROXIMATELY 10 MILES WEST-SOUTHWEST OF ROSWELL, N.M.
 WATER LEVEL REPORTED AS 414 FT. IN JANUARY 1972.

 DATE COLLECTED T.U. SAMPLE # COMMENTS
 01/14/71 3.9 +/- .7 1401
 01/12/72 25.7 +/- 1.3 A-5

 DISCHARGE=1 GPM T=18.3 C SP COND=1220 CL=60 PPM

MAP # WR5
 DESCRIPTION LOCATION # 12.23.05.341 RA 2823
 ON PROPERTY ADJACENT TO EAST SIDE OF PATTERSON RANCH, APPROXIMATELY 7 MILES
 SOUTHWEST OF ROSWELL, N.M. LATE 1975, PATTERSON RANCH, SOLD TO HENDERSON,
 DRILLER'S LOG: RANDY, JOHNSTON, FERRUARY, 1949 I.D.: 458 FT.
 CASING: 14 5/8 IN. TO 143 FT. 445 FT. TO 190 TO 195 FT. 210 TO
 215 FT. 310 TO 320 FT. 458 FT. TO OPEN INTERVAL: 143 FT. TO BOTTOM
 LITHOLOGY: 0 TO 90 FT. ALLUVIUM; 90 FT. TO BOTTOM, SAN ANDRES FORMATION

 DATE COLLECTED T.U. SAMPLE # COMMENTS
 05/16/72 20.4 +/- .9 1424 PUMPING 1500 GPM (ESTIMATE)
 03/24/74 10.0 +/- 1.1 1576 PUMPING 1400 GPM
 06/14/74 6.0 +/- .5 1661 PUMPING 1200 GPM
 04/25/75 9.5 +/- .8 1879
 05/20/75 10.5 +/- .9 1868

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # WR5
 DESCRIPTION LOCATION # 12, 23, 06, 214. 'LITTLE CAT' WELL RA 2888
 ON PATTEPSON RANCH, APPROXIMATELY 7 MILES SOUTHWEST OF ROSWELL, N.M. LATE 1975,
 RANCH SOLD TO HENDERSON. RECORD OF THE LAST REPORT. CASING: NOT
 ONE OF THE SEVEN 'LONG LEWIS, JANUARY 1955 T.D.: 655 FT. OPEN INTERVAL;
 DRILLER'S LOG: O.B. LEWIS, HOLE WATER: 623 TO 638 FT. TO BOTTOM;
 MENTIONED 10 IN. DIAMETER, LITHOLOGY: 0 TO 575 FT., NOT GIVEN; 575 FT. TO BOTTOM,
 0 FT. TO BOTTOM
 SAN ANDRPS FORMATION

DATE COLLECTED	T. U.	SAMPLE #	COMMENTS
05/26/73	16.3+/=1.1	1571	
06/14/74	15.6+/=0.8	1660	T=20.1 C PH=7.35
04/25/75	22.2+/=1.8	1883	PUMPING 880 GPM (METER)
05/20/75	19.6+/=1.1	1870	
07/21/75	11.0+/=0.9	1903	
08/27/75	18.6+/=0.6	1949	
09/12/75	5.4+/=0.4	1976	
03/28/76	15.3+/=0.9	2058	
06/12/76	17.6+/=0.8	2163	
08/27/76	2.1+/=0.8	2245	

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # WR5
DESCRIPTION

LOCATION #12.23.06.441 "BIG CAT" WELL RA 1777-A (FORMERLY RA 2887/2888-COMB B)
ON PATTERSON RANCH, APPROXIMATELY 7 MILES SOUTHWEST OF ROSWELL, N.M. LATE 1975,
RANCH SOLD TO HENDERSON RECORD, WELLS OF THE LAST REPORT, 1961
DRILLER'S LOG: LONG CONRAD 315 FT. WATER: 573 TO 612 FT.
CASING: 13 3/8 IN. TO OPEN INTERVAL: 315 FT. TO BOTTOM
COMPLETION: 270 FT. TO BOTTOM, SAN ANDRES FORMATION
88 FT. ALLUVIUM: 88 FT. TO BOTTOM, SAN ANDRES FORMATION
UNIT IN SAN ANDRES FORMATION.

T.D.: 640 FT.
WATER DEPTH UPON
LITHOLOGY: 0 TO
WATER FROM GREY SAND

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
05/26/73	8.0+/-1.1	1570	
04/25/75	10.1+/-1.9	1882	
05/20/75	6.3+/-0.9	1869	
08/27/75	11.8+/-0.9	1948	
09/12/75	15.0+/-0.4	1975	
03/28/76	7.7+/-0.7	2059	
06/12/76	8.2+/-0.7	2162	
08/27/76	5.3+/-0.5	2246	
06/24/78	2.7+/-0.5	2516	

PUMPING 1300 GPM T=20.4 C PH=7.40

PUMPING 391 GPM

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # WR5

DESCRIPTION LOCATION # 12-23-05-311 'RED TANK' RA 2887 SOUTHWEST OF ROSWELL, N.M. LATE 1975,
 ON PATTERSON RANCH, PERSON TO HENDERSON, APPROXIMATELY 7 MILES
 RAMCH SOLD TO HENDERSON H. H. LEWIS, OCTOBER 1952
 DRILLER'S LOG: CLEANOUT AND DEEPEN 10 IN. DIAMETER HOLE
 T.D. 575 FT. CASING: NOT MENTIONED, 562 TO 573 FT. OPEN INTERVAL: 0 FT. TO BOTTOM
 WATER: 502 FT. TO 504 FT. NO RECORD; 455 FT. TO BOTTOM, SAN ANDRES FORMATION
 LITHOLOGY: 0 TO 455 FT., NO RECORD; 455 FT. TO BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
03/24/74	42.1+/-	1615	
06/14/74	49.4+/-	1659	
08/24/74	36.3+/-	1711	
03/26/75	40.8+/-	1783	
07/21/75	44.9+/-	1904	
08/27/75	41.3+/-	1950	
12/20/75	35.8+/-	2006	
03/28/76	37.8+/-	2057	
08/27/76	26.5+/-	2244	
11/12/76	38.5+/-	2293	

PUMPING 1.0 GPM T=18.5 C

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # WR5 LOCATION # 12.23.05.313 HOUSE WELL, RA NOT KNOWN
 DESCRIPTION ON PATTERSON RANCH, APPROXIMATELY 7 MILES SOUTHWEST OF ROSWELL, N.M. LATE 1975
 RANCH SOLD TO HENDERSON DEPTH REPORTED IN MAY 1973 AS 390 FT., PUMP AT 360 FT.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
12/29/72	24.5 +/- 1.2	2250	SUPPLEMENTAL TO 1972 REPORT PREVIOUS WINTER HAD 1150 PPM SULFATE, T=18.5°C, PH=7.2 T=17.9 C HIGH IN H2SO4 T=16.7 C
05/26/73	21.7 +/- 1.2	1567	
03/24/74	34.1 +/- .5	1613	
06/14/74	16.1 +/- .6	1662	
08/24/74	16.3 +/- 1.0	1710	
11/02/74	29.1 +/- 1.7	1743	
03/26/75	25.2 +/- 1.2	1784	
04/25/75	28.2 +/- 1.0	1902	
07/21/75	24.9 +/- .9	1951	
08/27/75	18.0 +/- .8	2005	
12/20/75	17.0 +/- .9	2056	
03/28/76	22.0 +/- .8	2161	
06/12/76	31.9 +/- 1.0	2243	
08/27/76	15.9 +/- .7	2292	
11/12/76		2515	
06/24/78			

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # NOT GIVEN ONE DUE TO INSUFFICIENT LOCATION
DESCRIPTION LOCATION # NOT KNOWN 'STINKING MILL' WELL RA NOT KNOWN
ON PATTERSON RANCH, APPROXIMATELY 7 MILES SOUTHWEST OF ROSWELL, N.M. LATE 1975,
RANCH SOLD TO HENDERSON, AS 409 FT. DEEP AFTER BEING DEEPEENED IN DECEMBER 1974,
REPORTED IN MARCH 1975 AS 76 FT. OF WATER ABOVE BOTTOM.

DATE COLLECTED 04/25/75 T.U. 7.4+/- .8 SAMPLE # 1881 COMMENTS *****

MAP # NOT GIVEN ONE DUE TO INSUFFICIENT LOCATION
DESCRIPTION LOCATION # NOT KNOWN 'NORTH' WELL RA NOT KNOWN
ON PATTERSON RANCH, APPROXIMATELY 7 MILES SOUTHWEST OF ROSWELL, N.M. LATE 1975,
RANCH SOLD TO HENDERSON.

DATE COLLECTED 06/16/72 T.U. 17.5+/- 1.1 SAMPLE # 1425 COMMENTS *****

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # NOT GIVEN ONE DUE TO INSUFFICIENT LOCATION
 DESCRIPTION LOCATION # NOT KNOWN RESO (RESERVOIR) PUMP, RA NOT KNOWN
 ON PATTERSON RANCH, APPROXIMATELY 7 MILES SOUTHWEST OF ROSWELL, N.M. LATE 1975,
 RANCH SOLD TO HENDERSON.

DATE COLLECTED T.U. SAMPLE # COMMENTS
 04/25/75 4.6+/- .6 1880

MAP # WR6

DESCRIPTION LOCATION # 11.23.15.222 CHARLES SMITH WELL RA 2555
 ON CHARLES SMITH RANCH, OPERATED BY K.K. JENNINGS. APPROXIMATELY 4 MILES WEST
 OF US 285 IN ROSWELL, N.M. ON US 380 AND 2 MILES SOUTH OF US 380 ON UNMARKED
 ROAD.
 DRILLER'S LOG: W.D. DOLLIN, COMPLETED AUGUST 1949 T.D.: 649 FT.
 CASING: 15 1/2 IN. TO 179 FT., 12 IN. FROM 179 TO 487 FT., 10 IN. FROM 487 FT TO
 649 FT., NO PERFORATIONS REPORTED. WATER: 167 TO 176 FT.
 UPON COMPLETION: 107 FT. LITHOLOGY: 0 TO 57 FT., ALLUVIUM; 57 FT. TO BOTTOM,
 SAN ANDRES FORMATION

DATE COLLECTED T.U. SAMPLE # COMMENTS
 03/23/73 25.3+/- .4 1541 T=20.5 C PH=7.21 H2S SMELL
 07/07/76 10.0+/- .5 2107

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # WR7
 DESCRIPTION LOCATION # 7.22.26.131 TOM CORN WELL, RA NOT KNOWN
 ON TOM CORN RANCH, APPROXIMATELY 20 MILES NORTHWEST OF ROSWELL, N.M.
 REPORTED IN MAY 1973 AS DRILLED IN 1950. EQUIPPED WITH AN ELECTRIC PUMP.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
05/26/73	8.4+/-	1596	FROM SPIGOT AT HOUSE
05/20/75	15.9+/-	1844	T=22.0 C
09/21/75	3.3+/-	1980	FROM SPIGOT AT HOUSE. RUN 10 MIN. BEFORE SAMPLING.
12/20/75	3.2+/-	2008	
04/10/76	7.3+/-	2080	
06/12/76	3.1+/-	2159	
08/27/76	3.1+/-	2239	
03/18/78	4.9+/-	2525	

MAP # WR8
 DESCRIPTION LOCATION # 08.22.22.223 DICK CORN WELL RA NOT KNOWN
 ON DJCK CORN RANCH, APPROXIMATELY 20 MILES NORTHWEST OF ROSWELL, N.M.
 USUALLY SAMPLED FROM OUTSIDE SPIGOT AT HOUSE.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
03/24/73	14.8+/-	1553	FROM STORAGE TANK (TURNOVER TWICE A DAY)
08/25/74	1.7+/-	1717	T=20.5 C
12/18/74	4.9+/-	1761	
07/21/75	9.8+/-	1901	
09/21/75	8.4+/-	1979	LET RUN 10 MINUTES
04/10/76	6.9+/-	2079	
06/12/76	2.9+/-	2158	
08/27/76	5.6+/-	2238	

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL, IS WR#

MAP # WR9

DESCRIPTION LOCATION # 08.24.33.311 WELL NORTH OF ROSWELL, N.M. ON NM 285, EAST SIDE OF ROAD.
APPROXIMATELY 11.5 MILES

DATE COLLECTED

T.U. 12.4+/0.6

SAMPLE # 1544

COMMENTS

PUMPING 700 GPM (ESTIMATE)

MAP # WR11

DESCRIPTION LOCATION # 13.22.20.113 MCGEE WELL RA NOT KNOWN
APPROXIMATELY 20 MILES SOUTHWEST OF ROSWELL, N.M.
REPORTED IN JANUARY 1972 AS STOCK WELL, 620 FT. DEEP.

DATE COLLECTED

T.U. 67.6+/1.5

SAMPLE # A-4

COMMENTS

MAP # WR12

DESCRIPTION LOCATION # 14.23.08.144 MADE TANK, RA NOT KNOWN
APPROXIMATELY 18 MILES WEST OF HAGERMAN, N.M.
DEPTH REPORTED AS 460 FT. IN JANUARY 1972.

DATE COLLECTED

T.U. 12.2+/1.2

SAMPLE # A-6

COMMENTS

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # WR13

DESCRIPTION LOCATION # 15.22.09.122 F. RUNYON WELL RA NOT KNOWN
APPROXIMATELY 14 MILES SOUTHWEST OF HAGERMAN, N.M.
DEPTH REPORTED AS 520 FT. IN JANUARY 1972.

DATE COLLECTED 01/12/72
T.U. 15.64/-1.0
SAMPLE # A-7
COMMENTS

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # WR14
DESCRIPTION

LOCATION # 17.23.30.120 HOPE CITY WELL 20 MILES WEST OF ARTESIA, N.M. ON US 82. USUALLY
HOPE, N.M. APPROXIMATELY 20 MILES WEST OF ARTESIA, N.M. ON US 82. USUALLY
SAMPLER # AT GAS STATION, GEORGE, JANUARY AND FEBRUARY, 1954.
DRILLER'S LOG: TO 558 FT., PERFORATED FROM 498 TO 558 FT.
T.D.: 600 FT. CASING: 14 IN. TO OPEN INTERVAL: 498 FT. TO BOTTOM LITHOLOGY:
WATER: 535 FT. TO BOTTOM; 80 FT. TO BOTTOM, SAN ANDRES FORMATION
O TO 80 FT., ALLUVIUM; 80 FT. TO BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED

SAMPLE #

COMMENTS

T.U.

WATER LEVEL=552.16 FT.

DATE COLLECTED	SAMPLE #	COMMENTS	T.U.
01/12/72	A-89		37.5+/-3.4
07/11/73	1527		14.2+/-0.5
06/14/74	1692		16.7+/-0.6
07/22/74	1766		19.7+/-0.5
08/25/74	1767		3.4+/-0.7
09/25/74	1768		1.6+/-0.6
10/28/74	1795		4.6+/-0.8
11/26/74	1839		2.2+/-0.5
12/12/75	1799		6.9+/-0.9
02/21/75	2020		9.1+/-0.6
03/17/75	1840		8.3+/-0.7
04/03/75	2021		5.9+/-0.7
05/07/75	2022		4.6+/-0.6
09/07/75	2023		7.6+/-1.0
10/07/75	2024		5.4+/-0.5
11/07/75	2025		8.7+/-0.6
12/07/75	2027		8.8+/-0.7
01/07/76	2028		3.7+/-0.8
02/07/76	2515		9.5+/-0.7
05/12/77	2543		3.1+/-0.6
09/07/78	2570		6.2+/-1.0

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # WR15 LOCATION # 18.23.05.333 WELL RA NOT KNOWN
 DESCRIPTION APPROXIMATELY 5 MILES SOUTH OF HOPE, N.M.

DATE COLLECTED T.U. SAMPLE # COMMENTS
 01/19/74 15.4+/-1.4 1402 T=18.9 C SP COND=800 CL=20 PPM

MAP # WR16 LOCATION # 15.18.17.143 HENDRIX WELL RA 4761=S
 DESCRIPTION FORMER N. M. FLYING H RANCH, TURNOFF TO RANCH IS APPROXIMATELY 20 MILES EAST
 OF MAYLES HILL, N. M. BETWEEN HWY MARKERS 60 AND 61. RANCH IS APPROXIMATELY
 10 MILES NORTH OF US 82 ON DIRT ROAD. DEEP WITH 300 FT. OF CASING.
 REPORTED IN JULY 1973 AS 306 FT.

DATE COLLECTED T.U. SAMPLE # COMMENTS
 07/11/73 25.1+/- .3 1500 DISCHARGE=250 GPM T=16.2 C
 04/08/74 6.1+/- .7 1574 PUMPING 1200 GPM
 06/15/74 3.3+/- .5 1677 FLOWING 10 GPM (ESTIMATE) T=16.0 C
 08/23/74 10.1+/- 1.0 1679 LEAKING THROUGH CASTING
 12/19/74 1.05+/- .5 1774 T=16.5 C
 02/21/75 2.6+/- .5 1802 FLOWING 400 GPM
 08/28/75 17.3+/- .8 1995 FLOWING 900 GPM
 12/19/75 24.5+/- .6 2036 FLOWING 400 GPM
 03/27/76 3.1+/- .5 2142
 06/05/76 6.2+/- .6 2172

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # WR16
DESCRIPTION

LOCATION # 15.18.141 FLYING H WELL RA 4761
ON THE FORMER FLYING H RANCH. TURNOFF TO RANCH IS APPROXIMATELY 20 MILES EAST
OF MAYHILL M. M. OF US 82, BETWEEN HWY MARKERS 60 AND 61. RANCH IS APPROXIMATELY
10 MILES NORTH OF US 82 ON DIRT ROAD.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
06/15/74	2.3+/=.6	1678	PUMPING 370 GPM
08/23/74	6.2+/=.6	1690	T=15.8 C
12/19/74	3.6+/=.6	1775	FLOWING
02/21/75	1.6+/=.6	1797	T=16.0 C
08/28/75	12.9+/=.8	1965	FLOWING 50 GPM (ESTIMATE)
12/19/75	10.2+/=.6	2037	SAMPLE TAKEN FROM STORAGE TANK (PARTIAL COVERING)
03/27/76	7.9+/=.6	2143	FLOWING 60 GPM
06/05/76	8.6+/=.6	2173	
08/10/76	6.9+/=.6		

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # WP16
DESCRIPTION

LOCATION # 15.18.18.311 W.R. JOY WELL RA NOT KNOWN
ON THE FORMER FLYING H RANCH. TURNOFF TO RANCH IS APPROXIMATELY 20 MILES EAST
OF MAYHILL, N.M. ON US 82 BETWEEN HWY MARKERS 60 AND 61. RANCH IS APPROXIMATELY
10 MILES NORTH OF US 82 ON DIRT ROAD.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
06/15/74	11.8+/- .4	1681	FLOWING 250 GPM
08/23/74	6.5+/- .9	1776	FLOWING (PARTIALLY OPENED) T=15.8 C
12/19/74	3.5+/- .8	1966	FLOWING
08/28/75	18.1+/- .7	1997	FLOWING 20 GPM (ESTIMATE)
12/19/75	6.1+/- .6	2038	LEAKING
03/27/76	7.1+/- 1.0	2144	FLOWING 100 GPM
06/05/76	6.8+/- 1.4	2187	FLOWING 500 GPM
08/10/76	6.6+/- .9	2267	
10/29/76			

MAP # WR17
DESCRIPTION

LOCATION # 15.17.13.141 LELAND HENDRIX WELL RA 4761-S2
ON THE FORMER FLYING H RANCH. TURNOFF TO RANCH IS APPROXIMATELY 20 MILES EAST
OF MAYHILL, N.M. ON US 82 BETWEEN HWY MARKERS 60 AND 61. RANCH IS APPROXIMATELY
10 MILES NORTH OF US 82 ON DIRT ROAD.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
06/15/74	4.0+/- .5	1679	PUMPING 1400 GPM
08/28/75	11.9+/- .7	1968	PUMPING 600 GPM
10/29/76	11.9+/- .8	2269	

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # WR17
DESCRIPTION

LOCATION # 15, 17, 14, 312
ON THE FORMER FLYING H RANCH, TURNOFF
OF MAYFIELD, N.M. ON US 82, BETWEEN HWY
10 MILLS NORTH OF US 82 ON DIRT ROAD
REPOSITED IN JULY 1973 AS 400 FT. DEEP
DRILLER'S LOG: HARVEY EVERETT, APRIL 1951
WATER: 395 TO 454 FT., BROWN LIME WATER ROSE TO WITHIN 25 FT. OF SURFACE,
LITHOLOGY: 0 TO 70 FT., CLAY AND GRAVEL (WITH SOME WATER); 70 TO 115 FT., BROWN
LIME; 115 TO 227 FT., LAYERS OF BLUE AND YELLOW CLAY AND SHALE;
227 FT. TO BOTTOM, LIMESTONE.

RA 4326
TO RANCH IS APPROXIMATELY 20 MILES EAST
MARKERS 60 AND 61. RANCH IS APPROXIMATELY
WITH 65 FT. OF SCREEN.
T.D. 454 FT.

DATE COLLECTED T.U. SAMPLE # COMMENTS
07/11/73 7.2 +/- .6 1527 PUMPING 800 GPM (ESTIMATE) T=18.4 C PH=7.08
06/15/74 7.0 +/- .7 1680 PUMPING 228 GPM (METER)

MAP # WR18
DESCRIPTION

LOCATION # 16, 16, 11, 421
APPROXIMATELY 3 MILES EAST OF ELK, N.M. CLOSE TO HWY MARKER 51 ON US 82. WELL
IS APPROXIMATELY 1000 FT. UPSTREAM FROM MULCOCK'S HOUSE.
DEPTH REPORTED AS 180 FT. IN JULY 1973.

RA NOT KNOWN
MULCOCK WELL
CLOSE TO HWY MARKER 51 ON US 82. WELL

DATE COLLECTED T.U. SAMPLE # COMMENTS
07/11/73 81.9 +/- .7 1499
06/15/74 7.4 +/- .5 1682
04/04/76 6.5 +/- .8 2165

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # NOT GIVEN DUE TO INSUFFICIENT LOCATION
 DESCRIPTION LOCATION # NOT KNOWN KIMBRELL WELL RA NOT KNOWN
 APPROXIMATELY 2 MILES EAST OF TINNIE, N.M. ON US 380.
 WELL IS 300 FT. FROM THE RIO HONDO.

DATE COLLECTED T.U. SAMPLE # COMMENTS
 05/27/73 28.3 +/- 1.0 1598

MAP # WR19
 DESCRIPTION

LOCATION # 11.18.15.313 WEST OF PICACHO, N.M. ANDERSON (HOUSE) WELL US 380 RA H=476
 APPROXIMATELY 1 MILE WEST OF PICACHO, N.M. SOUTH OF US 380. FROM THE SAME WELL,
 FIRST SAMPLED AT 11.18.16.444), ONE AT THE STOCK BY B.G. T. I.D. FT. 140 FT. 30 FT. TO 45
 ONE AT THE HOUSE (11.18.16.444), WELL FORMERLY OWNED BY B.G. T. I.D. FT. 140 FT. 30 FT. TO 45
 NOW ONLY SAMPLED ELZY FT. 125 FT. TO 150 FT. WATER: DEPTH UPON COM-
 DRILLING: 16 IN. FT. AND FROM 140 FT. TO 86 FT. 95 FT. TO 86 FT. TO BOTTOM, RELA-
 CASING: TO 86 FT. TO 125 FT. INTERVAL: 35 FT. TO 86 FT. TO BOTTOM, RELA-
 PLITHOLOGY: 33 FT. TO 65 FT. SOIL AND GRAVEL; 65 FT. TO BOTTOM, RELA-
 TIVELY THIN LAYERS (APPROXIMATELY 15 FT. THICK) OF CLAY AND LIMESTONE.

DATE COLLECTED T.U. SAMPLE # COMMENTS
 10/02/76 30.8 +/- .4 2091
 10/02/76 29.9 +/- .5 2093
 10/31/76 40.9 +/- 1.6 2282
 11/19/76 40.4 +/- 1.6 2445
 06/23/78 25.5 +/- .9 2514

WELLS LOCATED IN THE "RECHARGE AREA"

MAP SYMBOL IS WR#

MAP # WR20 LOCATION # 11.18.24.341 R.O. ANDERSON WELL RA NOT KNOWN
DESCRIPTION APPROXIMATELY 1.5 MILES SOUTHEAST OF PICACHO, N.M., ON US 380. WELL
IS LOCATED 515 FT. FROM THE HONDO RIVER.

DATE COLLECTED T.U. SAMPLE # COMMENTS

10/02/76 27.0+/- .4 2095

WELLS PRODUCING FROM THE ALLUVIUM AQUIFER

MAP SYMBOL IS WA#

MAP # WA1

DESCRIPTION LOCATION # 11.23.01.413 MRS. L.U. LANE WELL, RA 1879
 APPROXIMATELY 2 MILES WEST OF US SOUTH OF US 380 ON UNMARKED ROAD, 285 IN ROSWELL, N.M. ON US 380 AND 3/4 MILE
 DRILLER'S LOG: GEORGE STERRETT, STARTED MARCH 1945 AND COMPLETED IN 1945
 T.D.: 160 FT. CASING: 18 IN. TO 160 FT., PERFORATED FROM 90 TO 120 FT. AND
 FROM 150 TO 160 FT. WATER: 75 TO 160 FT. LITHOLOGY: 0 TO 75 FT., ALLUVIUM; 75 FT. TO
 90 TO 120 FT. AND 150 TO 160 FT. BOTTOM, GATUNA FORMATION

DATE COLLECTED

T.U.

SAMPLE #

COMMENTS

03/23/73

13.4+/- .3

1538

T=19.1 C PH=7.20

05/26/73

27.5+/- 1.8

1565

PUMPING 1500 GPM (ESTIMATE) T=19.5 C PH=7.35

MAP # WA1

DESCRIPTION LOCATION # 11.23.01.433 LARRY HENDRICKS WELL, RA 1428/1879
 APPROXIMATELY 2 MILES WEST OF US 285 IN ROSWELL, N.M. ON US 380 AND 3/4 MILE
 SOUTH ON NM 447.

DATE COLLECTED

T.U.

SAMPLE #

COMMENTS

03/25/73

16.3+/- .3

1540

PUMPING 1300 GPM (METER) T=18.9 C PH=7.26

07/21/76

9.4+/- .4

2108

08/11/76

9.2+/- .7

2214

WELLS PRODUCING FROM THE ALLUVIUM AQUIFER

MAP SYMBOL IS WA#

MAP # WA1 LOCATION # 11.23.12.221 LARRY HENDRICKS WELL RA 458
 DESCRIPTION APPROXIMATELY 4 MILES SOUTHWEST OF ROSWELL, N.M.

DATE COLLECTED T.U. SAMPLE # COMMENTS
 03/23/73 11.1+/- .3 1539 PUMPING 600 GPM (ESTIMATE) T=18.9 C PH=7.20
 08/12/76 11.5+/- .8 2215

MAP # WA1 LOCATION # 11.23.12.332 CHARLES SMITH WELL RA 1521-M
 DESCRIPTION ON CHARLES SMITH RANCH OPERATED BY K.K. JENNINGS. APPROXIMATELY 3 MILES WEST
 OF US 285 IN ROSWELL, N.M. ON US 380, AND 2 MILES SOUTH OF US 380 ON UNMARKED
 ROAD. DEPTH REPORTED AS 165 FT. IN MARCH 1973.

DATE COLLECTED T.U. SAMPLE # COMMENTS
 03/23/73 11.6+/- .5 1484 PUMPING 900 GPM (METER) PH=7.43
 05/25/73 15.8+/- .6 1554 PUMPING 900 GPM T=20.4 C PH=7.20
 08/12/76 9.6+/- .8 2216

WELLS PRODUCING FROM THE ALLUVIUM AQUIFER

MAP SYMBOL IS WA#

MAP # WA1 LOCATION # 11.24.07.214 LONGWILL WELL RA 55-AB
 DESCRIPTION APPROXIMATELY 2 MILES SOUTHWEST OF ROSWELL, N.M.

DATE COLLECTED T.U. SAMPLE # COMMENTS
 03/23/73 20.2+/- .4 1537 PUMP 600 GPM, SAMPLE AFTER 10 MIN. T=18.8 C PH=7.22

MAP # WA2 LOCATION # 10.24.15.330 H.A. COGDILL WELL RA 5010
 DESCRIPTION APPROXIMATELY 3 MILES NORTH OF ROSWELL, N.M. ON US 285 AND 1 MILE EAST OF US 285
 ON NW 431. DRILLER'S LOG: G.J. CLARK, AUGUST 1964 T.D.: 120 FT. CASING: 6 5/8 IN.
 TO 120 FT. PERFORATED FROM 55 TO 120 FT. WATER: 55 TO 60 FT.
 WATER DEPTH UPON COMPLETION: 40 FT. OPEN INTERVAL: 55 FT. TO BOTTOM
 LITHOLOGY: 0 FT. TO BOTTOM, ALLUVIUM AND GATUNA FORMATION

DATE COLLECTED T.U. SAMPLE # COMMENTS
 01/05/73 149.3+/- 1.7 1459
 03/24/73 27.0+/- .7 1489
 07/21/76 12.9+/- .5 2109 PH=6.98

WELLS PRODUCING FROM THE ALLUVIUM AQUIFER

MAP SYMBOL IS WA#

MAP # WA2
 DESCRIPTION LOCATION # 10.24.22.212 ALBERT SANDOVAL WELL RA 4005
 APPROXIMATELY 3 MILES NORTH OF ROSWELL, N.M. ON US 285 AND 1.5 MILES EAST OF
 US 285 ON NM 431. CECIL LEDBETTER, MARCH AND APRIL 1959 T.D.: 61 FT. 32 TO
 DRILLER'S LOG: TO 60 FT., PERFORATED 38 TO 58 FT. WATER: 20 TO 28 FT., 32 TO
 CASING: 7 IN. TO 61 FT. WATER DEPTH UPON COMPLETION: 15 FT. OPEN INTERVAL:
 38 FT. 58 FT. AND BOTTOM FOOT OF HOLE. LITHOLOGY: 0 TO 60 FT., ALLUVIUM

 DATE COLLECTED T.U. SAMPLE # COMMENTS
 01/05/73 28.44/- .7 1463

MAP # WA3
 DESCRIPTION LOCATION # 11.24.14.314 J.C. EBERHART WELL RA 1920-S
 APPROXIMATELY 4 MILES SOUTHEAST OF ROSWELL, N.M. ON NM 2
 DRILLER'S LOG: TO 188 FT. C.G. YOUNG AND J.F. MONTGOMERY, JULY 1965 T.D.: 205 FT. 93 TO
 WATER: 154 TO 188 FT. WATER DEPTH UPON COMPLETION: 93 FT. OPEN INTERVAL:
 0 TO 205 FT. LITHOLOGY: 0 TO 118 FT., ALLUVIUM; 118 FT. TO BOTTOM, GATUNA
 FORMATION

 DATE COLLECTED T.U. SAMPLE # COMMENTS
 03/24/73 12.2+/- .6 1485
 07/21/76 12.5+/- .4 2110
 PUMPING 800 GPM (ESTIMATE)

WELLS PRODUCING FROM THE ALLUVIUM AQUIFER

MAP SYMBOL IS WA#

MAP # WA4

DESCRIPTION LOCATION # 11.24.20.333 RA NOT KNOWN WELL OF ROSWELL, N.M. ON US 285.
 APPROXIMATELY 4 MILES SOUTH OF ROSWELL, N.M. ON US 285.
 REPORTED AS SHALLOW IN JANUARY, 1972.
 THERE ARE TWO WELLS AT THIS LOCATION. (OWNERS: MRS. BEN FRANKLIN; ARCHIE COLE)
 WITH DIFFERENT RA'S (RA 1771; RA 2475); HOWEVER, THEY ARE BOTH SHALLOW
 (90 FT.; 175 FT. WITH 10 IN. CASING TO 35 FT.) WITH SIMILAR LITHOLOGIES;
 0 TO 50 FT.; ALLUVIUM; 50 FT. TO BOTTOM, GATUNA FORMATION.

 DATE COLLECTED T.U. SAMPLE # COMMENTS
 01/12/72 31.9+/-1.0 B-1

MAP # WA6

DESCRIPTION LOCATION # 11.25.28.333 WHEELER WELL M. RA 1572-S2
 APPROXIMATELY 2 ON NM 255, AND 1 MILE EAST ON NM 2, REPORTED IN MARCH
 NORTH AS THREE WELLS, OR SHOULD BE FOR THE SAME ONE AT LEAST TWO WELLS. IF
 1973 AS DRILLER'S LOGS SHOULD BE FOR AT LEAST ONE AT LEAST 1949 T.D.: 89 FT. INTERVAL: 24 TO
 APART. ARE THREE OUTLETS (T.U. S. INDICATED IN MAY 1949 OPEN INTERVAL: 24 TO
 DRILLER'S LOG: GEORGE STERRER, COMPLETED FROM 24 TO 89 FT. ALLUVIUM
 CASING: 16 IN. TO 89 FT.; LITHOLOGY: 0 TO 89 FT.; ALLUVIUM

 DATE COLLECTED T.U. SAMPLE # COMMENTS
 03/24/73 16.9+/-0.5 1486 PUMPING 500 GPM (ESTIMATE) PH=6.92
 03/24/73 28.3+/-0.9 1487 PUMPING 500 GPM (ESTIMATE) PH=6.97
 07/21/76 10.8+/-0.4 2111 PUMPING 500 GPM (ESTIMATE) PH=7.00

WELLS PRODUCING FROM THE ALLUVIUM AQUIFER

MAP SYMBOL IS WA#

MAP # WA7
 DESCRIPTION LOCATION # 13.26.28.411 J.R. MCNEIL WELL RA 2930
 APPROXIMATELY 2 MILES SOUTHEAST OF DEXTER, N.M. ON NM 2, CLOSE TO INTERSECTION
 OF NM 2 AND NM 339
 DRILLER'S LOG: LEONARD GEORGE, AUGUST 1952 T.D.: 200 FT. CASING: 7 IN.
 TO 185 FT. (PO SHUT OFF BAD WATER), 5 3/16 IN. FROM 180 TO 200 FT., PERFORATED
 FROM 185 TO 200 FT. WATER: 185 TO 200 FT. OPEN INTERVAL: 185 TO 200 FT.
 LITHOLOGY: 0 FT. TO BOTTOM, ALLUVIUM AND GATUNA FORMATION

DATE COLLECTED T.U. SAMPLE # COMMENTS
 05/20/75 9.24/1.0 1871

MAP # WA7
 DESCRIPTION LOCATION # 13.26.33.421 RICHARD HARSHEY WELL RA 1317
 APPROXIMATELY 2 MILES SOUTHEAST OF DEXTER, N.M. ON NM 2 AND JUST TO WEST OF NM 2
 ON UNMARKED ROAD
 DRILLER'S LOG: G.M. STERRETT, JUNE AND JULY, 1961 T.D.: 213 FT. WATER: 54 TO
 CASING: 16 IN. TO 213 FT., PERFORATED FROM 100 TO 213 FT. LITHOLOGY: 0 FT. TO
 66 FT., 83 TO 172 FT. OPEN INTERVAL: 100 TO 213 FT.
 BOTTOM, ALLUVIUM AND GATUNA FORMATION

DATE COLLECTED T.U. SAMPLE # COMMENTS
 04/09/74 7.44/1.0 1637 PUMPING 1011 GPM (METER) T=17.0 C

WELLS PRODUCING FROM THE ALLUVIUM AQUIFER

MAP SYMBOL IS WA#

MAP # WA8
DESCRIPTION

LOCATION # 14.26.15.113 SOUTH OF C. J. FORD WELL RA 1333-F
APPROXIMATELY 1 MILE SOUTH OF TURNOFF TO HAGERMAN, N.M. ON NM 2, ON EAST SIDE
OF ROAD
DRILLER'S LOG: LEONARD GEORGE, MAY 1955. T.D.: 150 FT. CASING: 16 IN.
TO 150 FT. PERFORATED FROM 45 FT. TO BOTTOM WATER: 45 FT. TO BOTTOM
OPEN INTERVAL: 45 FT. TO BOTTOM LITHOLOGY: 0 FT. TO BOTTOM, ALLUVIUM AND
GATUNA FORMATION
NOTE: SAMPLE # 1636 HAD A LOW SAMPLE PRESSURE. VALUE QUESTIONABLE.

DATE COLLECTED

T.U. SAMPLE # COMMENTS

160.4+/-1.1 1636 PUMPING 2993 GPM (METER) T=17.5 C
17.7+/-0.7 1663
19.3+/-0.9 1703
19.7+/-0.9 2048
24.8+/-1.1 2125
19.2+/-1.5 2204

MAP # WA9
DESCRIPTION

LOCATION # 16.26.21.300 NORTH ON NM 2 OF JUNCTION OF US 285 AND NM 2, NORTH OF
ARTESIA, N.M. EVEREST WELL RA 1459
DRILLER'S LOG: D.N. GRAY, 1937 T.D.: 131 FT. CASING: 1 1/2 IN. TO
131 FT. PERFORATED FROM 0 TO 131 FT. ALLUVIUM AND GATUNA FORMATION
CLEAN-CUT LITHOLOGY: 0 TO 131 FT. T.D.: 132 FT.
43 FT. TO 128 FT. OPEN INTERVAL: 43 TO 132 FT.

DATE COLLECTED

T.U. SAMPLE # COMMENTS

16.0+/-0.9 1872

WELLS PRODUCING FROM THE ALLUVIUM AQUIFER

MAP SYMBOL IS WA#

MAP # WA10 LOCATION # 17.26.10.333 V.L. GATES WELL RA 1331 ON NORTHWEST
 DESCRIPTION APPROXIMATELY 1 MILE EAST OF US 285 IN ARTESIA, N.M. ON US 82, ON NORTHWEST
 CORNER OF INTERSECT. OF THIS POINT. 1938 AND JANUARY 1939 T.D.: 278 FT.
 DRILLER'S LOG: DUG 278 FT., NO DIAMETER OR PERFORATIONS MENTIONED. LITHOLOGY:
 CASING: 0 TO 278 FT., ALLUVIUM AND GATUNA FORMATION
 0 FT. TO BOTTOM, ALLUVIUM AND GATUNA FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/11/73	29.9+/- .7	1531	T=16.7 C
04/09/74	16.5+/- .7	1627	T=18.7 C
06/14/74	13.9+/- .6	1669	
08/24/74	18.0+/- .9	1699	T=19.0 C
08/28/75	7.2+/- .5	1959	
06/04/76	3.8+/- .6	2129	PUMPING 900 GPM
08/11/76	9.5+/- .1	2200	PUMPING 500 GPM
09/17/77	8.1+/- .9	2522	
04/01/78	2.7+/- .7	2528	RERUN

WELLS PRODUCING FROM THE ALLUVIUM AQUIFER

MAP SYMBOL IS WA#

MAP # WA10

DESCRIPTION LOCATION 17.26.15.111 CHARLES D. ALLISON WELL N. RA 1227
 APPROXIMATELY 1 MILE EAST OF US 285 IN ARTESIA, N.M. ON US 82
 DRILLER'S LOG: E.C. & D.N. TO 194 FT., 8 IN. FROM 188 FT. TO BOTTOM, PERFORATED
 240 FT. CASING: 10 TO 194 FT., 15 FT., 175 FT. TO BOTTOM
 OVER ENTIRE LENGTH. WATER: 10 TO 194 FT. TO BOTTOM, ALLUVIUM AND
 OPEN INTERVAL: 194 FT. TO BOTTOM LITHOLOGY: 0 FT. TO BOTTOM, ALLUVIUM AND
 GATUNA FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/12/73	16.1+/- .5	1532	PUMPING 800 GPM T=24.0 C PH=7.10
04/09/74	8.3+/- .4	1628	
06/14/74	9.5+/- .4	1670	
08/24/74	8.6+/- .4	1696	
06/04/76	10.9+/- .7	2131	PUMPING 550 GPM (METER)

MAP # WA10

DESCRIPTION LOCATION # 17.26.15.120 J.M. VOGEL WELL RA 1183
 APPROXIMATELY 1.25 MILES EAST OF US 285 IN ARTESIA, N.M. ON US 82, SOUTH SIDE
 OF ROAD'S LOG: GRAY BROS. JULY AND AUGUST 1934 T.D.: 225 FT. CASING:
 DRILLER TO 220 FT. WATER: 20 TO 25 FT., 155 TO 225 FT. OPEN INTERVAL:
 10 IN. TO 220 FT. LITHOLOGY: 0 FT. TO BOTTOM, ALLUVIUM AND GATUNA FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/12/73	14.5+/- .4	1533	PUMPING 970 GPM T=18.8 C PH=7.35
03/28/75	7.7+/- 1.0	1834	

WELLS PRODUCING FROM THE ALLUVIUM AQUIFER

MAP SYMBOL IS WA#

MAP # WA10
DESCRIPTION

LOCATION # 17.26.15.133 MASON WELL RA 1503-F
 APPROXIMATELY 1 MILE EAST OF US 285 IN ARTESIA, N.M ON US 82, AND 0.5 MILES
 SOUTH OF US 82 ON UNMARKED ROAD.
 DRILLER'S LOG: W.P. BLACK, OCTOBER 1944 T.D.: 240 FT. CASING: 14 IN.
 TO 180 FT. PERFORATED OVER ENTIRE LENGTH, 10 IN. FROM 162 TO 240 FT.,
 PERFORATED OVER ENTIRE LENGTH, WATER: 10 TO 15 FT., 73 TO 83 FT.
 OPEN INTERVAL: 0 FT. TO BOTTOM LITHOLOGY: 0 FT. TO BOTTOM, ALLUVIUM AND
 GATUNA FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
04/09/74	9.5+/- .7	1629	PUMPING 900 GPM
06/14/74	0.4+/- .7	1672	PUMPING 800 GPM
08/24/74	19.2+/- 1.4	1697	PUMPING 800 GPM
03/23/75	11.8+/- .9	1832	
06/04/76	9.1+/- 1.1	2130	PUMPING 900 GPM (METER)
08/11/76	11.9+/- .8	2202	PUMPING 900 GPM

WELLS PRODUCING FROM THE ALLUVIUM AQUIFER

MAP SYMBOL IS WA#

MAP # WA11

DESCRIPTION LOCATION # 17.26.30.211
 APPROXIMATELY 1 MILE WEST OF US 285 IN ARTESIA, N.M. ON DIRT ROAD, 2 MILES SOUTH OF
 US 82 ON 13TH STREET, AND 1/4 MILE WEST OF THIS ROAD. RA 1826=AS
 *THESE ARE TWO WELLS VERY CLOSE TO ONE ANOTHER HERE, RA 1826 & RA COMBINS=A.
 BEFORE OUTPUT FROM THE WELLS (IF BOTH ARE PUMPING), SEEMS TO BE COMBINS TO
 BE PUMPING INTO THE POND. THE CHARACTERISTICS OF THE WELLS ARE PROBABLY
 VERY SIMILAR. J.F. MONTGOMERY, MARCH AND APRIL, 1964 T.D.: 200 FT. TO 161
 CASING: 16 IN. TO 167 FT. WATER DEPTH UPON COMPLETION: 40 FT. OPEN INTERVAL:
 140 FT. TO BOTTOM LITHOLOGY: 0 FT. TO BOTTOM, ALLUVIUM AND GATUNA FORMATION

DATE COLLECTED T.U. SAMPLE # COMMENTS
 03/28/75 3.1 +/- .5 1831 PUMPING 250 GPM, SAMPLED AFTER 10 MIN.
 08/11/76 5.9 +/- .7 2191

WELLS PRODUCING FROM THE ALLUVIUM AQUIFER

MAP SYMBOL IS WA*

MAP # WA12
DESCRIPTION

LOCATION # 18.26.18.221 SOUTH OF ARTESIA, N.M. ON US 285, AND 1.5 MILES WEST OF
APPROXIMATELY 229. F. SMITH, MARCH 1959 T.D.: 258 FT. CASING: 16 IN. TO 257 FT.,
US 285 ON NM LOG: A.60 TO 257 FT. WATER: 50 TO 60 FT., 240 TO 250 FT.,
DRILLER'S LOG: A.60 TO 257 FT. WATER: 50 TO 60 FT., 240 TO 250 FT.,
PERFORATED FROM COMPLETION: 115 FT. OPEN INTERVAL: 60 FT. TO BOTTOM
WATER DEPTH 0 TO 170 FT. ALLUVIUM; AS TO WHICH OF THE GATUNA FORMATION
LITHOLOGY: THERE IS SOME UNCERTAINTY AS TO WHICH OF THE GATUNA FORMATION
*NOTE: THERE IS SOME UNCERTAINTY AS TO WHICH OF THE GATUNA FORMATION
IS SHALLOW AND WHICH IS DEEP. SEE MAP # WP17.

RA 3181-S5*

DATE COLLECTED T.U. SAMPLE # COMMENTS
05/20/75 14.0+/-8 1877

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WPI
 DESCRIPTION LOCATION # 10.25.22.324 ELK#1 RA NOT KNOWN
 APPROXIMATELY 10 MILES EAST-NORTHEAST OF ROSWELL, N.M.
 EQUIPPED WITH USGS LONG RECORD WELLS OF THE LAST REPORT, 1972:
 ONE OF SEVEN REPORTED IN DAN RABINOWITZ'S DISSERTATION, DEPTH: 650 FT.
 INFORMATION REPORTED IN DAN RABINOWITZ'S DISSERTATION, 1972:
 OWNER: STATE ENGINEER'S OFFICE ELEVATION: 3650 FT. FORMATION: SAN ANDRES
 PRODUCTION INTERVAL: 621 TO 650 FT. (OPEN HOLE)
 LIMESTONE DATE DRILLED: 1962

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
10/19/67	20.8+/-1.4	1813	SUPPLEMENTAL TO 1972 REPORT
10/09/68	6.7+/-1.3	1812	SUPPLEMENTAL TO 1972 REPORT
04/10/74	20.1+/-0.6	1642	SUPPLEMENTAL TO 1972 REPORT
06/12/74	3.4+/-0.8	1645	FLOWING WITH 22 LBS. PRESSURE
12/17/74	6.4+/-1.0	1759	FLOWING WITH 13.5 LBS. PRESSURE
03/26/75	1.0+/-1.1	1785	LET RUN 1/2 HR.

MAP # WP2
 DESCRIPTION LOCATION # 10.25.33.144 WATER TREATMENT PLANT WELL RA 4304
 APPROXIMATELY 6 MILES EAST OF US 285 IN ROSWELL, N.M, ON US 82,
 NORTH SIDE OF ROAD.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
06/04/76	7.0+/-0.8	2116	

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP2
DESCRIPTION

LOCATION # 10.25.32.333. CONSERVANCY WELL RA 4568-S
APPROXIMATELY 5 MILES EAST OF US 285 IN ROSWELL, N.M. ON US 380, NORTH SIDE OF
THE HIGHWAY
DRILLER'S LOG: P.V.A.C.D. (PECOS VALLEY ARTESIAN CONSERVANCY DISTRICT), APRIL
AND WAY 1963 T.D.: 533 FT. CASING: 13 3/8 IN. TO 260 FT. 3/4 IN.
FROM 229 TO 416 FT. WATER: 418 TO 430 FT. 432 TO 467 FT. 487 TO 512 FT.
ORIGINAL FLOW: 1150 GPM OPEN INTERVAL: 416 FT. TO BOTTOM LITHOLOGY:
0 TO 97 FT. ALUVIUM; 97 TO 189 FT. SAN ANDRES FORMATION; 189 TO 393 FT. ARTESIA
GROUP; 393 FT. TO BOTTOM, SAN ANDRES FORMATION

LF3

DATE COLLECTED T.U. SAMPLE # COMMENTS

04/10/74 1.3 +/- 1.4 1641
08/27/75 5.5 +/- .8 1926

MAP # WP3
DESCRIPTION

LOCATION # 11.24.10.222 PVACD HOWARD HENDRICKS OBSV. WELL #1 RA NOT KNOWN
APPROXIMATELY 3 MILES SOUTHEAST OF ROSWELL, N.M. 423 FT. 325 TO
DRILLER'S LOG: PVACD, JULY-AUGUST 1968 T.D.: 320 FT. LITHOLOGY:
CASING: 13 3/8 IN. TO 409 FT. WATER: 298 TO 273 TO 423 FT. 202 TO 298 FT.
360 FT. 380 TO 409 FT. OPEN INTERVAL: 273 TO 423 FT. GATES FORMATION;
0 TO 120 FT. ALUVIUM; 120 TO 202 FT. SAN ANDRES FORMATION
ARTESIA GROUP; 298 FT. TO BOTTOM, SAN ANDRES FORMATION
CLEAN OUT: PVACD, NOVEMBER 1972 DEEPENED TO 425 FT.

DATE COLLECTED T.U. SAMPLE # COMMENTS

06/04/76 50.8 +/- .4 2115 DEPTH TO WATER=70 FT.

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP4
DESCRIPTION

LOCATION # 11.25.15.334 . CLARDY (OASIS) WELL RA 61 OR 59=S
APPROXIMATELY 4 MILES EAST OF NM 2 ON NM 255, SOUTHEAST OF ROSWELL, N.M. AND 1
MILE NORTH OF UNMARKED ROAD. APPROXIMATELY 1 MILE NORTHWEST OF OASIS,
N.M. ON WEST END OF LARGE IRRIGATION POND WHICH SERVES AS MAIN WATER SUPPLY
FOR DAIRY FARM. PEARSON BROS., MARCH 1926 T.D.: 780 FT. CASING: 12 1/2
DRILL TO 613 FT. WATER: 740 TO 750 FT. 760 TO 765 FT. 775 FT. TO BOTTOM
ORIGINAL FLOW: 660 GPM OPEN INTERVAL: 613 FT. TO BOTTOM LITHOLOGY: 0 TO
100 FT., ALLUVIUM; 100 TO 410 FT., GATUNA FORMATION; 410 TO 605 FT., ARTESIA
GROUP; 605 FT. TO BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
05/25/73	10.5 +/- .3	1556	PUMPING 2000 GPM T=20.5 C PH=7.30
03/25/74	3.8 +/- .5	1618	PUMPING 3015 GPM (METER) H2S SMELL
06/12/74	26.4 +/- .5	1648	PUMPING 2119 GPM (METER)
08/12/74	1.9 +/- .6	1709	FLOWING 300 GPM T=19.9 C
11/02/74	7.8 +/- .7	1742	T=20.0 C
05/20/75	4.6 +/- .3	1848	FLOWING 400 GPM
10/04/75	6.8 +/- .5	1985	
12/20/75	3.1 +/- .9	2004	
03/28/76	6.7 +/- .6	2055	
06/04/76	6.5 +/- .5	2119	PUMPING 1500 GPM (ESTIMATE)
10/02/76	6.9 +/- .9	2101	FLOWING 450 GPM
03/25/77	3.9 +/- .8	2520	
04/01/78		2526	PUMPING 1600 GPM

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP4

DESCRIPTION LOCATION # 11.25.15.343 CLARDY (OASIS) WELL RA 1102 (0-21)
 APPROXIMATELY 4 MILES EAST OF NM 255 SOUTHEAST OF ROSWELL, N.M., AND 1
 MILE NORTH OF NM 255 ON UNMARKED DIRT ROAD. APPROXIMATELY 1 MILE NORTHWEST OF
 OASIS, FOR DAIRY FARM. ONLY EAST END OF LARGE IRRIGATION POND WHICH SERVES AS MAIN WATER
 SUPPLY FOR SEVEN M.S. TO BRUNING, JANUARY AND FEBRUARY, 1931 T.D.: 843 FT. 720 TO
 DRILLER'S LOG: 12 1/2 IN. INTERVAL: 643 FT. TO BOTTOM; 150 TO 206 FT., 630 TO 690 FT.,
 843 FT. TO BOTTOM; 100 TO 400 FT., SAN ANDRES FORMATION; 400 TO 617 FT., ARTESIA GROUP;
 617 FT. TO BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
05/25/73	7.9	1555	PUMPING 1850 GPM
03/23/74	4.4	1612	PUMPING 1750 GPM
06/12/74	4.2	1649	PUMPING 1900 GPM
08/24/74	3.0	1708	PUMPING 1750 GPM
11/02/74	3.6	1723	T=20.0 C
02/21/75	5.6	1793	
07/21/75	5.1	1896	
10/04/75	6.1	1986	
03/08/76	9.1	2054	PUMPING 1500 GPM
06/04/76	10.8	2118	PUMPING 2000 GPM
08/11/76	10.5	2212	PUMPING 2102 GPM
10/02/76	17.8	2102	LEAKING
10/30/76	9.5	2277	

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP4
 DESCRIPTION LOCATION # 11.25.23.111 CLARDY (OASIS) WELL RA 62
 APPROXIMATELY 4 MILES EAST OF NM 255, SOUTHEAST OF ROSWELL, N.M. AND 1
 MILE NORTH OF NM 255 ON UNMARKED ROAD. APPROXIMATELY 1 MILE NORTHWEST OF OASIS,
 N.M.
 DRILLER'S LOG: SHROCK DRILLING CO., JUNE 1957 T.D.: 847 FT. CASING:
 13 3/8 IN. TO 629 FT. WATER: 622 TO 635 FT., 635 TO 650 FT., 810 TO 847 FT.
 ORIGINALLY FLOWING OPEN INTERVAL: 629 FT. TO BOTTOM LITHOLOGY: 0 TO
 82 FT. ALUVIUM; 82 TO 385 FT. GATUNA FORMATION; 385 TO 614 FT.,
 ARTESIA GROUP; 614 FT. TO BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
05/25/73	10.4+/-1.0	1557	T=20.6 C PH=7.10
03/24/74	5.0+/-0.6	1616	FLOWING 489 GPM (METER)
06/12/74	4.6+/-0.4	1647	PUMPING 1793 GPM (METER)
08/24/74	12.2+/-0.7	1707	FLOWING 326 GPM (METER)
11/02/74	14.1+/-0.6	1722	T=20.0 C
02/21/75	8.6+/-0.8	1794	RERUN
05/20/75	7.8+/-0.9	1794	
07/21/75	6.1+/-0.3	1895	
10/04/75	3.4+/-0.7	1984	PUMPING 1304 GPM (METER)
12/20/75	8.7+/-0.4	2053	
03/28/76	12.6+/-0.7	2117	PUMPING 326 GPM (METER)
06/04/76	16.2+/-0.8	2210	PUMPING 1000 GPM (METER)
08/11/76	2.3+/-0.5	2210	PUMPING 815 GPM (METER)
10/02/76		2103	

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP5
 DESCRIPTION LOCATION # 11.24.23.440 SOUTH SPRING RANCH & CATTLE CO. WELL RA 986 (S-116)
 APPROXIMATELY 4 MILES SOUTHWEST OF ROSWELL, N.M. ON NM 2.
 DRILLER'S LOG: GRAY COGGIN, JANUARY THROUGH APRIL, 1928 T.D.: 535 FT.
 CASING: 15 1/2 IN. TO 90 FT., 12 1/2 IN. FROM 90 FT. TO 388 FT. OPEN INTERVAL: 388 FT. TO
 385 TO 390 FT. 465 TO 507 FT. 507 TO 530 FT. ALLUVIUM; 110 TO 200 FT. GATUNA
 BOTTOM LITHOLOGY: 0 TO 110 FT. ALLUVIUM; 110 TO 200 FT. GATUNA
 FORMATION; 200 TO 383 FT. ARTESIA GROUP; 383 FT. TO BOTTOM, SAN ANDRES

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
03/24/73	19.14	1551	PH=7.40
05/26/73	4.94	1562	T=19.6 C PH=7.40
07/21/75	10.54	1894	
10/04/75	5.34	1987	
03/28/76	4.34	2052	PUMPING 900 GPM

MAP # WP5
 DESCRIPTION LOCATION # 11.24.24.433 O.M. VAUGHN WELL RA 986-A
 APPROXIMATELY 4 MILES SOUTHEAST OF ROSWELL, N.M. ON NM 2, 1 MILE EAST OF NM 2.
 DRILLER'S LOG: PEARSON BROS. AND ED SHROCK, JANUARY 1948 T.D.: 581 FT.
 CASING: 13 IN. TO 382 FT. WATER: 384 TO 389 FT. 389 FT. TO 504 TO 509 FT.
 521 TO 535 FT. 570 TO 575 FT. OPEN INTERVAL: 382 FT. TO BOTTOM
 BOTTOM LITHOLOGY: 0 TO 155 FT. ALLUVIUM; 155 TO 270 FT. GATUNA FORMATION
 FORMATION; 200 TO 398 FT. ARTESIA GROUP; 398 FT. TO BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
05/26/73	12.54	1563	PUMPING 1700 GPM (ESTIMATE) T=19.85 C PH=7.4

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WPS
DESCRIPTION

LOCATION # 11.24.25.312 ALLISON WELL RA 1015
 APPROXIMATELY 7 MILES SOUTHEAST OF ROSSWELL, N.M. ON NM 2.
 INFORMATION FROM DAN RABINOWITZ'S DISSERTATION, 1972:
 OWNER: MRS. ALLISON ELEVATION: 3574 FT. DEPTH: 669 FT.
 PRODUCTION INTERVAL: 369 FT. TO 669 FT. FORMATION: MULTIPLE FORMATION
 TYPE: MULTIPLE AQUIFER
 JUDGING FROM THE DRILLER'S LOGS OF THE OTHER ALLISON WELLS AND THE T.U.'S, THE
 PRODUCING HORIZON OF THIS WELL IS NOW BELIEVED TO BE THE PRINCIPAL AQUIFER
 (MOSTLY SAN ANDRES FORMATION), RATHER THAN 'MULTIPLE' FORMATIONS AS REPORTED
 EARLIER.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
03/24/73	2.5 +/- .9	1549	PUMPING 1900 GPM (METER) PH=7.3
04/09/74	13.0 +/- 1.2	1638	PUMPING 1450 GPM (METER) T=20.2 C
06/12/74	4.7 +/- .8	1650	PUMPING 1400 GPM (METER)
08/24/74	4.9 +/- .8	1704	
08/27/75	8.1 +/- .8	1952	
06/04/76	7.1 +/- .5	2120	
08/11/76	8.6 +/- .8	2208	PUMPING

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP5
 DESCRIPTION LOCATION # 11.24.25.341 ALLISON WELL, RA 1015/1012-S-COMB-B
 APPROXIMATELY 5 MILES SOUTHEAST OF ROSWELL, N.M. ON NM 2.
 ONE OF THE SEVEN LONG RECORD WELLS OF THE LAST REPORT AND FEBRUARY, 1952
 DRILLER'S LOG: PEARSON BROS. AND J. F. SHROCK, JANUARY AND WATER: 485 TO 570 FT.
 T.D.: 678 FT. CASING: 13 IN. OPEN INTERVAL: 413 FT. TO BOTTOM;
 607 TO 617 FT. TO 180 FT. ALLUVIUM: 180 TO 285 FT., GATUNA FORMATION; 285 TO
 LITHOLOGY: ARTESIA GROUP; 485 FT. TO BOTTOM, SAN ANDRES FORMATION
 485 FT., ARTESIA GROUP; 485 FT. TO BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED	T. U.	SAMPLE #	COMMENTS
03/18/68	24.6	1809	SUPPLEMENTAL TO 1972 REPORT
10/05/68	14.5	1426	PUMPING 1900 GPM (METER) PH=6.84
07/16/72	17.7	1542	PUMPING 1850 GPM T=20.5 C PH=7.50
03/24/73	5.3	1559	PUMPING 1700 GPM
05/26/73	3.0	1639	PUMPING 1850 GPM T=20.0 C
04/09/74	28.6	1651	PUMPING 1700 GPM
06/12/74	20.5	1705	PUMPING 1850 GPM
08/24/74	11.6	1836	PUMPING 1700 GPM
03/28/75	12.1	1849	PUMPING 1800 GPM
05/20/75	10.2	1897	PUMPING 1700 GPM
07/21/75	17.2	1953	PUMPING 1750 GPM
08/27/75	4.3	2051	
03/28/76	9.2	2122	
06/04/76	7.8	2117	
07/21/76	7.7	2207	
08/11/76	1.1	2207	
04/01/78	1.1	2527	

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WPS
 DESCRIPTION LOCATION # 11.24.26.224 ALLISON WELL RA 1012
 APPROXIMATELY 5 MILES SOUTHEAST OF ROSWELL, N.M. ON NM 2
 DRILLER'S LOG: J.P.R. STAMLEY, JULY 1913 T.D.: 592 FT. CASING: 10 IN.
 TO 446 FT. WATER: 465 TO 475 FT., 507 TO 511 FT., TO 555 FT.
 OPEN INTERVAL: 446 FT. TO BOTTOM; 240 TO 395 FT., LITHOLOGY: 0 TO 120 FT., ALLUVIUM; TO
 BOTTOM, SAN ANDRES FORMATION; 240 TO 395 FT., ARTESIA GROUP; 395 FT. TO
 BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
03/24/73	7.9+/- .5	1550	PUMPING 1900 GPM (METER) PH=7.30
05/26/73	13.9+/- 1.2	1561	PUMPING 1900-2000 GPM PH=7.30
01/09/74	38.5+/- 1.0	1640	PUMPING 1800 GPM
08/12/74	10.6+/- .4	1652	PUMPING 1800 GPM
03/24/75	9.1+/- .9	1706	PUMPING 1900 GPM T=19.9 C
07/21/75	5.3+/- .8	1837	
06/01/76	5.6+/- .5	1898	PUMPING 1800 GPM
03/11/76	6.6+/- .7	2121	PUMPING 1800 GPM
09/17/77	2.6+/- .8	2209	PUMPING 1850 GPM
04/01/78	2.6+/- .7	2507	PUMPING 1800 GPM
		2511	PUMPING 1800 GPM

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP# DESCRIPTION
 LOCATION # 11.25.21.333 TIERRA VUELTA, INC. WELL RA 20-S4 (FORMERLY RA 651)
 APPRUXIMATELY 4 MILES ON NM 255 EAST FROM NM 2 TO THE SOUTHEAST OF ROSWELL, N.M.
 DRILLER'S LOG OF PROBABLY THE SAME WELL (RA 651, LOCATION # 11.25.21.330, BUT
 DIFFERENT DEPTHS, OWNER, ETC. THAN THOSE CASED DOWN TO 810 FT. AND LOGGED 636 FT. (?)
 JUNE 1909 T.D.: 761 FT. HOWEVER, TO 174 FT. AND 8 IN. ORIGINAL FLOW: 2342 GPM
 952 FT. (?) TO 644 FT. TO 713 FT. TO 739 FT. LITHOLOGY: 0 TO 112 FT. TO BOTTOM,
 WATER INTERVAL: 636 FT. TO 952 FT. IN. ARTESIA GROUP; 631 FT. TO 815 FT., HOWEVER, PLUGGED
 OPEN IN GATUNA FORMATION WITH CEMENT BACK TO 815 FT. DUE TO SALT CONTAMINATION.
 260 FT. AND RES FORMATION YOUNG, NOVEMBER 1970 T.D.: 836 FT., HOWEVER, PLUGGED
 SAN ANDRES FORMATION WITH CEMENT BACK TO 815 FT. DUE TO SALT CONTAMINATION.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
03/28/75	7.0 +/- .9	1838	
07/21/75	9.6 +/- .8	1894 B	

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP7
DESCRIPTION

LOCATION # 11, 25, 29, 444
APPROXIMATELY 2 MILES EAST OF UNMARKED WELL, SOUTHEAST OF ROSWELL, N.M., AND
1 MILLER EAST OF NM 255 ON UNMARKED DIRT ROAD, RA 544
DRILLER'S LOG: SPERRY AND BRAUNING, FEBRUARY 1928 T.D.: 925 FT. IN WATER BELOW
CASING: 10 IN. TO 577 FT. WATER: 596 TO 603 FT. LITHOLOGY: 0 TO 292 FT.,
603 FT. OPEN INTERVAL: 577 FT. TO BOTTOM ARTESIA GROUP; 505 FT. TO BOTTOM,
ALLUVIUM AND GATUNA FORMATION; 292 TO 505 FT., TO BOTTOM
SAN ANDRES FORMATION

DATE COLLECTED 03/24/73
T.U. 12.54/m .6
SAMPLE # 1552
COMMENTS PUMPING 1200 GPM NEW PUMP* PH=7.45

* Was run 10 minutes before sampling.

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP8
 DESCRIPTION LOCATION # 13.26.03.114 EAST OF DEXTER, N.M. ON NM 190 AND 2 MILES NORTH OF NM 190
 APPROXIMATELY 2 MILES EAST OF DEXTER, N.M. ON NM 190 AND 2 MILES NORTH OF NM 190
 ON UNMARKED DIRT ROAD RECORD, WELLS OF THE LAST REPORT. SALINE WATER (H2S SMELL,
 ONE OF THE SEVEN IN 1968 APPARENTLY DUE TO INTRUSION OF
 WELL ABANDONED CORRODED CASING) RECORD, WELLS OF THE LAST REPORT. SALINE WATER (H2S SMELL,
 TURBID WATER; PASABU AND RUPE DRILLING CO., JUNE 1952 T.D.: 1150 FT.
 DRILLER'S LOG: TO 55 FT. 10 3/4 IN. FROM 833 TO 936 FT., 8 5/8 IN. LINER FROM
 CASING: 16 IN. TO 794 TO 1145 FT. OPEN INTERVAL: 794 FT. TO BOTTOM 1080
 TO 1090 FT. 1097 TO 1145 FT. ALLUVIUM, GATUNA FORMATION, ARTESIA GROUP (REMARKABLE AMOUNT
 OF GYPSUM AND ANHYDRITE); 767 FT. TO BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED	T.D.	SAMPLE #	COMMENTS
08/08/67	9.84	1810	SUPPLEMENTAL TO 1972 REPORT
09/06/68	2.14	1805	SUPPLEMENTAL TO 1972 REPORT

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP9 LOCATION # 13.24.34.441 VILLA SOLANO WELL RA 4096 (FORMERLY RA 1017-A)
 DESCRIPTION APPROXIMATELY 15 MILES SOUTH OF ROSWELL, N.M. ON US 285 AND 5.5 MILES WEST OF
 US 285 ON NM 559 LAYNE TEXAS CO., OCTOBER 1959 T.D.: 500 FT.
 DRILLING LOG: OVER ENTIRE LENGTH, PERFORATED FROM 380 FT. TO 485 FT.
 CASING: 7 IN. TO BOTTOM WATER, PERFORATION COMPLETION: 165 FT.
 WATER: 380 FT. TO 44 FT., ALLUVIUM; 44 TO 380 FT., GATUNA FORMATION AND ARTESIA
 LITHOLOGY: 0 FT. TO BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/21/75	5.5+/-	1910	
03/28/76	3.8+/-	2050	
06/04/76	6.1+/-	2123	
08/11/76	7.6+/-	2206	
10/30/76	8.1+/-	2275	

SAMPLE FROM STORAGE TANK

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP10 LOCATION # 14.26.10.222 HAGERMAN CITY WELL RA NOT KNOWN
 DESCRIPTION HAGERMAN, N.M. USUALLY SAMPLED FROM HOSE AT FIREHOUSE.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
06/14/74	5.6+	1664	
08/24/74	4.1+	1702	FROM SPRINKLER @ FIREHOUSE
12/18/74	1.9+	1763	
12/20/75	3.8+	2002	
03/28/76	1.6+	2049	
06/04/76	6.8+	2124	
08/11/76	9.0+	2205	
10/30/76	5.1+	2274	T=22.0 C FROM TAP NEAR FIREHOUSE

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP11
DESCRIPTION

LOCATION # 15.26.04.141 J.A. (JAKE) JOHNSON WELL RA 633
APPROXIMATELY 5 MILES SOUTH OF HAGERMAN, N.M. ON NM 2 AND 1 MILE EAST OF NM 2
ON DIRT ROAD
DRILLER'S LOG: LEONARD GEORGE, APRIL AND MAY 1965 T.D.: 1220 FT. OPEN INTERVAL:
CASING: 13 3/8 IN TO 1023 FT. WATER: 1023 FT. TO BOTTOM SOIL AND CALICHE; 20 TO 851 FT.,
1023 FT. TO BOTTOM LITHOLOGY: 0 TO 20 FT., SAND AND CALICHE; 20 TO 851 FT.,
BEDREDS AND ANHYDRITE; 851 FT. TO BOTTOM, SAND AND CALICHE

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
06/14/74	2.0+/-	1665	DISCHARGE=1000 GPM
08/24/74	4.6+/-	1701	SAMPLE FROM TANK T=21.2 C
12/18/74	0.0+/-	1764	
02/21/75	2.9+/-	1791	
08/27/75	10.3+/-	1954	
06/04/76	6.3+/-	2126	PUMPING 1100 GPM
08/11/76	5.5+/-	2203	PUMPING 950 GPM

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP12
DESCRIPTION

LOCATION # 15.26.13.121 POLLARD WELL RA 165
APPROXIMATELY 7 MILES SOUTH OF HAGERMAN, N.M. ON NM 2, TURN EAST FROM NM 2 AT
POWER TRANSFORMER STATION AND CONTINUE EAST FOR APPROXIMATELY 3.5 MILES ON
DIRT ROAD. SEVEN LONG RECORD WELLS OF THE LAST REPORT
DRILLING LOG: SHROCK DRILLING CO. 3/8 IN. JULY AND AUGUST 1955 T.D.: 1381 FT.
CASING: 13 3/8 IN. TO 172 FT. FROM 10 3/8 IN. FROM 172 TO 973 FT. 9 3/8 IN. FROM
973 TO 1223 FT. PERFORATED FROM 1166 TO 1223 FT. WATER: 932 TO 947 FT.
(FRESH WATER) 1214 TO 1230 FT. INTERVAL: 1350 TO BOTTOM WATER DEPTH UPON
COMPLETION: 3 FT. OPEN INTERVAL: 1166 FT. TO BOTTOM LITHOLOGY: 0 TO 872
FT. ALLUVIUM, GATUNA FORMATION, AND ARTESIA GROUP (REMARKABLE AMOUNT OF
GYPSUM AND ANHYDRITE); 872 FT. TO BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED	T. U.	SAMPLE #	COMMENTS
07/14/67	21.7+/-1.3	1811	SUPPLEMENTAL TO 1972 REPORT
08/16/67	26.0+/-1.9	1814	SUPPLEMENTAL TO 1972 REPORT
01/26/68	0.9+/-1.2	1806	SUPPLEMENTAL TO 1972 REPORT
10/09/68	45.6+/-0.9	1815	SUPPLEMENTAL TO 1972 REPORT
04/09/74	4.2+/-0.6	1573	SAMPLE FROM TANK FILLED THAT MORNING
06/14/74	5.3+/-0.8	1666	SAMPLE FROM TANK T=22.2 C
08/24/74	7.9+/-0.6	1700	SAMPLE FROM TANK
12/18/74	1.7+/-0.6	1765	SAMPLED FROM TANK
04/25/75	4.0+/-0.7	1800	FLOWING T=23.5 C
08/27/75	5.0+/-0.7	1885	SAMPLED FROM TANK
12/20/75	4.8+/-1.3	1955	SAMPLED FROM TANK
03/28/76	5.4+/-0.8	2047	SAMPLED FROM TANK
06/04/76	6.6+/-0.8	2212	SAMPLED FROM TANK
08/11/76	3.1+/-0.8	2201	PUMPING <500 GPM
10/30/76	4.5+/-0.7	2273	PUMPING FROM TANK
09/17/77	4.1+/-0.8	2506	PUMPING 978 GPM
04/01/78	1.5+/-0.6	2512	PUMPING 978 GPM

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP13
DESCRIPTION

LOCATION # 16.26.20.433 PARKHAM AND LIVINGSTON WELL AND 0.5 MILES WEST OF NM 2
APPROXIMATELY 4 MILES NORTH OF ARTESIA, N.M. ON NM 2
ON UNMARKED ROAD. THERE ARE TWO POSSIBLE LOGS FOR THIS WELL, THE LOG USED HERE IS
DRILLER'S LOG: 10 3/4 IN. LINER FROM 740 TO 905 FT., SLOTTED
FOR THE PARKHAM AND LIVINGSTON WELL. THERE IS ANOTHER WELL WITH LOCATION #
11.26.20.430 AND RA 558, WHICH IS HOW THIS WELL WAS REPORTED IN MAY 1975,
HOWEVER, THIS OTHER WELL WAS DRILLED IN 1907 AND THE DEPTH DOES NOT CORRESPOND
TO THAT REPORTED NOVEMBER 1953 THROUGH JANUARY 1954 T.D.: 1063 FT.
MYRON FRUNING, 13 3/8 IN. TO 750 FT., 10 3/4 IN. LINER FROM 740 TO 905 FT., SLOTTED
CASING: TIRE LENGTH WATER: 760 TO 785 FT., 960 TO 970 FT., 1010 TO 1025 FT.
OVER DEPTH UPON COMPLETION: 10 FT. OPEN INTERVAL: 740 FT. TO BOTTOM
WATER DEPTH: 0 TO 750 FT., ALLUVIUM, GATUNA FORMATION, AND ARTESIA GROUP
LITHOLOGGY: AMOUNT OF GYPSUM AND ANHYDRITE); 750 FT. TO BOTTOM, SAN ANDRES
(REMARKABLE AMOUNT OF GYPSUM AND ANHYDRITE); 750 FT. TO BOTTOM, SAN ANDRES
FORMATION

DATE COLLECTED 05/20/75
T.U. 6.2+/ .8
SAMPLE # 1873
COMMENTS

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP13
DESCRIPTION

LOCATION # 16, 26, 29, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

DATE COLLECTED 05/20/75
T.U. 7.6+/- .8
SAMPLE # 1874
COMMENTS

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP14
DESCRIPTION

LOCATION # 17.26.10.333 V. L. GATES WELL RA 307 AT NORTHWEST
APPROXIMATELY 0.5 MILES EAST OF THIS POINT, N.M. ON US 82, AT NORTHWEST
CORNER OF INTERSECTION AT ROSA, FROM 447 TO 930 FT. (FIRST 5 FT. OF CASING:
DRILLER'S LOG: 452 FT. 10 OF OPEN INTERVAL: 930 TO 1263 FT. WATER: 1086 TO
CASING INSIDE LAST 5 FT. OF OPEN INTERVAL: 930 TO 1263 FT. LITHOLOGY: 0 TO
177 FT. ALLUVIUM; 177 TO 373 FT. GATUNA FORMATION; 373 TO 779 FT., ARTESIA
GROUP; 779 FT. TO BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED	T. U.	SAMPLE #	COMMENTS
07/11/73	21.7	1530	T=19.9 C PH=7.00
04/09/74	3.0	1578	
06/14/74	6.4	1668	
08/24/74	7.7	1698	
05/20/75	7.0	1878	
08/28/75	9.6	1958	
06/04/76	4.2	2128	
08/11/76	9.7	2199	

PUMPING 800 GPM (ESTIMATE)
PUMPING 500 GPM

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP14
DESCRIPTION

LOCATION # 17.26.10.433 MRS. M. J. SULLIVAN WELL* RA 397
APPROXIMATELY 1.5 MILES EAST OF US 285 IN ARTESIA, N.M. ON US 82, NORTH SIDE OF
ROAD.
DRILLER'S LOG: PEARSON BROS. AND J.E. SHROCK, JANUARY AND FEBRUARY 1954
T.D.: 1095 FT. FROM CASING; 13 3/8 IN. TO 200 FT., 10 IN. FROM 200 TO 800 FT.
8 IN. CASING FROM 800 TO 1035 FT. WATER: 815 TO 830 FT., 1040 FT. TO BOTTOM
OPEN INTERVAL: 1035 TO 1095 FT. LITHOLOGY: 0 TO 260 FT., ALLUVIUM; 260 TO 380
FT., GATUNA FORMATION; 380 TO 798 FT., ARTESIA GROUP; 798 FT. TO BOTTOM, SAN
ANDRES FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/11/73	3.4 +/- 1.0	1601	T=23.8 C PH=7.18
04/09/74	2.2 +/- .5	1630	
06/14/74	1.6 +/- .4	1673	
03/28/75	1.2 +/- 1.0	1833	DISCHARGE=600 GPM
08/28/75	1.1 +/- .4	1960	
03/27/76	8.5 +/- .7	2041	
06/04/76	1.7 +/- .6	2133	
08/11/76	7.9 +/- .8	2194	PUMPING 550-600 GPM (ESTIMATE) PUMPING 500 GPM

* Also known as Doyle Pennington Well

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP14
DESCRIPTION

LOCATION # 17.26.11.433 BLAINE HAINES WELL RA 777
APPROXIMATELY 2.5 MILES EAST OF US 285 IN ARTESIA, N.M. ON US 82, NORTH SIDE OF
ROAD.
DRILLER'S LOG: BOB JOHNSON, APRIL AND MAY 1947 T.D.: 1034 FT. CASING:
13 IN. TO 117 FT. FROM 283 FT. TO 370 FT. (??) WATER: 8 5/8 IN. LINER TO 283 FT.,
6 5/8 IN. LINER FROM 283 FT. TO 370 FT. (??) WATER: 8 1/4 TO 8 3/4 FT., 975 TO
1008 FT. OPEN INTERVAL: 760 FT. TO BOTTOM(?) LITHOLOGY: 0 TO 240 FT.,
ALLUVIUM; 240 TO 350 FT., GATUNA FORMATION; 350 TO 751 FT., ARTESIA GROUP;
751 FT. TO BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/12/73	18.3+/-.6	1535	
12/18/74	0.7+/-.9	1770	
03/28/75	5.6+/-.1.0	1835	
08/28/75	8.5+/-.4	1962	
03/27/76	4.4+/-.7	2043	
06/04/76	5.4+/-.6	2135	
08/11/76	4.4+/-.8	2195	

PUMPING 200 GPM (ESTIMATE)
PUMPING 150 GPM

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP15

DESCRIPTION LOCATION # 17.26.14.211 G.E. SHARP WELL RA 895 SOUTH SIDE OF
 APPROXIMATELY 2.5 MILES EAST OF US 285 IN ARTESIA, N.M. ON US 82, SOUTH SIDE OF
 ROAD AT THE OASIS STORE
 DRILLER'S LOG: MYRON BRUNING, FILED APRIL 1952 T.D.: 1013 FT. OVER CASING:
 10 3/4 IN. TO 806 FT., 8 3/4 IN. FROM 806 TO 990 FT., PERFORATED OPEN INTERVAL: 806
 LENGTH WATER: 863, TO 870 FT. ORIGINALLY FLOWING OPEN INTERVAL: 806
 FT. TO BOTTOM. LITHOLOGY: 0 TO 801 FT., ALLUVIUM, GATUNA FORMATION, AND
 ARTESIA GROUP; 801 FT. TO BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/12/73	5.7+/-1.1	1534	PUMPING 557 GPM PH=7.3 DEPTH=1000 FT T=23.6
04/09/74	6.1+/-0.6	1631	
06/14/74	8.9+/-0.4	1674	
08/28/75	4.4+/-0.4	1961	
06/04/76	5.2+/-0.8	2134	PUMPING 652 GPM (METER)
08/11/76	3.8+/-0.8	2196	PUMPING 75 GPM
09/17/77	2.7+/-0.8	2536	PUMPING 652 GPM
04/01/78		2542	PUMPING 455 GPM

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP15
DESCRIPTION

LOCATION # 17.26.15.133 JACKSON/ROWLEY WELL RA 2050-COMB-2871
 APPROXIMATELY 1 MILE EAST OF ROAD. N.M. ON US 82, AND 0.5 MILES
 SOUTH OF US 82 ON UNMARKED DRILLING CO., APRIL 1955 T.D.: 1231 FT. CASING:
 DRILLER'S LOG: 207 FT. FROM 793 TO 1012 FT. WATER: 1016 TO 1030 FT. FROM 793 TO WATER
 13 3/8 IN. TO PERFORATION: 42 FT. OPEN INTERVAL: 793 TO 1012 FT. AND 1025 FT. TO
 1025 FT. UPON COMPLETION: C TO 209 FT. ALLUVIUM; 209 TO 300 FT. GATUNA FORMATION;
 BOTTOM LITHOLOGY: C TO 209 FT. TO BOTTOM, SAN ANDRES FORMATION
 300 TO 788 FT., ARTESIA GROUP; 788 FT. TO BOTTOM, SAN ANDRES FORMATION

----- COMMENTS -----

DATE COLLECTED T.U. SAMPLE # PUMPING 800 GPM T=24.0 C PH=7.10
 07/12/73 15.8 +/- .9 1602
 06/14/74 2.3 +/- .5 1671

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP15

DESCRIPTION LOCATION # 17.26, 15.413 EAST OF ROAD LOGS FOR LOCATION # 17.26, 15.410, NEITHER OF WHICH GIVE THIS WELL RA #. THERE ARE BOTH REPORTED AS 850 FT. DEEP WITH THE PRODUCTION INTERVAL, OK 1975, TO 850 FT. WAS THE WELL CONSTRUCTION IS NOT GIVEN SINCE IT IS PROBABLY DIFFERENT FROM EITHER OF THE TWO OLDER WELLS, HOWEVER, SINCE THE LOGS OF THE TWO OLDER WELLS BE USED TO DETERMINE THE LITHOLOGY OF THIS WELL, SINCE THEY ARE PROBABLY VERY SIMILAR, IF NOT THE SAME.
LITHOLOGY: 0 TO 120 FT., ALLUVIUM; 120 TO 375 FT., GATUNA FORMATION; 375 TO 751 FT., ARTESIA GROUP; 751 FT. TO BOTTOM, SAN ANDRES FORMATION

W.M. JACKSON ('REMARKABLE CHIMNEY') WELL RA 1578 APPROXIMATELY 1.5 MILES EAST OF 285 IN ARTESIA, N.M. ON US 82 AND 3/4 MILE SOUTH OF US 82

DATE COLLECTED T.U. SAMPLE # COMMENTS

04/09/74	6.3+/- .4	1635	T=18.0 C
06/14/74	4.0+/- .5	1676	
08/24/74	5.2+/- .5	1695	
06/04/76	5.3+/- .8	2132	
08/11/76	8.3+/- .9	2193	

T=18.0 C
PUMPING 800-1000 GPM (ESTIMATE)
PUMPING

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP16
DESCRIPTION

LOCATION # 17.26.29.111 DON MENESEE WELL RA 1925-S AND 2 MILES
APPROXIMATELY 1 MILE WEST OF ROAD AND SHROCK, APRIL AND MAY 1952 T.D.: 1150 FT.
SOUTH OF US 82 ON PEARSON PROS. AND 3/4 IN. FROM 222 WATER TO 700 FT. 8 1/4 IN. FROM
DRILLER'S LOG: IN. PERFORATED OVER ENTIRE LENGTH TO 1040 FT. TO 732 FT. 828 TO
680 TO 860 FT. 916 FT. DEPTH UPON COMPLETION: 63 FT. OPEN INTERVAL: 700 FT.
835 FT. TO WATER LOG. LITHOLOGY: 0 TO 330 FT. ALLUVIUM; 330 TO 420 FT. SAND
TO BOTTOM; 420 TO 666 FT. ARTESIA GROUP; 666 FT. TO BOTTOM, SAN ANDRES
FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
05/20/75	6.6 +/- .7	1875	
07/21/75	10.5 +/- 1.1	1906	
08/28/76	17.4 +/- .4	1963	
03/28/76	4.7 +/- .7	2046	
06/04/76	4.1 +/- .6	2139	
08/11/76	2.0 +/- .7	2190	

PUMPING 900 GPM

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # NOT GIVEN ONE DUE TO INSUFFICIENT LOCATION. WELL RA NOT KNOWN 88210
 DESCRIPTION LOCATION # NOT KNOWN GEORGE MAYO STREET ARTESIA, N.M.
 ADDRESS: GEORGE MAYO 1211 CHISUM STREET
 DEPTH REPORTED IN APRIL 1974 AS 1000 FT.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
04/09/74	5.5 +/- .7	1634	PUMPING 1000 GPM
06/14/74	0.1 +/- .6	1675	PUMPING 900 GPM
08/24/74	2.8 +/- .5	1694	PUMPING 770 GPM T=21.6 C
03/27/76	6.0 +/- .8	2042	
06/04/76	6.5 +/- .4	2138	PUMPING 750 GPM (METER)
08/11/76	2.8 +/- .8	2192	PUMPING 1000 GPM

MAP # WP17
 DESCRIPTION LOCATION # 18.26.18.322 VANDIVER WELL, RA 3181
 APPROXIMATELY 6 MILES SOUTH OF ARTESIA, N.M. ON US 285, AND 1.5 MILES WEST OF
 US 285 ON NM 229. Note: There is some doubt as to whether this well is deep or shallow.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
07/21/75	12.7 +/- .9	1908	

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP17
DESCRIPTION

LOCATION # 18, 26, 18, 41124 VANDIVER WELL, RA 1167-A
APPROXIMATELY 6 MILES SOUTH OF ARTESIA, N.M. ON US 285, AND 2 MILES WEST AND
SOUTH ON NM 229
PREVIOUSLY REPORTED AS RA 3181-S6
DRILLER'S LOG: JEWELL ADKISON DRILLING CO., MAY AND JUNE, 1970, WATER: 130 FT.
T.D.: 1120 FT. (300 GPM); 13 3/8 IN. FROM 2 FT. TO 860 FT.
TO 200 FT. (200 GPM); 860 FT. TO BOTTOM, IMPOROUS BROWN GRAY LIME-
STONE (2000 GPM); OPEN INTERVAL: 1080 FT. TO BOTTOM, LITHOLOGY: 0 TO
200 FT., ALLUVIUM; 200 TO 790 FT., SHALE, SANDSTONE, ANHYDRITE, LIMESTONE
(GATUNA AND ARTESIA FORMATIONS); 790 FT. TO BOTTOM, SAN ANDRES FORMATION.

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
05/20/75	1.7 +/- .7	1876	
08/17/77	2.6 +/- .7	2521	
04/01/78	0.5 +/- .7	2529	

MAP # WP17
DESCRIPTION

LOCATION # 18, 26, 18, 332 F.F. THORPE WELL SOUTH OF ARTESIA, N.M. ON NM 229, RA 747
APPROXIMATELY 1.5 MILES WEST OF US 285 SOUTH OF ARTESIA, N.M. ON NM 229, 1061 FT.
DRILLER'S LOG: SHROCK DRILLING CO., FEBRUARY AND MARCH, 1962, WATER: 800 TO 818 FT., 963 TO
CASING: 13 3/8 IN. TO 575 FT. WATER: 660 TO 696 FT., 800 TO 818 FT., 963 TO
1055 FT. OPEN INTERVAL: 575 FT. TO BOTTOM LITHOLOGY: 0 TO 215 FT.,
ALLUVIUM; 215 TO 390 FT. GATUNA FORMATION; 390 TO 615 FT., ARTESIA GROUP;
615 FT. TO BOTTOM, SAN ANDRES FORMATION

DATE COLLECTED	T.U.	SAMPLE #	COMMENTS
03/28/75	6.5 +/- .5	1830	
07/21/75	5.7 +/- .7	1907	PUMPING 1100 GPM

WELLS PRODUCING FROM THE PRINCIPAL AQUIFER

MAP SYMBOL IS WP#

MAP # WP18
DESCRIPTION

LOCATION # 19.26.05.323 POWELL WELL RA NOT KNOWN
APPROXIMATELY 11 MILES SOUTH OF ARTESIA, N.M. ON US 285, 1/2 MILE WEST OF ROAD.
PRODUCING INTERVAL REPORTED AS 567 TO 905 FT. IN JANUARY 1972.

DATE COLLECTED T.U. SAMPLE # COMMENTS
01/11/72 19,0+/- 9 A-1

WELLS PRODUCING FROM THE ALLUVIUM AND PRINCIPAL AQUIFERS

MAP SYMBOL IS WAP#

MAP # WAP1
DESCRIPTION

LOCATION # 10.24.22.110 JOHN M. HOLLEY WELL ON US 285 AND 1.1 MILES EAST OF
APPROXIMATELY 3 MILES NORTH OF ROSWELL, N.M. REPORTED IN MARCH 1973 AS NEAR THE RIO HONDO,
US 285 ONE EXPOSED ROAD (NM 431). REPOSED FROM MARCH THROUGH APRIL, 1966 T.D.: 306 FT.
LIMESTONE EXPOSED 0.25 MILES FROM WELL LOCATION WATER: 242 TO 262 FT., OPEN INTERVAL:
DRILLER'S LOG: CALVIN STERRETT, WATER: 242 TO 262 FT., OPEN INTERVAL:
CASING: 10 3/4 IN. WATER DEPTH UPON COMPLETION: 65 FT., UPON COMPLETION: 17 TO 237 FT.,
292 TO 300 FT. TO BOTTOM; LITHOLOGY: 0 TO 17 FT. ALLUVIUM; 17 TO 237 FT.,
234 FT. TO BOTTOM; 237 FT. TO BOTTOM, SAN ANDRÉS FORMATION

DATE COLLECTED T.U. SAMPLE # COMMENTS
03/24/73 14.3+/- .5 1490 PUMPING 1000 GPM (METER) PH=7.33

MAP # WAP1
DESCRIPTION

LOCATION # 10.24.22.133 ROBERT A. MACARTHUR WELL RA 896
APPROXIMATELY 3 MILES NORTH OF ROSWELL, N.M. ON US 285 AND 1.5 MILES EAST
OF US 285 ON NM 431.
DRILLER'S LOG: STERRETT, MARCH 1972 T.D.: 260 FT.
CASING DEPTH: 7 IN. UPON COMPLETION: 233 FT. WATER: 240 TO 246 FT., 249 TO 260 FT.
WATER DEPTH: 0 TO 29 FT. ALLUVIUM: 29 TO 249 FT., GATUNA FORMATION;
LITHOLOGY: 0 TO 29 FT. TO BOTTOM, SAN ANDRÉS FORMATION

DATE COLLECTED T.U. SAMPLE # COMMENTS
03/72 53.9+/-1.5 1460 COLLECTED FROM PRESSURE TANK
01/05/73 4.8+/- .7 1462 PUMPED FOR APPROX. 20 MINUTES
08/12/76 9.6+/- .8 2213 COLLECTED FROM TAP NEAR HOUSE

WELLS PRODUCING FROM THE ALLUVIUM AND PRINCIPAL AQUIFERS

MAP SYMBOL IS WAP#

MAP # WAP2

LOCATION # 14.23.24.433 ROSS CASAVEZ WELL 13, SOUTH EAST OF ROSWELL, N.M.
 APPROXIMATELY 9.5 MILES WEST OF US 285 ON THROUGH TO 217 FT. T.O. 397 FT.
 DRILLING'S LOG: RANDOLF JOHNSTON, APRIL THROUGH TO 275 FT.
 CASING: 13 3/8 IN. TO 392 FT. WATER DEPTH UPON COMPLETION: 200 FT.
 351 TO INTERVAL: 303 FT. TO BOTTOM LITHOLOGY: 0 TO 283 FT. ALLUVIUM AND
 OPEN INTERVAL: 303 FT. TO BOTTOM; SAN ANDRES FORMATION

DATE COLLECTED T.U. SAMPLE # COMMENTS

01/16/72 43.5+/-1.0 1422
