GROUND-WATER RESOURCES OF CATRON COUNTY, NEW MEXICO

By George T. Basabilvazo

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 96-4258

Prepared in cooperation with the

NEW MEXICO STATE ENGINEER OFFICE

and the

NEW MEXICO BUREAU OF MINES AND MINERAL RESOURCES

Albuquerque, New Mexico

1997

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CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
inch	25.4	millimeter
foot	0.3048	meter
mile	1.609	kilometer
square foot	0.09290	square meter
acre	4,047	square meter
square mile	2.590	square kilometer
foot per day	0.3048	meter per day
	0.000353	centimeter per second
foot squared per day	0.0929	meter squared per day
acre-foot	1,233	cubic meter
gallon	3.785	liter
	0.003785	cubic meter
gallon per minute	0.06309	liter per second
gallon per minute per foot	0.2070	liter per second per meter
gallon per day	0.00004382	liter per second
gallon per day per foot	0.124	square meter per day
cubic foot	0.02832	cubic meter
cubic foot per second	0.02832	cubic meter per second
	28.32	liter per second

Temperature in degrees Fahrenheit (°F) can be converted to degrees Celsius (°C) as follows:

$$°C = 5/9\ (°F - 32)$$

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929--a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

Specific conductance is reported in microsiemens per centimeter ($\mu S/cm$) at 25 degrees Celsius.

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ABSTRACT

This report describes the occurrence, availability, and quality of ground-water and related surface-water resources in Catron County, the largest county in New Mexico. The county is located in the Lower Colorado River Basin and the Rio Grande Basin, and the Continental Divide is the boundary between the two river basins. Increases in water used for mining activities (coal, mineral, and geothermal), irrigated agriculture, reservoir construction, or domestic purposes could affect the quantity or quality of ground-water and surface-water resources in the county.

Parts of seven major drainage basins are within the two regional river basins in the county--Carrizo Wash, North Plains, Rio Salado, San Agustin, Alamosa Creek, Gila, and San Francisco Basins. The San Francisco, Gila, and Tularosa Rivers typically flow perennially. During periods of low flow, most streamflow is derived from baseflow. The stream channels of the Rio Salado and Carrizo Wash Basins are commonly perennial in their upper reaches and ephemeral in their lower reaches. Largo Creek in the Carrizo Wash Basin is perennial downstream from Quemado Lake and ephemeral in the lower reaches.

Aquifers in Catron County include Quaternary alluvium and bolson fill; Quaternary to Tertiary Gila Conglomerate; Tertiary Bearwallow Mountain Andesite, Datil Group, and Baca Formation; Cretaceous Mesaverde Group, Crevasse Canyon Formation, Gallup Sandstone, Mancos Shale, and Dakota Sandstone; Triassic Chinle Formation; and undifferentiated rocks of Permian age. Water in the aquifers in the county generally is unconfined; however, confined conditions may exist where the aquifers are overlain by other units of lower permeability.

Yields of ground water from the Quaternary alluvium in the county range from 1 to 375 gallons per minute. Yields of ground water from the alluvium in the Carrizo Wash Basin are as much as 250 gallons per minute for short time periods. North of the Plains of San Agustin, ground-water yields from the alluvium in the San Agustin Basin range from 1 to 10 gallons per minute.

Irrigation wells completed in the Quaternary bolson fill produce as much as 975 gallons per minute immediately east of the county. Water from the bolson fill in the Plains of San Agustin has specific-conductance values generally ranging from 180 to 3,300 microsiemens per centimeter at 25 degrees Celsius (μS/cm).

Yields from the Gila Conglomerate generally range from 2 to 5 gallons per minute. Water samples from two springs from the Gila Conglomerate have specific conductances of 289 and 381 μS/cm.

The Tertiary Datil Group is present in the Carrizo Wash, San Agustin, San Francisco, and Gila Basins. The Datil Group commonly is unconfined, but may be confined at depth. Water levels of wells completed in this unit range from 60 to 1,260 feet below land surface. Wells completed in the Datil Group typically yield 1 to 15 gallons per minute. Specific conductance of water from the Datil Group ranges from 210 to 820 μS/cm. The Tertiary Baca Formation in the Carrizo Wash Basin produces 5 to 20 gallons per minute in stock wells. Water from wells completed in the Baca Formation has specific-conductance values ranging from 312 to 752 μS/cm.

Aquifers in Cretaceous rocks are present in the Carrizo Wash, North Plains, and Rio Salado Basins. The potential yield from wells completed in Cretaceous rocks in northwestern Catron County is from 1 to 122 gallons per minute. Specific conductance of water from Cretaceous rocks ranges from 210 μS/cm in the Moreno Hill Formation to 4,490 μS/cm in the Mancos Shale. Yields of ground water from Cretaceous rocks in the Carrizo Wash Basin typically range from 1 to 100 gallons per minute; in an artesian well, however, the yield in the main body of the Cretaceous Dakota Sandstone during an aquifer test was 350 gallons per minute. Ground-water yields from the Cretaceous Crevasse Canyon Formation in the North Plains Basin range from 0.5 to 1.5 gallons per minute. Specific conductance of water from the Mesaverde Group, Crevasse Canyon Formation, Mancos Shale and intertongued Dakota Sandstone, and the main body of the Dakota Sandstone ranges from 370 to 4,370; 1,200 to 2,500; 980 to 4,490; and 500 to 980 μS/cm, respectively.

Yields of ground water from two wells completed in Permian rocks in the Carrizo Wash Basin are 12 and 80 gallons per minute. Water from Permian and Triassic sedimentary rocks has specific-conductance values generally ranging from 1,300 μS/cm in the Permian San Andres Limestone and/or Glorieta Sandstone to 3,460 μS/cm in the Triassic Chinle Formation.

In Catron County, the total ground and surface water withdrawn was about 21,000 acre-feet in 1990, of which the primary use was for irrigated agriculture. In 1990, ground- and surface-water withdrawals for irrigated agriculture were 20,022 acre-feet or 95.5 percent of the total withdrawals in the county. The principal irrigated areas are along the San Francisco River, near Quemado, and in the Plains of San Agustin. About 87 percent of the water used in the county in 1990 was surface water. Surface water in the county is used for irrigated agriculture, livestock, and commercial purposes. The San Francisco, Gila, and Tularosa Rivers are the major source for almost all surface water diverted for irrigation, livestock watering, and commercial purposes. Ground water in the county is used for irrigated agriculture, mining, public water supply, domestic, livestock, commercial, and industrial purposes.

Geothermal areas are sparsely distributed throughout Catron County. They are located but are not restricted to areas (1) along the San Francisco River in the southwest part of the county, (2) along the headwaters of the Gila River and in the forks of the upper reaches in the southeast part of the county, (3) around the Plains of San Agustin in the east-central part of the county, and (4) northwest of the community of Quemado in the northwest part of the county. In geothermal areas, elevated water temperatures are probably related to high heat flow from shallow magma bodies and ground-water circulation through highly fractured, faulted, and permeable rocks near the heat source.

INTRODUCTION

Catron County is located in west-central New Mexico and is the largest county in New Mexico, containing approximately 6,900 square miles (4,400,000 acres) (fig. 1). The county is located in the Lower Colorado River Basin and the Rio Grande Basin. The Continental Divide is the boundary between the two river basins. Parts of the Gila-San Francisco and Rio Grande administrative ground-water basins, as declared by the New Mexico State Engineer June 30, 1991, also are in Catron County.

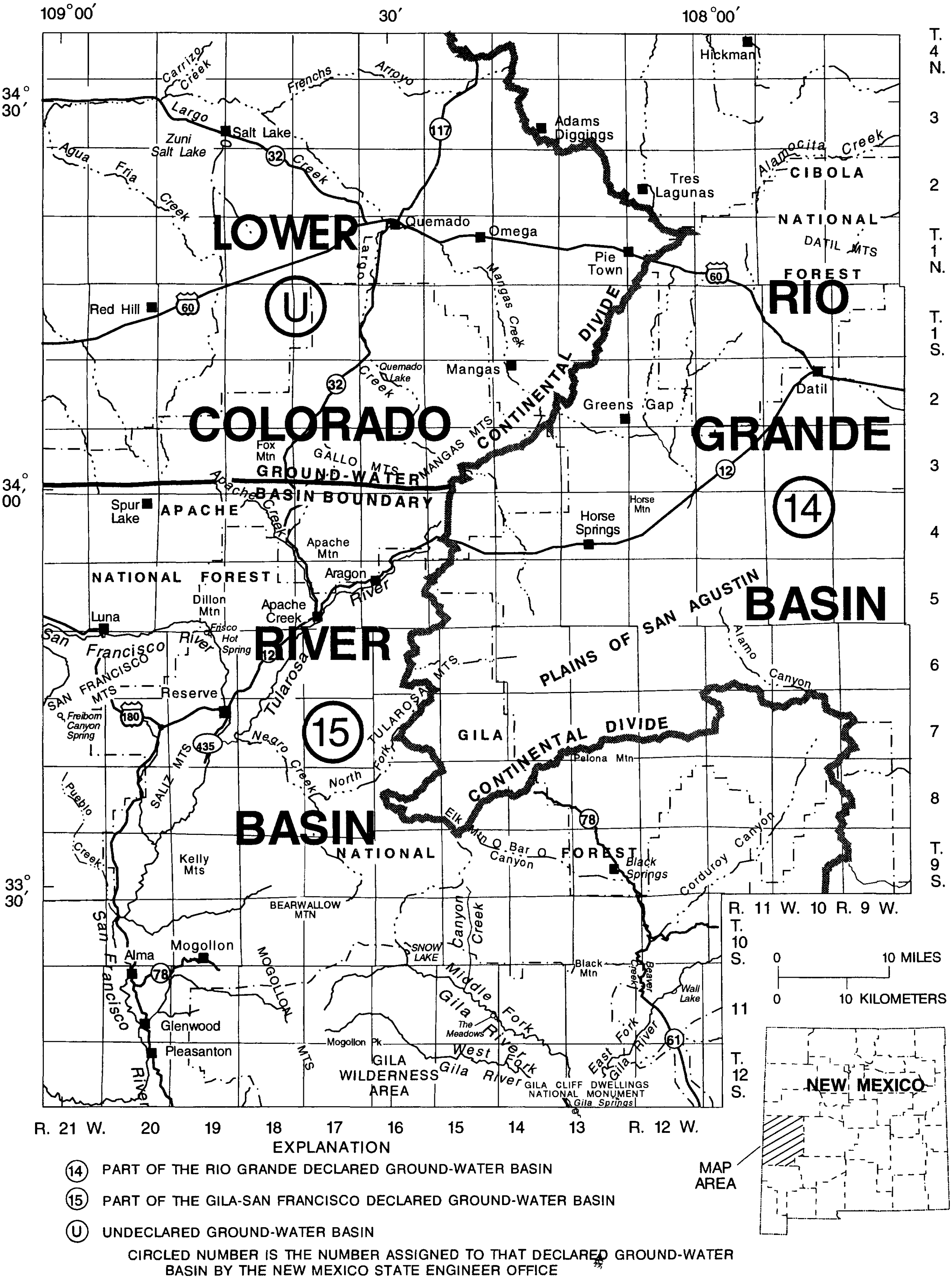


Figure 1.--Location of the study area, and declared and undeclared ground-water basins in Catron County, New Mexico (modified from Wilson, 1992).

About one-half of the county is federally owned and is in part of the Gila or Apache National Forests. In 1980, the population of Catron County was 2,720, which ranks the county as the third least populated county in New Mexico. Tysseling and others (1986) estimated that in 1980 the population of the Gila-San Francisco Basin was 1,728. Employment in Catron County is primarily by agriculture and government. Agriculture is dominated by livestock production, primarily in the San Francisco River Valley (Tysseling and others, 1986). Government employment is dominated by Federal employees at the Apache and Gila National Forests.

Increases in water used for mining activities (coal, mineral, and geothermal), irrigated agriculture, reservoir construction, or domestic purposes could lower water levels and affect the quantity or quality of surface-water and ground-water resources in the county. In the Gila-San Francisco Basin, surface-water use is limited by the *Arizona v. California* decree of 1964 (Tysseling and others, 1986); thus, any increase in withdrawals would require acquisition of water rights from existing users. In addition, any new appropriations of ground water would need approval by the New Mexico State Engineer Office because the Gila-San Francisco and Rio Grande are declared ground-water basins. Because of increasing interest and concern about the ground-water resources of Catron County, the U.S. Geological Survey, in cooperation with the New Mexico State Engineer Office and the New Mexico Bureau of Mines and Mineral Resources, investigated the ground-water resources of Catron County, New Mexico.

Purpose and Scope

This report describes the occurrence, availability, and quality of ground-water and related surface-water resources of Catron County, New Mexico. Existing hydrogeologic data from published and unpublished reports on the county were used to characterize the aquifers and hydrochemistry of the water in the aquifers. New hydrogeologic data were collected from selected wells, springs, and lakes in the Carrizo Wash Basin in northwestern Catron County, which is an undeclared administrative ground-water basin. Included in this report are a summary of (1) ground-water resources, (2) surface-water gaging stations and crest-stage stations, (3) geothermal areas, and (4) water use in the county.

Although Catron County has an abundance of wells and springs, many records for these water sources were collected prior to 1980 and do not have information concerning aquifer designation, water quality, or well-completion specifications. Parts of this report are based on interpreted aquifer assignments from geologic maps from 1965 and earlier, and limited water-quality data.

System of Numbering Wells and Springs

The system of numbering wells and springs is based on the common subdivision of public land into sections. A well or spring is located to the nearest 10-acre tract in the land network (fig. 2). The first number denotes the township north or south of the New Mexico Base Line, the second denotes the range east or west of the New Mexico Principal Meridian, and the third denotes the section in which the well or spring is located. The fourth number locates the well or spring within the section to the nearest 10 acres by the system of quartering shown in figure 3. If two or more wells or springs occur in the same 10-acre tract, the wells or springs are distinguished by letters (A, B, and so on) following the location number. The use of zeros in the fourth segment of the location number indicates that the well or spring could not be more accurately located. For example, well number 02S.12W.05.400 would indicate that the well could not be located more accurately than the southeast quarter of section 5.

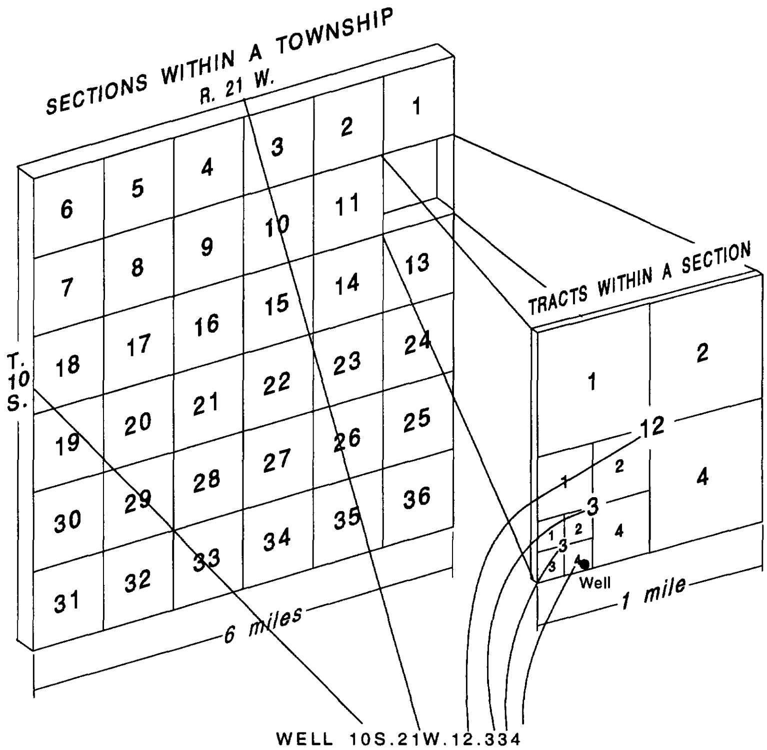


Figure 2.--System of numbering wells and springs.

Description of Study Area

Catron County contains plains, mesas, deep canyons, volcanic maars, necks, dikes, and mountain ranges. The major mountain ranges in the county include the Mogollon, Saliz, San Francisco, Tularosa, Gallo, Mangas, and Datil Mountains (figs. 1 and 3). In general the mountainous and forested areas are in the northeastern and southern parts of the county. Part of the Gila Wilderness Area is in the southern one-quarter of the county, which has some of the highest altitudes in the area, ranging from about 4,600 feet above sea level near Glenwood to about 10,892 feet above sea level at Whitewater Baldy in the Mogollon Mountains. The north-central and northwestern areas of the county are dominated by mesas and plateaus interspersed with gently sloping canyons, steep ridges, and hills. The watershed in the northwestern part of the county is bordered by the Gallo and Mangas Mountains and is drained by Largo Creek and the intermittent Carrizo Creek. Zuni Salt Lake is also located in the northwestern part of the county.

The soils in Catron County are divided into two general categories: moderately dark colored soils of the western plateau region and moderately dark and dark-colored soils of the mountainous region. Vegetation in the county ranges from pine, fir, and spruce forests to piñon and juniper woodlands. Grasslands are found in the plains, hills, and valleys. Semidesert brush and cacti grow at some of the lower altitudes.

Climatic factors are controlled primarily by altitude. Annual precipitation varies from 9 inches per year in the drier, low-lying areas to as much as 30 inches per year in the higher altitudes (Maker and others, 1972). Generally, the drier areas are in the northern one-quarter of the county. Approximately half the annual precipitation falls between the months of July and September (Maker and others, 1972). Average annual snowfall ranges from 6 to 40 inches. Mean annual temperatures range from 58 °F in the lowlands to 45 °F in the mountainous areas. The average number of days with freezing temperatures ranges from 128 at Glenwood to 245 at the Luna Ranger Station (fig. 1) (Maker and others, 1972).

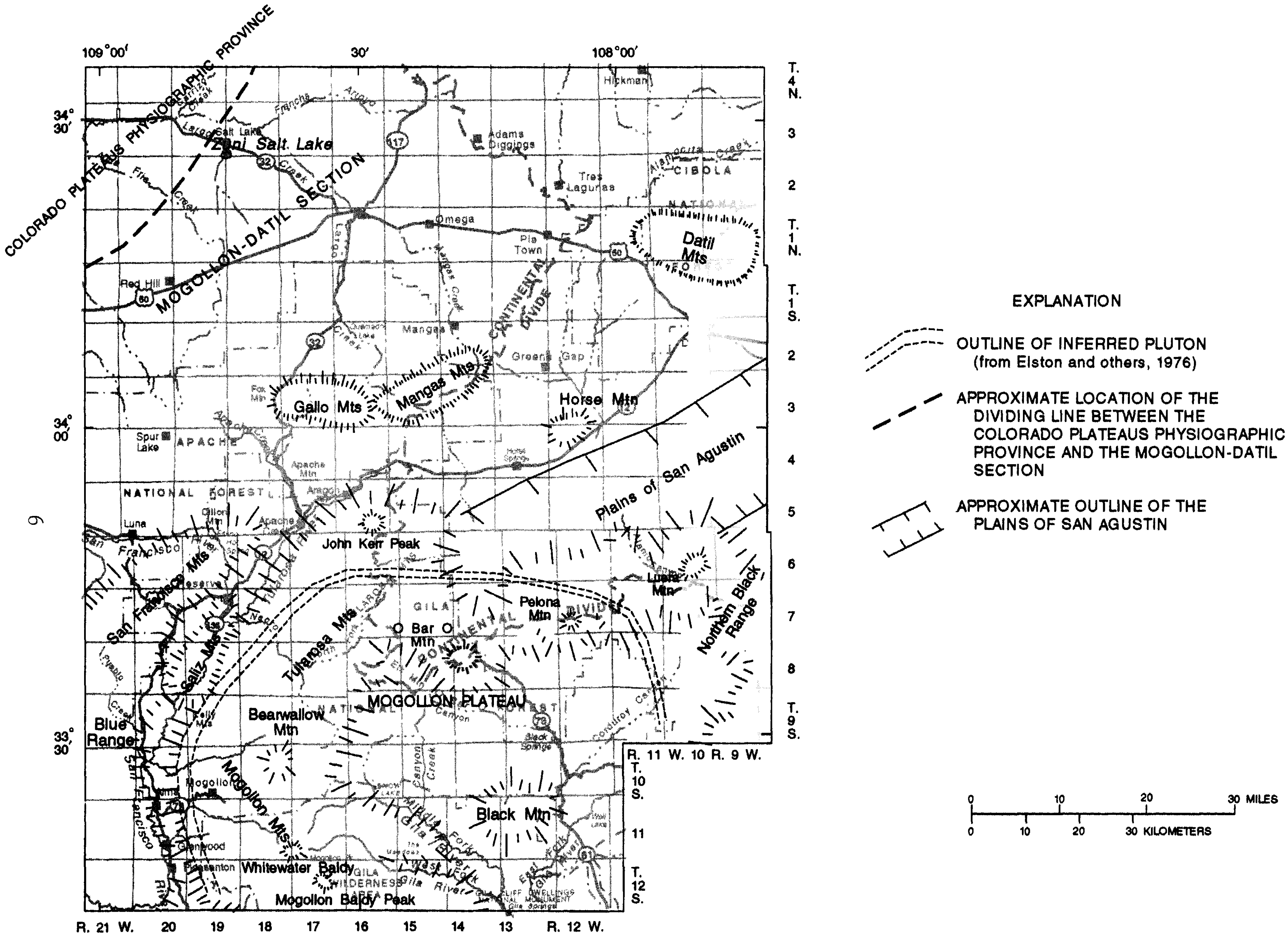


Figure 3.--Physiographic features in Catron Country, New Mexico (modified from Fenneman, 1931; Elston and others, 1976).

Regional Geology

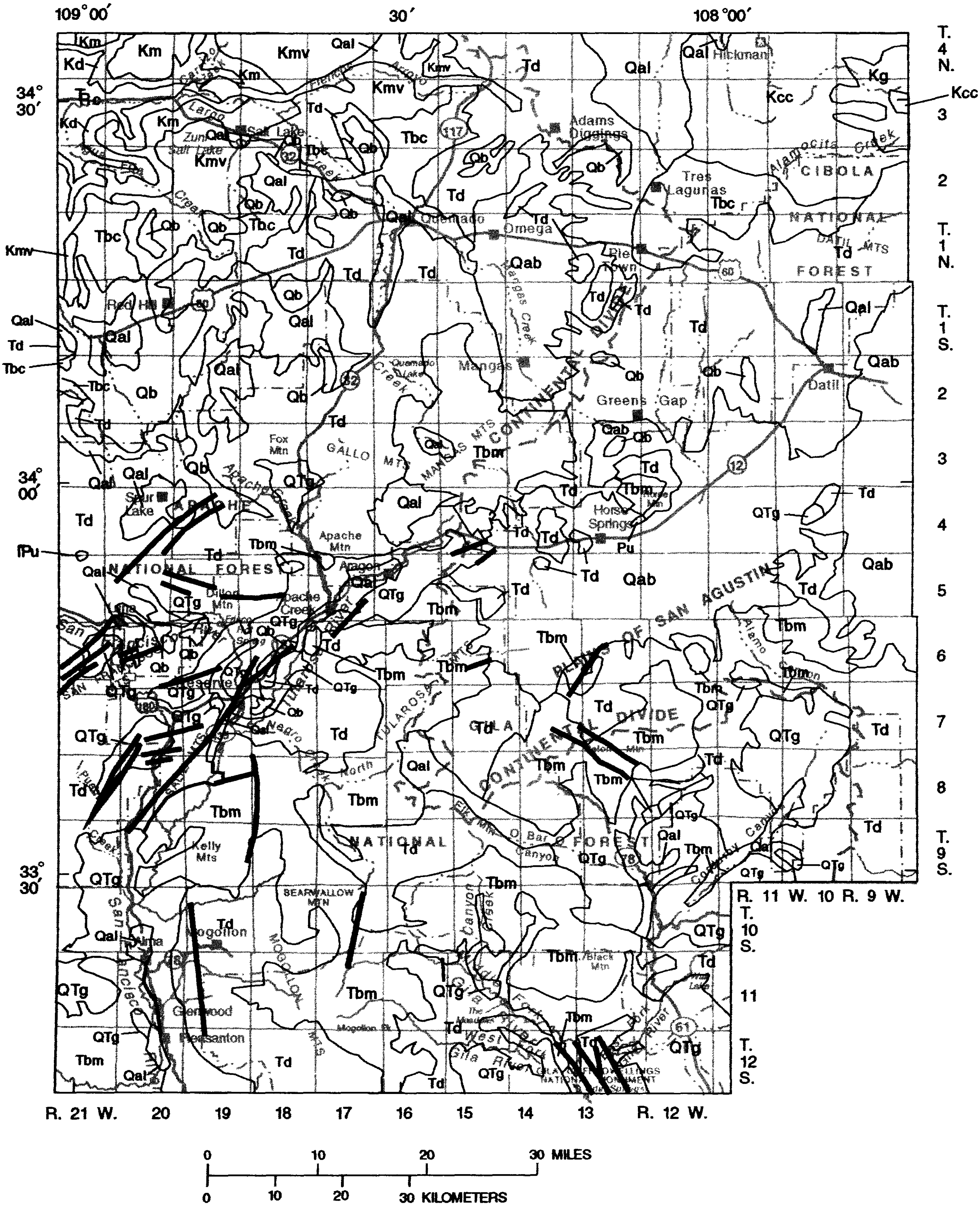
Catron County is located in the Colorado Plateaus physiographic province (fig. 3) and the Mogollon-Datil Section. The Mogollon-Datil Section (Osburn, 1983), previously referred to as the Datil Section (Fenneman, 1931), represents a transitional structural zone situated between the Colorado Plateaus physiographic province and the Basin and Range physiographic province, located south of Catron County. The Mogollon-Datil Section is characterized by volcanic rocks and features, such as necks, plugs, maars, dikes, cauldrons, and ash-flow tuffs and basalts. In the southern part of the county, rugged mountains, high tablelands, and structural basins are developed primarily in Tertiary epiclastic, volcanic, and volcaniclastic rocks.

Rock outcrops in Catron County range in age from Pennsylvanian to Quaternary (fig. 4). Rocks of Precambrian age are not exposed on the surface, but they have been penetrated in oil-test drill holes (Foster, 1964). According to Dane and Bachman (1965), the Paleozoic Era is represented by rocks in two minor outcrops: a small exposure of Pennsylvanian rocks in the west-central part of the county and an exposure of Permian rocks on the northern margin of the Plains of San Agustin.

Major outcrops of Triassic and Cretaceous rocks are present in buttes, plateaus, and mesas incised by local canyons and separated by broad valleys in the extreme northwest and northeast parts of the county (fig. 4). Rocks of the Triassic Chinle Formation are deposits from a stream system that flowed into a large basin that covered the area during the Triassic age (Stewart and others, 1972). Rocks of Late Cretaceous age in the county were deposited in an epicontinental sea that covered most of northwestern New Mexico during that period (Hook and others, 1983). The transgression and regression of this seaway deposited a sequence of intertonguing sediments that record the prior existence of marine, paralic, and nonmarine environments. Because of several sequences of inundation of the Cretaceous seaway, the lateral correlation of stratigraphic units is difficult, and some of the nomenclature of Late Cretaceous strata has been subdivided and subsequently revised (Hook and others, 1983).

Tertiary sedimentary and volcanic and intrusive rocks crop out in the county consisting of the Baca Formation, the Datil Group, and the Bearwallow Mountain Andesite. Beginning in the Eocene, intermontane basins developed adjacent to uplifts along the southern margin of the Colorado Plateau (Cather, 1989). These intermontane basins were slowly filled by fluvial and lacustrine processes that deposited the strata of the Baca Formation (Johnson, 1978; Cather and Johnson, 1984, 1986; Cather, 1989). During the middle Tertiary (43 to 23 million years ago) period, many volcanic and intrusive rocks were deposited and emplaced, and the cauldrons, depressions, and Mogollon Plateau were formed. The Mogollon Plateau (fig. 3) is the surface expression of an inferred underlying granitic pluton beneath the southern one-quarter of the county (Elston and others, 1976). The Tertiary volcanic rocks that are exposed on and along the Mogollon Plateau constitute a unique and complex volcanic sequence. Dane and Bachman (1965) mapped these rocks collectively as the Datil Formation (raised to a group status by Weber, 1971).

The rocks of the Mogollon Plateau include an extensive, primarily ignimbrite sequence ranging in age from 40 to 22 million years (New Mexico Bureau of Mines and Mineral Resources, written commun., 1991). Most of the rocks in this sequence are out-flow sheets; cauldron fill units; and associated interfingering fluvial, alluvial, and eolian deposits (Osburn and Chapin, 1983; R.M. Chamberlain, New Mexico Bureau of Mines and Mineral Resources, written commun., 1991). Elston and others (1976; fig. 8) recognized three overlapping magma suites and associated volcanic rock types in the Mogollon Plateau. These volcanic rock types include: (1) calc-alkalic andesite to rhyolite, generally a medium-colored andesite to rhyolite about 43 to 29 million years in age, (2) high-silica alkali rhyolite, generally ash-flow tuffs and flow-banded rhyolites about 32 to 21 million years in age, and (3) basalt and calc-alkalic basaltic andesite, typically dark-colored basaltic andesites and andesites about 37 million years to recent in age.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T. 12 S.
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16
15
14
13
R. 12 W.
R. 11 W.
10
R. 9 W.
Hickman
Salt Lake
Zuni Salt Lake
Adams Diggings
Tres Lagunas
Quemado
Omega
Pie Town
Red Hill
Quemado Lake
Mangas
Greens Gap
Datil
CIBOLA NATIONAL FOREST
DATIL MTS
Fox Mtn
GALLO MTS
MANGAS MTS
CONTINENTAL DIVIDE
Horse Springs
Apache Mtn
Aragon
Apache Creek
Dillon Mtn
Luna
Reserve
APACHE NATIONAL FOREST
PLAINS OF SAN AGUSTIN
GILA NATIONAL FOREST
TULAROSA MTS
Kelly Mts
BEARWALLOW MTN
Mogollon
MOGOLLON MTS
Alma
Glenwood
Pleasanton
Black Mtn
Elk Mtn
O Bar O Canyon
GILA CLIFF DWELLINGS NATIONAL MONUMENT
Gila River
San Francisco River
0 10 20 30 MILES
0 10 20 30 KILOMETERS

EXPLANATION

QUATERNARY	Qal	Alluvium
	Qab	Bolson fill
	Qb	Basalt
QUATERNARY AND TERTIARY	QTg	Gila Conglomerate
TERTIARY	Tbm	Bearwallow Mountain Andesite
	Td	Datil Group
	Tbc	Baca Formation
CRETACEOUS	Kmv	Mesaverde Group
	Kcc	Crevasse Canyon Formation
	Kg	Gallup Sandstone
	Km	Mancos Shale and intertongued Dakota Sandstone
	Kd	Main body of the Dakota Sandstone
TRIASSIC	₮c	Chinle Formation
PERMIAN	Pu	Permian rocks, undifferentiated
PENNSYLVANIAN	IPu	Pennsylvanian rocks, undifferentiated

FAULT

CONTACT

Figure 4.--Generalized geology of Catron County, New Mexico (modified from Dane and Bachman, 1965).

Detailed maps of the structure of and geology in and around the Mogollon Plateau have been completed since the effort of Elston and others (1976). Studies in this region include Ratte (1981); Richter, Eggleston, and Duffield (1986); Richter, Lawrence, and Duffield (1986); Houser (1987); Richter (1987); Ratte (1989); Ratte and Brooks (1989); and Richter and Lawrence (1989). Subdivision of the various Tertiary volcanic rocks on the Mogollon Plateau is hindered by their similar physical appearance and their complex, overlapping stratigraphic and temporal relations. The age and stratigraphic relations of the volcanic rocks of the Mogollon Plateau are not completely known, and hydrologic data are limited.

Volcanic and tectonic events during the middle of the Tertiary Period were followed by Basin and Range faulting, which started approximately 21 million years ago (Elston and others, 1976). Coney (1976) stated that approximately 21 million years ago most of the Mogollon Plateau had been eroded to an undulating surface. Air-fall and ash-flow pumice were then deposited on the surface. As the pumice supply waned, sandstone and conglomerate were deposited over the pumaceous deposits. Faulting, uplift, and subsidence coincided with the eruption of basaltic andesite. The resultant depressions from uplift and subsidence were filled with basaltic andesite flows and fluvial and alluvial-fan sediments of the Gila Conglomerate.

Tertiary and Quaternary geology is partly characterized by infilling of the basins and downwarps by alluvial, fluvial, and lacustrine processes. Bolson-fill and sedimentary rocks of Tertiary and Quaternary age and alluvial deposits of Quaternary age exist at various places throughout the county. The principal bolson-fill deposits in the county occur in the Plains of San Agustin of the San Agustin Basin (fig. 3). Bolson-fill deposits are also present in the North Plains Basin and in the eastern part of the Carrizo Wash Basin. Alluvium is found in arroyos, washes, and stream channels. During the late Pleistocene, lakes developed within the depressions and basins. Drier conditions since the Pleistocene have caused incised drainages and playas where some of the pluvial lakes previously existed.

Surface Water

The Continental Divide passes through Catron County, delineating the Colorado and Western Gulf of Mexico River Basins. Parts of seven major drainage basins are within the county, including the Carrizo Wash, North Plains, Rio Salado, San Agustin, Alamosa Creek, Gila, and San Francisco Basins (fig. 5). Outside the county or in identification of declared ground-water basins in New Mexico (fig. 1), the Gila and San Francisco Basins are referred to as the undivided Gila-San Francisco Basin. In Catron County, however, the basins are separated by a drainage divide, the Mogollon Mountains, and are considered separate surface-water drainage basins in this section of the report.

The Carrizo Wash, San Francisco, and Gila Basins are in the Colorado River Basin. The New Mexico State Engineer Office includes the parts of these basins that are in Catron County in their Lower Colorado River Basin (Wilson, 1992, p. 139). The Rio Salado and Alamosa Creek Basins drain to the Rio Grande, which in turn drains to the Gulf of Mexico. The North Plains and San Agustin Basins are closed basins. The Rio Salado, North Plains, San Agustin, and Alamosa Creek Basins are in the Western Gulf of Mexico River Basin. The New Mexico State Engineer Office includes these basins in its Rio Grande Basin (Wilson, 1992, p. 139). A small part of the Alamosa Creek Basin is within the county, but hydrologic data are limited.

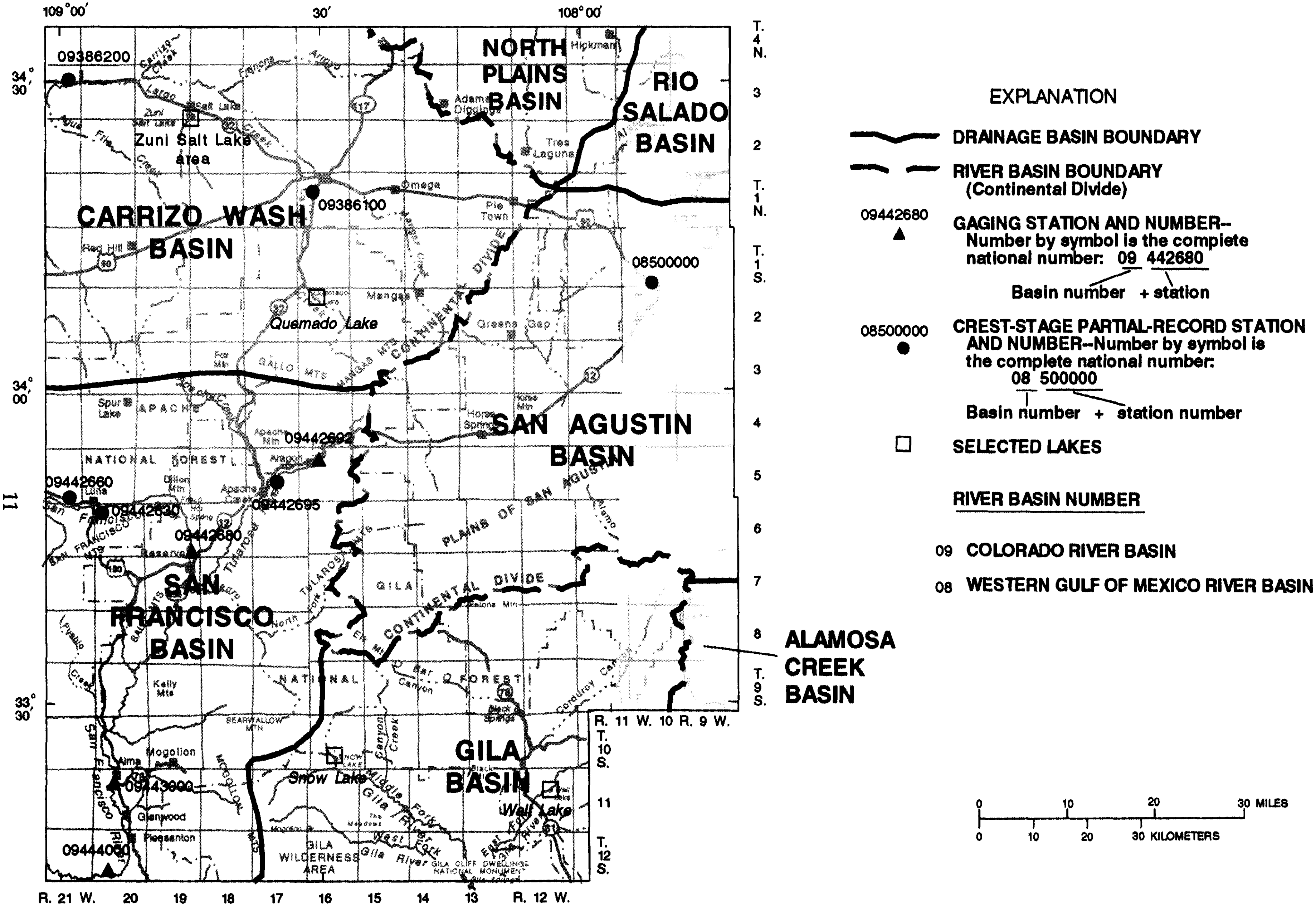


Figure 5.--Surface-water basins, surface-water gaging stations, partial-record stations, and selected lakes in Catron County, New Mexico.

Quemado Lake, Snow Lake, and Wall Lake are the three largest freshwater recreational reservoirs in Catron County (fig. 5). Quemado Lake is located in the Carrizo Wash Basin on Largo Creek. The original capacity of this reservoir was about 2,000 acre-feet of water (New Mexico State Engineer Office, oral commun., 1992). Snow Lake and Wall Lake are in the Gila Basin. Snow Lake drains into the Middle Fork of the Gila River. The original capacity of Snow Lake was about 1,600 acre-feet of water (New Mexico State Engineer Office, oral commun., 1992). Wall Lake, the smallest of the three reservoirs, drains into the East Fork of the Gila River. The original capacity of Wall Lake was about 188 acre-feet of water (New Mexico State Engineer Office, oral commun., 1992). Zuni Salt Lake and cinder cone lake (see fig. 9) contain saline water and are located in a maar area about 18 miles northwest of Quemado, New Mexico. This area has long been used by Pueblo Indians for religious purposes and for the production of salt.

Streamflow

The San Francisco, Gila, and Tularosa Rivers typically flow perennially, but no flow has been recorded during some months at a surface-water gaging station (since discontinued) near Alma on the San Francisco River (table 1; all tables are in the back of the report). During periods of low flow, most streamflow is derived from baseflow. The stream channels of the Rio Salado and Carrizo Wash Basins commonly are perennial in their upper reaches and ephemeral in their lower reaches. Largo Creek in the Carrizo Wash Basin is perennial downstream from Quemado Lake and ephemeral in the lower reaches.

Three surface-water gaging stations on the San Francisco River and one on the Tularosa River record discharge, and several crest-stage partial-record stations on other creeks and streams record discharge in Catron County (fig. 5). Minimum, maximum, and mean monthly discharges at streamflow-gaging stations in Catron County through 1992 are listed in table 1. Data collected at the crest-stage partial-record stations are annual maximum flows during each water year. The 1990 annual maximum discharges at partial-record stations and miscellaneous sites in Catron County are listed in table 2.

The U.S. Geological Survey, in cooperation with the New Mexico State Engineer Office, maintains and collects data for 25 irrigation ditches in Catron County during the irrigation season, April through October (table 3). The Tularosa Cruzville ditch diverts water from the Tularosa River; all other ditches divert water from the San Francisco River. The gaged irrigation ditches in Catron County typically are earthen lined. Mean monthly diversion discharges for ditches in the county are listed in table 3. The period of record for mean monthly diversion discharges is the time, in years, during which daily values have been collected. Prior to about 1989, ditch diversion was determined by an electronic data device that collected a 3-month total (April to June and July to October). Additional information is available from the U.S. Geological Survey, Water Resources Division in Albuquerque or the New Mexico State Engineer Office in Santa Fe.

During water years 1960-92, the mean annual discharge was 20,500 acre-feet per year (28.3 cubic feet per second) at the gaging station San Francisco River near Reserve (09442680) (table 1). In comparison, during water years 1960-92 the mean annual discharge was about 79,700 acre-feet per year (110 cubic feet per second) at San Francisco River near Glenwood (09444000). The mean annual discharge gained between these two stations on the San Francisco River was about 59,200 acre-feet per year (81.7 cubic feet per second). For water years 1966-92 the mean annual discharge was 2,540 acre-feet per year (3.5 cubic feet per second) at Tularosa River above Aragon (09442692).

The gaging station at San Francisco River near Glenwood records the largest annual mean discharge because it is located on the most downstream reach of the San Francisco River in the county. The annual mean discharge of the San Francisco River near Glenwood for 1928-92 ranges from 14 to 350 cubic feet per second (fig. 6). The 5-year moving average of annual mean discharge smooths out variations (fig. 6). From 1937 to 1941 the 5-year moving average at the San Francisco River near Glenwood was above average for the period of record; from 1942 to 1963 it was below average. From about 1975 to 1992 the 5-year moving average was again above average for the period of record.

Seasonal streamflow patterns in Catron County show a fairly distinct pattern. The largest percentage of runoff results from snowmelt during the spring, but runoff also results from late summer thunderstorms (fig. 7). The spring runoff season can last from February to about May, but the highest mean monthly discharge occurs in March. The peak for mean monthly discharge in October at the San Francisco River near Alma (09443000) is related to late summer rains and runoff from the mountainous areas in the southwestern part of the county.

Flow-duration curves, useful tools for characterizing streamflow, were constructed for the data collected at the three gaging stations on the San Francisco River and the gaging station on the Tularosa River (fig. 8). The flow-duration curve is a cumulative frequency curve that shows the percentage of time specified discharges were equaled or exceeded during a given period. For example, figure 8A shows that the daily mean discharges of 28 cubic feet per second at the San Francisco River near Glenwood, 13 cubic feet per second at the San Francisco River near Alma, and 8 cubic feet per second at the San Francisco River near Reserve gaging stations were equaled or exceeded 50 percent of the time for each period of record. Figure 8B shows that 90 percent of the time the daily mean discharge of the Tularosa River above Aragon is about 2.6 cubic feet per second.

The shape and steepness of the flow-duration curve can be used to compare streamflow characteristics. The steepness of the curve for the San Francisco River near Alma at the 80- to 85-percentile range indicates that this reach of the river loses water. No flow has been recorded at this station from March through June (table 1). The curve for Tularosa River above Aragon is flatter at the 85th to 95th percentile, indicating sustained baseflows or a more regulated stream.

Zuni Salt Lake area

The Zuni Salt Lake area in Carrizo Wash Basin is about 18 miles northwest of Quemado (fig. 1). Aligned cinder cones and maars present within this basin were formed by volcanic and phreatic explosions in the late Pleistocene (Bradbury, 1967, 1971). Zuni Salt Lake is the northernmost maar in this sequence. Three Quaternary geohydrologic features in the maar are Zuni Salt Lake, cinder cone lake, and Smith Spring (fig. 9).

Zuni Salt Lake is on the northern part of the floor of a maar about 175 feet below the surrounding area. According to Bradbury (1971) the maximum drainage area for Zuni Salt Lake is about 22 square miles. The surface area of the lake varies in size in response to evaporation and runoff but generally is less than 0.7 mile north to south by 0.5 mile west to east. The depth of water in Zuni Salt Lake usually is less than 4 feet. According to Myers (1992) water for Zuni Salt Lake has five major sources: (1) surface-water runoff from the surrounding basin, (2) brackish ground water from seeps and springs along the northeastern and southeastern edges of the lake, (3) brine springs and seeps along the southern edge of the lake issuing from the northern edge of the western cinder cone, (4) freshwater from the Quaternary alluvium and air-fall tuff south of the maar at Smith Spring, and (5) direct precipitation on the surface of the lake.

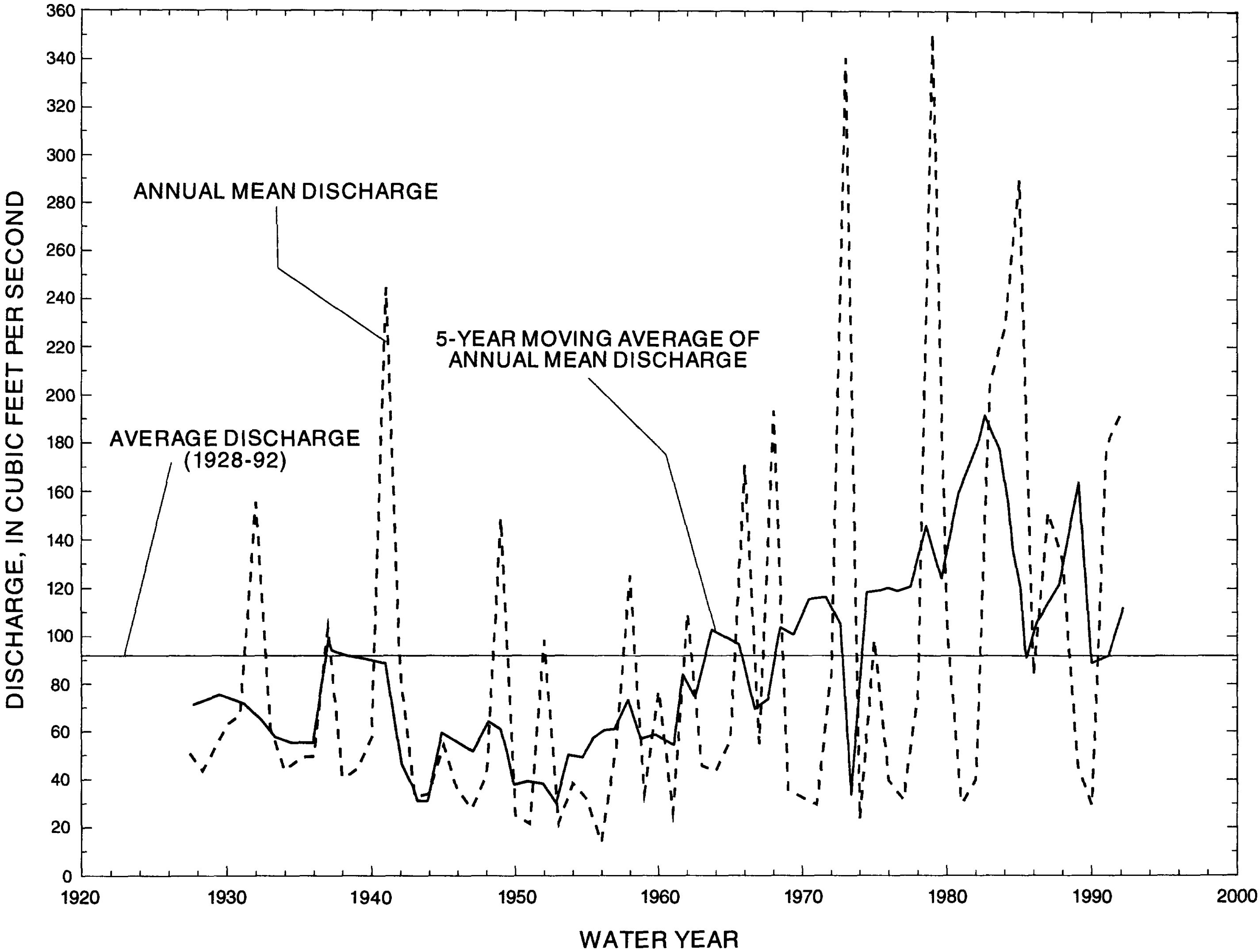


Figure 6.--Annual mean discharge for 1928-92 and 5-year moving average of annual mean discharge for the San Francisco River near Glenwood (09444000), Catron County, New Mexico (location shown in figure 5).

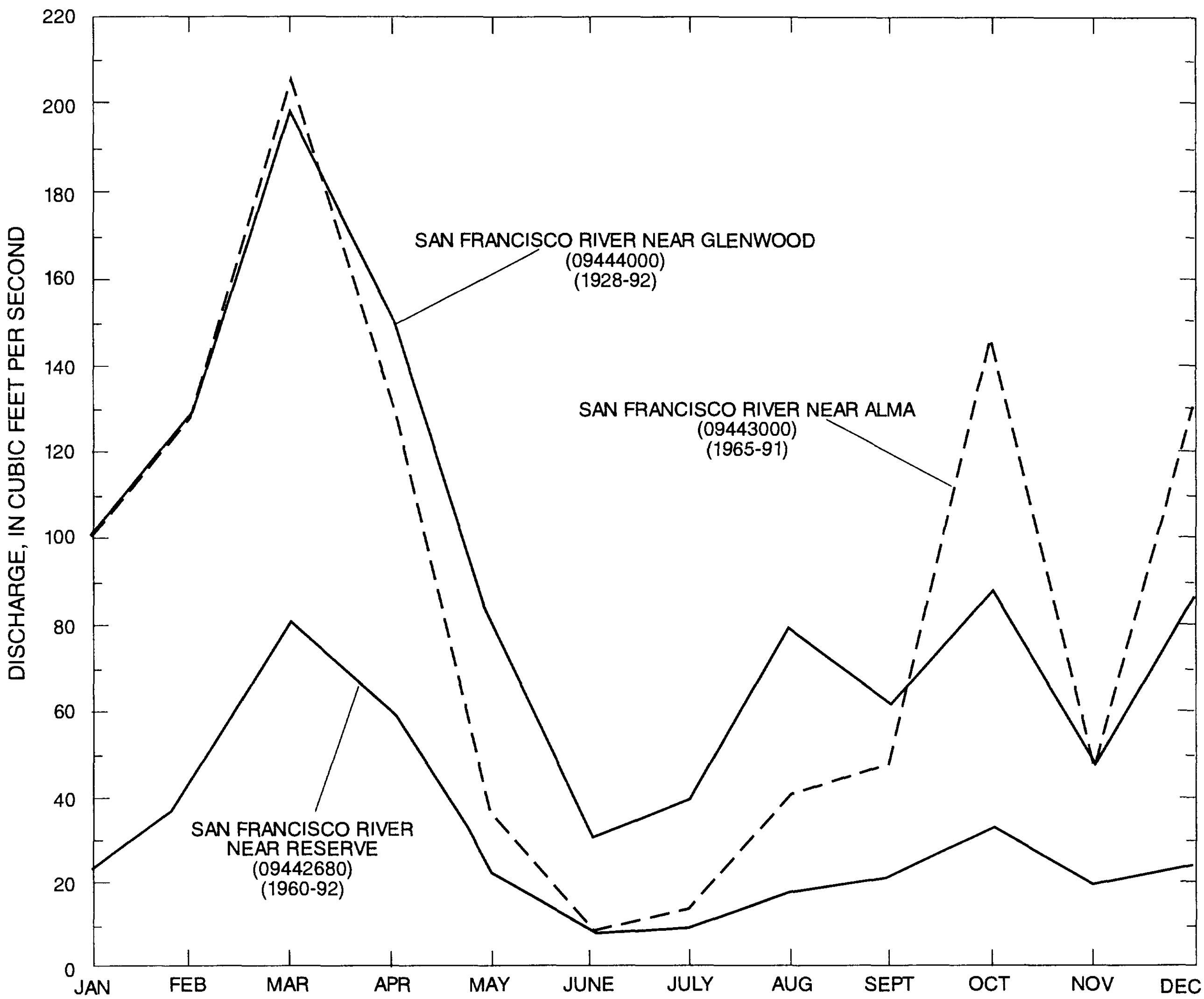
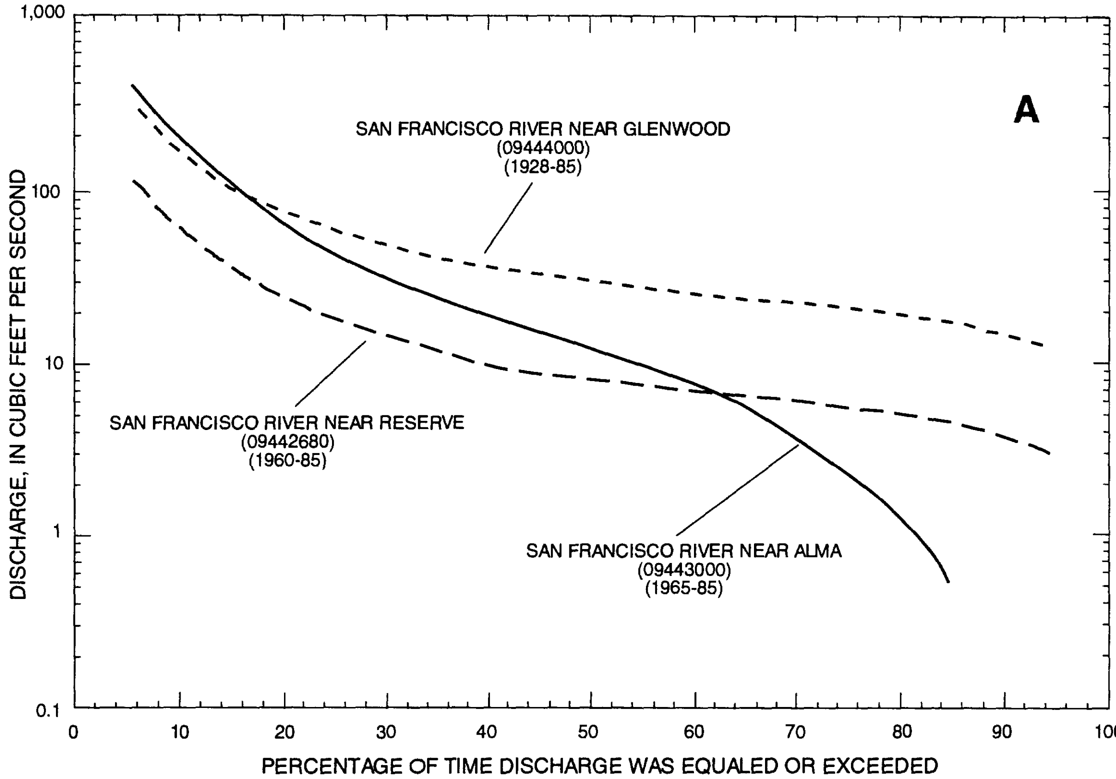


Figure 7.--Mean monthly discharge for the San Francisco River near Reserve, near Alma, and near Glenwood, Catron County, New Mexico (locations shown in figure 5).



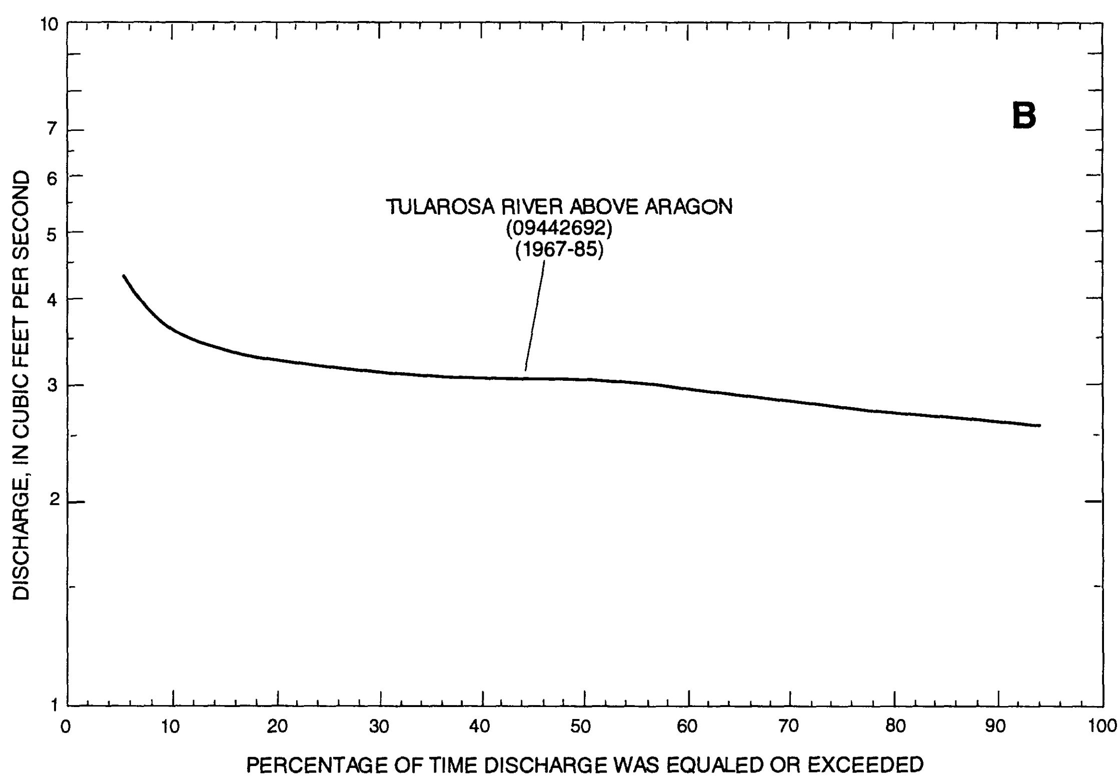


Figure 8.--Flow-duration curve for daily mean flows at the (A) San Francisco River and (B) Tularosa River, a tributary of the San Francisco River, Catron County, New Mexico (data from Waltemeyer, 1989).

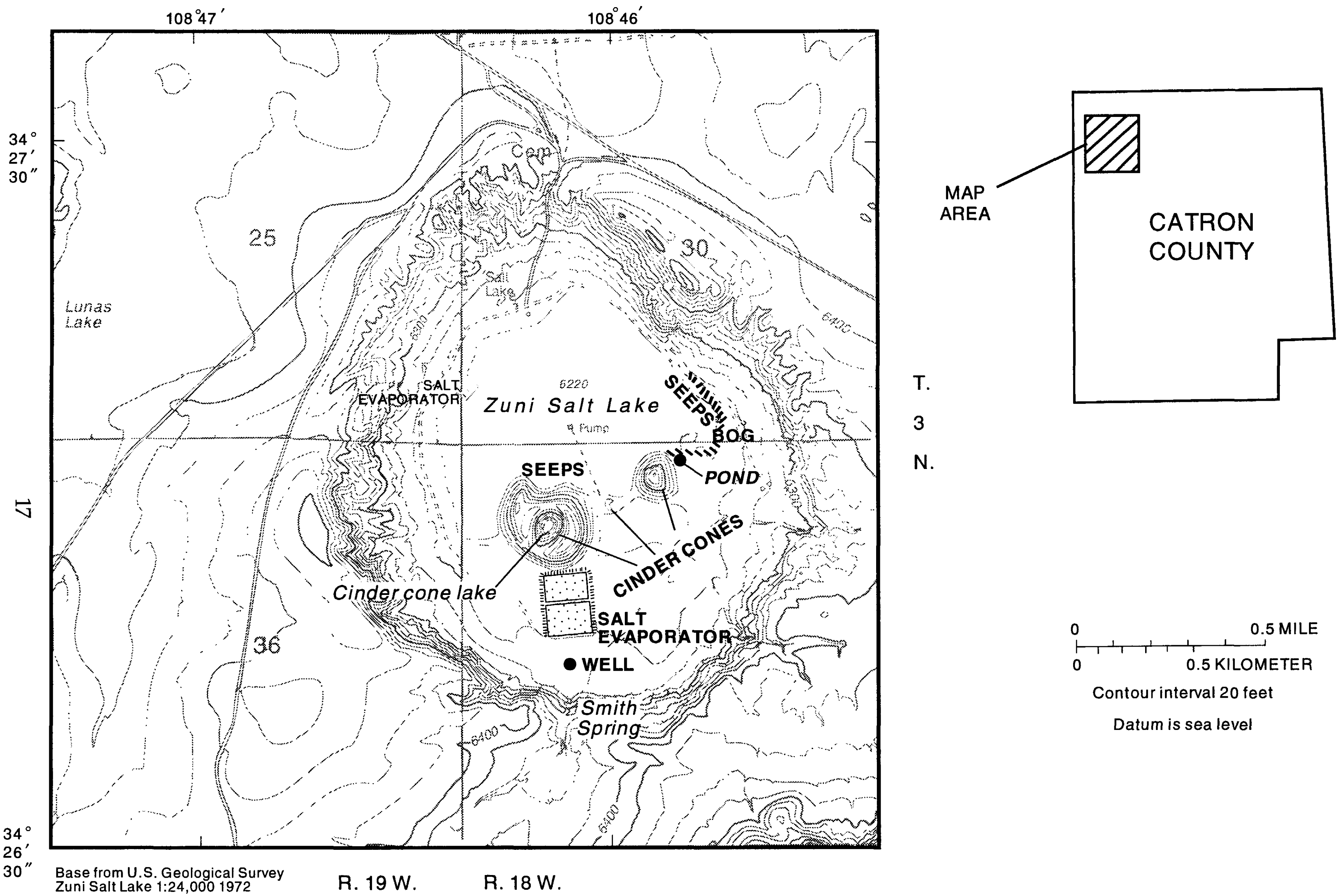


Figure 9.--Zuni Salt Lake area in Catron County, New Mexico (modified from Myers, 1992, figure 10).

The water in Zuni Salt Lake had an onsite specific conductance of 221,000 μS/cm on October 28, 1985 (Myers, 1992). The dominant ions of the water were sodium and chloride. Piezometers installed to as much as 1 foot below land surface were used to sample a brackish seep on the northeastern side of Zuni Salt Lake (Myers, 1992). On May 14, 1986, artesian and flowing artesian water was noticed in the piezometers. The water from the seep had an onsite specific conductance of about 1,800 to 2,200 μS/cm. Water from well 03N.18W.31.312, between the cinder cones and the south wall of the maar (fig. 9), had a specific conductance of 2,330 μS/cm. The depth of the well is about 48 feet below land surface on the maar floor. Water quality below this depth is unknown. Ground water in the maar floor alluvium has four sources: (1) Smith Spring, (2) surface-water runoff from outside the maar, (3) water from the Cretaceous sedimentary rocks, and (4) direct precipitation on the alluvium.

Cinder cone lake is located just south of Zuni Salt Lake at the southern end of the maar floor (fig. 9). Three cinder cones are located in this area, the largest of which contains cinder cone lake within its crater. The crater of the cinder cone is about 85 feet deep in the center. The lake is as much as 23 feet deep and has a surface area of about 4.7 acres. Major sources of water for the lake are precipitation within the crater and brine springs in the cinder cone. Bradbury (1971) indicated that water quality remains somewhat constant at the bottom of the lake, but varies with precipitation and with time of the year at the top of the lake. The specific conductance of the water at the top of the cinder cone lake was 148,000 μS/cm on October 28, 1985 (Myers, 1992). The dominant ions in the water were sodium and chloride. The specific conductance of brine that seeps from the northwestern edge of the cinder cone ranged from 146,400 to 148,000 μS/cm on May 14, 1986 (Myers, 1992). The specific conductance of brine that seeps from the northeastern side of the cinder cone ranged from 133,600 to 134,000 μS/cm on May 14, 1986. Myers suggested that the major source of water for the seeps into the cinder cone is the Permian sedimentary rocks underlying the maar.

Smith Spring is on the southern end of the maar (fig. 9). Flow from the spring generally is less than 5 gallons per minute (Myers, 1992). Water discharging from Smith Spring to the maar floor had a specific conductance of 1,100 μS/cm on May 14, 1985. Dominant ions in the spring water were sodium and bicarbonate. According to Myers the source of spring water is the shallow Quaternary alluvium and air-fall tuff in the arroyo south of the maar in the vicinity of Smith Spring. Myers also indicated that most of this water from the spring seeps into the alluvium in the floor of the maar before it reaches Zuni Salt Lake.

GROUND-WATER RESOURCES

The geologic units of regional hydrologic interest, in ascending order, are sedimentary rocks of Permian, Triassic, and Cretaceous age; sedimentary, igneous, and volcanic rocks of Tertiary age; bolson-fill and sedimentary rocks of Tertiary and Quaternary age; and Quaternary alluvial deposits. Jurassic rocks, Paleozoic rocks older than Permian age, and Precambrian rocks are not known to be of hydrologic interest in the county. A summary of the major aquifers and water quality is presented in this section. Well and spring records in Catron County are listed in table 4. Water-quality records for selected wells and springs with chemical analyses are listed in table 5.

Aquifers in Catron County are present in the following units: (1) Quaternary alluvium, (2) Quaternary bolson fill, (3) Quaternary and Tertiary Gila Conglomerate, (4) Tertiary Bearwallow Mountain Andesite, (5) Tertiary Datil Group, (6) Tertiary Baca Formation, (7) Cretaceous Mesaverde Group, (8) Cretaceous Crevasse Canyon Formation, (9) Cretaceous Mancos Shale, (10) Cretaceous Dakota Sandstone, (11) Triassic Chinle Formation, and (12) undifferentiated Permian rocks. Ground water is not withdrawn from Jurassic, Pennsylvanian, or

Precambrian units in the county. The New Mexico Bureau of Mines and Mineral Resources is presently (1992) working on a revised State geologic map. The area of greatest change will be Catron County (Orin Anderson, New Mexico Bureau of Mines and Mineral Resources, oral commun., 1991). Therefore, the geologic units and hydrologic units described in this report may be revised.

Regionally and locally, the hydrologic characteristics of the aquifers are often variable. Variations in grain size, cementation, stratigraphic thickness, structural modifications (faulting and fractures), aquifer geometry, and topography can change the availability, occurrence, movement, and quality of ground water in Catron County. Water-level altitudes in most of the aquifers are controlled by major surface drainages and topography. Water in the aquifers in the county generally is unconfined; however, confined conditions may exist where the aquifers are overlain by other units of lower permeability.

Some wells may be completed in more than one aquifer. The paucity of well-completion data and lithologic logs does not allow determination of the aquifer in which many of the wells were completed. For this report, determination of the geologic unit in which wells were completed mainly is based on interpretation of well information and geologic maps from reports by Willard (1957a and 1957b), Willard and Givens (1958), Willard and Weber (1958), Weber and Willard (1959a and 1959b), Willard and others (1961), and Willard and Stearns (1971). The location of some wells, such as those shown as completed in Quaternary alluvium or bolson fill (see figs. 11 and 13, respectively), may sometimes not coincide with the geologic units designated in figure 4 because of the scale used to display the generalized geology.

The following terms are used to describe dissolved-solids concentrations in water (Freeze and Cherry, 1979, p. 84): freshwater--dissolved-solids concentrations less than 1,000 milligrams per liter; brackish water--dissolved-solids concentrations between 1,000 and 10,000 milligrams per liter; saline water--dissolved-solids concentrations between 10,000 and 100,000 milligrams per liter; and brine--dissolved-solids concentrations greater than 100,000 milligrams per liter.

The quality of water from the aquifers in Catron County varies from fresh to saline. Aquifers in rocks of Quaternary and Tertiary age generally yield freshwater; some ground water could be brackish locally, however. Some ground water in sedimentary rocks of Cretaceous, Triassic, and Permian age range from fresh to brackish. In many instances, the water quality of an aquifer has been analyzed in only three or fewer samples, usually collected in only a small area. Data are not adequate to accurately characterize ground-water quality in Catron County.

Water quality is commonly related to the specific electrical conductance of a solution. Specific electrical conductance (specific conductance) is a measure of the ability of a substance to conduct an electric current (Hem, 1985). Specific conductance is measured in microsiemens per centimeter at 25 degrees Celsius. As ion concentration increases, conductance of a solution increases. Figure 10 is a plot of dissolved-solids concentration and specific conductance of the water analyses listed in table 5. The coefficient for the regression analysis is 0.70. This coefficient multiplied by a given specific-conductance value in the range of specific-conductance values listed in table 5, minus 31, may be used to approximate a dissolved-solids concentration with an average uncertainty of ±80 milligrams per liter. High values of specific conductance are found in ground water containing large dissolved-solids concentrations, due to one or more of the following factors: (1) mixing of ground water with other water having large dissolved-solids concentrations, (2) long residence time of the water in contact with soluble rocks or minerals, (3) mixing of ground water with geothermal water, and (4) evapotranspiration from shallow, unconfined aquifers.

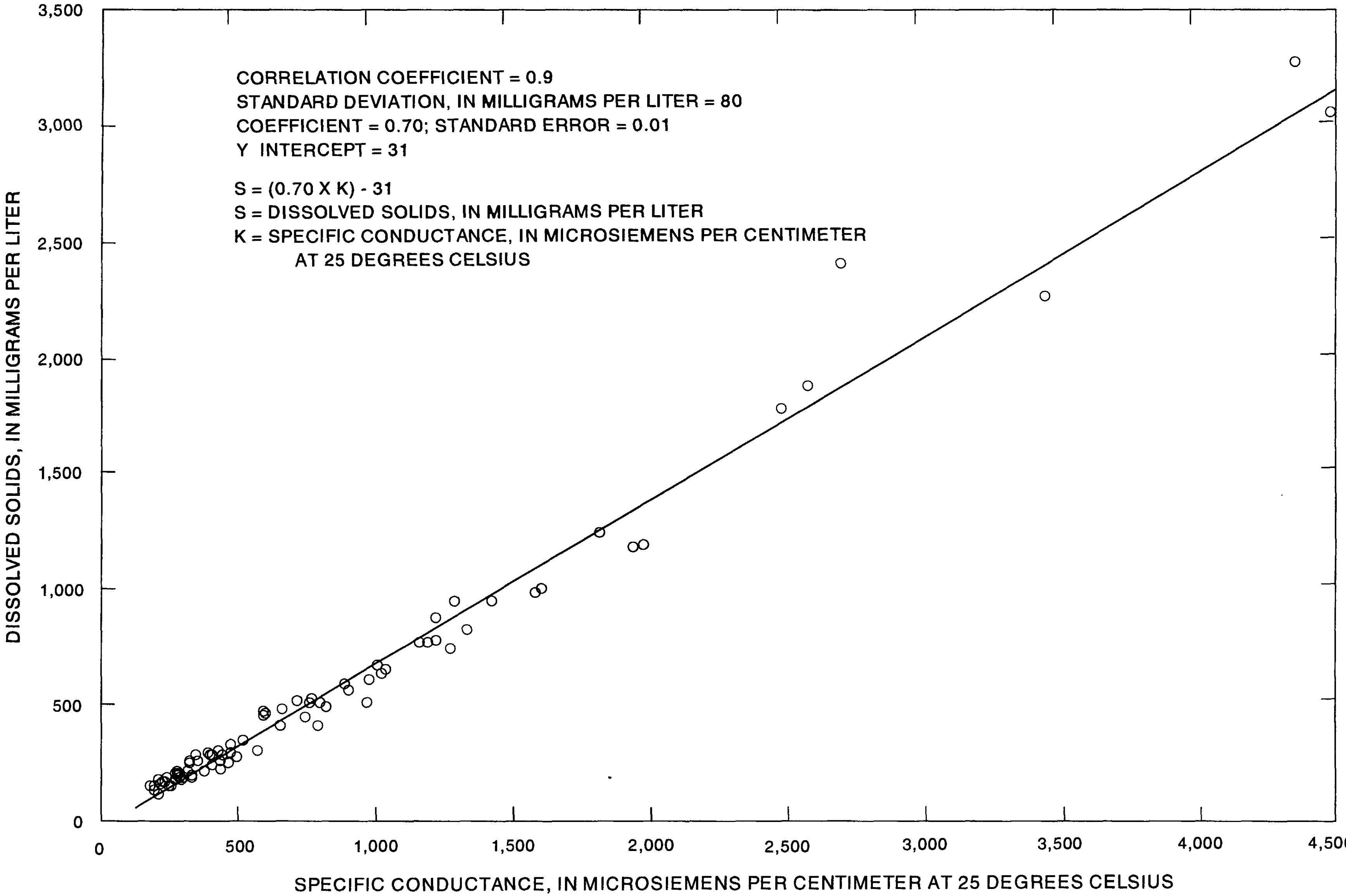


Figure 10.--Regression analysis results from a plot of specific conductance and dissolved solids from analyses of water from wells and springs in Catron County, New Mexico.

Quaternary Deposits

Alluvium

Alluvium is found in arroyos, washes, and stream channels. This alluvium is often terraced and consists of unconsolidated deposits of clay, silt, sand, and conglomerates. The texture of alluvium varies from clay and silt to conglomerates composed of gravel and boulders.

The altitude of water levels in Quaternary alluvium is shown in figure 11. Some wells with deeper water levels may be completed in both the alluvial and underlying aquifer. Water levels in the alluvium can fluctuate seasonally depending on the volume of runoff and recharge. Sources of recharge to the alluvium include infiltration from perennial and ephemeral streams, precipitation, storm runoff, and possibly interaquifer movement. Alluvial aquifers probably recharge underlying bedrock aquifers. In general, ground water in the alluvial deposits in Catron County moves in the same direction as surface streams. Yields of ground water from the Quaternary alluvium in the county range from 1 to 375 gallons per minute. Water quality and water type are generalized in this section because data are insufficient to indicate ground-water quality in many of the localities that have alluvial deposits.

Alluvial deposits in most of the Carrizo Wash Basin are underlain by Mesozoic sedimentary rocks or Tertiary volcaniclastic rocks. The thickness of alluvium in the valleys and canyons in this drainage basin probably does not exceed 100 feet (Galloway, 1968). However, the Salt River Project (1983) indicated that Quaternary alluvium may be as thick as 200 feet approximately 12 miles north of Quemado.

Ground water in the alluvium in the Carrizo Wash Basin typically is unconfined. However, confined conditions may exist at depth. Insufficient water-level data in the Carrizo Wash Basin do not allow determination of water-level trends.

Many of the wells completed in the alluvium in the Carrizo Wash Basin are used for stock and domestic purposes (table 4). No community water-supply systems are known to derive water from the aquifer in the alluvium in this drainage basin. However, self-supplied domestic systems probably derive water from the alluvium.

The Salt River Project (1983) found that the alluvium could yield as much as 250 gallons per minute of water in the area around 4N.16W.30.240 for short periods of time (table 4). A 26-hour aquifer test was conducted in the alluvium near Frenchs Arroyo by the Salt River Project (1983) October 7 and 8, 1983. The production well was cased to a depth of 177 feet below land surface and screened from 137 to 177 feet below land surface. Average transmissivity of the aquifer was determined to be 1,290 feet squared per day (9,640 gallons per day per foot), and the storage coefficient was 2.5×10^{-4}, indicating that the alluvial aquifer in the vicinity of 4N.16W.30.240 is probably confined.

Water in the alluvial aquifers in the Carrizo Wash Basin generally is fresh, and specific conductance ranges from 315 to 2,330 μS/cm (table 4). The dominant ions in water are sodium and bicarbonate. Specific conductances of water from wells 3N.18W.30.433 and 3N.18W.31.312 and from spring 3N.18W.31.314 are 1,960, 2,330, and 1,230 μS/cm, respectively (table 4). The higher specific conductance of these samples may result from the interaction of ground water from the Zuni Salt Lake flow system with water from Cretaceous sedimentary rocks.

The alluvium in the San Agustin Basin overlies the bolson fill of Quaternary age or volcanic, igneous, or sedimentary rocks of Tertiary age. Myers and others (1994) referred to the aquifers in the alluvium near the Plains of San Agustin as the shallow upland aquifers. Alluvium in the San Agustin Basin is found in arroyos, washes, and canyon bottoms and consists of varying amounts of clay, silt, sand, and gravel. Estimated maximum thickness of the alluvium in the San Agustin Basin is 65 feet.

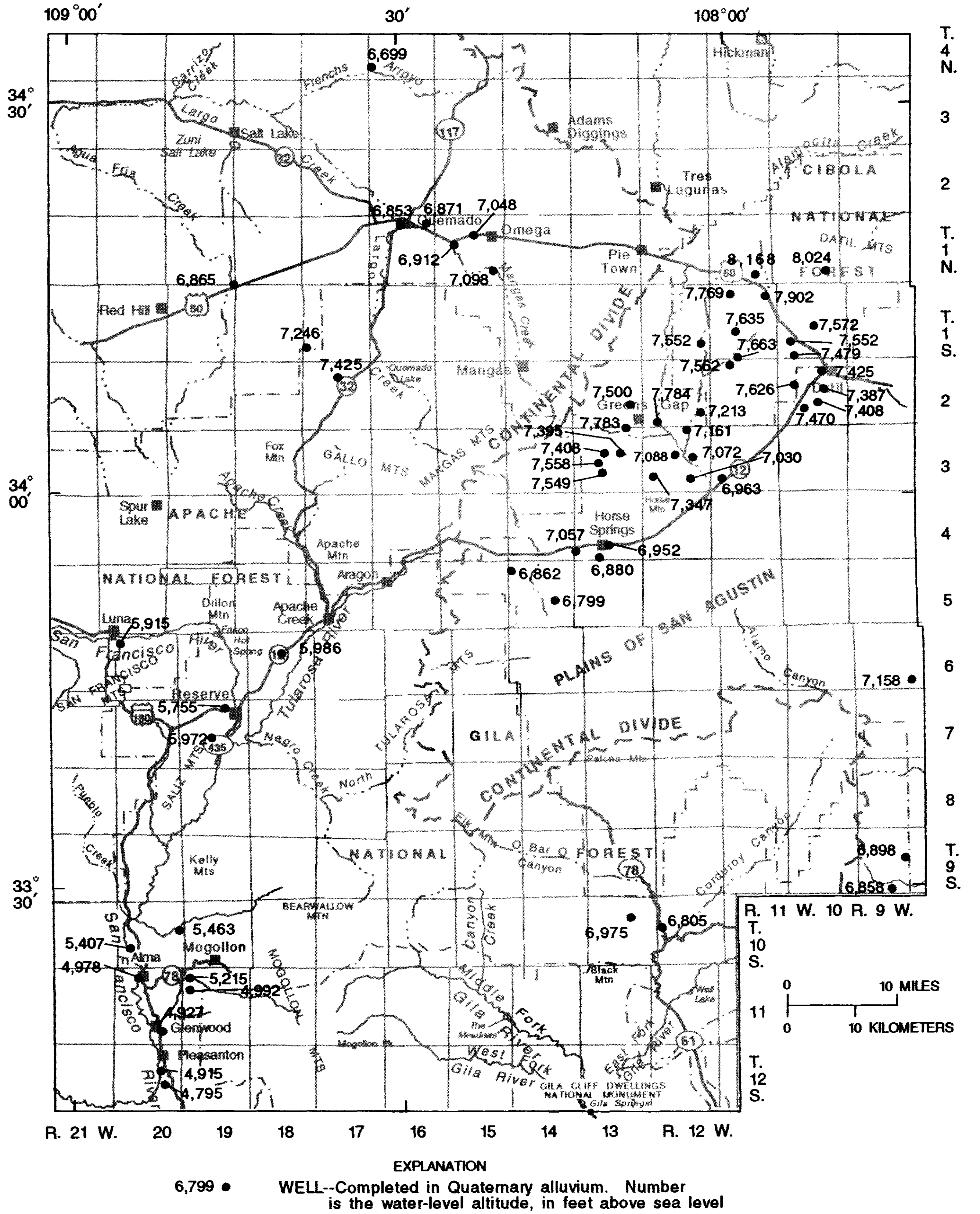


Figure 11.--Location of selected wells completed in Quaternary alluvium and altitude of water levels, 1952-85, Catron County, New Mexico.

Water in the alluvium in the San Agustin Basin typically occurs under unconfined conditions. Water levels in wells completed in the San Agustin Basin range from about 3 to 85 feet below land surface (table 4). The alluvial aquifers in the San Agustin Basin are recharged from precipitation and infiltration from runoff, and from transmission losses in ephemeral stream channels. Ground water in the alluvium in the San Agustin Basin generally moves in the same direction as surface drainage (fig. 11). Springs that develop where the water table in the alluvium intersects land surface are listed in table 4.

Wells completed in the alluvium north of the Plains of San Agustin typically produce 1 to 10 gallons per minute. Hydrographs of three wells completed in the alluvium in the San Agustin Basin are shown in figure 12. The hydrograph for well 2S.12W.32.243 shows a water-level rise from 1980 to 1993. The aquifers in the alluvium are used for stock watering purposes (table 4), probably because of low yields.

Specific conductance of water from wells completed in the alluvium in the San Agustin Basin ranges from about 280 to 1,100 $\mu S/cm$ (tables 4 and 5). The dominant ions in water in this unit are sodium, calcium, and bicarbonate (table 5). Specific conductance of water in the alluvium may increase downstream because of evapotranspiration from the shallow water table.

Alluvium in the Gila and San Francisco Basins overlies the Gila Conglomerate of Quaternary to Tertiary age or volcanic, igneous, and sedimentary rocks of Tertiary age. In some wells completed in the Gila and San Francisco Basins, distinguishing between the alluvium and the upper Gila Conglomerate is difficult because of their similar lithologies. Alluvial deposits in these basins generally are coarser grained than the alluvium in the Carrizo Wash Basin. Wide temperature fluctuations, steeper topographic gradients, higher precipitation, and a source material that weathers to a conglomeratic lithology help create coarser grained alluvial deposits in these basins.

Ground water in the alluvium in the Gila and San Francisco Basins typically occurs under unconfined conditions and is fresh. Insufficient long-term water-level data in these basins do not allow determination of water-level trends. Alluvium in the Gila and San Francisco Basins probably is connected hydraulically to the perennial streams in these valleys. Water is used for domestic, stock, irrigation, and public supply purposes (table 4).

Specific conductance of water from wells completed in the alluvium in the Gila and San Francisco Basins ranges from 95 to 340 $\mu S/cm$ (table 5). Based on limited water-quality data, the dominant ions of ground water in these basins generally are sodium, calcium, and bicarbonate (table 5).

In 1965, the community of Reserve acquired their public water supply from the alluvium (Dinwiddie and others, 1966). The estimated thickness of the alluvium near Reserve is 100 feet. Water levels in the alluvium near Reserve range from 15 to 28 feet below land surface (table 4). In 1965, well 7S.19W.01.340, used for public water supply, had a water level 15 feet below land surface and could produce 80 gallons of water per minute. Specific conductance of water from this well was 340 $\mu S/cm$, and the dominant ions were calcium, sodium, and bicarbonate (table 5).

In 1978 an aquifer test was conducted in well 7S.19W.23.431, completed in the alluvium near Reserve. Thickness of the alluvium in the vicinity of the well is estimated to be 100 feet. Prior to the test the static water level was 10.33 feet below land surface. The test duration was 240 minutes with an average discharge of 9.9 gallons per minute. The transmissivity was 1,949 feet squared per day (14,579 gallons per day per foot) (American Ground Water Consultants, Inc., 1979).

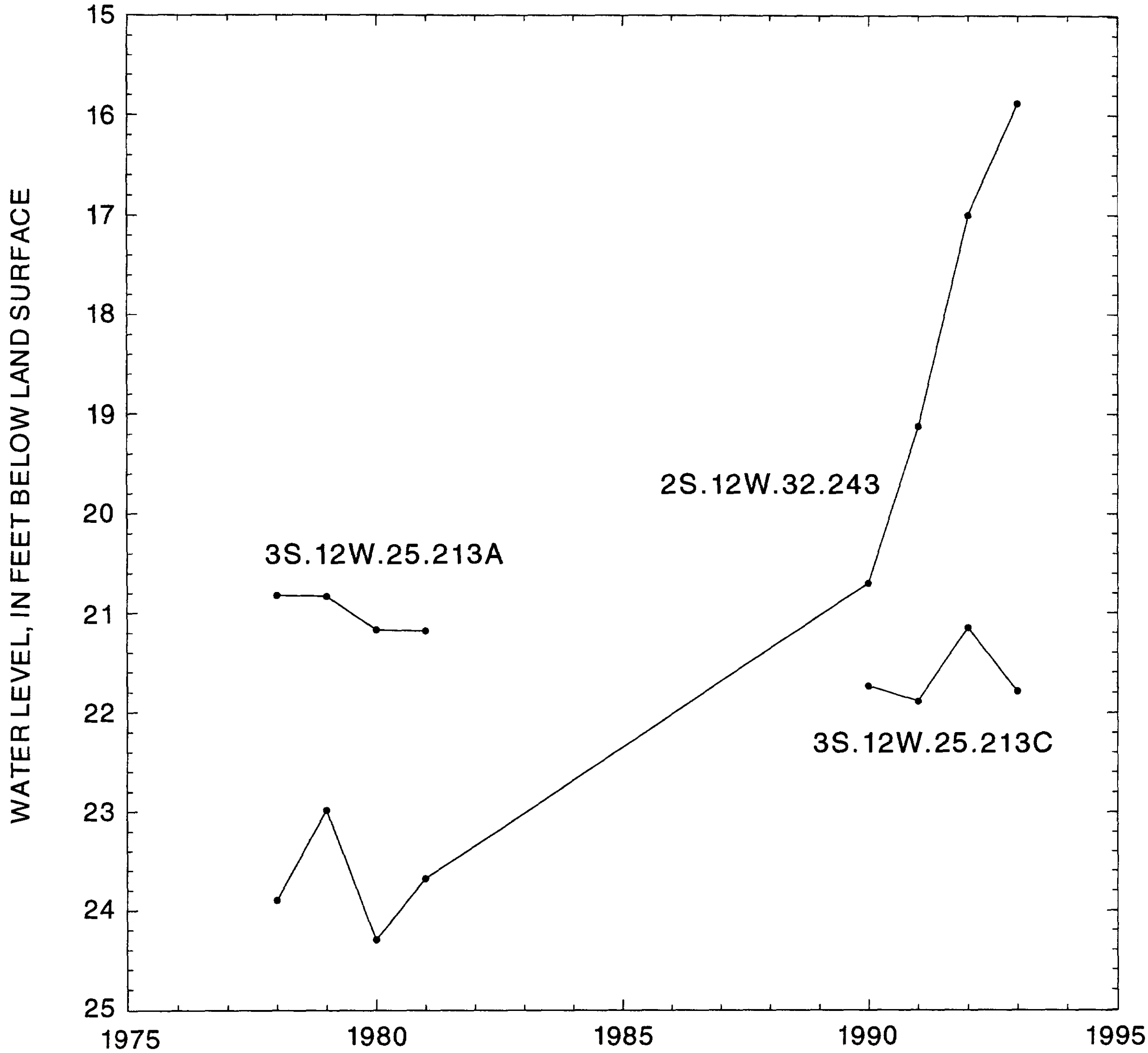


Figure 12.--Water levels in wells completed in the alluvium north of the Plains of San Agustin, Catron County, New Mexico.

Residents near Glenwood reported good yields from domestic and irrigation wells completed in the alluvium (Bishop, 1972). The thickness of alluvium near Glenwood is estimated to be about 80 feet. Water levels in wells completed in the alluvium vary from 2.45 feet below land surface in well 11S.20W.26.122A to about 55 feet in well 12S.20W.14.2. Water levels deeper than about 120 feet are probably completed in permeable zones of the Gila Conglomerate, Bearwallow Mountain Andesite, or Tertiary volcanic rocks.

Well 11S.20W.26.312 is probably representative of water wells completed in the alluvium near Glenwood; water depth is 23 feet below land surface and specific conductance is 279 μS/cm (Dinwiddie and others, 1966). The specific conductance of water from well 11S.20W.26.122A is 95 μS/cm.

Quantitative information on the alluvium near Glenwood is limited to two short aquifer tests conducted in wells 11S.20W.26.122A and 11S.20W.26.122B in 1955. The withdrawal rate for well 11S.20W.26.122A was 375 gallons per minute and the transmissivity was estimated by the Theis curve-matching method to be 1,765 feet squared per day (13,200 gallons per day per foot) (Bishop, 1972). The withdrawal rate for well 11S.20W.26.122B was 18 gallons per day. Bishop (1972) indicated that the long-term performance of the wells could not be evaluated because of the effects of the numerous hydrogeologic boundary conditions in the vicinity of the wells.

According to Trauger (1963) the alluvium is the most reliable source of water in the valley near the Gila Cliff Dwellings. Trauger estimated the thickness to vary from a few feet to 50 feet. Thickness of the alluvium in well 12S.14W.25.342 is estimated to be 35 feet. Water levels in the alluvium typically are shallow (less than 40 feet). Wells typically produce 5 to 10 gallons of water per minute (Trauger, 1963). Water levels in wells 12S.14W.25.124 and 12S.14W.25.311 are 9.69 and 12 feet below land surface, respectively.

Only two wells can be used to characterize the quality of water in the alluvium near the Gila Cliff Dwellings. Water from well 12S.14W.25.342 has a specific conductance of 219 μS/cm and the dominant ions are calcium and bicarbonate (Trauger, 1963). Water from well 12S.14W.25.124 has a specific conductance of 304 μS/cm and the dominant ions are sodium, potassium, calcium, and bicarbonate.

Bolson Fill

The principal bolson-fill deposits in the county are in the Plains of San Agustin (fig. 3) of the San Agustin Basin. Bolson-fill deposits are also present in the North Plains Basin and in the eastern part of the Carrizo Wash Basin; however, insufficient data are available to determine the hydrogeology of these bolson-fill deposits. Myers and others (1994) discussed in detail the characteristics of the bolson-fill aquifer in the Plains of San Agustin.

The lithology of the bolson-fill aquifer consists of unconsolidated deposits of clay, silt, sand, and gravel. Bolson-fill sediments commonly are derived from the surrounding volcaniclastic deposits, so the lithology is similar. Blodgett (1973) stated that several drill holes had been drilled in the Plains of San Agustin; the deepest was 1,800 feet. Ratte and others (1988) indicated that a uranium exploration company drilled a test hole to a depth of 2,100 feet near the central part of the Plains of San Agustin and did not locate bedrock. Myers and others (1994, p. 14) used data from surface electrical-resistivity soundings to suggest that the maximum thickness of the bolson fill in the western part of the Plains of San Agustin is about 4,600 feet and the maximum thickness in the eastern part is about 3,300 feet. Because no deep test wells in the Plains of San Agustin have lithologic or water-quality data to calibrate the surface electrical-resistivity data, it is not known whether the lower part of the aquifer is bolson fill or volcaniclastic desposits of the Datil Group.

The aquifer in the bolson-fill deposits in the San Agustin Basin typically is unconfined. However, confined conditions may exist at depth. The altitude of water levels in the bolson-fill deposits is shown in figure 13. In the Plains of San Agustin, water levels in wells completed in the bolson fill range from about 26 to 316 feet below land surface (table 4). Hydrographs of wells completed in the bolson-fill deposits in the Plains of San Agustin are shown in figure 14. Water-level measurements in well 5S.09W.23.231 show a general water-level decline; however, water levels in other wells in figure 14 are quite variable and show no distinct trend. The shallower water levels are in wells on the southwestern side of the Plains of San Agustin, and the deeper water levels are in wells on the eastern side (table 4).

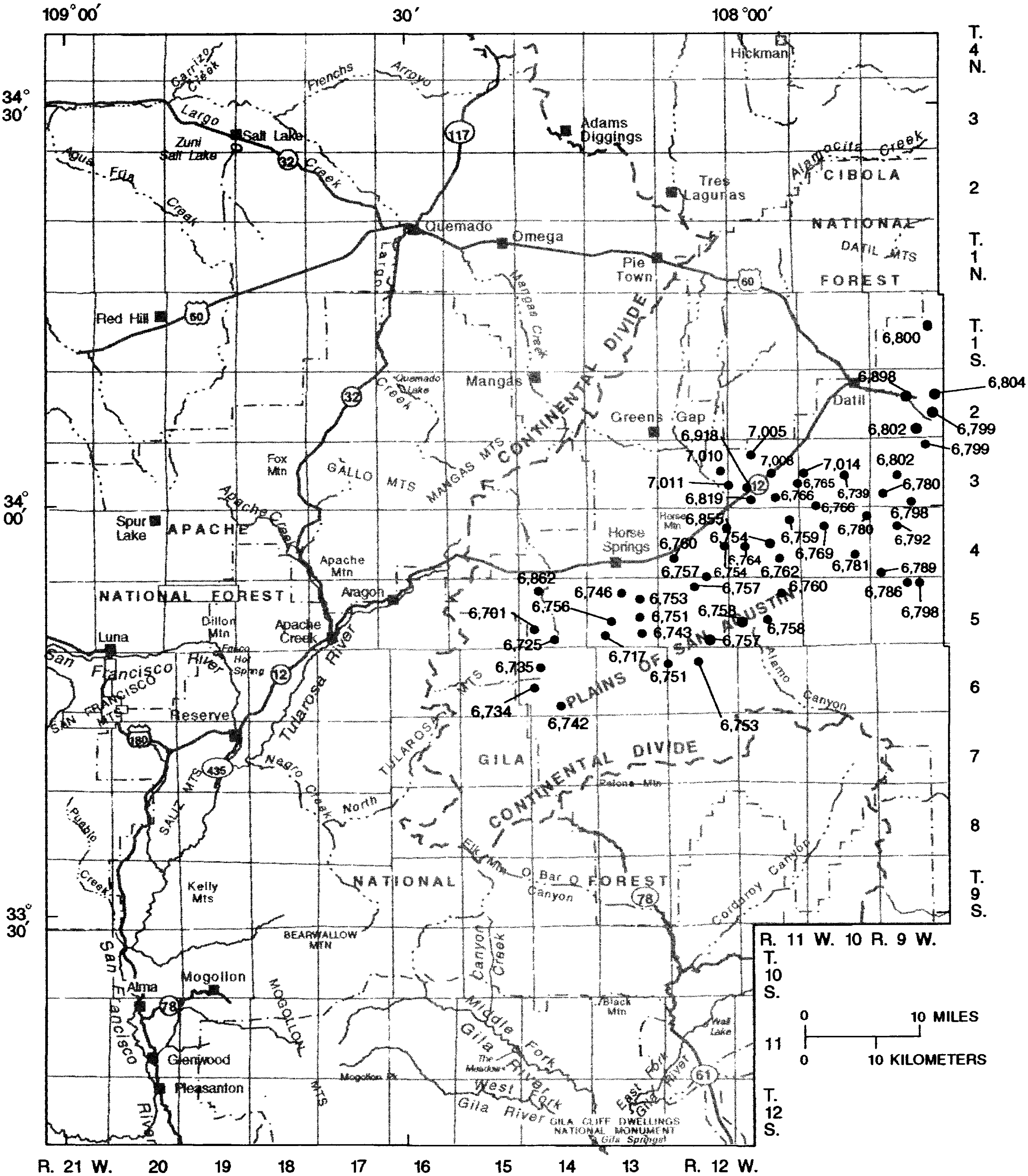
The altitude of water levels measured between 1950 and 1980 in the bolson fill generally decreases to the south and southwest (fig. 13). Myers and others (1994) also indicated that the flow direction in the bolson is south to southwest from water levels measured between 1979 and 1980. The presence of brackish to saline water (specific conductance as great as 40,800 µS/cm for well 5S.13W.32.33143) in the western part of the bolson-fill aquifer in the Plains of San Agustin indicates little or no water moving from the bolson-fill aquifer to the Datil Group in 5S.15W. Therefore, no water from the southwestern part of the bolson-fill aquifer may flow through the Datil Group to the springs and streams in the upper San Francisco Basin.

Recharge to the bolson-fill aquifer results from precipitation, runoff, and probably from interaquifer movement. Several springs are along the graben boundary faults on the western side of the Plains of San Agustin in 5S.14W. and 15W. (table 4). Spring 5S.14W.09.41213 discharged 212.5 gallons per minute and had a field specific conductance of 233 µS/cm on November 8, 1952. These springs may be derived from water in the Datil Group or the alluvium rather than from the bolson fill because of the lower specific conductance of the water (233 to 301 µS/cm).

The bolson-fill aquifer yields small to large quantities of water to wells (Cooper, 1967). Stock wells completed in bolson-fill deposits produce less than 1 to 20 gallons per minute (table 4). Irrigation wells completed in the bolson-fill deposits immediately east of the county yield as much as 975 gallons per minute (Myers and others, 1994).

Several aquifer tests were conducted on irrigation wells completed in the Quaternary bolson-fill deposits in the northeastern part of the Plains of San Agustin, adjacent to Catron County in northwestern Socorro County (table 7). The duration of the tests varied from 80 to 480 minutes. Transmissivities ranged from 2,300 to 48,000 feet squared per day. The specific capacity of these wells varied from 5.70 to 90.00 gallons per minute per foot. On October 26, 1978, an aquifer test was conducted in a well completed in bolson-fill deposits in the southeastern part of the Plains of San Agustin in 5S.9W.23; the transmissivity was estimated to be 70,588 feet squared per day (J. Everheart, New Mexico State Engineer Office, written commun., 1992).

Specific conductance of water in the bolson-fill aquifer in the Plains of San Agustin typically ranges from about 180 to 3,300 µS/cm (table 4). As previously mentioned, however, water from well 5S.13W.32.33143 had a specific conductance of 40,800 µS/cm. Dominant cations in the water having a specific-conductance range of 180 to 3,300 µS/cm vary from calcium to sodium plus potassium. Dominant anions generally are bicarbonate for water having a specific conductance below 900 µS/cm, and chloride or sulfate for water having a specific conductance greater than 900 µS/cm. Specific conductances ranging from 803 to 3,300 µS/cm are more common on the western and southwestern side of the Plains of San Agustin and probably result in part from evaporation of the shallow water.



EXPLANATION

6,734 ● WELL--Completed in Quaternary bolson fill. Number is the water-level altitude, in feet above sea level

Figure 13.--Selected wells completed in the Quaternary bolson fill and altitude of water levels, 1950-80, Catron County, New Mexico.

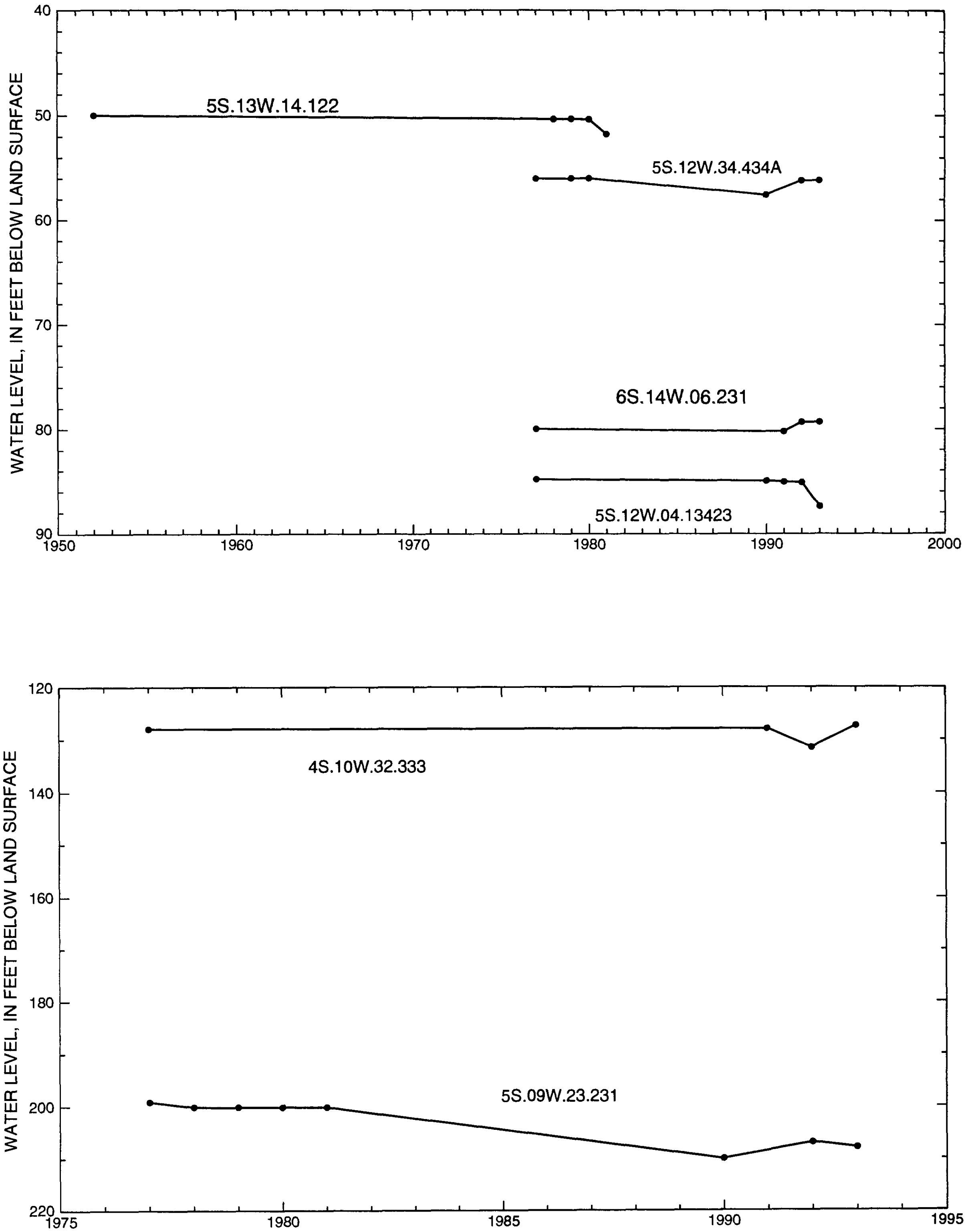


Figure 14.--Water levels in wells completed in the bolson-fill deposits in the San Agustin Basin, Catron County, New Mexico.

Quaternary to Tertiary Gila Conglomerate

The Gila Conglomerate overlies the older Tertiary volcanic sequences in most localities in Catron County. In Grant County this unit interfingers with the Bearwallow Mountain Andesite. The Gila Conglomerate represents the infilling of the block-faulted grabens by alluvial-fan and fluvial processes. Lacustrine deposits within the Gila Conglomerate strata represent ponding of the intermontane fluvial systems. These lacustrine deposits consist of clay and silty clay and can act as aquitards, or they might perch ground water. The largest exposures of the Gila Conglomerate are in the San Francisco and Gila Basins (Dane and Bachman, 1965).

The thickness of the Gila Conglomerate varies depending on where it was deposited and how much of it has eroded since its deposition. Ratte (1989) estimated the maximum thickness to be 600 feet south of Reserve. Ratte (1981) estimated the thickness of this unit to be at least 600 feet within 1.2 to 3.2 miles basinward from the mountain front near Alma, and Rhodes (1976) estimated the thickness of the Gila Conglomerate to exceed 820 feet near Glenwood. Richter and others (1986) estimated a maximum thickness of 750 feet south of Beaverhead, New Mexico (near the head of Beaver Creek; fig. 1).

The aquifer in the Gila Conglomerate typically is unconfined. Hydraulic head in the Gila Conglomerate generally is high in topographically high areas and low in lower areas. The altitude of water levels in the Gila Conglomerate is shown in figure 15. A hydrograph of a well completed in the Gila Conglomerate is shown in figure 16.

The lower part of the Gila Conglomerate is a poor aquifer because of poor sorting of the grain size and high degree of consolidation (cementation) of the sediments. The upper part of the Gila Conglomerate supplies small to moderate quantities of water to wells. Trauger (1960) found that drawdown in wells completed in the Gila Conglomerate is as much as 50 feet for each gallon of water withdrawn per minute. The reported yields from wells 10S.21W.12.334 and 10S.20W.13.341 completed in the Gila Conglomerate are both 5 gallons per minute (table 4). The water levels in these wells are 230 and 450 feet below land surface, respectively. Transmissivity was not estimated for the Gila Conglomerate because of insufficient data.

Water from spring 8S.21W.24.323 in the Gila Conglomerate had a specific conductance of 381 μS/cm on May 17, 1957 (table 4). Water from spring 12S.14W.27.224, located near the Gila Cliff Dwellings, had a flow rate of 2 gallons per minute and a specific conductance of 289 μS/cm on July 17, 1962 (Trauger, 1963). The dominant ions in water from spring 12S.14W.27.224 were sodium, calcium, and bicarbonate.

Tertiary Rocks

Tonking (1957), Brown (1972), Deal (1973), Elston and others (1976), Chapin and others (1978), Lopez and Bornhorst (1979), and Osburn and Chapin (1983) have disagreed on the stratigraphic order and nomenclature of the Datil Group and the Tertiary ignimbrite sequence. Early workers who assigned Tertiary volcanic rocks to the Datil Group were confronted with the following problems: similar textural characteristics from unit to unit; complicated stratal relations and varying stratigraphic thickness; differences in lithology and flow characteristics within a unit; and poor age constraints.

Detailed geologic mapping by Ratte (1981, 1989); Richter and others (1986a, 1986b); Houser (1987); Richter (1987); Ratte and Brooks (1989); and Richter and Lawrence (1989), and recent stratigraphic investigations and radiometric age dating of the Tertiary rocks by the New Mexico Bureau of Mines and Mineral Resources will help provide a more accurate stratigraphic subdivision of the Tertiary stratigraphic sequence. The maps and reports that are available should be referred to for a detailed understanding of the geology, structure, and stratigraphic relations of the Quaternary and Tertiary units.

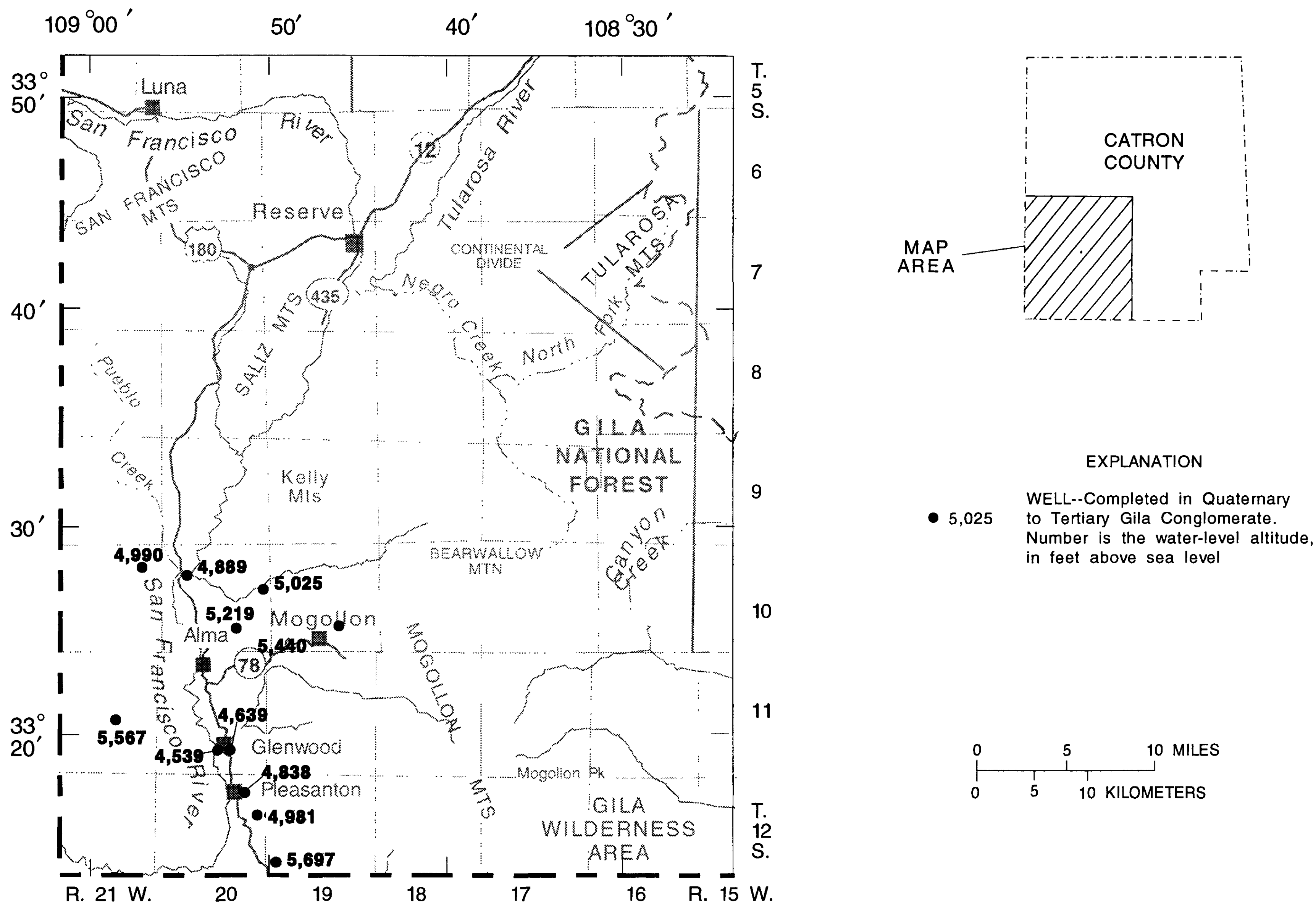


Figure 15.--Location of selected wells completed in the Quaternary to Tertiary Gila Conglomerate and altitude of water levels, 1942-80.

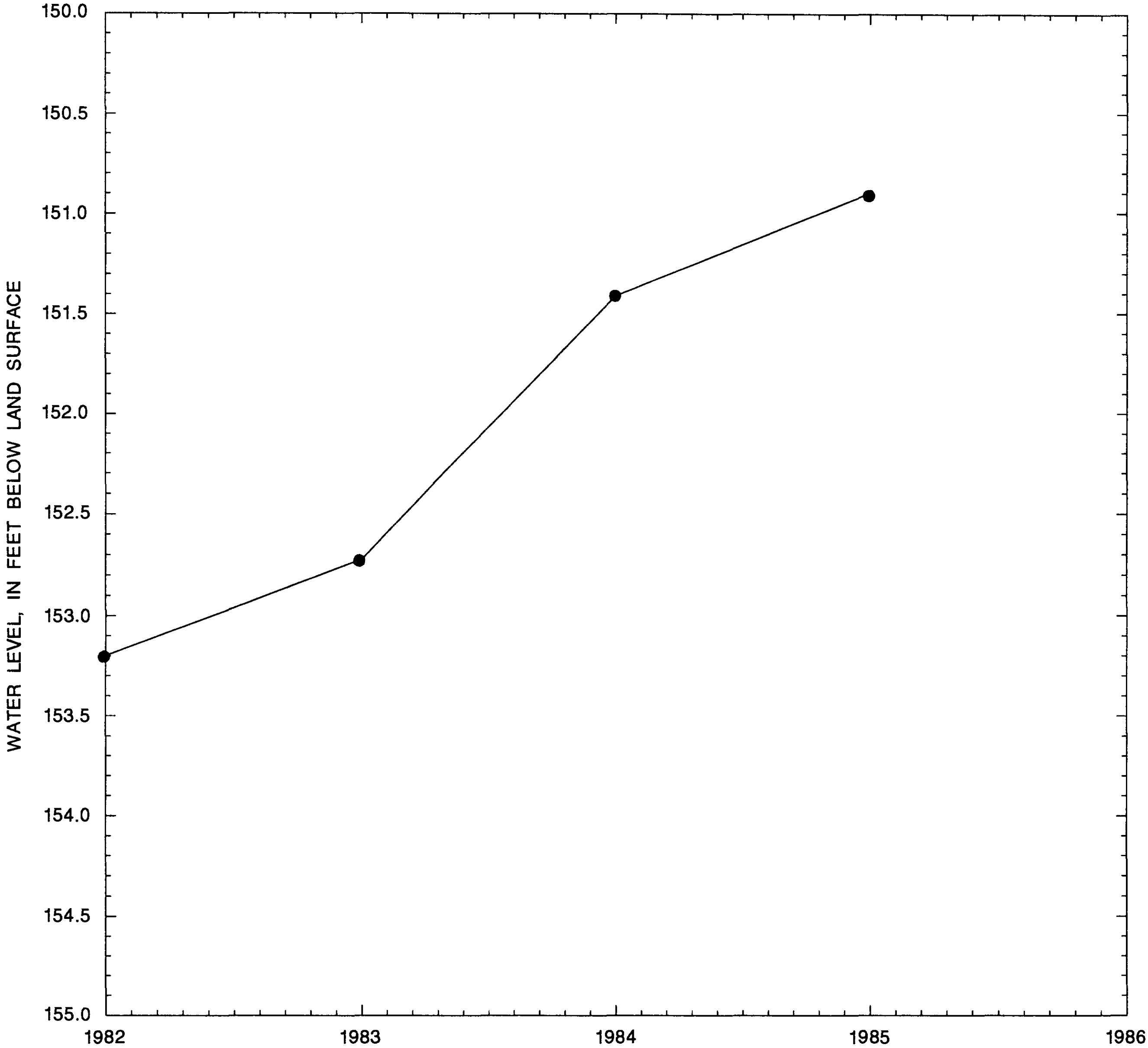


Figure 16.--Water level in well 7S.20W.13.410, interpreted to be completed in the Gila Conglomerate, Catron County, New Mexico.

In this report Tertiary rocks are divided into the Bearwallow Mountain Andesite, the Datil Group, and the Baca Formation. To be consistent with the established hydrogeologic nomenclature, the geologic mapping of the Datil Group by Dane and Bachman (1965) and the definition of the Bearwallow Mountain Andesite by Elston and others (1976) are used in this report. Aquifers in the Tertiary volcanic rocks on and along the Mogollon Plateau are collectively termed the Datil Group aquifer.

Bearwallow Mountain Andesite

The Bearwallow Mountain Andesite has only recently been determined to be a suitable supplier of water. Hydrogeologic data are not adequate to determine the quantity and quality of water in Bearwallow Mountain Andesite in Catron County, but this unit may be a potential source of ground water in the central and southern parts of the county.

In 1987, the Bearwallow Mountain Formation of Elston and others (1976) was redefined as the Bearwallow Mountain Andesite by Marvin and others (1987). Marvin and others (1987) excluded several exposures of rhyolitic, dacitic volcanic rocks and some of the younger basaltic rocks, included by Elston and others (1976), as the Bearwallow Mountain Andesite. In this report, the basaltic outcrops (QTb) mapped by Dane and Bachman (1965) located south and west of the Plains of San Agustin are included in the Bearwallow Mountain Andesite. Further geologic studies of this unit are being conducted by the New Mexico Bureau of Mines and Mineral Resources.

The Bearwallow Mountain Andesite consists of basaltic andesite, basalt, dark andesite, dark latite flows, lesser amounts of red scoria, and agglomerate (Coney, 1976). In the mountainous areas, where these deposits are interpreted to represent composite cones and volcanic centers, the thickness of this unit can be as much as 2,000 feet. In the plateau areas, where the deposits are interpreted to represent distal flows, the thickness of this unit is commonly 100 to 500 feet.

This unit was deposited throughout a large area in Catron County. Numerous driller's logs indicate that wells are completed in rock types that are similar to the Bearwallow Mountain Andesite. Many of the wells in previous records were considered to tap the Datil Group or Gila Conglomerate although the water was probably derived from water-yielding strata of the Bearwallow Mountain Andesite.

Three wells have been determined to be completed in the Tertiary Bearwallow Mountain Andesite. Well 11S.21W.29.442, reported to be completed in red cinders and probably belonging to the Bearwallow Mountain Andesite, has a water level 511.7 feet below land surface and yields 5 gallons per minute (table 4). Water from this well has a specific conductance of 456 μS/cm. Well 11S.20W.05.222 has a water level 195 feet below land surface (table 4) and is reported to have good yields (Trauger, 1960). Well 4S.16W.35.230 is probably completed in the Bearwallow Mountain Andesite and yields 2.5 gallons per minute.

South and southwest of the Plains of San Agustin, some stock and domestic wells may be completed in the Bearwallow Mountain Andesite aquifer. Many of the wells that are completed in black rock, andesite, or basalt could be partly or wholly completed in the Bearwallow Mountain Andesite.

Datil Group

Regionally, the Datil Group is represented by many interbedded igneous, volcanic, and sedimentary rocks. Locally, water can be derived from one unit, from several units, or from part of a unit that composes the Datil Group. Therefore, the following hydrologic characteristics of the Datil Group are generalizations and may apply only locally. The use of the name Datil Group is controversial in the geologic community. The present (1992) stratigraphic and geologic definition of the Datil Group was revised from the previous definition when ground-water records archived by the U.S. Geological Survey identified Tertiary rocks in Catron County as the Datil Group.

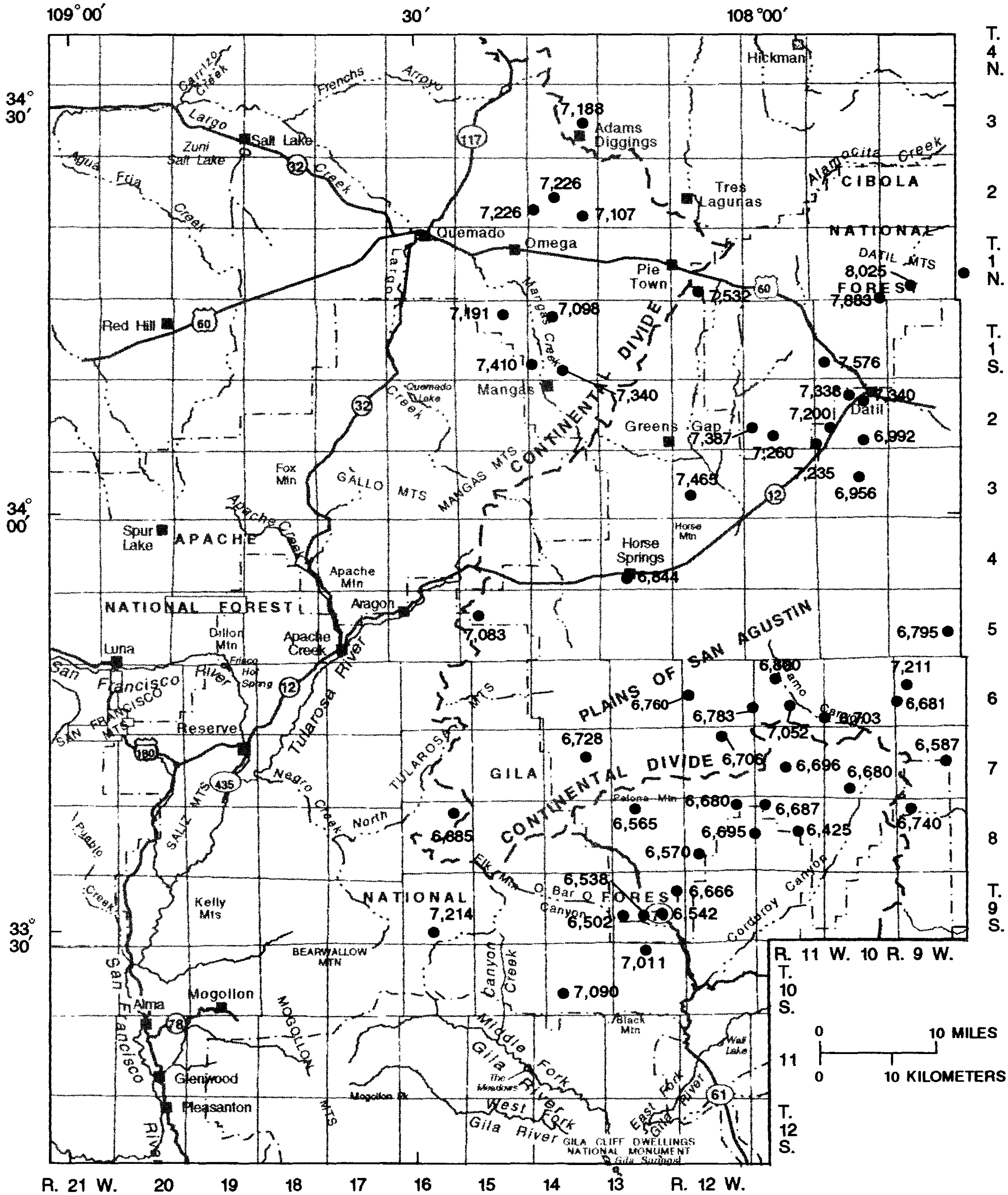
Winchester (1920) first introduced the term Datil Formation for the Tertiary bedded volcanic rocks in the Datil Mountains in Catron County and the Gallinas and Bear Mountains in Socorro County. The Datil Group was raised from a formation rank to a group status by Weber (1971). Osburn and Chapin (1983) defined the Datil Group as the predominantly volcaniclastic rocks that lie stratigraphically between the Baca Formation and the Hells Mesa Tuff. Sediments of the Datil Group represent the early volcaniclastic apron of the northeast Datil-Mogollon volcanic field. In the southeastern part of the Datil-Mogollon volcanic field, the Datil Group is equivalent to the Rubio Peak Formation. According to Cather (1989), the thickness of the Datil Group ranges from 980 to more than 3,000 feet.

The Spears Formation (Chapin, 1971; Brown, 1972; Chamberlain, 1974; and Chapin and others, 1978) is the basal unit of the Datil Group and consists of minor lava rocks and several interbedded ash-flow tuff sheets (Osburn and Chapin, 1983). Cather (1989) subdivided the Datil Group into two informal members--the lower and upper. He indicated that the lower member is distinguished by volcaniclastic rocks and minor lavas of intermediate composition, mainly high-potassium andesites and high-potassium dacites, whereas the upper member is characterized by a bimodal suite of mafic lavas, silicic ash-flow tuffs, and volcaniclastic rocks. The most abundant lithology in the unit is basaltic andesite.

The Tertiary Datil Group is present in the Carrizo Wash, San Agustin, San Francisco, and Gila Basins. The Datil Group commonly is unconfined, but may be confined at depth. The altitude of water levels in the Datil Group is shown in figure 17. Water levels of wells completed in this unit range from 60 to 1,260 feet below land surface (table 4). Wells completed in the Datil Group typically yield 1 to 15 gallons per minute. Specific conductance of water from the Datil Group ranges from 210 to 820 $\mu S/cm$ (table 4). Additional water-level information from 1979 to 1980 in the Datil Group in the San Agustin Basin can be found in Myers and others (1994, p. 25).

The Datil Group is in the eastern and southern parts of the Carrizo Wash Basin (fig. 4) and overlies the Baca Formation of Tertiary age and the Mesaverde Group of Cretaceous age. The Datil Group consists of a volcanic sediment facies of reddish-gray and greenish-gray to gray mudstone, siltstone, sandstone, and volcaniclastic conglomerate, and locally some thin beds of rhyolite tuff (Willard, 1957; Willard and Weber, 1958). The Datil Group is a few hundred feet thick in this basin and thins to the north (Foster, 1964; Osburn and Chapin, 1983).

Water levels in the Datil Group in the Carrizo Wash Basin range from about 98 to 340 feet below land surface (table 4). The altitude of water levels in the Datil Group decreases toward Largo Creek. Similar heads in the bolson fill and the Datil Group (figs. 13 and 17) indicate that the units probably are hydraulically connected; however, the degree to which the units are connected is not known because of insufficient well-control and water-quality data.



EXPLANATION

● 6,956 WELL--Completed in Tertiary Datil Group. Number is the water-level altitude, in feet above sea level

Figure 17.--Selected wells completed in the Tertiary Datil Group and altitude of water levels, 1952-85, Catron County, New Mexico.

Wells completed in the Datil Group in the Carrizo Wash Basin typically yield 2 to 10 gallons per minute. Well 1N.18W.35.412 completed in the Datil Group had a withdrawal rate of 5 gallons per minute on May 18, 1982. Several springs in this unit (table 4) probably represent perched water within the Datil Group. The Datil Group in the Carrizo Wash Basin is recharged from precipitation and surface-water runoff on outcrop areas.

Specific conductance of water from the Datil Group in the Carrizo Wash Basin ranges from 408 to 800 μS/cm (table 4). Water from well 1N.18W.35.412, probably representative of water from wells completed in the Datil Group, had a specific conductance of 500 μS/cm on May 18, 1982 (table 4). The dominant ions in water from this unit are sodium, calcium, and bicarbonate.

In areas north and south of the center of the Plains of San Agustin, the Datil Group consists of volcanic sediment facies similar to those in the Carrizo Wash Basin except with more latite tuffs, andesite and basaltic flows, and rhyolitic tuffs (Willard and Givens, 1958). The thickness of the Datil Group in these areas can vary from a few hundred feet to several thousand feet.

In the area north of the center of the Plains of San Agustin, the altitude of water levels in the Datil Group decreases toward the south (fig. 17) where water from the Datil recharges the aquifer in the Quaternary bolson fill. Water levels in this area in the Datil Group range from about 60 to 359 feet below land surface (table 4). In the northern area, well 02S.10W.11.410 had a reported yield of 12 gallons per minute on June 1, 1965 (table 4). Several springs are near the contact between the Datil Group and the bolson-fill deposits near this area. Recharge to the aquifer in the Datil Group occurs from precipitation in the mountainous areas where permeable rocks in this unit are exposed and probably from interaquifer movement (Myers and others, 1994).

Water in the Datil Group north of the center of the Plains of San Agustin is used primarily for stock tanks and domestic water supplies. Dinwiddie and others (1966) stated that 35 domestic wells in 1965 were completed in the Datil Group near the town of Datil. Specific conductance of water in the Datil Group north of the Plains of San Agustin ranges from 210 to 750 μS/cm. Dominant ions are sodium, calcium, and bicarbonate (table 4).

In areas south of the center of the Plains of San Agustin, the altitude of water levels in the Datil Group generally decreases toward the Plains of San Agustin (fig. 17). Specific conductance of water in the Datil Group in the area south of the center of the Plains of San Agustin ranges from 280 to 820 μS/cm (table 4). Dominant ions in this water are sodium, calcium, and bicarbonate (table 5). Well 7S.12W.03.424 had a water level 613.62 feet below land surface, and specific conductance of the water was 280 μS/cm on September 28, 1977 (table 4). Dominant ions in water from this well were calcium, sodium, and bicarbonate (table 5).

In areas south and west of Pelona Mountain, the altitude of water levels in the Datil Group generally decreases toward Black Springs. It is not known, however, whether the water discharging from Black Springs is derived from the Datil Group. Water levels of wells completed in this unit south of the Plains of San Agustin range from about 280 to 1,153 feet below land surface (table 4). Wells completed in the Datil Group in this southern area yield from 1.5 to 15 gallons per minute and are principally used for stock-watering purposes (table 4).

Baca Formation

The Eocene Baca Formation disconformably overlies the Upper Cretaceous Mesaverde Group and underlies the Tertiary Datil Group (Osburn and Chapin, 1983). The Baca Formation consists of a red bed sequence of mudstone, sandstone, and minor amounts of conglomerate (Johnson, 1978; Cather, 1980, 1982) and is interpreted as a synorogenic basin-fill deposit (Cather and Johnson, 1986). Exposures of the Baca Formation are restricted to the northern part of the county (fig. 4). The maximum thickness of the Baca Formation is estimated to be 1,900 feet near Datil (Cather, 1983), thinning westward to about 300 feet near the State line (Foster, 1964).

The Tertiary Baca Formation typically is unconfined, but confined conditions may exist at depth or where it is overlain by other formations. The altitude of water levels in the Baca Formation is shown in figure 18. Water levels in wells completed in this unit vary from about 27 to 304 feet below land surface (table 4). Recharge to the aquifer in the Baca Formation occurs from precipitation along mountain fronts, on outcrops, and ephemeral stream channels, and in the mountainous areas where permeable rocks in this unit are exposed.

In 1965, the community of Quemado used well 01N.16W.03.220, which is interpreted to be completed in the Baca Formation, for their water supply (Dinwiddie and others, 1966). The reported yield from this well in 1965 was 10 gallons per minute (Dinwiddie and others, 1966). Yields from stock wells range from 5 to 20 gallons per minute (table 4).

Specific conductance of water in the Baca Formation ranges from 312 to 752 μS/cm (table 4). Water from only one well completed in this unit has a complete hydrochemical analysis (table 5). Sodium and bicarbonate are the dominant ions in water from well 01N.16W.03.220. In water from other wells completed in this unit that have partial hydrochemical analyses the dominant cations are calcium and sodium.

Cretaceous Rocks

Exposures of Cretaceous rocks are present in the northwest and northeast parts of Catron County (fig. 4). The estimated thickness of the Cretaceous unit in the northwest part of the county is 1,000 feet and the thickness in the northeast part is approximately 1,100 feet. Dane and Bachman (1957), Willard (1957a), and Willard and Weber (1958) have divided the Cretaceous section in order of decreasing age--the Dakota Sandstone, Mancos Shale, and Mesaverde Group. In eastern Catron County, Dane and Bachman further divided the Mesaverde Group into the Gallup Sandstone and the Crevasse Canyon Formation. Foster (1964) divided the Mancos Shale into the lower shale member, the Tres Hermanos Sandstone Member, and the upper shale member. Other researchers have further divided the Cretaceous rocks in Catron County. In the northwestern part of the county McLellan and others (1984) divided the Mesaverde Group into the lower Atarque Sandstone and the upper Moreno Hill Formation. The Cretaceous unit in the northeast part of the county also is subdivided by Hook and others (1983). In this report, the stratigraphic divisions of the Cretaceous units generally follow the geologic divisions of Dane and Bachman (1965).

Determination of the geologic unit from which water in Cretaceous rocks is derived, however, is complicated by the lack of lithologic and well-completion data. A more refined aquifer division that would correlate to recent geologic definitions of the Cretaceous units (Hook and others, 1983; and McLellan and others, 1984) is not possible at this time because of insufficient well-completion data.

Aquifers in Cretaceous rocks are present in the Carrizo Wash, North Plains, and Rio Salado Basins, but the larger withdrawals are in the Carrizo Wash Basin. Yields from the consolidated Cretaceous rocks to wells vary considerably. However, the potential yield of ground water from Cretaceous rocks in northwestern Catron County ranges from 1 to 122 gallons per minute (table 4). Recharge to Cretaceous units is derived from infiltration during runoff where these units are exposed in ephemeral stream channels and in outcrops along mountain fronts. The hydrologic connection between the Cretaceous units and overlying Tertiary Baca Formation and underlying Triassic Chinle Formation is unknown at this time because hydrologic data are insufficient to determine the direction or magnitude of water movement between aquifers.

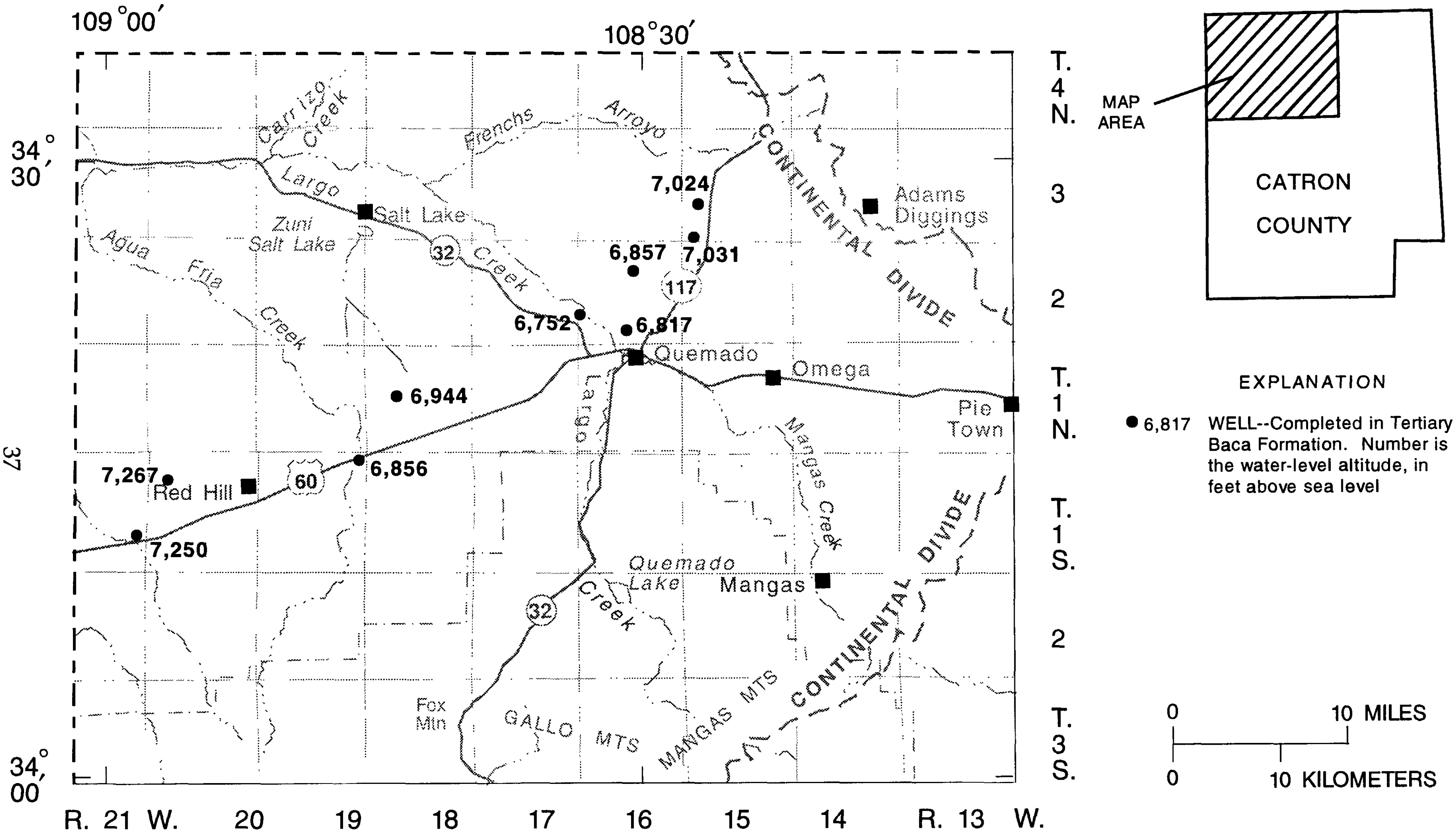


Figure 18.--Selected wells completed in the Tertiary Baca Formation and altitude of water levels, 1965-85.

Mesaverde Group

The Mesaverde Group generally consists of yellow and reddish-brown sandstones, siltstones, mudstones, and conglomerates with interbedded gray shales (Willard, 1957; Weber and Willard, 1958). Foster (1964) estimated a maximum thickness of 1,140 feet for the Mesaverde Group.

Shaler (1907) assigned coal-bearing strata near Zuni Salt Lake to the lower part of the Mesaverde sequence. Dane and Bachman (1965) also used this Mesaverde Group nomenclature for Catron County. Beaumont and others (1956) raised the Mesaverde Formation to a group rank. Detailed biostratigraphic data and recent stratigraphic investigations by Hook and others (1983), Molenaar (1983), and McLellan and others (1984) have led to revision of the geologic nomenclature of the Mesaverde Group. Mesaverde Group as used in this report is for aquifer assignments in northwestern Catron County. Insufficient well-completion data do not allow for a more refined aquifer designation in most areas that would correlate with the revised Cretaceous nomenclature.

According to Myers and others (1994), water in the Mesaverde Group occurs under confined conditions. The altitude of water levels in the Mesaverde Group is shown in figure 19. The depth to water in wells completed in the Mesaverde Group ranges from 3.70 to 250.93 feet below land surface (table 4). Estimates of yields in the Mesaverde Group range from 1 to as much as 100 gallons per minute (Roybal and others, 1984); yields of 10 to 25 gallons per minute are more typical. In the Carrizo Wash Basin most stock and domestic wells are completed in the Mesaverde Group (Myers and others, 1994).

Water in the Mesaverde Group generally is fresh; however, some wells yield brackish water (table 5). Specific conductance of water from the Mesaverde Group ranges from 370 to 4,370 μS/cm (tables 4 and 5). Calcium, sodium, and sulfate or bicarbonate are the dominant ions in water in the Mesaverde Group. In water having a specific conductance less than 1,000 μS/cm the dominant anion usually is bicarbonate. Sulfate is the dominant anion in water having a specific conductance greater than 1,000 μS/cm.

The Mesaverde Group includes wells completed in the Moreno Hill Formation and Atarque Sandstone in the northwestern part of the county. In the northwestern part of the Carrizo Wash Basin, McLellan and others (1983) and Stone and McGurk (1987) used the names Moreno Hill Formation and Atarque Sandstone for the Upper Cretaceous rocks that are equivalent to rocks in the Mesaverde Group. Stone and McGurk (1987) investigated the hydrogeology of the Cretaceous Moreno Hill Formation about 3 miles north of Quemado. Moreno Hill Formation nomenclature is used west of the approximate westward pinch-out of the Pescado Tongue of the Mancos Shale and consists of nonmarine sandstones, siltstones, shale, carbonaceous shale, and thin coal beds (McLellan and others, 1983). The thickness of the Moreno Hill Formation ranges from about 520 feet to as much as 715 feet in parts of the Carrizo Wash Basin (McLellan and others, 1983). The Moreno Hill Formation typically is unconfined (Stone and McGurk, 1987). Wells completed in sandstones of the Moreno Hill Formation typically yield less than 1 to 20 gallons per minute (Stone and McGurk, 1987). Specific conductance of water from these wells ranges from 210 to 1,250 μS/cm; dominant ions in water from this unit are sodium, calcium, and bicarbonate (Stone and McGurk, 1987). Some wells might be completed in both the alluvium and sandstones in the Moreno Hill Formation.

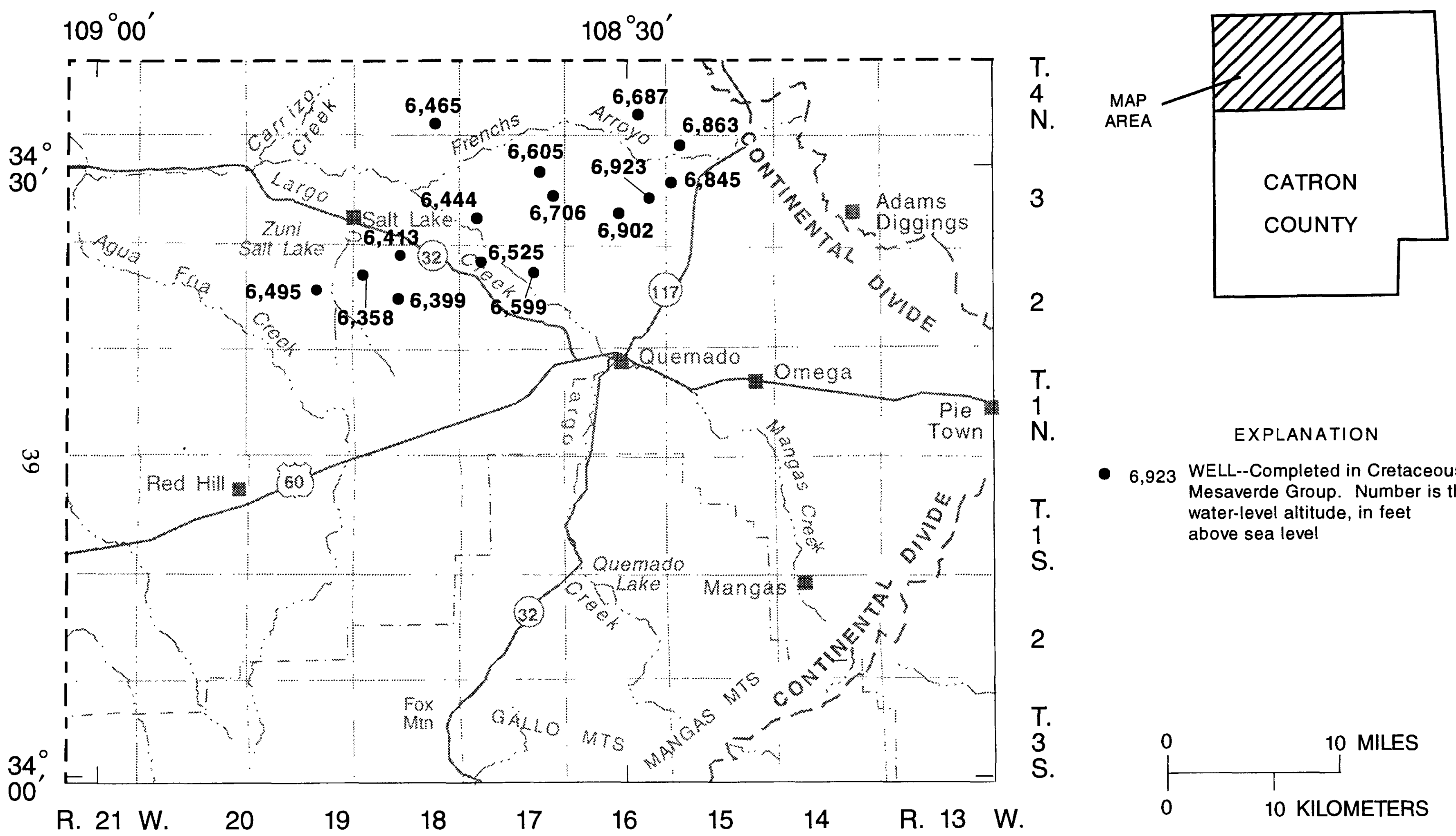


Figure 19.--Selected wells completed in the Cretaceous Mesaverde Group and altitude of water levels, 1978-85.

Crevasse Canyon Formation

The Cretaceous Crevasse Canyon Formation overlies the Cretaceous Gallup Sandstone and is overlain by the Tertiary Baca Formation or Tertiary Datil Group (fig. 4). The Crevasse Canyon Formation crops out in the northeastern part of the county and consists of nonmarine sandstone, siltstone, and shale (Foster, 1964). The formation has an estimated thickness of 610 feet in the northeastern part of the county (Foster, 1964), and thickens to the north and west and thins toward the east.

The aquifer in the Crevasse Canyon Formation is unconfined, but confined conditions may exist at depth. The altitude of water levels in the Crevasse Canyon Formation is shown in figure 20. Three water-level measurements are available for the northeastern part of Catron County: two in the North Plains Basin and one in the Rio Salado Basin. Depth to water ranges from 57.05 to 123.07 feet below land surface. Yields from wells completed in this unit range from 0.5 to 1.5 gallons per minute (table 4). Wells are principally stock wells.

Four hydrochemical analyses are available of water samples collected from wells completed in the Crevasse Canyon Formation in the northeastern part of the county (tables 4 and 5). Specific conductance of water in the Crevasse Canyon Formation ranges from 1,200 to 2,500 $\mu S/cm$ (table 4). The dominant ion in water from this unit is sulfate (table 5).

Gallup Sandstone

In the northeastern part of the county the Cretaceous Gallup Sandstone overlies and interfingers with the Cretaceous Pescado Tongue of the Mancos Shale, and underlies the Cretaceous Crevasse Canyon Formation. The Gallup Sandstone crops out in the extreme northeastern part of the county. The lithology of the Gallup Sandstone consists of marine and nonmarine sandstones and shales (Molenaar, 1983). The Gallup has an estimated thickness of 557 feet (Foster, 1964), and thickness increases to the west and north (Molenaar, 1983).

Few hydrogeologic data are available for the Cretaceous Gallup Sandstone. At the time of this study neither water-level measurements nor hydrochemical data were available for the Gallup Sandstone in the northeastern part of the county.

Mancos Shale

The predominantly marine deposits of the Mancos Shale were deposited during the inundation of the Cretaceous epeiric seaway. The Mancos Shale and interbedded sandstone tongues overlie the Dakota Sandstone and underlie the Atarque Sandstone (Formation status; McLellan and others, 1983) in northwestern Catron County. In northwestern Catron County, Hook and others (1983) divided the Mancos Shale into two units: (1) the Whitewater Arroyo Tongue that overlies the Dakota Sandstone and underlies the sandstone of the Twowells Tongue of the Dakota Sandstone, and (2) the Rio Salado Tongue that overlies the Twowells Tongue of the Dakota Sandstone and underlies the Atarque Sandstone. The Mancos Shale consists of light-gray to dark-gray shales intercalated with sparse, light-tan quartzose sandstone beds (Willard and Weber, 1958). In northeastern Catron County the Mancos Shale is present only in the subsurface of the Rio Salado and North Plains Basins. The estimated thickness of the Mancos Shale ranges from 700 to 800 feet (Cooper, 1967). Foster (1964) estimated a thickness of 500 feet for the shale and sandstone sequences in the Mancos Shale in the northwestern part of the county.

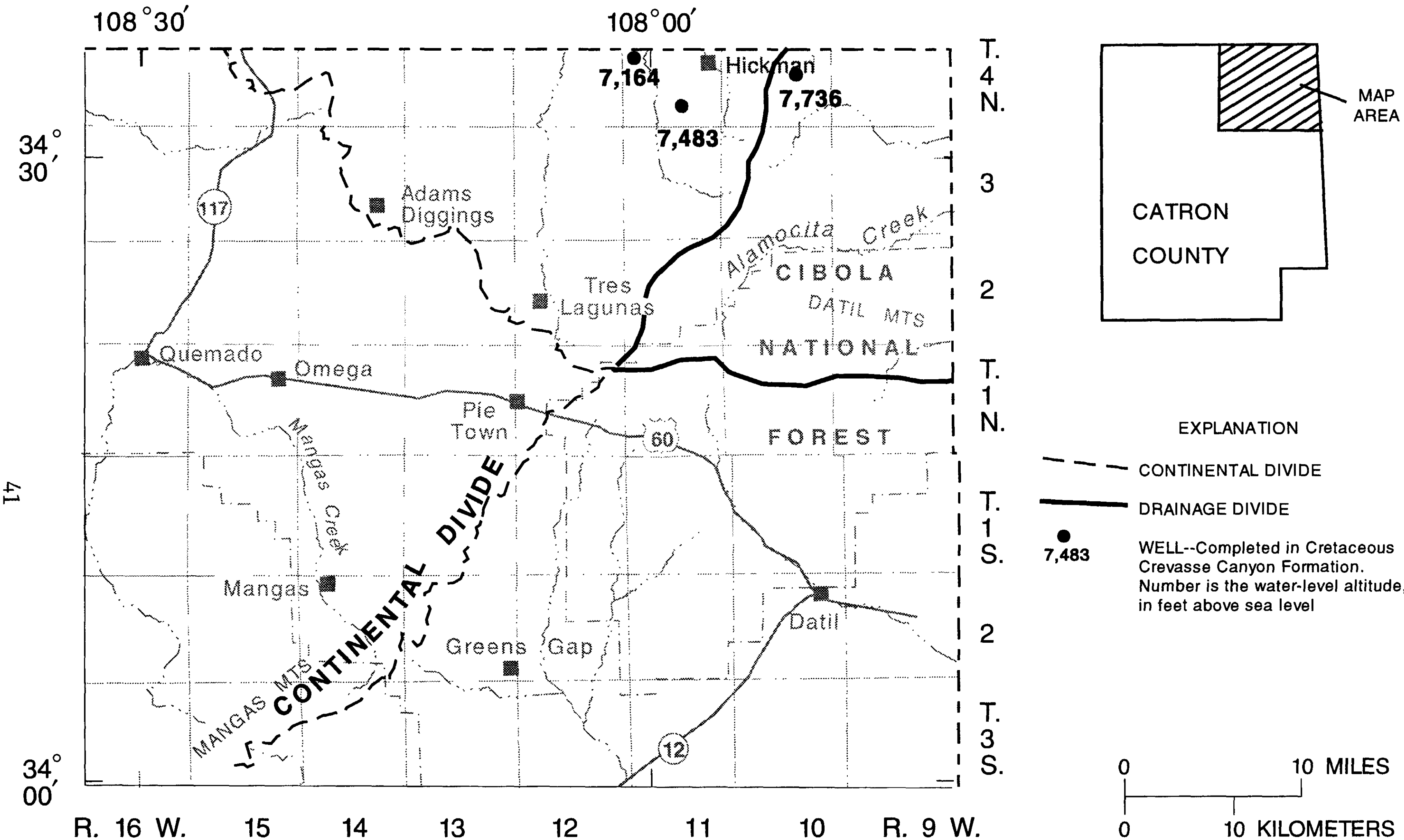


Figure 20.--Selected wells completed in the Cretaceous Crevasse Canyon Formation and altitude of water levels, 1981.

The Mancos Shale generally is a confining unit to the underlying units in the area. The altitude of water levels in the sandstones in the Mancos Shale and the interbedded tongues of the Dakota Sandstone is shown in figure 21 as one undivided unit. Water may move up from the main body of the Dakota Sandstone or down from the Mesaverde Group into the interbedded tongues and permeable units in the Mancos Shale. At this time, data are insufficient to determine the direction or magnitude of ground-water movement.

Wells that are probably completed in sandstone beds in the Mancos Shale yield small quantities of water (Cooper, 1967). Specific conductance of water from wells completed in this unit ranges from 980 to 4,490 μS/cm (table 4).

Dakota Sandstone

The Dakota Sandstone crops out in the Carrizo Creek area and disconformably overlies the Triassic Chinle Formation. Hook and others (1983) delineated the Twowells Tongue of the Dakota Sandstone, which interfingers with the Mancos Shale. The Tres Hermanos Sandstone Member of the Mancos Shale correlates with the Twowells Tongue of the Dakota Sandstone (Hook and others, 1983). In this report, Foster's (1964) description of the Dakota Sandstone is referred to as the "main body."

The Dakota Sandstone as described by Foster (1964) consists of interbedded, very pale orange, grayish-orange, and light-gray, very fine to medium-grained sandstone; some pebbly sandstone; and grayish-yellow, light-gray, and black shale. Foster (1964), however, stated that in the subsurface of western Catron County the lithology can vary considerably. Petrographic analysis presented in Stone and others (1983) for the Dakota Sandstone in northwestern New Mexico indicates that the unit generally is a fine- to medium-grained, submature subarkose to mature arkose. Thickness of the Dakota Sandstone in Catron County varies from 20 to 60 feet (Foster, 1964).

The altitude of water levels in the undifferentiated Cretaceous Mancos Shale and Dakota Sandstone in the Carrizo Wash Basin is shown in figure 21. Few wells are completed in the Dakota Sandstone in Catron County. In or near outcrop areas, some wells might be completed in the Twowells Tongue of the Dakota Sandstone or in sandstones or siltstones in the Mancos Shale that interfinger with the Dakota Sandstone. However, data are insufficient to determine the geologic unit in which the wells are completed.

An artesian well (04N.17W.36.120) located in Frenchs Arroyo was completed in the main body of the Dakota Sandstone by the Salt River Project (1983). Before the aquifer test was started, the well had a withdrawal rate of 122 gallons per minute; during the test the withdrawal rate was 350 gallons per minute. Transmissivity and hydraulic conductivity of the unit at that well were estimated to be 700 feet squared per day and 6.8 feet per day, respectively (Salt River Project, 1983, p. 25).

Specific conductance of water from wells completed in the Dakota ranges from 500 to 980 μS/cm (table 4). Dominant ions in water from the main body of the Dakota Sandstone generally are sodium and bicarbonate. Cooper (1967) indicated that the Dakota Sandstone typically yields freshwater near the outcrop.

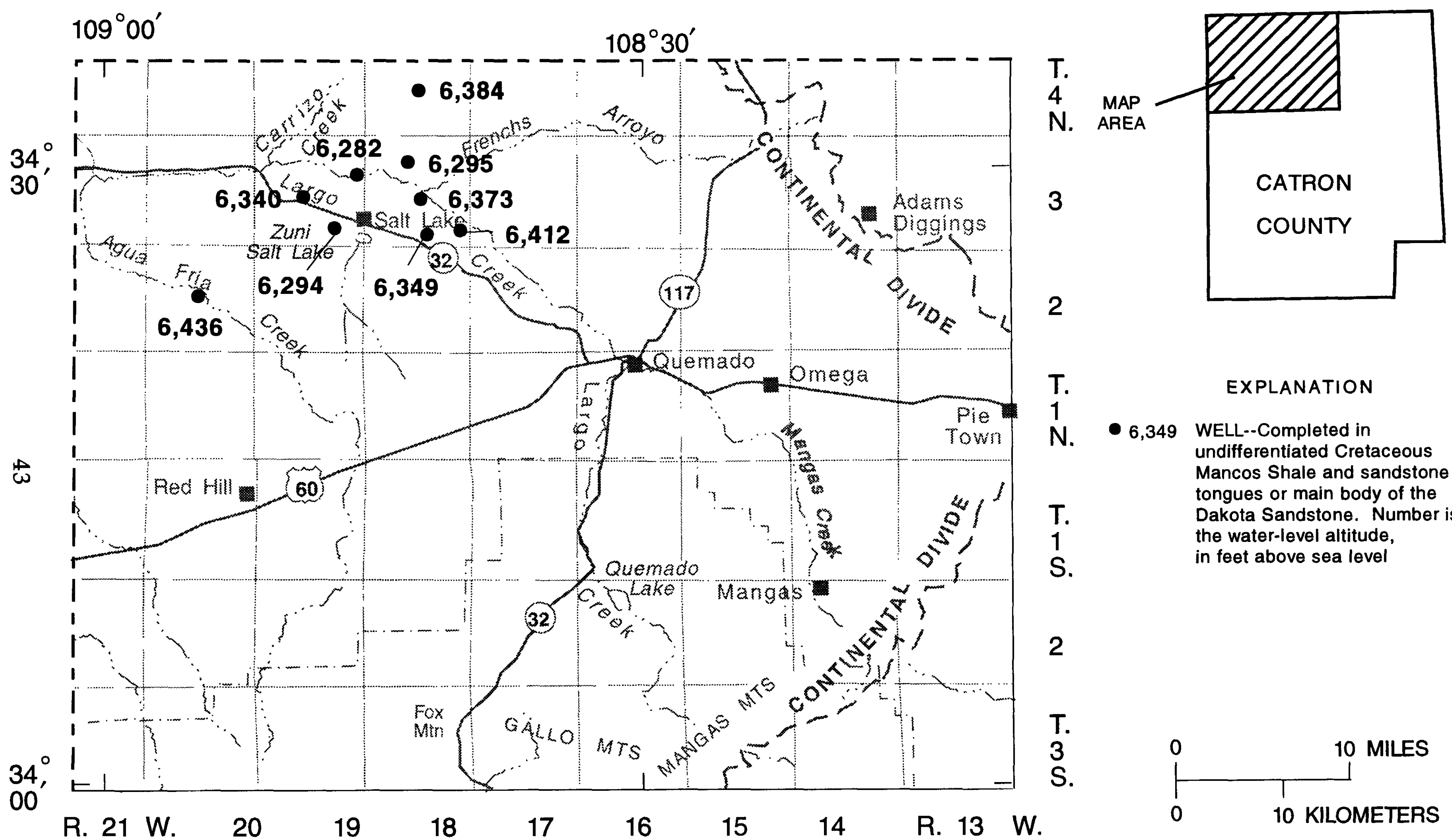


Figure 21.--Selected wells completed in the undifferentiated Cretaceous Mancos Shale and sandstone tongues or main body of the Dakota Sandstone and altitude of water levels, 1985.

Triassic Rocks

Triassic rocks crop out in the Rio Salado and Carrizo Wash Basins. The Triassic Chinle Formation overlies the Permian San Andres Limestone and disconformably underlies the Cretaceous Mesaverde Group, Tertiary Datil Group, or Tertiary Baca Formation. In the Carrizo Wash Basin there is an unconformity between the Chinle Formation and the Dakota Sandstone. In the northern part of the county an angular unconformity exists between the Triassic Chinle Formation and the Tertiary Datil Group or Baca Formation.

The Chinle Formation is not divided into the lithologic members recognized in northeastern Arizona (Foster, 1964). In northwestern Catron County this unit consists of reddish-brown to purple and light-greenish-gray to white claystones, shales, siltstones, and mudstones interbedded with thin lenses of poorly sorted sandstones and conglomerates (Willard and Weber, 1958; Foster, 1964; McLellan and others, 1984). The maximum subsurface thickness of the Chinle Formation in northwestern Catron County is approximately 1,500 feet (Akers, 1964; Foster, 1964).

The Chinle Formation is usually a confining bed within the northwestern part of the county. The altitude of water levels in the Triassic Chinle Formation is shown in figure 22.

In the Carrizo Wash Basin thin lenses of poorly sorted sandstones and conglomerates yield small quantities of water (Akers, 1964). However, some of these wells may be completed in the Chinle Formation and Quaternary alluvium.

Specific conductance of water from well 03N.21W.15.322, completed in the Triassic Chinle Formation, is 3,460 $\mu S/cm$ (table 4). The dominant ions in water from Triassic rocks in the county are calcium, sodium, and sulfate (table 5).

Permian Rocks

One of the few exposures of Permian rocks in Catron County is on the northwest side of the Plains of San Agustin, near Horse Mountain (fig. 1) (Foster, 1964). Permian units that have been identified at this outcrop, in descending order, are the San Andres Limestone, Glorieta Sandstone, and Yeso Formation (Foster, 1964). Permian units are not exposed on the surface in the northern part of the county. Deep oil-test wells in northwestern and northeastern Catron County have penetrated complete sections of Permian rocks (Foster, 1964). Stratigraphic relations of Permian strata in Catron County were determined by subsurface evaluation or mapping of surface outcrops outside the county (Foster, 1964); in descending order the Permian rocks include the San Andres Limestone, Glorieta Sandstone, Yeso Formation, and Abo Formation.

The San Andres Limestone overlies the Glorieta Sandstone and consists of algal, oolitic, and fossiliferous limestone. Estimated outcrop thickness of the San Andres Limestone is 417 feet (Foster, 1964). In the subsurface north of Quemado, this unit thins to 350 feet (Foster, 1964).

The Glorieta Sandstone underlies the San Andres Limestone and interfingers with the Yeso Formation. The Glorieta Sandstone consists of light-gray to white, medium-grained sandstones. Its outcrop thickness is 95 feet (Foster, 1964). In the subsurface in the northeastern part of the county, this unit thickens to 308 feet (Foster, 1964).

The Yeso Formation consists of interbedded limestone, sandstone, dolomite, and possibly some gypsum. Estimated outcrop thickness of the Yeso Formation is 201 feet (Foster, 1964). In the subsurface north of Quemado this unit thickens to 1,397 feet (Foster, 1964).

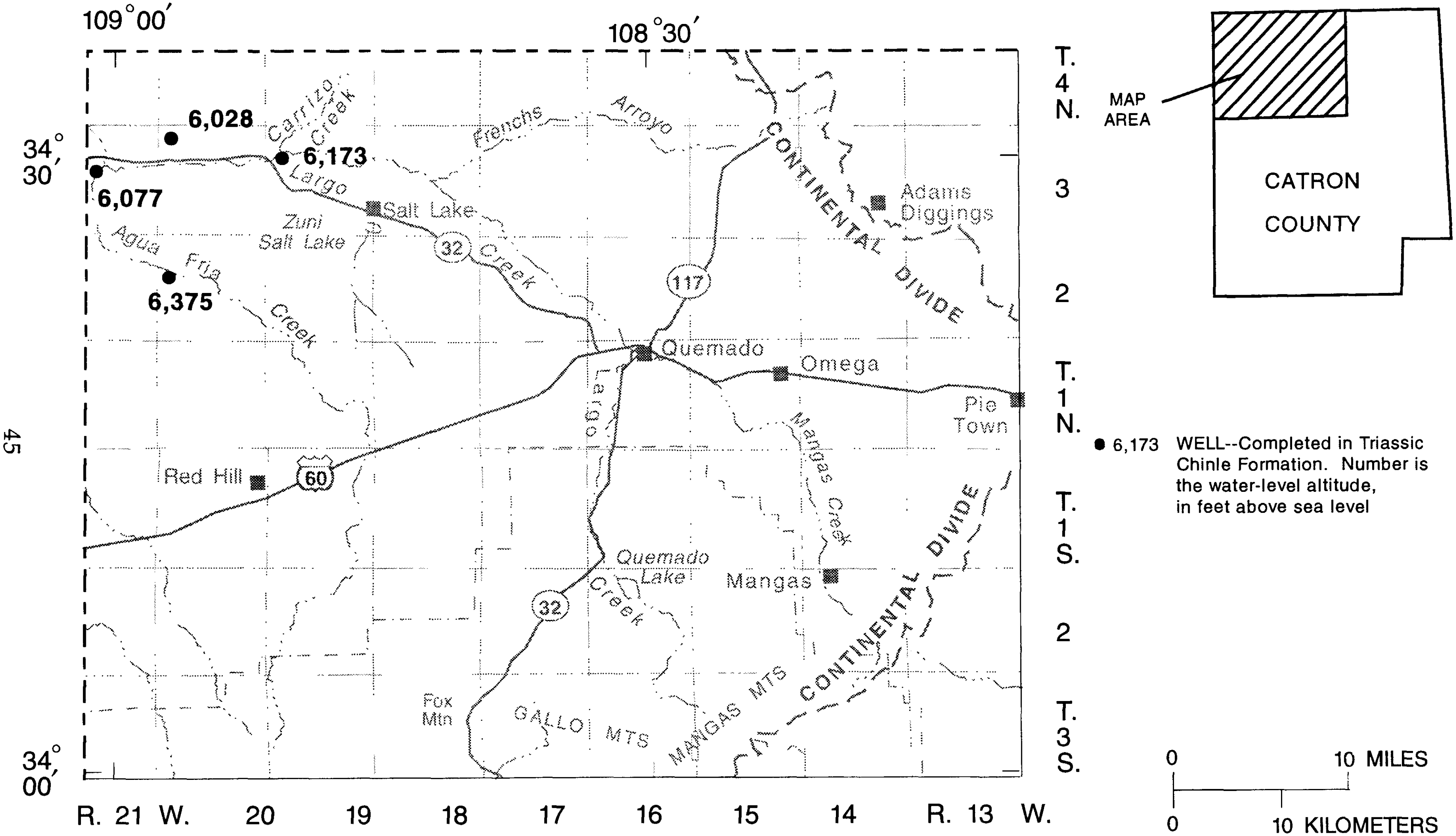


Figure 22.--Selected wells completed in the Triassic Chinle Formation and altitude of water levels, 1985.

Confined conditions may exist in Permian units in the northern part of the county because of overlying, less permeable lithologies. In 1980, the yields from wells 04N.19W.25.414 and 04N.19W.28.234, located in undifferentiated Permian rocks, were 12 and 80 gallons per minute, respectively (table 4). No estimates of regional flow direction, transmissivity, or other hydrologic properties can be made because of insufficient data. Cooper (1967) indicated that the Permian rocks yield small quantities of fresh to slightly saline water to wells in the county. The minor occurrence and great depths of Permian rocks in Catron County decrease the usefulness of Permian rocks as water sources.

Several wells are completed in Permian rocks in the extreme northwestern part of the county. Hydrochemistry data are available only for wells 04N.19W.25.414 and 04N.19W.28.234 (table 5). Specific conductance of water from two wells completed in the Permian San Andres Limestone and/or Glorieta Sandstone was 1,600 and 1,300 μS/cm, respectively (table 5). The dominant ions in water from the Permian San Andres Limestone and the Glorieta Sandstone are calcium or sodium plus potassium and sulfate.

GEOTHERMAL RESOURCES

Geothermal areas primarily are found where heat flow from the Earth's interior is elevated. Geologic settings that promote favorable conditions for possible geothermal resources include areas where there are shallow, silicic magma bodies and along fault zones where fracture permeability is high (Chapin and others, 1978; Witcher, 1988). Elevated water temperatures probably are related to high heat flow from the shallow magma bodies and ground-water circulation through highly fractured, faulted, and permeable rocks near the heat source.

Geothermal areas are sparsely distributed throughout Catron County (Summers, 1976; Swanberg, 1978; Ratte and others, 1979; Levitte and Gambill, 1980; Witcher, 1988). They are located but not restricted to areas (1) along the San Francisco River in the southwest part of the county, (2) along the headwaters of the Gila River and in the forks of the upper reaches in the southeast part of the county, (3) around the Plains of San Agustin in the east-central part of the county, and (4) northwest of the community of Quemado in the northwestern part of the county (fig. 23).

Levitte and Gambill (1980) studied geochemical trends and reservoir temperatures in the northwestern part of the county. Water temperatures measured at several springs and wells northwest of Quemado varied from 12.6 to 33.8 °C (table 6). The rock types from which the water samples probably are derived are Cretaceous in age, except for water samples from the basalt at Zuni Salt Lake. One water sample from well DL-32 had a temperature of 33.8 °C, slightly above the natural thermal gradient (table 7) at 997 feet below land surface (Levitte and Gambill, 1980). Dominant ions in water samples from well DL-32 were sodium, calcium, bicarbonate, and sulfate (Levitte and Gambill, 1980, p. 10).

Swanberg (1978) analyzed water temperature and other constituents from hot springs on the San Francisco River near Glenwood. This analysis showed a water temperature of 48.9 °C and dominant dissolved ions of sodium and chloride. The thermal water is interpreted to be derived from Tertiary volcanics (Witcher, 1988).

Water temperatures from 32 to 68 °C have been recorded at several areas immediately south of Catron County and immediately north of the boundary between Grant and Catron Counties, near the Gila Cliff Dwellings (Ratte and others, 1979). Swanberg (1978) indicated that a water sample collected from a hot spring along the Gila River (33°12', 108°12') had a temperature of 66.3 °C. The dominant dissolved ions in water samples from this spring were sodium, bicarbonate, and chloride (Swanberg, 1978).

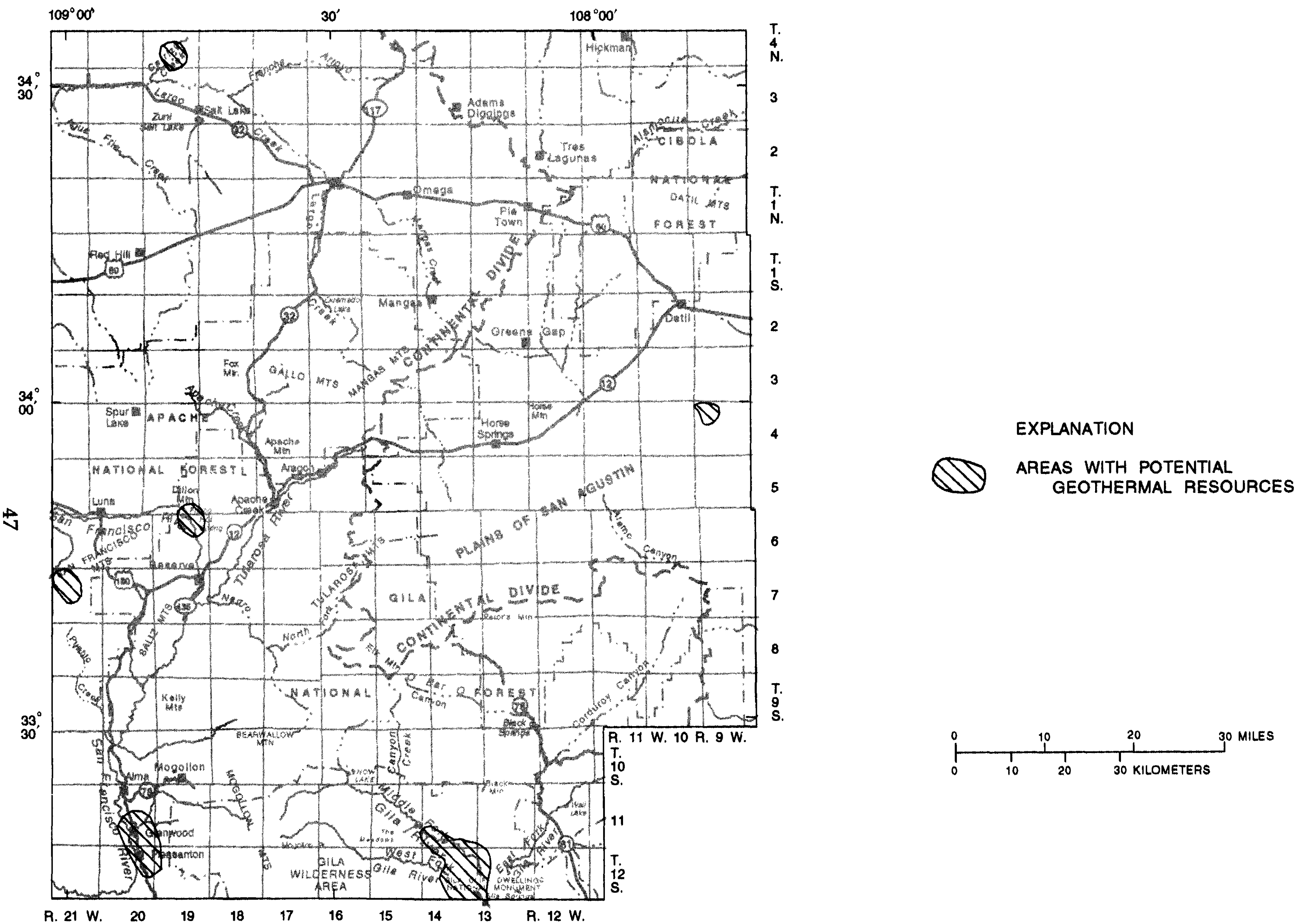


Figure 23.--Approximate locations of potential geothermal areas in Catron County, New Mexico (compiled from Summers, 1976; Swanberg, 1978; Ratte and others, 1979; Levitte and Gambill, 1980; and Witcher, 1988).

Additional wells that produce thermal water are located in the area around the Plains of San Agustin (Myers and others, 1994). Well 04S.09W.17.311 (table 5) has a point-of-discharge water temperature of 32.0 °C, and the dominant ions are sodium and bicarbonate. The field specific conductance of water from this well is 330 μS/cm. Well 6S.08W.08.432 in Socorro County is interpreted to be completed in the Datil Group. Water from this well has a specific conductance of 2,100 μS/cm and a water temperature of 35 °C (Roybal, 1991). Water in this well is different from water in other wells completed in the Datil aquifer: its field specific conductance is higher and its dominant ions are sulfate and chloride rather than sodium and bicarbonate. Myers and others (1994, p. 29) suggested that warm water having large concentrations of dissolved solids from some wells probably represents deep, circulating water in the bedrock or along faults in the bedrock.

Summers (1976) described several geothermal areas in the upper Gila Basin and the San Francisco Basin in Catron County. The areas described in the upper Gila Basin are located in 11S.14W.30, 11S.14W.35, 12S.13W.7, 12S.13W.31, and 12S.13W.30. The areas described in the San Francisco Basin in Catron County are located in 5S.19W.35, 7S.21W.8, and 12S.20W.23.

The Meadows (Warm Spring) located in 11S.14W.30 is an area of about 150,000 square feet from which water discharges from seeps, springs, and a bog (Summers, 1976). The flow of water from this area on November 12, 1969, was about 69 gallons per minute and temperatures ranged from 14 to 32.5 °C (Summers, 1976). The field specific conductance ranged from 180 to 240 μS/cm.

Summers (1976) described several seeps and springs on the Middle Fork of the Gila River. A small seep on the south side of the Middle Fork at 11S.14W.35 discharges water from fractures in a rhyolite (Summers, 1976). According to Summers, the discharge temperature of the water on February 26, 1966, was about 27.2 °C. Several small seeps and springs located at 12S.13W.7 flowed at about 54 gallons per minute on February 26, 1966; discharge water temperature ranged from about 22 to 34.4 °C. Field specific conductance was about 200 μS/cm. A spring located at 12S.13W.31 flowed at about 47 gallons per minute on February 21, 1966; the maximum discharge temperature was about 65.3 °C. Field specific conductance was about 460 μS/cm.

Summers (1976) also described three areas in the San Francisco Basin. The upper Frisco Hot Springs at 5S.19W.35 had an estimated flow of 6.9 gallons per minute on February 18, 1966; the discharge temperature was about 36.7 °C. Field specific conductance was about 300 μS/cm. Freiborn Canyon Spring in 7S.21W.8 had an estimated flow of 9.4 gallons per minute on February 16, 1966; the discharge water temperature was about 33.4 °C. Field specific conductance was about 140 μS/cm. The lower Frisco Hot Springs at 12S. 20W.23 had a discharge of at least 50 gallons per minute on February 15, 1966; discharge water temperatures ranged from 36.6 to 49.4 °C. Field specific conductance ranged from 750 to 1,400 μS/cm.

Robertson and Garrett (1988) reported a fluoride concentration of 1 to 2 milligrams per liter near the Gila Cliff Dwellings National Monument in southern Catron County. They also found a fluoride concentration of 2 to 5 milligrams per liter in the northwest corner of T. 9 S. and R. 14 W. near O Bar O Canyon. Trauger (1960) indicated that ground water near the Gila Hot Springs in Grant County had a fluoride concentration of 1.5 milligrams per liter. Large fluoride concentrations (2 to 5 milligrams per liter) commonly are associated with rhyolitic and andesitic volcanic rocks, and the above-average fluoride concentrations (2 to 5 milligrams per liter) around the Gila Cliff Dwellings and O Bar O Canyon (Robertson and Garrett, 1988) probably are associated with Quaternary and Tertiary volcanic rocks. Upward circulation of geothermally heated water may help concentrate the fluoride.

Ratte and others (1979) and Witcher (1988) indicated a potential for low-temperature, steam-field, or nonelectric geothermal applications in geothermal areas in the county. Witcher (1988) indicated that a small generator was being used in the Gila Hot Springs area that was capable of producing 10 kilowatts electrical power.

WATER USE

The New Mexico State Engineer Office collects most water-use data in New Mexico. Water-use data by county and river basin are estimated at 5-year intervals. State Engineer Office data and terminology from Wilson (1992) are used in this section unless otherwise noted. Water use in Catron County is grouped into the following categories: irrigated agriculture, livestock, domestic, public water supply, commercial, industrial, and mining.

The total volume of water withdrawn in Catron County was about 21,000 acre-feet in 1990; total depletions were about 3,800 acre-feet (Wilson, 1992). A withdrawal is defined by Wilson as the total volume of water taken or diverted from a surface- or ground-water supply, and a depletion is the volume of water consumed by humans, incorporated into crops, or otherwise unavailable for reuse.

The primary depletion of ground and surface water in Catron County is for irrigated agriculture (fig. 24). In 1990, ground- and surface-water withdrawals for irrigated agriculture totaled 20,022 acre-feet or 95.5 percent of total withdrawals in the county (table 8). About 79.6 percent of ground and surface water depleted in 1990 was used for irrigated agriculture. The second largest category of water depletion is livestock.

The San Francisco, Gila, and Tularosa Rivers are the major source for almost all surface water diverted for irrigation, livestock watering, and commercial purposes (table 8). Surface water was the major resource used for irrigated agriculture in 1990, accounting for about 87 percent of total withdrawals and about 42 percent of total depletions.

Ground water is used for irrigated agriculture, mining, public water supply, domestic, livestock, commercial, and industrial purposes, accounting for about 12 percent of total withdrawals and about 50 percent of total depletions (table 8). All water withdrawn for public supply, domestic, industrial, and mining purposes was ground water. Public water supply and domestic (self-supplied) water systems use ground water exclusively and make up about 3 percent of total depletions.

The State Engineer Office has reported data on water use by county at 5-year intervals from 1975 to 1990. Total withdrawals and depletions in 1975, 1980, 1985, and 1990 are shown in figure 25A. From 1975 to 1990 total withdrawals generally increased and total depletions slightly decreased (fig. 25A). Withdrawal of surface water increased, whereas withdrawal of ground water decreased (fig. 25B). Surface-water depletions decreased (fig. 25C), possibly reflecting more efficient irrigation methods. Ground-water depletions remained constant from 1975 to 1985, then increased in 1990.

The water-use category of irrigated agriculture is water that is applied to farm crops. The irrigated lands are along the San Francisco River, near the town of Quemado, and in the Plains of San Agustin (fig. 26). Total irrigable acres in 1990 was 2,620 acres and the volume of surface and ground water withdrawn was 20,022 acre-feet (Wilson, 1992). Part of the withdrawn water is loss to conveyance systems. In 1990, flood and sprinkler irrigation systems were used to irrigate 1,541 acres; 1,079 irrigable acres in the county were idle, fallow, or planted but not irrigated (Wilson, 1992). Total depletions from irrigated agriculture were 3,033 acre-feet.

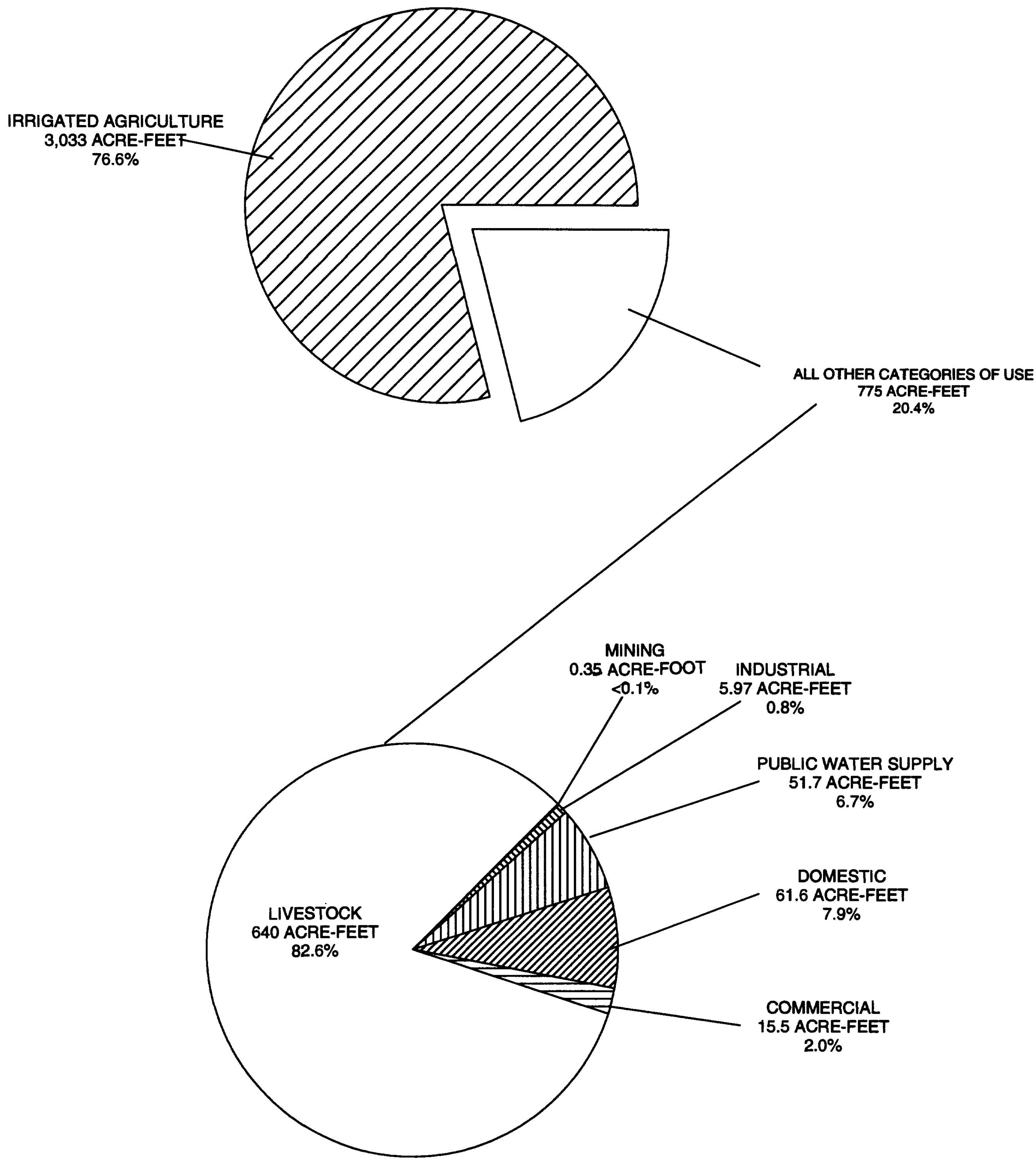


Figure 24.--Depletions of water by category of use, 1990, Catron County, New Mexico (data from Wilson, 1992).

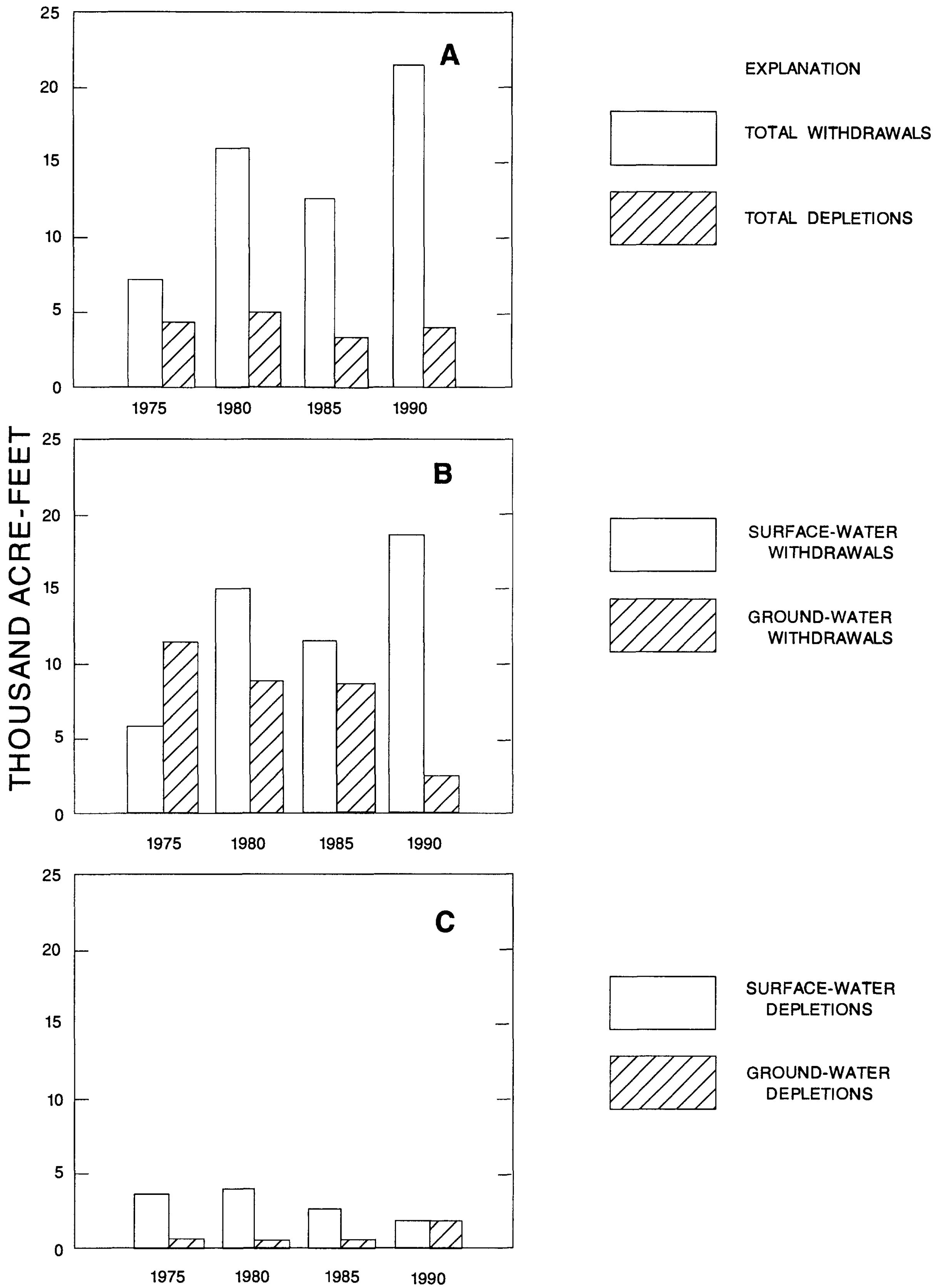


Figure 25.--Water use in Catron County in 1975, 1980, 1985, and 1990: (A) total withdrawals and depletions; (B) surface- and ground-water withdrawals; and (C) surface- and ground-water depletions (data from Sorensen, 1977; and Wilson, 1986, 1992).

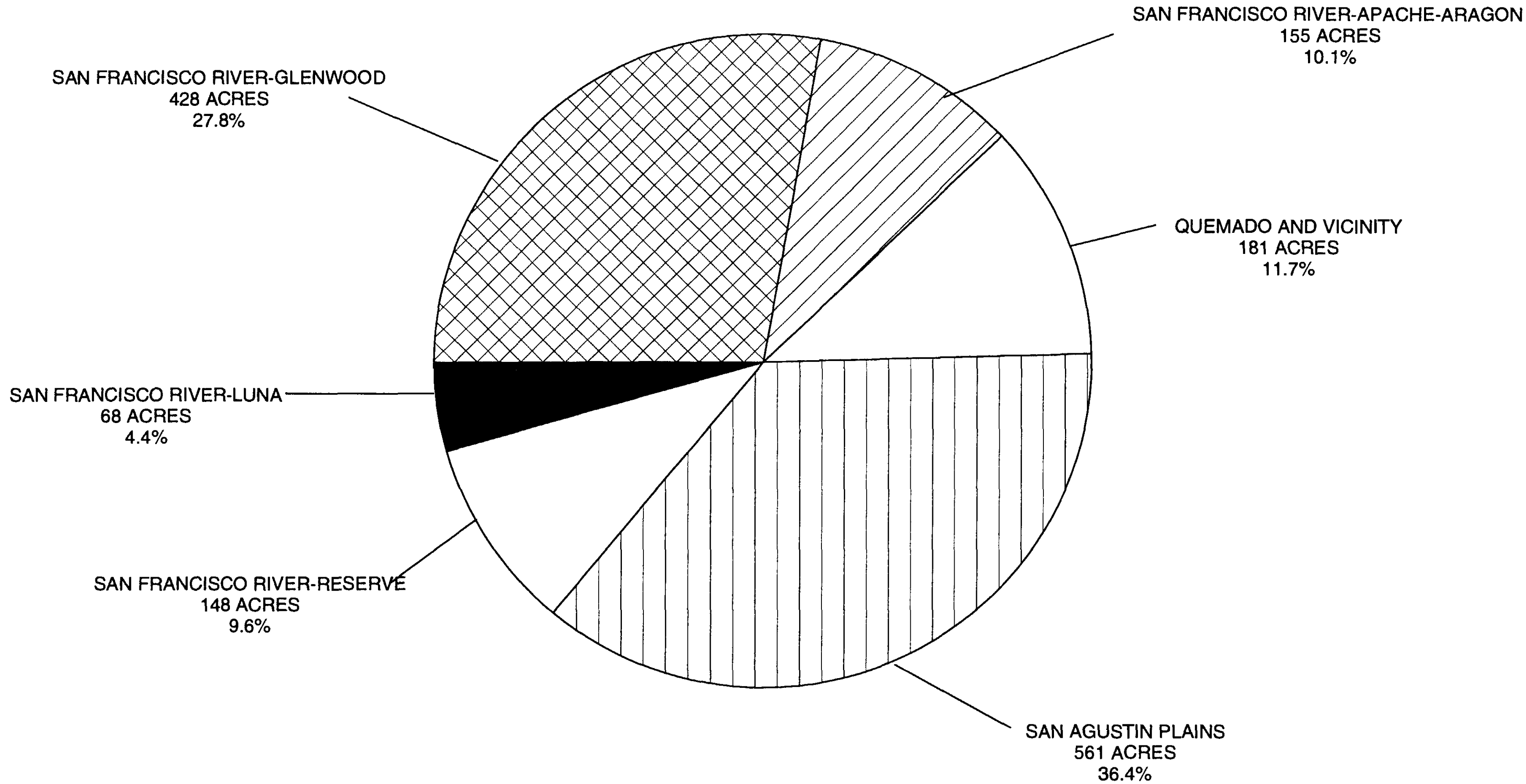


Figure 26.--Irrigated land by geographic area, 1990 (data from Wilson, 1992).

The livestock category refers to water that is self supplied and includes water used to raise livestock, maintain self-supplied livestock facilities, and provide for any on-farm processing of poultry and dairy products. Withdrawals of surface and ground water amounted to about 640 acre-feet or about 3 percent of total withdrawals (table 8). Depletions of surface and ground water amounted to about 640 acre-feet or about 17 percent of total depletions.

In 1990 self-supplied domestic water systems and public water supply used ground water exclusively (table 9). Domestic represents water that is self supplied for domestic use. Public water supply refers to water withdrawn by publicly or privately owned water suppliers. In 1990 ground-water withdrawals for water systems in Catron County were about 262 acre-feet and depletions were about 113 acre-feet (table 9).

In 1991, the New Mexico Environmental Improvement Division (now called the New Mexico Environment Department) collected data for five public community water systems in Catron County (Richard Asbury, New Mexico Environment Department, written commun., July 1991). The specific-conductance values for water from these systems are from the New Mexico Environmental Improvement Division (1980). The name of the water systems, population served, number of connections and meters, and specific conductance of the water were as follows:

Water system	Population	Number of connections	Number of meters	Specific conductance (μS/cm)
Aragon	45	12	1	454
Pie Town	60	30	30	491
Quemado Water Works	50	50	48	1,070
Rancho Grande Water Association, Inc.	150	50	Not known	Not known
Reserve Water Works	770	220	215	361

The remaining categories of water use in Catron County include commercial, industrial, and mining. Commercial water use is water used by self-supplied businesses and institutions involved in the trade of goods or provision of services (Wilson, 1992). Off-stream fish hatcheries engaged in the production of fish for release are included in this category. Less than 1 percent of surface and ground water depleted in 1990 was used for industrial and mining purposes (fig. 24). Industrial water use is water used for self-supplied enterprises engaged in the processing of raw materials or the manufacturing of durable or nondurable goods (Wilson, 1992). Water used for the construction of highways, subdivisions, and other construction projects is also included in the industrial category.

SUMMARY

Catron County is the largest county in New Mexico. The county is located in the Lower Colorado River Basin and the Rio Grande Basin; the Continental Divide is the boundary between the two river basins. Increases in water used for mining activities (coal, mineral, and geothermal), irrigated agriculture, reservoir construction, or domestic purposes could lower water levels and affect the quantity or quality of ground-water and surface-water resources in the county.

Parts of seven major drainage basins are located within the two regional river basins in the county--the Carrizo Wash, North Plains, Rio Salado, San Agustin, Alamosa Creek, Gila, and San Francisco Basins. Zuni Salt Lake and cinder cone lake contain saline water and are located in a maar area about 18 miles northwest of Quemado, New Mexico. Specific conductance of water in the brine seeps, springs, and lakes in the Zuni Salt Lake Maar ranges between 1,100 and 221,000 μS/cm.

The San Francisco, Gila, and Tularosa Rivers typically flow perennially. During periods of low flow, most streamflow is derived from baseflow. The stream channels of the Rio Salado and Carrizo Wash Basins commonly are perennial in their upper reaches and ephemeral in their lower reaches. Largo Creek in the Carrizo Wash Basin is perennial downstream from Quemado Lake and ephemeral in the lower reaches.

Aquifers described in this report are the Quaternary alluvium and bolson fill; Quaternary to Tertiary Gila Conglomerate; Tertiary Bearwallow Mountain Andesite, Datil Group, and Baca Formation; Cretaceous Mesaverde Group, Crevasse Canyon Formation, Gallup Sandstone, Mancos Shale, and Dakota Sandstone; Triassic Chinle Formation; and undifferentiated Permian units.

Water-level altitudes of water in most of the aquifers are controlled by major surface drainages and topography. Water in the aquifers in the county generally is unconfined; however, confined conditions may exist where the aquifers are overlain by other units of lower permeability.

Freshwater is found in aquifers in the sediments and rocks of the alluvium and bolson fill, Gila Conglomerate, Bearwallow Mountain Andesite, Datil Group, Baca Formation, Mesaverde Group, Crevasse Canyon Formation, Gallup Sandstone, Mancos Shale, and Dakota Sandstone. Ground water in Catron County becomes more brackish in some localities because of (1) mixing of ground water with other water having large dissolved-solids concentrations, (2) long residence time of the water in contact with soluble rocks or minerals, (3) mixing of ground water with geothermal water, and (4) evapotranspiration from shallow, unconfined aquifers.

Quaternary alluvial aquifers are found in most basins throughout Catron County but are typically located near surface drainages. Yields of ground water from alluvium in the Carrizo Wash Basin are as much as 250 gallons per minute for short time periods. Wells completed in the Quaternary alluvium north of the Plains of San Agustin typically produce from 1 to 10 gallons per minute. The major ions in ground water from the alluvium are sodium plus potassium, calcium, and bicarbonate.

Irrigation wells completed in the bolson-fill aquifer yield as much as 975 gallons per minute immediately east of the county. Specific conductance of ground water generally ranges from about 180 to 3,300 μS/cm. Dominant cations in water from this unit vary from calcium to sodium plus potassium. Dominant anions in water having a specific conductance less than 900 μS/cm generally are bicarbonate, and in water having a specific conductance greater than about 900 μS/cm generally are chloride or sulfate.

The Gila Conglomerate is found in the San Francisco and Gila Basins. Ground-water yields from the Gila Conglomerate typically are small, generally ranging from 2 to 5 gallons per minute. Specific-conductance values for water from two springs from this unit were 289 and 381 μS/cm. The Tertiary Datil Group is present in the Carrizo Wash, San Agustin, San Francisco, and Gila Basins. The Datil Group commonly is unconfined, but may be confined at depth. Water levels of wells completed in this unit range from 60 to 1,260 feet below land surface. Wells completed in the Datil Group typically yield 1 to 15 gallons per minute. Specific conductance of water from the Datil Group ranges from 210 to 820 μS/cm. The Datil Group typically yields water ranging from 2 to 10 gallons per minute in the Carrizo Wash Basin. A well produced 12 gallons per minute north of the Plains of San Agustin, and wells yield 1.5 to 15 gallons per minute south of the Plains of San Agustin. In 1965, 35 domestic wells were completed in the Datil Group near the town of Datil. Specific conductance of water from this unit typically ranges from 408 to 800 μS/cm in the Carrizo Wash Basin, from 210 to 750 μS/cm north of the Plains of San Agustin, and from 280 to 820 μS/cm south of the Plains of San Agustin. Dominant ions in water from this unit are sodium, calcium, and bicarbonate. Yields from stock wells in the Baca Formation range from 5 to 20 gallons per minute. Water from wells completed in the Baca Formation had specific conductances ranging from 312 to 752 μS/cm. Sodium and bicarbonate are the dominant ions in water from the only well completed in this unit for which a complete hydrochemical analysis was conducted.

Aquifers in Cretaceous rocks are present in the Carrizo Wash, North Plains, and Rio Salado Basins. Potential yields from wells completed in Cretaceous rocks range from 1 to 122 gallons per minute in northwestern Catron County.

Estimated ground-water yields from wells completed in the Mesaverde Group range from 1 to 100 gallons per minute in northwestern Catron County. Specific conductance of water from the Mesaverde Group ranges from 370 to 4,370 μS/cm. Calcium, sodium, and sulfate or bicarbonate are the dominant ions in water from the Mesaverde Group. In water having a specific conductance less than 1,000 μS/cm, bicarbonate usually is the dominant anion; in water having a specific conductance greater than 1,000 μS/cm, sulfate is the dominant anion.

The Cretaceous Crevasse Canyon Formation in the northeastern part of the county has yields ranging from 0.5 to 1.5 gallons per minute. Specific conductance of water in the Crevasse Canyon Formation ranges from 1,200 to 2,500 μS/cm. The dominant ion is sulfate.

The Cretaceous Mancos Shale generally is a confining unit in northwestern Catron County. Specific conductance of water in wells completed in this unit ranges from 980 to 4,490 μS/cm.

Few wells are completed in the Cretaceous Dakota Sandstone in Catron County. Artesian well 04N.17W.36.120, completed in the main body of the Dakota Sandstone, however, had a withdrawal rate of 122 gallons per minute. During an aquifer test, water from this well was withdrawn at a rate of 350 gallons per minute and the transmissivity was estimated to be 700 feet squared per day. In the Carrizo Wash Basin, specific conductance of water from wells completed in the Dakota Sandstone ranges from 500 to 980 μS/cm. Dominant ions in water from the main body of the Dakota Sandstone are sodium and bicarbonate.

The Triassic Chinle Formation commonly yields small quantities of water. The specific conductance of water from well 03N.21W.15.322, completed in the Chinle Formation, is 3,460 μS/cm. Dominant ions are calcium, sodium, and sulfate.

Permian rocks yield small quantities of fresh to slightly saline water to wells in the county. Yields of water from two wells completed in undifferentiated Permian rocks were 12 and 80 gallons per minute. Specific conductance of water from two wells completed in Permian rocks is 1,300 and 1,600 μS/cm. Dominant ions are calcium or sodium plus potassium and sulfate.

Geothermal areas are sparsely distributed throughout Catron County. They are located but not restricted to areas (1) along the San Francisco River in the southwest part of the county, (2) along the headwaters of the Gila River and in the forks of the upper reaches in the southeast part of the county, (3) around the Plains of San Agustin in the east-central part of the county, and (4) northwest of the community of Quemado in the northwest part of the county. In geothermal areas, elevated water temperatures probably are related to high heat flow from shallow magma bodies and ground-water circulation through highly fractured, faulted, and permeable rocks near the heat source.

The total ground and surface water withdrawn in Catron County was about 21,000 acre-feet in 1990. About 87 percent of the water used in the county in 1990 was surface water. Surface water in the county is used for irrigated agriculture, livestock, and commercial purposes. The San Francisco, Gila, and Tularosa Rivers are the major source of almost all surface water diverted for irrigation, livestock watering, and commercial purposes. Ground water in the county is used for irrigated agriculture, mining, public water supply, domestic, livestock, commercial, and industrial purposes. The primary use of ground and surface water in Catron County is for irrigated agriculture. In 1990, ground- and surface-water withdrawals for irrigated agriculture totaled 20,022 acre-feet or 95.5 percent of total withdrawals in the county.

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Table 1.--Minimum, maximum, and mean monthly discharges at streamflow-gaging stations in Catron County, New Mexico

[Modified from Waltemeyer, 1989; location of stations shown in figure 5]

Station name and number	Drainage area (square miles)	Period of record	Month	Minimum monthly discharge (cubic feet per second)	Maximum monthly discharge (cubic feet per second)	Mean monthly discharge (cubic feet per second)	Remarks
Tularosa River	94	1966-92	October	2.6	11	3.4	No diversion
above Aragon			November	2.6	3.9	3.0	upstream from station.
09442692			December	2.6	7.7	3.5	Maximum discharge
			January	2.3	3.6	3.0	of 660 cubic
			February	2.5	11	4.0	feet per second
			March	2.4	17	5.1	on 10/02/83.
			April	2.3	24	5.1	Mean annual discharge of
			May	2.7	3.6	3.0	3.5 cubic feet per second,
			June	2.4	3.2	2.9	water years 1966-92.
			July	2.5	5.1	3.0	
			August	2.5	3.4	3.0	
			September	2.5	3.7	3.0	
San Francisco River	350	1960-92	October	3.3	430	33	Diversions for
near Reserve			November	5.2	211	18	irrigation of
09442680			December	5.1	159	22	about 280 acres
			January	5.7	78	19	upstream from
			February	5.1	178	36	station.
			March	4.2	336	79	Maximum discharge
			April	3.4	398	59	of 9,830 cubic
			May	2.8	162	22	feet per second
			June	1.4	40	6.9	on 10/01/83.
			July	1.8	28	9.2	Mean annual discharge of
			August	4.6	79	17	28.3 cubic feet per second,
			September	4.9	172	20.4	water years 1960-92.

Table 1.--Minimum, maximum, and mean monthly discharges at streamflow-gaging stations in Catron County, New Mexico--Concluded

Station name and number	Drainage area (square miles)	Period of record	Month	Minimum monthly discharge (cubic feet per second)	Maximum monthly discharge (cubic feet per second)	Mean monthly discharge (cubic feet per second)	Remarks
San Francisco River	1,653	1928-92	October	9.8	2,026	89	Diversions for
near Glenwood			November	11	520	45	irrigation of
09444000			December	13	1,068	85	about 2,000
			January	14	509	78	acres upstream
			February	15	602	116	from station.
			March	11	1,036	194	Maximum discharge
			April	10	1,049	146	of 37,100 cubic
			May	8.7	593	78	feet per second
			June	5.7	146	29	on 10/02/82.
			July	13	108	38	Mean annual discharge of
			August	14	392	79	86.4 cubic feet per second,
			September	7.7	368	60	water years 1928-92.
							Mean annual discharge of
							110 cubic feet per second,
							water years 1960-92.
San Francisco River	1,546	1965-92	October	.1	1,792	155	Diversions for
near Alma			November	.2	502	42	irrigation of
09443000			December	6.3	1,009	141	about 1,600
(records 10/1/90-			January	6.9	420	71	acres upstream
09/30/91 not			February	2.5	586	130	from station.
summarized here)			March	0.0	870	225	Maximum discharge
			April	0.0	855	140	of 56,600 cubic
			May	0.0	427	47	feet per second
			June	0.0	42	6.2	on 10/02/83. No
			July	1.0	40	15	flow many days.
			August	4.1	251	48	
			September	.3	301	49	

Table 2.--Discharges at partial-record stations and miscellaneous sites in Catron County, New Mexico, 1990

[<, less than; modified from Borland and others, 1990; location of stations shown in figure 5. NA, not applicable]

Station name and number	Location	Drainage area (square miles)	Period of record	Gage height (feet)	1990 maximum discharge (cubic feet per second)	Date of 1990 maximum discharge
	CARRIZO WASH BASIN					
Largo Creek near Quemado 09386100	Lat 34°19'25", long 108°31'40", Catron County, hydrologic unit 15020003, on downstream side of bridge on ranch road, 2.5 miles southwest of Quemado.	151	1954-present	2.34	380	09-30-90
Carrizo Wash near Salt Lake 09386200	Lat 34°30'39", long 109°01'35", Catron County, hydrologic unit 15020003, on left downstream wingwall of bridge, 1.3 miles east of New Mexico-Arizona State line, and 15 miles west of Salt Lake.	[1]560	1957-present	0.54	230	05-03-90
	SAN FRANCISCO BASIN					
Mail Hollow near Luna 09442630	Lat 33°47'38", long 108°56'59", Catron County, hydrologic unit 15040004, 1,000 feet upstream from culvert on U.S. Highway 180, 2.3 miles south of Luna.	4.20	1970-present	2.78	5	08-14-90
Trout Creek at Luna 09442660	Lat 33°50'50", long 108°59'38", Catron County, hydrologic unit 15040004, 500 feet downstream from bridge on Luna-Red Hill Road, and 2.6 miles north of Luna.	31.9	1954-present	<1.06	<1.5	Not known
Negro Canyon at Aragon 09442695	Lat 33°52'47", long 108°33'08", Catron County, hydrologic unit 15040004, upstream from culvert on State Highway 12, at west edge of Aragon.	9.62	1958-	2.16	340	08-14-90
	SAN AGUSTIN BASIN					
Swingle Canyon near Datil 08500000	Lat 34°11'17", long 107°53'55", Catron County, hydrologic unit 13020208, 0.3 mile upstream from U.S. Highway 60, and 4.3 miles northwest of Datil.	6.35	1970-72 1976-	NA	([2])	NA

[1]Approximately.

[2]No evidence of any flow during water year.

Table 3.--Mean monthly diversion discharge by ditch systems in Catron County, New Mexico

Ditch name	Area	Statistical period of record	Month	Mean monthly diversion discharge (cubic feet per second)	Remarks
W.S. Laney	Luna	1989-92	April	1.21	Total period of record for diversion is from 1969 to 1992.
			May	1.07	
			June	.98	
			July	.97	
			August	1.19	
			September	1.37	
			October	1.94	
Cienega	Reserve	1989-92	April	.85	Total period of record for diversion is from 1969 to 1992.
			May	1.13	
			June	.69	
			July	.19	
			August	.20	
			September	.16	
			October	.77	
Fish Pond	Glenwood	1969-92	April	2.00	Total period of record for diversion is from 1969 to 1992.
			May	2.21	
			June	2.03	
			July	1.41	
			August	.66	
			September	1.63	
			October	1.33	
Kiehne	Reserve	1969-92	April	1.34	Total period of record for diversion is from 1969 to 1992.
			May	2.10	
			June	1.92	
			July	1.00	
			August	.40	
			September	.78	
			October	.48	
Holliman	Glenwood	1991-92	April	.02	Total period of record for diversion is from 1969 to 1992.
			May	.08	
			June	.00	
			July	.00	
			August	.03	
			September	.00	
			October	.21	
Parsons	Reserve	1969-92	April	.15	Total period of record for diversion is from 1969 to 1992.
			May	.44	
			June	.19	
			July	.16	
			August	.14	
			September	.15	
			October	.17	

Table 3.--Mean monthly diversion discharge by ditch systems in Catron County, New Mexico--Continued

Ditch name	Area	Statistical period of record	Month	Mean monthly diversion discharge (cubic feet per second)	Remarks
Thomason Flat	Glenwood	1969-92	April	1.46	Total period of record for diversion is from 1969 to 1992.
			May	2.34	
			June	1.96	
			July	2.16	
			August	1.48	
			September	1.64	
			October	.71	
Lower W.S.	Glenwood	1969-92	April	1.60	Total period of record for diversion is from 1969 to 1992.
			May	2.15	
			June	1.27	
			July	.66	
			August	1.14	
			September	.89	
			October	.65	
W.S.	Glenwood	1984-92	April	3.05	Total period of record for diversion is from 1969 to 1992.
			May	5.20	
			June	6.84	
			July	6.75	
			August	4.19	
			September	5.84	
			October	5.06	
Oaks No. 2	Glenwood	1989-92	April	.39	Total period of record for diversion is from 1969 to 1992.
			May	.83	
			June	.01	
			July	.01	
			August	.04	
			September	.00	
			October	.00	
East Pleasanton	Glenwood	1969-92	April	8.58	Total period of record for diversion is from 1969 to 1992. Diversion is through a pipe.
			May	8.92	
			June	10.57	
			July	9.53	
			August	7.56	
			September	9.08	
			October	7.54	
Spurgeon No. 2	Glenwood	1969-92	April	.83	Total period of record for diversion is from 1969 to 1992.
			May	2.51	
			June	2.35	
			July	1.97	
			August	1.63	
			September	2.29	
			October	.72	

Table 3.--Mean monthly diversion discharge by ditch systems in Catron County, New Mexico--Continued

Ditch name	Area	Statistical period of record	Month	Mean monthly diversion discharge (cubic feet per second)	Remarks
Deep Creek No. 1	Glenwood	1969-92	April	0.26	Total period of record for diversion is from 1969 to 1992.
			May	.38	
			June	.00	
			July	.01	
			August	.04	
			September	.07	
			October	.13	
Hightower	Reserve	1989-92	April	.00	Total period of record for diversion is from 1969 to 1992.
			May	1.30	
			June	1.58	
			July	1.93	
			August	.86	
			September	.29	
			October	.37	
Middle Frisco	Reserve	1969-92	April	.39	Total period of record for diversion is from 1969 to 1992.
			May	.71	
			June	1.04	
			July	.40	
			August	.10	
			September	.12	
			October	.23	
Northside Luna	Luna	1969-92	April	.41	Total period of record for diversion is from 1969 to 1992.
			May	1.19	
			June	1.29	
			July	1.44	
			August	1.08	
			September	.79	
			October	.57	
Lower Frisco	Reserve	1971-85	April	.04	Total period of record for diversion is from 1969 to 1992.
			May	.07	
			June	.05	
			July	.04	
			August	.00	
			September	.00	
			October	.00	
Oaks No. 1	Reserve	1989-92	April	.36	Total period of record for diversion is from 1969 to 1992.
			May	.20	
			June	.01	
			July	.03	
			August	.10	
			September	.05	
			October	.03	

Table 3.--Mean monthly diversion discharge by ditch systems in Catron County, New Mexico--Concluded

Ditch name	Area	Statistical period of record	Month	Mean monthly diversion discharge (cubic feet per second)	Remarks
Tularosa Cruzville	Aragon	1989-92	April	0.58	Total period of record for diversion is from 1969 to 1992.
			May	1.28	
			June	.49	
			July	.77	
			August	.68	
			September	.51	
			October	.44	
Jackson	Glenwood	1987-92	April	.51	Total period of record for diversion is from 1969 to 1992.
			May	.99	
			June	.45	
			July	.09	
			August	.13	
			September	.09	
			October	.01	
L. Laney	Luna	1990-92	April	1.48	Total period of record for diversion is from 1969 to 1992.
			May	1.10	
			June	.24	
			July	.05	
			August	.24	
			September	.04	
			October	.07	
A. Laney	Luna	1989-92	April	.74	Total period of record for diversion is from 1969 to 1992.
			May	.82	
			June	.82	
			July	.73	
			August	.21	
			September	.09	
			October	.00	
San Francisco	Reserve	1969-92	April	.94	Total period of record for diversion is from 1969 to 1992.
			May	1.70	
			June	1.40	
			July	1.05	
			August	.42	
			September	.16	
			October	.09	
Groves	Glenwood	1989-92	April	.64	Total period of record for diversion is from1969 to 1992.
			May	.35	
			June	.01	
			July	.01	
			August	.05	
			September	.05	
			October	.08	
Bill Lewis	Reserve	1990-92	April	2.48	Total period of record for diversion is from 1990 to 1992.
			May	3.10	
			June	3.31	
			July	5.03	
			August	5.51	
			September	5.96	
			October	7.1	

Table 4.--Records of wells and springs in Catron County, New Mexico

EXPLANATION

Location number: See system of numbering wells and springs in this report; * indicates spring.

Surface-water basin: ACB, Alamosa Creek Basin; CWB, Carrizo Wash Basin; GB, Gila Basin; NPB, North Plains Basin; RSB, Rio Salado Basin; SAB, San Agustin Basin; SFB, San Francisco Basin.

Owner: BLM, Bureau of Land Management; NMDGF, New Mexico Department of Game and Fish; NMSGC, New Mexico State Game Commission; USDA, United States Department of Agriculture.

Depth of well: Depths followed by R were reported; all others were measured.

Water level: Water levels followed by R were reported. Additional water-level data are available from the U.S. Geological Survey.

Date measured: Date of water-level measurement. If no water-level measurement, date of specific-conductance determination.

Use of water: C, commercial; H, domestic; I, irrigation; N, industrial; P, public supply; S, stock; U, unused; Z, other.

Geologic unit: Qal, Quaternary alluvium; Qab, Quaternary bolson fill; QTg, Quaternary to Tertiary Gila Conglomerate; Tbm, Tertiary Bearwallow Mountain Andesite; Td, Tertiary Datil Group; Tbc, Tertiary Baca Formation; Kcc, Cretaceous Crevasse Canyon Formation; Kmv, Cretaceous Mesaverde Group; Kd? Km?, undifferentiated Cretaceous Mancos Shale and tongues of the Dakota Sandstone; Kd, main body of the Cretaceous Dakota Sandstone; Trc, Triassic Chinle Formation; Pu, undifferentiated Permian units.

Altitude of land surface: Altitude of land surface at the well or spring, in feet above sea level, determined from U.S. Geological Survey topographic maps at scales 1:24,000 and 1:62,500. E, estimated.

Yield: Yields followed by E were estimated; R, reported; all others were measured. Values are in gallons per minute (gal/min).

Specific conductance: Values are in microsiemens per centimeter at 25 degrees Celsius (μS/cm).

-- indicates no data.

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
01N.09W.27.113	SAB	U.S. Forest Service	--	6	05-09-80	270.03	05-09-80	S	Td	8,295	1	210
01N.09W.30.341*	SAB	--	--	--	--	--	06-18-80	--	--	8,110	--	490
01N.09W.31.322	SAB	U.S. Forest Service	--	6.5	06-18-80	77.87	06-18-80	S	Td	7,961	--	400
01N.10W.21.431*	SAB	--	--	--	--	--	06-24-80	--	--	8,755	--	210
01N.10W.23.311*	SAB	--	--	--	--	--	06-24-80	--	--	8,420	--	560
01N.10W.26.442*	SAB	--	--	--	--	--	06-18-80	--	--	8,078	5 R	460
01N.10W.26.444	SAB	Chorte	--	6	06-18-80	12.19	06-18-80	S	Qal	8,036	--	470
01N.10W.30.411*	SAB	--	--	--	--	--	05-07-80	--	--	8,347	--	200
01N.10W.32.432	SAB	U.S. Forest Service	--	4	05- -80	35.20	05-07-80	S	--	8,300	--	--
01N.10W.34.322	SAB	N. Mex. State Highway	--	8	--	4.7	01-16-74	S	--	--	--	--
01N.10W.35.343	SAB	U.S. Forest Service	--	6	06-25-80	34.35	06-25-80	S	--	7,990	--	--
01N.11W.25.312	SAB	U.S. Forest Service	--	6	05-07-80	16.43	05-07-80	S	Qal	8,184	2	380
01N.11W.27.342	SAB	Malmstrom	--	--	--	41.38	06-25-80	S	--	8,015	--	--
01N.12W.13.131	SAB	U.S. Forest Service	--	6	06-26-80	116.73	06-26-80	P	--	8,173	--	400
01N.12W.19.	CWB	--	--	--	--	--	10-00-53	--	--	--	--	535
01N.12W.33.442	SAB	--	--	7	07- -79	182.53	07-05-79	--	Td	7,715	--	--
01N.14W.22.144	CWB	McKinley, B.	--	6	07-26-83	112.61	07-26-83	S	Td	7,187	--	--
01N.15W.11.	CWB	--	--	--	--	--	--	--	--	--	--	--
01N.15W.11.432	CWB	--	--	6	07-26-83	--	--	--	--	7,085	--	--
01N.15W.11.432	CWB	--	80	6	--	34.23	05-17-85	S	Qal	7,082	--	--
01N.15W.15.441*	CWB	--	--	--	--	--	07-11-80	--	Td	--	--	435
01N.15W.16.113	CWB	--	33	6	--	18.73	05-17-85	S	Qal	6,931	--	--
01N.15W.25.231	CWB	McKinley, B.	--	--	--	31.68	07-25-83	H	Qal	7,128	--	430
01N.15W.26.144*	CWB	--	--	--	--	--	07-11-80	--	Td	--	--	370
01N.15W.27.342	CWB	--	--	--	--	--	08-26-80	--	Qab	--	--	670

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
01N.16W.01.331	CWB	--	84	6	--	33.07	05-17-85	I	Qal	6,904	--	--
01N.16W.03.	CWB	--	--	--	--	--	--	--	--	--	--	--
01N.16W.03.214	CWB	--	--	--	--	--	06-27-79	--	--	--	--	1,020
01N.16W.03.214	CWB	--	--	--	--	--	06-27-79	--	--	--	--	1,040
01N.16W.03.220	CWB	--	200	--	--	--	05-06-65	--	Tbc	6,860	10	752
01N.16W.04.232	CWB	N. Mex.	--	6	07-19-83	23.69	07-19-83	H	Qal	6,877	--	670
01N.17W.08.120	CWB	--	--	--	05- -79	--	--	S	Td	7,525	2.5	--
01N.17W.08.332	CWB	Melton	540	--	--	480	01-09-74	S	--	--	--	--
01N.17W.12.333	CWB	--	--	--	--	--	07-26-83	--	--	7,410	--	820
01N.18W.16.332	CWB	--	211	2	--	178.85	05-16-85	S	Tbc	7,122	--	--
01N.18W.31.332	CWB	--	97.5	4	--	69.86	05-23-85	S	Qal	6,935	--	--
01N.18W.35.412	CWB	--	250	--	--	--	05-18-82	--	Td	7,205	5	500
01N.19W.13.443	CWB	--	--	6	--	50.27	05-22-85	S	Kmv	6,891	--	--
01N.19W.23.324	CWB	--	--	6	--	64.67	05-22-85	S	Kmv	6,868	--	--
01N.19W.27.413	CWB	--	--	--	--	158.96	05-22-85	S	--	7,130	--	--
01N.19W.27.420	CWB	--	--	--	--	--	07-13-83	--	--	7,080	--	453
01N.19W.32.111	CWB	--	91	--	--	--	--	S	--	7,251	--	--
01N.20W.09.440	CWB	Whitman, Heins	470	6	11- -60	--	--	S	--	6,835	5.5	--
01N.20W.13.412	CWB	Red Hill Store House Cafe	--	--	--	244.0	01-09-74	H	--	--	--	--
01N.20W.27.120	CWB	Crosby	200	4.5	- -61	3.70	04-15-61	S	Kmv	6,940	10	370
01N.20W.27.221	CWB	Stroud, B.	--	4	04-01-81	--	--	S	Kmv	6,978	10	--
01N.20W.35.344	CWB	--	79	4	--	45.72	05-23-85	S	--	7,111	--	--
01N.21W.16.000	CWB	--	--	--	--	--	--	--	Qal	--	--	--
01S.09W.06.223*	SAB		--	--	--	--	05-09-80	--	--	8,012	--	190
01S.09W.13.343	SAB	Barrett, Tom	--	7	12- -77	485.30	05-06-80	S	Qab	7,285	--	205

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (μS/cm)
01S.10W.03.434	SAB	U.S. Forest Service	--	6	06-25-80	64.67	06-25-80	S	--	7,880	--	500
01S.10W.06.412	SAB	U.S. Forest Service	--	6	05-07-80	48.96	05-07-80	S	--	8,121	--	250
01S.10W.14.213*	SAB	--	--	--	--	--	06-25-80	--	--	7,650	--	580
01S.10W.16.143	SAB	U.S. Forest Service	--	6	05-08-80	107.09	05-08-80	--	--	7,830	--	300
01S.10W.20.121*	SAB	--	--	--	--	--	11-18-80	--	Qab	--	--	515
01S.10W.20.142	SAB	Cleaveland	--	6	05-07-80	14.03	05-07-80	S	Td	7,690	--	320
01S.10W.20.213*	SAB	--	--	--	--	--	11-04-80	H	Td	--	--	350
01S.10W.20.331	SAB	Cleaveland	--	6	05-07-80	16.40	05-07-80	--	Qal	7,620	--	--
01S.10W.22.242	SAB	Choate	--	3.75	06-25-80	3.49	06-25-80	S	Qal	7,575	--	--
01S.10W.29.122	SAB	Cleaveland	--	6	05- -80	23.73	05-07-80	I	Qal	7,595	--	--
01S.10W.29.143	SAB	--	--	--	--	64.07	07-05-79	H	Td	7,640	--	--
01S.10W.29.241	SAB	Cleaveland	--	--	--	3.12	05-07-80	S	Qal	7,555	--	450
				--	--	--	07-05-79	--	--	--	--	610
01S.10W.29.314	SAB	--	--	6.75	07-05-79	100.65	07-05-79	S	Td	7,680	--	--
01S.10W.29.442	SAB	--	--	6	07-05-79	18.18	07-05-79	--	Qal	7,545	--	--
01S.10W.31.223	SAB	Gallaher, R.D.	--	6	12-05-79	12.40	12-05-79	H	--	7,715	--	--
01S.10W.31.224	SAB	Gallaher	--	4	12-05-79	15.35	12-05-79	S	--	7,700	--	--
01S.10W.33.2114	SAB	--	--	6.38	07-05-79	26.36	07-05-79	S	Qal	7,505	--	950
01S.10W.34.43323	SAB	--	--	6.75	07-05-79	2.98	05-08-80	S	Qab	7,425	1.75	680
				--	--		07-05-79		--		--	730
01S.11W.01.312	SAB	--	--	6.5	07-05-79	6.45	07-05-79	S	Qal	7,908	--	695
01S.11W.04.143	SAB	U.S. Forest Service	--	--	--	46.05	06-18-80	S	Qal	7,815	--	--
01S.11W.16.333	SAB	--	--	--	--	25.31	12-06-79	--	Qal	7,660	--	--
01S.11W.20.324	SAB	Gallaher	--	6	12-06-79	25.65	12-06-79	-	Qal	7,615	--	750
01S.11W.22.144	SAB	U.S. Forest Service	--	--	--	33.00	12-06-79	--	Qal	7,880	1	750

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
01S.11W.27.421*	SAB	--	--	--	--	--	12-05-79	--	--	7,895	--	490
01S.11W.29.113	SAB	U.S. Forest Service	--	--	--	28.18	12-06-79	S	Qal	7,590	--	--
01S.11W.33.231A	SAB	U.S. Forest Service	--	6	12-05-79	21.80	05-08-80	S	Qab	7,685	2.5	860
				--	--		12-05-79		--		--	875
01S.11W.33.231B	SAB	U.S. Forest Service	--	6	12-05-79	24.31	12-05-79	--	Qal	7,687	--	--
01S.12W.25.413	SAB	Nalda, L.	--	6	06-18-80	25.11	06-18-80	S	Qal	7,577	--	1,100
01S.13W.21.343	CWB	--	--	--	07-27-83	22.97	07-27-83	S	--	7,900	--	700
01S.14W.04.334	CWB	McKinley, Bobby	--	6	07-26-83	176.52	07-26-83	S	Td	7,275	--	--
01S.14W.06.112	CWB	McKinley, Bobby	--	4	07-25-83	41.68	07-25-83	S	--	7,167	--	--
01S.14W.17.332	CWB	McKinley, Bobby	--	12	07-25-83	16.38	07-25-83	I	--	7,240	--	--
01S.14W.18.132	CWB	--	--	7.03	07-06-79	70.64	07-06-79	S	--	7,250	--	--
01S.14W.23.233	CWB	McKinley, Bobby	--	6	07-26-83	195.30	07-26-83	U	Td	7,605	--	--
01S.14W.29.123	CWB	McKinley, Bobby	--	12	- -68	4.38	07-25-83	I	--	7,265	600	--
01S.14W.34.412	CWB	McKinley, Bobby	--	5	07-26-83	260.25	07-26-83	S	Td	7,600	--	--
01S.15W.02.433	CWB	McKinley, Bobby	--	8.5	07-25-83	113.66	07-25-83	U	Td	7,305	--	--
01S.17W.30.433	CWB	--	--	8.5	07-28-83	28.60	07-28-83	--	Qal	7,275	--	--
01S.18W.05.332	CWB	--	300	--	--	--	05-18-82	--	Td	6,997	--	408
01S.18W.09.142	CWB	--	150	--	--	--	05-18-82	--	Td	7,092	--	800
01S.19W.01.223	CWB	BLM	--	6	07-28-83	104.99	07-28-83	S	Tbc	6,960	--	721
01S.19W.09.123	CWB	--	--	--	--	259.3	01-09-74	S	Tbc	--	--	--
01S.19W.09.124	CWB	--	--	--	--	--	08-12-80	--	Qal	--	--	480
01S.20W.01.410	CWB	--	--	--	03- -81	--	--	S	Qal	7,170	10	--
01S.20W.08.443	CWB	--	310	6	--	271.2	05-14-85	S	Tbc	7,538	--	--
01S.20W.21.233	CWB	--	--	--	--	--	03-16-83	--	Qal	7,565	--	438
01S.20W.21.411	CWB	--	--	--	--	--	06-26-79	--	--	--	--	460

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (μS/cm)
01S.21W.25.244	CWB	BLM	360	6	07-28-83	304.31	06-26-79	S	Tbc	7,554	--	312
02N.10W.11.410	RSB	--	186	--	--	--	05-06-65	--	Td	7,400	--	750
02N.14W.16.321	CWB	--	106	6	--	98.47	05-15-85	U	Td	7,324	--	--
02N.14W.18.412	CWB	--	574	--	07-06-83	340	07-06-83	S	Td	7,550	10	--
02N.14W.19.322	CWB	--	223	7.5	--	115.4	05-15-85	H	Td	7,341	--	--
02N.14W.25.133	CWB	--	157	6	--	152.67	05-15-85	S	Td	7,260	--	790
02N.15W.05.000*	CWB	--	--	--	--	--	08-03-79	--	Tbc	7,193	--	478
02N.15W.23.132	CWB	--	--	--	--	--	05-15-85	S	--	7,328	--	430
02N.15W.27.142	CWB	--	--	6	--	--	--	S	Td	7,248	--	--
02N.15W.30.342	CWB	--	220	6	--	206.45	05-15-85	S	--	7,208	--	--
02N.16W.10.133	CWB	--	104	4	--	68.2	05-14-85	S	Tbc	6,925	--	--
02N.16W.12.110	CWB	--	--	--	08- -82	--	--	--	Tbc	7,145	5	--
02N.16W.19.342	CWB	--	51	6	--	27.02	05-14-85	U	Tbc	6,779	--	--
02N.16W.22.122	CWB	--	--	--	--	--	05-23-85	S	Tbc	6,967	--	520
02N.16W.27.134	CWB	--	223	5.5	--	111.7	05-23-85	S	Tbc	6,928	--	--
02N.16W.31.120	CWB	--	--	--	12- -79	--	--	S	Tbc	6,930	20	--
02N.16W.33.112	CWB	--	95	6	--	18.17	05-23-85	S	--	6,810	--	700
02N.17W.05.233	CWB	--	64	6	--	30.35	05-14-85	S	Kmv	6,555	--	--
02N.17W.11.333	CWB	--	87	6	--	71.66	05-23-85	S	Kmv	6,670	--	--
02N.17W.13.242*	CWB	--	--	--	--	--	03-12-81	--	Td	--	--	460
							04-21-81					528
02N.18W.03.233	CWB	--	115	6	--	86.39	05-16-85	S	Kmv	6,499	--	--
02N.18W.07.140	CWB	Layton	160	6	- -61	--	05-16-61	S	Kmv	6,545	25	870
02N.18W.07.141	CWB	--	--	5	--	192.72	05-16-85	S	Kmv	6,550	--	994
02N.18W.16.114	CWB	--	265	6	--	250.93	05-16-85	S	Kmv	6,650	--	--
02N.19W.03.221	CWB	--	--	--	--	182.3	05-16-85	S	--	6,505	--	--

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
02N.19W.03.343	CWB	--	--	--	--	--	--	U	--	6,562	--	--
02N.19W.14.430	CWB	Layton	200	5	- -61	--	--	S	--	6,540	6	--
02N.19W.14.441	CWB	--	--	6	--	15.08	05-16-85	S	Kmv	6,510	--	699
02N.19W.25.110	CWB	Layton	200	6	- -61	--	05-16-61	S	Kmv	6,525	20	650
02N.19W.29.430	CWB	Layton	200	6	- -61	--	--	S	Kmv	6,660	20	--
02N.20W.07.131	CWB	--	--	--	--	--	--	--	--	--	--	--
02N.20W.07.143	CWB	--	31	4	--	15.7	05-21-85	U	--	6,373	--	--
02N.20W.08.344	CWB	--	50	5	--	28.44	05-21-85	U	Trc	6,406	--	--
02N.20W.15.241	CWB	--	64	6	--	29.6	05-21-85	S	Kd? Km?	6,465	--	--
02N.20W.29.410*	CWB	--	--	--	--	--	08-05-79	--	Kmv	--	--	495
02N.20W.29.413*	CWB	--	--	--	--	--	08-08-80	--	Kmv	--	--	575
02N.21W.02.223	CWB	--	--	--	--	--	--	--	Trc	--	--	--
02N.21W.24.132	CWB	--	18	--	--	9.03	05-21-85	U	--	6,560	--	--
02N.21W.24.141	CWB	--	--	--	--	--	--	--	Qal	--	--	--
02N.21W.25.332	CWB	--	28	6	--	14.34	05-21-85	S	--	6,727	--	--
02N.21W.36.120	CWB	Neal, T.J.	24	9	- -61	15.70	05-16-61	S	--	6,680	1	400
02S.09W.01.323	SAB	Guin, A.	--	--	05-01-80	--	--	S	Qab	7,102	--	--
02S.09W.12.343	SAB	Guin, A.	--	--	05-01-80	--	--	S	Qab	7,108	--	--
02S.09W.13.444	SAB	Guin, A.	--	--	05-01-80	280.00	05-01-80	S	Qab	7,084	--	--
02S.09W.15.11111	SAB	Barnett, Tom	--	5	05-06-80	281.73	05-06-80	S	Qab	7,179	--	290
02S.09W.22.321	SAB	Barnett, Tom	--	--	--	--	--	S	Qab	7,166	--	300
02S.09W.22.443	SAB	Hand, John	--	6.63	05-08-79	340.05	07-10-79	S	--	7,130	--	320
02S.09W.24.224	SAB	--	--	5.5	05-01-80	279.05	05-11-80	S	Qab	7,078	--	240
02S.09W.31.124	SAB	Hand, John	--	6	05- -79	430.70	05-23-79	S	Qab	7,230	--	--
02S.09W.33.122	SAB	Hand, John	--	6	05- -79	339.40	05-23-79	S	Qab	7,135	0.75	340

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
02S.09W.35.444	SAB	Benton, John	--	--	--	254.35	07-04-80	U	Qab	7,056	--	--
02S.10W.03.221	SAB	--	--	8.88	07-05-79	7.14	07-05-79	S	Qal	7,433	--	--
02S.10W.08.311	SAB	U.S. Forest Service	--	--	--	63.92	06-26-80	--	Qal	7,710	--	540
02S.10W.08.413	SAB	U.S. Forest Service	--	--	--	34.19	06-26-80	--	Qal	7,660	--	--
02S.10W.09.333	SAB	Sweeten, Darwin	--	--	--	--	--	H	Qal	7,603	--	--
02S.10W.10.222	SAB	BLM	--	6	06- -80	81.98	06-26-80	H	Td	7,420	--	460
02S.10W.11.233	SAB	--	--	--	- -20	20	08-10-50	C	--	7,855	--	--
02S.10W.11.333	SAB	Johnson, A.J.	--	7	06- -80	30.88	06-27-80	--	Qal	7,418	--	--
02S.10W.11.410	SAB	Coker, Lee	186	8	- -80	60	06-01-65	H	Td	7,400	12 R	750
02S.10W.13.243	SAB	--	--	10	--	127.5	01-16-74	S	--	--	--	--
02S.10W.15.223	SAB	Johnson, A.J.	--	6	06- -80	28.03	06-27-80	S	Qal	7,442	--	--
02S.10W.15.224	SAB	Johnson, A.J.	--	5	06- -80	17.67	06-27-80	S	Qal	7,425	--	--
02S.10W.15.241	SAB	Johnson, A.J.	60	5	--	16.7	01-16-74	S	--	--	--	--
02S.10W.15.242	SAB	Johnson, A.J.	--	6	--	16.2	01-16-74	S	--	--	--	--
02S.10W.21.221	SAB	Benton, Bill	60	6	--	21.4	01-16-74	S	--	--	--	--
02S.10W.21.223	SAB	Wellborn Bros.	--	6	07- -80	13.18	07-01-80	S	Qal	7,483	--	--
02S.10W.21.241	SAB	Wellborn Bros.	--	--	--	--	--	S	--	7,480	--	--
02S.10W.22.114	SAB	Datil Cemetery	60	6.	--	33.2	01-16-74	Z	--	--	--	--
02S.10W.29.123	SAB	Wellborn Bros.	--	6	06-25-80	358.80	06-26-80	--	Td	7,559	--	330
02S.10W.29.212	SAB	Wellborn Bros.	--	7	06- -80	117.87	06-26-80	S	--	7,558	--	370
02S.10W.31.313	SAB	Wellborn Bros.	--	6	06- -80	357.60	06-26-80	S	Td	7,593	--	320
02S.10W.34.144	SAB	Wellborn Bros.	--	6	06- -80	120.84	06-26-80	S	--	7,266	--	420
02S.10W.35.242	SAB	Hand, John	--	--	--	346	06-26-80	--	Td	7,338	--	--
02S.11W.06.212	SAB	--	--	--	--	20.49	12-06-79	S	Qal	7,490	--	875
02S.11W.18.233	SAB	Lunger, P.	--	6	06-17-80	54.26	06-17-80	S	--	7,481	--	--

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
02S.11W.29.244	SAB	Lunger, P.	--	6	06-17-80	219.19	06-17-80	S	Td	7,606	--	290
02S.11W.34.222	SAB	Wellborn Bros.	--	--	--	348.40	06-26-80	S	Td	7,608	--	--
02S.12W.05.000	SAB	--	--	--	--	--	02-00-54	--	--	--	1.5 E	522
02S.12W.05.400	SAB	--	--	--	--	--	06-28-59	--	--	--	7	541
02S.12W.19.244	SAB	Rifenbark, B.A.	--	--	--	--	--	--	--	7,390	--	--
02S.12W.25.144	SAB	Lunger, Phillip B.	--	6.88	11-27-78	13.08	11-27-78	S	Qal	7,240	--	--
02S.12W.25.431	SAB	--	--	--	--	13.53	11-27-78	S	Qal	7,226	--	--
02S.12W.29.433	SAB	Sanchez, J.L.	--	--	--	42.08	06-16-80	S	Qal	7,242	--	510
02S.12W.31.323	SAB	Sanchez, J.L.	--	--	--	31.85	06-16-80	S	Qal	7,359	--	--
02S.12W.32.241	SAB	Sanchez, J.L.	--	12	06-16-80	26.29	06-16-80	--	Qal	7,210	--	--
02S.12W.32.243	SAB	McMasterd, Elliott	--	12	- -65	23.90	11-16-78	I	Qal	7,198	--	--
02S.12W.35.442	SAB	Lunger, Phillip B.	--	6.5	11-27-78	19.31	11-27-78	S	Qal	7,179	--	--
02S.13W.15.234*	SAB	--	--	--	--	--	--	S	--	--	--	--
02S.13W.22.113*	SAB	--	--	--	--	--	10-31-79	S	--	7,895	--	210
02S.13W.24.331	SAB	Sanchez, J.L.	--	6	10-31-79	85	10-31-79	S	Qal	7,585	2.5	380
02S.13W.25.242	SAB	Rifenbark, B.A.	--	5.5	09-13-79	27.58	09-13-79	S	Qal	7,453	2	600
02S.13W.25.311	SAB	Rifenbark, B.A.	--	5.5	09-13-79	67.99	09-13-79	H	--	7,620	--	540
02S.13W.27.213A	SAB	Sanchez, J.L.	--	6	10-04-79	67.33	10-04-79	S	--	7,698	1.25	500
02S.13W.27.213B	SAB	Sanchez, J.L.	--	--	--	69.15	10-04-79	U	--	7,700	--	--
02S.13W.28.122*	SAB	--	--	--	--	--	10-31-79	S	--	7,805	1.2	356
02S.13W.35.311	SAB	Sanchez, J.L.	--	6	10-04-79	21.97	10-04-79	S	Qal	7,805	--	450
02S.13W.35 433A	SAB	Sanchez, J.L.	--	--	--	41.04	10-04-79	U	--	7,454	--	--
02S.13W.35.433B	SAB	Sanchez, J.L.	--	--	--	--	--	H	--	7,456	--	--
02S.13W.35.433C	SAB	Sanchez, J.L.	--	6	10-04-79	82.41	10-04-79	S	--	7,460	--	--
02S.13W.36.142	SAB	Sanchez, J.L.	--	--	--	45.03	06-17-80	S	--	7,500	--	--

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
02S.14W.10.322	CWB	Genk	--	6	07-27-83	193.87	07-27-83	S	--	7,575	--	--
02S.15W.12.441	CWB	U.S. Forest Service	--	--	07-27-83	162.15	07-27-83	S	--	7,621	--	--
02S.17W.03.432	CWB	--	--	8	07-28-83	9.99	07-28-83	S	--	7,435	--	--
02S.18W.01.443	CWB	--	--	6	07-28-83	26.68	07-28-83	S	--	7,380	--	590
02S.18W.17.333	CWB	--	--	6	07-28-83	44.78	07-28-83	--	--	7,455	--	--
02S.19W.09.434	CWB	--	--	8	07-28-83	61.44	07-28-83	S	--	7,323	--	800
02S.19W.12.324	CWB	--	158	6	--	113.07	05-22-85	S	--	7,283	--	500
02S.19W.20.221	CWB	--	240	5	--	189.7	05-22-85	S	--	7,450	--	--
02S.19W.29.311	CWB	--	90	6	--	40.24	05-22-85	S	--	7,582	--	--
02S.20W.07.332	CWB	--	22	48	--	18.64	05-23-85	S	--	7,582	--	--
02S.20W.18.244	CWB	--	--	--	--	3.14	05-22-85	S	--	7,612	--	355
02S.21W.04.124	CWB	--	--	36	--	--	06-26-79	S	--	7,331	--	487
02S.21W.10.122	CWB	--	300	6	--	106.69	05-23-85	U	--	7,561	--	--
02S.21W.21.414	CWB	--	22	6	--	8.83	05-23-85	U	Qal	7,245	--	--
02S.21W.21.440	CWB	Lapp, Charles R.	30	6	--	17.5	05-16-56	S	--	--	--	--
02S.21W.22.423	CWB	--	44	6	--	23.88	05-23-85	U	--	7,358	--	--
02S.21W.28.230	CWB	Lapp, Charles R.	21	6	--	--	--	S	--	--	--	--
03N.11W.05.213	NPB	--	242	--	--	164.53	04-29-81	S	--	7,641	1.5	800
03N.12W.03.44	NPB	DIA Art Found.	415	6.62	08-26-79	148	08-26-79	H	--	7,278	--	--
03N.12W.04.11	NPB	DIA Art Found.	325	6.62	--	78	06-25-78	H	--	7,187	--	--
03N.13W.24.22	NPB	Phillips Uran.	180	7	04-12-80	80	04-12-80	H	--	7,240	--	--
03N.13W.25.24	NPB	Partners, Ms. Paul	307	6.62	--	165	10-07-79	H	--	7,320	--	--
03N.14W.24.311	CWB	--	268	5.5	--	227.84	05-15-85	S	Td	7,416	--	--
03N.15W.05.413	CWB	--	135	6	--	72.07	05-21-85	S	Kmv	6,935	--	--
03N.15W.18.000	CWB	--	--	--	--	135 E	--	--	Kmv	6,980E	--	--

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (μS/cm)
03N.15W.20.323	CWB	--	104	6	--	86.96	05-21-85	S	Tbc	7,111	--	--
03N.15W.22.111*	CWB	--	--	--	--	--	03-24-81	--	Td	--	--	525
03N.15W.31.424	CWB	--	180	5.5	--	142.97	05-14-85	S	Tbc	7,174	--	--
03N.16W.22.331	CWB	--	116	7	--	88.16	05-21-85	H	Kmv	6,990	--	--
03N.16W.24.142	CWB	--	111	6	--	89.73	05-21-85	S	Kmv	7,012	--	--
03N.17W.08.123	CWB	--	40	6	--	29.96	05-14-85	S	--	6,510	--	--
03N.17W.08.200*	CWB	--	--	--	--	--	07-19-79	--	--	6,540	--	1,192
03N.17W.10.223	CWB	--	--	--	--	--	07-25-83	--	--	6,640	--	710
03N.17W.12.314	CWB	--	138	6	--	52.84	05-21-85	S	Kmv	6,657	--	--
03N.17W.24.232	CWB	--	248	5.75	--	49.24	05-21-85	S	Kmv	6,755	--	--
03N.17W.29.111	CWB	--	63	4.5	--	36.28	05-23-85	S	Kmv	6,480	--	--
03N.18W.09.223	CWB	--	189	6	--	94.83	05-22-85	S	Kd? Km?	6,390	--	--
03N.18W.22.13	CWB	--	--	--	--	--	--	--	Kd? Km?	--	--	--
03N.18W.22.232	CWB	--	28	6	--	20.42	05-14-85	S	Kd	6,394	--	980
03N.18W.25.241	CWB	--	54	--	--	30.09	05-23-85	S	Kd? Km?	6,442	--	--
03N.18W.26.211	CWB	--	--	--	--	--	--	S	--	6,918	--	--
03N.18W.30.000*	CWB	--	--	--	--	--	12-22-83	--	--	--	3 R	--
03N.18W.30.433	CWB	--	3.36	--	--	7	05-14-85	U	Qal	6,235	--	1,960
03N.18W.31.113	CWB	Zuni Pueblo	--	--	--	3.98	02-21-85	U	Qal	6,230	--	--
03N.18W.31.312	CWB	--	47.65	--	--	8.34	05-14-85	U	Qal	6,248	--	2,330
03N.18W.31.314*	CWB	--	--	--	--	--	07-18-85	--	Qal	--		1,230
03N.18W.33.233	CWB	--	119	--	--	115.78	05-23-85	S	Kd? Km?	6,465	--	1,290
03N.19W.07.411	CWB	Mireles	--	--	--	81.46	05-21-85	S	Trc	6,254	--	--
03N.19W.12.411	CWB	--	112	--	--	17.2	05-22-85	S	Kd? Km?	6,299	--	--
03N.19W.22.310	CWB	--	--	--	07- -79	160.0R	05- -85	S	Kd? Km?	6,500E	10	--

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (μS/cm)
03N.19W.35.231	CWB	--	--	--	--	156.55	05-16-85	S	Kd? Km?	6,450	--	--
03N.20W.07.434	CWB	Allen	134	--	--	72.33	05-21-85	S	Trc	6,100	--	--
03N.21W.15.322	CWB	Chavez	30	--	--	8.39	05-21-85	S	Trc	6,085	--	3,460
03S.09W.01.212	SAB	Benton, John	--	--	--	236.61	07-04-80	S	Qab	7,035	--	260
03S.09W.03.221	SAB	Benton, John	--	6	07- -80	261.34	07-04-80	S	Qab	7,060	--	--
03S.09W.07.442	SAB	--	--	--	--	--	08-30-79	--	Qab	--	3	420
03S.09W.11.212	SAB	--	--	--	--	--	09-26-80	--	Qab	--	--	250
03S.09W.11.221	SAB	Benton, John	--	--	--	--	--	S	--	7,027	--	260
03S.09W.19.412	SAB	Hand, John	--	--	--	298.75	05-24-79	S	Qab	7,078	2.2	235
03S.09W.21.221	SAB	Anderson, I.H.	243	--	07- -34	226.57	08-10-50	S	Qab	7,029	--	310
03S.09W.28.240	SAB	BLM	255	6	08- -50	191.80	08-12-50	S	Qab	6,990	--	240
03S.09W.29.331	SAB	Sun Oil Co.	305	--	03-17-66	270	03-01-66	N	--	7,060	52	--
03S.10W.05.214	SAB	Wellborn Bros.	178	--	--	147.88	06-26-80	S	Qab	7,303	--	360
03S.10W.07.312	SAB	Gutierrez	--	--	--	146.10	06-30-80	--	Qab	7,160	--	390
03S.10W.11.314	SAB	Benton, John	--	7	- -61	284.20	07-04-80	S	Td	7,240	--	--
03S.10W.19.222	SAB	Sanchez, H.	--	5	12-04-79	284.60	12-04-79	S	Qab	7,050	--	230
03S.10W.22.444	SAB	Benton, John	--	--	--	285	07-04-80	S	Qab	7,024	--	220
03S.10W.28.224	SAB	Sanchez, H.	--	--	--	--	--	H	Qab	6,990	--	220
03S.10W.31.212	SAB	Sanchez, H.	--	4.5	- -34	172	08-01-79	U	Qab	6,938	--	--
03S.11W.08.33132	SAB	Lunger, P.	--	6	06-17-80	211.48	06-17-80	S	Qab	7,216	--	--
03S.11W.09.424	SAB	Wellborn Bros.	--	6	06-25-80	190.67	06-25-80	S	Qab	7,197	--	--
03S.11W.12.242	SAB	Wellborn Bros.	--	--	--	--	06-27-80	H	--	7,216	--	440
03S.11W.13.131	SAB	Wellborn Bros.	--	6	- -57	57	06-25-80	U	--	7,160	--	--
03S.11W.16.424	SAB	Wellborn Bros.	--	8	- -57	101.47	06-25-80	S	Qab	7,109	--	--
03S.11W.18.311	SAB	Wellborn Bros.	--	6	06-25-80	195.44	06-25-80	--	Qab	7,205	--	--

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
03S.11W.19.231	SAB	Wellborn Bros.	--	6	06-25-80	124.78	06-25-80	--	--	7,100	--	4,200
03S.11W.19.414	SAB	--	--	--	--	139.79	11-27-78	S	Qab	7,058	--	--
03S.11W.25.344	SAB	Wellborn Bros.	--	--	--	164.02	06-27-80	S	Qab	6,929	--	--
03S.11W.26.112	SAB	--	--	--	--	--	--	U	Qab	6,987	--	--
03S.11W.27.342	SAB	Wellborn Bros.	--	--	--	183.48	06-27-80	S	Qab	6,949	--	--
03S.11W.27.444	SAB	--	--	--	- -50	197.48	08-11-50	S	--	6,951	--	--
03S.11W.28.230	SAB	Powell, Ted	220	--	- -50	--	--	S	--	6,985	--	--
03S.11W.29.324	SAB	Wellborn Bros.	--	--	--	180.50	06-25-80	--	Qab	6,999	--	380
03S.11W.30.333	SAB	Wellborn Bros.	--	--	--	28.71	06-30-80	S	--	7,007	--	440
03S.11W.31.300	SAB	Powell, Ted	100	--	- -10	27.30	12-11-52	H	--	6,975	2	662
03S.11W.31.342	SAB	Emery	--	--	--	30.87	07-20-77	--	Qal	6,994	--	--
03S.11W.35.311	SAB	Powell, Ted	500	--	--	160.90	01-28-53	S	--	6,925	4.5	369
03S.12W.01.242	SAB	Wellborn Bros.	--	6	06-25-80	38	06-25-80	S	--	7,278	--	--
03S.12W.10.433A	SAB	Conner, P.H.	--	8.5	09-12-79	8.10	09-12-79	--	Qal	7,096	10	850
03S.12W.10.433B	SAB	Conner, P.H.	--	--	--	8.38	09-12-79	--	Qal	7,096	2.5	850
03S.12W.11.231	SAB	--	--	--	--	29.38	06-25-80	--	Qal	7,134	--	--
03S.12W.11.322	SAB	--	--	6	06-25-80	30.16	06-25-80	--	Qal	7,102	--	900
03S.12W.20.144	SAB	T.P. Ranch	--	5.5	11-28-79	43.17	11-28-79	U	Qal	7,390	--	--
03S.12W.23.121	SAB	McMasters, E.	--	6	06-15-80	49.90	06-15-80	--	Qal	7,070	--	600
03S.12W.23.222	SAB	McMasters, E.	--	6	06-15-80	50.08	06-15-80	--	Qal	7,078	--	--
03S.12W.23.224	SAB	--	--	6	11-27-78	19.41	11-27-78	S	--	7,033	--	--
03S.12W.23.424	SAB	--	--	6.63	11-24-78	14.80	11-27-78	S	Qal	7,045	--	--
03S.12W.24.312A	SAB	Conner, P.H.	--	5	09-12-79	19.87	09-12-80	--	Qal	7,036	--	--
03S.12W.24.312B	SAB	Conner, P.H.	--	9	09-12-79	--	--	U	Qal	7,036	--	--
03S.12W.24.431	SAB	Conner, P.H.	--	5	09-12-79	30.92	09-12-79	--	Qal	7,038	--	--

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (μS/cm)
03S.12W.25.211A	SAB	Conner, P.H.	--	5.5	09-12-79	19.48	09-12-79	I	Qal	7,029	1.5 R	975
03S.12W.25.213A	SAB	Conner, P.H.	--	7.25	09-12-79	21.15	09-12-79	--	Qal	7,025	--	--
03S.12W.25.213C	SAB	Conner, P.H.	--	--	--	--	--	H	Qal	7,038	--	--
03S.12W.28.111	SAB	T.P. Ranch	--	6	11-07-79	105.10	11-07-79	S	Td	7,570	--	--
03S.12W.29.141*	SAB	--	--	--	--	--	11-07-79	--	Td	--	1E	280
03S.12W.30.223*	SAB	--	--	--	--	--	05-01-80	S	Td	--	1.5 R	290
03S.12W.30.241*	SAB	--	--	--	--	--	11-28-79	S	Td	--	1	300
03S.12W.33.433	SAB	Conner, J.B.	42	--	--	--	--	H	--	7,800	--	--
03S.12W.33.434	SAB	Conner, J.B.	57	--	- -40	--	01-28-53	H	--	7,750	--	232
03S.13W.10.233	SAB	Hutcherson	--	6	10-03-79	42.04	10-03-79	--	Qal	7,450	--	580
03S.13W.11.333	SAB	Hutcherson	--	--	--	30.40	10-03-79	--	Qal	7,425	--	--
03S.13W.22.114	SAB	Hutcherson	--	5	10-02-79	52.04	10-02-79	S	Qal	7,612	--	--
03S.13W.22.412	SAB	Hutcherson	--	6.5	10-02-79	--	--	--	--	7,590	--	--
03S.13W.23.333	SAB	Hutcherson	--	4.5	09-26-79	33.10	09-26-79	U	Qal	7,554	--	--
03S.13W.26.111	SAB	Hutcherson	--	5	09-26-79	62.68	09-26-79	S	Qal	7,548	3	490
03S.13W.27.224	SAB	Hutcherson	--	5.5	09-26-79	40.70	09-26-79	--	Qal	7,590	--	--
03S.13W.27.434	SAB	Hutcherson	--	6	09-26-79	66.73	09-26-79	S	--	7,696	--	520
03S.14W.19.100*	SAB	--	--	--	--	--	10-07-52	--	--	--	--	185
03S.17W.31.100	SFB	N.H. Ranch Inc.	375	6	--	251	12-01-77	S	--	--	--	--
03S.20W.11.243	CWB	--	--	--	--	--	--	U	--	7,895	--	320
03S.20W.14.132	CWB	--	115	4	--	82.68	05-22-85	H	--	8,036	--	650
03S.20W.14.333	CWB	--	170	8	--	5.28	05-22-85	S	--	8,040	--	--
03S.20W.35.132*	CWB	--	--	--	--	--	05-21-58	--	Qal	--	--	315
03S.21W.12.422	CWB	--	270	6	--	215.9	05-22-85	S	--	8,123	--	--
04N.09W.19.434	RSB	King Bros.	67	6	--	23.81	04-29-81	U	--	7,218	--	--

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
04N.10W.14.232	NPB	King Bros.	40	9.2	--	9.80	04-29-81	S	--	7,728	--	--
04N.10W.17.313	NPB	King Bros.	--	--	--	55.98	04-29-81	S	--	7,520	1	1,800
04N.10W.18.333	NPB	King Bros.	93	10.9	--	43.70	04-29-81	S	--	7,440	--	--
04N.10W.22.412	NPB	King Bros.	72	5.3	--	64.03	04-30-81	S	Kcc	7,800	1	1,200
04N.10W.24.423	RSB	King Bros.	37	5.7	--	28.47	04-29-81	U	Qab	7,368	1	2,600
04N.10W.25.344	RSB	King Bros.	--	--	--	--	--	S	Qal	7,310	2	900
04N.10W.31.121	RSB	King Bros.	200	--	--	--	--	S	Kcc	7,588	1.5	2,500
04N.11W.18.444	NPB	King Bros.	151	9	--	123.07	04-28-81	S	Kcc	7,287	.5	1,240
04N.11W.19.114	NPB	King Bros.	152	4	--	97.19	04-28-81	S	--	7,285	1.3	625
04N.11W.20.443	NPB	King Bros.	145	5.4	--	71.50	04-28-81	S	--	7,353	3	1,350
04N.11W.21.343	NPB	King Bros.	35	--	--	22.19	04-29-81	U	--	7,306	--	--
04N.11W.26.144	NPB	King Bros.	63	12.9	--	57.05	04-29-81	S	Kcc	7,540	1	1,870
04N.11W.29.244A	NPB	King Bros.	320	5.7	--	96.93	04-29-81	S	--	7,370	2	--
04N.11W.29.244B	NPB	King Bros.	73	6.7	--	69.70	04-29-81	S	--	7,390	--	--
04N.11W.34.213A	NPB	King Bros.	160	--	--	69.62	04-29-81	S	--	7,440	--	1,500
04N.11W.34.213B	NPB	King Bros.	157	7.2	--	52.82	04-29-81	U	--	7,445	--	--
04N.12W.14.221	NPB	King Bros.	87	7	--	67.06	04-28-81	U	--	7,221	--	--
04N.12W.26.114	NPB	King Bros.	224	6.7	--	94.97	04-28-81	S	--	7,199	--	875
04N.14W.14.333	NPB	Fischer, Douglas	308	6.62	04-10-78	200	04-10-78	S	Kmv	7,398	--	--
04N.14W.19.211	NPB	--	--	--	05- -82	--	--	S	Td	7,580	10	--
04N.15W.31.213A	CWB	--	191	6	--	95.38	05-21-85	U	--	6,973	--	--
04N.15W.31.213B	CWB	--	142	--	--	125.45	05-14-85	U	--	6,973	--	--
04N.16W.26.141	CWB	--	130	5	--	108.71	05-14-85	U	Kmv	6,795	--	--
04N.16W.30.240	CWB		177	10	08-26-83	--	--	Z	Qal	6,665	250	--
04N.16W.30.421	CWB	--	180	10.75	08-26-83	46.0 E	09-07-83	H	Qal	6,745E	--	685

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
04N.16W.31.111	CWB	--	79	6	--	11	05-14-85	S	--	6,643	--	750
04N.17W.23.22	CWB	--	--	--	--	--	--	--	Kmv	6,745	--	1,480
04N.17W.36.120	CWB	--	1,040	8.62	08-30-83	--	08-30-83	--	Kd	6,582E	122	--
04N.18W.22.200	CWB	--	--	--	--	10.0 R	05- -85	--	Kd? Km?	6,394	--	--
04N.18W.28.122*	CWB	--	--	--	--	--	--	--	Kmv	--	--	--
04N.18W.28.211	CWB	--	--	--	--	--	10-30-80	U	Kmv	6,615	--	900
04N.18W.29.124	CWB	--	23	2.55	--	11.45	05-22-85	U	--	6,620	--	--
04N.18W.36.312	CWB	--	189	12	--	101.25	05-22-85	S	Kmv	6,566	--	600
04N.19W.14.314A	CWB	--	--	--	--	--	10-29-80	--	Kmv	--	--	4,370
04N.19W.15.422	CWB	--	--	--	--	--	10-29-80	--	Kd? Km?	--	--	4,490
04N.19W.25.414	CWB	--	1,050	4.5	--	--	10-30-80	S	Pu	6,475	12	1,600
04N.19W.25.424	CWB	--	--	--	--	--	--	--	Kmv	--	--	--
04N.19W.28.234	CWB	--	1,350	--	--	--	10-29-80	--	Pu	--	80	1,440
04S.09W.04.210	CWB	Marvin Ake	163 R	6.625	--	134 R	06-18-80	--	Qab	--	--	--
04S.09W.06.000	SAB	--	--	--	- -50	294.53	08-13-50	S	--	7,000	--	--
04S.09W.06.212	SAB	--	--	--	--	--	08-21-79	--	Qab	--	--	310
04S.09W.08.132	SAB	--	--	6	02-24-77	112.17	02-24-77	S	Qab	6,904	--	400
04S.09W.12.133	SAB	--	--	--	--	--	05-08-79	--	--	--	--	460
04S.09W.15.333	SAB	--	--	6.5	- -38	119.06	07-14-78	S	Qab	6,909	--	--
04S.09W.17.311	SAB	--	130	7	- -50	102.40	08-12-50	S	Qab	6,900	--	330
04S.09W.32.333	SAB	--	--	7	02-24-77	122.58	02-24-77	--	Qab	6,912	--	--
04S.10W.01.224	SAB	--	--	6.63	01-22-80	315.66	01-23-80	U	Qab	7,096	--	--
04S.10W.05.333A	SAB	--	--	--	- -50	144	08-13-50	S	--	6,825	3	--
04S.10W.05.333B	SAB	--	--	--	--	130.04	08-29-79	--	Qab	6,899	5	360
04S.10W.28.222	SAB	--	--	7	10-28-77	148.89	10-28-77	S	--	6,885	--	--

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (μS/cm)
04S.10W.28.224	SAB	Marvin Ake	--	7	--	148.64	10-28-77	S	Qab	6,930	--	--
04S.10W.32.333	SAB	Harriett, Michael	--	--	--	127.97	02-23-77	--	Qab	6,892	--	430
04S.11W.02.333	SAB	Coker	--	--	--	161.08	07-21-77	--	Qab	6,920	--	--
04S.11W.06.140	SAB	Powell, Ted	250	--	- -51	--	12-11-52	S	--	6,977	1	844
04S.11W.08.122	SAB	Emery, Odell	230	--	--	200	12-17-52	S	--	6,960	--	--
04S.11W.10.433	SAB	Coker, Lee	--	--	--	163.77	07-21-77	--	Qab	6,918	--	--
04S.11W.17.33333	SAB	Emery, Odell	--	6	- -50	168.20	12-17-52	S	Qab	6,932	1	292
04S.11W.21.122	SAB	Coker	--	--	- -50	153.19	08-13-50	S	--	6,850	--	--
04S.11W.23.121	SAB	Harriett, Michael	--	8	- -66	133.72	09-25-80	S	Qab	6,896	--	350
04S.12W.03.212	SAB	McMaster	--	6	06-15-80	114.78	06-15-80	S	--	7,485	--	300
04S.12W.03.220	SAB	McKinley, Ira	160	--	--	148.20	01-28-53	S	Qab	7,475	20	--
04S.12W.12.410	SAB	Sanchez, L.A.	240	7	- -50	200	01-01-50	S	--	6,957	3E	803
04S.12W.12.413	SAB	Sanchez, Felrica	--	--	--	92.80	07-20-77	--	Qab	6,957	--	--
04S.12W.12.414	SAB	Emery, Odell	--	--	--	97.84	07-20-77	--	Qab	6,953	--	--
04S.12W.12.420A	SAB	Emery, Odell	--	--	--	--	--	--	--	--	--	--
04S.12W.12.420B	SAB	Emery, Odell	214	--	- -10	195	12-17-52	H	--	6,935	1	941
04S.12W.15.42314	SAB	Sanchez, L.	206	--	- -48	155	12-17-52	S	--	6,925	1.5	778
04S.12W.22.31111	SAB	Gutierrez, D.	152	--	--	133.40	12-11-52	S	--	6,889	--	--
04S.12W.24.122	SAB	BLM	--	--	--	173	01-28-52	S	Qab	6,927	2	324
04S.12W.29.122	SAB	Farr Ranch	--	--	--	--	07-11-79	--	--	--	--	360
04S.12W.30.420	SAB	--	--	--	--	--	12-11-52	--	--	--	--	442
04S.12W.30.421	SAB	Carrlo, J.J.	--	--	--	78.62	12-11-52	I	Qab	6,839	3	450
04S.12W.31.310	SAB	--	--	--	--	--	12-11-52	--	--	--	--	488
04S.12W.31.31132	SAB	Apodoca, J.	160	--	- -52	70.20	12-11-52	S	--	6,828	4	--
04S.12W.31.421	SAB	Gutierrez, D.	160	--	--	73	12-11-52	S	--	6,828	--	--

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
04S.12W.35.111	SAB	Farr Ranch	--	--	--	127.73	09-29-77	S	Qab	6,884	--	--
04S.13W.06.124*	SAB		--	--	--	--	04-26-79	--	--	7,620	--	220
04S.13W.10.114*	SAB	Price, Hiram	--	--	--	--	12-18-52	S	--	7,290	2	279
04S.13W.12.123*	SAB	--	--	--	--	--	03-01-83	--	Td	7,000	--	215
04S.13W.17.430	SAB	Price, Hiram	139	--	--	115.60	12-12-52	U	--	7,240	--	--
04S.13W.19.420*	SAB	Price, Hiram	--	--	--	--	12-18-52	S	--	7,126	1.5 R	311
04S.13W.20.330	SAB	Price, Hiram	64	--	--	55.70	12-18-52	S	--	7,116	--	--
04S.13W.21.222A	SAB	Price, Hiram	60	--	- -52	34	12-12-52	S	--	7,062	1	502
04S.13W.21.222B	SAB	Price, Hiram	20	--	--	18.80	12-12-52	H	--	7,060	--	--
04S.13W.22.330	SAB	Price, Hiram	75	--	--	34.20	12-12-52	S	--	6,985	--	--
04S.13W.27.11222	SAB	Hutchenson	--	6	07-22-77	22.84	07-22-77	--	Qal	6,975	--	--
04S.13W.27.314	SAB	Armijo, A.N.	65	--	- -30	56.50	12-04-52	H	--	6,930	--	--
04S.13W.27.323	SAB	Armijo, A.N.	125	--	--	55.20	12-04-52	S	--	6,925	2	603
04S.13W.27.332	SAB	Armijo, A.N.	--	6	07-08-77	51.31	07-08-77	--	Qal	6,928	--	--
04S.13W.27.34122	SAB	Armijo	--	6	07-08-77	49.12	07-08-77	--	Qal	6,929	--	--
04S.13W.29.331A	SAB	Armijo, Pete	--	--	--	--	--	--	Qal	7,000	--	--
04S.13W.29.331B	SAB	Armijo, Pete	--	--	--	--	--	--	Qal	7,000	--	--
04S.13W.30.140A	SAB	Kline, E.	70	--	--	35.10	12-04-52	H	--	7,100	3	272
04S.13W.30.140B	SAB	Kline, E.	60	--	--	24.40	12-04-52	H	--	7,100	6	290
04S.13W.30.144	SAB	--	--	--	--	28.92	09-24-80	--	Qal	7,085	--	300
04S.13W.30.340*	SAB	Aragon, Frank	--	--	--	--	--	H	--	7,071	10 R	--
04S.13W.30.344	SAB	Lucero, Demetrio	--	--	--	--	--	H	--	7,100	--	--
04S.13W.30.423	SAB	Apodaca, Joe	98	--	- -47	35.20	12-05-52	H	--	7,025	6	365
04S.13W.30.424	SAB	--	--	--	--	--	11-20-52	--	--	--	3.5 E	397
04S.13W.30.442	SAB		130	--	- -36	24.80	11-20-52	H	--	7,000	--	--

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
04S.13W.30.444	SAB	--	--	--	--	--	12-05-52	--	--	--	--	638
04S.13W.30.444A	SAB	Sanchez, Abelicio A.	--	6	- -43	29	11-20-52	H	Qal	6,981	2.5	638
04S.13W.30.444B	SAB	Sanchez, Abelicio A.	--	8	- -43	21.25	09-24-80	H	--	6,993	--	530
04S.13W.33.242	SAB	Armijo, A.N.	--	--	--	87.90	12-04-52	S	Td	6,932	--	570
04S.13W.35.200A	SAB	Gutierrez, T.	--	--	--	--	--	--	--	--	--	--
04S.13W.35.200B	SAB	Gutierrez, T.	130	--	- -35	105	12-11-52	S	--	6,870	2	378
04S.14W.11.330	SAB	--	--	--	--	--	12-09-52	--	--	--	--	205
04S.14W.11.33331	SAB	Aragon, Manuel	70	--	- -36	34.90	12-09-52	S	--	7,250	4	--
04S.14W.11.340	SAB	--	--	--	--	--	12-09-52	--	--	--	--	198
04S.14W.11.34332	SAB	Baca, O.	120	--	- -47	42.40	12-09-52	S	--	7,267	6	--
04S.14W.14.300	SAB	Aragon, Manuel	100	--	- -20	32.50	11-19-52	U	--	7,200	--	--
04S.14W.23.230	SAB	--	--	--	--	--	12-09-52	--	--	--	--	186
04S.14W.23.23114	SAB	Baca, Henry	--	--	- -51	57.60	11-19-52	S	--	7,233	2	--
04S.14W.27.344	SAB	--	217	--	--	--	11-24-82	--	Qab	7,060	--	270
04S.15W.21.334	SAB	--	--	6.5	10-25-77	268.69	10-25-77	S	--	7,400	--	--
04S.15W.26.334	SAB	--	--	--	--	--	11-19-52	--	Td	--	--	304
04S.15W.32.12234	SFB	Aragon, Mel	355	--	- -49	--	03-19-53	S	--	7,125	--	299
04S.16W.08.112	SFB	Dalton, Jack	470	4.5	09-24-80	420	11-08-80	H	--	--	--	--
04S.16W.17.244	SFB	--	--	--	--	--	03-19-53	S	--	--	--	315
04S.16W.28.211	SFB	--	--	--	--	--	03-19-53	S	--	--	--	234
04S.16W.35.132	SFB	Dalton, Jack	--	6	--	128.33	03-08-79	S	--	--	--	--
04S.16W.35.230	SFB	--	194	--	10-02-90	120.0	10-02-90	H	Tbm	6,820	2.5	--
04S.17W.08.1222	SFB	Carrejo, Andy B.	153	--	--	--	- -	H	--	7,000	--	--
04S.17W.17.414	SFB	Resck, Denny	200	8	--	29	09-21-81	H	--	--	--	--
04S.17W.31.123	SFB	Baptist Church	57	6.63	--	24	06-10-81	H	--	--	--	--

Table 4.--Records of wells and springs in Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (μS/cm)
04S.20W.14.300	SFB	Tipton, Jesse	500	--	--	--	--	S	--	5,800	--	--
04S.20W.24.000	SFB	Tipton, Jesse	300	6.63	--	78	08-12-71	S	--	--	--	--
05S.09W.01.111	SAB	Ake, Marvin	--	--	--	152	10-28-77	S	--	6,950	--	--
05S.09W.01.112	SAB	Sathathite, R.	--	--	- -50	151.80	08-12-50	S	--	6,968	--	--
05S.09W.02.111	SAB	Sathathite, R.	135	6	- -50	133.65	08-12-50	S	--	6,885	--	--
05S.09W.03.221	SAB	Ake, Marvin	--	6	10-28-77	123.28	10-28-77	S	Qab	6,921	--	--
05S.09W.04.212	SAB	Ake, Marvin	--	6.75	05- -80	129.17	05-06-80	S	Qab	6,915	--	--
05S.09W.16.421	SAB	Luera Ranch	--	--	--	166.36	10-28-77	S	--	6,959	--	--
05S.09W.23.231	SAB	Ake, Marvin	--	--	--	199.42	10-28-77	I	Qab	7,015	--	--
05S.09W.23.233	SAB	Ake, Marvin	--	--	- -77	199.01	02-22-77	I	--	6,985	--	--
05S.09W.24.441	SAB	Morris, George L.	--	--	--	280.28	02-21-77	H	Td	7,075	--	310
05S.10W.09.200	SAB	--	--	--	--	--	09-00-58	--	Qab	--	--	538
05S.10W.09.232	SAB	--	--	--	--	--	08-29-79	--	--	--	--	660
05S.10W.27.223*	SAB	--	--	--	--	--	11-28-79	--	--	7,580	--	393
05S.11W.01.311	SAB	Harriett, Michael	--	--	--	103.26	02-23-77	--	Qab	6,863	2	700
05S.11W.19.111	SAB	Farr Cattle Co.	108	--	- -10	80	12-19-52	S	--	6,841	4	489
05S.11W.19.113	SAB	Farr Ranch	--	6	09-28-77	79.73	09-28-77	S	Qab	6,838	--	--
05S.11W.22.212	SAB	Harriett, Michael	--	--	--	94.60	02-23-77	--	Qab	6,853	--	860
05S.12W.01.434	SAB	Farr Cattle Co.	150	--	- -17	110	12-19-52	S	--	6,869	4.5	465
05S.12W.04.13423	SAB	Farr Ranch	--	6	09-29-77	84.82	09-29-77	S	Qab	6,842	--	330
05S.12W.04.310	SAB	Birmingham, Jr. H.B.	225	--	- -10	83.50	12-04-52	S	--	6,840	--	--
05S.12W.05.14224	SAB	Farr Ranch	100	6	- -10	--	--	S	Qab	6,837	--	--
05S.12W.05.440	SAB	Birmingham, Jr. H.B.	117	--	- -10	83.50	12-19-52	H	--	6,837	4	321
05S.12W.09.430	SAB	--	--	--	--	--	12-19-52	--	--	--	--	360
05S.12W.09.434	SAB	Farr Ranch	150	--	- -21	115	01-01-54	--	--	6,834	--	420

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin	Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
05S.12W.32.200 SAB	--	--	--	--	--	07-00-59	--	--	--	--	325
05S.12W.34.430 SAB	--	--	--	--	--	12-19-52	--	--	--	--	422
05S.12W.34.434A SAB	Farr Ranch and Cattle Co.	--	6	- -80	56.01	09-23-77	S	Qab	6,813	--	460
05S.12W.34.434B SAB	Farr Ranch	100	6	- -88	--	--	S	Qab	6,813	--	--
05S.13W.04.241 SAB	--	--	--	--	--	08-30-79	--	Td	--	--	480
05S.13W.05.130 SAB	McWhorter, R.	180	--	--	121.80	12-18-52	H	--	6,950	1	468
05S.13W.05.210 SAB	McWhorter, R.	155	--	--	56.70	12-18-52	I	--	6,885	--	--
05S.13W.05.212 SAB	Farr Cattle Co.	--	--	--	55.06	11-29-78	U	--	--	--	--
05S.13W.07.243* SAB	Farr Bros.	--	--	--	--	--	--	--	6,840	1	420
05S.13W.08.310* SAB	McWhorter, R.	--	--	--	--	10-31-52	S	--	6,793	2	364
05S.13W.09.24411 SAB	--	--	--	--	47.48	07-19-77	--	Qab	6,793	--	610
05S.13W.09.420 SAB	McWhorter, R.	--	--	--	38.30	10-30-52	S	--	6,795	2	610
05S.13W.14.122 SAB	Farr Cattle Co.	200	16	04- -52	50	04-01-52	I	Qab	6,815	6	--
05S.13W.14.32214 SAB	McWhorter, R.	--	--	--	50	08-19-52	S	Qab	6,803	--	--
05S.13W.20.12344 SAB	Farr Bros.	--	8	07-05-80	25.93	07-05-80	S	Qab	6,782	--	3,300
05S.13W.22.100 SAB	McWhorter, R.	75	--	--	44.20	10-30-52	U	--	6,795	--	--
05S.13W.22.11221 SAB	--	--	6	07-19-77	47.10	07-19-77	S	Qab	6,798	--	2,000
05S.13W.25.11111 SAB	Farr Cattle Co.	160	--	- -27	--	10-30-52	S	--	6,803	4	400
05S.13W.27.422 SAB	--	--	--	--	--	08-30-79	--	--	--	--	1,620
05S.13W.27.42222A SAB	Sanchez, A.	75	--	- -40	48.90	07-19-52	S	Qab	6,791	--	--
05S.13W.27.42222B SAB	Sanchez, A.	75	--	- -52	47.90	12-19-52	S	Qab	6,791	--	--
05S.13W.32.33143 SAB	Hubbell Co.	--	6	- -41	60.60	10-30-52	S	Qab	6,778	--	40,800
05S.14W.05.130 SAB	Jaramillo Bros.	80	--	- -22	49.60	12-12-52	H	--	6,920	1	406
05S.14W.05.133 SAB	Kelly Welford J.	--	--	--	52.10	07-22-77	--	Qab	6,914	--	470
05S.14W.05.210 SAB	Jaramillo, Frank	100	--	- -25	46.10	12-12-52	S	--	6,910	--	--

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin	Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
05S.14W.06.311 SAB	Lee, Soto	--	--	--	89.31	10-04-77	--	--	6,964	--	--
05S.14W.09.243B SAB	Hubbell Co Frant	11	--	--	5.70	11-08-52	H	--	6,866	10	281
05S.14W.09.412* SAB	--	--	--	--	--	08-23-79	--	--	--	--	250
05S.14W.09.41213*SAB	Hubbell Co Frank	--	--	--	--	11-08-52	I	--	6,885	212.5	233
05S.14W.13.100 SAB	Hubbell Co Frank	--	--	--	--	--	--	--	--	275	
		200	--	- -47	7.10	10-31-52	S	--	6,850	6	--
05S.14W.13.13443 SAB	Lee, Soto	--	8.5	09-24-48	5.95	10-03-77	S	Qal	6,804	--	--
05S.14W.18.000* SAB	Hubbell Co Frank	--	--	--	--	--	S	--	6,825	--	--
05S.14W.22.233 SAB	Lee Soto	--	--	--	21.22	10-21-77	U	--	6,794	--	--
05S.14W.28.31141 SAB	Aragon, David	344	6	03-31-52	150	12-09-52	S	Qab	6,851	3	1,520
05S.14W.32.43444 SAB	Rael, Anselmo T.	150	--	- -22	65.40	11-13-52	S	--	6,820	--	--
05S.14W.33.110A SAB	Rael, Martin	--	--	--	--	--	--	--	--	--	--
05S.14W.33.110B SAB	Rael, Martin	290	--	- -39	83.00	12-03-52	S	--	6,800	4	5,630
05S.14W.33.114 SAB	Aragon	--	--	--	84.56	10-21-77	S	Qab	6,810	--	--
05S.15W.06.420 SAB	Daughtery Inc. Wd	272	--	08-04-82	--	--	--	--	--	--	--
05S.15W.09.300 SAB	Hubbell Co Frank	425	--	- -47	--	12-09-52	S	--	7,400	--	442
05S.15W.16.131 SAB	Lee Ranch	--	--	--	327.03	10-04-77	--	Td	7,410	--	--
05S.15W.22.330 SAB	--	--	--	--	--	12-17-52	--	--	--	--	941
05S.15W.22.3323* SAB	Hubbell Co Frank	--	--	--	--	11-18-52	S	--	7,600	10 R	294
05S.15W.36.300* SAB	DC Rael Estate	--	--	--	--	11-18-52	S	--	7,375	--	301
05S.16W.03.1314* SFB	Aragon	--	--	--	--	01-27-53	I	--	6,810	1,500 R	236
05S.16W.07.030 SFB	--	130	6	--	60	04-18-78	H	--	--	--	--
05S.16W.08.340 SFB	N. Mex. Dept. of State Health	295	6.63	03-06-62	54	03-19-62	C	--	--	--	--
05S.16W.09.3411 SFB	Lumpkins, Steve	87	6	07-01-79	47	07-05-79	H	--	--	--	--
05S.16W.18.000 SFB	Baca, Herminio P.	90	6	07-27-80	26	07-21-80	H	--	--	--	--

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
05S.16W.18.120	SFB	Aragon, Sam	150	8.63	--	89	07-09-81	H	--	--	--	--
05S.16W.18.200	SFB	Najop, Patsy	80	6	08-04-80	32	08-04-80	H	--	--	--	--
05S.16W.18.210	SFB	Madrid, Courado	200	6.63	08-20-69	87	08-20-69	H	--	6,500	--	--
05S.16W.18.2112	SFB	Aragon, Ben F.	105	6.63	11-10-79	83	11-10-79	H	--	6,500	--	--
05S.16W.18.320	SFB	Fajardo, Alvaro J.	150	6.63	10-14-72	79	10-14-72	H	--	6,100	--	--
05S.17W.06.220	SFB	Milligan, Burnard E.	150	10.75	06-10-81	150	06-18-81	I	--	--	--	--
05S.17W.06.410	SFB	Hudson, Alex D.	3	--	--	--	06-05-73	H	--	--	--	--
05S.17W.08.433	SFB	Lowell, Linda D.	18	8	05-18-82	1.5	05-18-82	H	--	--	--	--
05S.17W.13.000	SFB	Trujillo, Teofilo	125	6.63	08-19-72	52	08-19-72	H	--	6,500	--	--
05S.17W.13.310	SFB	Kiehne, E.O.	100	6	06-13-67	19	06-13-67	H	--	6,000	--	--
05S.17W.13.320	SFB	Dyer, D.V.	100	10	--	10	12-21-61	U	--	--	--	--
05S.17W.13.410	SFB	Nayar, Albert R.	80	--	08-30-79	21	08-30-79	H	--	--	--	--
05S.17W.14.330	SFB	Kiehne, E.O.	50	12	05-03-69	6	05-17-69	I	--	--	--	--
05S.17W.17.414	SFB	Hill, Myles H.	65	6.63	07-24-68	15	08-03-68	H	--	--	--	--
05S.17W.17.434	SFB	Robinson, Allen	50	10	08-04-69	6	08-04-69	I	--	6,000	--	--
05S.17W.28.111B	SFB	--	--	--	09-02-82	19.83	09-02-82	U	--	--	--	--
05S.17W.31.310	SFB	Swallows, Don	280	8.63	10-21-82	94	11-04-82	H	--	--	--	--
05S.17W.32.320	SFB	Maine, Allen	225	8.63	08-09-82	64	09-09-82	H	--	--	--	--
05S.17W.32.330	SFB	Jones, Mt	134	6.63	06-25-81	51	06-29-81	H	--	6,000	--	--
05S.17W.32.414	SFB	Clappet, Edward	100	8	05-06-83	20	05-06-83	H	--	5,960	--	--
05S.17W.33.444	SFB	Sewell, Anna L.	100	7	07-19-62	14	07-19-62	H	--	7,060	--	--
05S.18W.34.330	SFB	Fitzsimmons, Kenneth B.	270	5	06-20-82	12	06-20-82	H	--	--	--	--
05S.19W.31.200	SFB	Laney, Alvin	100	8.63	09-05-80	29	09-05-80	H	--	--	--	--
05S.19W.35.132*	SFB	--	--	--	--	--	05-22-58	--	Qal	6,510	--	284
05S.20W.05.212	SFB	Reyholds, Leon	120	--	06-15-63	9	06-15-63	H	--	6,500	--	--

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
05S.20W.11.432*	SFB	--	--	--	--	--	05-22-58	S	Qal	7,075	--	412
05S.20W.12.230	SFB	Fuent, George	132	6.63	03-06-75	13	03-06-75	S	--	6,200	--	--
05S.20W.24.411	SFB	Jenks, Randolph	36	20	07-23-66	23	07-23-66	H	--	6,500	--	--
05S.20W.25.000	SFB	Strobar, Steve	300	8.63	09-04-80	73	09-04-80	H	--	--	---	--
05S.20W.31.000	SFB	Reay, Richard L.	125	6.63	10-16-82	19	10-16-82	H	--	--	--	--
05S.20W.31.400	SFB	Trotter, Carl	100	6.63	06-22-82	24	06-22-82	H	--	--	--	--
05S.20W.31.420	SAB	Carter, James	140	6.63	08-30-78	59	08-30-78	H	--	--	--	--
05S.20W.31.444	SAB	Wolfe, Charles A.	80	6.63	10-15-79	16	10-21-79	H	--	--	--	--
05S.20W.32.310	SAB	Stone, Benjamin	100	--	09-28-79	28	09-28-79	--	--	--	--	--
05S.20W.32.311	SAB	--	100	6.63	08-30-78	31	08-31-78	H	--	--	--	--
05S.20W.32.312A	SAB	Gibbins, George	125	8.63	--	19.6	06-08-78	S	--	--	--	--
05S.20W.32.312B	SAB	Gibbens, George	125	8.63	10-11-77	27	10-11-77	I	--	--	--	--
05S.20W.32.313	SAB	Adair, Tom Laney, Joe	--	--	--	--	--	H	--	--	--	--
05S.20W.32.330	SAB	--	100	8.63	09-28-79	28	09-28-79	H	--	--	--	--
05S.20W.32.331	SAB	Fortune, C.L.	100	8.63	12-18-73	13	12-18-73	H	--	--	--	--
05S.20W.32.333	SAB	Laney, Joe	100	6.63	10-18-77	34	10-18-77	H	--	--	--	--
05S.20W.32.334	SAB	McFate, Merld J.	157	6	03-31-74	18	03-31-74	H	--	--	--	--
05S.20W.32.343	SAB	Laney, Dale	104	8.63	09-24-76	20	09-24-76	H	--	--	--	--
05S.20W.33.333	SAB	--	20	--	--	12.09	04-01-64	H	--	--	--	--
05S.20W.33.341	SAB	Jenks, Randall	20	--	--	--	--	S	--	--	--	--
05S.20W.33.422	SAB	Jenks, Randall	400	7	07-29-72	29	07-29-72	H	--	--	--	--
05S.20W.33.433	SAB	--	130	8	12-20-69	17	12-20-69	H	--	6,000	--	--
05S.20W.34.311	SAB	Jenks, Randall	400	6.63	12-12-70	55	12-12-70	H	--	--	--	--
05S.20W.34.34	SAB	Baker, Clyde	100	6.63	10-16-79	16	10-21-79	H	--	--	--	--
05S.20W.34.443	SAB	Laney, Vernon	200	6.63	12-14-85	143	12-14-85	H	--	--	--	--

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin	Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
06S.09W.17.133 SAB	Leova Ranch	--	--	--	303.68	12-07-77	S	Td	7,515	--	--
06S.09W.25.44444 SAB	Welty	--	6	04-13-78	22.01	04-13-78	S	Qal	7,180	--	--
06S.09W.30.222 SAB	Luera Ranch	--	6	04-12-78	801.26	04-11-78	S	Td	7,482	--	--
06S.10W.31.131 SAB	Farr Ranch	--	7	- -49	842.00	09-22-77	S	Td	7,545	--	--
06S.11W.09.124 SAB	Farr, Ed	--	6	09-27-77	277.48	09-27-77	S	Td	7,077	--	--
06S.11W.20.221 SAB	Farr Ranch	--	--	- -59	1153.22	09-22-77	U	Td	7,960	--	--
06S.11W.27.114 SAB	Farr, Ed	--	7	09- -06	288.42	09-22-77	--	Td	7,340	--	280
06S.11W.30.322 SAB	Farr Ranch	--	6	09-27-77	337.25	09-27-77	--	Td	7,110	--	--
06S.11W.30.410 SAB	Farr Cattle Co.	480	--	- -22	--	--	S	--	7,150	10	--
06S.12W.09.114 SAB	Farr Ranch	--	3.5	09-28-77	73.12	09-28-77	S	Qab	6,826	--	470
06S.12W.09.130 SAB	Farr Cattle Co.	200	--	--	--	12-19-52	S	--	6,826	7	572
06S.12W.12.111 SAB	Farr Ranch	--	7	09-27-77	--	--	S	--	6,827	--	--
06S.12W.12.200 SAB	Farr Cattle Co.	150	--	- -12	--	--	S	--	6,837	--	--
06S.12W.19.33233 SAB	Farr Ranch	--	6	09-28-77	303.33	09-28-77	S	Td	7,063	--	--
06S.12W.28.242 SAB	Farr Cattle Co.	604	--	- -39	--	11-06-52	S	Td	7,075	4	233
06S.13W.11.243 SAB	Farr Ranch	--	6	09-28-77	51.94	09-28-77	S	Qab	6,803	--	800
06S.13W.11.244 SAB	Farr Ranch	--	6.5	09-28-77	51.44	09-28-77	--	Qab	6,802	--	550
06S.13W.11.400A SAB	Farr Cattle Co.	110	--	- -97	--	12-19-52	S	--	6,807	3	533
06S.13W.11.400B SAB	Farr Cattle Co.	100	--	--	--	--	S	--	6,807	--	--
06S.13W.20.122 A SAB	--	--	--	--	--	10-30-52	--	--	--	--	772
06S.13W.20.12223 SAB	Hubbell Co Frank	90	6	- -00	33.50	10-30-52	S	Qab	6,787	5	1,200
06S.13W.20.12223B SAB	Hubbell Co Frank	100	--	- -18	47	10-30-52	S	Qab	6,787	5	804
06S.14W.01.430 SAB	--	--	--	--	--	11-13-52	--	--	--	--	297
06S.14W.06.231 SAB	--	--	6.5	10-20-77	79.96	10-20-77	S	Qab	6,815	--	--
06S.14W.07.330 SAB	Birmingham, H.B.	125	--	- -22	85	10-31-52	H	Qab	6,850	35	314

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
06S.14W.07.334	SAB	York Ranch	120	6	10-05-77	84.83	10-05-77	H	Qab	6,820	--	330
06S.14W.08.333	SAB	Birmingham, H.B.	--	7	- -48	45.50	10-31-52	S	Qab	6,783	6	1,180
06S.14W.19.122	SAB	Hubbell Co Frank	100	--	- -30	67.20	11-17-52	S	--	6,815	3	352
06S.14W.19.211	SAB	Hubbell Co Frank	100	--	- -18	64	11-17-52	S	--	6,810	--	--
06S.14W.19.21344	SAB	Lee Ranch	--	6	10-04-77	67.02	10-04-77	S	Qab	6,801	--	--
06S.14W.21.433	SAB	Birmingham, H.B.	--	6	- -40	57	10-31-52	S	Qab	6,794	--	380
06S.14W.28.332A	SAB	Hubbell Co Frank	90	6	- -18	65.60	11-17-52	H	Qab	6,808	4	280
06S.14W.28.332B	SAB	Hubbell Co Frank	90	6	- -02	66	11-17-52	S	Qab	6,808	--	--
06S.14W.31.122	SAB	Hubbell Co Frank	--	--	- -00	63.50	01-27-53	S	Qab	6,800	2	288
06S.15W.01.431	SAB	DC Rael Estate	--	6	- -33	26.20	11-13-52	S	Qal	7,040	3	280
06S.15W.13.333	SAB	Lee York Ranch	--	--	--	170.93	10-20-77	S	--	6,910	--	--
06S.15W.17.400	SAB	--	--	--	--	--	11-14-52	--	--	--	--	185
06S.15W.17.430A	SAB	York Ranch	--	5	08- -74	68.16	10-04-77	S	--	7,250	--	--
06S.15W.17.434	SAB	U.S. Forest Service	80	48	- -90	46.10	11-14-52	S	--	7,275	2	--
06S.15W.20.21134	SAB	York Ranch	57	--	--	26.34	10-04-77	H	--	7,264	--	200
06S.15W.24.111	SAB	Birmingham, H.B.	191	6	- -46	170.93	10-20-77	S	Qab	6,915	4	667
06S.16W.16.400*	SFB	--	--	--	--	--	11-14-52	S	--	7,750	--	369
06S.16W.16.423*	SFB	U.S. Forest Service	--	--	--	--	--	S	--	7,801	0.1	--
06S.18W.01.120	SFB	Jenkins, Victor & Rebecca	225	6	11-20-83	50	11-20-83	H	--	--	1	--
06S.18W.01.220	SFB	Jenkins, Victor	175	6	10-16-82	51	10-16-82	H	--	6,000	--	--
06S.18W.01.333	SFB	Rowell, Troy	69	6	12-16-74	40	12-16-74	H	--	--	--	--
06S.18W.02.020	SFB	Jones, Ronald M.	--	--	--	--	--	H	--	--	--	--
06S.18W.02.211	SFB	Hampton, John	800	--	11-27-61	80	06-21-61	H	--	6,500	--	--
06S.18W.02.410	SFB	--	130	6	--	13.8	12-20-62	H	--	--	--	--
06S.18W.11.220	SFB	Trujillo, Ramon	100	12	06-21-70	14	06-21-70	I	Qal	6,000	--	--

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
06S.18W.31.424	SFB	McCarty, F.D.	100	8.63	06-25-81	29	06-26-81	H	--	--	--	--
06S.19W.01.312	SFB	Trujillo, Ramon	12	--	09-08-82	8	09-08-82	U	--	--	--	--
06S.19W.27.320	SFB	Hudson, Mabel	250	6.63	08-27-81	60	08-27-81	H	--	--	--	--
06S.20W.05.000	SFB	Jenks, Randolph	202	6.63	12-12-73	9	12-12-73	H	--	--	--	--
06S.20W.05.212	SFB	Laney, Russel	100	6	10-13-83	15	10-15-83	H	Qal	5,930	--	--
06S.20W.06.020	SFB	Swan, Randolf	200	6.63	08-20-81	19	08-20-81	H	--	--	--	--
06S.20W.06.100	SFB	Derrick, John R.	150	6	11-25-74	30	11-25-74	H	--	--	--	--
06S.20W.06.110	SFB	Romney, Marshall	100	6	10-12-83	8	10-12-83	H	--	5,930	--	--
06S.20W.06.311	SFB	Swapp, Lance	160	6.63	04-02-84	30	03-26-84	H	--	--	--	--
06S.20W.06.431	SFB	Arnold, Ruby	150	8.63	08-21-78	50	08-25-78	H	--	--	--	--
06S.20W.06.432	SFB	Damron, Bill	150	6.63	11-16-82	34	11-19-82	H	--	7,000	--	--
06S.21W.01.000	SFB	Fort, Clint	135	6.63	08-24-72	31	10-21-72	H	--	6,200	--	--
06S.21W.01.220	SFB	Bradford, Doyle	100	6.38	10-03-77	29	10-06-77	H	--	--	--	--
06S.21W.02.420	SFB	Stone, Larry	200	6.63	07-26-84	49	07-26-84	H	--	7,000	--	--
06S.21W.12.423	SFB	--	138	--	--	11	02-05-69	I	--	--	--	--
07N.19W.15.131	--	--	--	--	--	--	--	Pu	--	--	--	
07S.09W.08.44	SAB	Goodin, Charles O.	225	--	03-05-84	12	03-05-84	H	--	--	--	--
07S.09W.24.131	ACB	McCracken, C.W.	--	--	--	463.33	05-12-78	S	Td	7,050	1.5	--
07S.09W.25.144	ACB	--	--	--	--	--	08-24-79	--	--	--	--	310
07S.10W.33.343	GB	Adobe Ranch	--	--	--	980 R	10-27-77	--	QTg	7,660	--	--
07S.11W.23.334	GB	Adobe Ranch	--	--	--	814 R	10-27-77	--	QTg	7,510	--	--
07S.11W.26.323	GB	South West Bible Camp	130	7	11-12-78	55	11-12-78	H	--	--	--	--
07S.12W.03.424	SAB	Farr Ranch	--	7	09-28-77	613.62	09-28-77	--	Td	7,320	--	280
07S.14W.03.000	SAB	Hubbell Co Frank	200	--	- -08	--	--	S	--	6,855	--	--
07S.14W.03.14341	SAB	Lasater, Hubert	--	--	--	126.53	10-05-77	S	--	6,865	--	420

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
07S.14W.11.23112	SAB	Lasater, Hubert	--	--	--	215.41	10-05-77	S	--	6,955	--	360
07S.14W.14.34341	SAB	Lasater, Hubert	--	--	--	332.46	10-27-77	S	Td	7,069	--	820
07S.14W.16.133	SAB	--	--	--	--	--	08-22-79	--	Qab	--	--	180
07S.14W.17.000	SAB	Hubbell, Frank A.	360	6	- -14	90	07-08-52	S	--	6,925	20	--
07S.14W.17.244	SAB	Hubbell Co Frank	400	10.09˙	- -14	--	--	S	--	6,922	2.5	180
07S.14W.19.424	SAB	Lasater Ranch	--	7	10- -77	390.81	12-09-77	S	Td	7,120	--	--
07S.15W.34.213	SAB	--	--	--	--	--	08-22-79	--	--	--	--	220
07S.19W.01.340	SFB	Reserve N. Mex.	125	8	- -54	15	05-05-65	P	Qal	5,770	80	340
07S.19W.01.424	SFB	--	125	--	--	21.12	--	H	--	--	--	--
07S.19W.01.442	SFB	McCargish, Lloyd L.	200	7	08-08-68	46	08-24-68	H	--	--	--	--
07S.19W.08.000	SFB	--	160	6.63	04-08-80	20	04-08-80	H	--	--	--	--
07S.19W.08.030	SFB	--	200	6.63	03- -69	43	03- -69	U	--	6,000	--	--
07S.19W.08.44	SFB	Nelson, Adelbert	182	6.63	03-21-80	10	03-26-80	H	--	--	--	--
07S.19W.08.44	SFB	--	72	--	--	35.02	02-02-82	U	--	--	--	--
07S.19W.08..000	SFB	--	125	--	--	30.04	--	H	--	--	--	--
07S.19W.09.32	SFB	Grane, Robert	370	6.63	08-26-73	281	09-12-73	H	--	--	--	--
07S.19W.09.33	SFB	Kiehne, Emil	105	6	03-27-80	9	04-01-80	H	--	--	--	--
07S.19W.11.32	SFB	Brown, James	350	8.63	11-13-80	279	11-22-80	H	--	--	--	--
07S.19W.12	SFB	Shelton, Jim	240	6.63	08-14-67	131	08-19-67	H	--	--	--	--
07S.19W.12.23	SFB	Armijo, Martin	209	5	08-09-78	--	--	Z	--	--	--	--
07S.19W.12.3	SFB	Jiron, Dore	--	7	--	--	--	H	--	--	--	--
07S.19W.12.342	SFB	--	--	--	--	18.8	08-09-78	U	--	--	--	--
07S.19W.12.344	SFB	Romero, Pablo	--	12	--	10.01	08-09-78	U	--	--	--	--
07S.19W.12.4	SFB	Jaramillo, Pete	55	6	08-01-78	9	08-03-78	H	--	5,790	--	--
07S.19W.13.113	SFB	Spurgeon, Byron	225	7	09-16-63	85	09-27-63	H	--	6,000	--	--

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
07S.19W.13.122	SFB	Keihne, Max C.	34	5	--	14	05-16-56	I	--	--	--	--
07S.19W.14	SFB	Romero, Rorfirio	240	6.63	12-21-72	--	--	H	--	--	--	--
07S.19W.14.24	SFB	--	250	6.63	--	44	--	H	--	--	--	--
07S.19W.14.4	SFB	Baker, Earl D.	45	6.63	04-30-80	9	05-01-80	H	--	--	--	--
07S.19W.14.42	SFB	Narajo, Juan	220	7	02-10-64	28	02-19-64	H	Qal	5,720	--	--
07S.19W.14.422	SFB	Armijo, Rosalie	200	5.56	04-22-80	29	04-24-80	H	--	--	--	--
07S.19W.14.423	SFB	Peralta, Abel	200	6.63	04-03-70	45	04-07-70	H	--	6,000	--	--
07S.19W.14.424	SFB	--	--	--	--	--	--	H	--	6,000	--	--
07S.19W.14.431	SFB	Parson, Eddie	50	6	--	27	03- -70	H	--	6,000	--	--
07S.19W.14.44	SFB	Romero, Porfirio	255	7	08-09-73	27	08-09-73	H	--	6,000	--	--
07S.19W.17.132	SFB	Norime, Hollis	--	6	--	173.8	01-08-80	U	--	--	--	--
07S.19W.23.111	SFB	--	--	--	--	--	--	--	--	6,000	--	--
07S.19W.23.431	SFB	--	--	--	--	10.33	09-04-78	--	Qal	--	9.9	--
07S.19W.24	SFB	Mullins, E.H.	110	6.63	11-08-80	17	11-12-80	H	--	--	--	--
07S.19W.26..13	SFB	Martinez, Joaquin	85	6	04-21-67	14	05-09-67	S	--	5,400	--	--
07S.19W.26.11	SFB	Lerma, Manuel	66	--	08-21-83	22	08-28-83	H	--	6,100	--	--
07S.19W.26.2	SFB	Kiehne, Emil	95	6	06-05-67	27	06-08-67	H	--	5,900	--	--
07S.19W.26.33	SFB	Cordova, Selso	100	7	01-29-64	33	02-07-64	H	--	6,000	--	--
07S.19W.26.400	SFB	Bruce, Harry	35	5	--	1.36	04-18-62	S	--	--	--	--
07S.19W.27.2	SFB	--	--	--	--	--	--	--	--	--	--	--
07S.19W.27.241	SFB	Lerma, Anselmo	80	6.63	09-30-72	71	10-03-72	H	--	6,000	--	--
07S.19W.27.41	SFB	Radvillas, Marden S.	150	6.63	04-19-73	19	04-24-73	H	--	--	--	--
07S.19W.27.42	SFB	Martinez, Joaquin	102	6.63	03-04-72	32	04-22-72	H	--	6,000	--	--
07S.19W.27.422	SFB	Armijo, Tomas	35	12	07-18-65	7	07-18-65	I	--	5,800	--	--
07S.19W.27.424	SFB	Armijo, Porfirie	165	7	11-03-67	14	11-03-63	H	--	5,910	--	--

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin	Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
07S.19W.27.432 SFB	Jiron, Abe	105	6	06-06-67	32	06-06-67	H	--	5,900	--	--
07S.19W.27.433 SFB	Shelton, Charles	165	6.63	10-07-81	39	10-07-81	H	--	--	--	--
07S.19W.34 SFB	--	--	--	--	--	--	H	--	6,000	--	--
07S.19W.34.230 SFB	Jiron, Fred	100	6	--	15.93	09-24-57	I	--	--	--	--
07S.19W.34.3234 SFB	Fryar, Lem O.	335	6.63	09-15-81	209	09-15-81	H	--	--	--	--
07S.19W.34.33 SFB	Jiron, Carlotta	105	6	07-08-67	32	07-08-67	S	--	--	--	--
07S.19W.34.341 SFB	Southwest Forest Ind.	165	6.63	08-11-67	45	03-04-68	H	--	--	--	--
07S.19W.34.411 SFB	Heynekamp, Johannas J.	100	8	11-03-83	10	11-03-83	H	--	6,050	--	--
07S.19W.34.433 SFB	Frisco Lumber Whiting Brothers	35	8	--	6.91	12-19-62	--	--	--	--	--
07S.20W.12.421 SFB	Copper Council Boy Scouts of America	653	--	05-15-66	--	--	H	--	--	--	--
07S.20W.13.41 SFB	--	300	--	--	165	01-16-69	U	--	--	--	--
07S.20W.13.410 SFB	N. Mex. State Hwy. Dept.	--	--	--	153.02	02-02-82	--	QTg	--	--	--
08S.09W.04.342 ACB	Johnson, W.E.	--	6.63	05-04-78	405.95	05-04-78	S	Td	7,145	--	--
08S.09W.35.244 ACB	Johnson, W.E.	--	10	05-02-78	49.28	05-02-78	S	QTg	7,210	--	--
08S.11W.05.223 GB	Adobe Ranch	--	--	--	768 R	10-27-77	--	Td	7,455	--	--
08S.11W.18.321 GB	Adobe Ranch	--	--	--	655 R	--	--	Td	7,350	--	--
08S.11W.23.212 GB	Adobe Ranch	--	--	--	1,260 R	10-27-77	--	Td	7,685	--	--
08S.12W.02.213 GB	Adobe Ranch	1,340	--	--	1,141 R	--	--	Td	7,821	--	--
08S.12W.32.211 GB	Adobe Ranch	--	--	--	600 R	--	--	Td	7,170	--	--
08S.13W.16.122 GB	Boyd Ranch	1,350	--	--	983 R	--	--	Td	7,528	--	--
08S.13W.16.211 GB	Hubbell Co Frank	1385	6	- -38	--	--	S	--	7,525	--	--
08S.13W.16.211 GB	--	--	--	--	--	08-23-79	--	--	--	--	210
08S.13W.18.13133 GB	Boyd Ranch	--	5.19	09-02-43	1021.75	09-02-43	S	Tbm? Td?	7,610	--	510

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
08S.16W.01.313	SFB	--	--	--	--	--	07-31-59	--	Td?	--	--	227
08S.16W.01.330	SFB	U.S. Forest Service	600	--	- -41	--	--	H	--	7,480	--	--
08S.16W.02.441	SFB	U.S. Government	625	6	07- -59	605	07-31-59	S	Td	7,490	3	--
08S.16W.22.33314*	SFB	Hubbell Co Frank	--	--	--	--	12-03-52	S	--	8,060	0.1	173
08S.16W.27.122*	SFB	--	--	--	--	--	12-03-52	S	--	8,060	.3	173
08S.17W.13.14	SFB	Kichne, Max C.	100	6.63	03-17-70	20	03-23-70	H	--	6,500	--	--
08S.17W.18.44	SFB	De Dea, Gene	--	--	--	--	--	H	--	--	--	--
08S.19W.30.442	SFB	Giron, Thomas	155	7	06-21-67	32	07-14-67	H	--	5,200	--	--
08S.20W.15.2	SFB	Riddle, Bergen	150	6.63	11-14-83	95	11-16-83	H	--	--	--	--
08S.20W.15.234	SFB	Libby, Rodney G.	45	6.63	11-22-80	16	11-24-80	H	--	--	--	--
08S.20W.32.233	SFB	Bill Kelly Forest Service-USDA	100	8	03-15-62	49	03-25-62	H	--	6,000	--	--
08S.21W.24.323*	SFB	--	--	--	--	--	05-17-57	H	QTg	6,170	--	381
09S.09W.04.244	ACB	Johnson, W.E.	--	--	--	126.89	05-03-78	S	--	7,436	3	--
09S.09W.11.122	ACB	Johnson, W.E.	--	--	--	47.44	05-03-78	S	--	7,210	--	--
09S.09W.13.313	ACB	Greer, Raymond	--	6	05-10-78	7.14	05-10-78	S	Qal	6,905	0.75	320
09S.09W.34.343	ACB	Gilcrest	16.	--	- -69	9.22	01-20-56	H	--	--	--	4,200
09S.09W.35.211	ACB	Sage, Bruce	--	--	--	21.70	04-05-79	S	Qal	6,980	--	700
09S.10W.05.22	GB	Canning, R.A.	1000	6.63	09-10-81	800	10-09-81	S	--	--	--	--
09S.12W.31.232	GB	Orasman, Tom	--	--	--	146	01-01-77	--	QTg	6,980	--	--
09S.13W.01.441	GB	Slash Ranch	--	6	- -69	335.04	12-17-79	S	Td	7,001	--	--
09S.13W.01.442	GB	Cudahy, Edward	408	6.63	08-17-69	337	09-08-69	S	--	--	--	--
09S.13W.20.324	GB	Slash Ranch	--	--	--	620	01-01-79	--	Td	7,122	15	320
09S.13W.21.221	GB	Slash Ranch	475	6	- -41	425.80	12-17-79	--	Td	6,964	--	--
09S.13W.23.21222	GB	Slash Ranch	--	6	- -43	373.31	12-04-79	--	Td	6,915	--	--

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
09S.14W.09.124	GB	Blair, Judy	831	8.63	06-16-80	716	05-15-81	H	Td	--	--	--
09S.16W.10.323	GB	U.S. Government	--	--	- -58	--	--	--	--	8,125	--	--
09S.16W.18.223	GB	U.S. Government	106	--	- -55	--	--	--	--	7,880	--	--
09S.16W.19.212	SFB	U.S. Forest Service	950	6.63	10-24-77	--	--	H	--	--	--	--
09S.16W.34.134	SFB	Otondo, J.Y.	735	7	- -55	696.00	07-29-59	S	Td	7,910	--	--
09S.17W.24.334	SFB	Gilson, Earl	525	6	- -59	505	07-30-59	S	--	7,870	--	--
09S.17W.26.443	SFB	Otondo, J.Y.	727	6	- -55	635	01-01-55	S	--	8,030	3	--
09S.20W.22.211	SFB	Kelly, Willie	80	16	10-13-64	24	10-16-64	I	--	--	--	--
09S.21W.34.242	SFB	Spurgeon, Ephraim	440	10	- -36	275	07-01-59	S	--	5,630	2	--
10S.12W.07.333*	GB	Slash Ranch	--	--	--	--	--	H	--	6,800	224 R	--
10S.12W.11.2	GB	U.S. Government	385	6.63	08-10-81	340	09-05-81	S	--	--	--	--
10S.12W.18.114	GB	Slash Ranch	--	--	--	15.01	01-15-80	H	Qal	6,820	--	--
10S.12W.18.144	GB	Cudahu, Ed	102	6.63	09-11-69	21	09-29-69	H	--	--	--	--
10S.13W.04.221	GB	Slash Ranch	500 R	--	--	430 R	12-17-79	--	Td	7,441	--	--
10S.13W.10.244	GB	Slash Ranch	--	--	--	17.42	01-15-80	--	Qal	6,992	3	--
10S.14W.29.413	GB	Slash Ranch	650 R	--	--	590	12-12-79	S	Td	7,680	--	--
10S.16W.20.4	GB	--	--	--	--	--	--	H	--	--	--	--
10S.19W.07.344	SFB	Tackman, Arthur	100	6	11-21-80	9	11-24-80	H	--	5,400	--	--
10S.19W.08.314	SFB	Tackman, Laurence C.	100	6	11-25-80	9	11-30-80	H	--	--	--	--
10S.19W.30.231	SFB	Groves, Carter	35	6.5	10-11-67	17	10-12-67	H	--	5,300	--	--
10S.19W.30.323	SFB	Groves, Gerber	90	7	09-14-62	31	10-21-62	H	--	--	--	--
10S.19W.32.24	SFB	Fabres, Randy	10	--	--	--	- -	H	--	6,900	--	--
10S.19W.32.33	SFB	U.S. Forest Service	42	--	06-05-61	12	06-06-61	S	--	--	--	--
10S.19W.33	SFB	Challenge Venture Mining	--	7	--	--	--	H	--	6,400	--	--
10S.19W.33.2	SFB	Manning, R.C.	--	7	07-21-82	--	--	Z	--	--	--	--

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
10S.19W.33.24	SFB	Arlcter, J.F.	50	6	01-03-67	7	01-07-67	H	--	--	--	--
10S.19W.33.244	SFB	Yeats, V.L.	95	8	--	13	01-24-81	H	--	--	--	--
10S.19W.33.4	SFB	Jones, bob	851	--	11-01-81	--	--	H	--	--	--	--
10S.19W.34	SFB	Pena, Felix	185	7.75	07-18-82	92	07-18-82	H	--	--	--	--
10S.19W.34.111	SFB	Morgan, Daniel L.	80	6	09-11-78	25	09-12-78	H	--	--	--	--
10S.19W.34.13	SFB	--	100	6	09-13-78	20	09-13-78	U	--	--	--	--
10S.19W.34.133	SFB	Sage Associates, Inc.	1146	4	01-01-78	--	--	Z	--	6,680	--	--
10S.19W.34.434	SFB	Wray, James	65	7	10-01-81	--	--	--	--	--	--	--
10S.20W.08.34	SFB	Holimon, Vernon	200	6.63	12-22-82	84	01-07-83	H	--	--	--	--
10S.20W.08.4	SFB	Turner, John L.	280	7	12-03-80	211	12-12-80	H	--	--	--	--
10S.20W.08.421	SFB	Griffith, Clarence	135	6	--	46.96	02-23-61	U	--	--	--	--
10S.20W.08.43	SFB	Ellis, Marvin T.	280	7	12-14-80	211	12-19-80	Z	QTg	--	--	--
10S.20W.10.100	SFB	Clarance	75	8	--	18.55	02-23-62	U	--	--	--	--
10S.20W.13.324	SFB	Veeck, Mary F.	62.2	8	- -59	27.47	07-28-59	S	Qal	5,490	--	--
10S.20W.13.324	SFB	Veeck, Mary F.	38.6	48	- -59	30.51	07-28-59	S	Qal	5,493	--	--
10S.20W.13.341	SFB	Veeck, Mary F.	700	8	- -55	450	01-01-58	S	QTg	5,475	5	--
10S.20W.13.413	SFB	Veeck, Mary F.	90.8	6	- -59	58.67	07-28-59	U	--	5,520	--	--
10S.20W.15.100	SFB	--	525	--	--	35	02-23-62	U	--	--	--	--
10S.20W.17	SFB	Acosto, Dario	45	6	01-03-67	20	01-07-67	H	--	--	--	--
10S.20W.17.114	SFB	Barnes, Marshall	100	6	02-04-74	99	02-07-74	H	--	--	--	--
10S.20W.20.31	SFB	Beope, Peter	70	8	06-10-84	25	06-10-84	I	Qal	5,440	--	--
10S.20W.20.31	SFB	--	35	10	--	--	--	H	Qal	5,100	--	--
10S.20W.23.2	SFB	Fell, David	600	8.63	10-07-81	509	10-28-81	H	--	--	--	--
10S.20W.24	SFB	--	700	6	11-26-75	585	12-10-75	H	--	--	--	--
10S.20W.26.223	SFB	U.S. Forest Service	--	--	- -36	331	01-01-42	S	QTg	5,550	--	--

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
10S.20W.29.423	SFB	McKeen, Hugh, B.	225	7	01-16-67	206	01-29-67	H	QTg	4,900	--	--
10S.20W.33.32	SFB	McKeen, John A.	100	6.63	06-10-82	29	06-17-82	H	--	--	--	--
10S.20W.33.323	SFB	McKeen, John A.	--	--	09-05-61	--	--	I	--	--	--	--
10S.20W.33.323	SFB	McKeen, John A.	120	16	--	20.3	10-15-57	U	--	--	--	--
10S.20W.36.411	SFB	McKeen, Bronson	700	6	07-03-61	610	08-28-61	S	QTg	6,050	--	--
10S.21W.02.342	SFB	Spurgeon, Ephraim	515	--	- -56	--	--	S	--	5,370	--	--
10S.21W.12.334	SFB	Nordgren, M.L.	330	6	- -52	230	07-29-59	S	QTg	5,220	5	--
10S.21W.27.314	SFB	McKeen, John A.	60	16	03-06-76	6	03-12-76	I	--	--	--	--
10S.21W.27.331	SFB	McKeen, John A.	--	--	--	12	12-10-75	U	--	--	--	--
10S.21W.27.341	SFB	McKeen, John A.	31	36	--	29.65	12-10-75	U	--	--	--	--
10S.21W.36.1	SFB	McKeen, Bronson	--	7	--	26	09-11-61	S	--	--	--	--
10S.21W.36.1	SFB	McKeen, Bronson	265	6	06-20-61	91	07-02-61	S	--	--	--	--
11S.12.34.32	GB	Donaldson, John	60	6.63	11-08-67	12	11-10-67	S	--	--	--	--
11S.12W.31.420	GB	Donaldson, John	50	6.63	11-06-67	10	11-08-67	S	--	--	--	--
11S.19W.06.233	SFB	Walton, Newt	--	--	07- -55	35	07-01-55	H	Qal	5,680	35	--
11S.19W.07.241	SFB	Flaiz	--	--	- -55	33	07-01-55	H	Qal	6,080	15	--
11S.20W.01.2	SFB	Sylvester, Kenneth	490	8.63	04-02-82	359	04-21-82	H	--	--	--	--
11S.20W.01.211	SFB	Hollander, Tom	85	6	07-01-81	38	08-01-81	H	--	5,400	--	--
11S.20W.02	SFB	McKeen, John A.	109	6	04-18-83	12	04-21-83	H	--	--	--	--
11S.20W.02.133	SFB	McKeen, John A.	--	6	--	39.95	12-11-75	U	--	--	--	--
11S.20W.02.143	SFB	Faust, Joseph & Eva	255	6	02-12-74	90	02-25-74	S	--	--	--	--
11S.20W.02.223	SFB	Davis, Marvin	100	7	--	--	--	H	--	5,000	--	--
11S.20W.03	SFB	Telbert, Lyon J. Jr.	52	12	05-17-61	34	05-23-61	H	--	5,000	--	--
11S.20W.03.1	SFB	Holiman, Charice	--	6	--	13.34	09-15-69	U	--	--	--	--
11S.20W.03.1	SFB	Lyons, Jimmie	47.4	12	--	14.44	06-14-61	H	--	--	--	--

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
11S.20W.03.13	SFB	Toni, John A.	104	6.63	02-21-83	81	03-01-83	H	--	--	--	--
11S.20W.03.14	SFB	Kelly, Raymond	140	8	05-15-62	29	05-30-62	H	--	5,800	--	--
11S.20W.04	SFB	Clanton, G.W.	65	6.63	04-26-69	27	04-28-69	H	--	5,100	--	--
11S.20W.04.2	SFB	Brown, Richard W.	88	6.6	06-03-73	24	06-07-73	H	--	4,900	--	--
11S.20W.04.211	SFB	McKeen, John A.	93	6	--	37	11-28-69	H	--	5,000	--	--
11S.20W.04.211	SFB	McKeen, John A.	93	6	--	22.12	12-10-75	S	Qal	5,000	--	--
11S.20W.04.244	SFB	Faust, Jerry	85	12	--	14.60	08-15-61	I	--	--	--	--
11S.20W.04.4	SFB	Faust, Jerry	--	--	--	5	08-08-61	I	--	--	--	--
11S.20W.04.412	SFB	Faust, Jerry & Menges, Eva	80	--	--	41	08-10-61	I	--	6,000	--	--
11S.20W.05.222	SFB	Faust, Jerry	--	--	- -59	195	07-01-59	S	Tbm	5,025	--	--
11S.20W.05.311	SFB	Faust, Jerry	325	6	- -59	--	--	S	--	5,275	--	--
11S.20W.12	SFB	Hollimon, Vernon & Valera	500	6.63	12-20-83	199	02-08-84	H	--	--	--	--
11S.20W.23	SFB	Schoellhomer, F.E.	135	6	01-24-74	19	01-30-74	H	--	--	--	--
11S.20W.23	SFB	--	100	--	--	--	--	U	--	4,900	--	--
11S.20W.23.122	SFB	Tipton, Elanworth	90	6	10-05-75	18	10-05-75	H	--	--	--	--
11S.20W.23.34	SFB	Jackson, Lester	150	7	--	--	--	H	--	--	--	--
11S.20W.23.4	SFB	--	50	--	01-01-66	20	01-01-67	H	Qal	4,700	--	--
11S.20W.23.41	SFB	Gilfillan, Jim	100	6.63	10-20-67	47	11-03-67	H	--	5,200	--	--
11S.20W.23.431	SFB	Tiptom	50.	8	- -55	17.26	09-16-55	--	--	4,950	--	--
11S.20W.23.431	SFB	Burn, Charlie	100	7	03-11-65	66	03-23-65	H	--	4,980	--	--
11S.20W.23.432	SFB	--	100	6	03-10-65	29	03-12-65	H	--	4,950	--	--
11S.20W.23.434	SFB	Heinz, J.L.	100	--	- -26	18.54	09-16-55	H	--	4,725	--	--
11S.20W.23.442	SFB	McKnight, Daniel	65	--	--	--	--	H	--	--	--	--
11S.20W.23.444	SFB	Pangburn, Jim	100	--	07-05-64	35	07-16-64	H	--	5,100	--	--
11S.20W.24	SFB	Cook, Jim	43	6	07-09-76	25	07-17-76	H	--	--	--	--

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (μS/cm)
11S.20W.24.143	SFB	Chandler, Bill & Crum, Ray	260	6	03-29-76	160	04-10-76	H	--	--	--	--
11S.20W.24.213	SFB	Smith, H.A.	170	6	--	70	07-07-72	H	--	--	--	--
11S.20W.24.311	SFB	Trotter, Emma	100	6	11- -53	25.95	09-16-55	S	Qal	4,750	5	--
11S.20W.26	SFB	Chandler, William, & Joyce	--	8	09-10-61	--	--	H	--	4,850	--	--
11S.20W.26.1	SFB	Elias, Roy E.	100	6.63	03-01-68	30	03-09-68	H	Qal	5,000	--	--
11S.20W.26.113	SFB	Allued, G.V.	100	6	03-19-67	35	03-29-67	H	--	4,956	--	--
11S.20W.26.12	SFB	Edwards, Newton J.	130	7	05-16-67	32	06-17-67	H	--	--	--	--
11S.20W.26.121	SFB	George, Edgar	135	6.63	--	--	--	H	--	--	--	--
11S.20W.26.122A	SFB	NMDGF	23.	6	- -53	2.45	09-17-55	S	Qal	4,760	375	95
11S.20W.26.122B	SFB	NMDGF	18.	60	- -38	2.65	09-17-55	S	Qal	4,760	18	--
11S.20W.26.124	SFB	Edwards, N.J. Jr.	130	--	--	13	10-12-69	H	--	4,950	--	--
11S.20W.26.13	SFB	Shelton, Jim	200	6	01-14-67	111	01-22-67	H	QTg	4,750	--	--
11S.20W.26.132	SFB	--	35	--	04-30-70	11	04-30-70	U	--	4,950	--	--
11S.20W.26.133	SFB	NMSGC	78	--	--	--	--	Z	--	4,800	--	--
11S.20W.26.134A	SFB	--	--	--	--	45.07	01-23-61	U	--	--	--	--
11S.20W.26.211	SFB	Kelly, Pat M.	100	7	06-22-64	36	06-27-64	S	--	4,950	--	--
11S.20W.26.312	SFB	Kelly, Pat. M.	130	--	--	23	03-26-65	H	Qal	4,950	--	279
11S.20W.26.313A	SFB	Wygant, Nelson P.	--	8	--	47	08-11-61	U	--	--	--	--
11S.20W.26.313B	SFB	Scanland, E.M.	100	--	--	45	09-03-61	H	--	5,000	--	--
11S.20W.26.314	SFB	Felix	126	7	01-04-65	45	01-11-65	H	--	4,950	--	--
11S.20W.26.32	SFB	Roberts, Grant W.	130	7	02-14-66	45	02-18-66	H	--	--	--	--
11S.20W.26.33	SFB	Drixner, Bill	100	7	--	45	03-01-64	H	--	4,900	--	--
11S.20W.27.143	SFB	NMDGF	70	--	--	32.5	02-25-75	U	--	--	--	--
11S.20W.27.242	SFB	Alfred, W.C.	67	8	--	30.43	08-27-63	S	--	--	--	--
11S.20W.27.244	SFB	NMSGC	80	16	--	10.5	- -	--	--	4,800	--	--

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
11S.20W.27.424	SFB	Goets, Edward	145	6	02-02-76	130	02-19-76	H	--	--	--	--
11S.20W.27.43	SFB	Shelton, Jim	200	7	07-19-69	111	07-26-69	H	QTg	4,650	--	--
11S.20W.27.44	SFB	Shelton, Jim	200	--	08-11-69	131	08-18-69	H	--	4,950	--	--
11S.20W.27.48	SFB	U.S. Forest Service	200	6	07-12-63	157	08-08-63	H	--	5,100	--	--
11S.20W.34.43	SFB	USDA	6	--	04-15-63	3	04-16-63	S	--	4,700	--	--
11S.20W.34.433	SFB	Shrock, Norman B.	100	6	05-05-81	55	05-12-81	Z	--	4,700	--	--
11S.21W.22.334	SFB	U.S. Government	371	8	- -59	323.35	07-24-59	S	QTg	5,890	--	--
11S.21W.23.211	SFB	U.S. Government	229	8	- -59	--	--	--	--	5,875	--	--
11S.21W.29.442	SFB	--	618.5	--	--	511.7	07-24-59	H	Tbm	6,150	5	456
12S.12W.11.440	GB	Diamond Bar Ranch	300	8	10- -55	--	--	S	--	6,660	8	--
12S.12W.29.210	GB	Diamond Bar Ranch	300	8	10- -55	--	--	S	QTg	6,520	5	--
12S.12W.30.210	GB	Diamond Bar Ranch	220	8	10- -55	195	10-01-55	S	QTg	6,440	5	--
12S.12W.34.400	GB	Donaldson, John	475	8	09-09-65	100	09-09-65	S	--	--	--	--
12S.13W.00.000	GB	--	--	--	--	--	05-17-71	--	--	--	--	286
12S.13W.00.000A	GB	--	--	--	--	--	05-17-71	--	--	--	--	282
12S.13W.01.231	GB	Curtis, Sidney & Ruth	30	6.6	02-05-67	11	02-05-67	H	--	5,600	--	--
12S.13W.31.100*	GB	--	--	--	07-21-67	--	07-21-67	--	--	--	--	771
12S.14W.00.000	GB	--	--	--	--	--	05-17-71	--	--	--	--	196
12S.14W.24.411*	GB	--	--	--	07-24-62	--	07-24-62	--	--	5,700	5 R	767
12S.14W.25.124	GB	U.S. Park Service and U.S. Forest Service	40	6	08-05-64	9.69	08-05-64	H	Qal	--	--	304
12S.14W.25.231	GB	--	--	--	--	--	07-31-64	--	--	--	--	2,710
12S.14W.25.311	GB	U.S. Forest Service	50	10	12-31-83	12	12-31-83	H	--	--	--	--
12S.14W.25.311A	GB	U.S. Forest Service	60	10	01-10-84	11	01-10-84	U	--	--	--	--
12S.14W.25.341	GB	NMDGF	12	24	- -58	--	07-22-62	P	Qal	5,670	5	219
12S.14W.25.342	GB	--	35	--		--	07-22-62	--	Qal	--	--	219

Table 4.--Records of wells and springs, Catron County, New Mexico--Continued

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (μS/cm)
12S.14W.26.244	GB	U.S. Forest Service	52	10	11-29-83	12	11-29-83	U	--	--	3	--
12S.14W.26.422	GB	U.S. Forest Service	115	10	11-07-83	12	11-07-83	U	--	--	--	--
12S.14W.27.224*	GB	--	--	--	--	--	07-17-62	--	QTg	--	2	289
12S.19W.31.344	SFB	Henry, Jim	228	6	- -50	122.57	10-27-55	S	QTg	5,820	--	--
12S.20W.02.223	SFB	Williams, S. & Ruby Luera	60	6	--	--	--	H	--	4,700	--	--
12S.20W.11	SFB	Seals, Tom	70	6	--	29	12-03-77	I	--	4,950	--	--
12S.20W.11.2	SFB	Bowlden, Fred	102	6.63	07-07-81	54	07-15-81	H	--	--	--	--
12S.20W.11.21	SFB	Shelton, Charles K.	100	7	--	34	12-22-79	H	--	4,850	--	--
12S.20W.11.222	SFB	Shelton, Jim & Thomas L.	205	7	06-12-69	112	06-17-69	H	QTg	4,950	--	--
12S.20W.11.223	SFB	Williams, Bill	100	6.63	12-03-73	40	12-19-73	H	--	4,900	--	--
12S.20W.11.23	SFB	Saunders, Joe A.	135	6	04-02-69	63	04-17-69	H	--	4,850	--	--
12S.20W.11.233	SFB	Saunders, Joe A.	89	6.63	12-01-67	48	12-13-67	H	--	4,900	--	--
12S.20W.11.234	SFB	Slut, Charlie	51	8	05-11-61	36	05-13-61	H	--	4,700	--	--
12S.20W.11.24	SFB	Bezzetta, Russel & Joya	60	6.63	10-12-77	26	10-12-77	H	--	4,850	--	--
12S.20W.11.242	SFB	Hutchinson, Howard & Susan	80	6.63	10-12-77	31	10-12-77	H	--	4,800	--	--
12S.20W.11.244	SFB	Shelton, Louise L.	162	16	04-05-63	62	04-11-63	I	--	4,064	--	--
12S.20W.11.4	SFB	Sumner, Lowell	40	10.2	08-01-77	14.5	09-01-77	I	--	4,950	--	--
12S.20W.11.412	SFB	Simmons, Glen N. & Slout, Charles E.	120	7	12-27-71	35	01-14-72	H	Qal	4,950	--	--
12S.20W.11.420	SFB	Shelton, Louis L.	140	12	--	40	05-29-62	H	--	--	--	--
12S.20W.11.421	SFB	Shelton, Louis L.	140	12	04-21-62	76	05-06-62	H	--	5,725	--	--
12S.20W.11.43	SFB	Lobman, Pete & Chris	40	6	10-10-74	12	10-14-74	H	--	4,950	--	--
12S.20W.11.441	SFB	Howrad, Howard R.	100	6.63	--	51	05-05-80	U	--	--	--	--
12S.20W.13.142	SFB	Vackar, David	--	8	--	172	12-06-79	S	--	--	--	--
12S.20W.13.411	SFB	Smith, H.O.	300	8.63	02-09-76	219	02-13-76	S	QTg	5,200	--	--

Table 4.--Records of wells and springs, Catron County, New Mexico--Concluded

Location number and surface-water basin		Owner	Depth of well (feet below land surface)	Casing diameter (inches)	Date of construction	Water level (feet below land surface)	Date measured	Use of water	Geologic unit	Altitude of land surface (feet above sea level)	Yield (gal/min)	Specific conductance (µS/cm)
12S.20W.14	SFB	Anway, Roy	60	7	10-16-65	32	10-17-65	H	--	4,800	--	--
12S.20W.14.11	SFB	Hudson, Leonard	35	7	06-14-67	8	06-16-67	H	--	4,900	--	--
12S.20W.14.2	SFB	Grider, David R. & Shari	100	6	05-11-81	55	05-14-81	H	Qal	4,850	--	--
12S.20W.14.233	SFB	Hudson, Leonard	85	8	--	53.14	04-25-61	H	--	--	--	--
12S.20W.14.234	SFB	Slade, James	100	7	03-03-79	--	--	H	--	4,850	--	--
12S.20W.14.241	SFB	Goble, Jess F.	85	--	--	23	04-25-61	S	--	--	--	--
12S.20W.23.13	SFB	U.S. Forest Service	3	--	02-13-63	--	--	S	--	4,600	--	--
12S.20W.23.14	SFB	Henry, Jim	46	6	04-03-67	9	04-06-67	H	--	4,800	--	--
12S.20W.23.23	SFB	Henry, Jim	35	7	06-03-80	7	06-04-80	Z	--	4,850	--	--
12S.20W.23.321*	SFB	--	--	--	--	--	12-05-74	--	QTg? Tbm?	--	20 R	1,200

Table 5.--Summary of data for water-quality analyses of water for selected wells and springs in Catron County, New Mexico

EXPLANATION

Location number: See system of numbering wells and springs in this report; * indicates spring.

Geologic unit: Qal, Quaternary alluvium; Qab, Quaternary bolson fill; QTg, Quaternary to Tertiary Gila Conglomerate; Tbm, Tertiary Bearwallow Mountain Andesite; Td, Tertiary Datil Group; Tbc, Tertiary Baca Formation; Kcc, Cretaceous Crevasse Canyon Formation; Kmv, Cretaceous Measverde Group; Kd? Km?, undifferentiated Cretaceous Mancos Shale and tongues of the Dakota Sandstone; Kd, main body of the Cretaceous Dakota Sandstone; Trc, Triassic Chinle Formation; Pu, undifferentiated Permian units.

µS/cm, microsiemens per centimeter at 25 degrees Celsius; deg C, degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no data; <, less than.

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Geo-logic unit	Spe-cific con-duct-ance (µS/cm)	Solids, sum of constit-uents, dis-solved (mg/L)	pH (stand-ard units)	pH lab (stand-ard units)	Temper-ature water (deg C)	Hard-ness, total (mg/L as $CaCO_3$)
01N.09W.27.113	05-09-80	Td	210	156	7.8	--	17.0	71
01N.12W.19.	10-00-53	--	535	--	--	--	--	10
	00-00-54	--	--	--	--	--	--	--
01N.15W.11.	12-20-33	--	--	--	--	--	--	--
	12-30-33	--	--	329	--	--	--	190
01N.15W.15.441*	07-11-80	Td	435	298	7.9	--	19.0	170
01N.15W.26.144*	07-11-80	Td	370	221	8.9	--	24.0	120
01N.15W.27.342	08-26-80	Qal	670	474	7.9	--	12.0	230
01N.16W.03.	12-20-33	--	--	494	--	--	--	80
01N.16W.03.214	06-27-79	--	1,020	663	7.9	--	20.0	110
	06-27-79	--	1,040	630	8.2	--	24.0	110
01N.16W.03.220	05-06-65	Tbc	752	456	8.1	--	--	48
01N.17W.12.333	07-26-83	--	820	488	7.8	8.1	14.0	350
01N.18W.35.412	05-18-82	Td	500	271	8.5	8.1	15.0	51
01N.19W.27.42	07-13-83	--	453	273	--	8.5	18.5	34
01N.20W.27.221	09-28-79	Kmv	--	315	--	--	20.0	150
01N.21W.16.000	12-22-33	Qal	--	1,350	--	--	--	780
01S.10W.20.121*	11-18-80	Qab	515	346	7.8	7.5	9.5	220
01S.10W.20.142	11-04-80	Qal	440	232	8.8	8.6	12.0	13
01S.10W.20.213*	11-04-80	Td	350	295	7.4	7.6	13.0	160
01S.10W.34.43323	08-28-80	Qal	915	547	8.1	--	13.0	360
01S.11W.33.231A	05-08-80	Qal	860	568	7.3	--	12.5	440
	08-08-80	Qal	860	--	--	--	--	--
01S.18W.05.332	05-18-82	Td	408	253	9.2	8.9	18.0	14
01S.18W.09.142	05-18-82	Td	800	407	9.5	9.1	18.0	23
01S.19W.01.223	10-15-80	Tbc	721	470	8.3	8.0	15.0	220
01S.19W.09.124	08-12-80	Qal	480	293	8.5	--	18.0	7
01S.20W.21.233	03-16-83	Qal	438	276	8.1	8.0	7.0	150
01S.20W.21.411	06-26-79	--	460	262	7.8	--	16.0	130
01S.21W.25.244	06-26-79	Tbc	312	224	8.1	--	--	140
	10-15-80	Tbc	372	222	8.3	8.0	15.0	140
02N.10W.11.410	05-06-65	Td	750	442	7.7	--	--	310
02N.15W.05.000*	08-03-79	Tbc	478	280	--	--	12.5	140
02N.17W.13.242*	03-12-81	Td	460	291	7.7	7.8	7.0	220
	04-21-81	Td	528	--	7.2	--	15.0	--
02N.18W.07.141	07-18-85	Kmv	994	607	7.8	8.6	18.5	13
02N.19W.14.441	07-18-85	Kmv	699	431	8.3	8.8	18.5	9
02N.20W.07.131	12-22-33	--	--	1,190	--	--	--	320
02N.20W.29.410*	08-05-79	Kmv	495	299	--	--	12.5	120
02N.20W.29.413*	08-08-80	Kmv	575	308	8.3	--	13.0	120

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Alkalinity (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Sodium percent	Sodium+potassium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Bicarbonate (mg/L as HCO_3)	Carbonate (mg/L as CO_3)
01N.09W.27.113	05-09-80	100	26	1.5	21	39	--	1.1	--	--
01N.12W.19.	10-00-53	166	--	--	--	--	120	--	190	8
	00-00-54	156	--	--	--	--	120	--	190	--
01N.15W.11.	12-20-33	287	--	--	--	--	--	--	350	--
	12-30-33	287	48	17	--	--	62	--	350	0
01N.15W.15.441*	07-11-80	250	41	16	46	37	--	0.60	--	--
01N.15W.26.144*	07-11-80	180	27	13	41	42	--	1.8	--	--
01N.15W.27.342	08-26-80	300	55	22	85	45	--	1.2	--	--
01N.16W.03.	12-20-33	427	20	--	--	--	180	--	520	--
01N.16W.03.214	06-27-79	541	27	10	220	81	220	2.1	660	--
	06-27-79	517	27	11	200	79	200	1.7	630	--
01N.16W.03.220	05-06-65	--	14	3.2	170	--	--	--	420	0
01N.17W.12.333	07-26-83	--	100	24	33	17	--	1.5	--	--
01N.18W.35.412	05-18-82	--	15	3.3	79	76	--	1.7	--	--
01N.19W.27.42	07-13-83	--	9.5	2.6	92	84	--	1.9	--	--
01N.20W.27.221	09-28-79	230	34	16	56	44	59	3.1	--	--
01N.21W.16.	12-22-33	328	130	110	--	--	170	--	400	0
01S.10W.20.121*	11-18-80	--	63	14	34	25	--	1.5	--	--
01S.10W.20.142	11-04-80	--	4.7	0.40	81	93	--	0.30	--	--
01S.10W.20.213*	11-04-80	--	47	11	33	30	--	0.90	--	--
01S.10W.34.43323	08-28-80	410	91	32	64	28	--	0.50	--	--
01S.11W.33.231A	05-08-80	440	120	34	41	17	--	0.80	--	--
	08-08-80	--	--	--	--	--	--	--	--	--
01S.18W.05.332	05-18-82	--	5.2	0.14	91	93	--	0.40	--	--
01S.18W.09.142	05-18-82	--	7.2	1.2	140	93	--	0.60	--	--
01S.19W.01.223	10-15-80	--	45	26	76	42	--	4.9	--	--
01S.19W.09.124	08-12-80	200	2.4	0.30	110	96	--	1.5	--	--
01S.20W.21.233	03-16-83	--	30	17	42	38	--	3.1	--	--
01S.20W.21.411	06-26-79	197	26	16	42	40	45	3.4	240	--
01S.21W.25.244	06-26-79	150	36	11	22	26	24	2.0	--	--
	10-15-80	160	37	11	23	26	--	1.6	--	--
02N.10W.11.410	05-06-65	--	89	21	40	--	--	--	350	0
02N.15W.05*	08-03-79	210	43	9.0	37	35	39	1.8	--	--
02N.17W.13.242*	03-12-81	--	55	21	17	14	--	2.4	--	--
	04-21-81	--	--	--	--	--	--	--	--	--
02N.18W.07.141	07-18-85	--	4.5	0.35	240	97	--	1.3	--	--
02N.19W.14.441	07-18-85	--	2.9	0.40	180	97	--	1.0	--	--
02N.20W.07.131	12-22-33	402	54	46	--	--	300	--	490	0
02N.20W.29.41*	08-05-79	200	24	14	61	52	64	2.9	--	--
02N.20W.29.413*	08-08-80	200	22	16	66	53	--	3.4	--	--

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Sulfate, dis-solved (mg/L as SO_4)	Chlo-ride, dis-solved (mg/L as Cl)	Fluo-ride, dis-solved (mg/L as F)	Bromide, dis-solved (mg/L as Br)	Silica, dis-solved (mg/L as SiO_2)	Nitro-gen, nitrate, dis-solved (mg/L as NO_3)	Arsenic, dis-solved (µg/L as As)	Barium, dis-solved (µg/L as Ba)
01N.09W.27.113	05-09-80	5.5	5.5	0.20	--	32	--	3	10
01N.12W.19.	10-00-53	63	26	1.4	--	13	1.4	--	--
	00-00-54	--	--	--	--	--	--	--	--
01N.15W.11.	12-20-33	--	--	--	--	--	--	--	--
	12-30-33	14	17	0.20	--	--	1.3	--	--
01N.15W.15.441*	07-11-80	4.8	6.1	2.1	--	31	--	3	70
01N.15W.26.144*	07-11-80	5.3	7.9	2.0	--	15	--	7	40
01N.15W.27.342	08-26-80	32	23	1.8	--	40	--	13	100
01N.16W.03.	12-20-33	2.0	31	3.1	--	--	0.40	--	--
01N.16W.03.214	06-27-79	8.4	34	2.3	--	34	--	4	-
	06-27-79	12	33	2.3	--	33	-	1	--
01N.16W.03.220	05-06-65	15	29	2.6	--	19	0.10	--	--
01N.17W.12.333	07-26-83	21	160	0.40	--	26	--	1	130
01N.18W.35.412	05-18-82	24	11	0.40	--	18	--	3	110
01N.19W.27.42	07-13-83	20	10	0.80	--	12	--	1	39
01N.20W.27.221	09-28-79	40	5.8	0.40	--	21	--	2	--
01N.21W.16.	12-22-33	650	69	1.2	--	--	30	--	--
01S.10W.20.121*	11-18-80	65	15	0.40	--	27	--	2	60
01S.10W.20.142	11-04-80	24	13	0.60	--	18	--	1	<2
01S.10W.20.213*	11-04-80	42	10	0.40	--	32	--	1	30
01S.10W.34.43323	08-28-80	53	26	0.40	--	34	--	2	60
01S.11W.33.231A	05-08-80	57	16	0.30	--	34	--	3	100
	08-08-80	--	--	--	--	--	--	--	--
01S.18W.05.332	05-18-82	35	13	1.3	--	12	--	5	<6
01S.18W.09.142	05-18-82	71	110	1.6	--	12	--	4	25
01S.19W.01.223	10-15-80	78	37	0.40	--	30	--	5	200
01S.19W.09.124	08-12-80	39	8.0	1.5	--	9.7	--	2	40
01S.20W.21.233	03-16-83	9.2	18	0.40	--	23	--	6	230
01S.20W.21.411	06-26-79	19	10	0.40	--	20	--	2	--
01S.21W.25.244	06-26-79	15	14	0.30	--	27	--	1	--
	10-15-80	11	13	0.30	--	23	--	1	200
02N.10W.11.410	05-06-65	31	54	0.50	--	33	3.4	--	--
02N.15W.05*	08-03-79	17	16	0.50	--	24	--	2	--
02N.17W.13.242*	03-12-81	23	12	0.40	--	27	--	2	40
	04-21-81	--	--	--	--	--	--	--	--
02N.18W.07.141	07-18-85	62	24	1.4	0.19	11	--	<1	48
02N.19W.14.441	07-18-85	43	8.5	0.90	0.075	10	--	3	12
02N.20W.07.131	12-22-33	520	18	1.0	--	--	12	--	--
02N.20W.29.41*	08-05-79	49	9.6	0.50	--	17	--	1	-
02N.20W.29.413*	08-08-80	52	9.5	0.50	--	18	--	4	100

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Boron, dis-solved (µg/L as B)	Cadmium, dis-solved (µg/L as Cd)	Chro-mium, dis-solved (µg/L as Cr)	Copper, dis-solved (µg/L as Cu)	Iron, dis-solved (µg/L as Fe)	Lead, dis-solved (µg/L as Pb)	Manga-nese, dis-solved (µg/L as Mn)	Mercury, dis-solved (µg/L as Hg)
01N.09W.27.113	05-09-80	10	<1.0	0	5	20	0	3	0
01N.12W.19.	10-00-53	--	--	--	--	--	--	--	--
	00-00-54	--	--	--	--	--	--	--	--
01N.15W.11.	12-20-33	--	--	--	--	--	--	--	--
	12-30-33	--	--	--	--	--	--	--	--
01N.15W.15.441*	07-11-80	--	<1.0	10	3	120	0	120	0
01N.15W.26.144*	07-11-80	--	<1.0	0	2	50	0	20	0
01N.15W.27.342	08-26-80	170	<1.0	0	8	20	0	<1	0
01N.16W.03.	12-20-33	--	--	--	--	--	--	--	--
01N.16W.03.214	06-27-79	650	<2.0	ND	<20	130	<10	110	0.6
	06-27-79	--	<2.0	ND	<20	270	<10	170	0.5
01N.16W.03.220	05-06-65	--	--	--	--	--	--	--	--
01N.17W.12.333	07-26-83	--	<1.0	<10	2	170	1	8	<0.1
01N.18W.35.412	05-18-82	--	<3.0	<10	4	27	<1	<3	<0.1
01N.19W.27.42	07-13-83	--	<1.0	<10	7	19	2	3	<0.1
01N.20W.27.221	09-28-79	100	<2.0	ND	ND	100	3	50	0.6
01N.21W.16.	12-22-33	--	--	--	--	--	--	--	--
01S.10W.20.121*	11-18-80	40	1.0	0	6	50	0	50	0
01S.10W.20.142	11-04-80	30	<1.0	0	1	<10	3	<1	0
01S.10W.20.213*	11-04-80	20	2.0	0	1	1900	2	470	0
01S.10W.34.43323	08-28-80	80	<1.0	0	0	110	0	130	0
01S.11W.33.231A	05-08-80	40	<1.0	0	17	20	0	10	0
	08-08-80	--	--	--	--	--	--	--	--
01S.18W.05.332	05-18-82	--	<3.0	<10	14	980	2	9	<0.1
01S.18W.09.142	05-18-82	--	<3.0	<10	2	34	<1	<3	<0.1
01S.19W.01.223	10-15-80	300	<1.0	0	3	<10	2	3	0
01S.19W.09.124	08-12-80	890	2.0	10	4	10	0	6	0
01S.20W.21.233	03-16-83	--	<1.0	<10	3	7	<1	4	<0.1
01S.20W.21.411	06-26-79	80	2.0	ND	<20	<10	<10	3	0.2
01S.21W.25.244	06-26-79	40	2.0	ND	<20	<10	<10	2	0.7
	10-15-80	70	<1.0	0	3	<10	1	20	0
02N.10W.11.410	05-06-65	--	--	--	--	--	--	--	--
02N.15W.05*	08-03-79	80	<2.0	ND	<20	<10	<10	6	0.8
02N.17W.13.242*	03-12-81	20	<1.0	0	2	10	1	50	0
	04-21-81	--	--	--	--	--	--	--	--
02N.18W.07.141	07-18-85	180	<1.0	<10	1	10	1	22	--
02N.19W.14.441	07-18-85	120	<1.0	<10	2	33	2	6	--
02N.20W.07.131	12-22-33	--	--	--	--	--	--	--	--
02N.20W.29.41*	08-05-79	160	<2.0	<20	<20	50	<10	1	0.4
02N.20W.29.413*	08-08-80	170	<1.0	0	2	<10	0	<1	0

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Selenium, dissolved (µg/L as Se)	Silver, dissolved (µg/L as Ag)	Strontium, dissolved (µg/L as Sr)	Zinc, dissolved (µg/L as Zn)
01N.09W.27.113	05-09-80	1	0	--	260
01N.12W.19.	10-00-53	--	--	--	--
	00-00-54	--	--	--	--
01N.15W.11.	12-20-33	--	--	--	--
	12-30-33	--	--	--	--
01N.15W.15.441*	07-11-80	0	0	--	6
01N.15W.26.144*	07-11-80	0	0	--	<3
01N.15W.27.342	08-26-80	4	0	--	160
01N.16W.03.	12-20-33	--	--	--	--
01N.16W.03.214	06-27-79	--	--	--	30
	06-27-79	--	--	--	--
01N.16W.03.220	05-06-65	--	--	--	--
01N.17W.12.333	07-26-83	2	<1.0	--	270
01N.18W.35.412	05-18-82	2	<1.0	--	56
01N.19W.27.42	07-13-83	<1	<1.0	--	110
01N.20W.27.221	09-28-79	<1	--	--	40
01N.21W.16.	12-22-33	--	--	--	--
01S.10W.20.121*	11-18-80	0	0	--	40
01S.10W.20.142	11-04-80	0	0	--	20
01S.10W.20.213*	11-04-80	0	0	--	40
01S.10W.34.43323	08-28-80	0	0	--	80
01S.11W.33.231A	05-08-80	1	0	--	110
	08-08-80	--	--	--	--
01S.18W.05.332	05-18-82	3	<1.0	--	330
01S.18W.09.142	05-18-82	<1	<1.0	--	<12
01S.19W.01.223	10-15-80	21	1.0	--	70
01S.19W.09.124	08-12-80	0	0	--	10
01S.20W.21.233	03-16-83	1	<1.0	--	680
01S.20W.21.411	06-26-79	--	--	--	1,900
01S.21W.25.244	06-26-79	--	--	--	30
	10-15-80	1	0	--	80
02N.10W.11.410	05-06-65	--	--	--	--
02N.15W.05*	08-03-79	--	--	--	<3
02N.17W.13.242*	03-12-81	0	0	--	20
	04-21-81	--	--	--	--
02N.18W.07.141	07-18-85	<1	<1.0	140	15
02N.19W.14.441	07-18-85	3	<1.0	46	58
02N.20W.07.131	12-22-33	--	--	--	--
02N.20W.29.41*	08-05-79	--	--	--	6
02N.20W.29.413*	08-08-80	0	0	--	20

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Geo-logic unit	Spe-cific con-duct-ance (µS/cm)	Solids, sum of constit-uents, dis-solved (mg/L)	pH (stand-ard units)	pH lab (stand-ard units)	Temper-ature water (deg C)	Hard-ness, total (mg/L as $CaCO_3$)
02N.21W.02.223	12-22-33	Trc	--	11,100	--	--	--	7,200
02N.21W.24.141	12-22-33	Qal	--	443	--	--	--	310
02S.09W.33.122	09-22-80	Qab	328	215	8.2	--	18.0	110
02S.10W.10.222	09-22-80	Td	510	331	7.9	--	18.0	180
	04-29-81	Td	520	--	7.8	--	14.0	--
	09-03-81	Td	--	--	--	--	16.5	--
02S.12W.05.000	02-00-54	--	522	--	--	--	--	12
02S.12W.05.400	06-28-59	--	541	--	9.7	--	--	12
02S.13W.28.122*	10-31-79	--	356	225	--	--	11.0	83
02S.21W.04.124	06-26-79	--	487	284	7.7	--	14.0	120
03N.15W.18.000	12-21-33	Kmv	--	--	--	--	--	<10
03N.15W.22.111*	03-24-81	Td	525	346	8.0	7.9	13.0	250
03N.17W.10.223	07-25-83	--	710	--	8.1	8.4	16.0	--
03N.18W.22.13	07-17-79	Kd? Km?	--	<498	--	--	--	3
03N.18W.22.232	09-08-82	Kd	980	507	8.8	9.0	21.5	4
03N.18W.30.000*	12-22-33	--	--	1,270	--	--	13.0	--
03N.18W.30.433	07-18-85	Qal	1,960	1,170	8.5	8.8	21.5	59
03N.18W.31.314*	07-18-85	Qal	1,230	773	7.6	8.4	17.5	85
03N.18W.33.233	08-19-80	Kd? Km?	1,290	739	8.2	--	17.0	17
03N.21W.15.322	03-13-81	Trc	3,460	2,270	7.9	7.8	8.0	820
03S.09W.07.442	08-30-79	Qab	420	<250	7.8	--	18.0	31
03S.09W.11.212	09-26-80	Qab	250	188	8.6	--	15.0	84
03S.09W.21.221	08-30-79	Qab	310	185	7.9	--	18.0	75
03S.09W.28.240	08-02-79	Qab	240	180	8.3	--	26.0	42
	02-24-83	Qab	240	170	8.2	8.1	19.0	41
03S.11W.12.242	06-27-80	--	440	298	7.9	--	18.0	190
03S.11W.31.300	12-11-52	--	662	--	--	--	13.5	180
03S.11W.35.311	01-28-53	--	369	--	--	--	--	120
03S.12W.29.141*	05-01-80	Td	280	212	7.6	--	--	110
03S.12W.30.223*	05-01-80	Td	290	--	7.9	--	11.5	--
03S.12W.30.241*	11-28-79	Td	300	238	--	--	9.5	110
03S.12W.33.434	01-28-53	--	232	--	--	--	4.5	78
03S.14W.19.100*	10-07-52	--	185	--	--	--	10.5	73
03S.20W.35.132*	05-21-58	Qal	315	--	8.2	--	--	74
04N.10W.22.412	04-29-81	Kcc	1,350	815	7.4	7.6	17.0	350
04N.10W.24.423	04-28-81	Qal	2,600	1,870	7.6	7.9	13.5	290
04N.10W.25.344	04-28-81	Qab	1,050	648	8.5	8.3	15.0	35
04N.10W.31.121	04-29-81	Kcc	2,500	1,770	7.0	7.5	12.0	820
04N.11W.18.444	04-28-81	Kcc	1,240	868	7.8	7.9	14.0	460
04N.11W.26.144	04-29-81	Kcc	1,840	1,230	7.7	8.1	13.0	26

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Alkalinity (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Sodium percent	Sodium+ potassium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Bicarbonate water wh fet field (mg/L as HCO_3)	Carbonate water wh fet field (mg/L as CO_3)
02N.21W.02.223	12-22-33	0	1,500	830	--	--	1,100	--	0	0
02N.21W.24.141	12-22-33	189	69	34	36	--	--	--	230	0
02S.09W.33.122	09-22-80	140	31	7.0	31	38	--	1.9	--	--
02S.10W.10.222	09-22-80	210	57	8.7	47	36	--	0.80	--	--
	04-29-81	--	--	--	--	--	--	--	--	--
	09-03-81	--	--	--	--	--	--	--	--	--
02S.12W.05.	02-00-54	164	--	--	--	--	120	--	200	0
02S.12W.05.400	06-28-59	105	--	--	110	96	--	0.20	20	53
02S.13W.28.122*	10-31-79	160	20	8.1	49	55	51	2.0	--	--
02S.21W.04.124	06-26-79	164	29	12	51	47	53	2.0	200	--
03N.15W.18.	12-21-33	238	2.0	--	--	--	130	--	290	0
03N.15W.22.111*	03-24-81	--	69	18	28	20	--	0.70	--	--
03N.17W.10.223	07-25-83	--	--	--	170	--	--	1.4	--	--
03N.18W.22.13	07-17-79	370	1.2	0.10	190	99	190	0.90	--	--
03N.18W.22.232	09-08-82	--	1.4	0.10	210	99	--	0.80	--	--
03N.18W.30.*	12-22-33	462	14	--	--	--	490	--	560	0
03N.18W.30.433	07-18-85	--	12	7.0	430	93	--	8.1	--	--
03N.18W.31.314*	07-18-85	--	21	7.7	270	87	--	4.3	--	--
03N.18W.33.233	08-19-80	300	5.2	1.0	270	97	--	1.5	--	--
03N.21W.15.322	03-13-81	--	180	91	460	54	--	25	--	--
03S.09W.07.442	08-30-79	115	11	0.80	78	84	79	0.60	140	0
03S.09W.11.212	09-26-80	110	24	5.9	26	40	--	1.8	--	--
03S.09W.21.221	08-30-79	100	17	8.0	27	43	28	1.3	--	0
03S.09W.28.240	08-02-79	115	13	2.4	40	67	41	0.70	140	0
	02-24-83	--	12	2.6	41	68	--	0.90	--	--
03S.11W.12.242	06-27-80	150	48	16	28	24	--	2.2	--	--
03S.11W.31.300	12-11-52	205	--	--	--	--	73	--	250	E0
03S.11W.35.311	01-28-53	180	--	--	--	--	40	--	220	0
03S.12W.29.141*	05-01-80	130	32	7.4	20	28	--	2.2	--	--
03S.12W.30.223*	05-01-80	140	--	--	--	--	--	--	--	--
03S.12W.30.241*	11-28-79	140	33	7.8	22	29	24	1.6	--	--
03S.12W.33.434	01-28-53	107	--	--	--	--	23	--	130	0
03S.14W.19.100*	10-07-52	82	--	--	--	--	13	--	100	0
03S.20W.35.132*	05-21-58	162	--	--	46	57	--	1.8	200	0
04N.10W.22.412	04-29-81	--	94	27	160	50	--	3.4	--	--
04N.10W.24.423	04-28-81	--	80	21	560	81	--	4.6	--	--
04N.10W.25.344	04-28-81	--	9.9	2.6	230	93	--	1.2	--	--
04N.10W.31.121	04-29-81	--	240	53	280	43	--	5.3	--	--
04N.11W.18.444	04-28-81	--	130	32	110	34	--	2.3	--	--
04N.11W.26.144	04-29-81	--	72	19	340	74	--	3.4	--	--

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Bromide, dissolved (mg/L as Br)	Silica, dissolved (mg/L as SiO_2)	Nitrogen, nitrate, dissolved (mg/L as NO_3)	Arsenic, dissolved (µg/L as As)	Barium, dissolved (µg/L as Ba)
02N.21W.02.223	12-22-33	--	--	--	--	--	--	--	--
02N.21W.24.141	12-22-33	180	9.0	0.60	--	--	0.40	--	--
02S.09W.33.122	09-22-80	7.6	15	0.30	--	33	--	2	6
02S.10W.10.222	09-22-80	23	23	0.70	--	35	--	8	20
	04-29-81	--	--	--	--	--	--	--	--
	09-03-81	--	--	--	--	--	--	--	--
02S.12W.05.	02-00-54	65	25	1.4	--	16	0.80	--	--
02S.12W.05.400	06-28-59	120	14	4.8	--	42	0.50	--	2,200
02S.13W.28.122*	10-31-79	11	8.9	0.70	--	25	--	2	--
02S.21W.04.124	06-26-79	22	33	0.50	--	23	--	2	--
03N.15W.18.	12-21-33	30	12	2.1	--	--	0.0	--	--
03N.15W.22.111*	03-24-81	19	14	0.70	--	34	--	3	80
03N.17W.10.223	07-25-83	58	9.2	2.3	--	--	--	1	--
03N.18W.22.13	07-17-79	51	18	1.6	--	12	--	1	--
03N.18W.22.232	09-08-82	45	13	1.5	--	13	--	<1	23
03N.18W.30.*	12-22-33	170	340	0.0	--	--	1.8	--	--
03N.18W.30.433	07-18-85	150	290	1.0	0.36	21	--	4	200
03N.18W.31.314*	07-18-85	110	49	2.1	0.28	22	--	2	61
03N.18W.33.233	08-19-80	150	120	2.4	--	8.2	--	0	20
03N.21W.15.322	03-13-81	850	510	2.1	--	15	--	0	0
03S.09W.07.442	08-30-79	53	14	1.0	--	19	--	4	--
03S.09W.11.212	09-26-80	28	8.4	0.40	--	24	--	2	9
03S.09W.21.221	08-30-79	13	19	0.50	--	23	--	3	--
03S.09W.28.240	08-02-79	14	8.9	0.50	--	28	--	3	--
	02-24-83	8.5	8.7	0.40	--	26	--	3	4
03S.11W.12.242	06-27-80	24	37	0.80	--	37	--	3	10
03S.11W.31.300	12-11-52	43	63	--	--	46	2.9	--	--
03S.11W.35.311	01-28-53	7.8	12	0.60	--	27	0.30	--	--
03S.12W.29.141*	05-01-80	5.7	8.7	0.10	--	55	--	1	20
03S.12W.30.223*	05-01-80	--	--	--	--	--	--	1	20
03S.12W.30.241*	11-28-79	11	15	0.20	--	60	--	1	--
03S.12W.33.434	01-28-53	8.2	0.70	0.20	--	53	1.0	--	--
03S.14W.19.100*	10-07-52	15	2.0	0.20	--	42	0.20	--	--
03S.20W.35.132*	05-21-58	7.4	6.5	0.50	--	21	0.0	--	0
04N.10W.22.412	04-29-81	280	57	0.10	--	9.6	--	--	--
04N.10W.24.423	04-28-81	900	60	0.70	--	9.6	--	--	--
04N.10W.25.344	04-28-81	170	7.0	1.0	--	10	--	--	--
04N.10W.31.121	04-29-81	930	44	0.20	--	12	--	--	--
04N.11W.18.444	04-28-81	390	34	0.50	--	13	--	--	--
04N.11W.26.144	04-29-81	500	67	0.50	--	7.8	--	--	--

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Boron, dis-solved (µg/L as B)	Cadmium, dis-solved (µg/L as Cd)	Chro-mium, dis-solved (µg/L as Cr)	Copper, dis-solved (µg/L as Cu)	Iron, dis-solved (µg/L as Fe)	Lead, dis-solved (µg/L as Pb)	Manga-nese, dis-solved (µg/L as Mn)	Mercury, dis-solved (µg/L as Hg)
02N.21W.02.223	12-22-33	--	--	--	--	240,000	--	1,400	--
02N.21W.24.141	12-22-33	--	--	--	--	--	--	--	--
02S.09W.33.122	09-22-80	60	<1.0	0	14	40	1	20	0
02S.10W.10.222	09-22-80	120	<1.0	0	4	<10	0	2	0
	04-29-81	--	--	--	--	--	--	--	--
	09-03-81	--	--	--	--	--	--	--	--
02S.12W.05.	02-00-54	--	--	--	--	--	--	--	-
02S.12W.05.400	06-28-59	1,600	--	--	40	1,500	--	--	--
02S.13W.28.122*	10-31-79	30	<1.0	10	<10	50	<10	10	0
02S.21W.04.124	06-26-79	70	<2.0	ND	<20	<10	<10	5	0.7
03N.15W.18.	12-21-33	--	--	--	--	--	--	--	--
03N.15W.22.111*	03-24-81	10	<1.0	10	2	20	2	30	0
03N.17W.10.223	07-25-83	--	1.0	<10	2	--	1	--	<0.1
03N.18W.22.13	07-17-79	470	<2.0	<20	<20	60	<10	2	0.2
03N.18W.22.232	09-08-82	--	<1.0	<10	1	20	<1	1	<0.1
03N.18W.30.*	12-22-33	--	--	--	--	--	--	--	--
03N.18W.30.433	07-18-85	350	1.0	<10	2	20	1	<10	--
03N.18W.31.314*	07-18-85	210	<1.0	<10	2	3	2	6	--
03N.18W.33.233	08-19-80	670	<1.0	10	2	130	3	10	0
03N.21W.15.322	03-13-81	--	0	0	3	20	1	90	0
03S.09W.07.442	08-30-79	180	ND	ND	ND	670	ND	<10	1.2
03S.09W.11.212	09-26-80	40	<1.0	20	6	30	2	<1	0
03S.09W.21.221	08-30-79	50	ND	<20	ND	60	ND	<10	2.4
03S.09W.28.240	08-02-79	70	<2.0	<20	<20	120	20	1	0.2
	02-24-83	--	<1.0	<10	16	650	<1	7	0.1
03S.11W.12.242	06-27-80	80	2.0	0	40	80	31	50	0.4
03S.11W.31.300	12-11-52	--	--	--	--	--	--	--	--
03S.11W.35.311	01-28-53	--	--	--	--	--	--	--	--
03S.12W.29.141*	05-01-80	0	<1.0	0	3	20	0	3	0.2
03S.12W.30.223*	05-01-80	--	1.0	0	2	--	0	--	0.2
03S.12W.30.241*	11-28-79	20	<1.0	0	<10	10	69	<1	0
03S.12W.33.434	01-28-53	--	--	--	--	--	--	--	--
03S.14W.19.100*	10-07-52	--	--	--	--	--	--	--	--
03S.20W.35.132*	05-21-58	20	--	--	0	--	--	--	--
04N.10W.22.412	04-29-81	90	--	--	--	1,400	--	20	--
04N.10W.24.423	04-28-81	120	--	--	--	1,300	--	180	--
04N.10W.25.344	04-28-81	150	--	--	--	250	--	10	--
04N.10W.31.121	04-29-81	100	--	--	--	1,600	--	330	--
04N.11W.18.444	04-28-81	130	--	--	--	150	--	30	--
04N.11W.26.144	04-29-81	120	--	--	--	60	--	7	--

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Selenium, dissolved (µg/L as Se)	Silver, dissolved (µg/L as Ag)	Strontium, dissolved (µg/L as Sr)	Zinc, dissolved (µg/L as Zn)
02N.21W.02.223	12-22-33	--	--	--	--
02N.21W.24.141	12-22-33	--	--	--	--
02S.09W.33.122	09-22-80	0	0	--	840
02S.10W.10.222	09-22-80	1	0	--	480
	04-29-81	--	--	--	--
	09-03-81	--	--	--	--
02S.12W.05.	02-00-54	--	--	--	--
02S.12W.05.400	06-28-59	--	--	--	480
02S.13W.28.122*	10-31-79	--	--	--	9
02S.21W.04.124	06-26-79	--	--	--	<20
03N.15W.18.	12-21-33	--	--	--	--
03N.15W.22.111*	03-24-81	0	0	--	20
03N.17W.10.223	07-25-83	<1	<1.0	--	--
03N.18W.22.13	07-17-79	--	--	--	20
03N.18W.22.232	09-08-82	<1	<1.0	--	8
03N.18W.30.*	12-22-33	--	--	--	--
03N.18W.30.433	07-18-85	3	<1.0	200	40
03N.18W.31.314*	07-18-85	<1	<1.0	550	13
03N.18W.33.233	08-19-80	0	0	--	20
03N.21W.15.322	03-13-81	0	0	--	200
03S.09W.07.442	08-30-79	--	--	--	680
03S.09W.11.212	09-26-80	1	0	--	70
03S.09W.21.221	08-30-79	--	--	--	40
03S.09W.28.240	08-02-79	--	--	--	40
	02-24-83	1	<1.0	--	140
03S.11W.12.242	06-27-80	1	0	--	310
03S.11W.31.300	12-11-52	--	--	--	--
03S.11W.35.311	01-28-53	--	--	--	--
03S.12W.29.141*	05-01-80	1	0	--	270
03S.12W.30.223*	05-01-80	1	0	--	<3
03S.12W.30.241*	11-28-79	--	--	--	8
03S.12W.33.434	01-28-53	--	--	--	--
03S.14W.19.100*	10-07-52	--	--	--	--
03S.20W.35.132*	05-21-58	--	--	--	20
04N.10W.22.412	04-29-81	--	--	--	--
04N.10W.24.423	04-28-81	--	--	--	--
04N.10W.25.344	04-28-81	--	--	--	--
04N.10W.31.121	04-29-81	--	--	--	--
04N.11W.18.444	04-28-81	--	--	--	--
04N.11W.26.144	04-29-81	--	--	--	--

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Geo-logic unit	Spe-cific con-duct-ance (μS/cm)	Solids, sum of constit-uents, dis-solved (mg/L)	pH (stand-ard units)	pH lab (stand-ard units)	Temper-ature water (deg C)	Hard-ness, total (mg/L as $CaCO_3$)
04N.16W.31.111	07-26-83	--	720	509	8.1	7.9	13.0	120
04N.17W.23.22	07-27-83	Kmv	--	1,070	--	7.8	16.0	460
04N.18W.28.122*	08-04-79	Kmv	--	522	--	--	--	44
04N.18W.28.211	10-30-80	Kmv	900	577	8.0	8.2	13.0	54
	10-30-81	Kmv	--	--	--	--	--	--
04N.18W.36.312	11-20-80	Kmv	600	460	9.6	>9.0	14.0	7
04N.19W.14.314A	10-29-80	Kmv	4,370	3,270	8.1	8.0	15.0	650
04N.19W.15.422	10-29-80	Kd? Km?	4,490	3,050	8.4	8.0	--	200
04N.19W.25.414	10-30-80	Pu	1,600	985	6.7	7.2	34.0	500
04N.19W.25.424	08-04-79	Kmv	--	1,020	--	--	34.0	440
04N.19W.28.234	10-29-80	Pu	1,440	939	6.9	7.3	28.0	620
	11-20-80	Pu	1,300	939	6.0	7.0	29.0	610
04S.09W.06.212	08-21-79	Qab	310	215	9.2	--	25.0	8
04S.09W.08.132	07-13-79	Qab	400	286	8.6	--	17.0	24
04S.09W.12.133	05-08-79	--	460	292	8.0	--	18.0	80
04S.09W.17.311	07-13-79	Qab	330	246	9.0	--	32.0	3
04S.10W.05.333B	08-29-79	Qab	360	<231	7.9	--	15.0	130
04S.11W.06.140	12-11-52	--	844	--	--	--	14.0	180
04S.11W.17.33333	12-17-52	Qab	292	--	--	--	11.5	100
04S.12W.12.410	12-17-52	--	803	--	--	--	13.0	220
04S.12W.12.420B	12-17-52	--	941	--	--	--	--	260
	00-00-53	--	--	--	--	--	--	260
04S.12W.15.42314	12-17-52	--	778	--	--	--	11.0	290
04S.12W.24.122	12-11-52	Qab	324	--	--	--	14.5	110
04S.12W.29.122	07-11-79	--	360	263	7.9	--	19.0	120
04S.12W.30.420	12-11-52	--	442	--	--	--	14.0	160
04S.12W.31.310	12-11-52	--	488	--	--	--	13.5	190
04S.13W.10.114*	12-18-52	--	279	--	--	--	13.5	7
04S.13W.12.123*	03-01-83	Td	215	180	8.0	7.8	14.0	83
04S.13W.19.420*	12-18-52	--	311	--	--	--	9.5	4
04S.13W.21.222A	12-19-52	--	502	--	--	--	10.5	180
04S.13W.27.323	12-05-52	--	603	--	--	--	13.5	210
04S.13W.30.140A	12-02-52	--	272	--	--	--	11.5	93
04S.13W.30.140B	12-04-52	--	290	--	--	--	14.5	100
04S.13W.30.423	12-05-52	--	365	--	--	--	14.0	130
04S.13W.30.424	11-20-52	--	397	--	--	--	14.0	140
04S.13W.30.444	12-05-52	--	638	--	--	--	13.5	210
04S.13W.35.200B	12-11-52	--	378	--	--	--	14.0	100

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Alkalinity (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Sodium percent	Sodium+potassium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Bicarbonate (mg/L as HCO_3)	Carbonate (mg/L as CO_3)
04N.16W.31.111	07-26-83	--	28	13	150	72	--	2.3	--	--
04N.17W.23.22	07-27-83	--	140	27	180	46	--	4.1	--	--
04N.18W.28.122*	08-04-79	310	13	2.7	160	89	160	1.1	--	--
04N.18W.28.211	10-30-80	--	16	3.4	200	89	--	1.1	--	--
	10-30-81	--	--	--	--	--	--	--	--	--
04N.18W.36.312	11-20-80	--	1.8	0.50	170	98	--	0.60	--	--
04N.19W.14.314A	10-29-80	230	180	49	770	72	--	6.2	--	--
04N.19W.15.422	10-29-80	240	61	12	900	90	--	5.4	--	--
04N.19W.25.414	10-30-80	--	150	31	150	39	--	13	--	--
04N.19W.25.424	08-04-79	460	130	29	170	45	180	13	--	--
04N.19W.28.234	10-29-80	430	180	41	88	23	--	9.7	--	--
	11-20-80	--	180	40	86	23	--	9.3	--	--
04S.09W.06.212	08-21-79	112	2.7	0.20	59	94	60	0.60	100	18
04S.09W.08.132	07-13-79	146	6.7	1.7	80	87	81	1.2	170	4
04S.09W.12.133	05-08-79	156	22	6.0	71	65	73	2.1	190	0
04S.09W.17.311	07-13-79	138	0.90	0.10	65	96	68	2.7	120	24
04S.10W.05.333B	08-29-79	131	29	13	27	31	29	1.5	160	0
04S.11W.06.140	12-11-52	230	--	--	--	--	120	--	280	8
04S.11W.17.33333	12-17-52	131	--	--	--	--	25	--	160	0
04S.12W.12.410	12-17-52	246	--	--	--	--	93	--	300	0
04S.12W.12.420B	12-17-52	281	--	--	--	--	110	--	340	0
	00-00-53	279	--	--	--	--	110	--	340	--
04S.12W.15.42314	12-17-52	230	--	--	--	--	55	--	280	6
04S.12W.24.122	12-11-52	139	--	--	--	--	32	--	170	0
04S.12W.29.122	07-11-79	153	31	11	28	32	34	5.9	190	0
04S.12W.30.420	12-11-52	148	--	--	--	--	40	--	180	0
04S.12W.31.310	12-11-52	156	--	--	--	--	33	--	190	0
04S.13W.10.114*	12-18-52	131	--	--	--	--	65	--	85	37
04S.13W.12.123*	03-01-83	--	23	6.1	17	30	--	1.6	--	--
04S.13W.19.420*	12-18-52	151	--	--	--	--	73	--	62	60
04S.13W.21.222A	12-19-52	205	--	--	--	--	45	--	250	18
04S.13W.27.323	12-05-52	254	--	--	--	--	51	--	310	0
04S.13W.30.140A	12-02-52	123	--	--	--	--	24	--	150	0
04S.13W.30.140B	12-04-52	131	--	--	--	--	25	--	160	0
04S.13W.30.423	12-05-52	156	--	--	--	--	29	--	190	0
04S.13W.30.424	11-20-52	164	--	--	--	--	30	--	200	0
04S.13W.30.444	12-05-52	238	--	--	--	--	58	--	290	0
04S.13W.35.200B	12-11-52	164	--	--	--	--	47	--	200	0

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Sulfate, dis-solved (mg/L as SO_4)	Chlo-ride, dis-solved (mg/L as Cl)	Fluo-ride, dis-solved (mg/L as F)	Bromide, dis-solved (mg/L as Br)	Silica, dis-solved (mg/L as SiO_2)	Nitro-gen, nitrate, dis-solved (mg/L as NO_3)	Arsenic, dis-solved (μg/L as As)	Barium, dis-solved (μg/L as Ba)
04N.16W.31.111	07-26-83	2.9	6.3	1.4	--	24	--	13	210
04N.17W.23.22	07-27-83	500	6.4	0.20	--	17	--	1	100
04N.18W.28.122*	08-04-79	140	9.1	0.40	--	10	--	1	--
04N.18W.28.211	10-30-80	150	8.6	0.50	--	11	--	--	--
	10-30-81	--	--	--	--	--	--	--	--
04N.18W.36.312	11-20-80	100	7.9	1.0	--	9.1	--	--	--
04N.19W.14.314A	10-29-80	2,100	23	0.80	--	6.5	--	--	--
04N.19W.15.422	10-29-80	1,900	20	0.70	--	7.8	--	--	--
04N.19W.25.414	10-30-80	280	68	0.0	--	15	--	--	--
04N.19W.25.424	08-04-79	310	68	3.4	--	14	--	18	--
04N.19W.28.234	10-29-80	280	63	1.0	--	18	--	--	--
	11-20-80	290	63	0.90	--	17	--	13	40
04S.09W.06.212	08-21-79	14	19	1.4	--	48	--	8	--
04S.09W.08.132	07-13-79	37	27	0.70	--	33	--	7	--
04S.09W.12.133	05-08-79	27	15	2.0	--	33	--	3	--
04S.09W.17.311	07-13-79	23	13	1.4	--	53	--	8	--
04S.10W.05.333B	08-29-79	14	18	0.40	--	32	--	2	--
04S.11W.06.140	12-11-52	66	86	--	--	30	3.3	--	--
04S.11W.17.33333	12-17-52	7.4	11	--	--	18	2.7	--	--
04S.12W.12.410	12-17-52	68	72	0.40	--	17	0.20	--	--
04S.12W.12.420B	12-17-52	90	88	0.20	--	20	1.4	--	--
	00-00-53	--	--	--	--	--	--	--	--
04S.12W.15.42314	12-17-52	51	86	0.10	--	22	0.50	--	--
04S.12W.24.122	12-11-52	8.8	17	--	--	22	3.7	--	--
04S.12W.29.122	07-11-79	14	22	0.20	--	52	--	2	--
04S.12W.30.420	12-11-52	22	31	0.40	--	65	3.9	--	--
04S.12W.31.310	12-11-52	36	40	--	--	59	5.6	--	--
04S.13W.10.114*	12-18-52	5.8	7.0	--	--	36	1.8	--	--
04S.13W.12.123*	03-01-83	6.6	7.4	0.20	--	53	--	1	3
04S.13W.19.420*	12-18-52	5.6	3.0	--	--	42	1.6	--	--
04S.13W.21.222A	12-19-52	22	14	0.60	--	44	2.7	--	--
04S.13W.27.323	12-05-52	29	28	0.80	--	41	3.3	--	--
04S.13W.30.140A	12-02-52	8.2	6.0	0.60	--	38	2.6	--	--
04S.13W.30.140B	12-04-52	9.9	7.0	0.60	--	29	1.8	--	--
04S.13W.30.423	12-05-52	13	12	0.80	--	44	4.6	--	--
04S.13W.30.424	11-20-52	14	10	0.60	--	45	19	--	--
04S.13W.30.444	12-05-52	26	42	0.60	--	46	11	--	--
04S.13W.35.200B	12-11-52	14	16	0.60	--	45	1.2	--	--

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Boron, dis-solved (µg/L as B)	Cadmium, dis-solved (µg/L as Cd)	Chro-mium, dis-solved (µg/L as Cr)	Copper, dis-solved (µg/L as Cu)	Iron, dis-solved (µg/L as Fe)	Lead, dis-solved (µg/L as Pb)	Manga-nese, dis-solved (µg/L as Mn)	Mercury, dis-solved (µg/L as Hg)
04N.16W.31.111	07-26-83	--	<1.0	<10	2	90	1	260	<0.1
04N.17W.23.22	07-27-83	--	<1.0	<10	1	40	<1	1500	<0.1
04N.18W.28.122*	08-04-79	170	<2.0	ND	<20	<10	<10	8	0.8
04N.18W.28.211	10-30-80	170	--	--	--	10	--	<1	--
	10-30-81	--	--	--	--	--	--	--	--
04N.18W.36.312	11-20-80	320	--	--	--	40	--	<1	--
04N.19W.14.314A	10-29-80	280	--	--	--	60	--	180	--
04N.19W.15.422	10-29-80	300	--	--	--	180	--	110	--
04N.19W.25.414	10-30-80	280	--	--	--	1,300	--	100	--
04N.19W.25.424	08-04-79	360	<2.0	<20	<20	1,600	<10	100	0.9
04N.19W.28.234	10-29-80	110	--	--	--	740	--	10	--
	11-20-80	150	<1.0	0	0	680	0	10	0
04S.09W.06.212	08-21-79	70	ND	20	ND	200	ND	<10	<0.1
04S.09W.08.132	07-13-79	--	<2.0	20	<20	<10	<10	3	0.2
04S.09W.12.133	05-08-79	210	ND	ND	ND	50	ND	<10	<0.1
04S.09W.17.311	07-13-79	100	<2.0	<20	<20	50	<10	<1	<0.1
04S.10W.05.333B	08-29-79	30	ND	20	ND	40	ND	<10	1.3
04S.11W.06.140	12-11-52	--	--	--	--	--	--	--	--
04S.11W.17.33333	12-17-52	--	--	--	--	--	--	--	--
04S.12W.12.410	12-17-52	--	--	--	--	--	--	--	--
04S.12W.12.420B	12-17-52	--	--	--	--	--	--	--	--
	00-00-53	--	--	--	--	--	--	--	--
04S.12W.15.42314	12-17-52	--	--	--	--	--	--	--	--
04S.12W.24.122	12-11-52	--	--	--	--	--	--	--	--
04S.12W.29.122	07-11-79	80	<2.0	<20	<20	<10	<10	<1	<0.1
04S.12W.30.420	12-11-52	--	--	--	--	--	--	--	--
04S.12W.31.310	12-11-52	--	--	--	--	--	--	--	--
04S.13W.10.114*	12-18-52	--	--	--	--	--	--	--	--
04S.13W.12.123*	03-01-83	--	<1.0	<10	5	<3	4	1	<0.1
04S.13W.19.420*	12-18-52	--	--	--	--	--	--	--	--
04S.13W.21.222A	12-19-52	--	--	--	--	--	--	--	--
04S.13W.27.323	12-05-52	--	--	--	--	--	--	--	--
04S.13W.30.140A	12-02-52	--	--	--	--	--	--	--	--
04S.13W.30.140B	12-04-52	--	--	--	--	--	--	--	--
04S.13W.30.423	12-05-52	--	--	--	--	--	--	--	--
04S.13W.30.424	11-20-52	--	--	--	--	--	--	--	--
04S.13W.30.444	12-05-52	--	--	--	--	--	--	--	--
04S.13W.35.200B	12-11-52	--	--	--	--	--	--	--	--

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Selenium, dissolved (µg/L as Se)	Silver, dissolved (µg/L as Ag)	Strontium, dissolved (µg/L as Sr)	Zinc, dissolved (µg/L as Zn)
04N.16W.31.111	07-26-83	<1	<1.0	--	27
04N.17W.23.22	07-27-83	<1	<1.0	--	70
04N.18W.28.122*	08-04-79	--	--	--	<20
04N.18W.28.211	10-30-80	--	--	--	--
	10-30-81	--	--	--	--
04N.18W.36.312	11-20-80	--	--	--	--
04N.19W.14.314A	10-29-80	--	--	--	--
04N.19W.15.422	10-29-80	--	--	--	--
04N.19W.25.414	10-30-80	--	--	--	--
04N.19W.25.424	08-04-79	--	--	--	20
04N.19W.28.234	10-29-80	--	--	--	--
	11-20-80	0	0	--	30
04S.09W.06.212	08-21-79	--	--	--	20
04S.09W.08.132	07-13-79	--	--	--	--
04S.09W.12.133	05-08-79	--	--	--	290
04S.09W.17.311	07-13-79	--	--	--	<3
04S.10W.05.333B	08-29-79	--	--	--	--
04S.11W.06.140	12-11-52	--	--	--	--
04S.11W.17.33333	12-17-52	--	--	--	--
04S.12W.12.410	12-17-52	--	--	--	--
04S.12W.12.420B	12-17-52	--	--	--	--
	00-00-53	--	--	--	--
04S.12W.15.42314	12-17-52	--	--	--	--
04S.12W.24.122	12-11-52	--	--	--	--
04S.12W.29.122	07-11-79	--	--	--	30
04S.12W.30.420	12-11-52	--	--	--	--
04S.12W.31.310	12-11-52	--	--	--	--
04S.13W.10.114*	12-18-52	--	--	--	--
04S.13W.12.123*	03-01-83	1	<1.0	--	17
04S.13W.19.420*	12-18-52	--	--	--	--
04S.13W.21.222A	12-19-52	--	--	--	--
04S.13W.27.323	12-05-52	--	--	--	--
04S.13W.30.140A	12-02-52	--	--	--	--
04S.13W.30.140B	12-04-52	--	--	--	--
04S.13W.30.423	12-05-52	--	--	--	--
04S.13W.30.424	11-20-52	--	--	--	--
04S.13W.30.444	12-05-52	--	--	--	--
04S.13W.35.200	12-11-52	--	--	--	--

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Geologic unit	Specific conductance (µS/cm)	Solids, sum of constituents, dissolved (mg/L)	pH (standard units)	pH lab (standard units)	Temperature water (deg C)	Hardness, total (mg/L as $CaCO_3$)
04S.14W.11.330	12-09-52	--	205	--	--	--	13.5	56
04S.14W.11.340	12-09-52	--	198	--	--	--	15.5	--
04S.14W.23.230	12-09-52	--	186	--	--	--	12.0	66
04S.14W.27.344	11-24-82	Qal	270	--	8.0	--	10.0	--
	08-07-80	Qal	408	250	7.7	--	19.0	160
04S.15W.26.334	11-19-52	Td	304	--	--	--	15.5	79
04S.15W.32.12234	03-19-53	--	299	--	--	--	17.5	100
04S.16W.17.244	03-19-53	--	315	--	--	--	11.0	140
04S.16W.28.211	03-19-53	--	234	--	--	--	--	94
05S.09W.24.441	08-23-79	Td	310	220	8.0	--	20.0	86
05S.10W.09.200	09-00-58	Qab	538	--	8.2	--	--	200
05S.10W.09.232	08-29-79	--	660	<417	7.9	--	17.0	240
05S.10W.27.223*	11-28-79	--	393	239	--	--	--	140
05S.11W.01.311	09-01-58	Qab	683	--	8.1	--	--	140
05S.11W.19.111	12-19-52	--	489	--	--	--	13.5	160
05S.12W.01.434	12-14-52	--	465	--	--	--	16.0	160
05S.12W.05.440	12-19-52	--	321	--	--	--	14.0	110
05S.12W.09.430	12-19-52	--	360	--	--	--	16.0	110
05S.12W.09.434	08-30-79	--	420	219	7.9	--	16.0	140
05S.12W.32.200	07-00-59	--	325	--	8.7	--	--	130
05S.12W.34.430	12-19-52	--	422	--	--	--	--	46
05S.12W.34.434A	07-12-79	Qab	460	300	7.6	--	15.0	65
05S.13W.04.241	08-30-79	--	480	321	7.4	--	16.0	130
05S.13W.05.130	12-19-52	--	468	--	--	--	11.0	56
05S.13W.08.310*	10-31-52	--	364	--	--	--	16.5	5
05S.13W.09.24411	08-30-79	Qab	610	469	8.7	--	14.0	11
05S.13W.09.420	12-19-52	--	610	--	--	--	13.0	11
05S.13W.20.12344	07-05-80	Qab	3,300	--	7.8	--	18.5	--
05S.13W.22.11221	08-30-79	Qab	2,000	1,180	8.4	--	14.5	38
05S.13W.25.11111	10-30-52	--	400	--	--	--	--	14
05S.13W.27.422	08-30-79	--	1,620	<995	9.7	--	15.0	2
05S.13W.32.33143	06-13-79	Qab	40,800	--	6.7	--	14.5	--
05S.14W.05.130	12-19-52	--	406	--	--	--	13.0	170
05S.14W.09.243B	11-08-52	--	281	--	--	--	14.0	110
05S.14W.09.412*	08-23-79	--	250	<163	8.1	--	19.0	83
05S.14W.09.41213*	11-08-52	--	233	--	--	--	18.0	--
05S.14W.13.100	11-13-52	--	275	--	--	--	14.5	64
05S.14W.28.31141	12-09-52	Qab	1,520	--	--	--	17.0	19
05S.14W.33.110B	12-03-52	--	5,630	--	--	--	15.5	320
05S.15W.09.300	12-09-52	--	442	--	--	--	--	160

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Alkalinity (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Sodium percent	Sodium+potassium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Bicarbonate (mg/L as HCO_3)	Carbonate (mg/L as CO_3)
04S.14W.11.330	12-09-52	90	--	--	--	--	24	--	110	0
04S.14W.11.340	12-09-52	88	--	--	--	--	--	--	95	6
04S.14W.23.230	12-09-52	90	--	--	--	--	14	--	110	0
04S.14W.27.344	11-24-82	--	--	--	--	--	--	--	--	--
	08-07-80	200	39	14	19	21	--	3.9	--	--
04S.15W.26.334	11-19-52	139	--	--	--	--	37	--	170	0
04S.15W.32.12234	03-19-53	139	--	--	--	--	28	--	170	0
04S.16W.17.244	03-19-53	139	--	--	--	--	12	--	170	0
04S.16W.28.211	03-19-53	72	--	--	--	--	8.0	--	88	0
05S.09W.24.441	08-23-79	107	29	3.2	35	46	39	4.4	130	0
05S.10W.09.200	09-00-58	205	--	--	42	31	--	1.1	250	0
05S.10W.09.232	08-29-79	189	57	24	43	28	44	1.1	230	0
05S.10W.27.223*	11-28-79	170	41	10	19	22	20	1.1	--	--
05S.11W.01.311	09-01-58	180	--	--	--	--	95	--	220	0
05S.11W.19.111	12-19-52	172	--	--	--	--	42	--	210	0
05S.12W.01.434	12-14-52	123	--	--	--	--	31	--	150	0
05S.12W.05.440	12-19-52	115	--	--	--	--	26	--	140	14
05S.12W.09.430	12-19-52	123	--	--	--	--	35	--	140	5
05S.12W.09.434	08-30-79	139	37	11	35	35	37	2.2	170	0
05S.12W.32.200	07-00-59	146	--	--	24	29	--	2.0	150	14
05S.12W.34.430	12-19-52	156	--	--	--	--	80	--	190	10
05S.12W.34.434A	07-12-79	235	17	5.5	70	69	71	1.4	290	0
05S.13W.04.241	08-30-79	197	31	13	57	48	58	1.0	240	0
05S.13W.05.130	12-19-52	172	--	--	--	--	86	--	210	5
05S.13W.08.310*	10-31-52	171	--	--	--	--	87	--	64	71
05S.13W.09.24411	08-30-79	268	3.1	0.70	150	97	150	0.50	290	16
05S.13W.09.420	12-19-52	238	--	--	--	--	140	--	290	16
05S.13W.20.12344	07-05-80	290	--	--	--	--	--	--	--	--
05S.13W.22.11221	08-30-79	230	7.0	5.1	410	96	410	2.7	280	0
05S.13W.25.11111	10-30-52	148	--	--	--	--	95	--	180	18
05S.13W.27.422	08-30-79	479	0.80	0.10	370	100	370	1.2	340	120
05S.13W.32.33143	06-13-79	25	--	--	--	--	--	--	--	--
05S.14W.05.130	12-19-52	161	--	--	--	--	24	--	160	18
05S.14W.09.243B	11-08-52	131	--	--	--	--	20	--	160	0
05S.14W.09.412*	08-23-79	107	19	8.6	15	28	17	1.8	130	0
05S.14W.09.41213*	11-08-52	109	--	--	--	--	--	--	130	0
05S.14W.13.100	11-13-52	123	--	--	--	--	39	--	150	0
05S.14W.28.31141	12-09-52	377	--	--	--	--	350	--	460	18
05S.14W.33.110B	12-03-52	197	--	--	--	--	1,100	--	240	17
05S.15W.09.300	12-09-52	205	--	--	--	--	33	--	250	0

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Bromide, dissolved (mg/L as Br)	Silica, dissolved (mg/L as SiO_2)	Nitrogen, nitrate, dissolved (mg/L as NO_3)	Arsenic, dissolved (μg/L as As)	Barium, dissolved (μg/L as Ba)
04S.14W.11.330	12-09-52	6.6	5.0	0.20	--	25	3.1	--	--
04S.14W.11.340	12-09-52	--	3.0	--	--	--	--	--	--
04S.14W.23.230	12-09-52	2.9	4.0	0.20	--	12	0.20	--	--
04S.14W.27.344	11-24-82	--	--	--	--	--	--	--	--
	08-07-80	1.9	4.5	0.40	--	41	--	1	10
04S.15W.26.334	11-19-52	6.6	10	0.60	--	25	1.5	--	--
04S.15W.32.12234	03-19-53	11	5.0	1.6	--	51	3.6	--	--
04S.16W.17.244	03-19-53	7.4	10	0.20	--	34	10	--	--
04S.16W.28.211	03-19-53	21	12	0.20	--	36	0.0	--	--
05S.09W.24.441	08-23-79	16	5.1	1.3	--	58	--	3	--
05S.10W.09.200	09-00-58	32	30	1.2	--	47	4.1	--	2,700
05S.10W.09.232	08-29-79	59	61	1.1	--	46	--	2	--
05S.10W.27.223*	11-28-79	12	19	0.20	--	34	--	--	--
05S.11W.01.311	09-01-58	72	47	0.90	--	30	23	--	--
05S.11W.19.111	12-19-52	14	41	2.0	--	24	6.2	--	--
05S.12W.01.434	12-14-52	11	46	0.20	--	22	33	--	--
05S.12W.05.440	12-19-52	7.4	14	0.30	--	19	1.1	--	--
05S.12W.09.430	12-19-52	8.2	32	0.30	--	20	6.6	--	--
05S.12W.09.434	08-30-79	21	2.6	0.40	--	19	--	2	--
05S.12W.32.200	07-00-59	21	7.2	0.40	--	55	0.10	--	1,300
05S.12W.34.430	12-19-52	15	17	1.0	--	25	6.3	--	--
05S.12W.34.434A	07-12-79	20	16	1.2	--	26	--	4	--
05S.13W.04.241	08-30-79	22	32	1.1	--	37	--	5	--
05S.13W.05.130	12-19-52	23	23	1.4	--	31	4.8	--	--
05S.13W.08.310	10-31-52	12	4.0	1.4	--	48	1.5	--	--
05S.13W.09.24411	08-30-79	17	32	1.7	--	1.2	--	--	--
05S.13W.09.420	12-19-52	14	27	1.8	--	40	0.20	--	--
05S.13W.20.12344	07-05-80	260	670	3.5	--	110	--	--	--
05S.13W.22.11221	08-30-79	190	380	1.4	--	44	--	5	--
05S.13W.25.11111*	10-30-52	7.0	22	2.8	--	25	0.0	--	--
05S.13W.27.422	08-30-79	140	150	6.7	--	38	--	16	--
05S.13W.32.33143	06-13-79	100	16,000	--	--	--	--	--	--
05S.14W.05.130	12-19-52	19	16	0.60	--	38	18	--	--
05S.14W.09.243B	11-08-52	9.5	5.0	0.60	--	42	3.0	--	--
05S.14W.09.412*	08-23-79	7.3	4.2	0.70	--	40	--	1	--
05S.14W.09.41213*	11-08-52	--	4.0	--	--	--	--	--	--
05S.14W.13.100	11-13-52	8.2	8.0	1.0	--	42	1.5	--	--
05S.14W.28.31141	12-09-52	26	240	1.6	--	15	0.90	--	--
05S.14W.33.110B	12-03-52	92	1,700	1.2	--	19	0.40	--	--
05S.15W.09.300	12-09-52	12	12	0.30	--	43	0.0	--	--

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Boron, dis-solved (μg/L as B)	Cadmium, dis-solved (μg/L as Cd)	Chro-mium, dis-solved (μg/L as Cr)	Copper, dis-solved (μg/L as Cu)	Iron, dis-solved (μg/L as Fe)	Lead, dis-solved (μg/L as Pb)	Manga-nese, dis-solved (μg/L as Mn)	Mercury, dis-solved (μg/L as Hg)
04S.14W.11.330	12-09-52	--	--	--	--	--	--	--	--
04S.14W.11.340	12-09-52	--	--	--	--	--	--	--	--
04S.14W.23.230	12-09-52	--	--	--	--	--	--	--	--
04S.14W.27.344	11-24-82	--	--	--	--	--	--	--	--
	08-07-80	130	5.0	10	28	1,200	16	50	0.1
04S.15W.26.334	11-19-52	--	--	--	--	--	--	--	-
04S.15W.32.12234	03-19-53	--	--	--	--	--	--	--	--
04S.16W.17.244	03-19-53	--	--	--	--	--	--	--	--
04S.16W.28.211	03-19-53	--	--	--	--	--	--	--	--
05S.09W.24.441	08-23-79	80	ND	ND	ND	<10	ND	<10	<0.1
05S.10W.09.200	09-00-58	200	--	--	20	--	--	--	--
05S.10W.09.232	08-29-79	90	<2.0	ND	11	30	<10	2	<0.1
05S.10W.27.223*	11-28-79	20	--	--	--	20	--	3	--
05S.11W.01.311	09-01-58	--	--	--	--	--	--	--	--
05S.11W.19.111	12-19-52	--	--	--	--	--	--	--	--
05S.12W.01.434	12-14-52	--	--	--	--	--	--	--	--
05S.12W.05.440	12-19-52	--	--	--	--	--	--	--	--
05S.12W.09.430	12-19-52	--	--	--	--	--	--	--	--
05S.12W.09.434	08-30-79	50	ND	<20	ND	60	ND	<10	1.8
05S.12W.32.200	07-00-59	510	--	--	10	--	--	--	--
05S.12W.34.430	12-19-52	--	--	--	--	--	--	--	--
05S.12W.34.434A	07-12-79	--	2.0	ND	<20	300	<10	30	<0.1
05S.13W.04.241	08-30-79	90	ND	20	ND	20	ND	<10	2.4
05S.13W.05.130	12-19-52	--	--	--	--	--	--	--	--
05S.13W.08.310	10-31-52	--	--	--	--	--	--	--	--
05S.13W.09.24411	08-30-79	160	--	--	--	320	--	8	--
05S.13W.09.420	12-19-52	--	--	--	--	--	--	--	--
05S.13W.20.12344	07-05-80	--	--	--	--	--	--	--	--
05S.13W.22.11221	08-30-79	1,500	<2.0	ND	<20	50	<10	8	3.0
05S.13W.25.11111*	10-30-52	--	--	--	--	--	--	--	--
05S.13W.27.422	08-30-79	800	<2.0	ND	<20	40	<10	2	2.0
05S.13W.32.33143	06-13-79	--	--	--	--	--	--	--	--
05S.14W.05.130	12-19-52	--	--	--	--	--	--	--	--
05S.14W.09.243B	11-08-52	--	--	--	--	--	--	--	--
05S.14W.09.412*	08-23-79	<20	<2.0	ND	<20	<10	<10	5	<0.1
05S.14W.09.41213*	11-08-52	--	--	--	--	--	--	--	--
05S.14W.13.100	11-13-52	--	--	--	--	--	--	--	-
05S.14W.28.31141	12-09-52	--	--	--	--	--	--	--	--
05S.14W.33.110B	12-03-52	--	--	--	--	--	--	--	--
05S.15W.09.300	12-09-52	--	--	--	--	--	--	--	--

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Selenium, dissolved (µg/L as Se)	Silver, dissolved (µg/L as Ag)	Strontium, dissolved (µg/L as Sr)	Zinc, dissolved (µg/L as Zn)
04S.14W.11.330	12-09-52	--	--	--	--
04S.14W.11.340	12-09-52	--	--	--	--
04S.14W.23.230	12-09-52	--	--	--	--
04S.14W.27.344	11-24-82	--	--	--	--
	08-07-80	0	0	--	3,700
04S.15W.26.334	11-19-52	--	--	--	--
04S.15W.32.12234	03-19-53	--	--	--	--
04S.16W.17.244	03-19-53	--	--	--	--
04S.16W.28.211	03-19-53	--	--	--	--
05S.09W.24.441	08-23-79	--	--	--	40
05S.10W.09.200	09-00-58	--	--	--	210
05S.10W.09.232	08-29-79	--	--	--	80
05S.10W.27.223*	11-28-79	--	--	--	6
05S.11W.01.311	09-01-58	--	--	--	--
05S.11W.19.111	12-19-52	--	--	--	--
05S.12W.01.434	12-14-52	--	--	--	--
05S.12W.05.440	12-19-52	--	--	--	--
05S.12W.09.430	12-19-52	--	--	--	--
05S.12W.09.434	08-30-79	--	--	--	60
05S.12W.32.200	07-00-59	--	--	110	0
05S.12W.34.430	12-19-52	--	--	--	--
05S.12W.34.434A	07-12-79	--	--	--	--
05S.13W.04.241	08-30-79	--	--	--	--
05S.13W.05.130	12-19-52	--	--	--	--
05S.13W.08.310	10-31-52	--	--	--	--
05S.13W.09.24411	08-30-79	--	--	--	--
05S.13W.09.420	12-19-52	--	--	--	--
05S.13W.20.12344	07-05-80	--	--	--	--
05S.13W.22.11221	08-30-79	--	--	--	20
05S.13W.25.11111*	10-30-52	--	--	--	--
05S.13W.27.422	08-30-79	--	--	--	30
05S.13W.32.33143	06-13-79	--	--	--	--
05S.14W.05.130	12-19-52	--	--	--	--
05S.14W.09.243B	11-08-52	--	--	--	--
05S.14W.09.412*	08-23-79	--	--	--	4
05S.14W.09.41213*	11-08-52	--	--	--	--
05S.14W.13.100	11-13-52	--	--	--	--
05S.14W.28.31141	12-09-52	--	--	--	--
05S.14W.33.110B	12-03-52	--	--	--	--
05S.15W.09.300	12-09-52	--	--	--	--

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Geo-logic unit	Spe-cific con-duct-ance (µS/cm)	Solids, sum of constit-uents, dis-solved (mg/L)	pH (stand-ard units)	pH lab (stand-ard units)	Temper-ature water (deg C)	Hard-ness, total (mg/L as $CaCO_3$)
05S.15W.09.300	05-15-53	--	571	--	--	--	--	270
05S.15W.22.330	12-17-52	--	941	--	--	--	8.0	260
05S.15W.22.3323*	11-18-52	--	294	--	--	--	--	130
05S.15W.36.300*	11-18-52	--	301	--	--	--	10.0	120
05S.16W.03.1314*	11-20-52	--	236	--	--	--	21.0	86
	11-08-54	--	234	170	8.2	--	20.0	80
	11-29-78	--	240	171	8.0	--	20.0	78
05S.19W.35.132*	05-22-58	Qal	284	--	9.7	--	36.5	10
05S.20W.11.432*	05-22-58	Qal	412	--	7.8	--	11.5	140
06S.12W.09.130	12-19-52	--	572	--	--	--	13.0	100
06S.12W.28.242	11-06-52	Td	233	--	--	--	21.0	11
06S.13W.11.243	08-30-79	Qab	800	513	8.0	--	19.0	130
06S.13W.11.244	08-30-79	Qab	550	345	8.0	--	15.0	63
06S.13W.11.400A	12-19-52	--	533	--	--	--	13.5	44
06S.13W.20.122A	10-30-52	--	772	--	--	--	15.5	--
06S.13W.20.12223	08-30-79	Qab	1,200	757	--	--	20.0	100
06S.13W.20.12223B	10-30-52	Qab	804	493	--	--	15.5	29
06S.14W.01.430	11-13-52	--	297	--	--	--	15.5	110
06S.14W.07.330	11-13-52	Qab	314	--	--	--	14.5	120
06S.14W.07.334	08-22-79	Qab	330	<205	7.8	--	15.0	120
06S.14W.08.333	08-22-79	Qab	1,180	756	--	--	21.0	19
	11-13-52	Qab	211	--	--	--	13.0	92
06S.14W.19.122	11-17-52	--	352	--	--	--	12.5	130
06S.14W.21.433	08-30-79	Qab	380	245	8.1	--	19.0	63
06S.14W.28.332A	01-27-53	Qab	270	--	--	--	--	94
06S.14W.31.122	11-17-52	Qab	288	--	--	--	11.0	92
06S.15W.17.400	11-14-52	--	185	--	--	--	9.5	75
06S.15W.20.21134	08-22-79	--	200	<144	7.4	--	10.0	89
06S.15W.24.111	11-13-52	Qab	667	--	--	--	15.5	5
07N.19W.15.131	09-03-79	Pu	--	671	--	--	--	460
07S.09W.25.144	08-24-79	--	310	185	9.0	--	28.0	19
07S.12W.03.424	07-11-79	Td	280	212	8.0	--	26.0	96
07S.14W.16.133	08-22-79	Qab	180	<153	7.5	--	15.0	82
07S.14W.17.244	01-27-53	--	150	--	--	--	--	54
07S.15W.34.213	08-22-79	--	220	159	8.1	--	18.0	66
07S.19W.01.340	05-05-65	Qal	340	222	7.5	--	--	120
08S.13W.16.211	08-23-79	--	210	<157	8.5	--	28.0	75
08S.13W.18.13133	08-23-79	Tbm? Td?	510	304	7.6	--	19.5	160
08S.16W.01.313	07-31-59	Td?	227	--	--	--	22.0	73
08S.16W.22.33314*	12-03-52	--	173	--	--	--	5.5	70
08S.21W.24.323*	05-17-57	QTg	381	--	7.6	--	13.5	160

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Alkalinity wat wh tot fet field (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Sodium percent	Sodium+potassium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Bicarbonate (mg/L as HCO_3)	Carbonate (mg/L as CO_3)
05S.15W.09.300	05-15-53	--	--	--	--	--	--	--	--	--
05S.15W.22.330	12-17-52	279	--	--	--	--	110	--	340	0
05S.15W.22.3323*	11-18-52	148	--	--	--	--	12	--	180	0
05S.15W.36.300*	11-18-52	151	--	--	--	--	20	--	180	0
05S.16W.03.1314*	11-20-52	113	--	--	--	--	20	--	140	0
	11-08-54	114	21	6.6	19	33	--	3.3	140	0
	11-29-78	110	21	6.3	21	36	--	2.7	--	--
05S.19W.35.132*	05-22-58	138	--	--	66	94	--	0.50	57	55
05S.20W.11.432*	05-22-58	198	--	--	43	40	--	0.80	240	0
06S.12W.09.130	12-19-52	189	--	--	--	--	90	--	230	6
06S.12W.28.242	11-06-52	64	--	--	--	--	53	--	44	17
06S.13W.11.243	08-30-79	160	39	8.9	130	67	130	3.8	--	--
06S.13W.11.244	08-30-79	130	12	7.9	100	77	100	3.0	--	--
06S.13W.11.400A	12-19-52	156	--	--	--	--	100	--	190	5
06S.13W.20.122A	10-30-52	130	--	--	--	--	--	--	160	0
06S.13W.20.12223	08-30-79	210	28	7.8	220	81	230	8.4	--	--
06S.13W.20.12223B	10-30-52	148	7.0	2.8	--	--	170	--	180	0
06S.14W.01.430	11-13-52	131	--	--	--	--	19	--	160	0
06S.14W.07.330	11-13-52	139	--	--	--	--	22	--	170	0
06S.14W.07.334	08-22-79	131	29	11	19	25	22	3.3	160	0
06S.14W.08.333	08-22-79	460	4.5	2.0	280	96	280	4.0	-	--
	11-13-52	107	--	--	--	--	12	--	130	0
06S.14W.19.122	11-17-52	148	--	--	--	--	27	--	180	0
06S.14W.21.433	08-30-79	107	17	5.0	60	66	63	2.6	130	0
06S.14W.28.332A	01-27-53	75	--	--	--	--	18	--	92	0
06S.14W.31.122	11-17-52	139	--	--	--	--	32	--	170	0
06S.15W.17.400	11-14-52	57	--	--	--	--	9.9	--	70	0
06S.15W.20.21134	08-22-79	54	23	7.6	6.7	14	8.7	2.0	66	0
06S.15W.24.111	11-13-52	254	--	--	--	--	160	--	310	10
07N.19W.15.131	09-03-79	150	130	33	48	18	54	5.8	--	--
07S.09W.25.144	08-24-79	97	6.9	0.50	56	86	57	0.50	110	4
07S.12W.03.424	07-11-79	148	34	2.6	23	34	24	1.3	180	0
07S.14W.16.133	08-22-79	43	23	6.0	8.4	17	12	3.3	52	0
07S.14W.17.244	01-27-53	48	--	--	--	--	9.0	--	58	0
07S.15W.34.213	08-22-79	90	23	2.1	20	39	21	0.50	110	0
07S.19W.01.340	05-05-65	--	36	6.3	30	--	--	--	200	0
08S.13W.16.211	08-23-79	81	25	3.0	18	34	19	1.2	86	6
08S.13W.18.13133	08-23-79	82	53	7.0	40	35	42	1.5	100	0
08S.16W.01.313	07-31-59	--	--	--	--	--	--	--	--	--
08S.16W.22.33314	12-03-52	76	--	--	--	--	12	--	93	0
08S.21W.24.323*	05-17-57	176	--	--	24	25	--	0.90	210	0

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Bromide, dissolved (mg/L as Br)	Silica, dissolved (mg/L as SiO_2)	Nitrogen, nitrate, dissolved (mg/L as NO_3)	Arsenic, dissolved (µg/L as As)	Barium, dissolved (µg/L as Ba)
05S.15W.09.300	05-15-53	--	--	--	--	--	--	--	--
05S.15W.22.330	12-17-52	90	88	0.20	--	20	1.4	--	--
05S.15W.22.3323*	11-18-52	1.6	4.0	0.40	--	39	0.20	--	--
05S.15W.36.300*	11-18-52	9.1	4.0	0.40	--	45	0.20	--	--
05S.16W.03.1314*	11-20-52	7.0	5.0	0.40	--	44	0.50	--	--
	11-08-54	2.9	4.5	0.60	--	42	1.5	--	--
	11-29-78	4.3	4.4	0.50	--	40	--	2	10
05S.19W.35.132*	05-22-58	6.6	5.0	1.0	--	58	0.60	--	2,200
05S.20W.11.432*	05-22-58	23	7.0	0.50	--	33	1.1	--	3,300
06S.12W.09.130	12-19-52	59	22	2.0	--	42	1.0	--	--
06S.12W.28.242	11-06-52	24	12	6.0	--	26	3.9	--	--
06S.13W.11.243	08-30-79	96	81	3.2	--	51	--	--	--
06S.13W.11.244	08-30-79	59	32	3.4	--	21	--	--	--
06S.13W.11.400A	12-19-52	51	33	3.6	--	48	0.90	--	--
06S.13W.20.122A	10-30-52	--	140	--	--	--	--	--	--
06S.13W.20.12223	08-30-79	150	160	2.9	--	45	--	--	--
06S.13W.20.12223B	10-30-52	39	140	2.4	--	45	1.5	--	--
06S.14W.01.430	11-13-52	5.8	8.0	1.0	--	42	1.0	--	--
06S.14W.07.330	11-13-52	13	8.0	0.20	--	37	4.2	--	--
06S.14W.07.334	08-22-79	11	7.7	0.50	--	39	--	1	--
06S.14W.08.333	08-22-79	32	120	1.1	--	36	--	--	--
	11-13-52	7.8	2.0	0.20	--	51	0.70	--	--
06S.14W.19.122	11-17-52	31	6.0	0.20	--	42	4.2	--	--
06S.14W.21.433	08-30-79	13	50	0.80	--	31	--	1	--
06S.14W.28.332A	01-27-53	14	27	1.0	--	32	27	--	--
06S.14W.31.122	11-17-52	14	5.0	1.0	--	43	0.90	--	--
06S.15W.17.400	11-14-52	30	4.0	0.20	--	41	2.2	--	--
06S.15W.20.21134	08-22-79	34	2.3	0.50	--	35	--	1	--
06S.15W.24.111	11-13-52	26	38	1.4	--	30	0.80	--	--
07N.19W.15.131	09-03-79	310	36	0.60	--	14	--	<1	--
07S.09W.25.144	08-24-79	18	4.8	3.8	--	34	--	4	--
07S.12W.03.424	07-11-79	10	4.8	2.4	--	44	--	1	--
07S.14W.16.133	08-22-79	45	4.2	0.20	--	33	--	1	--
07S.14W.17.244	01-27-53	15	5.0	0.20	--	40	3.7	--	--
07S.15W.34.213	08-22-79	6.9	3.6	3.3	--	43	--	1	--
07S.19W.01.340	05-05-65	7.2	5.2	0.40	--	36	3.6	--	--
08S.13W.16.211	08-23-79	7.9	4.5	1.7	--	43	--	2	--
08S.13W.18.13133	08-23-79	23	86	2.1	--	39	--	1	--
08S.16W.01.313	07-31-59	5.8	4.8	--	--	--	--	--	--
08S.16W.22.33314*	12-03-52	13	3.0	0.20	--	62	1.0	--	--
08S.21W.24.323*	05-17-57	30	5.0	0.50	--	34	0.20	--	0

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Boron, dis- solved (µg/L as B)	Cadmium, dis- solved (µg/L as Cd)	Chro- mium, dis- solved (µg/L as Cr)	Copper, dis- solved (µg/L as Cu)	Iron, dis- solved (µg/L as Fe)	Lead, dis- solved (µg/L as Pb)	Manga- nese, dis- solved (µg/L as Mn)	Mercury, dis- solved (µg/L as Hg)
05S.15W.09.300	05-15-53	--	--	--	--	--	--	--	--
05S.15W.22.330	12-17-52	--	--	--	--	--	--	--	--
05S.15W.22.3323*	11-18-52	--	--	--	--	--	--	--	--
05S.15W.36.300*	11-18-52	--	--	--	--	--	--	--	--
05S.16W.03.1314*	11-20-52	--	--	--	--	--	--	--	--
	11-08-54	40	--	--	--	50	--	0	--
	11-29-78	40	8.0	10	2	<10	--	1	<0.1
05S.19W.35.132*	05-22-58	40	--	--	10	--	--	--	--
05S.20W.11.432*	05-22-58	40	--	--	0	--	--	--	--
06S.12W.09.130	12-19-52	--	--	--	--	--	--	--	--
06S.12W.28.242	11-06-52	--	--	--	--	--	--	--	--
06S.13W.11.243	08-30-79	540	--	--	--	150	--	30	--
06S.13W.11.244	08-30-79	550	--	--	--	50	--	20	--
06S.13W.11.400A	12-19-52	--	--	--	--	--	--	--	--
06S.13W.20.122A	10-30-52	--	--	--	--	--	--	--	--
06S.13W.20.12223	08-30-79	300	--	--	--	250	--	20	--
06S.13W.20.12223B	10-30-52	--	--	--	--	--	--	--	--
06S.14W.01.430	11-13-52	--	--	--	--	--	--	--	--
06S.14W.07.330	11-13-52	--	--	--	--	--	--	--	--
06S.14W.07.334	08-22-79	<20	3.0	<20	<20	20	<10	3	<0.1
06S.14W.08.333	08-22-79	280	--	--	--	340	--	20	--
	11-13-52	--	--	--	--	--	--	--	--
06S.14W.19.122	11-17-52	--	--	--	--	--	--	--	--
06S.14W.21.433	08-30-79	50	ND	<20	ND	20	ND	<10	3.2
06S.14W.28.332A	01-27-53	--	--	--	--	--	--	--	--
06S.14W.31.122	11-17-52	--	--	--	--	--	--	--	--
06S.15W.17.400	11-14-52	--	--	--	--	--	--	--	--
06S.15W.20.21134	08-22-79	30	ND	ND	ND	380	ND	50	2.3
06S.15W.24.111	11-13-52	--	--	--	--	--	--	--	--
07N.19W.15.131	09-03-79	120	<2.0	ND	<2	3000	3	40	<0.1
07S.09W.25.144	08-24-79	60	ND	ND	ND	40	ND	<10	2.6
07S.12W.03.424	07-11-79	--	3.0	ND	<20	40	<10	2	<0.1
07S.14W.16.133	08-22-79	30	ND	<20	ND	<10	ND	<10	<0.1
07S.14W.17.244	01-27-53	--	--	--	--	--	--	--	--
07S.15W.34.213	08-22-79	30	ND	ND	ND	670	ND	<10	0.2
07S.19W.01.340	05-05-65	--	--	--	--	--	--	--	--
08S.13W.16.211	08-23-79	30	ND	<20	ND	80	ND	<10	<0.1
08S.13W.18.13133	08-23-79	60	ND	ND	ND	20	ND	<10	0.2
08S.16W.01.313	07-31-59	--	--	--	--	--	--	--	--
08S.16W.22.33314*	12-03-52	--	--	--	--	--	--	--	--
08S.21W.24.323*	05-17-57	30	--	--	0	--	--	--	--

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Sele-nium, dis-solved (µg/L as Se)	Silver, dis-solved (µg/L as Ag)	Stron-tium, dis-solved (µg/L as Sr)	Zinc, dis-solved (µg/L as Zn)
05S.15W.09.300	05-15-53	--	--	--	--
05S.15W.22.330	12-17-52	--	--	--	--
05S.15W.22.3323*	11-18-52	--	--	--	--
05S.15W.36.300*	11-18-52	--	--	--	--
05S.16W.03.1314*	11-20-52	--	--	--	--
	11-08-54	--	--	--	--
	11-29-78	1	ND	--	4
05S.19W.35.132*	05-22-58	--	--	--	0
05S.20W.11.432*	05-22-58	--	--	--	10
06S.12W.09.130	12-19-52	--	--	--	--
06S.12W.28.242	11-06-52	--	--	--	--
06S.13W.11.243	08-30-79	--	--	--	--
06S.13W.11.244	08-30-79	--	--	--	--
06S.13W.11.400A	12-19-52	--	--	--	--
06S.13W.20.122A	10-30-52	--	--	--	--
06S.13W.20.12223	08-30-79	--	--	--	--
06S.13W.20.12223B	10-30-52	--	--	--	--
06S.14W.01.430	11-13-52	--	--	--	--
06S.14W.07.330	11-13-52	--	--	--	--
06S.14W.07.334	08-22-79	2	--	--	70
06S.14W.08.333	08-22-79	--	--	--	--
	11-13-52	--	--	--	--
06S.14W.19.122	11-17-52	--	--	--	--
06S.14W.21.433	08-30-79	--	--	--	130
06S.14W.28.332A	01-27-53	--	--	--	--
06S.14W.31.122	11-17-52	--	--	--	--
06S.15W.17.400	11-14-52	--	--	--	--
06S.15W.20.21134	08-22-79	--	--	--	40
06S.15W.24.111	11-13-52	--	--	--	--
07N.19W.15.131	09-03-79	<1	--	--	900
07S.09W.25.144	08-24-79	--	--	--	<20
07S.12W.03.424	07-11-79	--	--	--	--
07S.14W.16.133	08-22-79	--	--	--	1,400
07S.14W.17.244	01-27-53	--	--	--	--
07S.15W.34.213	08-22-79	--	--	--	190
07S.19W.01.340	05-05-65	--	--	--	--
08S.13W.16.211	08-23-79	--	--	--	30
08S.13W.18.13133	08-23-79	--	--	--	310
08S.16W.01.313	07-31-59	--	--	--	--
08S.16W.22.33314*	12-03-52	--	--	--	--
08S.21W.24.323*	05-17-57	--	--	--	20

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Geologic unit	Specific conductance (µS/cm)	Solids, sum of constituents, dissolved (mg/L)	pH (standard units)	pH lab (standard units)	Temperature water (deg C)	Hardness, total (mg/L as $CaCO_3$)
09S.13W.20.324	01-15-80	Td	320	253	7.9	--	--	83
12S.13W.00.000	05-17-71	--	286	186	7.5	--	14.0	65
12S.13W.00.000A	05-17-71	--	282	186	7.4	--	22.0	65
12S.13W.31.100*	07-21-67	--	771	518	7.9	--	6.5	40
12S.14W.00.000	05-17-71	--	196	119	6.9	--	14.0	61
12S.14W.24.411*	07-24-62	--	767	504	7.8	--	60.5	42
12S.14W.25.124	08-08-64	Qal	304	215	7.6	--	16.5	69
12S.14W.25.231	07-31-64	--	2,710	2,410	8.7	--	32.0	1,200
12S.14W.25.341	07-22-62	Qal	219	149	7.0	--	--	86
12S.14W.27.224*	07-17-62	QTg	289	195	7.0	--	--	100
12S.20W.23.321*	06-13-58	QTg? Tbm?	1,660	--	7.6	--	43.0	140
	12-05-74	QTg? Tbm?	1,200	--	7.3	--	35.0	--

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Alkalinity (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Sodium percent	Sodium+potassium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Bicarbonate (mg/L as HCO_3)	Carbonate (mg/L as CO_3)
09S.13W.20.324	01-15-80	110	31	1.3	36	48	37	1.2	--	--
12S.13W.00.000	05-17-71	85	20	3.6	32	51	--	1.8	100	0
12S.13W.00.000A	05-17-71	83	20	3.6	32	51	--	1.9	100	0
12S.13W.31.100*	07-21-67	107	16	0.10	150	88	--	4.1	130	0
12S.14W.00.000	05-17-71	75	19	3.4	9.9	26	--	1.1	92	0
12S.14W.24.411*	07-24-62	105	16	0.50	--	--	150	--	130	0
12S.14W.25.124	08-08-64	98	22	3.4	38	54	--	2.3	120	0
12S.14W.25.231	07-31-64	17	500	0.0	220	28	--	1.6	15	3
12S.14W.25.341	07-22-62	74	26	5.1	--	--	11	--	90	0
12S.14W.27.224*	07-17-62	125	36	3.4	--	--	22	--	150	0
12S.20W.23.321*	06-13-58	108	--	--	280	79	--	16	130	0
	12-05-74	111	--	--	200	9	--	12	130	0

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Bromide, dissolved (mg/L as Br)	Silica, dissolved (mg/L as SiO_2)	Nitrogen, nitrate, dissolved (mg/L as NO_3)	Arsenic, dissolved (μg/L as As)	Barium, dissolved (μg/L as Ba)
09S.13W.20.324	01-15-80	52	12	3.8	--	46	--	--	--
12S.13W.00.000	05-17-71	17	16	2.6	--	41	--	--	--
12S.13W.00.000A	05-17-71	19	16	2.6	--	41	--	--	--
12S.13W.31.100*	07-21-67	84	110	9.6	--	80	0.10	--	--
12S.14W.00.000	05-17-71	3.3	4.8	0.90	--	31	--	--	--
12S.14W.24.411*	07-24-62	79	110	9.5	--	81	0.40	--	--
12S.14W.25.124	08-08-64	25	18	3.0	--	44	0.10	--	--
12S.14W.25.231	07-31-64	1,600	52	7.8	--	20	0.20	--	--
12S.14W.25.341	07-22-62	20	5.1	0.90	--	31	6.3	--	--
12S.14W.27.224*	07-17-62	17	4.8	1.4	--	35	0.10	--	--
12S.20W.23.321*	06-13-58	41	430	1.8	--	76	1.3	--	0
	12-05-74	--	310	--	0.40	73	--	--	--

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Continued

Location number	Date	Boron, dis-solved (µg/L as B)	Cadmium, dis-solved (µg/L as Cd)	Chro-mium, dis-solved (µg/L as Cr)	Copper, dis-solved (µg/L as Cu)	Iron, dis-solved (µg/L as Fe)	Lead, dis-solved (µg/L as Pb)	Manga-nese, dis-solved (µg/L as Mn)	Mercury, dis-solved (µg/L as Hg)
09S.13W.20.324	01-15-80	--	--	--	--	--	--	--	--
12S.13W.00.000	05-17-71	--	--	--	--	30	--	0	--
12S.13W.00.000A	05-17-71	--	--	--	--	20	--	0	--
12S.13W.31.100*	07-21-67	120	--	--	--	--	--	--	--
12S.14W.00.000	05-17-71	--	--	--	--	20	--	0	--
12S.14W.24.411*	07-24-62	--	--	--	--	0	--	--	--
12S.14W.25.124	08-08-64	40	--	--	--	20	--	--	--
12S.14W.25.231	07-31-64	390	--	--	--	30	--	--	--
12S.14W.25.341	07-22-62	--	--	--	--	0	--	--	--
12S.14W.27.224*	07-17-62	--	--	--	--	0	--	--	--
12S.20W.23.321*	06-13-58	1	--	--	0	--	--	--	--
	12-05-74	200	--	--	--	--	--	--	--

Table 5.--Summary of data for water-quality analyses of water from wells and springs in Catron County, New Mexico--Concluded

Location number	Date	Selenium, dissolved (μg/L as Se)	Silver, dissolved (μg/L as Ag)	Strontium, dissolved (μg/L as Sr)	Zinc, dissolved (μg/L as Zn)
09S.13W.20.324	01-15-80	--	--	--	--
12S.13W.00.000	05-17-71	--	--	--	--
12S.13W.00.000A	05-17-71	--	--	--	--
12S.13W.31.100*	07-21-67	--	--	--	--
12S.14W.00.000	05-17-71	--	--	--	--
12S.14W.24.411*	07-24-62	--	--	--	--
12S.14W.25.124	08-08-64	--	--	--	--
12S.14W.25.231	07-31-64	--	--	--	--
12S.14W.25.341	07-22-62	--	--	--	--
12S.14W.27.224*	07-17-62	--	--	--	--
12S.20W.23.321*	06-13-58	--	--	--	0
	12-05-74	--	--	--	--

Table 6.--Location, date, and temperature of water samples from wells and springs near Quemado, Catron County, New Mexico

[DL-26: original sample number for the well or spring; modified from Levitte and Gambill, 1980]

Location		Name	Date sampled	Temperature (degrees Celsius)
Latitude	Longitude			
34°27'	108°46'	Zuni Salt Lake Spring (DL-22)	June 1979	18.2
34°28'	108°44'	Jerry Well (DL-26)	July 1979	24.0
34°34'	108°44'	New Santa Rita Spring (DL-31)	August 1979	16.4
34°32'	108°47'	Pueblo Windmill (DL-32)	August 1979	33.8
34°22'	108°58'	Goat Spring (DL-33)	August 1979	12.6
34°39'	108°19'	Mujeres Camp Well (DL-42)	August 1979	15.8

Table 7.--Summary of data for aquifer tests conducted in Quaternary bolson-fill deposits of the Plains of San Agustin in Socorro County, New Mexico

[I, irrigation well; P, production well; modified from Myers and others, 1994]

Location number	Test type	Duration (minutes)	Transmissivity (feet squared per day)	Specific capacity (gallons per minute per foot)	Remarks
01S.08W.02.241	Recovery	158	20,900	16.95	I
01N.08W.36.341	Recovery	121	46,000	16.80	I
01S.08W.02.424	Recovery	101	48,000	90.00	I
01N.08W.35.413	Drawdown	480	21,700	31.60	I
	Recovery	101	22,700	No data	
01N.08W.35.242	Recovery	80	42,800	No data	I
03S.08W.01.310	Drawdown	100	2,300	5.70	P
	Recovery	100	2,400	No data	

Table 8.--Water use in Catron County, New Mexico, 1990--withdrawals and depletions by category

[Modified from Wilson, 1992]

	Withdrawals (acre-feet)			Depletions (acre-feet)		
Water-use category	Surface water	Ground water	Total	Surface water	Ground water	Total
Irrigated agriculture	18,153	1,869	20,022	1,592	1,441	3,033
Mining	0	4	4	0	0.35	0.35
Public water supply	0	125	125	0	51.7	51.7
Domestic	0	137	137	0	61.6	61.6
Livestock	308	332	640	308	332	640
Commercial	8	16	24	8.5	7	15.5
Industrial	0	11	11	0	5.97	5.97
Total	18,469	2,494	20,963	1,908	1,900	3,808

Table 9.--Domestic water use, by river basin, for public water supply and self-supplied water systems in Catron County, New Mexico, 1990

[Modified from Wilson, 1992]

Water system	River basin	Population	Water use per day per capita (gallons per day)	Surface-water withdrawals (acre-feet)	Ground-water withdrawals (acre-feet)	Ground-water depletions (acre-feet)
Quemado Water Works	Lower Colorado	150.0	66.0	0.0	11.13	5.01
Rancho Grande Water Association, Inc.	Lower Colorado	125.0	144.0	0.0	20.13	9.06
Reserve Water Works	Lower Colorado	500.0	168.0	0.0	94.18	37.67
Rural, self-supplied homes	Lower Colorado	1,561.0	64.0	0.0	111.91	50.36
	Subtotal	2,336.0	442.0	0.0	237.35	102.10
Rural, self-supplied homes	Rio Grande	347.0	64.0	0.0	24.88	11.20
	Subtotal	347.0	64.0	0.0	24.88	11.20
	County total	2,683.0	506.0	0.0	262.23	113.30

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