Water-Resources Report Number Twelve-E
ARIZONA STATE LAND DEPARTMENT
Obed M. Lassen, Commissioner

Geohydrologic data in the Navajo and Hopi Indian Reservations Arizona, New Mexico, and Utah

PART I-A—SUPPLEMENTAL RECORDS OF GROUND-WATER SUPPLIES

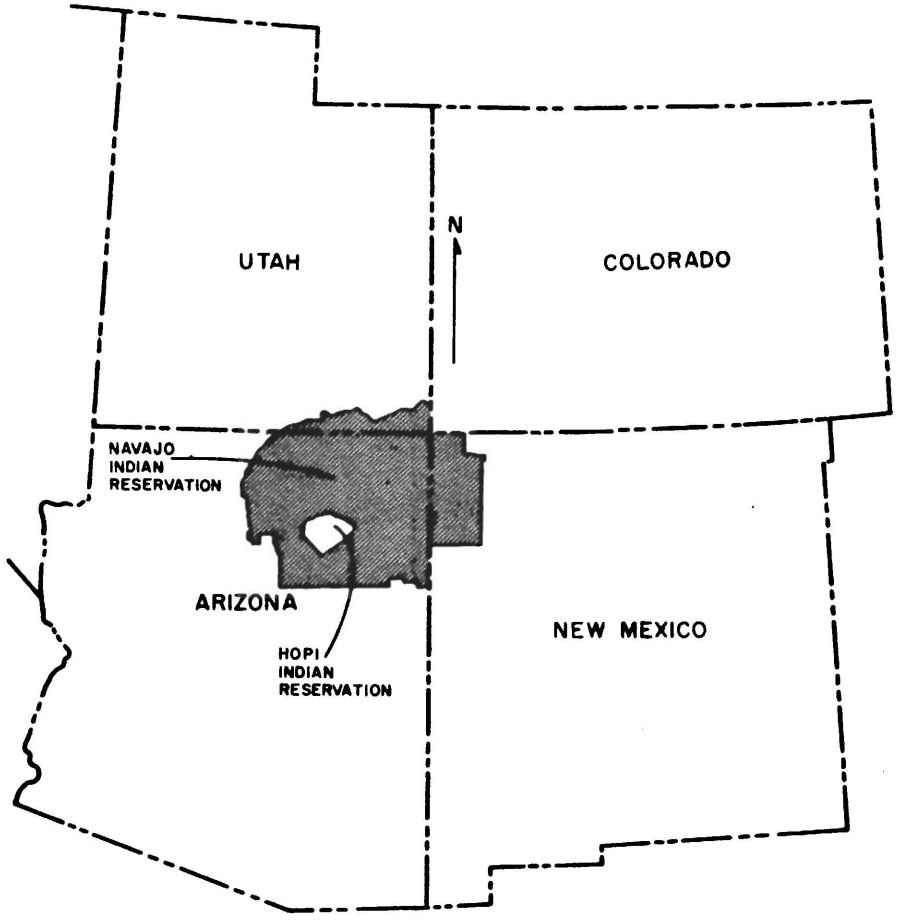
By E. H. McGavock, R. J. Edmonds
E. L. Gillespie, and P. C. Halpenny



Prepared by the Geological Survey
United States Department of the Interior
in cooperation with the
Navajo Tribe and the
Bureau of Indian Affairs

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1298



Index map

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GEOHYDROLOGIC DATA IN THE NAVAJO AND HOPI INDIAN RESERVATIONS, ARIZONA, NEW MEXICO, AND UTAH

PART I-A

SUPPLEMENTAL RECORDS OF GROUND-WATER SUPPLIES

By E. H. McGavock, R. J. Edmonds, E. L. Gillespie, and P. C. Halpenny

Introduction

The geohydrologic data in this report represent a field inventory of wells and springs in the Navajo and Hopi Indian Reservations. The inventory was, for the most part, completed in 1961. The report is a supplement to the previous inventory completed in 1956 (Davis and others, 1963) and includes 402 drilled wells, 2 dug wells, and 123 springs. The report also summarizes the results of bailing and pumping tests of wells. The data were compiled to provide an easy reference for obtaining information about individual wells and springs, which will supplement the information contained in the forthcoming comprehensive report on the ground-water resources and geology of the reservations. The comprehensive report will be published in separate chapters in U. S. Geological Survey Professional Paper 521. Professional Paper 521-A is in press (Cooley, Harshbarger, Akers, and Hardt, 1966).

Purpose, Scope, and Organization of the Report

In 1946 the U. S. Geological Survey was asked by the Bureau of Indian Affairs to make a series of hydrologic investigations to help alleviate the water shortage at several localities. Later, in 1950, the U. S. Geological Survey in cooperation with the Bureau of Indian Affairs began a comprehensive investigation of the geology and ground-water resources of the Navajo and Hopi Indian Reservations, which occupy parts of northeastern Arizona, northwestern New Mexico, and southeastern Utah (fig. 1). The principal objectives of the investigation were as follows: (1) to determine the feasibility of developing ground-water supplies for stock, domestic, institutional, and industrial use in particular areas and at several hundred well sites scattered throughout the reservations and in adjoining areas owned by the Navajo Tribe; (2) to make a comprehensive investigation of the geology and determine the hydrogeologic factors that control the occurrence and movement of ground water; (3) to appraise the water potential for future development; and (4) to compile an inventory of the existing ground-water supplies.

The basic geohydrologic data of the Navajo and Hopi Indian Reservations are reproduced separately in sections as Parts I (Davis and others, 1963), I-A (this report), II (Kister and Hatchett, 1963), III (Cooley and others, 1964), and IV (Cooley and others, 1966) of Arizona State Land Department Water-Resources Report No. 12. Parts I, II, and III refer only to wells and springs inventoried before 1957. Part I contains a compilation of the records of drilled wells, dug wells, and springs. Part II is a compilation of selected chemical analyses of water from the wells and springs that were sampled. Part III contains selected drillers' logs, lithologic logs, and stratigraphic sections. Part IV consists of maps of the reservations showing the locations of the wells, springs, and stratigraphic sections listed in Parts I, I-A, II, and III. The additional dug wells and springs in this report represent a partial inventory that has continued since 1956, and the drilled wells include new wells that have been completed since 1956 and before 1962. Other inventories of wells and springs within and adjacent to the reservations are in central Apache County (Akers, 1964), area of the Wupatki-Sunset Crater National Monuments (Cosner, 1962), and Glen Canyon area (Cooley, 1965). Information pertaining to wells drilled since 1961 is available in the open files of the Geological Survey Water Resources Division offices in Tucson and Flagstaff, Ariz.

Personnel

The collection, compilation, and analysis of the data contained in this report were under the general supervision of P. E. Dennis, former district supervisor of the Ground Water Branch in Arizona, and H. M. Babcock, present chief of the Water Resources Division in Arizona. Preparation of this report was under the direct supervision of M. E. Cooley.

Substantial contributions—including field inventory of the water developments, geologic descriptions and correlations, and other hydrologic work—were made by other personnel of the Geological Survey. Those deserving special mention are N. E. McClymonds and J. P. Akers. The well and spring records were typed by Mrs. Marilyn Case, Mrs. Ruth Blubaugh, and Mrs. Helen Price.

Acknowledgments

The Geological Survey is grateful for the assistance, cooperation, and information given by C. M. Sells, superintendent of the Navajo Tribal Water Development office; by J. C. Shorty, geologist for the Navajo Tribe; by M. H. Miller, former Bureau of Indian Affairs Engineer; by William Beck, Bureau of Indian Affairs Engineer; and by other personnel of the Bureau of Indian Affairs and the Navajo Tribe connected with the well-development program. Acknowledgment is due the many water-well drillers who collected drill cuttings of the wells and supplied hydrologic data, with special thanks to Cowley Bros. Drilling Co., St. Johns, Ariz.; Myers Drilling Co., Holbrook, Ariz.; Perry Bros. Drilling Co.,

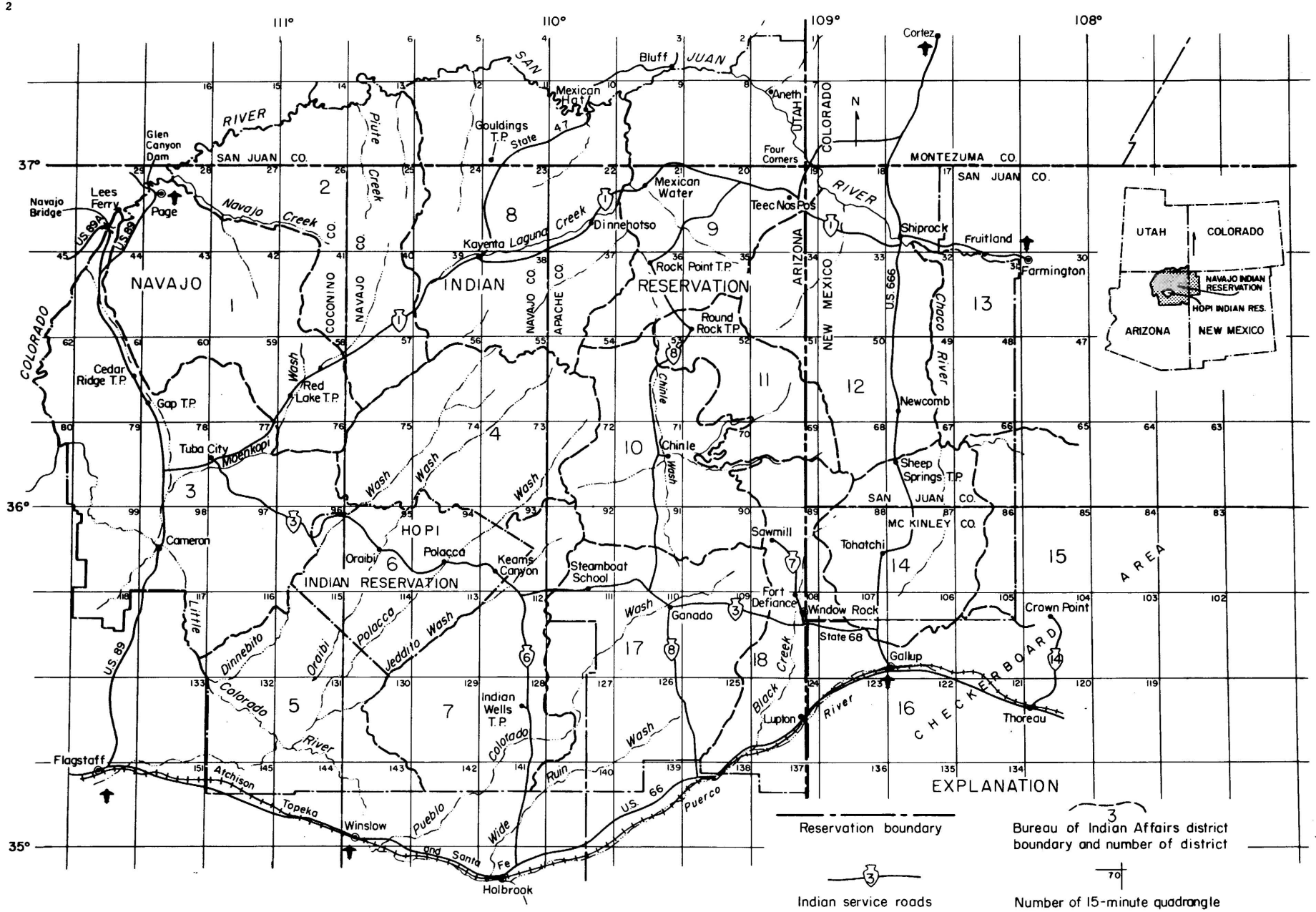


Figure 1.--Roads, villages, Bureau of Indian Affairs' administrative districts, and 15-minute quadrangles in the Navajo and Hopi Indian Reservations.

Flagstaff, Ariz.; and Elmer White Drilling Co., Flagstaff, Ariz.

Location and Land-Net System

The Navajo and Hopi Indian Reservations are in the south-central part of the Colorado Plateaus. The Navajo Indian Reservation occupies parts of Apache, Navajo, and Coconino Counties in northeastern Arizona, San Juan and McKinley Counties in northwestern New Mexico, and San Juan County in southeastern Utah (fig. 1). The Hopi Indian Reservation is within the central part of the Navajo Indian Reservation in Arizona. The reservations comprise an area of about 25,000 square miles, which is about three times the size of the State of New Jersey.

The Navajo Indian Reservation is divided into 17 administrative districts, numbered 1 to 5 and 7 to 18, and the Hopi Indian Reservation comprises district 6 (fig. 1). District 19 is east of the reservation boundary in New Mexico. The reservations and adjoining area were not mapped in detail during this study, but 15-minute planimetric maps of the area were made from aerial photographs. These maps were used for the geologic and hydrologic base maps and are arbitrarily numbered from 1 to 151, starting in the upper-right corner of the area and numbering consecutively in rows from right to left.

Explanation of the Ground-Water Records

The well and spring records are arranged in the numerical order of the 18 administrative districts of the Bureau of Indian Affairs and in accordance with the 15-minute quadrangles within each district. In each quadrangle the drilled wells are listed first, followed in order by the dug wells and springs. No data are included in this report from district 19, which is outside the reservation boundary in New Mexico.

Well Numbers

The wells and springs assigned a Bureau of Indian Affairs' field number are identified by a compound number consisting of two main parts. The first part is divided into a numeral that designates the Bureau of Indian Affairs' district and a letter that usually denotes the source of funds used in the drilling of a well. The letter "K" is used for wells drilled under the Bureau's drilling program, the letter "T" is used for wells drilled under the Navajo Tribal Well-Development Program or for wells turned over to the Tribe by oil companies, and the letter "P" is used for wells drilled by private individuals or concerns for their own use. The second part of the Bureau's field numbers represents the consecutive order in which the wells and springs were inventoried in each district. Some developments contain an additional letter at the end of the field number. These letters are arranged consecutively, beginning with "A." Usually, these field numbers are obtained from the number of a nearby development that was inventoried previously.

Dug wells and springs that were not inventoried previously are identified by a compound number consisting of three parts. The first part is divided into a numeral that designates the Bureau of Indian Affairs' district and the letters "GS." The second part is the quadrangle number. The third part is the number representing the consecutive order in which the new developments were inventoried in the quadrangle.

The Bureau of Indian Affairs' school wells are assigned a two-part field number beginning with the letters "P. M." or "P. D. C." The second part is a number that represents the consecutive order in which the wells were drilled at a locality.

Some of the well numbers in district 6 were assigned field numbers by the Hopi Agency of the Bureau of Indian Affairs and do not conform to the well-numbering system outlined above.

Some drilled wells, dug wells, and springs were not assigned Bureau of Indian Affairs' field numbers because the developments are not located on the reservation, or they were not inventoried in investigations connected with the Bureau of Indian Affairs' water-investigations programs.

Springs that were inventoried by personnel of the Glen Canyon project of the Museum of Northern Arizona (Cooley, 1965) are identified by a two-part number beginning with the letters "GJ." The second part is a number that represents the consecutive order in which the springs were inventoried.

Some wells drilled near the Navajo Indian Reservation are assigned field numbers used by the Geological Survey in the rest of Arizona (fig. 2).

Quadrangle Location Number

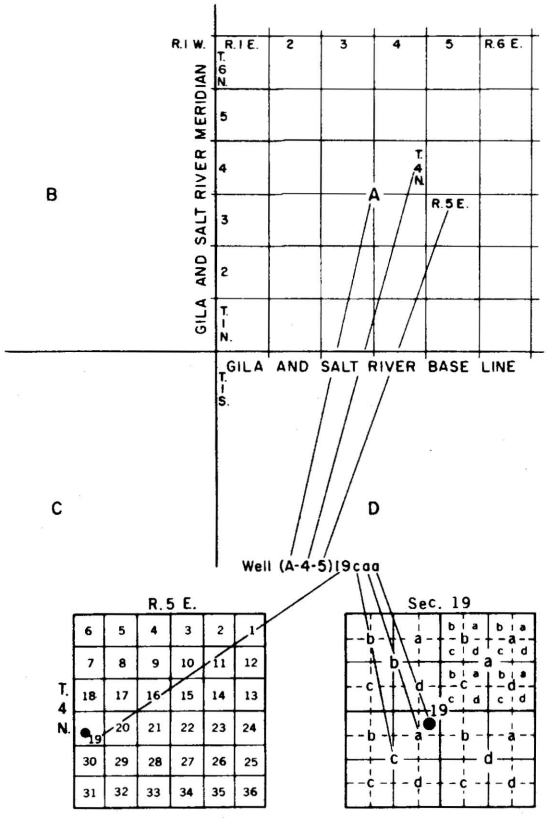
The quadrangle location number indicates the position of a development within a 15-minute quadrangle and consists of two parts. The first part is the distance in miles west of the northeast corner of the quadrangle, and the second part is the distance in miles south of the northeast corner of the quadrangle (fig. 3). The letter "A" at the end of the quadrangle location number means an approximate location.

Altitude Above Mean Sea Level

The altitudes of the wells and springs were obtained from topographic maps. Altitudes were estimated to the nearest 5 or 10 feet in areas where 7.5- or 15-minute topographic maps were available. Altitudes were estimated to the nearest 25 feet in the rest of the area, although this should not imply that the altitudes are correct to that figure.

Construction Data

The construction data listed include the well depth, diameter and depth of casing in the well, finish of the well, and other improvements. The "finish" for drilled wells describes the perforated interval and other related information. "Open hole" means there is no casing in the well below the last casing depth.



The well numbers used by the Geological Survey in Arizona are in accordance with the Bureau of Land Management's system of land subdivision. The land survey in Arizona is based on the Gila and Salt River meridian and base line, which divide the State into four quadrants. These quadrants are designated counterclockwise by the capital letters A, B, C, and D. All land north and east of the point of origin is in A quadrant, that north and west in B quadrant, that south and west in C quadrant, and that south and east in D quadrant. The first digit of a well number indicates the township, the second the range, and the third the section in which the well is situated. The lowercase letters a, b, c, and d after the section number indicate the well location within the section. The first letter denotes a particular 160-acre tract, the second the 40-acre tract, and the third the 10-acre tract. These letters also are assigned in a counterclockwise direction, beginning in the northeast quarter. If the location is known within the 10-acre tract, three lowercase letters are shown in the well number. In the example shown, well number (A-4-5)19caa designates the well as being in the $NE\frac{1}{4}NE\frac{1}{4}SW\frac{1}{4}$ sec. 19, T. 4 N., R. 5 E. Where there is more than one well within a 10-acre tract, consecutive numbers beginning with 1 are added as suffixes.

Figure 2. --Well-numbering system in Arizona.

Water-Bearing Strata

The water-bearing strata are referred to by their standard geologic names and are divided into formations and members. Some aquifers consist of combinations of two or more formations and (or) members. Figure 4 lists the stratigraphic names of the rocks that yield some water to wells and springs in the Navajo and Hopi Indian Reservations.

The principal unit (or units) yielding water to a well or spring are listed under the heading "Stratigraphic unit." Strata that are open to the well and yield a negligible quantity of water are not listed under this heading. Other water-yielding zones may be present but cased out of a well either

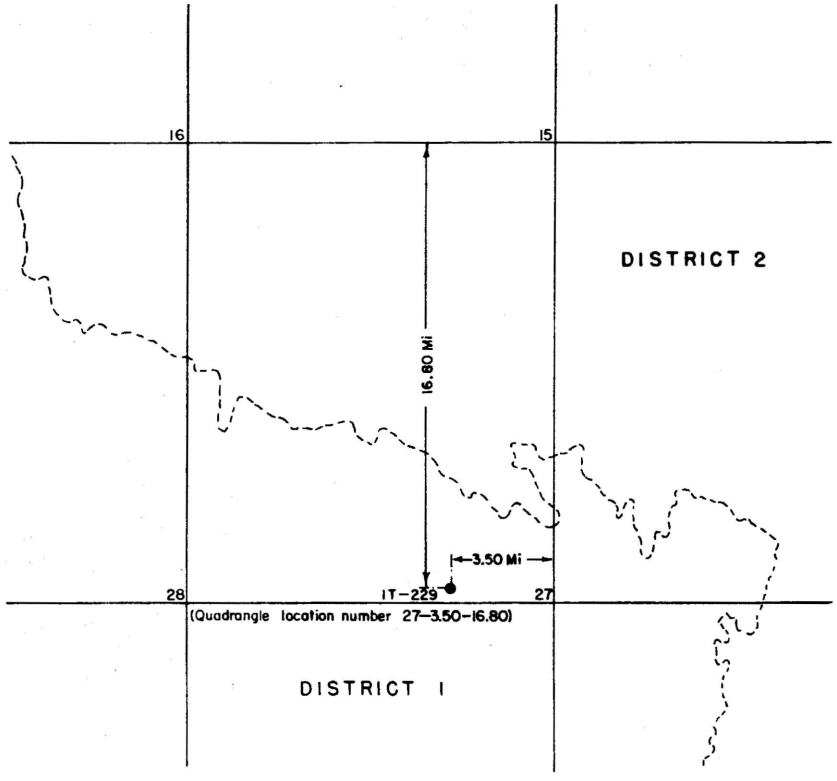


Figure 3. -- Well-numbering system in the Navajo and Hopi Indian Reservations.

because of undesirable chemical quality or small yield. These zones are not listed under the "Stratigraphic unit" column but may be noted in the "Remarks" column.

The columns "Depth below land surface to top of stratigraphic unit" and "Thickness" apply only to the strata penetrated by drilled wells. "Thickness" refers to the thickness of the stratigraphic unit or aquifer that yields sizable amounts of ground water to a well. Many wells penetrate only part of the stratigraphic unit. These partial thicknesses are denoted by the letter "P" following the figure in the "Thickness" column.

Artesian aquifers are fully saturated and the thickness of the water-bearing strata is equal to the saturated thickness. If water-table conditions prevail, the thickness of the saturated zone penetrated by a well is not necessarily equal to the thickness of the stratigraphic unit. The saturated thickness penetrated by the well may be calculated by subtracting the depth of the static water level from the total depth of those wells that penetrate only part of the aquifer. The total saturated thickness of the stratigraphic unit may be calculated by subtracting the depth of the static water level from the depth of the base of the aquifer. The depth to the base of the aquifer is the sum of the figures in the columns headed "Depth below land surface to top of stratigraphic unit" and "Thickness."

Hydrologic Data

The hydrologic data consist of information that gives an indication of the aquifer's potential yield in that area. The principal hydrologic data contained in this report are static water levels and results of bail, pump, or flow tests.

The static water level is the distance in feet measured below the land surface when the well is not pumping. All water-level measurements more than 100 feet below the land surface are rounded off to the nearest 1 foot. The water-level measurements were obtained by a steel tape or by electrical measuring equipment. The word "flow" in the column containing the depth of the static water level means a flowing well.

The rate of discharge measured or estimated from a flowing well or spring is listed in the "Yield" column. The data listed under the heading "Bail or pump test" describe the water-yielding characteristics of the well and of the water-bearing strata penetrated by the well. Most bail tests were made in cooperation with the driller at the time of completion of the well. The drawdown is the amount of lowering of the water level in the well caused by bailing or pumping water from the well. The rate of pumping or bailing is the average rate maintained only during the test and is not necessarily related to the rate of discharge of the well when in use.

Quality

Samples of water were taken from selected wells and springs for chemical analysis. If there is a "yes" under the heading "Chemical analysis," the analysis is available in the open files of the Geological Survey, Water Resources Division, Flagstaff, Ariz.

A sensory test was determined from the quality-of-water analysis, or it was estimated by taste if no water sample was taken for analysis. The water analyzed chemically is classified as "good" if there is less than 1,000 ppm (parts per million) total dissolved solids, "fair" if there is between 1,000 and 2,500 ppm total dissolved solids, and "poor" if there is more than 2,500 ppm total dissolved solids.

The specific conductance of the water from many wells is listed in the "Remarks" column. Specific conductance is a measure of the ability of water to conduct an electric current and is expressed in micromhos at 25°C. Because the specific conductance is related to the amount and type of ions in solution, it can be used for estimating the concentration of dissolved solids in the water. In most natural water the ratio of dissolved solids to specific conductance ranges from 0.55 to 0.75. An approximate value for the concentration of dissolved solids in most water on the Navajo and Hopi Indian Reservations can be obtained by multiplying the measured specific conductance by a factor of 0.65.

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SYSTEM	SERIES	BLACK MESA BASIN	SOUTHERN SAN JUAN BASIN	NORTHERN SAN JUAN BASIN
QUATERNARY		ENTIRE AREA Surficial deposits: Alluvium; Landslide deposits and talus; Windblown sands; Terrace deposits; Spring deposits; Volcanic rocks		
TERTIARY	PLIOCENE	Bidahochi Formation Upper member Volcanic member (tuff) Lower member		
	PLIOCENE(?)	Chuska Sandstone		
	PALEOCENE	Nacimiento Formation		
CRETACEOUS	UPPER	Yale Point Sandstone Wepo Formation Toreva Formation Upper sandstone member Middle carbonaceous member Lower sandstone member Mancos Shale	Menefee Formation Point Lookout Sandstone Satan Tongue of Mancos Shale Hosta Tongue of Point Lookout Sandstone Cleary Coal Member of Menefee Formation Crevasse Canyon Formation Gibson Coal Member Dalton Sandstone Member Mulatto Tongue of Mancos Shale Bartlett Barren Member Dilco Coal Member Gallup Sandstone Upper part Tongue of Mancos Shale Lower part Mancos Shale	Ojo Alamo Sandstone Kirtland Shale Upper member Farmington Sandstone Member Lower member Fruitland Formation Pictured Cliffs Sandstone Lewis Shale Cliff House Sandstone Menefee Formation Point Lookout Sandstone Mancos Shale (upper part) Gallup Sandstone Mancos Shale (lower part) Dakota Sandstone
	UPPER AND LOWER	Dakota Sandstone Upper member Middle member Lower member	Dakota Sandstone	
	LOWER			Burro Canyon Formation
JURASSIC	UPPER	ENTIRE AREA Cow Springs Sandstone	Morrison Formation Brushy Basin Member Westwater Canyon Member Recapture Shale Member Salt Wash Sandstone Member Summerville Formation Sandy facies Todilto Limestone Entrada Sandstone Upper sandy member Medial silty member Lower sandy member	Bluff Sandstone
	UPPER AND MIDDLE	Carmel Formation		
JURASSIC AND TRIASSIC(?)		Navajo Sandstone		

TRIASSIC(?)	UPPER	Kayenta Formation Silty facies Sandy facies Moenave Formation Springdale Sandstone Member Dinosaur Canyon Sandstone Member			
TRIASSIC	UPPER	Wingate Sandstone Lukachukai Member Rock Point Member Chinle Formation Church Rock Member Owl Rock Member Petrified Forest Member Upper part Sonsela Sandstone Bed Lower part Monitor Butte Member Shinarump Member { Correo(?) Sandstone Member in Zuni Mountains area			
	MIDDLE(?) AND LOWER	SOUTHERN AND SOUTHWESTERN PARTS OF THE RESERVATIONS Moenkopi Formation Holbrook Member Moqui Member Wupatki Member		MONUMENT VALLEY Moenkopi Formation Upper siltstone member Middle sandstone member Lower siltstone member Hoskinnini Member	
TRIASSIC(?)					
		GRAND CANYON	DEFIANCE PLATEAU	ZUNI MOUNTAINS	MONUMENT VALLEY
PERMIAN		Kaibab Limestone Toroweap Formation Coconino Sandstone	De Chelly Sandstone Upper member Tongue of Supai Formation Lower member	San Andres Limestone Glorieta Sandstone Yeso Formation Abo Formation	Cutler Formation De Chelly Sandstone Member Organ Rock Tongue Cedar Mesa Sandstone Member Halgaito Tongue
CARBONIFEROUS PERMIAN AND PENNSYLVANIAN		Supai Formation	Supai Formation		Rico Formation
CARBONIFEROUS PENNSYLVANIAN					Hermosa Formation
CARBONIFEROUS MISSISSIPPIAN		Redwall Limestone			Stratigraphic units not listed below the Hermosa Formation
CAMBRIAN	MIDDLE	Muav Limestone Bright Angel Shale			
CAMBRIAN	MIDDLE AND LOWER	Tapeats Sandstone			
PRECAMBRIAN		Granite	Quartzite and granite	Granite	

Figure 4. --Names of the rocks and sediments of the Navajo and Hopi Indian Reservations.

SUPPLEMENTAL RECORDS OF GROUND-WATER SUPPLIES IN THE NAVAJO AND HOPI INDIAN RESERVATIONS

AND ADJOINING AREAS

Field number or name: See p. 3 for description of numbering system.
Quadrangle location number: A, approximate location. See p. 3 for description of numbering system.
Approximate location: B.S., boarding school; D.S., day school; T.P., trading post.
Altitude: See p. 3 for explanation of accuracy of measurements.
Construction data: R, reported.

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 1							
16	Drilled well	(A-42-8)35ab	11.85-17.30	5 NNE of Page			3,700	640			
26	do.	1T-504	7.55-17.20	15 NE of Kaibito T.P.	9/59	Side of hill	5,750	688	10	60	Open hole
27	do.	1T-507	4.60-14.55	13 N of Kaibito T.P.	10/59	Small valley	5,580	1,095	10	20	do.
28	do.	1T-509	5.90-7.90	6 ESE of Page	5/61	Low mesa	4,620	1,232	9	60	do.
	do.	1T-510	10.70-9.80	4 S of Page	3/61	Gentle slope	4,760	1,500	10		do.
	do.	(A-41-8)25ba	13.30-4.85	0.8 W of Page			3,970	1,285			
	do.	(A-41-8)25bb	13.50-4.80	1 W of Page			4,800	1,910			
	do.	(A-42-8)35ad	13.80-0.05	5 NNW of Page			3,750	675			
	do.	(A-42-8)35da	13.65-0.2	do.			3,740	625			
	do.	(A-42-8)36cb	13.50-0.35	do.			3,750				
	Dug well	GJ-351	9.85-15.90	12 S of Page			5,215				
	Spring	GJ-244	10.69-2.2	3 NE of Page		Side of cliff	3,170				
	do.	GJ-352	13.10-1.95	3 NNW of Page		Bottom of canyon	3,240				
29	Drilled well	1T-501	0.90-12.70	8 SSW of Page	10/58	Gentle slope	4,760	1,402	8	20	do.
	do.	1T-502	0.50-10.20	5 SW of Page	9/58	Low mesa	4,450	1,406	8	44	do.
	do.	(A-40-7)13ac	6.00-9.55	0.7 WSW of Lees Ferry	9/63	Bank of river	3,160	80	8 6	44 80	
	do.	(A-40-8)18ca	5.40-9.50	Lees Ferry	9/63	Bottom of canyon	3,155	200	6		
	do.	(A-40-8)18db	4.70-8.85	do.	8/63	Bottom of cliff, along Paria River	3,148	203	6	113	do.
	do.	(A-41-8)14bc	0.45-3.10	2 NW of Page			4,140	1,500			
	do.	(A-41-8)14bd	0.15-3.10	2 NW of Page			4,120	1,200			
	Spring	1GS-29-1	2.40-10.70	3 SE of Lees Ferry		Base of cliff	3,125				
	do.	1GS-29-2	0.70-8.35	4 ENE of Lees Ferry		do.	3,130				
	do.	1GS-29-3	1.15-6.85	4 NE of Lees Ferry		do.	3,140				
	do.	GJ-299	2.25-10.40	3 SE of Lees Ferry		Head of canyon	3,400				

Water-bearing strata. Thickness: P, partial penetration. Stratigraphic unit: undiff., undifferentiated. See p. 4 for discussion of water-bearing strata.
Log: DL, driller's log; LL, lithologic log. These logs are available in the open files of the Geological Survey Water Resources Division offices in Tucson and Flagstaff, Ariz.
Hydrologic data: E, estimated; Flow, flowing well; R, reported; <, less than. See p. 5 for discussion concerning yield and bail or pump test.
Use of water: D, domestic; Ind, industrial; Irr, irrigation; PS, public supply; S, stock; Un, unused.
Remarks: S.C., specific conductance. See p. 5 for explanation of this term. T.P., trading post.

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
								DISTRICT 1							
		Navajo						1,000 R							
0	688	do.	DL	545	8/29/59			28	143	½	D, S	No	Good	62	S.C. 200; recovery 7 gpm; bailed hole dry.
0	1,010	do.	DL	894	10/14/59			19	201	¾	D, S	No	Good	68	S.C. 180; recovery 5 gpm; bailed hole dry.
95	1,137 P	do.	LL	1,009	5/26/61			5		1	D, S	No	Good	69	
40	1,460 P	do.	LL	1,190	3/17/61			30	8	½	D, S	No	Good	62	
		do.													
		do.		680 R											
		do.		395 R				1,000							
		do.													
		do.													
		Alluvium													
		Navajo				25 E	9/ 1/58								Glen Canyon.
		do.													Wahweap Creek.
20	1,382 P	do.	DL	1,330 R	10/ 4/58			5	70	5	D, S	No	Good		
25	1,381 P	do.	DL	1,170	9/17/58			6	236	8	D, S	No	Good		
39	41 P	Moenkopi	DL	18	10/ 2/63			50	0	12	D	Yes	Fair	64	
0	117	Alluvium													
117	66	Chinle (Shinarump)	DL	30	9/24/63								Poor		Abandoned, poor quality.
0	115	Alluvium	DL	23	9/ 3/63			33	20	¼			Poor		Abandoned, poor quality; "gas" bubbling from well reported.
		Navajo		880 R				100	55						
		do.		870 R											
		Landslide				420	/64						Good		Jerry Spring; bubbling in river below surface openings; water originates from Navajo Sandstone; Glen Canyon.
		do.				175 E	3/ 6/66						Good		Dead Sheep Springs; several openings; water originates from Navajo Sandstone; Glen Canyon.
		Navajo				< 5	3/ 6/66						Good		Ferry Swale Spring; Glen Canyon.
		do.				< 5	9/18/59								Tributary to Glen Canyon.

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 1—Continued							
41	Drilled well	1K-238	12. 70-2. 10	10 NE of Kaibito	4/57	Edge of valley	5, 800	966	10	22	Open hole
42	do.	1K-236	7. 95-2. 65	3 NW of Kaibito T. P.	1/58	Dune plain	5, 320	870	8	29	do.
	do.	1K-242	13. 60-2. 40	12 NW of Kaibito	7/59	Low mesa	5, 600	1, 403	8 6	21 298	do.
	do.	1T-506	9. 20-0. 15	12 NNW of Kaibito	12/59	Gentle slope	5, 160	1, 165			do.
	do.	Kaibito P. M. 3	4. 05-10. 65	0. 25 NW of Kaibito T. P.	6/58	Edge of wash	5, 800	1, 168	8	1, 168	Perforated 600-948
43	do.	1K-245	2. 05-8. 75	9 E of Copper Mine T. P.	9/59	Sloping bench	5, 680	902			Open hole
	do.	1T-505	11. 30-9. 05	0. 8 S of Copper Mine T. P.	12/59	Stripped plain	5, 940	1, 220	6 4	1, 090 1, 220	Perforated
44	do.	1K-243	3. 55-3. 40	8 NW of Copper Mine T. P.	6/59	Small valley	5, 920	1, 287	8 6	22(?) 1, 287	
	do.	1T-240	1. 80-8. 00	4 W of Copper Mine T. P.	/57	do.	6, 100	1, 397	7 5	762 1, 397	Perforated 1,176-1,397
	do.	1T-500	5. 45-7. 80	8 W of Copper Mine T. P.	8/58	Gentle slope	6, 220	1, 280	8	462	Open hole
57	None										
58	Drilled well	Red Lake P.M. 1	11. 10-12. 00	Red Lake D. S.	9/57	Hill	5, 580	550	8	550	Perforated 150-510
59	do.	1K-241	6. 30-8. 70	10 NW of Red Lake D. S.	1/59	Alluvial slope	5, 960	697	8	16	Open hole
60	None										
61	do.										
75	do.										
76	Drilled well	1T-239	11. 05-4. 90	10 S of Red Lake D. S.	5/57		5, 240	408	8 10	10 40	do.
				DISTRICT 2							
12	None										
13	Drilled well	2T-325	12. 60-12. 50	6 NE of Navajo Mountain T. P.	6/58	Gentle slope	5, 285	880	8	20	do.
	do.	GJ-9	3. 50-5. 00	9 SW of Piute Farms	/57	Near edge of Shinarump bench	3, 690	169	6		do.
	do.	GJ-77	3. 10-3. 30	8 SW of Piute Farms	/57	Shinarump bench	3, 745	191			6-inch open hole
	do.	GJ-239	3. 00-1. 85	7 WSW of Piute Farms							
	Spring	GJ-1	4. 53-1. 67	8 WSW of Piute Farms		Head of canyon	4, 520				
	do.	GJ-2	1. 47-1. 65	5 W of Piute Farms		Bottom of gorge	3, 565				
	do.	GJ-5	3. 13-4. 42	8 SW of Piute Farms		Shallow gorge	3, 710				
	do.	GJ-6	3. 56-6. 19	10 SW of Piute Farms		Narrow gorge	3, 850				
	do.	GJ-7	3. 59-6. 54	10 SW of Piute Farms		Head of narrow gorge	3, 880				
	do.	GJ-8	3. 6-8. 85	12 SW of Piute Farms		Narrow gorge	4, 110				

and Hopi Indian Reservations and adjoining areas——Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (° F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
							DISTRICT 1—Continued								
4	962 P	Navajo	DL	568							D, S	No	Good	59	S. C. 190.
22	848 P	do.	DL	737	1/ 8/58			15	0	½	D, S	No	Good		S. C. 290.
55	1,040	do.	DL	Dry	7/23/59							No			Casing capped.
15	1,135	do.	LL	1,050 R	12/13/59			8	25	2	D, S	No	Good		
70	1,098 P	do.		566 R	7/ 9/58						D, PS	Yes	Good		
0	800	do.	DL	Dry R	9/ 5/59						Un	No			Abandoned.
850	370 P	Tongues of Navajo in Kayenta	LL	1,010 R	12/21/61			9	10	1	D, S	No	Good		Copper Mine Chapter House.
2	1,263	Navajo	DL	1,203	6/12/59			10	0	¾		No	Good	68	
0	1,397 P	do.	DL	1,165 R	9/21/61						D, S	No	Good		Drilled to 1,228 feet in 1957; deepened in 1961.
0	1,280	do.	DL	Dry R	8/31/58						Un	No			Abandoned, casing pulled.
120	430 P	do.									D, S, PS	Yes	Good		Recovery test 38 gpm.
5	692	Tongue of Navajo in Kayenta	DL	258	1/24/59			4	439		D, S	No	Good	56	S. C. 150; bailed hole dry.
24	384 P	Navajo	DL	282	5/10/57			30		39	D, S	No			
							DISTRICT 2								
765	115 P	Wingate (Lukachukai)	DL	533 R	6/24/58			½	345	18		No	Good		
		Chinle (Shinarump)		64	11/24/57						Un	Yes	Fair Good		Nokai Canyon.
		do.		174	12/12/57						Un	Yes			Do.
		do.													
		do.				Dry	10/10/57								Flows only during wet weather; side canyon.
		Alluvium													Water derived from Shinarump originally; mouth of Castle Creek.
		Chinle (Shinarump)				3 +	11/23/57					Yes			Several pools; flows downstream 300 feet; Nokai Canyon.
		do.				5 +	11/23/57								Flows for 200 feet; Nokai Canyon.
		do.													Pools extend downstream to spring GJ-6; Nokai Canyon.
		Alluvium				3 +	11/23/57					Yes			Nokai Canyon; some water from Shinarump; flows downstream about 1,000 feet.

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 2—Continued							
13	Spring	GJ-34	3.50-4.22	8 SW of Piute Farms		Shallow gorge	3,675				
	do.	GJ-36	3.57-3.58	do.		do.	3,605				
	do.	GJ-60	3.51-3.45	do.		Deep gorge	3,600				
	do.	GJ-78	0.47-3.10	5 SW of Piute Farms		Inner gorge	3,740				
	do.	GJ-79	0.21-3.24	5 SSW of Piute Farms		do.	3,760				
	do.	GJ-129	6.06-2.37	10 WSW of Piute Farms		Base of cliff	3,640				
	do.	GJ-140	11.20-0.48	15 W of Piute Farms		Alcove	3,850				
	do.	GJ-141	11.55-5.99	17 SW of Piute Farms		Head of small canyon	3,900				
	do.	GJ-142	11.00-6.21	16 SW of Piute Farms		Bottom of canyon	3,550				
	do.	GJ-143	10.90-6.37	do.		do.	3,580				
	do.	GJ-144	11.15-7.24	17 SW of Piute Farms		Head of small canyon	3,900				
	do.	GJ-145	9.75-9.10	16 SW of Piute Farms		Bottom of canyon	3,950				
	do.	GJ-146	9.50-9.85	17 SW of Piute Farms		do.	4,060				
	do.	GJ-147	9.60-10.55	do.		Alluvial terrace	4,145				
	do.	GJ-148	7.10-3.36	11 SW of Piute Farms		Slump below cliff	4,400				
	do.	GJ-149	11.90-5.15	16 WSW of Piute Farms		Slump at base of cliff	3,460				
	do.	GJ-150	12.80-4.25	17 WSW of Piute Farms		Alcove	3,540				
	do.	GJ-151	13.35-5.65	18 WSW of Piute Farms		Head of inner gorge	3,500				
14	Drilled well	2P-330	2.60-16.20	Navajo Mtn. T. P.	7/58	Valley	6,030	61	8	61	Perforated 30-61
	do.	2T-325A	1.15-13.20	3 NE of Navajo Mtn. T. P.	6/58	Slope	5,680	855	None		
	do.	Navajo Mtn. P. M. 3	2.3-16.1A	0.5 E of Navajo Mtn. T. P.	5/60	Valley	5,960	75	None		Open hole
	Spring	GJ-104	9.08-5.48	13 N of Navajo Mtn. T. P.		Amphitheater	3,300				
	do.	GJ-105	11.95-8.15	12 NW of Navajo Mtn. T. P.		Bed of wash in amphitheater	3,300				
	do.	GJ-106	11.90-11.95	10 WNW of Navajo Mtn. T. P.		Alcove	3,750				
	do.	GJ-107	12.20-11.45	11 WNW of Navajo Mtn. T. P.		do.	3,680				
	do.	GJ-108	12.68-10.94	12 WNW of Navajo Mtn. T. P.		Base of cliff	3,550				
	do.	GJ-152A	2.24-3.88	12 N of Navajo Mtn. T. P.		Bottom of canyon	3,725				
	do.	GJ-152B	1.87-4.90	11 N of Navajo Mtn. T. P.		do.	3,500				
	do.	GJ-152C	2.25-4.15	12 N of Navajo Mtn. T. P.		do.	3,650				

and Hopi Indian Reservations and adjoining areas—Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
						DISTRICT 2—Continued									
		Chinle (Shinarump)				2-3	11/25/57								Flows downstream for 300 feet; Nokai Canyon.
		do.				5 E	12/11/57								Flows downstream for 500 feet; Nokai Canyon.
		do.				5-6	12/12/57								Flows downstream for 1,000 feet; Nokai Canyon.
		do.				< ¼	12/13/57								Copper Canyon.
		Alluvium				10 E	12/13/57					Yes			Flows downstream 1,000 feet; Copper Canyon.
		Cutler (De Chelly)				< 1	6/17/58								San Juan Canyon.
		Navajo													Flows almost to river; San Juan Canyon.
		Wingate (Lukachukai)				3 E	6/23/58						Good		Piute Canyon.
		Alluvium				1-2	6/23/58						Good		Do.
		do.				2-3	6/23/58								Do.
		Wingate (Lukachukai)				10-20	6/23/58								Flows to Piute Creek.
		Alluvium				2-3	6/23/58						Good		Several openings; Piute Canyon.
		Chinle (Shinarump)				2 E	6/23/58								Piute Canyon.
		Alluvium				5 E	6/23/58						Good		Soda Water Spring; Piute Canyon.
		Landslide				1 E	6/24/58								San Juan Canyon.
		do.													Do.
		Wingate (Lukachukai)				< 2	6/24/58								Do.
		Chinle (Church rock)				< 1	6/24/58								Used by rivermen; water originates from Wingate; deep canyon.
0	60	Alluvium	DL	24 R	7/ 2/58			8	37	2		No			Bailed hole dry.
		Wingate (Lukachukai)	DL	Dry R	6/10/58						Un	No			Abandoned.
		Alluvium		Dry R	5/ /60						Un	No			Do.
		Navajo													Music Temple.
		Alluvium				15 E	4/24/58								Water originates from Navajo Sandstone; flows to river; Twilight Canyon.
		Navajo				2 E	4/25/58								Bridge Canyon.
		do.				2 E	4/25/58								Do.
		do.				100 E	4/25/58								Joint intercepts water from Aztec Creek; Forbidding Canyon.
		Kayenta													Upper end of permanent water; Wilson Canyon.
		Wingate (Lukachukai)													Wilson Canyon.
		do.													Issues most of water in Wilson Canyon.

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
DISTRICT 2—Continued											
14	Spring	GJ-153	5.86-5.77	11 NNW of Navajo Mtn. T. P.		Head of canyon	3,440				
	do.	GJ-155	9.15-4.9	13 NW of Navajo Mtn. T. P.		Bottom of canyon	3,275				
	do.	GJ-156	10.0-4.65	14 NW of Navajo Mtn. T. P.		Head of canyon	3,400				
	do.	GJ-157	9.65-4.70	do.		Alcove	3,350				
	do.	GJ-158	9.65-4.70	do.		do.	3,370				
	do.	GJ-159	11.03-6.55	13 NW of Navajo Mtn. T. P.		Large alcove	3,500				
	do.	GJ-160	11.3-7.90	12 NW of Navajo Mtn. T. P.		Alcove in canyon	3,280				
	do.	GJ-161	11.55-8.30	do.		Side of canyon	3,280				
	do.	GJ-162	12.65-10.75	12 WNW of Navajo Mtn. T. P.		Bottom of canyon	3,560				
	do.	GJ-163	13.30-9.25	13 NW of Navajo Mtn. T. P.		Alcove	3,275				
	do.	GJ-210	8.36-2.61	16 NNW of Navajo Mtn. T. P.		do.	3,800				
	do.	GJ-211	8.34-5.35	12 NNW of Navajo Mtn. T. P.		Base of cliff	3,360				
	do.	GJ-212	12.42-8.55	13 NW of Navajo Mtn. T. P.		Alcove	3,360				
	do.	GJ-213	13.68-9.49	13 WNW of Navajo Mtn. T. P.		Bottom of canyon	3,250				
	do.	GJ-226	8.33-2.68	15 NNW of Navajo Mtn. T. P.		Alcove	3,800				
	do.	GJ-229	11.40-8.60	12 NW of Navajo Mtn. T. P.		Side of cliff	3,360				
	do.	GJ-230	11.40-8.60	do.		do.	3,510				
	do.	GJ-245	7.60-5.20	12 NNW of Navajo Mtn. T. P.		Alcove	3,600				
	do.	GJ-247	6.70-6.70	11 NNW of Navajo Mtn. T. P.		Head of canyon	3,550				
	do.	GJ-294	10.70-4.40	14 NNW of Navajo Mtn. T. P.		Bottom of canyon	3,525				
	do.	GJ-295	13.85-8.40	14 WNW of Navajo Mtn. T. P.		do.	3,560				
	do.	GJ-296	10.35-3.55	15 NNW of Navajo Mtn. T. P.		do.	3,700				
	do.	GJ-297	9.50-3.60	14 NNW of Navajo Mtn. T. P.		do.	3,550				
	do.	GJ-353	6.44-6.70	10 NNW of Navajo Mtn. T. P.		Side of canyon	3,600				
	do.	GJ-354	1.60-5.30	11 NNE of Navajo Mtn. T. P.		Alcove in canyon	3,700				
	do.	GJ-358	8.2-10.5	8 NW of Navajo Mtn. T. P.		Head of canyon	4,400				
	do.	GJ-359	8.25-8.45	10 NW of Navajo Mtn. T. P.		Head of shallow canyon	3,350				
	do.	GJ-360	5.95-7.85	9 NNW of Navajo Mtn. T. P.		Bottom of canyon	4,010				
	do.	GJ-361	9.2-10.15	9 NW of Navajo Mtn. T. P.		Head of canyon	3,975				
15	do.	GJ-110	9.9-7.85	22 NE of Page		Bed of wash	3,350				

and Hopi Indian Reservations and adjoining areas—Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (° F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
						DISTRICT 2—Continued									
		Wingate (Lukachukai)				100 E	6/25/58								Flows to river; used by rivermen; Red Bud Canyon.
		Kayenta				< 5	6/25/58								Pools on alluvium; Cottonwood Gulch.
		Navajo				5 E	6/25/58						Good		Flows to river; Glen Canyon.
		do.				2-3	6/25/58								Glen Canyon.
		do.				< 5	6/25/58								Do.
		do.				1-2	6/26/58								Do.
		do.				5 E	6/25/58								Flows to river; Glen Canyon.
		do.													Pools in alluvium for 300 feet downstream; Oak Canyon.
		Kayenta				5 E	6/26/58								Forbidding Canyon.
		Navajo				⅛	6/26/58								Used by rivermen; Forbidding Canyon.
		do.				5 E	8/13/58								Glen Canyon.
		Kayenta													Do.
		Navajo				< 5	8/13/58								Do.
		do.													A side canyon.
		do.				< 5	8/13/58								Glen Canyon.
		do.				7 E	8/23/58								Oak Canyon.
		do.				2 E	8/24/58						Good		Do.
		do.				2 +	6/25/58								San Juan Canyon.
		Wingate (Lukachukai)				40-50	6/25/58								Flows to river; San Juan Canyon.
		Navajo				< 10	9/17/59								Flows to river; Hidden Passage.
		do.				< 5	9/17/59								Tributary to Glen Canyon.
		do.				10 E	9/17/59								Head of perennial flow; tributary of Cottonwood Gulch.
		do.				10 E	9/17/59								Head of perennial flow; Cottonwood Gulch.
		Wingate (Lukachukai)													Bald Rock Canyon.
		do.													Wilson Canyon.
		Navajo				5 E	9/24/59								Mystery Canyon.
		do.													Do.
		do.													Bald Rock Canyon.
		do.													Mystery Canyon.
		Alluvium													Flows to Colorado River; Rock Creek.

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 2—Continued							
15	Spring	GJ-111	13. 10-16. 05	14 ESE of Page		Alcove in canyon	3, 250				
	do.	GJ-214	0. 25-9. 00	14 NW of Navajo Mtn. T. P.		do.	3, 360				
	do.	GJ-215	0. 6-8. 8	do.		Head of small canyon	3, 920				
	do.	GJ-216	1. 05-8. 95	do.		Alcove	3, 280				
	do.	GJ-217	4. 55-9. 70	18 NW of Navajo Mtn. T. P.		Alcove in canyon	3, 360				
	do.	GJ-218	5. 10-9. 70	do.		Bottom of canyon	3, 280				
	do.	GJ-219	5. 0-9. 50	do.		do.	3, 360				
	do.	GJ-220	6. 05-9. 75	19 WNW of Navajo Mtn. T. P.		Alcove in canyon	3, 280				
	do.	GJ-221	6. 60-9. 40	do.		Head of canyon	3, 440				
	do.	GJ-222	8. 0-11. 25	20 WNW of Navajo Mtn. T. P.		do.	3, 225				
	do.	GJ-223	8. 8-11. 10	21 WNW of Navajo Mtn. T. P.		do.	3, 220				
	do.	GJ-224	11. 55-12. 85	17 NE of Page		Alcove in canyon	3, 350				
	do.	GJ-225	12. 0-13. 30	do.		Head of small canyon	3, 360				
	do.	GJ-255	9. 55-8. 65	22 NE of Page		Narrow canyon	3, 300				
	do.	GJ-256	9. 60-9. 55	21 NE of Page		do.	3, 250				
	do.	GJ-342	3. 2-12. 95	15 WNW of Navajo Mtn. T. P.		Bottom of canyon	3, 625				
	do.	GJ-343	6. 0-12. 4	18 WNW of Navajo Mtn. T. P.		do.	3, 550				
16	do.	GJ-242	2. 71-12. 60	14 NE of Page		Side of cliff	3, 200				
	do.	GJ-248	3. 91-12. 95	12 NE of Page		Head of small canyon	3, 280				
	do.	GJ-249	3. 30-13. 66	do.		Alcove in canyon	3, 280				
	do.	GJ-250	4. 25-15. 70	10 NE of Page		Bottom of canyon	3, 280				
	do.	GJ-251	3. 10-17. 05	10 ENE of Page		Head of small canyon	3, 180				
	do.	GJ-254	3. 30-16. 80	do.		Alcove in canyon	3, 180				
	do.	GJ-348	9. 8-15. 85	7 NNE of Page		Shallow canyon	3, 300				
	do.	GJ-349	8. 35-14. 50	9 NE of Page		Bottom of wash	3, 960				
	do.	GJ-350	12. 17-16. 00	7 N of Page		Hillside	3, 980				
24	None										
25	do.										
26	do.										

and Hopi Indian Reservations and adjoining areas——Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (° F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
							DISTRICT 2—Continued								
		Navajo				5 E	4/26/58								Glen Canyon.
		do.				< 5	8/13/58								Do.
		do.				5-10	8/13/58								Side canyon.
		do.				< 5	8/13/58								Flows to river; Glen Canyon.
		do.				< 5	8/13/58								Glen Canyon.
		do.				5 E	8/14/58								Dangling Rope Canyon.
		do.				15 E	8/14/58								Several openings; Dangling Rope Canyon.
		do.				< 5	8/14/58								Glen Canyon.
		do.				5 E	8/14/58								Side canyon.
		do.				5 E	8/14/58								Grotto Canyon.
		do.				5 E	8/14/58								Dungeon Canyon.
		do.				< 5	8/14/58								Glen Canyon.
		do.				< 5	8/14/58								Do.
		do.				3 E	4/20/59								Rock Creek.
		do.				5-6	4/20/59								Do.
		do.				5-10	9/17/59								Air reconnaissance; False Entrance Canyon.
		do.				5-10	9/17/59								Air reconnaissance; Catfish Canyon.
		do.				10	9/ 1/58						Good		Kane Creek; measurements by University of Utah archeological field party.
		do.				200 E	9/ 1/58								Tributary of Glen Canyon; several openings.
		do.				80 E	9/ 1/58								Flows to river; Glen Canyon.
		do.				15 E	9/ 1/58								Do.
		do.				5 E	9/ 1/58								Flows to river; Labyrinth Canyon.
		do.				5 E	4/20/59								Tributary of Glen Canyon.
		do.				5-10	9/18/59								Air reconnaissance; Warm Creek.
		Alluvium				< 1	12/ 4/59								Cottonwood Wash.
		Entrada				¼E	12/ 4/59								On divide between Warm and Wahweap Creeks.

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 2—Continued							
27	Spring	GJ-243	12.86-0.33	14 NNE of Page		Base of cliff	3,400				
	do.	GJ-344	6.7-1.7	18 WSW of Navajo Mtn. T. P.		Bottom of canyon	3,600				
	do.	GJ-345	6.05-3.05	do.		Shallow canyon	3,950				
	do.	GJ-346	1.95-5.85	15 SW of Navajo Mtn. T. P.		do.	4,600				
	do.	GJ-347	2.8-5.05	16 SW of Navajo Mtn. T. P.		do.	4,300				
28	None										
39	do.										
40	Drilled well	2T-502	1.00-12.10	8 E of Shonto T. P.	8/59	Side of hill	6,650	523	10	12	Open hole
	do.	2T-505	8.25-10.85	Shonto Chapter House	3/61	Canyon	6,350	165	9 7	43 131	do.
	do.	Shonto P. M. 2	8.05-10.95	0.75 WNW of Shonto T. P.	5/61	Plain	6,580	554	8	554	Perforated 485-510, 514-539
	Dug well	2GS-40-2	0.10-2.50	12 NE of Shonto T. P.		Bottom of canyon	6,440				
	Spring	2GS-40-1	0.05-2.85	do.		do.	6,420				
	do.	2GS-40-3	0.15-1.75	do.		Side of canyon	6,600				
41	None										
56	do.										
57	Drilled well	2T-503	6.50-8.95	13 ESE of Cow Springs T. P.	6/60	Low cliff	6,250	730	7	730	Perforated 430-730
58	None										
				DISTRICT 3							
29	None										
44	Drilled well	3T-502	8.60-7.80	12 W of Copper Mine T. P.	7/58	Plain	5,080	428			
45	None										
59	do.										
60	Drilled well	3K-336	1.75-6.40	12 NE of Gap T. P.	2/59	Low hill	5,720	295	8	8	Open hole
61	do.	3K-340	4.75-15.55	7 SW of Gap T. P.	8/60	Valley	5,480	1,292	8	21	do.
62	do.	3K-342	1.70-2.50	15 WNW of Cedar Ridge T. P.	1/60	Gentle slope	5,510	1,000	None		do.
76	do.	3K-344	3.20-11.65	13 NW of Hotevila	2/58	Stripped plain	6,000	1,047	6 5	732 1,047	Perforated 709-1,047
	do.	3K-345	8.65-8.55	14 S of Red Lake T. P.	10/59	Low mesa	5,450	520	8	130	Open hole
77	do.	3P-350	13.65-8.35	0.5 S of Tuba City	7/59	Gentle slope	4,850	135 R	10 6	26 32	do.
	do.	3P-351	13.55-7.15	Tuba City	9/59	do.	5,100	292 R			

and Hopi Indian Reservations and adjoining areas——Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
							DISTRICT 2—Continued								
		Navajo				100 E	8/31/58								Face Canyon.
		do.				20 E	9/16/59								Air reconnaissance; West Canyon Creek.
		do.				5 E	9/16/59								Do.
		do.				< 5	9/16/59								Do.
		do.				< 5	9/16/59								Do.
5	515	do.	DL	318	8/11/59			42	200	5/6	D, S	No	Good	57	S.C. 200; deepened to 820 feet; water level reported 450 feet in August 1964.
0	165 P	do.	DL	8	4/27/61			30	13	6	D, S	No	Good		
0	554 P	do.	DL	209	5/ 8/61			64	35	24	PS	Yes	Good		S.C. 290; water level reported 206 feet in December 1962.
		Alluvium									D, S				
		Alluvium and Navajo				< 5	9/25/65				D, S				
		Navajo				5-10 E	9/25/65				D, S		Good		
350	355	Toreva	LL	359	6/22/60			11	90	1	D, S	No	Fair		S.C. 1,250.
							DISTRICT 3								
370	58 P	Coconino	DL	Dry R							Un	No			Abandoned.
5	265	Navajo	DL	233	2/19/59			6	37	5/6	D, S	No	Good	58	S.C. 150.
700	582	Coconino	LL	Dry	7/11/60						Un	No			Dry; abandoned.
510	450	do.	LL	Dry	2/ 1/60						Un	No			Do.
595	452 P	Cow Springs and Entrada and Carmel undiff.	DL	486	2/ 5/58			8	125	3	D, S	No	Good		S.C. 1,050.
190	330 P	Navajo	LL	317	9/30/59			14	165	1	D, S	No	Good	62	S.C. 300.
22	113 P	Kayenta and tongues of Navajo in Kayenta		4 R	7/ 7/59			17	15	1	D	No	Good	64	S.C. 200; poor water in alluvium at 22 feet.
0	292 P	Navajo and tongue of Navajo in Kayenta	DL	Flow	9/30/59	10 E	9/30/59					No	Good		

Supplemental records of ground-water supplies in the Navajo

Quad-rangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 3—Continued							
77	Drilled well	3T-507	13.00-8.35	0.5 SE of Tuba City	4/59	Gentle slope	4,850	395	6	395	Perforated 77-395
	do.	3T-508	13.10-6.50	1 NNE of Tuba City	9/59	Low mesa	5,190	475	10	16	Open hole
78	do.	3K-339	11.30-14.05	9 SW of Moenave	11/57	Alluvial basin	4,620	316			
	do.	3K-341	11.10-8.40	6 W of Moenave	7/59	Near wash	4,900	245	6	245	Perforated 189-245
	do.	3T-510	0.10-6.30	1 NNW of Tuba City	5/60		5,200	455	9 6	47 390	Perforated 0-390, open hole 390-455
79	None										
80	do.										
96	Drilled well	3M-176A	13.50-3.15	19 SE of Tuba City	4/58		6,050	670	6	670	Perforated 580-585, 655-665
	do.	3T-500	10.85-2.80	16 W of Hotevila	12/57	Sandy plain	6,040	1,102 R	4	1,008	Perforated 904-1,008
	do.	3T-500A	10.90-2.90	15 W of Hotevila	1/60	do.	6,040	1,230	6	1,048	Open hole
97	None										
98	Drilled well	3T-341	13.60-15.50	2 NW of Gray Mtn. T. P.	6/58	Side of hill	4,760	1,320	8	1,320	
	do.	3T-501	10.90-9.95	2 SW of Cameron	6/58	Edge of cliff	4,410	92			do.
99	None										
115	do.										
116	do.										
117	Drilled well	(A-25-10)30bc	7.35-15.90	Wupatki Ruins			4,850	904			
	do.	(A-26-9)33dd	10.85-11.70	12 SSE of Gray Mtn. T. P.			5,392	1,410	8		
	do.	(A-26-10)31ca	7.10-11.25	13 SE of Gray Mtn. T. P.			5,085	1,009	8		
118	None										
				DISTRICT 4							
54	Drilled well	4T-399	13.20-9.35	7 SW of Rough Rock T. P.	7/59	Bank of wash	6,950	1,172	6 4	998 1,172	Perforated 998-1,172
	do.	4T-500	10.05-10.85	6 SW of Rough Rock	7/58	Side of wash	7,100	205	6	60	Open hole
	do.	4T-514	10.50-14.45	9 SSW of Rough Rock	8/61	do.	7,000	430	6	430	
55	do.	4K-407	8.05-15.00	13 NE of Pinon	4/59	Alluvial flat	6,470	603	10 6	60 603	Perforated 493-580
	do.	4T-503	12.50-16.05	12 N of Pinon	3/61	Narrow valley	6,580	833	6	833	Perforated 710-833
	do.	4T-504	3.35-16.75	14 NE of Pinon	5/61	Narrow canyon	7,100	1,125	6 5	975 1,125	Perforated 975-1,125
56	do.	4T-396	5.50-14.30	15 NNW of Pinon	11/60	Low hill	6,550	500	6	500	Perforated 200-336
	do.	4T-402	5.00-2.60	16 WSW of Chilchinbito T. P.	5/61	Ridge	6,850	1,300	6	1,212	Open hole
	do.	4T-403	7.75-5.80	19 SW of Chilchinbito T. P.	8/60	Top of hill	6,500	510	6	510	Perforated 395-510

and Hopi Indian Reservations and adjoining areas——Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
DISTRICT 3—Continued															
4	391 P	Kayenta and tongues of Navajo in Kayenta	DL	5 R	4/ 2/59			15	80	6	D, S	No	Good		
0	475 P	Navajo and tongue of Navajo in Kayenta		120 R	8/25/59			150(?)		12	D	Yes	Good		S. C. 230.
250	50	Chinle (Shinarump)	DL	Dry R	11/30/57						Un	No			Seep of salt water; abandoned.
190	55 P	do.	DL	200	7/21/59							No	Good	67	Hole backfilled from 270 to 245 feet; recovery test 2 gpm.
0	455 P	Navajo and tongue of Navajo in Kayenta	DL	9 R	5/16/60			25	30	4	D	Yes	Good		S. C. 280.
339	331 P	Entrada and Carmel undiff. and Navajo(?)	DL	560 R	4/30/58			3		5	D, S	No	Good		S. C. 550.
904	198	Navajo		920 R	3/ /58			8		36	Un	No	Good		S. C. 820; abandoned; some water from Cow Springs.
881	349 P	do.	DL	890 R	1/26/60			15		8	D, S	No			Howell Mesa Chapter House well.
		Coconino		1, 146	3/24/64			15	120	1½	D, S	Yes	Good	65	S. C. 776.
0	90(?)	Volcanic		67	7/ 1/58			4	25	½	Un	Yes	Good	64	Bailed hole dry; abandoned.
315	589 P	Coconino		780	/58			50	45	24	D	Yes	Fair		
		do.	DL	1, 343	10/22/54						S				
		do.									S	Yes			
DISTRICT 4															
970	202 P	Morrison (Westwater Canyon)	DL	787	7/15/58			18	15	1	D, S	Yes	Fair	65	S. C. 3, 070.
60	145 P	Wepo		60 R	7/23/58						D, S	No	Fair		S. C. 2, 050.
0	416	Toreva	DL	81 R	8/30/61			2	349	1½	D, S	No	Fair		S. C. 3, 100; bailed hole dry.
490	113 P	Dakota	DL	445 R	4/14/59			20	70		D, S	No	Fair	62	S. C. 2, 500; recovery 8 gpm.
705 745	40 88 P	Dakota Cow Springs	LL	490	3/26/61			10	110	1¾	D, S	No	Fair	64	S. C. 2, 100; seep in Toreva at 137 feet.
995	130 P	Morrison (Westwater Canyon)	LL	999 R	5/22/61			6	90	⅔	D, S	No	Fair	70	S.C. 1, 800; slightly bitter taste.
12	488 P	Wepo	LL	254 R	11/25/60			2	246	1	D, S	No	Good	54	S.C. 1, 080; bailed hole dry.
1, 205	95 P	Dakota	DL	922 R	5/22/61			10	65	1½	D, S	Yes	Fair	72	S.C. 2, 440.
442	68 P	Toreva	LL	283	8/25/60			13	100	1½	D, S	No	Good	61	S.C. 850; seep from Wepo at 320 to 355 feet cased off.

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
DISTRICT 4—Continued											
56	Drilled well	4T-404	3.00-3.80	14 SW of Chilchinbito T. P.	5/59	Head of wash	6,780	540 R	6	540	Perforated 480-540
	do.	4T-405	9.25-8.50	20 SE of Shonto	6/59	Gentle slope	6,500	436	6	436	Perforated 375-436
	do.	4T-406	8.10-12.40	18 NW of Pinon	11/60	Head of valley	6,750	716	8 5(?)	560 716	Perforated
	do.	4T-510	2.90-14.10	14 NNW of Pinon	10/60	Valley	6,650	452	6	452	Perforated 260-450
	do.	4T-511	10.95-14.65	18 NW of Pinon	1/61	Low hill	6,720	645	6 5	430 645	Perforated 300-645
	do.	4T-512	2.15-7.35	15 SW of Chilchinbito T. P.	7/61	Valley	6,700	600	6	600	Perforated
57	do.	4T-508	1.90-10.80	16 ESE of Cow Springs T. P.	4/60	Gentle slope	6,400	1,000	6	1,000	Perforated 880-1,000
72	do.	4T-392	11.55-13.00	6 WNW of Salina T. P.	5/58	Plain	6,480	500 R	6	500	Perforated 430-500
73	do.	4T-400	11.95-9.00	2 NE of Pinon T. P.	5/58	Low hill	6,440	443	6	443	Perforated 320-443
	do.	Pinon P.M. 5	12.75-10.00	Pinon School	1/59	Alluvial flat	6,350	1,500	8	1,500	Perforated 1,000-1,500
	do.	Whippoorwill P.M. 2	4.45-15.10	Whippoorwill D.S.	8/58	Gentle slope	6,125	700	8 6	404 700	Perforated 475-611
74	do.	4T-395	9.90-3.15	14 NW of Pinon T. P.	7/59	Alluvial flat	6,280	150	6	150	Perforated 120-150
	do.	4T-509	11.95-8.20	14 WNW of Pinon T. P.	10/59	Broad hill	6,300	647	6	647	Perforated 486-647
	Spring	4GS-74-1	13.1-6.7			Bed of wash	6,125				
75	Drilled well	4K-391	11.70-7.20	16 N of Hotevila	3/59	Gentle slope	5,800	303	6	303	Perforated 190-300
	do.	4T-393	11.95-13.55	10 NNW of Hotevila	10/58	Rolling hills	6,160	1,350	8 6	1,120 1,350	Perforated 1,330-1,350
	do.	4T-394	0.90-10.40	15 NE of Hotevila	1/59	Top of ridge	6,310	650 R	6	650	Perforated 400-650
	do.	4T-506	2.75-13.70	11 NE of Hotevila	4/60	Gentle slope	6,180	566	6	566	Perforated 250-560
	do.	4T-515	10.75-6.45	16 N of Hotevila	12/58	Nose of hill	5,815	475 R	6	475	Perforated 230-280, 320-445
	do.	Rocky Ridge P.M. 1	5.25-11.85	0.5 N of Rocky Ridge School	8/59	Gentle slope	6,200	1,500	10 8	700 1,500	Perforated 1,400-1,500
76	None										
93	Drilled well	4M-79A	9.60-3.10	10 N of Keams Canyon T. P.	10/60	Alluvial flat	6,050	622	8 6 5	95 365 622	Perforated 365-622
94	None										
95	do.										
DISTRICT 5											
96	None										
114	Drilled well	5K-322	10.00-13.25	13 NE of Tolani Lake T. P.	7/58	Alluvial flat	5,100	82	6	75	Perforated 60-75
115	do.	5T-325	8.00-16.00	6 NW of Red Lake T. P.	4/60	do.	4,950	137	None		
	do.	5T-500	5.90-4.30	18 N of Red Lake T. P.	1/60	Stripped plain	5,600	324	None		

and Hopi Indian Reservations and adjoining areas——Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
							DISTRICT 4—Continued								
320	220 P	Toreva	DL	450 R	5/15/59			15	90	1	D, S	No	Fair		S.C. 1,700; bailed hole dry.
2	434 P	Wepo	DL	335 R	6/19/59			4	100	1	D, S	No	Good		S.C. 950.
2 505	503 211 P	Wepo Toreva	DL	492 R	12/14/60			13	40	1	D, S	No	Good	57	S.C. 1,050.
204	248 P	Toreva	LL	281	10/21/60			27	140	1	D, S	No	Good	54	Forest Lake Chapter House well.
282	363 P	Toreva(?)	LL	308	2/ 2/61			16	205	1 1/6	D, S	No	Good	57	S.C. 520.
96 174	78 328	Wepo(?) Toreva	DL									No	Good		S.C. 1,150.
865 955	80 45 P	Dakota Cow Springs	LL	450 E	4/ 7/60			20	55	5/6	S	No	Fair	62	S.C. 2,200; salty taste.
		Cow Springs	DL								D, S	No			
170	251	Toreva	DL	203	5/21/58			25	60	1/2	D	No	Good	57	S.C. 1,400; Pinon Chapter House well.
		Dakota, Morrison (Westwater Canyon) and Cow Springs		179 R	1/29/59			23	184	2 1/2	PS	Yes	Good		
		Morrison (Westwater Canyon)		66 R	8/15/58			30	534	90 days	PS	Yes	Fair		
120	30 P	Toreva(?)	DL	77	7/28/59			35	38	3/4	D, S	No	Good	54	
486(?)	161 P	Toreva		313	10/20/59			23	182	5/6	D, S	No	Good	63	
		Wepo				<1									Undeveloped.
180	123 P	do.	DL	190	3/ 3/59			23	110	1/1	D, S	Yes	Good	57	S.C. 860.
895	455 P	Entrada and Carmel undiff. and Navajo(?)	DL	291	10/ 6/58			30	425	1	D, S	Yes	Good	64	S.C. 906; possibly some water from Dakota and Cow Springs.
400	250 P	Toreva	DL	306	1/28/59			15	132	1 1/4	D, S	No	Good	61	S.C. 630.
242	324 P	do.	LL	252	4/ 5/60			19	130	2/3	D	No	Good		S.C. 600; Hard Rock Chapter House well.
175	300 P	do.	DL	240	12/18/58			20	180	1	D, S	Yes	Good	60	S.C. 625.
		Entrada and Carmel undiff. and Navajo		170 R	8/19/59						D, PS	No	Fair		
338	284 P	Dakota and Cow Springs	LL	Flow	10/ 3/60	1 1/3	10/ 3/60	17	230	3/4	D, S	No	Fair	57	S.C. 1,700; recovery 14 gpm.
							DISTRICT 5								
0	72	Alluvium	DL	50 R	7/15/58			10	0	8	D, S	No	Poor		S.C. 5,600.
2	135 P	Chinle (Owl Rock)	DL	44 R	4/19/60			1/8	90	1/6	Un	No			Abandoned, insufficient yield; seep at 45 feet.
6	224	Navajo	DL	190 R	1/28/60			1/12	134	1	Un	No	Good		Bailed hole dry; abandoned.

Supplemental records of ground-water supplies in the Navajo

Quad-rangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 5—Continued							
116	None										
117	do.										
130	do.										
131	Drilled well	5T-324	5.45-3.95	0.5 NW of Red Lake T. P.	10/57	Lake bed	4,910	72	14	72	Perforated 15-45
132	do.	5K-312	0.50-9.30	4 NNW of Sunrise T. P.		Plain	4,700	25 E			Open hole
	do.	5K-312A	0.10-9.30	do.		do.	4,700	30 R			
	do.	5T-505	0.40-14.40	1 W of Sunrise T. P.	4/61	Low hill	4,765	425	9	133	do.
	do.	New Leupp P. M. 1	0.60-14.15	do.	2/58	Gentle slope	4,740	405	8	405	Perforated
	do.	New Leupp P. M. 2	0.50-14.15	do.	3/59	Small hill	4,730	400	10	400	Perforated 300-400
142	None										
143	do.										
144	Drilled well	5T-506	12.60-0.50	4 SSE of Sunrise T. P.	9/61	Low hill	4,795		6		
145	do.	5T-507	1.50-0.20	4 SSW of Sunrise T. P.	6/61	Small hill	4,885	570	6		
				DISTRICT 6							
74	None										
75	do.										
93	Drilled well	6P-400	11.60-12.90	Keams Canyon T. P.	8/60	Valley	6,150	803	6 5	675 803	Perforated 735-800
	do.	6-1-F-9	14.00-17.05	5 SW of Keams Canyon T. P.	12/59	Shallow valley	6,500	301	8 6	242 301	Perforated 246-301
	do.	Keams Canyon P. D. C. 1	12.05-12.80	0.5 W of Keams Canyon T. P.	12/58	Canyon	6,130	1,500 R	8 6		
	do.	Keams Canyon P. D. C. 2	10.95-13.10	1 E of Keams Canyon T. P.	1/61	do.	6,220	950	8	950	Perforated 730-765, 780-950
94	do.	6-F-1A	4.00-11.10	4 E of Polacca D. S.	5/60	Alluvial flat	5,775	61	None		
	do.	6-F-1B	4.00-11.10	do.	5/60	do.	5,775	43	None		
	do.	6-1-H6	7.00-3.90	8 N of Polacca D. S.	4/60	Slope	6,020	216	6	216	Perforated 176-216(?)
	do.	6-1-H7	11.7-3.0A	10 NW of Polacca D. S.	4/60	Mesa	6,200	511	6	511	Perforated 470-510(?)
	do.	6H-2-1	8.9-6.1A	6 N of Polacca D. S.	5/60	do.	6,000	691	None		
	do.	Polacca P.D.C. 1	7.55-11.40	Polacca D. S.	2/59	Foot of mesa	5,900	1,200	8 5	1,005 1,200	Perforated 980-1,200
95	do.	6-NO1	4.60-4.50	4 NNE of Oraibi	3/60	Alluvial flat	5,750	127	None		
	do.	6-3-S03	9.70-10.00	3 WSW of Oraibi	3/60	Plain	5,740	500	6	500	Perforated 40 feet
	do.	6-3-S04	12.2-16.0A	9 SW of Oraibi	2/60	do.	5,630	335	6	335	do.

and Hopi Indian Reservations and adjoining areas——Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
DISTRICT 5—Continued															
0	40	Alluvium	DL	15	10/ 3/57			17	55	½	D, S	Yes	Fair		S.C. 3,000.
		do.										No			Possibly could produce 1 to 3 gpm.
		do.										No			Probably could yield 3 gpm of stock water.
180(?)	245 P	Coconino		140	4/28/61			35	< 1	3	D, S	Yes	Good	62	S.C. 1,430.
		do.	DL	135	2/12/58			60	0		PS	Yes	Good		
		do.	DL	125 R	3/31/59			75	.9	1½	PS	Yes	Good		S.C. 1,400.
		Coconino(?)		122	11/22/65						D, S	Yes	Good		S.C. 1,190.
		Coconino	DL								D, S	Yes	Good		S.C. 1,020.
DISTRICT 6															
625 765	140 38 P	Dakota Cow Springs	LL	157	8/22/60			18	570	2	D, PS	No	Fair		S.C. 2,200; Keams Canyon T. P. well.
210(?)	91 P	Toreva	LL	212 R	2/10/60			11	< 5(?)	1	D, S	No	Good		
		Dakota and Cow Springs(?)		256	2/18/59			15-20	417	27	D	Yes	Fair	65	
657 830	173 120 P	Dakota Cow Springs	LL	190	1/21/61			54	224	44	D, PS	Yes	Fair	67	S.C. 2,480.
0	48	Alluvium	DL	Dry R	5/25/60						Un	No			Abandoned.
0	41	do.	DL	Dry R	5/27/60						Un	No			Do.
		Toreva	DL	89 R	4/25/60			10	4.5	10	D, S	No			
190(?)	320	do.	DL	402 R	4/18/60			2	56	10	D, S	No			
2	207	do.	DL	Dry R	5/ 9/60						Un	No			Abandoned.
995	205 P	Navajo	DL	210 R	2/ 4/59						Un	Yes	Poor	68	S.C. 4,500; poor water from Cow Springs and Entrada probably leaking into well.
0	86	Alluvium	DL	Dry R	3/31/60						Un	No			Abandoned.
		Entrada and Carmel undiff. and Navajo(?)	DL	282 R	3/ 7/60			11	10	10		No			
		Navajo	DL	246 R	2/26/60			8	6	10		No			

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 6—Continued							
95	Drilled well	Hotevila P.D.C. 1	9.65-5.20	Hotevila D.S.	10/57	Mesa	6,350	1,757 R		1,500	Open hole
	do.	Oraibi P.D.C. 2	6.55-8.60	Oraibi School	12/58	Gentle slope	5,700	1,200			
	do.	Second Mesa P.D.C. 1	0.30-14.45	Second Mesa School	3/58	Slope	5,750	800	8	640	do.
96	do.	6-3-ED3	0.30-6.80	5 WSW of Hotevila D.S.	3/60	Alluvial flat	5,630	385	6	385	Perforated 40 feet
112	None										
113	Drilled well	6-1-T4	4.65-0.90	7 SSE of Polacca D.S.	2/60	Low hill	6,030	700	6	700	Perforated 656-700(?)
114	None										
115	do.										
				DISTRICT 7							
72	None										
73	do.										
92	Drilled well	7T-505	11.45-8.90	10 NW of Steamboat T.P.	10/58	Narrow valley	7,180	165	6	165	Perforated 106-134
	do.	7T-509	12.05-11.45	8 NW of Steamboat T.P.	11/58	Low hill	6,990	430 R	8		
93	do.	7K-371	0.10-12.30	12 E of Keams Canyon T.P.	2/57	Mesa	6,840	956	6 5	765 956	Perforated 886-956
	do.	7P-387	7.40-3.50	Low Mountain T.P.	4/60	Gentle slope	6,150	460	6	460	Perforated 410-460
	do.	7T-377	0.10-0.85	8 WSW of Salina T.P.	10/58	Edge of wash	6,430	600	6 5 4	400 529 600	Perforated 400-600
	do.	7T-507	0.65-8.40	12 NE of Keams Canyon T.P.	10/58	Alluvial flat	6,880	450	6	450	Perforated 370-450
	do.	7T-525	8.95-15.30	2 NW of Jeddito T.P.	4/59	Mesa	6,500	1,000	6 4	530 1,000	Perforated 850-1,000
	do.	Jeddito P.M. 1	7.40-15.70	0.5 S of Jeddito T.P.	2/60	Slope	6,430	900	8 6	156 798	Perforated 700-720
111	None										
112	Drilled well	7T-378	10.70-1.55	4 SW of Jeddito T.P.	12/58	Alluvial flat	6,050	355	6	355	Perforated 325-340(?)
	do.	7T-511	5.80-16.85	8 NNW of Bidahochi T.P.	10/58	Diatreme	6,200	220	6	220	Perforated 150-200
	do.	7T-512	2.80-16.75	7 N of Bidahochi T.P.	10/58	Alluvial flat	5,950	170	8	170	Perforated 70-94, 130-154
	do.	7T-513	7.45-16.10	8 NW of Bidahochi T.P.	10/58	Diatreme	6,250	380	8	380	Perforated 340-380
	do.	7T-514	6.65-14.50	6 SW of White Cone T.P.	10/58	do.	6,200	370	None		
	do.	7T-519	3.00-3.80	6 N of White Cone T.P.	12/58	Small hill	6,700	760	8 6	444 760	Perforated 450-750
	do.	7T-520	8.75-10.00	5 W of White Cone T.P.	12/58	Low hill	6,130	485	8	485	Perforated 417-475
	do.	7T-521	1.20-12.40	4 SE of White Cone T.P.	12/58	Gentle slope	6,100	328	8	328	Perforated 285-305, 315-328
	do.	White Cone P.M. 1	3.65-10.15	White Cone D.S.	10/57	Side of hill	6,130	500	8 6	202 500	Perforated 362-385, 454-500

and Hopi Indian Reservations and adjoining areas——Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
DISTRICT 6—Continued															
1,450	307 P(?)	Navajo		1,044 R	10/ /57			43		18	D, PS	Yes	Good	61	S.C. 380.
		Navajo(?)		246 R	12/ 4/58			20	24	1	PS	Yes	Good		
640	160 P	Navajo	DL	279 R	4/ 2/58			43	37	4	D, PS	No	Good		
		Entrada and Carmel undiff. (?)	DL	259 R	3/21/60			10	31	10		No			
		Entrada and Carmel undiff. and Navajo	LL	361	2/10/60			10	227	1¼	D, S	No	Fair	60	S.C. 2,700.
DISTRICT 7															
		Toreva	DL	74 R	11/ 1/58			5	64	1		Yes	Good		S.C. 1,130.
4	204	do.	DL	Dry	11/15/58						Un	No			Dry; abandoned.
897	59 P	Dakota	DL	706	2/24/57			6	180	1½	D, S	Yes	Fair	64	S.C. 601.
396	64 P	do.	DL	77 R	4/ /60			20	355		D	No	Good		S.C. 980.
		Dakota(?), Morrison, and Cow Springs		297	10/ 7/58			15	6	1	D, S	Yes	Poor		S.C. 6,000.
		Toreva		300	10/15/58			10	150	1	D, S	No	Good		S.C. 500; bailed hole dry.
844	156 P	Dakota	DL	426	4/20/59			2	150	1	D, S	Yes	Good	64	S.C. 1,510.
		Dakota(?) and Cow Springs(?)	DL	310 R	2/24/60			20	405	6	Un	Yes	Poor		
325	30 P(?)	Dakota	DL	90 R	12/13/58			25	100	1	D, S	Yes	Fair		S.C. 2,132.
165	55 P	Bidahochi (volcanic)	DL	135 R	10/19/58			5	85	1	S	Yes	Poor		S.C. 5,000; bailed hole dry.
25 120	95 50 P	Bidahochi Wingate (Lukachukai)	DL	65 R	10/19/58			3.5	105	1	D, S	Yes	Good		S.C. 1,090; bailed hole dry.
0	380 P	Bidahochi (volcanic)	DL	170 R	10/24/58			20	210	2	D, S	Yes	Good		S.C. 1,540; bailed hole dry.
0(?)	370 P	do.	DL	Dry R	10/30/58						Un	No			Abandoned; some water reported in hole in June 1962.
725	35 P	Dakota	DL	635 R	12/ 2/58			7	<1	2	D, S	Yes	Good		S.C. 790.
386	99 P	Entrada and Carmel undiff.	DL	120 R	12/ 8/58			8	280	1	D, S	Yes	Good	59	S.C. 1,200; some water cased off in Dakota and Cow Springs.
155	165	Cow Springs(?)	DL	240 R	12/10/58						D, S	No	Good	57	S.C. 1,480.
		Entrada and Carmel undiff.		282 R	1/26/61			33	150	24	PS	Yes	Good		

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
DISTRICT 7—Continued											
113	Drilled well	7T-501	6.4-9.9A	8 NNE of Teastoh T. P.	2/58	Alluvial flat	5,680	325	None		
	do.	7T-502	7.7-9.8A	8 N of Teastoh T. P.	3/58	do.	5,585	103			
	do.	7T-503	8.8-9.3A	do.	3/58	do.	5,560	124	6	124	Perforated 80-120
	do.	7T-504	4.5-7.0A	12 NNE of Teastoh T. P.	3/58	do.	5,700	92	8		
114	None										
127	Drilled well	7H-121-B	9.80-12.70	10 SE of Bidahochi T. P.	2/59	Circular valley	5,625	310	10	21	Open hole
	do.	7H-121-C	10.95-12.60	10 SE of Bidahochi T. P.	3/59	Valley	5,580	170	10	170	Perforated 140-170
128	do.	7P-385	3.90-6.20	0.25 W of Bidahochi T. P.	10/58	Alluvial flat	5,700	58 R	6	58	Perforated 48-58
	do.	7P-386	3.55-6.30	Bidahochi T. P.	11/58	Side of hill	5,750	135			
	do.	7T-372	8.70-14.95	10 SW of Bidahochi T. P.	10/56	Valley	5,380	145	None		
	do.	7T-510	5.25-1.75	5 NNW of Bidahochi T. P.	10/58	Diatreme	5,980	375	None		
	do.	7T-515	6.00-0.90	6 NNW of Bidahochi T. P.	11/58	Alluvial flat	5,910	100	6	85	Perforated 65-85(?)
	do.	7T-516	3.35-5.25	1 N of Bidahochi T. P.	11/58	Diatreme	5,820	415	None		
	do.	7T-517	3.20-7.70	2 SE of Bidahochi T. P.	11/58	Alluvial flat	5,700	137	8	67	Perforated 44-67
	do.	7T-518	13.05-1.05	5 W of Na Ah Tee T. P.	11/58	do.	6,350	175	None		
	do.	7T-523	13.40-4.90	6 NE of Dilcon T. P.	12/58	Subsidence crater	6,380	87	None		
	do.	Indian Wells P. M. 2	7.90-8.00	4 SW of Indian Wells T. P.	9/59	do.	5,980	820 R			
129	do.	7P-533	4.70-10.70	2 S of Dilcon T. P.	4/61	Top of hill	5,960	360	4	360	Perforated 325-345
	do.	7T-522	4.80-5.90	2 NNW of Dilcon T. P.	12/58	Low hill	6,100	150	6	150	Perforated 85-145
	do.	7T-524	1.55-0.70	7 E of Teastoh T. P.	1/59	Shallow valley	6,420	305	None		
	do.	Dilcon P. M. 1	4.80-8.65	0.75 SW of Dilcon T. P.	2/57	Edge of wash	5,830	45	8	45	
130	None										
141	do.										
142	do.										
DISTRICT 8											
4	None										
5	Spring	GJ-131	0.25-14.85	10 ENE of Piute Farms		Alcove in canyon	3,800				
	do.	GJ-132	1.90-15.95	9 ENE of Piute Farms		do.	3,690				
9	None										
10	do.										

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
							DISTRICT 7—Continued								
10	315 P	Entrada and Carmel undiff.	DL	Dry R	2/18/58						Un	No			Dry; abandoned.
0	70	Alluvium	DL	40 R	3/ 7/58						Un	No	Poor		Salty water; abandoned.
0	110	do.	DL	50 R	3/ 7/58			6	20	6	Un	No	Poor		Abandoned.
0	80	do.	DL	Dry R	3/17/58						Un	No			Dry; abandoned.
30	280 P	Bidahochi (volcanic)	DL	135 R	2/27/59			¼	175		Un	No	Poor		S.C. 7,000; bailed hole dry; abandoned.
0	168	Alluvium	DL	97 R	3/20/59			15	20	20		No	Poor		S.C. 8,000.
0	58	do.		40 R	10/20/58			15	18	1		Yes	Poor		S.C. 14,800; bailed hole dry.
0	135 P	Wingate (Rock Point)	DL	57 R	11/ /58							No	Good		
0	123	Alluvium	DL	105 R	10/18/56						Un	Yes	Fair		S.C. 2,520; seep at 118 feet; abandoned.
0	375 P	Alluvium and Bidahochi (volcanic)	DL	74	10/16/58			15	300	4	Un	Yes	Poor	73	S.C. 9,420; abandoned.
30 75	45 25 P	Bidahochi Wingate (Lukachukai)	DL	53 R	10/31/58			10	47(?)	1	D, S	Yes	Poor		S.C. 4,470; salty taste; bailed hole dry.
25	390 P	Bidahochi (volcanic)	DL	197 R	11/ 4/58			8	218	1	Un	Yes	Poor		S.C. 8,790; bailed hole dry; abandoned.
0	95	Alluvium	DL	50 R	11/ 6/58			15	85	2	D, S	Yes	Fair		S.C. 3,100.
0 55	55 120 P	Alluvium Bidahochi	DL	Dry R	11/ 8/58						Un	No			Dry; abandoned.
0	87 P	Bidahochi (volcanic)	DL	Dry R	12/20/58						Un	No			Do.
		do.	DL	30								No	Poor		Abandoned; "too salty."
47(?)	313 P	Wingate (Rock Point)	DL	280 R	4/ /61						D, S	No	Good		Abandoned; new well drilled in 1965.
0	150 P	Bidahochi (volcanic)	DL	74	7/20/59			36	6	82	D, S	Yes	Good		S.C. 452.
0	305 P	do.	DL	Dry R	1/17/59							No			Dry; abandoned.
		Alluvium and Wingate (Rock Point)(?)		13	2/ /57			30	0		PS	Yes	Good		
							DISTRICT 8								
		Cutler (Cedar Mesa)				<5	6/17/58								San Juan Canyon.
		do.				<5	6/17/58								Do.

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
DISTRICT 8—Continued											
11	None										
12	Spring	GJ-3	8.80-7.20	8 SSE of Piute Farms		Under ledge	4,390				
	do.	GJ-4	12.20-7.0 A	8 SSW of Piute Farms		Base of small cliff	4,200				
	do.	GJ-80	13.30-5.64	7 SW of Piute Farms		Bed of wash	3,955				
	do.	GJ-81	12.90-6.77	8 SW of Piute Farms		do.	4,035				
13	None										
21	do.										
22	do.										
23	Drilled well	8K-441	6.00-16.00	8 ENE of Kayenta	11/57	Gentle slope	5,390	343	6	270	Perforated 230-270
	do.	8P-451	13.75-1.40	3 SW of Goulding T. P.	6/60	Valley	5,185	130	12	130	Perforated 82-122
24	None										
25	do.										
36	do.										
37	Drilled well	8K-443	12.60-17.00	6 ESE of Chilchinbito T. P.	8/57	Plain	6,015	720	8	619	
38	do.	8T-503	4.45-15.05	0.75 NW of Chilchinbito T. P.	6/60	Gentle slope	5,965	840	7 4	347 840	Perforated 240-840
39	do.	8P-450	0.25-1.40	Kayenta	4/59	Alluvial flat	5,650	760	16 12	18 28	Perforated 150-750
									10	760	
	do.	8T-500	0.80-1.55	do.	7/59	Plain	5,700	868	10 8	117 712	Open hole
	do.	8T-506	8.70-15.65	16 SW of Kayenta	6/61	Valley	6,580	552	6	552	Perforated 70-552
40	None										
54	do.										
55	do.										
56	Drilled well	8T-504	1.00-0.90	11 WSW of Chilchinbito T. P.	1/61	Gentle slope	6,870	500	6	450	Perforated 270-450, open hole
DISTRICT 9											
2	None										
3	do.										
7	Drilled well	9T-225	9.75-10.20	8 S of Aneth T. P.	10/58	Slope	4,910				
8	None										
9	Drilled well	9T-517	5.70-13.30	7 NNE of Mexican Water T. P.	/57	Stripped plain	5,097	380	10		Open hole(?)
19	do.	9P-240	6.20-4.60	2 NNW of Teec Nos Pos T. P.	8/59	Low hill	5,080	285	6	200	Perforated 150-200, open hole

and Hopi Indian Reservations and adjoining areas——Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
								DISTRICT 8—Continued							
		Cutler (Cedar Mesa)													Seep; upper Piute Farms Wash.
		Cutler (De Chelly)													Seep area; Copper Canyon.
		Alluvium				2-3	12/13/57								Flows downstream about 500 feet; Copper Canyon.
		do.				2-3	12/13/57								Flows 300 feet downstream; Copper Canyon.
		Navajo	DL	106	11/30/57			20	224	1	D, S	No	Good		S.C. 360; recovery 8 gpm.
0	122 P	Alluvium and Cutler (De Chelly)(?)	DL					45		96	PS	No			
590(?)	130 P	Navajo	LL	530	8/15/57			14	72	9/6	D, S	No			
222	332	Morrison (Recapture)													
554	218	Cow Springs	LL	320 R	6/25/60						D, S	No	Good		S.C. 1,300; Chilchinbito Chapter House well.
13	742	Navajo	DL	62	4/ /59			170(?)	37		PS	No			County School well.
155	705	do.	DL	54	7/25/59			80	423	20	D	Yes	Good	59	S.C. 592.
2	376	Wepo													
378	174 P	Toreva	DL	34 R	6/30/61			60	222	3	D, S	No	Fair		S.C. 2,000.
222	278 P	Toreva	LL	218	2/ 8/61			30	125	3/4	D, S	No	Good	54	S.C. 1,400; slightly salty taste.
								DISTRICT 9							
		Morrison									D, S	No			
0	380 P(?)	Navajo		84	10/27/59							No	Good	63	S.C. 130.
90(?)	195 P	Morrison (Salt Wash) and Bluff	DL	Flow R	12/ 1/59	1/4	12/ 1/59	60	285	1/2	D, Ind	No	Good	72	S.C. 400; bailed hole dry.

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 9—Continued							
19	Drilled well	9T-226	5.80-4.30	2 NNW of Teec Nos Pos T. P.	6/58	Small ridge	5,000	138	8	138	
	do.	9T-336	3.50-3.40	4 NNE of Teec Nos Pos T. P.	4/56	Base of hill	5,030	550	5	465	Open hole(?)
	do.	9T-500	8.75-3.00	5 NW of Teec Nos Pos T. P.	7/58	Side of hill	5,090	200	8	200	Perforated 45-194
	do.	9T-502	11.15-7.15	6 WSW of Teec Nos Pos T. P.	8/58	Alluvial flat	5,710	472 R	8		
	do.	9T-503	6.00-6.20	0.5 W of Teec Nos Pos T. P.	11/58	Top of bench	5,290	556 R	8 6	54 370	Perforated 330-360
	do.	Teec Nos Pos P. M. 4	5.95-6.70	Teec Nos Pos B. S.	11/60	Side of hill	5,325	625	8	625	Perforated 340-346, 440-650
20	do.	9K-223	5.70-7.75	5 NE of Sweetwater T. P.	8/57	Sandy plain	5,840	662	None		
	do.	9T-227	1.50-1.90	12 NE of Sweetwater T. P.	9/58	Gentle slope	5,290	560	6 4	465 -	
	do.	9T-501	0.55-5.90	9 W of Teec Nos Pos T. P.	7/58	Low terrace	5,520	280	6	280	
21	do.	9T-224	3.55-9.80	8 SSE of Mexican Water T. P.	10/57	Stripped plain	5,350	604	10 8	61 604(?)	
	do.	9T-513	8.55-8.90	6 S of Mexican Water T. P.	/57	do.	5,200	16.5	4		Open hole(?)
	do.	9T-514	9.35-5.50	3 SSW of Mexican Water T. P.	/57	do.	4,960	25	None		Open hole
	do.	9T-515	8.70-3.50	1 SW of Mexican Water T. P.	/57	Rock platform	4,880	68	4	6	do.
	do.	9T-516	6.25-0.95	2 NE of Mexican Water T. P.	/57	Terrace	4,950	217	6		Open hole(?)
	do.	9T-518	4.65-10.70	9 SSE of Mexican Water T. P.	11/59	Sand dune	5,370	800 R	7	597	Open hole
34	None										
35	do.										
36	Drilled well	Rock Point P.M.3	7.20-2.10	0.5 W of Rock Point School	6/58	Alluvial flat	4,970	210			
	do.	Rock Point P.M.4	7.00-2.55	Rock Point School	8/58	do.	4,980	243	8 6	215 243	Perforated 230-242
37	None										
53	do.										
54	do.										
				DISTRICT 10							
36	None										
52	Drilled well	10K-248	13.75-14.50	6 ENE of Chinle Valley Store	4/59	Low hill	5,890	487	8	248	Open hole
53	do.	10T-253	9.10-7.90	4 NW of Many Farms T. P.	9/58	Gentle slope	5,425	1,508	6	1,275	Perforated 1,213-1,275, open hole
	do.	10T-254	7.70-4.25	6 N of Many Farms T. P.	10/58	Alluvial flat	5,275	1,280 R	6	1,280	Perforated 1,080-1,280
	do.	10T-255	6.20-10.05	0.2 SE of Many Farms T. P.	6/58	do.	5,300	801	6	675	Perforated 600-675
	do.	10T-256	5.50-1.95	8 N of Many Farms T. P.	9/60	do.	5,170	986	7	838	Open hole

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
						DISTRICT 9—Continued									
		Morrison		Flow	6/16/58	1	6/16/58	14	138	1	D, S	No	Good		S.C. 550; bailed hole dry.
		Morrison (Salt Wash) and Bluff		Flow R	4/10/56	5-10 E	4/10/56					Yes	Good		
0	132	Morrison (Salt Wash)	DL	Flow R	7/24/58	8 R	7/24/58	17		½	D, S	No	Good	62	S.C. 650.
		Morrison (Salt Wash) and Bluff	DL	122 R	8/21/58			20		2		No			
		Morrison (Salt Wash)	DL	94 R	11/10/58			35	146	1	D, S	No	Good	53	S.C. 550; Teec Nos Pos Chapter House.
		Morrison		173 R	11/ /60			33	287	46	PS	Yes	Good	67	S.C. 440; caliper log indicates perforations from 440(?) to 625 feet.
540	120	Navajo	DL	Dry R	8/23/57						Un	No			Dry; abandoned.
275	109	do.	DL	250	1/ /65			8	50	4	D, S	No	Good		Deepened from 414 feet in 1965.
		Morrison (Salt Wash) and Bluff		184	7/24/58			36	94	¼	D, S	No	Good	60	S.C. 640.
20(?)	584 P	Navajo and Wingate (Lukachukai)		172	10/ 3/57			7½	348	1⅓	D, S	No	Good		
5	11.5 P	Navajo	DL	15.4	10/27/59						D	No	Good	63	S.C. 120; seismic shot hole.
0	25 P	do.	DL	8.5	10/27/59						Un	No	Good	68	S.C. 160; seismic shot hole.
0	68 P	do.	DL	36	10/27/59						Un	No	Good	64	S.C. 170.
20	197 P	do.	DL	40	10/27/59						D	No			
		Navajo and Wingate (Lukachukai)									Un	No			Oil-test hole.
0	210 P	Alluvium									Un	Yes	Fair		Abandoned; insufficient yield.
0	243 P	do.		28	8/ 6/58			40	88	½	D, PS	Yes	Fair	63	S.C. 2,400.
						DISTRICT 10									
265	222 P	De Chelly	DL	334	4/14/59			8	60	1	D, S	No	Good		S.C. 770.
1,205 1,320	115 188 P	Chinle (Shinarump) De Chelly		68 R	9/18/58			20	35	1⅓	D, S	Yes	Good	68	S.C. 732.
		Chinle (Shinarump) and De Chelly		Flow R	11/ 3/58	32 R	11/ 3/58				D, S	Yes	Good	62	S.C. 740.
		do.		Flow	6/17/58	100	6/17/58				D	Yes	Good	63	S.C. 610.
895	91 P	Chinle (Shinarump)	LL	Flow R	9/16/60	30 R	9/16/60				D, S	No	Good		S.C. 1,000.

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 10—Continued							
54	Drilled well	10T-257	6.65-6.10	0.4 NE of Rough Rock T. P.	9/58	Edge of valley	6,220	1,385 R	6	1,385	Perforated 1,250-1,385
	do.	10T-258	1.05-13.15	10 WSW of Many Farms T. P.	4/60	Alluvial flat	5,880	670	8 6	430 670	Perforated 465-670
	do.	Rough Rock P. M. 3	6.80-6.35	Rough Rock D. S.	3/59	Low bench	6,240	1,515	8	1,515	Perforated 1,150-1,515
69	None										
70	do.										
71	Drilled well	10T-272	2.90-7.20	Chinle	8/58	Alluvial flat	5,570	605	10 8	232 605	Perforated 234-585
	do.	10T-500	5.50-2.30	3 S of Chinle Valley Store	10/58	do.	5,430	200 R	17	200	Perforated
	do.	10T-501	5.50-2.65	4 S of Chinle Valley Store	10/58	do.	5,430	137	6	137	Perforated 104-124
	do.	10T-514	10.90-1.65	6 SW of Chinle Valley Store	6/59	Ridge	5,975	600	8	42	Open hole
	do.	10T-514A	9.00-0.90	4 SW of Chinle Valley Store	6/59	Plain	5,825	1,700	7	1,592	do.
72	do.	Cottonwood P. M. 2	7.10-12.70	Cottonwood D. S.	7/58	Alluvial flat	6,100	2,660	7 5	2,017 2,660	Perforated 2,445-2,578
	do.	Salina P. M. 1	6.75-15.75	Salina D. S.	3/58	Top of mesa	6,630	1,200 R	None		
89	None										
90	Drilled well	10K-252	9.90-2.95	4 N of Nazlini T. P.	2/59	Low mesa	6,520	815	8	20	Open hole
	do.	10T-517	10.90-7.10	0.5 E of Nazlini T. P.	5/60	Gentle slope	6,280	297	8	10	do.
	do.	Nazlini P. M. 3	11.15-7.35	0.3 S of Nazlini T. P.	2/59	Base of mesa	6,260	535	6	535	Perforated 75-535
91	do.	10K-219A	2.70-6.95	6 W of Nazlini T. P.	12/59	Alluvial flat	5,890	733	6	423	Open hole
	do.	10K-244A	11.65-7.50	12 NE of Steamboat D. S.	6/57	do.	5,965	1,716	10	886	Screen 886-1,713
	do.	10T-251	6.5-5.0A	10 WNW of Nazlini	4/57		6,000	1,416	6	1,278	Open hole
	do.	10T-259	1.50-9.90	5 SW of Nazlini	11/59	Base of hill	6,010	697	6	440	do.
92	None										
				DISTRICT 11							
35	Drilled well	11K-246	12.20-10.30	6 N of Round Rock T. P.	3/58	Sandy plain	5,570	1,244	6	1,123	do.
	do.	11K-255	5.60-15.10	7 ENE of Round Rock T. P.	5/59	Plain	5,770	707	6	543	do.
	do.	11K-257	7.15-12.10	7 NE of Round Rock T. P.	5/59	Gentle slope	5,935	1,200	6	1,048	do.
36	None										
50	do.										
51	Drilled well	11K-253	13.15-13.05	7 S of Lukachukai B. S.	5/57	Small rise	6,960	500	6	320	do.
	do.	11T-242	13.40-6.40	0.5 E of Lukachukai T. P.	11/56	Gentle slope	6,435	508	8	155	do.
	do.	Lukachukai P. M. 3	12.45-5.80	0.3 E of Lukachukai B. S.	10/58	do.	6,575	1,200 R	8 6	470 1,200	Perforated 550-1,200

and Hopi Indian Reservations and adjoining areas—Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
							DISTRICT 10—Continued								
1,250	135 P(?)	Navajo, Kayenta, and Wingate (Lukachukai)									D, S	No	Good		S.C. 900.
460 510	50 160 P	Navajo Wingate (Lukachukai)	LL	301	4/14/60			20	145	1	S	No	Poor	63	S.C. 4,500.
1,120	395 P	Navajo, Kayenta, and Wingate (Lukachukai)	DL	715 R	6/ 6/64			19	40	29	D, PS	Yes	Fair	62	S.C. 1,530.
207 280	73 325 P	Chinle (Shinarump) De Chelly	DL	.5	9/ 2/58			50	181	15	PS	No	Good	63	State School well 1 at Chinle.
		Alluvium		20	10/22/58			500		8	D, S, Irr	Yes	Good	58	S.C. 770.
0	124	do.	DL	17 R	10/24/58			20	0	6	D, S, Irr	No	Good		
40	243	Wingate (Lukachukai)	DL	89	6/22/59			2	10(?)	3	Un	No	Fair	61	S.C. 1,800; abandoned; insufficient yield.
1,590 1,698	108 2	Chinle (Shinarump) De Chelly(?)		414	6/29/59			20	85	1	D, S	Yes	Good	67	S.C. 861.
		Chinle (Shinarump) and De Chelly	DL	950	1/ /64			22	46	19	PS	Yes	Good		S.C. 547.
		Cow Springs and Wingate		336 R	3/21/58			3	864		Un	No			Bailed hole dry; abandoned; insufficient yield.
6	762	De Chelly	DL	365	2/19/59			20	450	$\frac{1}{3}$	D, S	No	Fair		Bailed hole dry; may have some water from Supai.
0	297 P	do.	LL	58	5/19/60			50	32	$\frac{1}{2}$	D	No	Good	53	S.C. 580; Nazlini Chapter House Well.
75 125	50 410 P	Chinle (Shinarump) De Chelly		41	2/23/59			37	19	3	PS	Yes	Good	59	S.C. 725.
500	233 P	De Chelly	LL	298	12/ 5/59			14	60	$\frac{3}{4}$	D, S	No	Good	62	S.C. 580.
		Chinle (Shinarump) and De Chelly		772	6/ /57			4	155		D, S	No	Good		S.C. 700.
		De Chelly	DL	305	4/ /57			15	20	$\frac{1}{2}$	D, S	No	Good	59	S.C. 700.
440	257 P	Chinle (Shinarump)(?) and De Chelly	LL	404	12/ 5/59			10	235	3	D, S	No	Good	64	S.C. 750.
							DISTRICT 11								
1,095 1,215	120 29 P	Chinle (Shinarump) De Chelly	DL	115	3/12/58			26	49	$1\frac{1}{2}$	D, S	No	Good		S.C. 500.
520	187 P	Chinle (Shinarump) and De Chelly(?)	DL	132	5/21/59			24	28	1	D, S	No	Good		S.C. 625.
1,050 1,190	140 10 P	Chinle (Shinarump) De Chelly	DL	290 R	5/ 8/59			15	17	$2\frac{1}{2}$	D, S	No	Good		S.C. 250.
		Chinle (Shinarump) and De Chelly		275 R	5/ /57						D, S	No	Good	55	S.C. 500.
170	338 P	do.	DL	315	9/ /56			21	37	$\frac{3}{4}$	D, S	No	Good		S.C. 650.
		do.		367	1/ /64			$13\frac{1}{2}$	46	$1\frac{1}{3}$	PS	Yes	Good	63	S.C. 542.

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 11—Continued							
51	Drilled well	Lukachukai P. M. 4	13. 10-5. 95	Lukachukai B. S.	/58	Gentle slope	6, 480	1, 197	8 6	499 1, 197	Perforated 550-1, 197
52	do.	11K-244	0. 15-16. 40	10 S of Lukachukai B. S.	8/59	do.	7, 230	800	8	16	Open hole
	do.	11K-252	4. 15-10. 20	7 SW of Lukachukai B. S.	6/59	do.	6, 640	602	8	96	do.
	do.	11K-256	3. 90-5. 95	5 W of Lukachukai B. S.	5/59	Low hill	6, 265	452	8	100	do.
	do.	11K-258	1. 80-13. 55	8 SSW of Lukachukai B. S.	9/59	Plain	6, 930	763	6	763	Perforated 430-763
	do.	11K-259	8. 00-16. 80	12 NE of Chinle	10/59	Gentle slope	6, 640	811	6	811	Perforated 500-800(?)
	do.	11T-256	10. 00-10. 35	10 E of Many Farms T. P.	12/59	Low hill	6, 170	820	6	300	Open hole
53	None										
68	do.										
69	Drilled well	11T-500	7. 00-0. 95	14 SE of Lukachukai B. S.	8/60	Slope	7, 325	682	9 6	35 578	Perforated 524-578, open hole
70	None										
				DISTRICT 12							
1	None										
2	do.										
7	Drilled well	12T-503	10. 3-2. 4 A	Aneth	5/58	Terrace	4, 520	270	6	258	Perforated 228-258, open hole
	do.	12T-504	6. 70-1. 10	4 ENE of Aneth	12/58	Flat bench	4, 770	720	6	474	Open hole
17	do.	12T-520	10. 80-15. 55	0. 5 SW of Shiprock	2/61	Plain	4, 935	1, 777	16 12 9 7	46 530 1, 339 1, 482	do.
18	do.	12P-355	10. 4-12. 8 A	5 ESE of Bitlabito T. P.	/60	Ridge	5, 000	300 R			
	do.	12T-505	0. 85-1. 05	15 NNW of Shiprock	10/59	Low ridge	5, 190	1, 296	4	1, 296	Perforated 1, 158-1, 168
	do.	12T-517	12. 00-7. 15	4 NE of Bitlabito T. P.	3/61	Slope	4, 960	330	13 7	36 330	Perforated 175-310
19	do.	12K-335	2. 20-8. 40	4 SE of Teec Nos Pos T. P.	8/57	Narrow ridge	5, 546	604	10 8	37 308	Perforated 160-180, 220-240
	do.	12T-340	2. 20-4. 55	4 ENE of Teec Nos Pos T. P.	1/60	Ridge	5, 160	802	6	652	Open hole
32	do.	12R-86 A	13. 00-16. 10	5 N of Little Water T. P.	10/58	Base of hill	5, 500	37. 5	10	20	Perforated 17-20
	do.	12R-86 B	13. 75-16. 00	do.	9/58	Low hill	5, 640	107	3		
33	do.	12P-357	1. 60-8. 90	13 SSW of Shiprock	7/57	Slope	5, 368	1, 464	13 9	60 909	Open hole
	do.	12T-343	5. 50-12. 05	10. 5 N of Sanostee School	4/58	Alluvial flat	5, 530	351	8	204	do.
	do.	12T-354	7. 50-14. 50	8 N of Sanostee School	/56	Slope	5, 810	675(?)	5		do.
	do.	12T-508	3. 90-15. 65	8 NNE of Sanostee School	7/59	Gentle slope	5, 655	1, 172	10 8	212 950	do.
	Spring	12GS-33-1	13. 40-8. 70	4 NE of Red Rock T. P.		Bottom of canyon	6, 310				

and Hopi Indian Reservations and adjoining areas——Continued

WATER-BEARING STRATA				HYDROLOGIC DATA								QUALITY			
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)	Log	Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)	Use of water	Chemical analysis	Sensory test	Temperature (°F)	Remarks
						DISTRICT 11—Continued									
		Chinle (Shinarump) and De Chelly									PS	Yes	Good		
250	550 P	De Chelly	LL	559	8/11/59			20	241	¾	D, S	No	Good	54	S. C. 500; bailed hole dry.
230	372 P	do.	DL	426	6/11/59			18	145	1¼	D, S	Yes	Good	60	S. C. 944.
170	282 P	do.	DL	282	5/ 4/59			8	45	1	D, S	No			
270	493 P	do.	LL	416	9/15/59			25	90	1¼	D, S	No	Good	57	S. C. 690.
220	591 P	do.	LL	480	11/ 6/59			16	331	1⅛	D, S	No	Good	58	S. C. 570; bailed hole dry.
170	650 P	do.	LL	277	12/17/59			30	275	1¼	D, S	No	Good	58	S. C. 800.
545 650	105 32 P	Chinle (Shinarump) De Chelly	LL	230 R	8/24/60			8	300	5	D, S	No	Good		Wheatfields Chapter House well.
						DISTRICT 12									
240	30 P	Morrison and Bluff	DL									No			Aneth Chapter House well.
		Bluff and Entrada	DL	Flow	12/ 3/58	3 R	12/ 3/58	20	380	1	D, S	No	Poor		S. C. 5,100.
1, 185	592 P	Morrison and Bluff	LL	Flow	3/ 9/61	155	3/ 9/61	350	380	46		Yes	Fair	86	S. C. 3,000; original depth 1,850 feet.
		Dakota		Flow R		35 R					D, S	Yes	Poor	60	Oil test.
996	180	do.	LL	1	10/20/59			13	330	1	D, S	Yes	Fair	65	S. C. 2,070; original depth 1,702 feet; poor water in Morrison.
118	102	do.	LL	175 R	3/ 8/61			5	155	½	D, S	No	Good	60	S. C. 1,300; bailed hole dry.
160(?)	444 P	Morrison	DL	370	8/ /57			8	230	1	D, S	No	Good		S. C. 600.
628 785	157 17 P	Morrison (Salt Wash) Bluff	LL	39	1/18/60			23	245	¾	D, S	No	Good		S. C. 550.
		Gallup(?)		Flow	10/ 7/58	37 R	10/ 7/58					No	Good	57	S. C. 1,200.
0	107 P	Gallup		Flow R	9/ /58							No	Good	58	S. C. 350.
1, 370	94 P	Dakota	DL	Flow R	7/ /57							No			
195	156 P	Gallup	DL	37	4/25/58			40	3	4	D, S	No	Fair		S. C. 1,600.
		Dakota and Morrison(?)		Flow	/56	6 R	/56				D, S	No	Good	63	S. C. 280.
955 1, 114	159 58 P	Dakota Morrison (Brushy Basin)	DL	Flow	7/17/59	40 E	7/17/59				D, S	Yes	Good		S. C. 570.
		Wingate (Rock Point)				< ⅛	9/28/65				D, S		Good		

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 12—Continued							
33	Spring	12GS-33-2	13. 50-8. 05	4 NE of Red Rock T. P.		Head of canyon	6, 420				
	do.	12GS-33-3	13. 8-8. 05	4 NE of Red Rock T. P.		do.	6, 400				
34	Drilled well	12T-329	0. 40-6. 55	5 NE of Red Rock T. P.	4/57	Plain	5, 960	555	6	555	Perforated 340-360, 430-450, 515-535
	do.	12T-341	11. 95-11. 60	2 N of Cove D. S.	11/57	Alluvial flat	6, 170	75			
	do.	12T-342	5. 85-13. 20	4 SW of Red Rock T. P.	10/57	Low hill	6, 200	190	10	22	Open hole
	do.	12T-500	3. 20-10. 40	0. 3 N of Red Rock D. S.	10/57	Alluvial plain	5, 830	185	6		
	do.	12T-501	1. 15-13. 15	3 SE of Red Rock T. P.	2/58	Broad saddle	6, 200	702	8	553	do.
	do.	12T-502	3. 35-10. 70	0. 5 SW of Red Rock T. P.	2/58	Alluvial plain	5, 850	551	6		
	do.	12T-514	3. 95-2. 80	8 N of Red Rock T. P.	8/60	Low rise	5, 810	407	8	407	Perforated 80-407
	do.	Cove P. M. 2	12. 40-13. 30	Cove D. S.	4/60	Sloping terrace	6, 456	806	8 6	293 806	Perforated 50-85, 735-800
	do.	Red Rock P. M. 2	3. 60-11. 05	0. 5 SW of Red Rock D. S.	9/59	Side of wash	5, 840	70	10	40	Perforated 40-70
	Spring	12GS-34-6	0. 10-9. 00	3 ENE of Red Rock T. P.		Head of canyon	3, 360				
	do.	12GS-34-7	0. 30-8. 55	4 NE of Red Rock T. P.		Bottom of canyon	6, 350				
49	Drilled well	12T-336	7. 35-1. 75	6 ENE of Little Water T. P.	12/57	Gentle slope	5, 450	541	8	508	Open hole(?)
	do.	12T-511	9. 15-14. 50	2 ENE of Newcomb T. P.	10/59	Narrow valley	5, 550	4, 274	4	2, 000	Intermittent perforations below 703
50	Drilled well	12T-338	4. 90-1. 20	4 NNE of Sanostee School	7/58	Low ridge	5, 860	370	8	207	Open hole
	do.	12T-507	7. 90-10. 15	5 S of Sanostee School	7/59	Narrow mesa	6, 370	1, 040	8 6	748 1, 030	Perforated 980-1, 030
	do.	12T-512	6. 60-5. 00	0. 2 N of Sanostee School	9/59	Alluvial flat	5, 939	800	7 6	83 500	Open hole
	do.	12T-516	11. 30-4. 95	4 W of Sanostee School	8/60	Side of hill	6, 330	575	8	575	Perforated 450-575
	do.	12T-518	3. 15-3. 55	4 ENE of Sanostee School	10/60	Alluvial flat	5, 760	1, 287	8 7	271 1, 035	Open hole
	do.	12T-571	1. 80-11. 50	8 SE of Sanostee School	10/58	Gentle slope	5, 740		6	33	
51	None										
67	do.										
68	Drilled well	12T-339	2. 20-2. 70	2 SSE of Two Grey Hills T. P.	5/58	Low hill	5, 900	1, 188	10 8	327 764	do.
				DISTRICT 13							
31	None										
48	do.										
49	do.										

and Hopi Indian Reservations and adjoining areas—Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (° F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
							DISTRICT 12—Continued								
		Windblown sands and talus, tongue of Wingate (Lukachukai) in Wingate (Rock Point)				1	9/28/65				D, S				
		Wingate (Lukachukai)				< 1	9/28/65				D, S				
		Morrison (Salt Wash) and Bluff	DL	228	4/24/57			6	305	1⅓		No	Good		
0	75 P	Alluvium		19	11/ /57							No	Good		
0	190 P	Chinle (Owl Rock)	DL	25	11/ /57			5	110	2		Yes	Good	61	S.C. 899.
		Alluvium		34	10/28/57							No			Abandoned.
		Morrison (Recapture and Salt Wash)		333	2/ 7/58			5	110	2	D, S	Yes	Good	61	S.C. 451.
		Morrison (Salt Wash), Entrada, and Wingate (Lukachukai)	DL	55 R	2/ /58			30	495	1	D	Yes	Fair		S.C. 1,960.
		Chinle (Owl Rock)	DL	36	8/31/60			26	60	2½	D, S	No	Fair	64	S.C. 2,000.
570	236 P	De Chelly	LL	700 R	4/28/60			5½	100	5	D, PS	Yes	Poor		Gas in water; gas coming from behind 6-inch casing at about 380 to 400 feet.
0	70 P	Alluvium	DL	17 R	9/17/59			40	48	8	D, PS	Yes	Good		
		Wingate (Rock Point)				1	9/28/65				D, S				
		Alluvium and Wingate (Rock Point)				2	9/28/65				D, S				Flows short distance downstream.
508	35 P	Cliff House	DL	Flow	11/27/57			40	319	½	S	Yes	Poor	59	S.C. 4,090; not suitable for domestic use.
20	1,986	Menefee and other units		Flow	10/26/59	30 R	10/26/59				D, S	No	Fair	76	Oil test; several zones of bad water, which may be sealed off.
170	60	Gallup	DL	180 R	7/ 4/58			6	190	2	D, S	No	Fair		Bailed hole dry.
990	50 P	Dakota	DL	137	8/ 2/59			30	320	1	D, S	No	Good	62	S.C. 900.
312	488 P	Morrison	LL	Flow	9/20/59	30 E	9/20/59				D, S	No	Good		Original depth 1,486 feet.
470	105 P	Dakota	DL	103	8/18/60			6	200	3	D, S	No	Good		S.C. 1,050.
1,025	130	Dakota													
1,155	132 P	Morrison	LL	Flow	10/ 5/60	9 R	10/ 5/60				D, S	No	Good	66	S.C. 400.
				Flow	10/21/58	20 R	10/21/58					No	Good	57	S.C. 225.
85	870(?)	Menefee and Point Lookout	DL	Flow	5/25/58	15 E	5/25/58				D, S	Yes	Good	66	S.C. 920.
							DISTRICT 13								

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
DISTRICT 13—Continued											
66	Drilled well	13K-215	8.3-2.3 A	9 SW of Bisti T. P.	8/57	Sandy mesa	5,710	358	8 6	270 358	Perforated 203-246, 270-358
67	None										
DISTRICT 14											
66	None										
67	Drilled well	14T-500	10.10-12.95	Naschitti T. P.	6/58	Low mesa	5,950	378	6	378	Perforated 322-359
68	None										
86	do.										
87	Drilled well	14T-324	0.3-13.0 A	8 W of Standing Rock D. S.	3/57		6,020	505	10 8 6	22 174 505	Perforated 421-505
	do.	14T-515	9.60-10.15	5 E of Tohatchi	6/60	Plain	6,115	2,500			
88	do.	14T-322	7.15-11.65	4 NW of Mexican Springs D. S.	7/58	Narrow valley	6,720	500	8	315	Open hole
	do.	14T-502	4.55-14.55	Mexican Springs	7/58	Alluvial flat	6,390	425	8	425	Perforated 260-423
	do.	14T-503	8.20-6.50	8 WNW of Tohatchi	7/58	Gentle slope	7,850	615	8	330	Open hole
	do.	14T-513	11.70-4.55	8 S of Crystal T. P.	6/59	Alluvial flat	7,270	70	6	70	Perforated 20-70
	do.	14T-514	1.00-9.95	Tohatchi	5/59	Small butte	6,490	1,760	13 10 8 6	481 955 1,310 1,760	Perforated 1,447-1,500, 1,620-1,660, 1,720-1,740
	do.	14T-517	9.55-0.15	4 SE of Crystal T. P.	7/60	Side of hill	7,720	887	10 8 7	540 700 887	Perforated 481-887
	do.	Tohatchi County School	0.50-9.60	0.5 NE of Tohatchi	12/57	Gentle slope	6,480	1,813		1,813	Perforated
89	None										
105	do.										
106	Drilled well	14T-320	7.35-1.45	4 SW of Coyote Canyon T. P.	7/58	Gentle slope	6,375	726	8	726	Perforated 240-726
	do.	14T-321	8.50-6.25	10 NE of Gallup	10/58	Side of hill	7,058	1,082	8	1,082	Perforated 580-1,082
	do.	14T-510	11.50-4.35	4 ESE of Twin Lakes T. P.	5/60	do.	6,390	818	6	818	Perforated 550-560, 590-610, 630-730, 750-770, 790-815
107	do.	14T-323	1.40-1.15	2 N of Twin Lakes T. P.	3/60	do.	6,320	520	6	520	Perforated
	do.	14T-501	1.20-3.00	Twin Lakes T. P.	9/58	Nose of hill	6,380	1,850	6 5 4	1,273 1,290 1,700	Open hole
	do.	14T-508	7.40-0.00	7 NW of Twin Lakes T. P.	1/60	Low hill	6,754	560	6 5	456 560	Perforated 495-560
	do.	14T-509	9.85-6.15	7 E of Window Rock	4/59	do.	6,912	477	6	477	Perforated 425-477

and Hopi Indian Reservations and adjoining areas——Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
						DISTRICT 13—Continued									
205	153 P	Cliff House	DL	95	8/ /57						S	No	Fair		S.C. 2,500.
						DISTRICT 14									
0	378 P	Menefee	DL	18 R	6/11/58			20	90	5	D	No			Naschitti Chapter House well.
		Point Lookout	DL	Flow R							D, S	No	Fair		S.C. 2,200.
		Morrison and other units		Flow	/65	750 R	/61				D, S	Yes	Good	97	S.C. 640; original depth 7,053 feet.
325	85	Point Lookout													
410	90 P	Crevasse Canyon (Gibson Coal)	DL	34 R	7/14/58			50		4	D, S	No	Good		
		Menefee	DL	145 R	7/ 8/58			25	55	2	D	Yes	Good	58	S.C. 822; Mexican Springs Chapter House well.
330	60	Hosta Tongue of Point Lookout	DL	200 R	7/19/58			18	100	3	D, S	No	Good		
0	70 P	Alluvium	DL	6 R	6/ 7/59							No			
1,380(?)	380 P	Point Lookout and Crevasse Canyon	DL	380	4/15/59			75	59	48	D	No	Good	62	Tohatchi community well.
493	160	Dakota													
705	182 P	Morrison and Cow Springs	LL	179	4/25/61			45	70	2	D	No			Navajo Youth Camp well.
		Point Lookout and Crevasse Canyon										No			
		Crevasse Canyon (mainly Dalton)	LL	Flow R	7/23/58	14 R	7/23/58				D, S	Yes	Good	65	S.C. 1,020.
		Gallup(?)		434 R	10/15/58			65	31	18	D, S	No	Good		
398	184	Menefee (Cleary Coal)													
582	236 P	Crevasse Canyon	LL	Flow	5/10/60	1	5/10/60	15	330	1⅓	D, S	No	Fair	67	S.C. 2,700.
0	520 P	Menefee	LL	84	3/24/60			32	105	⅔	D, S	No	Fair	54	S.C. 1,550.
1,425	425 P(?)	Gallup	DL	Flow R	9/ 9/58						D, S	No	Good		Deepened from 1,500 feet; poor quality water in Crevasse Canyon Formation.
		Crevasse Canyon	LL	416	1/28/60			15	55	1	D, S	No	Good		S.C. 440.
		Menefee	DL	36 R				10	100	2		No	Poor		

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 14—Continued							
107	Drilled well	14T-512	5.75-1.45	4 NW of Twin Lakes School	11/59	Small valley	6,560	350	6	350	Perforated 310-350
				DISTRICT 15							
65	Drilled well	15T-503	6.75-16.20	10 SE of White Rock T. P.	2/60	Valley	6,090	500	6	300	Perforated 195-280
66	do.	15K-340	4.10-14.50	16 N of Standing Rock D. S.	4/57	Low hills	5,820	412	6	412	Perforated 347-368
	do.	15K-341	7.40-6.50	11 SW of Bisti T. P.	7/57	Plain	5,750	1,054	6	1,019	Open hole
85	None										
86	do.										
103	Drilled well	15T-504	12.50-5.95	6 NNW of Borrego Pass T. P.	6/59	Rolling terrain	6,777	440	8	320	do.
104	do.	15T-505	1.15-9.55	3 NNW of Borrego Pass T. P.	7/59	Gentle slope	7,070	570	6	570	Perforated 470-570
	do.	Crown Point P. M. 5	8.80-5.40	Crown Point	9/58	Base of mesa	7,035	2,544	8	2,544(?)	Perforated 396 feet below 1,600
	do.	Crown Point P. M. 6	8.10-4.60	do.	9/61	Gentle slope	6,950	2,500	10 8	1,815 2,500	Perforated 1,844-1,857, 1,925-1,989, 2,018-2,111, 2,175-2,228, 2,242-2,363
105	None										
				DISTRICT 16							
104	Drilled well	16T-345	9.00-14.75	2 NW of Smith Lake T. P.	2/57	Valley	7,338	740	None		Open hole
	do.	16T-499	7.55-14.70	1 N of Smith Lake T. P.	1/59	do.	7,255	1,174	6	1,003	do.
	do.	Borrego Pass P. M. 1	0.30-12.30	Borrego Pass D. S.	3/57	Slope	7,380	830	7 6	40 830	Perforated
	do.	Borrego Pass P. M. 2	0.85-12.55	1 SW of Borrego Pass D. S.	5/61	do.	7,335	500	6	500	Perforated 230-240, 260-480
105	do.	16T-348	11.50-9.00	1 N of Pinedale	11/57	Low hill	6,900	410	8	410	Perforated 400-410
	do.	16T-351	11.50-16.20	2 SE of Iyanbito	2/58	do.	6,920	1,050	8	1,050	Perforated 1,010-1,050
	do.	16T-507	4.00-11.85	0.2 W of Mariana Lake D. S.	4/60	Gentle slope	7,195	1,200	7	1,200	Perforated 500-1,200(?)
	do.	16T-509	8.65-8.45	3 NE of Pinedale T. P.	8/60	Alluvial flat	7,015	953	6 4	852 953	Perforated 852-953
	do.	16T-514	11.30-9.70	0.5 NW of Pinedale T. P.	8/59	Edge of bench	6,975	496	10 8 6	70 165 496	Perforated 225-245, 275-330, 405-415, 455-475
	do.	Mariana Lake P. M. 3	4.10-11.70	Mariana Lake D. S.	4/58	Slope	7,160	1,000	6	1,000	Perforated 556-855
	do.	Mariana Lake P. M. 4	3.95-11.90	do.	12/58	do.	7,210	1,200			
106	do.	16B-40A	5.40-14.80	8 E of Gallup	12/59	Plain	6,675	1,683	9 6	111 1,660	Open hole
	do.	16T-500	5.85-14.95	7 E of Gallup	6/58	Alluvial flat	6,620	215	16		Perforated
	do.	16T-510	6.95-9.00	9 NE of Gallup	8/60	Bank of wash	6,818	680	6	680	Perforated 520-550, 575-595, 620-630
	do.	16T-513	0.95-9.40	4 W of Pinedale T. P.	7/59	Alluvial flat	6,875	318	8	206	Open hole

and Hopi Indian Reservations and adjoining areas—Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
							DISTRICT 14—Continued								
12	338 P	Menefee	LL	277	12/ 1/59			11	60	½	D, S	No	Good	61	S.C. 800.
							DISTRICT 15								
0	500 P	Menefee	LL	58	2/ 9/60			28	240	1	D, S	No	Fair	55	S.C. 2,300; salty taste.
21	391 P	do.	DL	65	4/ /57			19	96	1	D, S	No	Fair	60	S.C. 1,900.
0	1,054 P	do.	DL	Flow R	7/ /57	3 R	7/ /57				D, S	No	Fair	66	S.C. 2,750.
		Crevasse Canyon (Dalton)		90	6/18/59			45	70	½	D, S	Yes	Fair	61	S.C. 2,750.
		Gallup	DL	265	7/10/59			29	80	1	D	Yes	Fair	62	S.C. 1,640; Borrego Pass Chapter House well.
		Dakota(?), Morrison, and Cow Springs(?)		335	9/15/58			50	83	10	PS	Yes	Good	75	S.C. 1,040.
		Morrison and Cow Springs(?)	DL	351 R	9/ /61			221(?)	200	24	PS	Yes	Good		
							DISTRICT 16								
272	468 P	Dakota and Morrison	DL	Dry R	2/22/57						Un	No			Dry, abandoned.
		do.						15	120	1½	D	No	Fair	64	S.C. 1,700; Smith Lake Chapter House well.
		Crevasse Canyon and Gallup	DL	280 R	/57			20	20	8	PS	Yes	Fair		
		Crevasse Canyon(?) and Gallup		206 R	6/ 9/64						PS	Yes	Fair		Plugged back from 600 feet.
		Dakota		Flow	11/ /57	¼ R	11/ /57	8	242	½	D, S	No	Good		S.C. 960.
		Chinle (Monitor Butte)	DL	Flow	2/ /62	15 E	2/ /62				D, S	Yes	Good	68	S.C. 1,150.
350	600	Morrison (Westwater Canyon) and Cow Springs	LL	490	6/22/60			4	160	2⅕	D	No	Good	62	S.C. 920; Mariana Lake Chapter House well.
690 880	190 73 P	Dakota Morrison	LL	355	8/ 2/60			8	25	1½	D, S	No	Good	69	S.C. 1,290.
275	221 P	Dakota	LL	63	8/31/59			24	335	1¾	D	No	Fair	58	S.C. 1,600; slight soda taste.
		Morrison and Cow Springs		459 R	4/ 1/58			12⅗	201	3	D, S, PS	Yes	Good		
		do.		531 R	12/ 9/58						Un	No			Abandoned; insufficient yield.
1,638	45 P	Glorieta	DL	Flow	2/ 1/65	70 R	2/ 1/65				D	Yes	Fair		S.C. 1,500.
		Alluvium		33 R	6/12/58						D	No	Fair	59	S.C. 1,700.
410	270 P	Dakota and Morrison	DL	103	8/30/60			26	240	¾	D, S	No	Fair	65	S.C. 1,500.
150	168 P	Morrison (Westwater Canyon)	DL	181	7/27/59			33	20	¾	D, S	No	Good	58	S.C. 1,390.

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 16—Continued							
106	Drilled well	Church Rock County School	5.45-14.50	8 ENE of Gallup	12/57	Base of hill	6,715	1,965	10	1,965	Perforated 1,725-1,965
	do.	Rehoboth Mission 2	8.50-15.40	5 E of Gallup	/57(?)	Slope	6,575	1,673			
107	do.	16T-353	7.25-14.70	2 NW of Mentmore	9/60	Low ridge	6,497	427	7	427	Perforated 120-427
	do.	Tse Bonita County School	11.95-8.20	6 SE of Window Rock	10/57		6,990	1,200			
108	do.	16K-322B	2.30-6.60	2 SE of Window Rock	8/56	Alluvial flat	6,900	155	6	149	Perforated 123-138
120	do.	16T-349	9.85-5.85	3 ENE of Thoreau	2/58	Plain	7,120	677	10 8	600 677	Perforated 525-600, open hole
	do.	16T-352	11.00-6.05	2 ENE of Thoreau	11/59	Low hill	7,135	435	8	435	Perforated 400-435
121	do.	16T-350	3.80-3.25	6 NW of Thoreau	5/58	do.	7,275	1,730(?)	8	1,500	Open hole(?)
	do.	Ceniza Refinery 1	10.65-0.95	4 SE of Iyanbito		Alluvial flat	6,885	1,050 R	12		Perforated 520-1,020
	do.	Ceniza Refinery 2	10.65-0.75	do.		do.	6,880	1,075		806(?)	Open hole(?)
122	do.	16T-342	12.55-10.50	4 SW of Bread Springs School	9/56	Mesa	7,300	1,203	8 6 5	454 666 1,203	Perforated 1,150-1,203
	do.	16T-502	8.60-7.25	1 ESE of Bread Springs School	10/59	Slope	7,325	442	8 6	395 442	Perforated 395-442
	do.	Bread Springs P. M. 2	9.40-7.05	Bread Springs School	10/58	Valley	7,150	755	6	755	Perforated 500-741
123	do.	16T-343	4.00-3.00	7 SW of Gallup	9/56	Slope	6,700	512	8 6	343 512	Perforated 432-512
	do.	16T-511	4.25-13.40	12 SE of Manuelito	10/60	Mesa	7,100	500			
	do.	Jones Ranch P. M. 2	13.00-15.35	1 SW of Jones Ranch School	2/58	do.	6,995	600	6	600	Perforated 446-584
124	None										
136	do.										
137	do.										
				DISTRICT 17							
89	None										
90	do.										
91	Drilled well	17T-505	9.45-14.35	10 ENE of Steamboat T. P.	5/59	Rolling terrain	6,350	1,960	6	1,790	Open hole
92	do.	17T-516	8.15-10.30	8 NNW of Steamboat T. P.	1/61	Low ridge	6,775	600	8	600	Perforated 500-520, 560-580
	do.	Steamboat P. M. 2	5.45-17.25	0.1 E of Steamboat D. S.	4/58	Valley	6,470	700	8	400	Perforated 264-274, open hole
108	None										
109	Drilled well	17K-378	7.60-10.90	9 S of Cross Canyon T. P.	12/58	Alluvial flat	7,000	497	8	38	Open hole
	do.	17K-379	3.85-15.95	8 N of Pine Springs T. P.	2/58	Plain	7,360	501	8	40	do.

and Hopi Indian Reservations and adjoining areas——Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (° F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
						DISTRICT 16—Continued									
1,800 1,840	40 125 P	San Andres Glorieta	LL	Flow	12/ /57	5 E	12/ /57				PS	Yes	Fair	74	S.C. 1,500.
		Glorieta		Flow R							D	Yes	Fair		S.C. 1,510.
120	307 P	Gallup	LL	41	9/26/60			25	25	3	D, S	No	Good		
		Gallup and other units(?)		290 R	10/10/57			30	175	1½	D	Yes	Good		S.C. 1,090.
		Alluvium		73 R	8/24/56			6	50		D	No	Good		Navajo Bible School 4.
535	140	Chinle (Sonsela)	DL	180 R	2/25/61			20	235	1	D, S	No	Good	58	S.C. 800.
410	25 P	do.	DL	170 R	11/25/59			50	100	1	D, S	No	Good	59	S.C. 1,100; Thoreau Chapter House well.
		Glorieta		Flow R	5/20/58						D, S	No			
		do.		Flow R				240	680	8	D, Ind	No			Shut-in pressure 140 psi.
		do.		Flow R				334	534	8	D, Ind	No			Do.
960(?)	243 P	Gallup(?)	DL	449 R	/56			6	376		D, S	No			
		Menefee and Crevasse Canyon	LL	171	10/18/59			25	250	1¾	D, S	No	Good	58	S.C. 600; Bread Springs Chapter House well.
		Crevasse Canyon	DL	91 R	4/ /58			20	492	3	D, PS	No	Good		S.C. 640.
435	77 P	Gallup	DL	182	9/19/56			19	178	1½	D, S	Yes	Good	65	S.C. 511; seep at 280 feet from Dilco Coal Member.
200	145	do.	LL	148	10/19/60			4	200	2	D, S	Yes	Fair	58	S.C. 1,920; some water from Crevasse Canyon Formation at 150 to 200 feet.
4	596 P	Bidahochi	DL	214 R	2/13/58						D, PS	No			
						DISTRICT 17									
1,790(?)	170 P	De Chelly	DL	1,142	4/30/59			6	25	1	D, S	Yes	Fair	70	S.C. 1,700.
270	330 P	Morrison (Westwater Canyon) and Cow Springs	LL	432	1/26/61			3	120	¾	D, S	No	Poor	62	S.C. 4,500.
		Cow Springs and Entrada(?)									D, PS	No			
27(?)	463	De Chelly	DL	317	12/ 5/58			17	23	1	D, S	No	Good	50	S.C. 160.
0	501 P	do.	DL	282	2/24/58			11	219	1	D, S	No	Good	53	S.C. 450; bailed hole dry.

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 17—Continued							
109	Drilled well	17T-376	10.70-5.10	4 SW of Cross Canyon T. P.	7/57	Small valley	6,870	356	8	71	Open hole
	do.	17T-382	13.65-8.75	6 SSE of Ganado	8/59	Low hill	6,860	575	8	200	do.
	do.	17T-386	10.50-8.20	6 SSW of Cross Canyon T. P.	4/60	Alluvial flat	6,970	445	5	445	Perforated 310-445
	do.	17T-507	11.05-0.75	0.6 SW of Kin Li Chee School	10/59	Gentle rise	6,700	355	8	355	Perforated 280-355
	do.	Kin Li Chee P. M. 2	10.60-0.50	Kin Li Chee School	4/61	Gentle slope	6,610	226	6	226	Perforated 164-216
110	do.	17K-381	7.70-16.25	6 W of Klagetoh D. S.	12/58	Alluvial flat	6,525	422	8	422	Perforated 325-329
	do.	17T-500	2.00-17.15	0.6 S of Klagetoh D. S.	1/58	Low hill	6,480	1,020	10 8	50 406	Open hole
	do.	17T-501	6.30-6.25	6 SW of Ganado	8/59	do.	6,425	1,445	7	1,285	do.
	do.	17T-523	7.80-11.35	6 ESE of Sunrise T. P.	5/61	Gentle slope	6,525	279	8 7	261 275	Perforated 261-275
	do.	17T-524	12.70-15.80	7 E of Greasewood T. P.	5/61	Plain	6,415	554	7 6	523 554	Perforated 514-554
111	do.	17T-517	5.35-9.35	6 W of Sunrise T. P.	3/61	Gentle slope	6,450	570	8 6	372 570	Perforated 372-570
	do.	17T-518	11.90-9.50	6 E of White Cone T. P.	3/61	Low ridge	6,100	399	8 6	120 399	Perforated 120-399
	do.	17T-519	10.85-5.80	8 SW of Steamboat T. P.	2/61	Low mesa	6,550	560	8 6	380 500	Perforated 380-500, open hole
	do.	17T-522	2.30-8.60	3 NW of Sunrise T. P.	3/61	Low hill	6,250	300	8 6	155 300	Perforated 185-300
	do.	17T-527	5.70-0.05	Steamboat T. P.	5/61	Edge of valley	6,430	400	10 8	168 400	Perforated 190-370
112	None										
125	Drilled well	17T-388	12.00-16.45	6 N of Chambers	2/60	Top of ridge	6,210	615	10 8	279 603	Perforated 279-603, open hole
	do.	Pine Springs P. M. 5	2.50-6.15	0.5 W of Pine Springs School	8/58	Valley	7,020	606	6	17	Open hole
	do.	Pine Springs P. M. 6	2.65-6.30	0.8 W. of Pine Springs School	12/58	do.	7,010	395	6	6	do.
126	do.	17T-337	9.25-0.75	8 W of Klagetoh D. S.	11/57	Alluvial flat	6,440	375	6	375	Perforated 140-375
	do.	Wide Ruins P. M. 3	0.25-5.80	0.5 W of Wide Ruins D. S.	1/59	do.	6,160	250	10 6	50 250	Perforated 210-250
127	None										
128	do.										
139	do.										
140	do.										
141	do.										
				DISTRICT 18							
68	Drilled well	18T-372	11.75-14.00	Crystal Mission	6/59	Valley	7,480	55	10	55	

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
						DISTRICT 17—Continued									
70	286 P	De Chelly	DL	230	7/ /57			18	10	$\frac{1}{2}$	D, S	No			Drawdown estimated.
350	225 P	do.	DL	381	8/20/59			21	30	1	D, S	No	Good	59	S. C. 210.
115	330 P	do.	LL	310	4/29/60			12	135	$\frac{3}{4}$	D, S	No	Good	53	S. C. 500; bailed hole dry.
18	337 P	do.	LL	174	11/ 3/59			30	25	$\frac{3}{4}$	D, S	Yes	Good	56	S. C. 340; Kin Li Chee Chapter House well.
12	214 P	do.	LL	47	4/13/61			55	19	24	D, PS	Yes	Good	53	S. C. 528.
		Bidahochi	DL					$\frac{1}{6}$		$\frac{1}{2}$	Un	No			Abandoned.
780	240 P	Supai	DL	915	1/ /64			7	80	12	D, S	Yes	Good		S. C. 699.
1, 285	160 P	De Chelly	LL	1, 118	8/ 5/59			10	60	$1\frac{1}{2}$	D, S	No	Good	74	S. C. 470.
0	279 P	Bidahochi	LL	232	5/11/61			19	10	1	D, S	No	Good	58	S. C. 290.
0	554 P	do.	LL	457	5/ 3/61			8	65	$\frac{2}{3}$	D, S	No	Good	62	S. C. 350.
400 510	110 50	Entrada Moenave	LL	385	3/ 8/61			5	183	2	D, S	No	Good	58	S. C. 980.
560	10 P	Wingate (Lukachukai)													
80 138	58 92	Bidahochi Entrada	LL	116	3/20/61			4	280	1	D, S	No	Good	55	S. C. 700.
270 340	70 59 P	Moenave Wingate (Lukachukai)													
380 440	60 120 P	Dakota Morrison (Westwater Canyon)	LL	389	2/28/61			19	40	1	D, S	No	Good	57	S. C. 350.
190	110 P	Moenave and Wingate (Lukachukai)	LL	132	3/24/61			20	165	1	D, S	No	Good	55	S. C. 510.
		Cow Springs (?)	DL	157 R	6/ 5/61			9	243		D, S	No			Bailed hole dry; Steamboat Chapter House well.
280	335 P	Chinle	DL	403	2/24/60			$2\frac{7}{10}$	212	3	D, S	No	Good	54	S. C. 970; bailed hole dry.
0	606 P	De Chelly and Supai		310 R	5/14/58						Un	No			Abandoned; insufficient yield.
6(?)	389 P	do.		385 R	1/ 6/59			$1\frac{1}{2}$	8		Un	No			Do.
45	330 P	Bidahochi	DL	308 R	11/ 7/57			17	30	$\frac{1}{2}$	D, S	No	Good	58	S. C. 400.
		Chinle (Shinarump)(?)	DL	210	1/26/59			20	6	4	PS	No	Good		S. C. 700.
						DISTRICT 18									
0	55 P	Alluvium										No	Good		

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 18—Continued							
68	Drilled well	18T-531	10.30-12.50	2 NE of Crystal T.P.	6/59	Edge of wash	7,800	270	6	270	Perforated 32-270
69	None										
88	do.										
89	Drilled well	18T-505	2.55-5.40	12 NNE of Fort Defiance	9/58	Top of hill	7,160	1,283	14 10 8	667 760 1,283	Perforated 753-1,283.
	do.	18T-506	1.65-5.75	do.	3/58	Alluvial flat	7,095	60	None		Open hole
	do.	18T-507	1.55-5.70	do.	3/58	do.	7,095	48	None		do.
	do.	18T-508	1.85-6.15	do.	3/58	do.	7,080	76	8	63	do.
	do.	18T-509	1.90-6.20	do.	3/58	do.	7,075	145	None		do.
	do.	18T-510	1.85-6.30	do.	4/58	do.	7,080	45	None		do.
	do.	18T-511	1.80-6.10	do.	4/58	do.	7,080	170	8	85	Perforated 82-85, open hole
	do.	18T-512	1.65-5.95	do.	4/58	do.	7,095	65			
	do.	18T-513	1.60-5.95	do.	4/58	do.	7,090	50			
	do.	18T-514	4.55-7.45	Buell Park	5/58	do.	7,165	480	6	20	Open hole
	do.	18T-515	5.00-6.45	do.	6/58	Base of hill	7,220	315			
89	do.	18T-519	4.50-6.80	do.	6/58	Alluvial flat	7,185	50 R			
	do.	18T-520	4.50-6.85	do.	6/58	do.	7,180	40 R			
	do.	18T-521A	4.50-6.95	do.	11/60	do.	7,180	250	14	250	Perforated
	do.	18T-522	4.50-6.95	do.	6/58	do.	7,180	65 R	None		Open hole
	do.	18T-523A	4.50-7.45	do.	10/59	do.	7,165	250	14	250	Perforated 170-250
	do.	18T-524	2.00-6.15	Navajo	/58	Slope	7,080	78 R			
	do.	18T-525	1.75-6.15	do.	/58	Gentle slope	7,090	81 R			
	do.	18T-526	1.55-6.25	do.	9/58	do.	7,100	73 R			
	do.	18T-527	1.45-6.40	do.	/58	do.	7,100	67 R			
	do.	18T-541	3.20-15.20	2 NE of Fort Defiance	5/60	Alluvial flat	6,860	33	6	33	Perforated 13-33
	do.	18T-545	2.75-6.50	1 W of Navajo	3/61	do.	7,070	98	14	98	Perforated 32-98
	do.	18T-546	2.85-6.85	2 WSW of Navajo	3/61	do.	7,040	101	14	101	Perforated 55-101
	do.	18T-547	1.60-5.85	0.3 N of Navajo	4/61	do.	7,100	37 R			
	do.	18T-548	2.75-6.50	1 W of Navajo	4/61	do.	7,067	107	14	107	Perforated 56-107
	do.	18T-549	1.70-6.50	0.3 S of Navajo	[illegible]	Gentle slope	7,102	75	8	75	Perforated 25-75

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
							DISTRICT 18—Continued								
		Alluvium and Dakota(?)	DL	12 R	6/ 3/59			80(?)	20	1		No	Good		
730	553 P	Chinle (Shinarump) and De Chelly	DL	Flow R	9/29/58			60	540	72	D, Ind	Yes	Good	67	S.C. 442.
0	60	Alluvium		20 R	3/17/58			26	40	1/8	Un	No	Good		Bailed hole dry; abandoned; insufficient yield.
0	48(?)	do.		20	3/18/58			35	26	1/8	Un	No	Good		Abandoned; insufficient yield.
		do.		14	3/20/58			50	11	1/2	D	Yes	Good	52	S.C. 625.
		do.		14	3/25/58			16	61	2	Un	No	Good	51	S.C. 650; abandoned; insufficient yield.
0	44(?)	do.		15	4/ 2/58			50	30	1/20	Un	No			Bailed hole dry; abandoned; insufficient yield.
0	83(?)	do.		13	4/ 8/58			45	92	18	D, Ind	Yes	Good	52	S.C. 557.
0	60(?)	do.		11	4/11/58			24	54	1/12	Un	No	Good	52	Bailed hole dry; abandoned; insufficient yield.
0	48(?)	do.		10 R	4/15/58						Un	No	Good	52	S.C. 550; bailed hole dry; abandoned.
30	450 P	Volcanic	DL	21	5/ 5/58			174	50	72	D	Yes	Good	53	S.C. 768.
10	305 P	do.		8	6/ 6/58						Un	No	Good	52	S.C. 450; abandoned; insufficient yield.
0	50 P	Alluvium and volcanic		Dry R	6/10/58						Un	No			Dry, abandoned.
0	40 P	do.		Dry R	6/10/58						Un	No			Do.
30	220 P	Volcanic	DL	32 R	11/ 2/59			550	16	190	D, Ind	Yes	Good	52	S.C. 624; improvement of well 18T-521.
30	35 P	do.	DL	31	6/13/58			60		1	Un	No			Abandoned; insufficient yield.
31	219 P	do.	DL	21 R	10/18/59			130	128	1	D, Ind	Yes	Good	52	S.C. 718; improvement of well 18T-523.
0	78 P	Alluvium		13 R							Ind	Yes	Good	53	S.C. 703.
		do.		12 R							Ind	Yes	Good	53	S.C. 578.
		do.		14 R							Ind	Yes	Good	53	S.C. 531.
		do.		21 R							Ind	Yes	Good	53	S.C. 493.
0	31	do.	DL	7	5/26/60			20	4	2	D, S	No	Good		
0 94	94 4 P	Alluvium Chinle (Petrified Forest)	LL	40 R				13	54	16		Yes	Good	54	S.C. 650.
0	98	Alluvium	LL	30 R				160	65	5		Yes	Good	53	S.C. 630.
0	35(?)	do.		13 R							Ind	Yes	Good	47	S.C. 447.
0	107 P	do.	DL	37 R				100	65	45	D, Ind	Yes	Good	50	S.C. 997.
0	67	do.	DL	28 R								No			Hole filled in to 41 feet.

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 18—Continued							
89	Drilled well	18T-550	5.20-6.80	Buell Park		Alluvial flat	7,230				
107	None										
108	Drilled well	18K-360	3.90-6.90	2 SSW of Window Rock	8/57	do.	6,730	357	10	190	Perforated 125-190, open hole
	do.	18P-361	7.15-9.60	3 SW of St. Michaels Mission	4/57	Gentle slope	6,915	786	16	16	Open hole
	do.	18P-364	6.90-9.55	do.	5/57	do.	6,826	700	10	592	do.
	do.	18P-365	3.10-10.00	4 NE of Hunters Point School	6/57	do.	6,883	479	16 8	16 479	Perforated 376-479
	do.	18P-366	3.55-10.20	3 NE of Hunters Point School	6/57	do.	6,862	462	16 8	16 462	Perforated 363-462
	do.	18P-370	3.10-6.00	1 S of Window Rock	3/59	Alluvial flat	6,740	120	4	120	Perforated 92-102
	do.	18T-345	10.80-12.05	5 W of Hunters Point School	8/58	Side of hill	7,600	650	None		Open hole
	do.	18T-346	12.70-9.70	8 SW of St. Michaels Mission	7/58	Plain	7,600	620	10	15	do.
	do.	18T-348	2.10-11.10	4 E of Hunters Point School	5/57	Slope	6,750	492	8	492	Perforated 330-378, 430-455
	do.	18T-354	5.55-13.35	2 S of Hunters Point School	9/58	Alluvial flat	6,750	122	6	120	Screen(?) 95-105
	do.	18T-355	5.45-6.55	0.5 ENE of St. Michaels Mission	9/58	Crest of hill	6,810	400	8	400	Perforated 114-138, 202-224, 355-400
	do.	18T-359	3.80-6.70	2 SW of Window Rock	9/57	Alluvial flat	6,725	150	6	150	Perforated 115-150
	do.	18T-362	9.75-9.70	5 SW of St. Michaels Mission	5/60	Plain	7,575	586	8	10	Open hole
	do.	18T-371	4.45-6.35	2 E of St. Michaels Mission	5/59	Alluvial flat	6,710	905	6	903	Perforated
	do.	18T-500	3.35-4.00	1 NW of Window Rock	11/57	Alluvial plain	6,825	91 R	5	91	Perforated 40-91
	do.	18T-501	3.55-4.00	do.	11/57	do.	6,816	91 R	5	91	Perforated 80-91
	do.	18T-502	3.40-4.40	do.	11/57	Edge of plain	6,820	125			
	do.	18T-503	3.55-3.90	2 NW of Window Rock	11/57	Alluvial plain	6,815	60			
	do.	18T-504	3.45-4.20	1 NW of Window Rock	11/57	do.	6,830	90	5	90	Perforated 70-90
	do.	18T-504A	3.45-4.20	do.	/59	do.	6,830	98 R	6	98	Perforated
	do.	18T-516	0.80-6.15	2 SE of Window Rock	6/58	Alluvial flat	6,860	1,010	14 8	520 965	do.
	do.	18T-517	0.65-6.10	do.	10/58	do.	6,860	1,680	10 8 6	570 1,260 1,655	Perforated 450-840, 1,425-1,655
	do.	18T-518	1.10-6.00	2 ESE of Window Rock	6/58	Small valley	6,905	775	12	305	Open hole
	do.	18T-529	5.35-4.85	3 W of Window Rock	9/58	Low ridge	6,715	310	8	302	Perforated 240-300
	do.	Fort Defiance P.M. 8	4.10-0.40	Fort Defiance	12/58	Gentle slope	6,840	900	10 8	283 627	Perforated 525-627, open hole
109	None										
124	Drilled well	18A-111A	8.85-15.15	3 E of Houck	4/59	Alluvial slope	6,070	535	10	60	Open hole(?)

and Hopi Indian Reservations and adjoining areas—Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
							DISTRICT 18—Continued								
		Volcanic													
120	170	Chinle (Shinarump)													
290	67 P	De Chelly	DL	64	7/ /57						D, S	Yes	Fair		S.C. 1,510.
200(?)	571 P	Chinle (Shinarump) and De Chelly		131	4/ 2/57			16	520	8	D	No	Good		S.C. 460; abandoned; insufficient yield.
		do.									D	No	Good		Abandoned; insufficient yield.
391(?)	88 P	Gallup		358	6/ 1/57			50	66	20	D	No	Good		
360(?)	102 P	do.		335	6/12/57			50	84	27	D	No	Good		
0	100(?)	Alluvium		30 R	3/ /59			20	90	3	D	No	Good		Bailed hole dry.
10(?)	640 P	De Chelly and Supai	DL	476 R	8/22/58			1½	170	4	Un	No	Good		Abandoned; insufficient yield.
105(?)	515 P	do.	DL	442	8/31/58			50	130	¾	D, S	No	Good		
1	491 P	Crevasse Canyon	DL	320 R	4/ /57			30	0	½	D, S, PS	No	Good	56	S.C. 1,000.
0	39	Alluvium													
39	83 P	Mancos(?)	DL	18 R	9/27/58			45	40	¾	D, S	No	Good		
205	195 P	Chinle (Shinarump) and De Chelly	DL	48 R				43	352(?)	1	D	Yes	Good	53	S.C. 550; bailed hole dry; Window Rock Chapter House well.
80	70 P	Chinle (Sonsela)	DL	26	9/16/57			8	100	3	D, S	No	Good		
30	556 P	De Chelly(?) and Supai	LL	450	5/ 5/60			20	10	¾	D, S	No	Good	52	S.C. 560.
110(?)	795 P	Chinle (Shinarump and Monitor Butte) and De Chelly	DL									No			
0	91 P	Alluvium		51 R	11/ /57						D	Yes	Fair		S.C. 2,530; abandoned.
0	91 P	do.		51 R	11/ /57						D	Yes	Fair	52	S.C. 1,800.
0	125 P	Chinle (Owl Rock)		Dry R							Un	No			Abandoned.
0	60 P	Alluvium		35 R	11/ /57						Un	No			Do.
0	90 P	do.		51 R	11/ /57						D	No			
0	90	do.		51 R							D	No			
0	725	Crevasse Canyon													
725(?)	285 P	Gallup	DL	332	8/ 5/58			66	160	80(?)	PS	Yes	Good	63	S.C. 641; Window Rock community well.
0	755(?)	Crevasse Canyon													
755(?)	75	Gallup	DL	185 R	10/ /58			28	300	72	PS	No	Good(?)	73	Window Rock community well.
1,425	255 P	Dakota and Morrison (Westwater Canyon)													
0	658(?)	Crevasse Canyon(?)													
658	117 P	Gallup	DL	330 R	8/ 5/58			50		4	PS	No	Good		S.C. 590; Window Rock community well.
220	70	Chinle (Shinarump)													
290	20 P	De Chelly	DL	Flow	9/23/58	9	9/23/58	80	75	1	D, S	Yes	Good	56	S.C. 615.
		Chinle [Monitor Butte(?) and Shinarump] and De Chelly		15 R	12/15/58			50	252		PS	No			
405	98	Chinle (Shinarump)													
503	32 P	De Chelly(?)	DL								Un	No	Good		Abandoned; bailed hole dry.

Supplemental records of ground-water supplies in the Navajo

Quadrangle	Type of water supply or development	Field number or name	Quadrangle location number	Approximate location (miles)	Date developed or completed (month, year)	Topography	Altitude above mean sea level (feet)	CONSTRUCTION DATA			
								Depth of well (feet)	Casing or cribbing		Finish
									Diameter (inches)	Depth (feet)	
				DISTRICT 18—Continued							
124	Drilled well	18A-111B	9.05-15.00	3 E of Houck	5/59	Alluvial flat	6,070	132	8	132	Perforated 115-132
	do.	18T-347A	6.00-13.40	4 SW of Lupton	6/57	do.	6,145	108	10	102	Perforated 90-102(?)
	do.	18T-358	10.35-10.50	4 NNE of Houck	10/57	Flat ridge	6,225	476	8		
	do.	18T-530	4.55-11.05	0.5 SW of Lupton	9/58	Alluvial flat	6,250	192	8	192	Perforated 152-192
	do.	18T-533	8.15-0.45	7 SSW of Hunters Point School	5/60	do.	6,725	121	8 7	21 94	Open hole
	do.	18T-538	12.40-14.50	0.5 NW of Houck	8/59	do.	6,000	76	6	76	Perforated 38-74
	do.	18T-540	7.55-1.90	8 SSW of Hunters Point School	5/60	Gentle slope	6,580	1,002	10 8	190 790	Open hole
137	do.	18T-347	10.8-0.6A	4 SE of Houck	4/57	Side of hill	6,300	329	8		
				OFF RESERVATION							
6	Spring	GJ-133	9.55-16.94	13 W of Piute Farms		Bottom of canyon	3,640				
	do.	GJ-134	10.1-16.38	14 W of Piute Farms		Alcove	3,840				
	do.	GJ-135	10.90-16.12	do.		Head of inner gorge	3,500				
	do.	GJ-136	10.57-15.50	14 WNW of Piute Farms		Bottom of canyon	3,700				
	do.	GJ-137	10.54-15.22	do.		do.	3,760				
	do.	GJ-138	10.28-14.68	do.		Head of canyon	3,920				
	do.	GJ-139	11.40-16.15	15 WNW of Piute Farms		Side of cliff	3,496				
	do.	GJ-355	6.20-16.78	10 W of Piute Farms		Bottom of wash	4,325				
	do.	GJ-356	1.65-16.48	5 WNW of Piute Farms		Side of canyon	4,700				
	do.	GJ-357	0.58-15.08	4 NW of Piute Farms		Shallow canyon	5,100				
118	Drilled well	(A-26-8)36bb	0.15-10.70	11 SSW of Gray Mtn.			5,350	1,662	8		
133	do.	(A-22-10)3ad	3.80-12.05	9 N of Angell			5,710	2,400	12		
	do.	(A-23-10)1bb	2.50-5.80	8 SE of Wupatki Ruins			4,950	800 +	8		
	do.	(A-23-10)13dc	2.00-8.60	11 SE of Wupatki Ruins			5,200	900 +	8		

and Hopi Indian Reservations and adjoining areas—Continued

WATER-BEARING STRATA			Log	HYDROLOGIC DATA							Use of water	QUALITY		Temperature (°F)	Remarks
				Static water level		Yield		Bail or pump test							
Depth below land surface to top of stratigraphic unit (feet)	Thickness (feet)	Stratigraphic unit (aquifer)		Depth (feet)	Date measured	Rate (gpm)	Date measured	Rate (gpm)	Drawdown (feet)	Duration of test (hours)		Chemical analysis	Sensory test		
							DISTRICT 18—Continued								
0	132 P	Alluvium	DL	40				20	25	1	D, S	No	Good		S.C. 1,100.
0	102	do.	DL	36	6/ /57			30	72	5	D, S	No	Fair		S.C. 2,000; bailed hole dry.
		De Chelly	DL	150	10/24/57			24	126	⅓	S	No	Fair		S.C. 1,700.
150	38	Chinle (Shinarump)	DL	Flow	10/ 1/58	½R	10/ 1/58	8	170	1	D	Yes	Good		S.C. 440.
30	91 P	Chinle (Monitor Butte)	LL	Flow	5/13/60	35	5/13/60				D, S	No	Good	52	S.C. 1,380.
0	74	Alluvium	DL	35 R	8/21/59			20		7	D	Yes	Good		S.C. 749; Houck Chapter House well.
730	272 P	De Chelly	LL	Flow	5/ 9/60	10	5/ 9/60	35	300	⅝	D	No	Good	66	S.C. 600; Chinle (Shinarump) dry; Oak Springs Chapter House well.
0	329 P	Bidahochi		Dry R	4/ /57						Un	No			Dry; abandoned.
							OFF RESERVATION								
		Wingate (Lukachukai)													Side canyon.
		Kayenta and Moenave				3 E	6/20/58						Good		Used by rivermen; San Juan Canyon.
		Wingate (Lukachukai)				5-10	6/20/58								Broad seepage area; Alcove Canyon.
		Alluvium				5 E	6/20/58								Water originates in Kayenta but issues from alluvium and flows downstream 300 feet; Alcove Canyon.
		Kayenta				5-10	6/20/58								Flows downstream 300 feet; Alcove Canyon.
		Navajo													Forms seep area for half a mile in canyon; Alcove Canyon.
		Wingate (Lukachukai)				5 E	6/20/58								Seep 200 feet long; San Juan Canyon.
		Landslide													Flows for 1 mile in September 1921 reported by Miser, no flow 1958-1959; side canyon.
		Wingate (Lukachukai)													Castle Creek.
		Navajo													Reported by Miser in 1924; side tributary.
			DL	1,500 R											
		Supai		1,137	10/21/54										
				741	10/19/54						D, S	Yes			
		Coconino		859	10/19/54						S	Yes			

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Geohydrologic data in the Navajo and Hopi Indian reservations, Arizona, New

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Holbrook, Arizona

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