STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
Carson City

View of Edwards Creek playa with Clan Alpine Mountains in background. *Photograph by* F. EUGENE RUSH.

GROUND-WATER RESOURCES – RECONNAISSANCE SERIES
REPORT 26

GROUND–WATER APPRAISAL OF EDWARDS CREEK VALLEY, CHURCHILL COUNTY, NEVADA

By
D. E. EVERETT
Chemist

Price $1.00

Prepared cooperatively by the
Geological Survey, U.S. Department of the Interior

APRIL 1964

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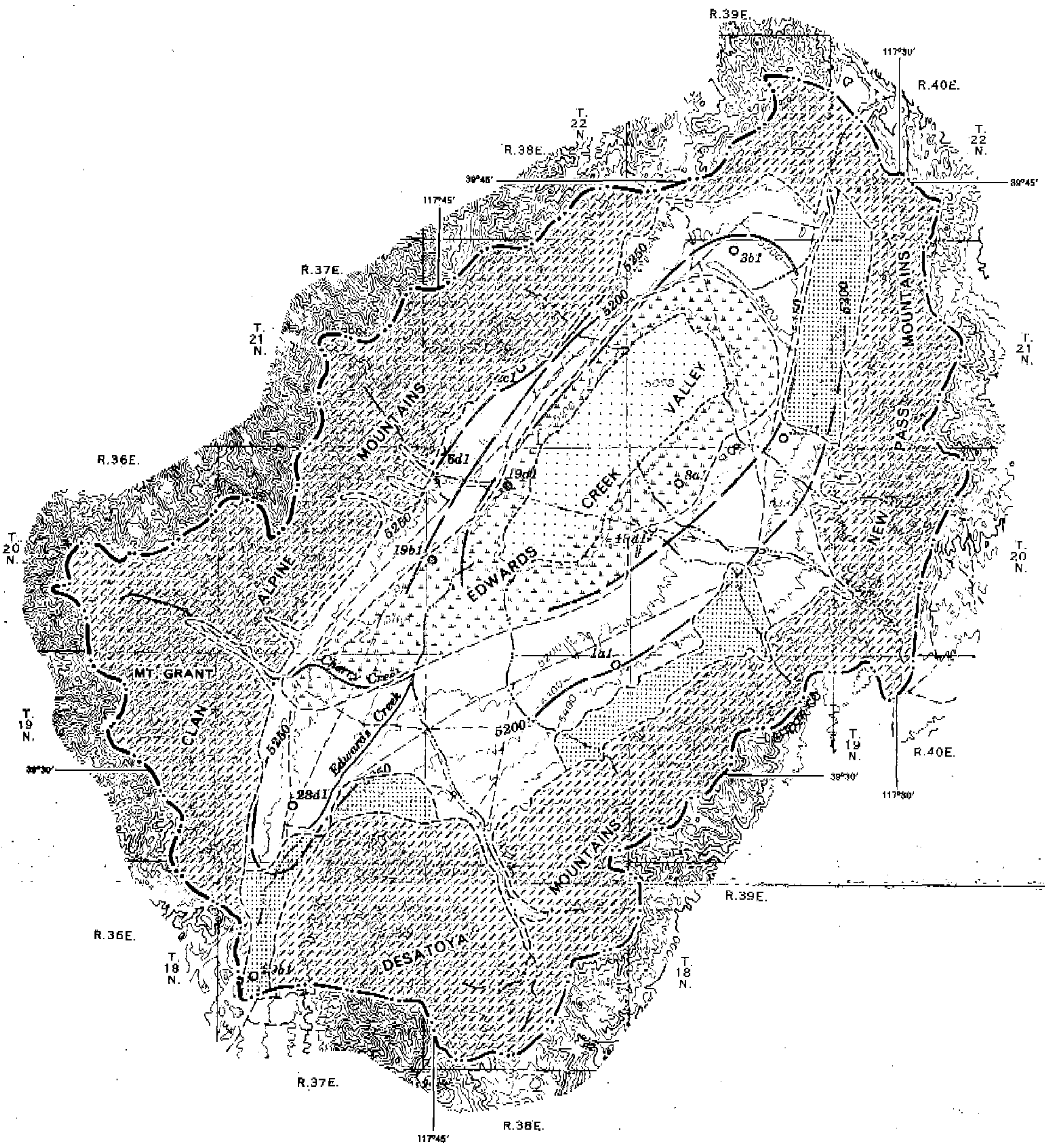

EXPLANATION

QUATERNARY

Younger alluvium

Unconsolidated sedimentary deposits of high to low permeability

TERTIARY AND QUATERNARY

Older alluvium

Unconsolidated sedimentary deposits of moderate to low permeability

CAMBRIAN TO QUATERNARY

Consolidated rocks

Largely consolidated rocks having little or no interstitial permeability

Playa (dry lake)

Phreateophytes

Plants that transpire ground water from the water table or the overlying capillary fringe. Largely greasewood, rabbitbrush, and saltgrass

Approximate geologic contact

Drainage divide

3b1

Well and number

Flowing well

6200

Generalized water-level contour, altitude in feet above sea level; contour interval, 50 feet

Scale

1 0 1 2 3 4 5 6 7 8 9 10 Miles

Base: U.S. Geological Survey 1:250,000 topographic quadrangle; Millett (1959)

Hydrology by D. E. Everett (1964)

PLATE 1.—GENERALIZED HYDROGEOLOGIC MAP OF EDWARDS CREEK VALLEY, NEVADA

FOREWORD

This report, the 26th in the series of reconnaissance ground-water studies which were initiated following authorization by the 1960 Legislature, gives the results of a study of the Edwards Creek Valley which is located in the eastern part of Churchill County.

This study was made and report prepared by D. E. Everett, Chemist for the United States Geological Survey.

These reconnaissance ground-water resources surveys make available pertinent information of great and immediate value to many State and Federal agencies. As development takes place in any area, demands for more detailed information will arise and studies to supply such information will be undertaken. In the meantime, these reconnaissance type studies are timely and adequately meet the immediate needs for information on the ground-water resources of the areas covered by the reports.

Hugh A. Shamberger, Director
Department of Conservation and
Natural Resources

April, 1964

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GROUND-WATER APPRAISAL OF EDWARDS CREEK VALLEY,

CHURCHILL COUNTY, NEVADA

by
D. E. Everett

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SUMMARY

Edwards Creek valley is a topographically and hydrologically closed valley. The source of practically all the ground water is precipitation within the drainage basin.

The estimated average annual recharge to and discharge from the ground-water reservoir is on the order of 8,000 acre-feet. Most of the ground water is discharged by evaporation from land surface and evapotranspiration by phreatophytes. The estimated perennial yield is also on the order of 8,000 acre-feet per year.

Most of the available ground water occurs in the valley fill and it is estimated that about 700,000 acre-feet is in storage in the upper 100 feet of saturated fill. Thus, a very large amount of ground water is in storage and is available as a reserve for pumping during periods of drought or other emergencies.

Ground water is used mainly for domestic and stock supplies. Little or no ground water is used for irrigation. About 300 acres, however, are being irrigated by Cherry Creek diversion, whose low flow is supplied by springs.

INTRODUCTION

Purpose and Scope of the Study:

Ground-water development in Nevada has shown a substantial increase in recent years. A part of this increase is due to the effort to bring new land into cultivation. The increasing interest in ground-water development has created a substantial demand for information of ground-water resources throughout the State.

Recognizing this need, the State Legislature enacted special legislation (Chapt. 181, Stats. 1960) for beginning a series of reconnaissance studies of the ground-water resources of Nevada. As provided in the legislation, these studies are being made by the U. S. Geological Survey in cooperation with the Nevada

Department of Conservation and Natural Resources. This is the twenty-sixth report in the reconnaissance series (fig. 1).

The objectives of the reconnaissance studies and this report are -- (a) appraise the source, occurrence, movement, storage, and chemical quality of the ground water, (b) estimate average annual recharge to and discharge from the ground-water reservoir, and (c) provide a preliminary estimate of the perennial yield of the basin.

The investigation was made under the administrative supervision of G. F. Worts, Jr., district chief in charge of hydrologic studies by the U. S. Geological Survey in Nevada.

Location and General Geographic Features:

Edwards Creek valley is in west-central Nevada and is enclosed by latitude 39°20' and 39°45' N., and longitude 117°30' and 117°55' W. It is in the eastern part of Churchill County and is about 30 miles long and 15 miles wide; its area is about 410 square miles.

Principal access to the area is by a gravel road which connects with U.S. Highway 50 at Eastgate, south of the area. The gravel road forks about 10 miles north of Eastgate and traverses both the east and west sides of the valley. Trails or unimproved roads provide access to other points in the valley.

Physiography and Drainage:

Edwards Creek valley is a hydrologically and topographically closed valley in the Great Basin Section of the Basin and Range physiographic province. It is a northeast-trending valley bordered on the east and southeast by the Desatoya Mountains, on the northeast by the New Pass Mountains, and on the west, northwest, and southwest by the Clan Alpine Mountains. An alluvial divide connects the Clan Alpine and Desatoya Mountains and forms the southern boundary.

Mt. Grant, altitude 9,990 feet, in the Clan Alpine Mountains, is the highest peak in the area. However, other peaks in the area have elevations greater than 9,000 feet. The lowest point in the valley, 5,052 feet, is at the playa. The maximum relief is nearly 5,000 feet.

All the drainage in the valley is toward the playa. In the valley lowland north of the playa, the gradient is about 50 feet per mile, whereas south of the playa it is about 25 feet per mile. Gradients on the alluvial apron, which lies between the mountains and the lowlands, commonly range from 100 to 300 feet per mile. In the mountains erosion has produced steep-sided canyons, and stream-channel gradients generally are in excess of 300 feet per mile, and locally may be as much as 1,000 feet per mile.

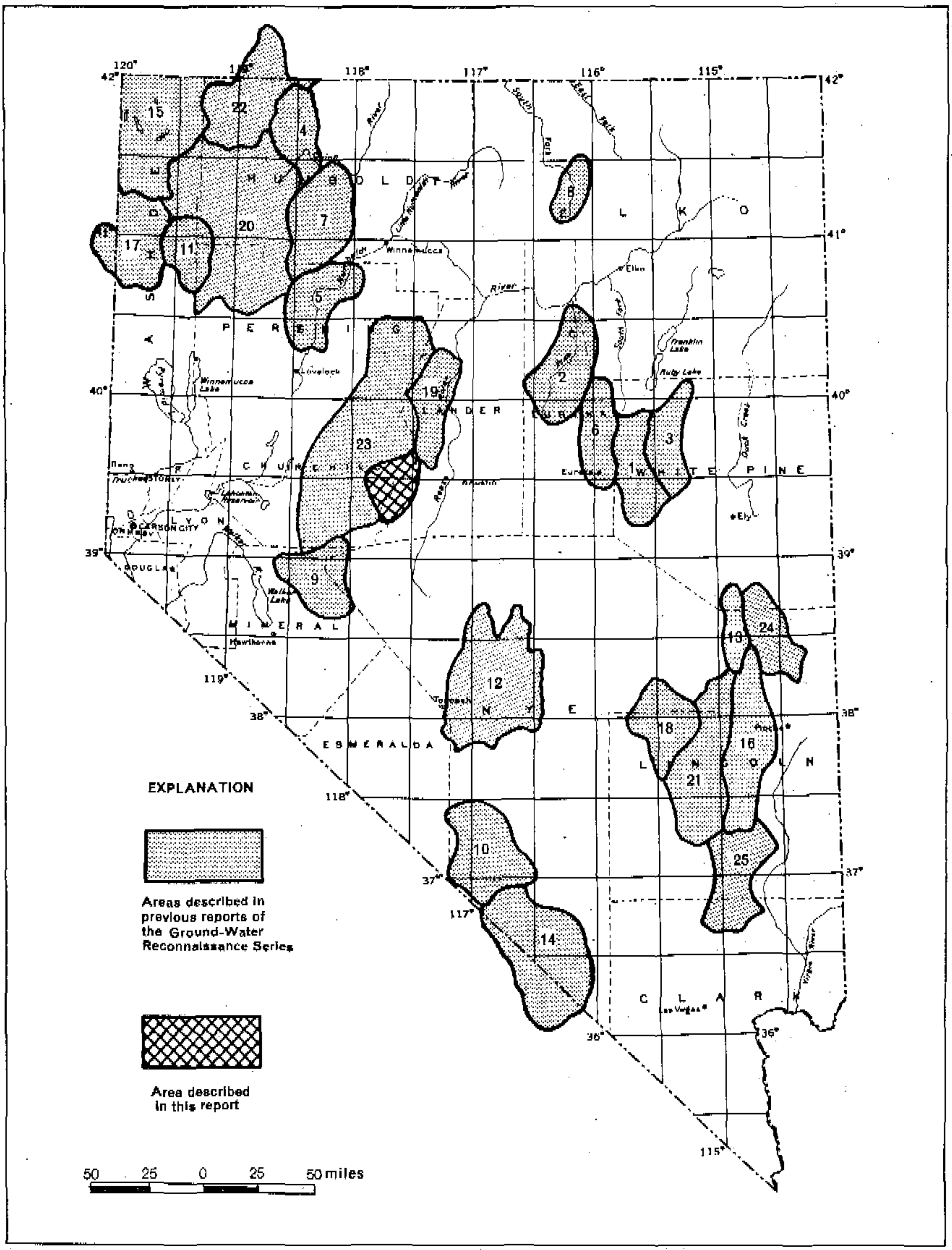

Figure 1. **Map of Nevada**
showing areas described in previous reports
of the ground-water reconnaissance series
and the area described in this report

In late Pleistocene time many lakes occurred in closed valleys of Nevada. The existence of such a lake in Edwards Creek valley is indicated by shore-line features. Beach and bar forms north and west of the playa are readily identifiable in areal photographs. The highest recognizable lake level is at an elevation of about 5,300 feet, which is about 250 feet higher than the present playa.

Climate:

The climate of Edwards Creek valley is semiarid. Precipitation and humidity generally are low, and summer temperatures and evaporation rates are high. Precipitation is irregularly distributed but generally is least on the valley floor and greatest in the mountains. Snow is common during the winter months and localized thundershowers provide much of the summer precipitation. The daily and seasonal temperature range is relatively large.

Although records of precipitation are not available for Edwards Creek valley, the magnitude of monthly and annual precipitation in the lower parts of the valley may be approximately represented by the records for Eastgate and Fallon (table 1). The record of precipitation for Austin may represent approximately the precipitation on the higher parts of the alluvial apron. Only 7 years of data are available at Eastgate, but long-term data are available for Fallon and Austin (table 1). These data indicate the general precipitation pattern in Nevada--the stations at the lowest altitude commonly receive the least precipitation.

The average monthly and annual temperatures for the period of record at Eastgate, Fallon, and Austin are listed in table 2. The average growing season has not been determined, but an approximation may be obtained by reference to nearby areas. Houston (1950, p. 16) states that the average growing season for the Fallon area is 127 days and for the upper Reese River area 117 days. These data suggest that the length of the growing season in Edwards Creek valley may be about 120 days, because this valley lies between the two reference areas and is at an intermediate altitude.

Table 1. --Average monthly and annual precipitation, in inches, at three stations near Edwards Creek Valley, Nev.

(from published records of the U. S. Weather Bureau)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
Eastgate[1/]	0.48	0.39	0.70	0.37	0.90	0.54	0.39	0.65	0.74	0.43	0.70	0.52	6.81
Fallon[2/]	.57	.70	.56	.50	.63	.42	.17	.12	.20	.49	.35	.67	5.38
Austin[3/]	1.14	1.14	1.46	1.64	1.43	.80	.60	.53	.48	.93	.85	1.06	12.06

1. Altitude 5,020 feet. In sec. 25, T. 17 N., R. 36 E., 7 miles south of project area. Period of record 1949-1950, 1957 - 1961.

2. Altitude 3,965 feet. In sec. 6, T. 18 N., R. 29 E., 50 miles west of project area. Average for period 1908-1962; continuing record.

3. Altitude 6,594 feet. In sec. 19, T. 19 N., R. 44 E., 30 miles east of project area. Average for period 1911-1962; continuing record.

Table 2. --Average monthly and annual temperatures, in degrees Fahrenheit, at three stations near Edwards Creek valley, Nev.

(from published records of the U. S. Weather Bureau)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
Eastgate[1/]	32.4	38.9	42.2	49.0	56.3	68.2	64.1	70.6	62.8	51.4	39.4	35.5	51.7
Fallon[2/]	30.4	36.0	42.5	50.6	57.5	65.3	72.8	70.3	62.4	52.0	39.5	32.7	51.0
Austin[3/]	28.6	31.4	36.0	43.8	51.6	60.6	70.4	68.4	60.2	49.4	38.0	31.7	47.5

1. Period of record 1957-1961.

2. Average for period 1931-1962; continuing record.

3. Average of partial records from 1920-1962; continuing record.

Surface Water:

Cherry Creek is the only perennial stream in the area and most of the water is used to irrigate about 300 acres of pasture. Its low flow of about 1 cubic foot per second is supplied by spring discharge in the upper part of the canyon. Some of the perennial streamflow reaches the irrigated pasture in the northern part of T. 19 N., R. 37 E. Streamflow of Cherry Creek resulting from high-intensity storms or rapid snowmelt may flow several miles beyond the pasture but only rarely reaches the playa. Most of the water is used for irrigation; however, part is lost by evapotranspiration of natural vegetation and part seeps into the ground-water reservoir in the valley fill.

All other streamflow in the valley is ephemeral and occurs only after intense thundershowers or during periods of snowmelt. Recently deposited large boulders and gravel on the alluvial apron in the southwest part of the valley testify to the vigorous action of runoff from the thundershower activity.

Numbering System for Wells:

The numbering system for wells in this report is based on the rectangular subdivisions of the public lands referenced to the Mount Diablo base line and meridian. It consists of three units; the first is the township north of the base line. The second unit, separated from the first by a slant, is the range east of the meridian. The third unit is separated from the second by a dash and designates the section number. The section number is followed by a letter that indicates the quarter section; the letters a, b, c, and d designating the northeast, northwest, southwest, and southeast quarters, respectively. Following the letter, a number indicates the order in which the well or spring was recorded within the 160-acre tract. For example, well 20/38-19b1 is the first well recorded in the northwest quarter of section 19, T. 20 N., R. 38 E., Mount Diablo base line and meridian.

Because of the limitation of space, wells are identified on plate 1 only by the section number, quarter section letter, and the number indicating the order in which the well was located. Township and range numbers are shown along the margins of the plate.

LITHOLOGIC AND HYDROLOGIC FEATURES OF THE ROCKS

In this report the rocks of the study area are divided into three units, based largely on their hydrologic properties: consolidated rocks, older alluvium, and younger alluvium. The surface distribution of these units is shown in plate 1. The geologic information shown on the map is based largely on examination of aerial photographs and on 3 days of field work; therefore, the geologic contacts are approximate.

Consolidated Rocks:

The consolidated rocks range in age from Paleozoic to Cenozoic. No extensive geologic mapping has been done in Edwards Creek valley. However, as the consolidated rocks in the study area seemingly are similar to those in Dixie Valley, which is the valley immediately west of Edwards Creek valley, much of the geologic information given in this section of the report regarding the consolidated rocks is adapted from the Dixie-Fairview Valley report (Cohen and Everett, 1963).

The Paleozoic rocks consist largely of indurated marine deposits having a maximum thickness of nearly 25,000 feet. They include virtually every common type of sedimentary rock and some volcanic rocks that occur locally. Paleozoic rocks have very little interstitial porosity and permeability and, accordingly, store and transmit only small quantities of water. Locally, however, small to moderate amounts of water are transmitted through fractures and other openings.

The Mesozoic rocks, which consist of marine strata, granitic rocks, and volcanic rocks, also have very little interstitial porosity and permeability. They also, however, locally store and transmit some water through fractures and other openings.

The Cenozoic consolidated rocks consist of lava flows and intrusive igneous rocks that range in composition from basalt and gabbro to rhyolite and granite. Partly to moderately consolidated sedimentary deposits of Miocene and Pliocene age are also included in this unit. Locally, these deposits are more than 3,500 feet thick (Axlerod, 1956). Because these deposits are fine-grained, structurally deformed, and partly compacted, they have a poor permeability, and large-capacity wells could not be developed in these rocks except in locally favorable situations.

Younger and Older Alluvium:

Most of the economically available ground water in Edwards Creek valley occurs in the unconsolidated deposits mapped as younger and older alluvium (pl. 1). It is difficult to distinguish between the younger and older alluvium in the subsurface, but at land surface the criteria used to distinguish between the two are as follows: (1) the older alluvium is moderately to intensely deformed, whereas the younger alluvium is characterized by little or no structural deformation; and (2) the older alluvium forms a well-dissected rolling topography whereas the younger alluvium is not appreciably eroded.

The older alluvium was deposited during late Tertiary and early Quaternary time and is composed principally of gravel, sand, silt, and clay. These deposits have a high porosity, but because they are structurally deformed and partly compacted and cemented, they probably have only a low to moderate permeability. Accordingly, they may yield only small to moderate quantities of water to wells.

The younger alluvium was deposited during Quaternary time and is composed of deposits of gravel, sand, silt, and clay that have been only slightly compacted and cemented (table 5). Most of these deposits have a high porosity, are moderately peremeable, and probably will yield moderate quantities of water to wells. However, the fine-grained lake deposits in the younger alluvium are poorly permeable and therefore will yield negligible quantities of water to wells. In summary, most of the younger alluvium is less compacted and less cemented than older alluvium; therefore, younger alluvium is more permeable and will tend to yield water to wells at a higher rate.

GROUND-WATER HYDROLOGY

Source:

The source of practically all the ground water in Edwards Creek valley is precipitation within the drainage basin. However, most of the precipitation is lost through evapotranspiration and only a small percentage recharges the ground-water reservoir. Because the mountains receive more precipitation than the lowlands, they contribute a larger part of the recharge. During the spring as the snow melts, some of the resulting streamflow infiltrates into cracks or other openings in the consolidated rocks and moves toward the valley as ground-water flow. A small part of the precipitation on the alluvial apron and some of the streamflow crossing the alluvial apron also infiltrates to the ground-water reservoir in the alluvium. Very little precipitation on the valley floor infiltrates to the ground-water reservoir because of evapotranspiration losses and because of the small amount of precipitation.

Occurrence:

Most of the available water occurs in the unconsolidated valley fill. It occurs under both artesian and water-table conditions. All wells listed in table 4 and shown on plate 1 obtain water from the valley fill. A few flowing artesian wells have been drilled along the western edge of the valley floor; the largest flow measured was 15 gallons per minute from well 20/38-9a1, which is 44 feet deep (table 4).

Some water occurs in the consolidated rocks as is evidenced by springs discharging from them. The largest springs are those supplying Cherry Creek. However, due to the low permeability of the consolidated rocks, yields from any wells tapping them probably would be very small.

Movement:

Ground water like surface water moves from areas of higher to areas of lower hydrostatic head. Unlike surface water, however, it moves very slowly, at rates ranging from a fraction of a foot to several hundred feet per year, depending on the porosity, permeability, and hydraulic gradient.

In Edwards Creek valley, ground water moves from recharge areas in the mountains to discharge areas in the valley lowlands. The general direction of movement is centripetally toward the playa, which is in the north-central part of the valley. The general direction of ground-water movement is perpendicular to the water-level contours shown on plate 1. These contours necessarily are generalized inasmuch as there are only a few wells in the valley (table 4).

Recharge:

Recharge to Edwards Creek valley is derived from precipitation within the drainage area. However, only a small percentage of the precipitation recharges the ground-water reservoir.

An estimate may be made of the average annual recharge to the ground-water reservoir as a percentage of the average annual precipitation within the valley (Eakin and others, 1951, p. 79-81). The method is based on the assumption that a fixed percentage of a given average annual rate of precipitation ultimately recharges the ground-water reservoir.

The precipitation map of Nevada (Hardman and Mason, 1949, p. 10) has been adjusted (Hardman, oral communication, 1962) to the improved topographic base maps (scale 1:250,000) now available for the whole State. Hardman showed that the average annual precipitation is closely related to altitude. The altitude zones, the estimated average annual precipitation, and the percentage of precipitation in each zone that ultimately recharges the ground-water reservoir are listed in table 3. The estimated average annual precipitation is 187,000 acre-feet, and the estimated average annual recharge is 8,000 acre-feet. Thus, an estimated 4 percent of the total precipitation recharges the ground-water reservoir.

Table 3.--Estimated average annual precipitation and ground-water recharge in Edwards Creek valley, Nevada.

Altitude zone (inches)	Area (acres)	Estimated annual precipitation			Estimated recharge	
		Range (in inches)	Average (in feet)	Average (in acre-feet)	(Assumed percentage of precipitation)	(Acre-feet per year)
Above 9,000	1,800	more than 20	1.75	3,200	25	800
8,000 - 9,000	12,200	15-20	1.46	17,800	15	2,700
7,000 - 8,000	37,000	12-15	1.12	41,400	7	2,900
6,000 - 7,000	59,000	8-12	.83	49,000	3	1,500
Below 6,000	152,000	less than 8	.50	76,000	--	--
Total (rounded)	262,000	--	--	187,000	--	8,000

Discharge:

In Edwards Creek valley, most of the ground water is discharged by evaporation from the water table, where it is at or near land surface, and by transpiration of phreatophytes, which are plants that obtain most of their water from the ground-water reservoir or the overlying capillary fringe.

Most of the ground water discharged by evapotranspiration is consumed by phreatophytes. The area covered by phreatophytes is shown in plate 1. The estimated evapotranspiration rate is based largely on the work of Lee (1912), White (1932), Young and Blaney (1942), and Houston (1950). The principal phreatophytes include greasewood, saltgrass, and rabbitbrush. The amount of ground water discharged is based on the area covered, plant species, density, and depth to water table. Greasewood, the most abundant variety, covers an area of about 30,000 acres; areal density is moderate to high, and the depth to water ranges from a few feet to about 40 feet below land surface. The average annual rate at which this phreatophyte uses ground water is estimated to be about 0.2 foot. Thus, total phreatophyte use is about 6,000 acre-feet per year.

The area of the playa shown on plate 1 is about 13,000 acres. Data are not available to estimate accurately the annual rate of evaporation from the playa; however, the annual rate probably does not exceed 0.1 foot, which would amount to an evaporation from the playa of about 1,300 acre-feet per year.

Ground-water development in Edwards Creek valley has modified the natural ground-water system only to a minor extent. The use of Cherry Creek for irrigation results in additional evapotranspiration of ground water in the pasture area. Previously, under natural conditions, much of the springflow of the creek probably was discharged by evapotranspiration adjacent to the channel and nearer to the playa.

Somewhat similarly the discharge from the wells is evaporated or transpired largely in the vicinity of the wells, whereas prior to the well development nearly the equivalent amount of water probably was discharged by evapotranspiration downgradient toward the playa. The net effect of ground-water development may result in an additional several hundred acre-feet of water a year being discharged from the valley.

Under the existing regimen of Edwards Creek valley, the average annual discharge from the ground-water reservoir may approach 8,000 acre-feet.

Perennial Yield:

The perennial yield of a ground-water reservoir is the maximum rate at which ground water of suitable chemical quality is available and can be withdrawn economically for an indefinite period of time. If the perennial yield is exceeded, water will be withdrawn from storage and ground-water levels will decline until the ground-water reservoir is depleted or the pumping lifts become uneconomical to maintain.

The net amount of ground water that can be pumped perennially in Edwards Creek valley without causing a continuing decline in ground-water levels is limited to the amount of natural discharge that can be salvaged. The allowable gross pumpage can exceed the net withdrawal to the extent that some of the ground water returns to the ground-water reservoir and is suitable for reuse. However, for the valley as a whole, it is assumed tentatively that the upper limit of the perennial yield is 8,000 acre-feet--the same as the estimate of recharge and discharge..

Storage:

The amount of ground water in storage in Edwards Creek valley is equal to the volume of saturaged material multiplied by the specific yield of the material. Specific yield is the ratio of the water that will drain by gravity from the zone of saturation to the volume of the material, commonly expressed as a percentage.

The specific yield of the upper 100 feet of saturated material in the valley is conservatively estimated as 10 percent. The estimated area underlain by 100 or more feet of saturated material is at least 70,000 acres, or about 70 percent of the 100,000 acres mapped as younger and older alluvium (plate 1). Accordingly, the amount of ground water in storage in the upper 100 feet of the zone of saturation beneath this area is 700,000 acre-feet, or about 7,000 acre-feet for each foot of saturated material.

The volume of ground water recoverable from storage in a few feet of saturated deposits provides a large reserve for maintaining adequate supplies for pumping during extended periods of drought or for limited periods of high demand under emergency conditions. The amount of usable ground water in storage, which is available on an economic basis, depends in part on the distribution of water-yielding deposits, the distribution and range in chemical concentration of the ground water, and the number and distribution of wells.

Chemical Quality:

No water samples were analyzed as part of the present study; however, specific conductance measurements were made on water samples from three wells on the west side of the playa, and from Cherry Creek.

Suitability for Agricultural Use: According to the U.S. Department of Agriculture (1954), the most significant factors with regard to the chemical suitability of water for irrigation are dissolved-solids content, the relative proportion of sodium to other cations, and the concentration of elements and compounds that are toxic to plants. Dissolved-solids content commonly is expressed as "salinity hazard", and the relative proportion of sodium to other cations as "alkali hazard".

Specific conductance is used to express the salinity hazard because of its ease of determination and its relationship to the dissolved-solids content. Salinity hazard and its relation to specific conductance are defined by the U.S. Department of Agriculture as follows:

Salinity hazard	Specific conductance (micromhos per centimeter at 25°C)	Classification
Low	0 to 250	C-1
Medium	251 to 750	C-2
High	751 to 2,250	C-3
Very high	greater than 2,250	C-4

The specific conductance of the samples taken ranged from 162 to 724 micromhos per centimeter and the salinity hazard as defined ranged from low to medium.

Since no samples were analyzed, the suitability of water for irrigation cannot be evaluated as to alkali hazard or concentration of toxic elements.

Salt Balance: As pointed out by Hem (Halpenny and others, 1952, p. 149):

> "It has long been recognized that if an irrigation project is to be permanently successful, it must be so designed and operated that the drainage leaving the area of irrigation carries off the accumulating soluble salt from the whole area. Ideally, the amount of soluble mineral matter that must be removed should at least be equivalent to the amount entering the area in the irrigation water supply and from other sources. This is essentially the principle of 'salt balance'."

Edwards Creek valley is a hydrologically closed valley. In general, the dissolved-solids content is low in the recharge areas in the mountains and increases in the area of discharge in and adjacent to the playa. This tendency toward progressive accumulation of salt as the water moves down-gradient plus the increase resulting from the recycling of water used for irrigation may be as great a threat to future development in the valley as the limited available supply of water. Thus, ground-water development should be located so that reasonable drainage could be maintained to minimize increases in salt concentration in water and soil in the area of development.

Development:

Present development of water in Edwards Creek valley consists of the irrigation of about 300 acres of pasture from Cherry Creek whose low flow is supplied by springs. Additionally, a small amount of ground water from flowing or pumped wells supplies livestock requirements. The total amount of ground water used is on the order of several hundred acre-feet per year. Previously, water was pumped from one well to supply the requirements of a tungsten mining operation. However, the well apparently has not been used for several years.

Additional development of ground water in Edwards Creek valley is possible. Although data are not available, general geologic and hydrologic conditions suggest that the area southwest of the playa may be one of the more favorable areas for the possible development of moderate to large-capacity wells, where depth to water is moderate and where the chemical quality of the ground water may be relatively good. However, this does not preclude other areas as being favorable for development. The combination of good water-yielding zones, moderate to shallow depth to water, and suitable chemical quality results in an area favorable for development of ground water. In Edwards Creek valley this might be expected generally along the lower parts of the alluvial apron and upper parts of the valley lowland.

Table 4.--Records of wells in Edwards Creek valley, Nev.

Type of well: Dr, drilled
Depth: R, reported; M, measured
Pressure head or water level: R, reported; M, measured
Use: D, domestic; S, Stock; I, irrigation; N, unused.
Remarks: Log, see table 5.

		Type of well	Date completed	Casing diameter (inches)	Depth (feet)	Pressure head or water level Below(-) land surface datum (feet)		Date measured or reported	Use	Discharge (gpm)	Temperature (°F)	Remarks
18/37-20b1	Tom Ormechea	Dr	1944	6	360 R	-225	R	1944	D, S	--	--	--
19/37-28b1	Tom Ormechea	Dr	1945	6	260 R	-129.10	M	6-11-48	S	--	--	Log
19/38-1a1	W. W. Whitacre	Dr	1951	6	220 R	-185.1	M	8-01-51	S	--	--	Log
20/38-6d1	Tom Ormechea	Dr	1950	12	100 R	--		--	N	50 R	76	Log
20/38-9a1	Tom Ormechea	Dr	1944	5	44 R	--		6-11-48	D, S	15 M	54	Flowing
20/38-19b1	Tom Ormechea	Dr	1948	6	--	--		6-11-48	S	1[illegible] M	56	Flowing
20/39-8a1	Tom Ormechea	Dr	1950	6 3/8	100 R	-[illegible]35	R	1950	S	--	65	Log
20/39-18d1	W. W. Whitacre	Dr	1950	6	190 R	-155	R	1950	S	--	--	Log
21/38-22c1	Tungsten mining	Dr	1959	10	200 R	-105	R	1959	N	--	--	Log
21/39-3b1	Tom Ormechea	Dr	--	6	105 R	-[illegible]49.94	M	6-11-48	S	--	--	--
21/39-35d1	W. W. Whitacre	Dr	--	6	252 M	-225.92	M	7-16-48	S	--	--	--

Table 5.--Drillers' logs of wells in Edwards Creek valley, Nev.

Material	Thickness (feet)	Depth (feet)
19/37-28b1		
Boulders and clay	140	140
Gravel and sand	15	155
Clay	65	220
Gravel	8	228
19/38-1a1		
Gravel and boulders	120	120
Gravel and clay	51	171
Boulders	12	183
Clay	8	191
Gravel	29	220
20/38-6d1		
Gravel	80	80
"Cement"	2	82
Gravel	18	100
20/39-8a1		
Clay	35	35
Sand	65	100
20/39-18d1		
Silt and boulders	16	16
Clay and gravel	139	155
Sand and gravel	35	190
21/38-22c1		
Sand and boulders	80	80
Silt and sand	10	90
Gravel and boulders	25	115
Clay and gravel	70	185
Thin clay and gravel	15	200

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United States Department of The Interior
Geological Survey

State of Nevada
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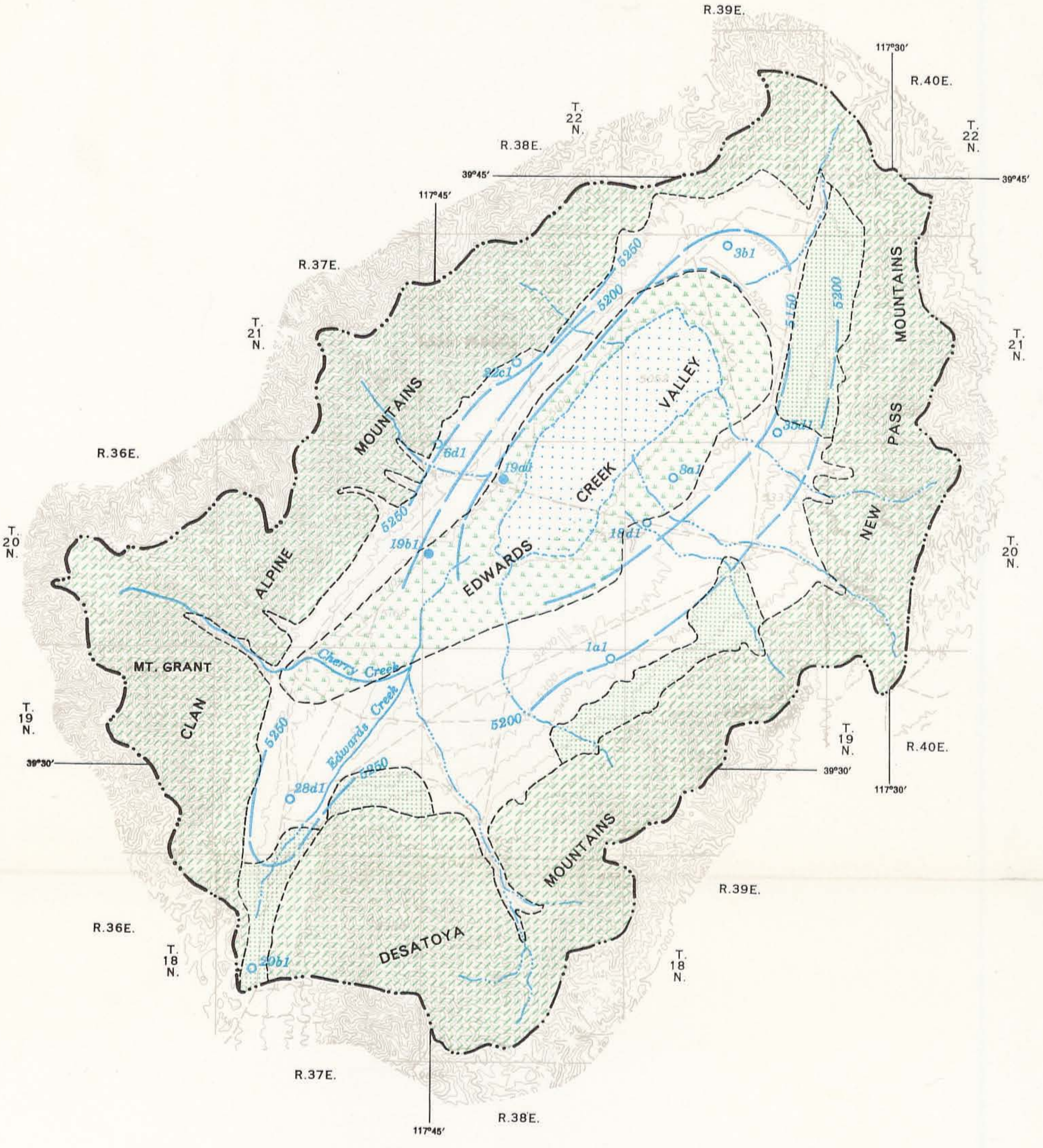

EXPLANATION

Younger alluvium

Unconsolidated sedimentary deposits of high to low permeability

QUATERNARY

Older alluvium

Unconsolidated sedimentary deposits of moderate to low permeability

TERTIARY AND QUATERNARY

Consolidated rocks

Largely consolidated rocks having little or no interstitial permeability

CAMBRIAN TO QUATERNARY

Playa (dry lake)

Phreateophytes

Plants that transpire ground water from the water table or the overlying capillary fringe. Largely greasewood, rabbitbrush, and saltgrass

Approximate geologic contact

Drainage divide

3b1

Well and number

Flowing well

5200

Generalized water-level contour, altitude in feet above sea level; contour interval, 50 feet

Scale

1 0 1 2 3 4 5 6 7 8 9 10 Miles

Base: U.S. Geological Survey 1:250,000 topographic quadrangle; Millett (1959)

Hydrology by D. E. Everett (1964)

PLATE 1.—GENERALIZED HYDROGEOLOGIC MAP OF EDWARDS CREEK VALLEY, NEVADA