59-87

Stratigraphic sections, well logs, and soil-profile sections in the southern Carson Desert, near Fallon, Nevada

By

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Resume of the geology

This report presents most of the stratigraphic sections, well logs, and soil-profile sections obtained during a stratigraphic study of an area of about 660 square miles in the southern part of the Carson Desert, near Fallon, Churchill County, Nevada. The exposed rocks and surficial sediments range in age from early Tertiary(?) to Recent. The late Quaternary sediments and soils were especially studied; they furnish a detailed history of the fluctuations of Lake Lahontan (a huge but intermittent late Pleistocene lake) and of younger lakes, as well as a history of late Quaternary sedimentation, erosion, soil development, and climatic change that probably is representative of the northern part of the Great Basin.

The Tertiary rocks are divided into five main map units. The lower three are chiefly lavas: the [illegible] andesite of Rainbow Mountain and dacite of Rainbow Mountain, and the [illegible] of [illegible] Eagle House [illegible]. The Truckee formation, chiefly a [illegible] tuffaceous sediments, [illegible] diatomite, and contains lower Pliocene fossils. The youngest and most extensively exposed unit, the Bunejug formation, is mainly andesitic and basaltic lavas of Pliocene(?) or possibly early Pleistocene age. Generally it overlies the Truckee formation with an angular unconformity, but in the south its lower part may intertongue with the Truckee formation.

Plate 1.--Topographic map of southern Carson Desert area showing traces of lake maxima and locations of stratigraphic sections, well logs, and soil-profile sections listed in this report, and of chief wells yielding natural gas.

Explanation

$\odot_2$ or $\odot 55d$

Site of stratigraphic section, soil-profile section (designated by S after numeral), or driller's log of well (indicated by L after numeral).

Well producing inflammable natural gas

Trace of lake maximum, at time of this maximum. E indicates Eetza; S_2, middle Sehoo; S_3, late Sehoo; F_1, maximum of first Fallon lake. Hachured where accurately located, dashed where extrapolated, dotted where eroded or concealed. The western shore of the late Sehoo lake is too indefinite to be mapped, because of widespread deflation and eolian sand deposition.

All the Tertiary rocks are cut by high-angle normal faults, and commonly are more or less tilted. The degree of deformation increases with age of the rocks, showing that faulting was fairly continuous. The earlier Tertiary deformations were mostly compressional, with notable strike-slip faulting, but Quaternary faulting was dominantly tensional. Few of the older faults are exposed; most exposed date from two climaxes, the first in late Pliocene or early Quaternary time, and the second probably also in relatively early Quaternary time, long prior to Lake Lahontan time. During the interval of relative quiescence between these two climaxes, extensive pedimentation occurred at the edges of the mountains. The main faults were active repeatedly, and as most of them bound mountain blocks, relief was increased progressively to a maximum at the close of the second climax. Subsequent erosion and sedimentation has been more rapid than faulting, and has progressively lowered the mountains and filled the basins.

The Carson Desert, long a major drainage sump of the northwestern Great Basin, contains Quaternary sediment probably more than a thousand feet thick in places. It is one of the largest and deepest basins of western Nevada that were inundated by Lake Lahontan; its floor lies as much as 515 feet below the highest shoreline. The area mapped covers the whole range of lake fluctuations from highest to complete desiccation. The Quaternary deposits, exclusive of volcanics, comprise seven main units (table 2), which are, from oldest to youngest:

1. Lacustrine sediments of pre-Lake Lahontan age.
2. Subaerial sediments and soil of late pre-Lake Lahontan age.
3. Deep-lake sediments, and minor interfingering subaerial deposits, of early Lake Lahontan age.

4. Subaerial sediments, soil, and intertonguing shallow-lake sediments of mid-Lake Lahontan age.

5. Deep-lake sediments, and minor intertonguing subaerial deposits, of late Lake Lahontan age.

6. Subaerial sediments and soil of early post-Lake Lahontan age.

7. Subaerial sediments and intertonguing shallow-lake sediments of late post-Lake Lahontan age.

Only the deposits of Lake Lahontan and younger age are widely exposed.

Pre-Lake Lahontan history is fragmentary, but Lake Lahontan and post-Lake Lahontan history is fairly complete. A lake older than Lake Lahontan is suggested by a single exposure of lacustrine sediment. A long interval of lake recession or desiccation ensued, during which any lakes remained at least 420 feet below the maximum level of Lake Lahontan. During early Lake Lahontan time the lake reached its maximum level of [illegible] feet, receded briefly to at least as low as 4,100 feet, then rose again to 4,340 feet. In mid-Lake Lahontan time the basin intermittently was low and held shallow lakes. During late Lake Lahontan time the lake had 3 stands and 2 recessions; first it rose to 4,370 feet, then dropped to at least 3,990 feet, then rose to 4,190 feet, then dropped at least to 3,990 feet, and then rose a last time to 3,990 feet. During early post-Lake Lahontan time the basin generally was completely dry, and during late post-Lake Lahontan time five successive small lakes, with maximum depths of 15 to 85 feet, occupied parts of the basin floor.

The writer's deductions on the lake history give no support to G. K. Gilbert's (1933) interpretation of a single lake cycle starting a mere 8,000 or so years ago. They agree, however, with most of Russell's (1885)

and Antevs' (1945, 1948, 1952) conclusions, although they supplement or contradict them in several details. Lake Lahontan had multiple maxima during both early and late Lake Lahontan times, supplementing both Russell's and Antevs' interpretations. The lake dried completely in mid-Lake Lahontan time, contrary to Antevs' interpretation but in line with Russell's. The lake reached its highest level in early Lake Lahontan time, as Antevs inferred, contrary to Russell's conclusion.

Late Quaternary volcanism consisted of small eruptions at three vents in the central lowlands. One vent probably erupted in late pre-Lake Lahontan time, forming the basalt cone known as Rattlesnake Hill; another erupted in mid-Lake Lahontan time, forming the hills of basaltic tuff and tuff-breccia called Upsal Hogback; the third erupted in late Lake Lahontan time (and possibly earlier), forming the craters occupied by Soda Lake and Little Soda Lake, and the surrounding tuff cone.

Late Quaternary faulting was minor and affected chiefly the basin-margins. The highest shoreline of Lake Lahontan is practically undeformed; on the other hand, the younger deposits of Lake Lahontan in the basin interior are locally faulted or warped as much as 10 feet.

Largely by means of soil chronology the following correlations have been developed: the Cocoon soil is correlated with the pre-Wisconsin soil of Hunt and Mabey (1950) in the Lake Bonneville and Rocky Mountain areas and with the soil of pre-Tahoe age (of Blackwelder, 1931) in the Sierra Nevada; the Churchill soil is correlated with the mid-Lake Bonneville soil and with the soil of inter-Tahoe-Tioga age (of Blackwelder, 1931) in the Sierra Nevada. The Fayth soil is correlated with soils of post-Lake Bonneville and post-Tioga time. The deposits intermediate in

age between these main soils are correlated as follows: The Estza formation is correlated with the Alpine and Bonneville formations of the Lake Bonneville area, and with the deposits of the Tahoe glacial stage in the Sierra Nevada. The Wyemaha formation is correlated with subaerial deposits of inter-Bonneville-Provo age in the Lake Bonneville area and with disconformities of inter-Tahoe-Tioga age in the Sierra Nevada. The Sehoo and Indian Lakes formations are correlated with the main part of the Provo formation of the Lake Bonneville area, and with deposits of the Tioga glacial stage in the Sierra Nevada. The Turupah formation is correlated with deposits of Antevs; "altithermal age" (2000 to 5500 B. C.) in the Great Basin. The Fallon formation is correlated with deposits of Antevs's "medithermal age" in the Great Basin and with deposits of Matthes' "Little Ice Age" in the Sierra Nevada.

On

NW cor. sec. 24, T. 22 N., R. 29 E. Auger hole in central Carson Sink, at wrecked plane. 3,369 ± 1 ft. altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm.	Medium sand, fairly clean to clayey, with a little coarse sand and grit. Eolian.	1	0.5	0.5
Do.	Clayey medium sand, clay increases downward. Lacustrine and eolian.	2	0.2	0.7
	Disconformity.			
Sahoo fm., lower mem.	Clay, fatty, with some partings of silty clay and ostracod coquina, soft, light olive green; lacustrine.	3	4.3	5.0
Do	Clay, soft, light olive with some interbeds of grey clay; lacustine.	4	0.8	5.8
Dreamer fm	Clay, dark gray to dark olive grey, some interbeds of blue-green clay (1/2 in. ± thick), and in lower 1 ft. a few interbeds of black carbonaceous, fairly clean medium sand; lacustrine.	5	1.5	7.3
Do.	Fine sand, clean, black; lacustrine.	6	0.4	7.7
Do	Clay, olive, soft; lacustrine.	7	0.2+	7.9
	Base not reached.			

Caa

NE cor., sec. 24, T. 22 N., R. 29 E. Auger hole in central Carson Sink. 3,069 ± 1 ft altitude.

Geologic unit	Description	Unit no. (top)	Thickness (feet)	Depth (feet)
Fallon fm.	Fine sand, some coarse sand, a little grit, slightly clayey. Eolian.	1	0.5	0.5
Do.	Medium sand, clayey, olive gray; lacustrine and eolian.	2	1.5	2.0
Soboo fm., lower mbr.	Clay, little or no sand, soft, olive green; lacustrine.	3	2.8	4.8
Pyramid fm.	Clay, somewhat silty, dark green-gray to dark gray; lacustrine.	4	1.0±	5.8±
Do.	Clay, jet-black, pronounced H_2S odor; lacustrine.	5	1.2	7.0±
Do.	Clay, [illegible] run, dark gray and black; lacustrine.	6	0.2	7.2±
Do.	Fine sand, mostly clean, aquifer, black to dark gray, H_2S odor; lacustrine. Base not reached.	7	3+	10.2

Ob

NE1/4 sec. 25, T. 22 N., R. 29 E. Auger hole in Carson Sink. 3,069 ± 1 ft altitude.

Geologic unit	Description	Thickness (feet) (top)	Depth (feet)
Fallon Fm.	Clayey sand and sandy clay, light olive gray. Lacustrine.	0.5	0.5
	Disconformity.		
Sonoma fm., lower mbr.	Clay, mostly "fatty", olive green, some ostracod coquina partings; lacustrine.	3.5±	4.0±
Hyenaha fm.	Clay, some sandy and/or silty clay interbeds in lower 1.5 ft., dark gray; lacustrine.	3.0	7.0
[illegible]	Clay, silty and sandy, black; lacustrine.	1.0	8.0±
[illegible]	Clay, pale olive gray; lacustrine.	0.1	8.1±
[illegible]	Fine sand, faintly laken in upper part, somewhat clayey in lower 1/3 ft., black; lacustrine. Base not reached.	1.0	9.1±

Cc

1/4 mi N. of SW cor., sec. 19, T. 42 N., R. 30 E. Auger hole in central Carson Sink. 3,859 ± 1 ft altitude.

Geologic unit	Description	Thickness (feet) (top)	Depth (feet)
Hollon fm.	Silty-sandy clay, gray. Lacustrine.	0.2	0.2
Dc.	Medium sand, clayey in upper part and near base. Eolian and lacustrine.	1.4	1.6
Hollon fm., lower mbr.	Clay, some silty and sandy layers; olive gray, soft; lacustrine.	4.4	6.0
Tyrone fm.	Clay, dark greenish gray, changing downward to dark gray; strong H_2S odor; lacustrine.	1.7	7.7
Ts	Fine sand, dark gray, with abundant basaltic grains; H_2S odor; lacustrine.	0.3	8.0
Ts	Clay, gray (olive gray); lacustrine.	0.3	8.3
Ts	Silt, dark gray sand, similar to unit 5; aquifer. Rate not tested.	1	9.3

x

NW1/4 sec. 26, T. 22 N., R. 30 E. Auger hole in central Carson Sink. 3,069 ± 1 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
		(top)	
Fallon fm.	Sandy clay, very saline.	0.2	0.2
Sehoo fm.	Clay, olive green, fatty (no white ash layer noted); lacustrine.	9.0	9.2
[illegible] fm.	Clay, somewhat silty, dark grey green to dark grey; lacustrine.	0.5	9.7
[illegible]	Clay to silty clay, dark grey to black; pronounced H_2S odor; lacustrine. Base not reached.	7.3	17.0

Ce

SE1/4 sec. 24, T. 22 N., R. 30 E. Augr. hole in central Carson Sink. 3,869 ± 1 ft altitude.

Geologic unit	Description	Thickness (feet) (top)	Depth (feet)
Fallon fm.	Sandy clay, saline, light olive gray.		
	Lacustrine.	0.2	0.2
Fallon fm.	Clay, olive, soft. 1.5 ft below top is		
Lower div.	1/4 in. white pumiceous ash partung;		
	lacustrine.	3.0	3.2
Do.	Pumiceous ash, white, clean, hard-cemented;		
	lacustrine.	0.1±	3.3±
Do.	Clay, olive, soft; lacustrine.	2.9	6.2
Fallon fm.	Clay, greenish medium gray to dusk grey-		
	to F.S clay; lacustrine.	0.3	6.5
Do.	Clay, olive, soft; lacustrine.	0.5	7.0
Do.	Clay, clayey, very perhaps of sand and		
	estheroid ostracod valves or ostracod-rich clay;		
	some oolites; lacustrine	2.5	9.5
Do.	Clay, dark greenish gray, with some F_2S		
	clay; no bleeding; very dusk gray clay;		
	lacustrine. Base not reached.	3±	12.5

C#

SW¼ sec. 29, T. 22 N., R. 30 E. Auger hole in Carson Sink.

3,869 ± 1 ft altitude.

Geologic unit	Description	Thickness (feet) (top)	Depth (feet)
Hallon fm.	Sandy clay, lacustrine.	0.2	0.2
Sehoo fm., lower mbr.	Clay, olive green, soft; a few sandy partings; lacustrine.	3.1	3.3
Dyeside fm.	Fine-medium sand, clean, gray; lacustrine.	0.2	3.5
Do.	Clay, some sand partings, dark greenish gray to dark gray; lacustrine.	1.2	4.7
Do.	Fine sand, clean, dark gray, nearly black; lacustrine.	0.3	5.0
Do.	Silty clay, somewhat sandy, dark gray, nearly black, some H_2S odor; lacustrine.	0.5	5.5
Do.	Clay, light bluish gray; lacustrine.	0.5	6.0
Do.	Fine sand, black, aquifer, strong H_2S odor; possible basaltic fragments. Lacustrine. Base not reached.	2.3+	8.3

08

NE1/4 SW1/4 sec. 26, T. 22 N., R. 27 E. Auger hole in central Carson Sink. 3,869 ± 1 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
			(top)	
Fallon fm.	Clayey medium sand, pale olive (gray; lacustrine.	1	0.3	0.3
Wyemaha fm.	Fine-medium sand, clean, olive gray; lacustrine.	2	1.7	2.0
Do.	Fine sand, clean, olive gray; lacustrine.	3	0.3	2.3
Do.	Silt, interbedded with very fine sandy silt; lean clay at base; micaceous, olive gray; lacustrine.	4	0.3	2.6
Do.	Medium sand, clean, olive gray, lacustrine.	5	0.3	2.9
Do.	Medium sand, faintly clean, jet black, changing to dark gray in lower 1 ft. lacustrine. Base not reached.	6	2.4+	5.3

Oh

NW1/4 sec. 31, T. 22 N., R. 29 E. Auger hole in Carson Sink, near its southwestern edge, beside Fallon-Lovelock cutoff; 3,885 ± 3 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Wyemaha fm.	Fine sand, well sorted, tan, very salty. Lacustrine.	0.5	0.5
Do.	Medium sand, well sorted, brown. Lacustrine.	1.8	2.3
Do.	Fine and medium sand, well sorted, tan. Lacustrine.	0.2	2.5
Do.	Medium and coarse sand, some pebbles to 1/4 in. Alluvial or lacustrine.	0.5	3.0
Do.	Clay, dark gray.	0.2	3.2
Do.	Medium and coarse sand, some small pebbles and grit (basalt, quartz, and probably olivine), black, highly organic (bad smell); water-bearing. Base not reached.	1.0	4.2

Oi

1,200 ft W. of SE cor. sec. 34, T. 22 N., R. 29 E. Auger hole in Carson Sink. 3,069 ± 1 ft altitude.

Geologic unit	Description	Thickness (feet) (top)	Depth (feet)
Fallon fm.	Clayey medium sand, salty, light gray yellow. Lacustrine.	0.3	0.3
Sehoo fm., lower mbr.	Clay, non-silty or sandy, very soft, light olive; lacustrine.	1.0	1.3
	Sharp contact.		
Wyemaha fm.	Medium sand, clean, olive gray; lacustrine.	1.2	2.5
Do.	Coarse-medium sand, clean, olive gray; lacustrine.	2.5	5.0
Do.	Medium sand, clean, dark gray; lacustrine. Base not reached.	1.3	6.3

Oj

SE1/4SW1/4 sec. 33, T. 22 N., R. 30 E. Auger hole in Carson Sink. 3,069 ± 1 ft altitude.

Geologic unit	Description	Thickness (feet) (top)	Depth (feet)
Fallon fm.	Clayey medium sand, olive gray. Lacustrine.	0.4	0.4
Do.	Clay, soft, olive green; lacustrine.	0.5	0.9
Do.	Medium sand, clean at top, becoming clayey near base; olive gray. Eolian or lacustrine.	0.4	1.3
Schoo fm., lower mbr.	Clay, olive, soft, some sand partings; increasingly sandy in lower several inches. Lacustrine.	1.3	2.6
Do.	Medium sand, clean, gray. Lacustrine.	0.1	2.7
Do.	Silty clay, pale olive gray; lacustrine.	0.2	2.9
Wyemaha fm.	Medium sand, deep rusty brown (darkest, most ferruginous at top). Lacustrine.	2.3	5.2
Do.	Medium sand. Top 0.6 ft is dark gray with slight H_2S odor; remainder is nearly black, more silty, has strong H_2S odor. Lacustrine. Base not reached.	1.8+	7

Ok

NE1/4NW1/4 sec. 33, T. 22 N., R. 31 E. Auger hole in Carson Sink. 3,871 ± 1 ft altitude.

Geologic unit	Description	Thickness (feet) (top)	Depth (feet)
Fallon fm.	Clayey fine-medium sand, grading downward to sandy clay, light olive gray. Eolian and lacustrine.	0.4	0.4
Sehoo fm., lower mbr.	Clay, quite sandy in upper 1 ft, little sand below, although slightly silty throughout (generally gritty between teeth). Soft, moist below top 2-3 ft. Lacustrine.	8.3	8.7
Wyemaha fm.	Interbedded clay, dark gray blue-green to very dark gray, and clean fine-medium sand, gray to jet-black. Lacustrine.	1.3	9.0
Do.	Clay (muck), jet-black to very dark gray, strong organic and H_2S odor; lacustrine.	1.0	10.0
Do.	Interbedded (equal parts) dark gray to black-gray and olive-gray clay; lacustrine. Base not reached.	1+	11.0

Water level about 7-8 ft below surface in October 1949.

Okk

NE1/4 sec. 35, T. 22 N., R. 31 E. 3,875 ± 10 ft altitude. Stillwater Lakes plain. Driller's log of validation well for oil claim, drilled in 1914 by L. W. Crehore of Fallon for Nevada Standard Oil Co.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon and			
Sehoo fms.	Yellow clay.	12	12
Wyemaha fm.	Blue clay or mud.	66	78
Do.	Black sand, with a small amount of gas and small fish bones.	2	80
Do.	Blue clay.	18	98
Do.	Sand with fish bones.	1±	99± bottom

01

SE1/4SW1/4 sec. 33, T. 22 N., R. 31 E. Auger hole in Carson Sink.

3,8[illegible]1 ft altitude.

Geologic unit	Description	Thickness (feet) (top)	Depth (feet)
Fallon fm.	Fine-medium sand, clayey, highly saline crust. Lacustrine.	0.2	0.2
Sehoo fm., lower mbr.	Clay, olive green to olive gray; almost without silt and sand; lacustrine.	7.8	8.0
Wyemaha fm.	Do., several 1/2-1 in. partings of fine-medium sand, clean, rusty yellow brown; lacustrine.	0.5	8.5
Do.	Clay, dark blue-green gray; lacustrine.	0.5	9.0
Do.	Clayey mud, stinking organic odor, and, below top 2 ft, pronounced H_2S odor. Jet black (highly carbonaceous), some interbeds of dark blue-green gray clay, more numerous downward. Lacustrine.	3.0	12.0
Do.	Clay, mostly dark greenish-gray with some black interbeds. Strong H_2S odor; lacustrine. Base not reached.	5.0	17.0

Water level at about 6 ft depth in October 1949.

On

SW1/4 sec. 4, T. 21 N., R. 31 E. Auger hole in Carson Sink. 3,871 ± 1 ft. altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Fine-medium sand, clayey, pale olive gray; lacustrine.	0.3	0.3
Sehoo fm., lower mbr.	Clay (not gritty between teeth), slightly saline, light olive green, moist and buttery. Some white fine sand partings in lower half. Lacustrine.	0.8	1.1
Do.	Clay, mostly with little silt or sand; a few partings or thin beds of silty and/or fine sandy clay. Lacustrine.	1.5	2.6
Wyemaha fm.	Fine-medium sand, clean except for rust-brown colored clayey or limonitic coatings; lacustrine.	0.7	3.3
Do.	Clay, with sparse grains of fine sand; olive green; lacustrine.	4.3	7.6
Do.	Clay, medium grayish blue green; lacustrine.	0.6	8.2
Do.	Clay, dark blue-green gray to nearly black; lacustrine.	1.0	9.2
Do.	Clay, slightly silty, jet-black; organic and sulfurous (H_2S) smell; lacustrine.	1.4	10.6
Do.	Clay, pale light olive gray; lacustrine.	0.4	11.0
Do.	Clay and silty clay, jet-black, stinking organic and H_2S odor; lacustrine. Base not reached.	5+	16.0

On SW¼ Sec. 2 (unsurveyed), T. 21 N., R. 30 E. Auger hole in Carson Sink.

3,869 ± 1 ft altitude.

Geolotic unit	Description	Unit no. (top)	Thickness (feet)	Depth (feet)
Fallon fm.	Sandy clay, pale olive gray; highly salty crust.	1	0.2	0.2
Sehoo fm., lower mbr	Clay, olive, with some silt and a little fine sand (some zones sandier than others). Lacustrine.	2	6.0	6.2
Wyemaha fm.	Clay, dark greenish gray with bright blue-green clay partings; grades downward to very dark gray clay. Slight H_2S odor at top, increasing somewhat downward. Lacustrine.	3	1.2	7.4
Do.	Clay, very dark greenish gray to black. Pronounced H_2S odor. Lacustrine.	4	0.6	8.0
Do.	Clay, dark blue gray; lacustrine.	5	0.7	8.7
Do.	Medium sand, fairly clean, black (highly carbonaceous); aquifer; lacustrine. Base not reached.	6	2.0+	10.7

Oo

SW1/4 sec. 7, T. 21 N., R. 29 E. Auger hole in alkali flat beside benchmark on Fallon-Lovelock cutoff; 3,900 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., lower mbr.	Pale gray to white lithoid tufa, platy to irregular masses, nearly continuous, in sandy silt. Lacustrine.	0.5	0.5
Do.	Medium sand with abundant ostracods; tan-green; lacustrine.	0.5	1.0
	Sharp, even, conformable contact.		
Wyemaha fm.	Fine medium sand, well sorted, reddish-yellow brown; many fish bones in upper part; some lime-cemented partings, including 1/4-in. very hard one at base.	3	4.0
Do.	Silty sand, very limy, reddish-brown; lacustrine; possibly part of eroded soil profile.	0.3	4.3
Do.	Fine sand, grading downward to medium sand, tan, except basal 2 in. is rust-stained. Lacustrine.	1.5	5.8
Do.	Silt, tan; lacustrine.	0.2	6.0
Do.	Fine sand, well sorted, tan; lacustrine.	0.5	6.5
Do.	Medium and coarse sand, well sorted, 20 percent dark (basaltic) grains. Lacustrine.	1.5	8.0
Do.	Fine sand, some silt, tan with rusty partings; lacustrine.	0.5	8.5
Do.	Fine sand, dark blue-gray with green grains; organic, stinks slightly. Lacustrine.	0.25	8.75
Do.	Medium sand, dark blue-gray, organic (mucky); water-bearing. Lacustrine. Base not reached.	2.75	11.5

Cp

1,600 ft N. of SW cor. sec. 9, T. 21 N., R. 29 E. Auger hole in Carson Sink, near its southern edge. 3,885 ± 3 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet) (top)
Wyemaha fm.	Medium sand, with some coarse sand, clean, golden yellow; lacustrine.	1.0	1.0
Do.	Silt, clean, some mica, tan; lacustrine.	0.5	1.5
Do.	Silt, clean, dark gray; lacustrine.	0.5	2.0
Do.	Medium sand, with some coarse sand and grit, clean, dark gray; lacustrine or alluvial.	3+	5.0

Cq

NW1/4NE1/4 sec. 10, T. 21 N., R. 29 E.; 3,875 ± 5 ft altitude. Southern edge of Carson Sink. 1904 water test borehole, no. 125 in Stabler (1904) report; water level 4 ft below surface in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Sandy loam.	1	1
Sehoo fm., lower mbr.	Yellow clay.	1	2
Wyemaha fm.	Yellow sand.	2	4
Do.	Black sand.	3	7

Or

Sec. 11 (unsurveyed), T. 21 N., R. 30 E. Auger hole in Carson Sink.

3,869 ± 1 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm.	Fine sand, clayey to moderately clean, some sandy clay partings; olive gray. Lacustrine and eolian.	1	1.0	1.0
Sehoo fm.(?)	Interbedded clayey fine-medium sand and sandy clay; olive gray; lacustrine.	2	1.9	2.9
Wyemaha fm.	Clay, greenish gray, grading downward toward unit 4. Lacustrine.	3	0.4	3.3
Do.	Silt and clay, some fine sand, black; organic smell, but no H_2S; lacustrine.	4	0.3	3.6
Do.	Fine sand, black, organic smell (no H_2S); lacustrine.	5	0.9	4.5
Do.	Fine sand, dark gray to black; lacustrine. Base not reached.	6	1.2	5.7

Os

NW1/4SW1/4 sec. 16, T. 21 N., R. 31 E. Auger hole in playa near SE margin of Carson Sink. 3,874 ± 2 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet) (top)	Depth (feet)
Fallon fm.	Clayey sand and sandy clay, light gray; lacustrine.	1	0.6	0.6
Sehoo fm., lower mbr.	Clay, light olive gray, slightly silty and sandy in top 3½ ft; below is less sandy but with a few partings of fine sand and fine-sandy clay, which commonly are yellow-brown or rusty yellow brown. Lacustrine.	2	8.4	9.0
Do.	Fine-medium sand, clean, brown; lacustrine.	3	0.1	9.1
Do.	Clay, somewhat silty and sandy; soft; light olive; lacustrine.	4	3.1	12.2
Do.	Pumiceous volcanic ash, white, semi-indurated; lacustrine.	5	0.05	12.25
Wyemaha fm.	Clay, olive, grading downward to olive-tan, then greyish blue-green, then blue-green gray, becoming darker downward; lacustrine.	6	0.5	12.75
Do.	Silty clay, jet-black, H_2S odor; lacustrine.	7	2.8	15.55
Do.	Silty clay, dark greenish gray, some black to tan streaks and a few partings of sand and sandy clay; lacustrine.	8	0.5	16.05
Do.	Pumiceous ash, white (parting); lacustrine.	9	0.03	16.1
Do.	Clay with silty or fine-sandy clay partings; dark greenish gray to dark gray; some tan streaks; lacustrine. Base not reached.	10	4.0	20.1

1

Sec. 15, T. 21 N., R. 30 E. Stratigraphic section exposed by trenching scarp of large deflation basin. 3,380 ± 5 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm.	Lake and eolian sand.		2±	2±
	Disconformity; erosion surface.			
Sehoo fm., lower mbr.	Clay, olive green-gray; lacustrine.	1	6±	8±
Do.	Fine sand, rust-brown, locally indurated; lacustrine.	2	0.2±	8.2±
Do.	Clay, olive green-gray, ostracods disseminated and in 1/16 in. thick lenses of fine sand; slightly laminated locally; lacustrine.	3	2±	10.2±
Do.	Volcanic ash, white, silt-sized; lacustrine.	4	0.1±	10.3±
Do.	Clay, similar to 3.	5	1±	11.3±
Do.	Fine sand, rust brown, abundant ostracods; lacustrine.	6	0.15	11.5±
Do.	Clay, similar to 3. 1/8 in. white volcanic ash parting 1.5± ft below top; lacustrine. Base not exposed.	7	3.5±	15.0±

2

SW corner sec. 16, T. 21 N., R. 29 E. Auger hole in playa embayment SW of Carson Sink. 3,888± 2 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	At surface 2 ± in. sandy fine gravel, 1/2 to 3/4 in. diam., some to 1 1/2 in. diam.; many fragments lithoid tuff of Sehoo fm., also some volcanic pebbles. Eolian and lacustrine.	0.2±	0.2±
Wyemaha fm.	Gritty medium sand, hard-cemented, mostly by $CaCO_3$, also by limonite; some pebbles to 1/2± in.	0.8	1.0±
Do.	Course and medium sand, clean, tan-gray; some grit and pebbles to 1/2 in. diam., but mostly less than 1/4 in. diam.; lacustrine.	1.7	2.5±
Do.	Do., but some thin layers (mostly 1 to 2 in. thick) of gray silt and fine sand; lacustrine.	2.0	4.5±

2a

Near SE cor. sec. 23, T. 21 N., R. 28 E.; 3,925 ± 5 ft altitude. 1904 water test borehole, no. 135 in Stabler (1904) report; water level 12.5 ft below surface in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Wyemaha fm.	Sand and silt.	6	6
Do.	Yellow clay.	1	7
Do.	Black clay.	3	10
Do.	Yellow sand.	1	11
Do.	Black sand.	3.5	14.5

2b

Six hundred ft S. of NW corner of sec. 21, T. 21 N., R. 29 E. Auger hole at S. edge of playa embayment SW of Carson Sink. 3,888± ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm., upper mbr.	Silty clay, saline, light gray. Discontinuous lag gravel on surface, of fragments of tan lithoid tufa (basin-interior lithoid tufa of lower Sehoo). Lacustrine.	0.5±	0.5±
	Disconformity.		
Wyemaha fm.	Medium sand, well sorted, deep rusty yellow in upper part, downward more and more gray. Somewhat limonite and lime cemented in upper few inches. Lacustrine.	2.5±	3.0±
Do.	Medium sand, some coarse sand and grit, somewhat silty and clayey; many dark basaltic or andesitic granules; dark brown gray. Lacustrine.	1.5	4.5±
Do.	Like above but less silty and clayey (better sorted).	1.5	6.0±
Do.	Fine sand and silty fine sand, dark gray; lacustrine.	0.5	6.5±
Do.	Clay and silty clay, dark gray to nearly black; lacustrine.	1.0	7.5±
Do.	Medium sand, some coarse sand, very clayey (clay decreases downward, sand becoming cleaner); very dark gray; lacustrine. Base not reached.	1.0	8.5±

2c

SW1/4 sec. 23, T. 21 N., R. 29 E. Stratigraphic section exposed in scarp of deflation basin. Top of section 3,899 ± 4 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet) (top)	Depth (feet)
Fallon fm.	Fine-medium and medium sand with some grit (grit is mostly tuff fragments and basaltic lapilli from Upsal Hogback); probably mostly lacustrine, possibly partly eolian.		3±	3±
	Disconformity.			
Sahoo fm., lower mbr.	Clay, olive-green-gray; lacustrine.	1	2.5±	5.5±
Do.	Clay, olive-green-gray to dark grayish green; ostracods; lacustrine.	2	0.7±	6.2±
Do.	Medium sand, rust-brown, gray, black (basaltic material prominent); thinly laminated, laminae 1/4 in. or less; well indurated. Lacustrine.	3	0.3	6.5±
Do.	Clay, olive-green-gray, slightly sandy, some ostracods; lenticular partings of fine quartz sand with ostracods; a few black granules 1/8 in. or less diam.; possible fish-bone fragments; brown and black staining along fractures. Lacustrine.	4	2.0	8.5±
Do.	Volcanic ash, silt-like, white; lacustrine.	5	0.15	8.7±
Do.	Clay, dark olive green, with ostracods; lenses partings of fine sand with ostracods; lacustrine.	6	0.4	9.1±
Do.	Sand, fine, tan, with ostracods; lacustrine.	7	0.1	9.2±

2c (continued)

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Schoc fm., lower mbr.	Clay, olive-green-gray; ostracods; slickensided; scaly; brown and black stains along fractures; lacustrine.	8	0.4	9.6±
Schoc fm.	Sand, fine, tan; ostracods; nodules of altered tuff, some nodules incorporate ostracods; lacustrine.	9	1/4 in. parting	
Do.	Clay, same as 7.	10	0.5	10.1±
Do.	Volcanic ash, white; lacustrine.	11	"line" (parting)	
Do.	Clay, olive green; ostracods and lenny partings of ostraced coquina; lacustrine.	12	2.5	12.6±
Do.	Sand, fine; ostracods; lacustrine.	13	0.15	12.7±
Do.	Clay, same as 12.	14	0.9	13.6±
Tyemaha fm.	Sand, fine to medium, yellow-brown; well bedded, well sorted; lacustrine.	15	0.6	14.2±
Do.	Sand, fine to medium, grayish brown mottled with rust brown; well bedded; lacustrine. Base not exposed.	16	1.3	15.5±

SE1/4 sec. 19, T. 21 N., R. 30 E. Stratigraphic section exposed in bank of former channel of Carson River. Top of section 3,937 ± 0 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Sand, medium to coarse small pebbles; in some beds; crossbedded; probably alluvial.	4±	4±
	Unconformity.		
Sehoo fm., lower mbr.	Clay, olive-green dm, (top eroded); lacustrine.	0.1	5±
Do.	Volcanic ash, white, appears crossbedded; upper surface irregular with 6 in. relief; lacustrine.	0.6±	5.6±
Do.	Clay, olive-green, with ostracods; lacustrine.	0.7	6.3±
Do.	Sand, fine, brown, probably tuffaceous; many ostracods; lacustrine.	0.15	6.5±
Do.	Clay, olive-green-gray, with ostracods. White ash "line" 5 in. below top. Lacustrine. Base not exposed.	1.25	7.7±

2e

T.M./KMEL/4 sec. 19, T. 21 N., R. 31 E. Auger sol. on plain flat.

3,070± wet elevation.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Silt and mud silt, poorly sorted, light grey; lacustrine.	1.0±	1.0
Sheep Sh., Lower Sh.	Clay, olive; lacustrine.	0.5	1.5
Do.	Diatomaceous mud, clayey, brown; lacustrine.	0.15	1.65
Do.	Clay, olive grey; lacustrine. Base not reached.		5.65

27

NE1/4 sec. 30, T. 21 N., R. 31 E. Auger hole in small playa flat.

3,885 ± 2 ft altitude

Geologic unit	Description	Unit no.	Thickness (feet) (top)	Depth (feet)
Fallon fm.	Sandy silt and clay, greenish yellow to bright yellow; lacustrine.	1	0.2	0.2
Sehoo fm., Lower mbr.	Clay, olive; lacustrine.	2	3.7	3.9
Do.	Silt, dark-greenish gray to gray; lacustrine.	3	0.2	4.1
Do.	Sand, fine-medium sandy brown; lacustrine.	4	0.1+	4.2
Do.	Clay, olive; white ash parting 0.2 ft. above base; lacustrine.	5	2.3	6.5
Do.	Pumiceous ash, white, hard-cemented; lacustrine.	6	0.15	6.65
Do.	Clay, olive, soft; parting of clean medium sand, tan, at 8.2 ft depth. Lacustrine.	7	1.85	8.5
Do.	Clay, light greenish gray, soft; lacustrine.	8	2.5	11.0
Wyemaha fm.	Clay, medium blue-gray; lacustrine.	9	1.0	12.0
Do.	Clay, variegated dark green-gray to black (locally tan); no H_2S odor; lacustrine.	10	1.0	13.0
Do.	Clay, dark greenish gray; no H_2S odor. Thin white volcanic ash parting 1.0 ft below top. Lacustrine. Base not reached	11	1.5+	14.5

25

Adjacent to NE corner sec. 25, T. 22 N., R. 20 E.; 3,885 ± 5 ft altitude. 1904 water test borehole no. 31 in Stebler (1904) report; water level 18 ft below surface in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Loam.	0.5	0.5
Sehoo fm.	Yellow clay.	8.5	9.0
Ib., lower mbr.	"White sand" (volcanic ash).	0.2	9.2
Ic.	Yellow clay.	7	16.2
Wyemaha fm.	Blue clay.	2	18.2
Ic.	Black sand.	1	19.2

Unknown to SE ¼ sec. 27, T. 21 N., R. 20 E.; 3,665 ± 5 ft altitude. 1904 water from borehole no. 40 in Stebler (1904) report; water level 6.5 ft below surface in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Pelican Fm.	Loam.	0.5	0.5
Petco Fm.	Yellow clay.	7.5	8.0
Tyrone Fm.	Yellow sand.	1	9.0
?Q.	Black peat.	3	12.0

22

NE1/4 sec. 27, T. 22 S., R. 36 E. Stratigraphic section exposed in scarp of Jefferson mesa, and 2 ft. auger hole in bench floor. 3,670 ± 4 ft. altitude.

Stratigraphic unit	Description	Thickness (feet)	Depth (feet)
Ogallala fm.	Loam and caliche, sand.	7±	7±
	Disconformity.		
Dakota fm., Lower mbr.	Clay, olive-green-gray; lenticular.	2±	9±
Do.	Volcanic ash, light white, silt-sized, sandy; lenticular.	0.15	9.15±
Do.	Clay, light green, with carbonate; lenticular.	1.5	10.65±
Do.	Sand, caliche to fine, brown (basaltic?), abundant carbonate; lenticular.	0.25	10.9±
Do.	Clay, olive green, mottled rust brown and olive; calcareous; lenticular. Base not reached.	1+	11.9±

3a

NW¼SW¼ sec. 29, T. 21 N., R. 28 E.; 3,920 ± 5 ft altitude. 1904 water test borehole, no. 148 in Stabler (1904) report; water level 15 ft below surface in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Wyoming Fm.	Sand.	10	10
Do.	Lead clay.	2	12
Do.	Yellow sand.	2	14
Do.	Black sand and clay.	4	18

SE1/4SE1/4 sec. 35, T. 21 N., R. 27 E., a few hundred ft W. of Southern Pacific R. R., on floor of small interdune basin within the high deflation plain east of the Hot Springs Mts. 3,950 ± 5 ft altitude.

1904 water test borehole, no. 147 in Stebler (1904) report, no. 1 in Clark and Lee (1916) report. Dry in 1904, water at 21 1/2 ft in 1915.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Hyemshe fm. (top few inches may be younger)	Sand.	20	20
Do.	Clay, silt, and coarse sand.	2.5	22.5
Do.	Sand.	2.5	25

3c

S1/2SW1/4 sec. 33, T. 21 N., R. 28 E.; 3,920 ± 5 ft altitude. 1904-1915 water test borehole, no. 118 in Stebler (1904) report, no. 2 in Clark and Lee (1916) report; water level 6 ft below surface in 1904, 2 ft below surface in 1915.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon Sm.	Silt.	0.5	0.5
Wyemke Sm.	Yellow sand.	5.5	6.0
Do.	Black sand.	2	8.0

NE1/4 sec. 31, T. 21 N., R. 29 E. Auger hole in alkali flat beside Fallon-Lovelock cutoff; about 3,905 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Fine sand and grit and small pebbles. Sand is basalt, olivine, quartz, feldspar, and tufa fragments; grit and pebbles are basaltic lapilli and some tufa fragments. Unconsolidated. Eolian.	0.5	0.5
	Disconformity.		
Sprague fm.	Layers 1/8 to 1/2 in. thick of basalt lapilli; gray ash(?) and gray sand, semi-indurated; probably lacustrine.	0.5	1.0
Do.	Silt, very hard-cemented.	0.05	1.05
Do.	Basaltic lapilli and sand, dark gray to brown, thinly interlayered; semi-indurated. Probably lacustrine.	0.75	1.8
Do.	Fine sand, brown, and medium sand, basaltic. Hard. Probably lacustrine.	1.0	2.8
Do.	Ash? (silt-size), semi-indurated.	0.1	2.9
Do.	Fine sand with some medium sand-sized basalt grains, brown, semi-indurated. Eolian or lacustrine.	3.0	5.9
Do.	Fine sand with medium to coarse sand partings; many basaltic and olivine grains. Eolian or lacustrine.	1.0	6.9
Do.	Very fine sand and silt, brown; lacustrine.	1.0	7.9
Do.	Gray silty clay; lacustrine. Base not reached.	2.5	10.4

SE¼ sec. 31, T. 22 N., R. 29 E. Auger hole in alkali flat, beside Fallon-Lovelock cutoff; about 3,897 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Lyon to fm.	Soil, brown, very salty. Lacustrine.	0.75	0.75
Do.	Silt, some clayey medium and coarse sand, tan, partly cemented by salt. Lacustrine.	1.5	2.25
Do.	Medium sand, rust-brown. Lacustrine.	0.1	2.35
Do.	Silty medium sand, almost entirely basaltic grains; dark gray, top 1 in. black. Lacustrine.	1.25	3.6
Do.	Clay, gray. Lacustrine.	1.5	5.1
Do.	Clay, gray, with 1/2-in. lenses of basaltic sand, black to rust-brown, containing basaltic and well-rounded quartz grains. Lacustrine.	1.5	6.6
Do.	Clay, shiny; 1/4 in. white volcanic ash parting at base. Lacustrine.	0.5	7.1
Do.	Clay, olive gray, with teal blue nodules. Lacustrine. Base not reached.	0.5	7.6

4

NE1/4 Sec. 33, T. 21 N., R. 30 E. Stratigraphic section exposed on south side of large deflation basin about 2 1/4 miles E. of Timber Lake. Top of section 3,885 ± 5 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Pelican fm. and(or) Turtle fm.	Sand, fine to medium, dark gray, with much coarse sand and granules, brown-gray and black limestone fragments. Eolian.	1	2.0	2
	Unconformity.			
Sehon fm., lower mbr.	Clay, medium to dark olive gray; blocky; ostracods; some lenticular partings of ostracod-rich fine sand as much as 1/8 in. thick. Lacustrine.	2	5.0	7
Do.	Sand, fine, tan; lacustrine	3	0.05	7.05
Do.	Clay, same as 2 above.	4	0.1	7.15
Do.	Sand. Laminated yellowish brown, gray, and black, poorly sorted, well indurated, laminae 1/8 in., probably bentonitic. Lacustrine.	5	0.25	7.4
Do.	Clay, same as 2 above, blocky to laminated; also some brown and black staining on fractures. Lacustrine.	6	1.9	9.3
Do.	Volcanic ash, silt -sized, white to pale grey. Lacustrine.	7	0.25	9.55

4 (continued)

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Selco fm., lower mbr. (continued)	Clay, same as 2 above.	8	1.0	10.55
Do.	Sand, fine; tan, brown and orange brown, laminated, ostracods abundant. Lacustrine.	9	0.15	10.7
Do.	Clay, same as 2 above.	10	0.7	11.4
Do.	Volcanic ash, white.	11	"lime"	
Do.	Clay, same as 2 above.	12	1.4	12.8
Do.	Volcanic ash, white.	13	"lime"	
Do.	Clay, same as 2 above.	14	4.0	16.8
Wyemaha fm.	Sand, fine, rust brown (base not exposed). Lacustrine.	15	1.0	17.8

48.

One-fourth mile W. of center sec. 5, T. [illegible] N., R. 30 E.; 3,682 ± 5 ft altitude. 1904 water test borehole, no. 77 in Stabler (1904) report; water level 15 ft below surface in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon Fm.	Clayey loam.	4	4
Do.	Sand.	1	5
Do.	Clay.	1	6
Do.	"White salt" (volcanic ash).	0.3	6.3
Sehoo Fm.	Yellow clay.	8.7	15
Wyemaha Fm.	Sand.	4	19

4b

Near NW cor. sec. 3, T. 20 N., R. 30 E.; 3,685 ± 5 ft altitude. 1904 water test borehole, no. 49 in Stabler (1904) report; water level 20 ft below surface in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm.	"Self-rising ground".	0.5	0.5
Do.	Yellow clay.	6	6.5
Do., lower mbr.	Sand.	1	7.5
Do.	Clay.	1.5	9
Do.	"White salt" (volcanic ash).	1	10
Do.	Clay.	7	17
Wyemaha fm.	Sand and clay.	3	20
Do.	Black sand.	2	22

4c

NE1/4NW1/4 sec. 6, T. 20 N., R. 30 E.; 3,890 ± 5 ft altitude.

1904 water test borehole, no. 99 in Stabler (1904) report; water level 11 ft below surface in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Dalton fm.	Sand.	1	1
Behan fm.	Yellow clay.	5	6
Do., lower mbr.	Yellow sand.	0.5	6.5
Do.	Yellow clay.	1.5	8
Do.	"White salt" (volcanic ash).	0.5	8.5
Do.	Yellow clay.	6	14.5

4d

SW¼NW¼ sec. 9, T. 20 N., R. 27 E., about 1/4 mile E. of Southern Pacific R. R., on floor of deflation basin; 3,970 ± 5 ft altitude. 1904 water test borehole, no. 145 in Stabler (1904) report, no. 8 in Clark and Lee (1916) report; water at 21 ft in 1904; 17.2 ft in 1915.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Wyemaha fm., (top several inches may be younger)	Sand.	11	11
Do.	Clay.	0.5	11.5
Do.	Sand.	0.5	12
Do.	Clay.	1.0	13
Do.	Sand.	7	20
Do.	Black sand.	4	24

4e

Center sec. 11, T. 20 N., R. 30 E.; 3,885 ± 5 ft altitude. 1904 water test borehole, no. 78 in Stabler (1904) report; dry to bottom in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Sand.	0.5	0.5
Sehoo fm.	Clay.	6.5	7
Do., lower mbr.	Sand.	0.5	7.5
Do.	Yellow clay.	1.5	9
Do.	Sand.	1	10
Sehoo fm.	Yellow clay.	6	16
Wyemaha fm.	Yellow sand.	7	23

Near center sec. 12, T. 20 N., R. 30 E.; 3,885 ± 5 ft altitude. 1904 water test borehole, no. 79 in Stabler (1904) report; water level 20 ft below surface in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Felton fm.	Clayey loam.	4	4
Sebec fm., lower mbr.	White salt (volcanic ash).	1	5
Do.	Yellow clay.	8.5	13.5
Wyanke fm.	Yellow to gray sand.	6.5	20

4g

SW¼ Sec. 7, T. 20 N., R. 31 E. Stratigraphic section exposed in drainage canal bank, and auger hole near N. edge of Stillwater Lakes plain. Top of section 3,880 ± 3 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Sandy, clayey silt, poorly sorted, black; lacustrine.	1.3±	1.3±
	Disconformity.		
Sehoo fm.	Silt and silty clay, pale greenish grey to nearly white (volcanic ash) interbedded with some light olive-gray clayey silt and silty clay. Lacustrine.	2	3.3±
Do.	Silty clay, olive grey, with a few partings of very fine sand (micaceous). 1/2 in. white ash parting 2 ft below top of bed. Lacustrine.	4±	7.3±

5

SW1/4 sec. 16, T. 20 N., R. 30 E. General stratigraphic section exposed in bank of channel connecting Likes and Pepcose lakes; top 3,905 ± ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Pelion fm.	Coarse, medium, and fine sand (highly quartzose), loose (uncemented). Eolian sand.	0.1±	0.1±
	Disconformity.		
Turupah fm., bearing Toyah soil (eroded).	Very fine, fine, and medium sand and coarse pebbly sand, interbedded; slightly micaceous; pebbles rarely to 1/2 in. diam.; Fe and Mn stains in coarse beds; strongly crossbedded. Eolian. Top several in. poorly sorted with moderate soil lime concentration (eroded Cca horizon of Toyah soil); remainder is moderately well sorted and lime-free.	2.3±	2.4±
	Unconformity representing subaerial erosion.		
Sehoo fm., upper mbr.	Very fine sand, tan; some iron oxide nodules. Lacustrine.	0.1±	3.3±
Do.	Clay, brown; gradational lower boundary. Lacustrine.	3±	6.3±
Indian Lakes fm., upper mbr.	Silty clay, very black, highly carbonaceous; marsh or swamp fluvio-lacustrine or lacustrine deposit.	0.5±	6.8±
	Disconformity.		
Sehoo fm., dendritic mbr.	Sandy clay, about 5 percent sand in top 1/2 ft, grading less sandy downward; olive green with turquoise blotches. Lacustrine.	1.5±	8.3±
Do.	Clay, bluish green with rusty blotches; ostracods. Lacustrine.	1.5±	9.8±
Do.	Sandy clay, olive green with teal-blue blotches; 15 to 20 percent sand; lacustrine.	1.5±	11.3±

NW1/4 sec. 21, T. 20 S., R. 23 E. General stratigraphic section exposed in scarp at S. edge of large deflation plain. Top of section about 3,980 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Fine to medium and coarse sand, some grit and a few small pebbles; unconsolidated; locally crossbedded. Eolian.	5±	5±
Turupah fm., bearing Toyah soil.	Sand, similar to above, bearing nearly full profile of Toyah soil (0.5± ft oxidized horizon, brown-tan, and 0.8± ft calcareous horizon, light pinkish grey) at top. Lower part has no grit or pebbles. Eolian.	4.8±	9.8±
	Disconformity.		
Sehoo fm., upper sub/fm (dendritic zone).	Silt, top 1/2 ft grading downward to mostly silty very fine sand and very fine sand; light grey. Lacustrine.	2.0±	11.8±
Sehoo fm., dendritic fm.(?)	Silt, some very fine sand, both light grey, and silty clay, light greenish grey. Lacustrine.	1.5±	13.3±
Sehoo fm., dendritic sub/fm lower zone.	Clay, dark greenish grey; commonly silty, especially in top 1/2 ft and in lower 1 ft; grades into silt unit below. 1/2 in. white calcareous silt layer (locally lime-cemented) 3.5 ft below top of unit. Lacustrine.	5.5±	18.8±

5a

Adjacent to NW corner of sec. 13, T. 20 N., R. 29 E.; 3,895 ± 5 ft altitude. 1904 water test borehole, no. 93 in Stabler (1904) report; water level 17 ft below surface in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm., upper mbr.	Black loam.	2	2
Fallon fm.(?)	Sand.	1	3
Do.	Clay.	1.5	4.5
Do.	Sand.	0.5	5
Sehoo fm.	Yellow clay.	9	14
Do.	Sand.	0.5	14.5
Do.	Yellow clay.	4	18.5

NW1/4NW1/4 sec. 14, T. 20 N., R. 28 E. General stratigraphic section exposed in scarp at S. edge of large deflation plain, 1 1/3 miles S. of Upsal Hogback. Top of section 3,967 ± 5 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Pelton and Drought fms.	Fine-medium, medium, and coarse sand, with some grit and small pebbles locally; loose to locally semi-indurated; somewhat crossbedded; eolian.	10±	10±
	Disconformity.		
Tokio fm., lower mbr.	Clay and silt, light to medium gray, semi-indurated, well bedded; lacustrine.	7±	17±
Wyemaha fm.	Medium and fine sand, yellow to medium gray, well sorted, well bedded, poorly consolidated; lacustrine.	7±	24±
Do.	Fine sand, silt, some clay, thinly interbedded; lacustrine.	5±	29±
Do.	Coarse, medium, and fine sand; interbedded; dark gray, highly andesitic or basaltic; generally well indurated, well bedded. Lacustrine. Probably accumulative with late eruptions at Upsal Hogback. Base not exposed.	10±	39±

6a (continued)

Sabco fm., lower mbr.	Silt, dark gray and somewhat clayey at top grading to tan gray fine sandy silt near base. Lacustrine.	5.0±	23.8±
	Sharp, even, conformable contact.		
Wyanaha fm.	Fine sand, light to medium gray with rusty streaks; some thin darker gray silt and silty fine sand partings and paper-thin limonitic partings, deep rust-brown, near base. Lacustrine. Base not exposed.	4	27.8±

Note: A water-well borehole sole in 1915 (no. 25 in Clark and Lee [1916], at the NW corner of this last section) is about a quarter-mile NW of the bottom of the above stratigraphic section, and the top of the borehole and bottom of the section are approximately the same stratigraphic horizon. The borehole log is: clay silt to 1 ft; sand, 1 to 16 ft; water level 13.0 ft in 1915; only Wyanaha formation was penetrated.

7

SW1/4SE1/4 sec. 21, T. 20 N., R. 28 E. Stratigraphic section exposed in scarp of deep deflation basin, and 5 ft auger hole at base of scarp. Top of section about 3,990 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Fine sand with coarse sand and much grit, a few pebbles to 1/4 in., rarely 1/2 in., even at crest of dune; crossbedded. Eolian.	8±	8±
	Disconformity.		
Turupah fm., bearing Toyeh soil(eroded).	Sand like above, eolian, bearing C_{ca} horizon (eroded) of Toyeh soil. 0.2 in. (locally eroded) white layer at top that may be partly volcanic ash but has much soil lime. Basal 1 in. of unit locally rust-stained.	0.8-1.0	9±
	Disconformity.		
Sahco fm., upper mbr.	Silty clay and very fine sand, clean, pale tan-grey to nearly white; limy, mottled with white soil lime. Lacustrine.	0.05-0.2	9±
Do.	Mostly fine sand 1-3 in. of poorly sorted coarse, medium, and fine sand locally at top and at base. Parallel bedded, probably lacustrine.	0.7±	9.7±
	Disconformity. Undulating erosion surface.		
Do.	Medium sand, yellow-brown, slightly cemented; appears to bear incipient soil (top is non-calcareous, lower part appears to have some soil-lime concentration). Parallel-bedded. Lacustrine.	0-0.5	10±

7 (continued)

Sehoo fm., upper mbr.	Sandy silt and silty sand, dark chocolate brown, much soil lime; parallel bedded; lacustrine.	0.4±	10.4±
	Disconformity.		
Indian Lakes fm., upper mbr. of late Sehoo age.	Fine-medium sand, light gray; eolian. Top 1± ft has some coarse sand; middle 0.5 to 1± ft is slightly lime-cemented, overlies very irregular erosion surface; lower 0.5 to 1.2 ft is uncemented.	3±	13.4±
Sehoo fm., upper mbr.	Fine sand, well sorted, parallel-bedded; lacustrine.	0.4±	13.8±
Do.	Silt and very fine sand; top 5± in. brown-gray to medium gray silt with very fine sand partings; middle 7± in. light gray very fine sand; bottom 6± in. is silt and a little very fine sand, laminated dark brown-gray, dark gray, some medium grey and light gray. Lacustrine.	1.5±	15.3±
	Disconformity, undulating erosion surface.		
Do.	Fine sand and fine-medium sand, well sorted, some partings of basaltic(?) sand, possibly from Soda Lake eruptions; lower 1 ft has some coarse sand; local 1/4-in. somewhat cemented light gray very fine sand (ash?) parting at base.	4±	19.3±
	Disconformity.		

7 (continued)

Sehoo fm., dendritic mbr.(?) possibly bearing Harmon School soil (eroded).	Coarse and medium sand, with fragments of pale gray platy lithoid tuff (0.1 in. thick); medium brown, slightly indurated and lime-cemented; possibly bears eroded weak soil. Lacustrine.	0.3±	19.6±
Sehoo fm., dendritic mbr.	Very fine sand and fine sand, well sorted, unindurated, micaceous, pale gray; loose and flour-like. Lacustrine.	0.5±	20.1±
Do.	Silt, light tan-gray, well sorted. Lacustrine.	0.3	20.4±
Do.	Clayey silt and silty clay, interbedded, light to medium gray. Lacustrine.	0.3±	20.7±
Do.	Silt, pale gray, interbedded very fine sandy silt to clayey silt.	2.6	23.3±
Do.	Very fine sand, well sorted, pale gray.	0.2	23.5±
Do.(?)	Silt and very fine sandy silt, slightly coherent, light grey. Lacustrine.	3.0±	26.5±
Sehoo fm., lower mbr.	Clayey silt, somewhat micaceous; ostracods; some selenite; medium grey; thinly laminated, semicoherent, fissile. Lacustrine.	1.0±	27.5±
Do.	Silty clay, semi-indurated, medium gray; well bedded; ostracods. Lacustrine; grades to clayey silt and silty clay near base.	7.5±	35.0±

Sharp, even, conformable contact.

7 (continued)

Wyemaha fm.	Medium and fine-medium sand, some interbedded fine sand; moderate yellowish brown (10 YR 6/4) to pale grey (particularly yellowish in upper part). Probably all lacustrine. Base not reached.	7	42+

7e

SW1/4SW1/4 sec. 20, T. 20 N., R. 30 E.; 3,905 ± 5 ft altitude. 1904 water test borehole, no. 94 in Stabler (1904) report; dry to bottom in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm. and Sehoo fm., upper mbr.	Sand.	8	8
Sehoo fm., upper mbr.	Dark clay.	2	10
Do.	Drab clay and sand.	3	13
Sehoo fm., dendritic and(or) lower mbr.	Yellow clay.	7	20
Sehoo fm., lower mbr.	Yellow sand.	0.5	20.5
Do.	Drab clay.	1	21.5
Do.	White layer (volcanic ash).	0.5	22
Do.	Yellow clay.	3	25

7b

SW1/4SW1/4 sec. 22, T. 20 N., R. 30 E.; 3,905 ± 5 ft altitude. 1904 water test borehole, no. 87 in Stabler (1904) report; dry to bottom in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Loam.	0.5	0.5
Do.	Sand.	4	4.5
Do.	Sand and clay.	6.5	11
Tuxupah fm.	White sand.	2.5	13.5
Sehoo fm.	Yellow clay.	10	23.5
Sehoo fm., lower mbr.	"White salt" (volcanic ash).	0.5	24
Do.	Yellow clay.	2	26

7c

About 1/4 mile S. of center sec. 23, T. 20 N., R. 30 E.; 3,885 ± 5 ft altitude. 1904 water test borehole, no. 88 in Stabler (1904) report; dry to bottom in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Sand.	8	8
Do.	Black clay.	4	12
Sonoma fm.?	Yellow clay.	8	20
Do., lower mbr.	"White salt" (volcanic ash).	0.2	20.2
Do.	Yellow clay.	4.8	25
Tyrnaha fm.(?)	Blue clay.	1	26

Near center sec. 24, T. 20 N., R. 30 E.; 3,885 ± 5 ft altitude. 1904 water test borehole, no. 69 in Stabler (1940) report; dry to bottom in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	"Self-rising ground".	0.5	0.5
Do.	Dark loam.	4.5	5
Sehoo fm.	Yellow clay.	10	15
Do., lower mbr.	"White salt" (volcanic ash).	0.2	15.2
Do.	Yellow clay.	1.8	17

7e

Sec. 30, T. 20 N., R. 31 E. Auger hole near SW edge of Stillwater Lakes plain. 3,880 ± 3 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Silt, grading downward to clayey silt; black; soft, nearly white lime nodules in lower 1 ft. lacustrine.	1.5±	1.5±
Do.	Clay, somewhat silty, olive-gray; lacustrine.	0.3±	1.8±
Turupah fm.(?)	Fine sand, well sorted, light olive tan; eolian.	0.7	2.5±
Do.	Silty clay, drab olive-gray; lacustrine.	0.2	2.7±
Do.	Fine- and fine-medium sand, well sorted, light olive tan to nearly white; eolian or alluvial.	1.3	4.0±
Sehoo fm.(?)	Silty fine sand, fine-sandy silt, and silt, interbedded; medium tan-gray with slight olive cast; lacustrine.	0.7	4.7±
Sehoo fm.	Silty clay, medium tan-gray with slight olive cast; lacustrine.	1.5±	6.2±

NW1/4 sec. 25, T. 20 N., R. 29 E.; 3,905 ± 5 ft altitude. 1904 water test borehole, no. 96 in Stabler (1904) report.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo Fm., upper mbr.	"Self-rising ground".	2.5	2.5
Do.	Sand.	1.5	4
Do.	Sand and clay.	3	7
Sehoo Fm., desiccate and/or lower mbr.	Yellow clay.	8	15
Do.	Yellow sand.	0.5	15.5
Sehoo Fm., lower mbr.	Yellow clay.	2	17.5
Do.	"White salt" (volcanic ash).	0.5	18
Do.	Yellow clay.	2	20
Upsala Fm.	Pink clay.	2	22

78

NE1/4SW1/4 sec. 29, T. 20 N., R. 29 E. General section across scarp of deflation basin (partly exposed by borrow pit), on E. side of Fallon-Lovelock cutoff. Top of section about 3,955 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm., upper mbr.	Fine, medium, and coarse sand, poorly sorted unindurated, locally crossbedded. Eolian.	2-7	5±
	Disconformity.		
Fallon fm., lower mbr., bearing "L" Drain soil (eroded).	Fine to medium sand, poorly sorted; locally crossbedded. Top 1/2± ft shows slight lime concentration, probably eroded Cca soil horizon.	3±	8±
	Disconformity.		
Turupah fm., bearing Toyah soil (eroded).	Fine-medium to coarse sand with some granules and small pebbles (quartz, olivine, and basaltic grains and pebbles; some fragments of clay and of early lithoid tuff of upper Sehoo in lower 2 ft); strongly crossbedded, with local disconformities. Eolian. Top 1-1 1/2 ft somewhat lime-cemented by Cca horizon of Toyah soil (top part of soil is here eroded)	7±	15±
	Disconformity.		
Sehoo fm., upper mbr.	Clay, tan, lacustrine.	0.05	15±

7g (continued)

Sehoo fm., upper mbr.	Very fine sand, thinly laminated, contains biotite; well indurated (breaks into hard blocks), tan, with rust-staining along some laminae. Lacustrine.	1.0	16±
Do.	Fine sand, tan, gray, ripple-marked; lacustrine.	0.3	16.3±
Do.	Fine sand with partings and thin lenses of silty clay. Large fragment of early lithoid tufa of this member at base.	0.3	16.6±
	Sharp, somewhat undulating contact; disconformity; suggestion of subaerial weathering.		
Sehoo fm., lower mbr., probably bearing Harmon School soil (eroded).	Silty clay, light olive gray; well, parallel-bedded; prismatic jointing, which is closer in top several inches; sand dikelets in some joints. Lacustrine. Top several inches appear slightly weathered, with slight soil-lime concentration (probably lower part of Harmon School soil).	3.0	19.6
	Sharp, level, conformable contact.		
Wyemaha fm.	Medium and fine-medium sand, coarsest at top; yellow; well sorted; incoherent; well bedded; lacustrine. Base not exposed.	1.0	20.6

7b

NW1/4NW1/4 sec. 25, T. 20 N., R. 28 E.; 3,955 ± 5 ft altitude. 1904-1915 water test borehole, no. 109 in Stebler (1904) report, no. 26 in Clark and Lee (1916) report: water level 17.45 ft below surface in 1915.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Wyemaha fm.	Clay silt.	3	3
Do.	Sand.	3	6
Do.	Cinders.	1	7
Do.	Sand.	11	18

Near SE cor. sec. 29, T. 20 N., R. 27 E.; 4,015 ± 5 ft altitude. 1915 water test borehole, no. 14 in Clark and Lee (1916) report; water level 37.5 ft below surface in 1915.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm.	Sand.	1	1
Do.	Silt.	1	2
Do.	Sand.	2	4
Do.	Gravel.	2	6
Do.	Sand.	14	20
Do.	Clay.	8	28
Do., or Wyemaha fm.	Sand.	10	38

T20N, R27E.,
Near NE cor. sec. 30, on floor of interdune basin; 3,995 ± 10 ft altitude. 1904-1915 water test borehole, no. 144 in Stabler (1904) report; no. 13 in Clark and Lee (1916) report; dry to 20 ft (total depth) in 1904, water at 28.9 ft in 1915.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Wyemaha fm., (upper part may be younger)	Sand.	3	3
Do.	Coarse sand.	3	6
Do.	Sand.	22	28
Do.	Sand and clay.	2	30
Do.	Bluish-green clay.	4	34

7k

Near SE corner, sec. 33, T. 20 N , R. 27 E., on floor of small deflation basin; 4,005 ± 5 ft altitude. 1915 water test borehole, no. 18 in Clark and Lee (1916) report; water level 24 ft below surface in 1915.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sebco fm.	Sand.	6	6
Do.	Clay.	6	12
Do.	Clay and sand.	2	14
Do., lower mbr.	Clay.	8	22
Do., or Wyemaha fm.	Sand.	3	25

7 1

SW1/4 SW1/4 sec. 36, T. 20 N., R. 27 E.; 4,010 ± 10 ft altitude. 1904-1915 water test borehole, no. 140 in Stabler (1904) report; no. 17 in Clark and Lee (1916) report; dry to 15 ft (total depth) in 1904; water level 33.2 ft below surface in 1915.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Turupah fm., or Sehoo fm.	Sand.	3	3
Sehoo fm.	Sand and fine gravel.	9	12
Do.	Clay silt.	16	28
Sehoo fm. and(or) Wyemaha fm.	Sand.	6	34

7m

NW1/2SE1/4 sec. 33, T. 20 N., R. 28 E.: 3,590 ± 10 ft altitude. 1915 water test borehole, no. 30 in Clark and Lee (1916) report, dry to 36 ft (total depth) in 1915.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Sand, eolian.	1	1
Sehoo fm.	Adobe and sand (adobe averaging 3 ft and sand 1 ft).	16	17
Do.	Fine sand.	6	23
Do.	Adobe and sand (adobe averaging about 2 ft and sand 1 ft).	5	28
Wyaha fm.	Sand.	8	36

Stratigraphic section at type locality for the upper member of the Sehoo formation. Exposure in borrow pit at northern edge of deflation basin, about 100 feet west of Fallon-Lovelock cutoff road, in the SE1/4NW1/4 sec. 32, T. 20 N., R. 29 E.; top of section about 3,995 ± 5 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Fine, medium, and coarse sand, pale yellow gray, poorly sorted, locally crossbedded. Eolian. (Northward thickens to more than 10 ft and underlain by several feet of eolian sand of the Turupah formation, which bears the Toyeh soil).	2±	2±
	Disconformity.		
Sehoo fm., upper mbr., bearing Toyeh soil (slightly eroded).	Coarse and medium sand with much grit and some pebbles (mostly less than 1/4 in., some to 1/2 in., and rarely about 1 in. diam.); rather poorly sorted, indistinctly bedded. Lacustrine. Granules and pebbles mostly late lithoid tufa of the upper Sehoo, medium to dark gray or dark brown-gray; rare fragments of white early lithoid tufa of this member and of volcanic and granitic rocks. Top 2 to 4 inches is oxide (B) horizon of Toyeh soil (field pH 6.8); next 9 to 10 inches is Cca horizon of this soil (partly cements the sand; pH 8.0-8.5).	2±	4±
	Contact gradational to sharp, somewhat undulating; local disconformity.		
Sehoo fm., upper mbr.	Medium sand, with some fine-medium sand and granule-bearing coarse sand; rare fragments of early lithoid tufa of the upper Sehoo. Lacustrine. Mostly poorly consolidated; bedding lenticular, locally crossbedded.	2±	6±

8 (continued)

	Fairly sharp, nearly level contact.		
Sehoo fm., upper mbr.	Fine-medium and fine sand. Thinly bedded; upper half ripple-cross-laminated, strongly so in top 2 inches; lower half almost parallel bedded; ripple marks approximately symmetrical. A few small nodules of medium brown lithoid tuff in top half; some fragments of white early lithoid tuff of this member in lower half, especially at base. Lacustrine.	0.6-0.9	6.8±
	Sharp, somewhat undulating contact; disconformity; in places cuts bedding in underlying lake clay.		
Sehoo fm., lower mbr.	Mostly silty clay, very light olive gray; lower 2 ft is pale gray silt. Well, parallel-bedded. Lacustrine. Prismatic jointing, which becomes closer in top few inches; sand dikelets in some joints. Top several inches appear slightly weathered (clay is discolored, fragmented, etc.); possibly lower part of Harmon School soil.	5-7	12.8±
	Sharp, level, conformable contact.		
Wyemaha fm.	Medium sand, light brownish yellow, well sorted, incoherent. Well, parallel-bedded. Lacustrine. Base not exposed.	2	14.8±

8a (L)

SW1/4 sec. 34, T. 20 N., R. 29 E. Carson River floodplain 3,930± ft altitude. Driller's log of water well; owner, J. Conlan; driller, J. J. Barry.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Sand and silt.	6	6
Do.	Clay.	4	10
Sehoo fm., upper mbr.	Fine sand.	8	18
Sehoo fm., dendritic and/or lower mbrs.	Clay, olive color.	2	20
Do.	Clay, laminated.	6	26
Wyemaha fm.	Clay, dark brown.	2	28
Do.	Brown "shale".	10	38
Do.	Coarse gray sand.	7	45

8b

Adjacent to north 1/4 corner sec. 36, T. 20 N., R. 30 E.; 3,885 ± 5 ft altitude. 1904 water test borehole, no. 90 in Stabler (1904) report; water level 18 ft below surface in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Loam.	3	3
Do., lower mbr.	Dark clay.	7	10
Do.	"Green white ash" (volcanic ash parting).	--	--
Sehoo fm.	Yellow clay.	6	16

(L)

NW/4 sec. 4, T. 19 N., R. 31 E. Main at S. end of Stillwater Lakes; 3,694 ± 5 ft altitude. Log of validation well drilled in 1914 by L. W. Crehore for Nevada Standard Oil Company.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm. and (mainly) Sehon fm.	Yellow clay.	13.5	13.5
Sehon fm., lower mbr.	White "sand" (white ash).	0.5	14
Wyemaha fm.	Blue clay.	22	36
Do.	Black sand with a few small fish bones.	38	74
Do.	Blue clay with thin shale of jet black clay.	26	100

9a

About 600 ft S. of N. 1/4 marker, sec. 2, T. 19 N., R. 30 E.; 3,895 ± 5 ft altitude. 1904 water test borehole, no. 64 in Stabler (1904) report; dry to bottom in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Sand.	2.5	2.5
Turupah fm., bearing Toyeh soil(?)	"Alkali hardpan".	0.5	3.0
Turupah fm.(?)	Sand.	7.5	10.5
Sehoo fm.	Yellow clay.	9	19.5
Do., lower mbr.	"Trace of white salt" (white volcanic ash parting).	--	--
Do.	Yellow clay.	5.5	25

9b

NE1/4NE1/4 sec. 4, T. 19 N., R. 30 E. 3,902 ± 3 ft altitude. 1904 water test borehole, no. 92 in Stabler (1904) report; dry to bottom in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm., upper mbr.	Dark loam.	2	2
Do.	Sand.	2	4
Fallon fm.	Clay.	1	5
Do.	Sand.	0.5	5.5
Fallon fm., lower mbr.	Dark clayey loam.	6	11.5
Turupah fm.	Gray sand with clay traces.	6.5	18
Sehoo fm.	Yellow clay.	7	25

9c

NW1/4 sec. 3, T. 19 N., R. 29 E. Sagouspe irrigation canal, cut through vale between sand dunes; stratigraphic section exposed by trenching S. bank of canal, through highest dune, and 4.2-ft auger hole below bed of canal (fig. 18). Top of section, 3,941 ± 3 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Fine and fine-medium sand, unindurated, well sorted, pale yellowish gray; eolian.	10.1	10.1
	Disconformity.		
Turupah fm., bearing Toyeh soil.	Medium and fine-medium sand, eolian. Top 0.8 to 1.2 ft somewhat indurated by buried Toyeh soil, which is locally more or less eroded; lower part is unindurated, light rusty yellow.	1.8	11.9
	Disconformity.		
Sehoo fm., upper mbr.	Clayey fine sand with some coarse sand (most clayey in upper part); medium yellow, brown; lacustrine.	0.7	12.6
	Disconformity.		
Do.	Top 1 ft coarse to medium sand, with sand pebbles; clean; medium rust-stained; lower 1/2 ft fine sand, clean, light yellow.	1.5	14.1
Do.	White lithoid tufa with mammalary to irregular form, drusy to smooth outer surfaces; locally, thin black encrustations occur on outer surfaces. Early lithoid tufa of this mbr.	0.5	14.6
	Disconformity.		
Sehoo fm., dendritic and lower mbrs.	Clay, pale bluish gray to light olive-greenish gray; lacustrine.	4.5	19.1
Wyemaha fm.	Medium sand, yellow, clean; lacustrine; base not reached.	1+	20.1

9d

NW1/4 sec. 3, T. 19 N., R. 29 E. Stratigraphic section exposed in bank of Sagouspe irrigation canal, about 10 ft E. of westernmost fault in Sagouspe fault zone, and 7.3 ft auger hole in bed of canal (fig. 18). Top of section 3,933 ± 3 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Sand, pale yellowish gray, moderately well sorted (mostly fine and very fine, some medium sand, a little coarse sand and grit), indistinctly bedded. Probably eolian.	5.5	5.5
	Disconformity (erosion surface with 1 to 3 ft relief).		
Sehoo fm., upper mbr.	Medium sand, well sorted, some coarse sand, rare pebbles to 1/2 in. diam. (about 20 percent are andesite and basalt, remainder are rhyolite, granite, gneiss, thinolite, early lithoid tufa of this mbr.), lower several feet are most pebbly; mostly indistinctly bedded but locally dips to 25°. Lacustrine and alluvial (deltaic).	7.0	12.5
Do.	White tufa (early lithoid tufa of this mbr.). Lacustrine.	0.7	13.2
Sehoo fm., dendritic and lower mbrs., bearing Harmon School soil.	Clay, light bluish gray and light olive-greenish gray; lacustrine. Slight soil development in upper 3 to 6 in. (Harmon School soil); locally eroded.	1.5+	14.7

9e

NW1/4 sec. 3, T. 19 N., R. 29 E. Stratigraphic section exposed in bank of Sagouspe irrigation canal and 3 ft auger hole in bed of canal (fig. 18). Top of section 3,933± 3 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., upper mbr., bearing Toyeh soil (eroded).	Mostly medium and fine sand, some silt; light pinkish-gray; lacustrine; moderate $CaCO_3$ concentration (Cca horizon of Toyeh soil).	0.6	0.6
Sehoo fm., upper mbr.	White tufa (early lithoid tufa of this mbr.)	1.0	1.6
Sehoo fm., dendritic and lower mbrs.	Clay and silty clay, moderately well bedded, light gray; lacustrine.	5.0	6.6
Wyemaha fm.	Sand, medium-grained, rust-colored, clean; lacustrine.	0.2	6.8
Do.	Sand, fine-medium grained, light yellowish gray, clean; lacustrine.	0.5	7.3
Do.	Clay, brown, with mica flakes; lacustrine.	0.1	7.4
Do.	Sand, fine-grained, micaceous; several partings of silt and clay; 1/2-in. clay parting at base; lacustrine.	0.15	7.55
Do.	Medium and fine sand, interbedded; well sorted, well-bedded (beds 1 to 5 in. thick), rust, brown, and yellowish-gray; lower 7 in. micaceous. Lacustrine.	1.1	8.65

9f

NW1/4NW1/4 sec. 5, T. 19 N., R. 28 E.; 3,990 ± 5 ft altitude. One mile N. of Soda Lake. 1904-1915 water test borehole, no. 138 in Stabler (1904) report; no. 54 in Clark and Lee (1916) report. Dry to 25 ft (total depth) in 1904; water level 22.5 ft in 1915.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm.	Sand.	6	6
Do.	Clay silt.	10	10
Wyemaha fm.	Coarse sand.	4	20
Do.	Sand.	8.5	28.5

9g (L)

About 1,000 ft N. of SW cor. sec. 5, on line between secs. 5 and 6, T. 19 N., R. 28 E.; 4,020 ± 10 ft altitude. About 1,400 ft N. of Soda Lake. Water test well no. 55 in Clark and Lee (1916) report.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Indian Lakes fm., volcanic sand complex of Soda Lake	Volcanic ash and sand.	8	8
Do.	Soft clay.	40	48
Do.	Silt, very soft.	9	57
Do.	Hard clay and cinders, in interbedded layers.	18	75

9h (L)

Near SW cor. sec. 5, on line between secs. 5, 6, T. 19 N., R. 28 E.; 4,060± 20 ft altitude. About 600 ft N. of Soda Lake. Water test well no. 56 in Clark and Lee (1916) report.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Indian Lakes fm., volcanic sand complex of Soda Lake.	Sand and volcanic ash.	6	6
Do.	Soft clay.	19	25
Do.	Coarse cinders.	0.5	25.5
Do.	Soft clay.	37.5	63
Do.?	Hard clay and cinders	39	102

i

Near center sec. 6, T. 19 N., R. 28 E.; 4,000 ± 5 ft altitude. One mile N. of Soda Lake, 1915 water test borehole, no. 57 in Clark and Lee (1916) report.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm.	Sand.	12.5	12.5
Do.	"Adobe"	7.5	20
Do.	Silt.	2	22
Do., or Wyemaha fm.	Sand, medium fine.	7	29

9 j

SW1/4SW1/4 sec. 6, T. 19 N., R. 28 E.; 4,005 ± 5 ft altitude. Two-thirds mile NW of Soda Lake. 1915 water test borehole, no. 60 in Clark and Lee (1916) report.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm.	Coarse sand with thin layers of fine sand.	9	9
Do.	Coarse sand and fine gravel.	9	18
Do.	Adobe.	12	30
Do., or Wyemaha fm.	Fairly coarse sand, slightly cemented.	2	32

9 k

T. 19 N., R. 27 E.,
Near NW cor. sec. 5, on floor of small deflation basin, 4,000 ± 5 ft altitude. 1904-1915 water test borehole, no. 132 in Clark and Lee (1916) report, dry to 16 ft (total depth) in 1904; water at 21.0 ft in 1915.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., lower mbr.	Silt.	2	2
Do.	Silty clay.	4	6
Do.	Silt.	2	8
Wyemaha fm.	Gravelly sand.	4	12
Do.	Sand.	10	22

9 1 (L)

NE1/4NW1/4 sec. 7, T. 19 N., R. 28 E.; 4,015 ± 10 ft altitude. One-third mi. NW of Soda Lake. 1915 water test well, no. 58 in Clark and Lee (1916) report.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Indian Lakes fm., volcanic sand complex of Soda Lake.	Fine sand and volcanic ash.	15	15
Do.	Coarse sand.	10	25
Do.	Soft clay.	3	28
Do.	Hard clay and cinders, interbedded layers.	47	75

9 n (L)

SW1/4SE1/4 sec. 7, T. 19 N., R. 28 E.; 4,000 ± 10 ft altitude. About 200 ft S. of S. edge of Soda Lake, between Soda Lake and Little Soda Lake. Test well no. 63 in Clark and Lee (1916) report.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Indian Lakes fm., volcanic sand complex of Soda Lake.	Volcanic ash, medium fine sand, and cinders.	14	14
Do.	Same, with fewer cinders.	3	17
Do.	Cinders and a little sand.	5	22
Do.	Sharp silica sand, containing a little mica and cinders.	1.5	23.5
Do.	Cinders the size of "BB" shot.	1.5	25
Do.	Coarse sand and cinders.	13	38
Do.	Coarse sand, carries water off rapidly.	8	46
Do.	Very fine black mucky silt; loses black color on exposure to air.	16	62

10

SW1/4SW1/4 sec. 8, T. 19 N., R. 28 E. Stratigraphic section exposed in bluff on southeastern side of Soda Lake, from crest of ridge to lake shore; altitude of ridge crest about 4,085 ft.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Indian Lakes fm., volcanic sand of late Sehoo age, bearing Toyeh soil.	Lapilli sand; poorly sorted, unconsolidated silty sand with several percent of basaltic lapilli and a few larger basaltic bombs, very rarely as much as 1 ft in diameter; generally indistinctly bedded; poorly exposed; probably subaerial.	1	38	38
	Contact poorly exposed.			
Indian Lakes fm., volcanic sand of dendritic Sehoo age.	Grit and coarse sand, with several percent of basaltic lapilli; some very small basalt pebbles; well sorted, nearly unindurated, moderately to well bedded; probably lacustrine.	2	8.5	46.5
Do.	Lapilli sand and grit, commonly more than 20 percent basaltic lapilli and commonly with some very small to small basaltic pebbles (mostly less than 1/2 inch diameter, but rarely to several inches (bombs) in some beds); lower part mostly well sorted, low in silt and relatively unindurated; upper part is moderately sorted, somewhat to very silty, somewhat indurated, forms small cliffs locally. Contains rare water-worn fragments of dendritic and lithoid tufa. Lacustrine.	3	37	83.5
	Sharp conformable contact.			

10 (continued)

Indian Lakes fm., volcanic sand of dendritic Sehoo age.	Silt and sandy silt, light-gray, very poorly sorted; many beds contain several percent of basaltic lapilli (sand- grit- and small-pebble-sized); somewhat indurated; lacustrine.	4	2.2	85.7
	Sharp contact, possible minor disconformity.			
Do.	Lapilli sand; very fine pebbly medium sand, very poorly sorted, grayish-yellow-grown, slightly indurated, indistrinctly bedded. Probably colluvium (slope wash or talus). [At next embayment of bluff to east this unit is somewhat more indurated, yellower, and shows slight lime concentration locally at top.]	5	3	88.7
	Gradational contact.			
Do.	Lapilli sand; mostly coarse, fine-pebbly sand and grit, some medium sand, especially in upper 2 ft; generally well sorted; practically all basaltic lapilli; pebbles mostly less than 1/2 inch, rarely to 1 inch; slightly indurated; contains occasional water-worn fragments of dendritic and lithoid tufa. Lacustrine.	6	5.5	94.2
	Sharp conformable contact.			

10 (continued)

Indian Lakes fm., volcanic sand of dendritic Sehoo age.	Silt, medium-grayish-grown, well sorted, unindurated; thins rapidly to west, is only 1/2 ft thick 10 ft to west. Lacustrine.	7	1.3	95.5
	Angular disconformity.			
Indian Lakes fm., volcanic sand of early Sehoo(?) age.	Lapilli sand, moderately indurated, moderately well bedded, parallel bedded; dips 20° to 30° to northwestward; strongly jointed. Contains several percent of basaltic lapilli in poorly sorted silty medium to coarse sand, commonly with some grit and small-pebble-sized lapilli and rare cobble-sized basalt bombs. Lacustrine. Base not exposed; thickens to several feet, locally as much as 15 ft, exposed above water, within 400 ft to west	8	1	96.5

10 a (L)

Center of SW1/4 sec. 8, T. 19 N., R. 28 E.; 4,090± ft altitude. At or near W. of ridge about 500 ft E. of Soda Lake. Test well no. 76 in Clark and Lee (1916) report.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Indian Lakes fm., volcanic sand complex of Soda Lake.	Volcanic ash, cinders, silt, and sand.	91	91
Do.	Very hard clay; occasional seams that carry water off very rapidly.	24	115
Do.	Soft silty clay.	3.5	118.5

10 b (L)

At S1/4 cor. sec. 8, T. 19 N., R. 28 E.; 4,020 ± ft altitude. About 2,000 ft SE of Soda Lake. Test well no. 77 in Clark and Lee (1916) report.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Indian Lakes fm., volcanic sand complex of Soda Lake.	Sand, clay, and cinders.	54	54
Do.	Soft clay.	5	59
Do.	Hard clay.	25	84

10 c (L)

NW1/4NE1/4 sec. 8, T. 19 N., R. 28 E.; 4,025 ± 10 ft altitude. About 0.3 mile E. of Soda Lake. Test well no. 78 in Clark and Lee (1916) report.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Indian Lakes fm., volcanic sand complex of Soda Lake.	Volcanic ash, sand, and cinders.	7	7
Do.	Coarse cinders.	2.5	9.5
Do.	Gravelly adobe.	5.5	15
Do.	Layers of adobe and cinders, adobe layers averaging about 3 ft and cinder layers about 1 ft thick.	20	35
Probably Wyemaha fm.	Fine sand, interbedded with partly cemented coarse sand.	15	50
Do.	Medium coarse sand.	13	63
?	Very fine soft silty clay.	12	75
?	Hard clay.	14	89
?	Very fine soft silty clay.	3	92

10 d

SE1/4NE1/4 sec. 9, T. 19 N., R. 28 E.; 3,990 ± 5 ft altitude. 1 1/2 miles E. of Soda Lake. 1915 water test borehole, no. 80 in Clark and Lee (1916) report.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm.	Adobe.	5	5
Do.	Sand and silt.	26	31
Do.	Adobe.	3	34
Do., or Wyemaha fm.	Gravel about size of "BB" shot.	1	35

10 e

Near center sec. 8. T. 19 N., R. 30 E. 3,912 ± 5 ft altitude. 1904 water test borehole, no. 91 in Stabler (1904) report, dry to bottom in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm., upper mbr.	"Alkali hardpan".	4	4
Fallon fm.	Sand.	5	9
Do.	"Alkali hardpan".	5	14
Fallon fm., lower mbr.	Dark clay (lake clay).	6	20
Turupah fm.	White sand (eolian sand).	5	25

10 f

SW1/4 sec. 7, T. 19 N., R. 31 E.; 3,895 ± 5 ft altitude. 1904 water test borehole, no. 54 in Stabler (1904) report; water at 7 and 16 ft below surface.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Clayey loam.	4	4
Turupah fm.(?)	Sand.	2	6
Sehoo fm.	Yellow clay.	19	25
Wyemaha fm.	Clay and sand.	6	31

10 g

NW1/4SW1/4 sec. 9, T. 19 N., R. 31 E.; 3,895 ± 5 ft altitude. 1904 water test borehole, no. 52 in Stabler (1904) report; water level 11.5 ft below surface in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Loam.	7	7
Sehoo fm.	Yellow clay.	5	12
Do., lower mbr.	"White salt" (volcanic ash).	0.3	12.3
Do.	Yellow clay.	2.7	15

10 gg

Stratigraphic section exposed in east bank of Stillwater Slough near corrals at Kent Ranch, about 100 ft south of bridge across slough. SW1/4 sec. 8, T. 19 N., R. 31 E. Top of section about 3,895 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm., young lake--interlake unit.	Silt, with some grains of coarse and medium sand; dark gray, carbonaceous; lacustrine.	0.5	0.5
Fallon fm., upper mbr.	Medium sand, fairly well sorted; gray-tan in top 1 in., tan-gray below; locally rust-stained; lacustrine.	1.1	1.6
Do.	Fine-sandy silt, with several inches of fine sand at base; tan-gray, locally rust-stained in upper part; lacustrine.	0.9	2.5
Fallon fm., lower mbr.	Silt (volcanic ash), light blue-gray, with discontinuous black carbonaceous paper-thin partings. Lacustrine.	0.1	2.6
Do.	Clayey silt in upper half, grading to silty clay in lower half; very dark brown-gray; somewhat carbonaceous; minute lime nodules. Lacustrine.	1.7	4.3
Do.	Volcanic ash zone. 1/4-in. light blue-gray silty ash parting at top, then 1/4-in. dark gray-green silty clay, then 1 in. light blue-gray silty ash with local black carbonaceous partings, then 1 in. pinkish gray silty ash, with local black carbonaceous partings. Lacustrine or swamp deposit.	0.2	4.5
	Disconformity.		

10 gg (continued)

Sehoo fm., upper mbr.?	Clay, pale olive gray; black more or less vertical carbonaceous stains, gradually decreasing in density downward, suggest former roots; gastropod shells in lower several inches. Lacustrine.	1.3	5.8
	Disconformity?		
Sehoo fm., dendritic mbr.?	Clay, olive tan-gray, somewhat carbonaceous; gastropods in upper part; 3/8-in. volcanic ash (silt), light gray, at base. Lacustrine.	1.4	7.2
Do.	Clay, variegated, as follows, from top: 1.3 ft olive-tan-gray clay; 0.25 ft pale gray-green clay with tan laminae; 0.3 ft pale tan-green clay, slightly silty and sandy and salty; 0.4 ft medium greenish gray clay.	2.1	9.3
Sehoo fm., dendritic and/or lower mbr.	Limestone, 1/2-in., at top; over clay, olive tan-gray, somewhat sandy. Base not exposed.	0.9	10.2

10 h (L)

S1/2 sec. 9, T. 19 N., R. 31 E. Nearly level flat NW of Stillwater Point reservoir, 3,905 ± 7 ft altitude. Driller's log of validation well drilled in 1914 by L. W. Crehore for Nevada Standard Oil Company.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm., and (mainly) Sehoo fm.	Yellow clay.	12	12
Sehoo fm., lower mbr.	White "sand" (white ash)	0.5	12.5
Wyemaha fm.	Blue clay.	2	14.5
Do.	Black sand.	4	18.5
Do.	Blue clay.	20	38.5
Do.	Black sand.	22	60.5
Do.	Black clay.	10	70.5
Do.	Blue clay.	20.5	91 (bottom)

10 i

NE1/4NW1/4 sec. 15, T. 19 N., R. 30 E. Stratigraphic section exposed in west bank of Upper Paiute drainage canal, and auger hole to 13 ft below water level in canal. Top of section about 3,905 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm., upper mbr.	Fine sand, compact, non-limy, gray-tan; lacustrine.	0.3	0.3
Do.	Fine sand, some admixed medium and coarse sand; medium sand parting; top 1 to 2 in. limy, remainder non-limy; gray-tan; 1/2-in. clayey silt (ash?) parting at base. Lacustrine.	0.5	0.8
Fallon fm.	Silty very fine to fine sand; grades to fine sand near base; upper part limy. Lacustrine.	2.0	2.8
	Disconformity?		
Fallon fm., lower mbr.	Silty clay, apparently brecciated; non-limy; tan-gray; uniform thickness; lacustrine.	1.2	4.0
	Undulating contact, possible disconformity.		
Do.	Silty clay, dark gray to black, limy; lacustrine.	0.25	4.25
	Undulating contact, possible disconformity.		
Do.	Medium sand, a little coarse sod, slightly limy; dark gray-tan; lacustrine.	0.55	4.6
	Possible disconformity.		
Do.	Silty clay, medium tan-gray; lacustrine.	0.5	5.1
(?)	Silty clay, dark brown-gray; lacustrine.	0.5	5.6

10 i (continued)

	Disconformity.		
Sehoo fm.	Clay, grading to somewhat silty clay in lower part, deep olive-tan-gray mottled with dark gray to black (Mn oxide?). Lacustrine.	5.2	10.8
Do.	Clay, slightly silty, olive tan-gray, locally bright olive-tan, a little dark gray mottling; abundant tiny lime nodules (mostly less than 2 mm diam.). Lacustrine.	1.2	12.0
Do.	Clay, slightly silty, about 50 percent olive tan-gray and 50 percent black mottling; a few tiny lime nodules, otherwise non-limy. Lacustrine.	2.8	14.8
Do.	Clay, mostly light olive gray, some black veining and mottling, moderately abundant to sparse tiny lime nodules(1-3 mm); little silt or sand. Lacustrine.	6.2	21.0
Do.	Silty clay and clay, black, with some olive gray mottling. Lacustrine.	1.7	22.7
Do.	Clay, mostly olive tan-gray, some black mottling.	1.0	23.7
Do., or Wyemaha fm.	Silty clay, silty fine sand, some fine sand, pale olive gray. Aquifer, somewhat artesian. Lacustrine.	1.0	24.7
Do.	Clay, bright olive gray.	0.2	24.9

10 j

NW1/4NW1/4 sec. 13, T. 19 N., R. 29 E.; 3,915 ± 5 ft altitude. 1904 water test borehole, no. 98 in Stabler (1904) report; dry to bottom in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Sand.	1.5	1.5
Do., or Turupah fm., bearing Toyeh soil.	"Alkali hardpan".	2	3.5
Turupah fm. and Sehoo fm., upper mb~.	Sand.	7.5	11
Sehoo fm.	Yellow clay.	14	25

12

SW1/4 sec. 16, T. 19 N., R. 29 E. Stratigraphic section exposed in scarp at SE edge of Carson River floodplain; top of section 3,950 ± 4 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Sehoo fm., upper mbr., bearing Toyeh soil.	Fine and medium sand, much coarse sand and grit and rare small pebbles; most pebbles and granules are dark gray to black tufa (late lithoid tufa of this mbr.); poorly sorted, indistinct parallel-bedded; lacustrine. Bears Toyeh soil and is semi-indurated by it; soil horizons as follows: at top, 0.3± ft vesicular horizon, sandy silt, light gray, with vesicular structure, faint horizontal lamination; sharp boundary, 0.3 to 0.6 ft oxide horizon, like parent material except medium yellow-brown, lime nearly absent at top, increases downward; gradual boundary; 0.5 to 1.0 ft calcareous horizon, light pinkish gray or light yellow-gray, moderate lime concentration, slight cementation, local white streaks and blotches of lime; irregular gradual boundary.	1	1.8±	1.8±

12 (continued)

Sehoo fm., upper mbr.	Medium and fine sand, well sorted, loose (uncemented); very feldspathic, with mineral-rock type characteristic of Carson River; no tufa fragments or nodules; some partings of dark red to black basaltic sand and grit, suggesting derivation from nearby volcanic eruptions (Soda Lake?).	2	1.5±	3.3±
	Disconformity.			
Sehoo fm., dendritic mbr.	Fine sand and fine-medium sand, olive yellow, mostly ostracod shells; some partings of olive-green clay. Lacustrine.	5	1.5±	4.8±
...o., and/or lower mbr.	Silty clay, olive-green; lacustrine.	6	3±	7.8±
Sehoo fm., lower mbr.	Silty clay, drab olive gray; lacustrine.	7	2±	9.8±

NE1/4NE1/4 sec. 17, T. 19 N., R. 29 E. Stratigraphic section exposed in river bank at western edge of Carson River floodplain, 3,945 ± 5 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Turupah fm., bearing Toyeh soil.	Medium sand, light gray. Two parts, with undulating disconformity between; upper part 0.5 to 3 ft thick; indistinctly bedded; lower part 3 to 0.5 ft thick, crossbedded with some coarse sand and grit, many tufa fragments. Eolian. Bears Toyeh soil; top several inches (oxide horizon) almost unindurated; below to 14 to 16 in. depth, weakly cemented by lime (calcareous horizon).	1	3±	3±
	Pronounced disconformity, slightly undulating, crosscuts bedding in underlying unit.			
Wono fm., lower mbr.	Clayey silt, pale gray. Several ostracod-rich sand partings in upper part; 3 in. above base is persistent 1/4 in. parting of silty lacustrine limestone; abundant worm-boring tubules below the limestone parting. Lacustrine.	2	1.4±	4.4±
	Flat, conformable contact.			
Wyemaha fm.	Mostly fine sand and silty fine sand, some silt partings and thin beds of coarse-medium sand. Strongly ripple-marked and layers locally broken as if by wave action in shallow water. Abundant worm tubules. Lacustrine.	3	2.2±	6.6±
	Disconformity.			

13 (continued)

Wyemaha fm.	Medium sand, well sorted, light gray; horizontally, parallel-bedded; 2- to 3-in. silt layer at base. Lenticular and locally absent. Lacustrine.	4	0-1	7.6±
	Disconformity.			
Do.	Medium sand, some fine sand and coarse sand, well sorted, light gray, strongly crossbedded (beds dip northward). Probably eolian.	5	1±	8.6±
Do.	Medium sand, light gray, well sorted; flat, parallel-bedded. Probably eolian.	6	1.5±	10±
Do.	Medium sand, well sorted, strongly crossbedded (beds dip northward). Eolian.	7	1.5±	11.5±
	Medium sand, well sorted; flat, parallel-bedded. Eolian or lacustrine. (Base not exposed).	8	3±	14.5±

14 (L)

NW1/4SW1/4 sec. 17, T. 19 N., R. 29 E. Carson River floodplain. 3,950 ± ft altitude. Driller's log of water well; owner, Warren Whitehead; driller, J. B. Reynolds; well completed March 9, 1949.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Soil and silt.	3	3
Do.	Sand.	11	14
Sehoo fm.	Clay.	14	28
Wyemaha fm.	Sand, hard water.	5	33
Do.	Blue clay.	8	41
Do.	Blue sand and water; foul-smelling.	41	82
Do.	Gray clay, tough.	5	87
Do.	Clean brown sand.	6	93

14 a

NE1/4NW1/4 sec. 13, T. 19 N., R. 28 E.; 3,955 ± 5 ft altitude. 1904 water test borehole, no. 103 in Stabler (1904) report; dry to bottom in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Wyemaha fm.	"Alkali hardpan".	2	2
Do.	Sand and silt.	6	8
Do.	Coarse sand.	6	14

14 b

SE1/4NW1/4 sec. 15, T. 19 N., R. 28 E.; 3,995 ± 5 ft altitude. 2 1/3 miles SE of Soda Lake. 1915 water test borehole, no. 85 in Clark and Lee (1916) report.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm.	Sand and some silt.	37	37
Do.	Adobe.	4	41
Wyemaha fm.(?)	Fairly coarse sharp sand.	3	44

14 c (L)

SE1/4NW1/4 sec. 18, T. 19 N., R. 28 E.; 4,005 ± ft altitude. 1/4 mile SW of Little Soda Lake. Test well no. 96 in Clark and Lee (1916) report.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Indian Lakes fm., volcanic sand complex of Soda Lake.	Medium fine sand, volcanic ash, and fine cinders.	6.5	6.5
Sehoo fm.	Sandy adobe.	7.5	14
Do.	Fine sand, some (a little) adobe or very fine silt.	20	34
Do.	Sandy adobe.	5	39
Do.(?)	Fine sand with a little adobe.	6	45
Do.(?)	Sandy adobe.	4	49
Wyemaha fm.	Fine sharp sand.	9	58

14 d (L)

SW1/4NE1/4 sec. 15, T. 19 N., R. 27 E.; 4,030 ± ft altitude. Driller's log of water well; owner, Alfred Jones; driller, C. J. Brackney; well completed 10/19/47.

Geologic unit	Description	Thickness (feet)	Depth (feet)
		(top)	
Fallon fm. and/or Turupah fm.	"Blow" sand.	4.5	4.5
Sehoo fm., dendritic mbr.	Sand and gravel.	13	17.5
Do.	Fine sand (damp).	3.5	21
Do.	"Cube" clay.	3.5	24.5
Do.(?)	Yellow clay.	12.5	37
Indian Lakes fm., middle mbr.(?)	Coarse sand and gravel.	4	41
Sehoo fm., lower mbr.(?)	Smoke-colored clay.	1	42

14 e

NW1/4NW1/4 sec. 15, T. 19 N., R. 27 E., on floor of small depression, 3,990 ± 5 ft altitude. 1904-1915 water test borehole, no. 136 in Stabler (1904) report; no. 138 in Clark and Lee (1916) report; water level 18 ft below surface in 1904; 9.4 ft in 1915.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., (top part may be younger).	Silt.	2	2
Sehoo fm.	Clay and silt.	2	4
Do.	Clay.	6	10
Do.	Clay and gravel.	2	12
emoha fm.	Sand.	7	19

14 f (L)

NE1/4 sec. 21, T. 19 N., R. 27 E. Terrace above Carson River floodplain. 4,020 ± ft altitude. Driller's log of water well; owner, Ed. Harriman; driller, Shuey Drilling Co.; well completed 10/2/50.

Geologic unit	Description	Thickness (feet)	Depth (feet)
		(top)	
Fallon fm.	Top soil, pit dug by hand.	5	5
	(Carson River alluvium).		
Sehoo fm.	Clay and sandy clay.	33	38
Wyemaha fm.	Sand and gravel; water.	21	59

15 (L)

NW1/4NW1/4 sec. 24, T. 19 N., R. 27 E. Terrace of Carson River, altitude 4,012 ± 3 ft. Driller's log of well on Ken Ogden ranch, drilled in 1944.

Geologic unit	Description	Thickness (feet)	Depth (feet)
		(top)	
Indian Lakes fm.	Sand, water-bearing in lower 4 ft.	18	18
Sehoo fm., dendritic and lower mbrs.	Clay.	14	32
Indian Lakes fm., middle mbr.(?)	Sand.	5	37
Sehoo fm., lower mbr.	Clay.	5	42
Wyemaha fm.	Sand.	12	54
Do.	Clay.	4	58
Do.	Sandy gravel.	7	65
Do.	Sandy pea gravel.	5	70
Do.	Black sand.	12	82
Do.	Clay.	4	86
Do.	Sand and gravel.	7	93
Do.	Clay.	1	94
Do.	Sand and gravel.	6	100
Do.	Sand and clay, interbedded	8	108

15 a (L)

SE1/4NE1/4 sec. 22, T. 19 N., R. 28 E. Carson River floodplain, L. E. Gummow ranch, 3,975 ± 10 ft altitude. Driller's log of test well for oil and gas drilled about 1921 for Fallon Extension Oil & Gas Co.

Geologic unit	Description	Thickness (feet)	Depth (feet) (top)
Fallon and Wyemaha fms.	Sand.	60	60
Wyemaha fm.	Blue clay.	9	69
Do.	Sand.	3	72
Do.	Hard streak.	1	73
Do.	Coarse sand	32	105
Correlation uncertain.	Gray and brown clay.	15	120
Do.	Clay and streaks of sand.	138	258
Do.	Cemented gravel.	20	278
Do.	"Metamorphosed rock".	5	283
Do.	Black conglomerate.	1	284
Do.	Hard rock.	2	286
Do.	Conglomerate.	119	405
Do.	Sandstone.	4	409
Do.	Yellow clay.	3	412
Do.	"Blue strata".	71	483
Do.	Sandstone.	7	490
Do.	Shale.	140	630
Do.	Fine sand.	5	635
Do.	Sandstone.	7	642
Do.	Soft sandstone and sand.	118	760
Do.	Shale.	24	784

15 a (L) (continued)

Correlation uncertain.	Lime and fine green sand.	6	790
Do.	Hard sand.	35	825
Do.	Blue shale.	46	871
Do.	Sandstone.	3	874
Do.	Blue shale; hard streak at base.	124	998
Do.	Gray shale.	13	1011
Do.	Sandstone.	24	1035
Do.	Blue and green shale.	15	1050
Probably either basalt of Rattlesnake Hill or Bunejug fm.	Hard vesicular basalt breccia, cemented by greenish $CaCO_3$.	26	1076

D. F. Hewett visited the well in 1922 and described cuttings as "largely thin-bedded shaly material, probably fine water-laid tuff" to 1,050 ft, where a flow of vesicular basalt was encountered and cored to 1,076 ft. The Oil and Gas Journal of Nov. 20, 1921, reported this well drilling at 1,155 ft in "black and white limestone".

15 b (L)

SW1/4NE1/4 sec. 24, T. 19 N., R. 28 E. Rice ranch, on Carson River floodplain; 3,965 ± 8 ft altitude. Driller's log of water well drilled in 1934, for city of Fallon (owner) under supervision of L. W. Crehore, city engineer.

Geologic unit	Description	Thickness (feet)	Depth (feet)
		(top)	
Fallon fm.	Surface soil.	5	5
Wyemaha fm.	Soft clay.	11	16
Do.	Sand.	3	19
Do.	Soft clay.	16	35
Do.	Hard clay.	3	38
Do.	Soft clay.	2	40
Do.	Sand.	5	45
Do.	Sandy clay.	35	80
Do.	Hard sandy clay.	2	82
Do.	Sand.	16	98
Do.	Sandy clay.	9	107
Do.	Black silt.	17	124
Do.	Fine sand.	4	128
Correlation uncertain.	Soft clay.	17	145
Do.	Sandy clay.	5	150
Do.	Sand, very fine.	10	160
Do.	Clay.	4	164
Do.	Sand.	1	165
Do.	Clay.	15	180
Do.	Sand with streaks of clay.	16	196
Do.	Sand.	2	198
Do.	Sandy clay.	10	208
Do.	Fine sand.	13	221
Do.	Yellow clay.	17	238
Do.	Fine gravel.	4	242
Do.	Green clay.	15	257
Do.	Sand.	13	270
Do.	Sand, water-bearing.	17	287
Do.	Clay.	1	288
Do.	Sand and gravel, water-bearing.	45	333
Do.	Clay.	54	387

15 c

SE1/4NW1/4 sec. 22, T. 19 N., R. 29 E. Stratigraphic section exposed on western side of small island in NE part of S-Line Reservoir. Top of section about 3,955 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm.	Fine-medium to coarse sand, pale gray, incoherent. Locally crossbedded. Eolian. No discernible soil development.	1	3±	3±
Turupah fm., bearing Toyeh soil (eroded).	Fine-medium and medium sand, commonly with abundant granules and some platy fragments of late lithoid tufa of upper mbr. of Sehoo fm., as much as 3/4 in. diam. and 1/8 in. thick. Rare coprolites (coyote?), containing rodent bones. Moderately well bedded, beds dip northward 15°- 25°. Top 0 to 1.2 ft moderately lime-cemented by Cca horizon of Toyeh soil; soil is partly to locally completely eroded; remainer of unit only locally slightly lime-cemented. Eolian.	2	10±	13±
	Sharp contact; disconformity representing subaerial erosion.			
Sehoo fm.	Clay, light greenish gray; lacustrine. Exposed by pit, base not reached.	3	2	15±

NE1/4SE1/4 sec. 22, T. 19 N., R. 29 E. Stratigraphic section exposed by trench and pits into wash-bank scarp on E. side of small valley, one-half mile E. of S-Line Reservoir; top of section 3,955 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm.	Sand, medium and coarse, pale tan-gray; loose and uncemented; 15 percent dark gray fragments of late lithoid tufa of upper mbr., Sehoo fm., including thin tabular ones 1/2 to 3/4 in. wide; indistinctly stratified. Eolian.	1	3	3
	Sharp contact; disconformity.			
Turupah fm., bearing Toyeh soil.	Medium and coarse sand, somewhat silty, poorly sorted, indistinctly bedded; some tufa fragments. Eolian. Top 1.1± ft bears Toyeh soil, which locally is somewhat eroded, vesicular horizon absent; top 2 to 5 in. of soil are oxide horizon, medium gray-brown, a little semiflocculated clayey silt, little or no lime, moderate columnar structure, hard consistence; gradual boundary; remaining 10± in. are calcareous horizon, pinkish gray, moderately calcareous, moderately cemented, hard consistence, with numerous white powdery $CaCO_3$ concentrations, slightly columnar to granular structure; gradual lower boundary. Material below soil is pinkish gray, very weakly indurated.	2	1.5-2.2	5.0±
	Disconformity.			

16 (continued)

Sehoo fm., upper mbr.	Grit and coarse sand, pinkish gray, very well-sorted arkosic, some small pebbles to rarely 1/2 in. diam., typical Carson River assemblage, also many thin platy fragments of dark purplish-red tufa. Top 3 to 4 in. are somewhat cemented by $CaCO_3$ and slightly darker, lower part is uncemented. Lacustrine (deltaic).	3	2.2	7.2±
Do.	Fine sand and silty fine sand, light brownish-yellow; lacustrine.	4	0-0.3	7.4±
Disconformity representing upper mbr. of Indian Lakes fm.	Sharp undulating contact; disconformity representing subaerial erosion.			
Sehoo fm., lower mbr.	Silty clay and clay, medium gray with faint greenish cast; tough, moderately indurated, faintly laminated; well (prismatically) jointed; some ostracods. Lacustrine.	5	2-2.5	9.6±
	Sharp even contact.			
Wyemaha fm.	Medium sand, well-sorted, uncemented, bright orange-yellow; ripple-bedded; lacustrine.	6	1.3	10.9±
Do.	Very coarse, clean sand, pale gray; lacustrine.	7	0.1-0.3	11.1±
Do.	Fine-medium sand, clean, pale yellow-brown-gray; lacustrine.	8	0.3	11.4±
Do.	Silt or silty clay, medium brown-gray; lacustrine.	9	0.05	11.4±

16 (continued)

Nyemaha fm.	Fine-medium sand, clean, pale brown-gray; irregular parting of silt at base. Lacustrine.	10	0.15	11.6±
Do.	Fine-medium sand, clean, pale brown-gray; lacustrine.	11	0.3	11.9±
Do.	Silt and clayey silt, medium yellow-brown-gray lacustrine.	12	0.3	12.2±
Do.	Medium and fine-medium sand, clean, pale brown-gray; lacustrine.	13	1.2	13.4±
Do.	Alternating silt, clayey silt, silty clay and fine sand; 1 in. of clay at base; medium yellow-brown gray; lacustrine.	14	0.7	14.1±
Do.	Medium sand, clean, medium yellow-brown; 1/2 in. of fine sand, light gray, at base, lacustrine.	15	0.8	14.9±
Do.	Coarse-medium sand, very well sorted, pale gray; lacustrine.	16	1.3	16.2±
Do.	1/2 to 1 in. fine sand at top, remainder coarse medium sand, medium sand; light yellow-brown. Lacustrine. (Base not exposed).	17	1.5+	17.7±

16 (S)

Soil profile section at type locality of the Toyeh soil. Location: SE1/4NE1/4 sec. 22, T. 19 N., R. 29 E. Topographic position: Near top of steep E. bank of wash. Slope: 10 percent. Erosion: Slight. Exposure: Vertical channel dug in bank. Altitude: (0 datum for soil profile description) 3,950± 5 ft. Parent material: Eolian sand of Turupah fm. Overlying material: Eolian sand of Fallon fm. Vegetation: Shadscale.

Depth (inches)	Thickness (inches)	Soil horizon	Description
6-0	6	--	Yellow-gray coarse eolian sand; structure, single grain; consistence, loose.
			Abrupt, wavy boundary.
0-3	3	A[1/]	Light gray (7.5 YR 7/2) sandy loam; structure, nearly vesicular; consistence, hard, brittle.
			Abrupt, smooth boundary.
3-7	4	B[1/]	Brown (7.5 YR 5/2) sandy loam; structure, moderately strong to moderate columnar; consistence, hard.
			Clear, smooth boundary.
7-11	4	Cca	Pinkish gray (7.5 YR 6/2) sandy loam; structure, slightly columnar to granular; consistence, hard, brittle, compact.
11-15	4	Cca	Pinkish gray (7.5 YR 6/2) loamy sand; structure, weak columnar to granular; consistence, weakly compacted.
15-22	7	C	Pinkish gray (10 YR 6/2) sand; structure, nearly structureless (nearly single-grain); consistence, loose.
22-40	18	D	Pinkish gray (10 YR 6/2) sand; structure, single grain; consistence, loose.

1/At this locality the B (oxide) horizon has been somewhat eroded, for its thickness ranges from 0 to 5 inches within a few feet; consequently, the A (vesicular) horizon in this profile probably is of post-Toyeh age (this also is suggested by the abnormally weak development of vesicular structure for this soil, compare soil profile section S-18-31-17-2).

Soil profile 16 S, analyses of physical and chemical properties. (Sampling and analyses by M. E. Springer, Division of Soils, University of California, Berkeley, Calif.)

Soil Horizon	Depth inches	Apparent density	Percent <2 mm	pH	Percent N (whole soil)	CO_2 from carbonates (whole soil)
A	0 - 3	1.57	94.4	9.9	0.009	5.2
B & Cca	4 - 11	1.38	95.5	10.0	0.008	2.9
Cca	11 - 15	1.52	98.6	10.1	0.004	1.6
C	15 - 22	1.51	96.9	10.1	0.003	1.1
D	22 - 40	1.47	92.4	9.9	0.001	0.9

Stratigraphic section at type locality of upper member of the Indian Lakes fm. and Harmon School soil; 2/3 mile N. of old Harmon School, SW1/4NW1/4 sec. 24, T. 19 N., R. 29 E. Exposed in banks of branch irrigation canal about 150 ft E. of county road bridge across main irrigation canal. Top of section about 3,932 ± 4 ft altitude. See also soil profile section S-19-29-24-3, at this locality.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., upper mbr., bearing Toyeh soil.	Silt and fine sand, thinly interbedded; lacustrine. Upper 3.5 in. light gray with vesicular structure (vesicular horizon of Toyeh soil); remainder is light brown, with weakly columnar to granular structure, slightly to moderately calcareous (B and upper part of Cca horizons of Toyeh soil).	1±	1±
	Irregular contact.		
Do.	Lithoid tufa, white to pale gray (early lithoid tufa of this mbr.), nearly continuous layer of irregular to mammilary masses commonly 1 to 2 ft diam. and 0.2 to 0.8 ft thick.	0.5±	1.5±
	Disconformity; fairly sharp contact.		
Indian Lakes fm., upper mbr., bearing Harmon School soil.	Colluvium, composed of fragments of the underlying clay. Top 0.2 in. light brown (oxide horizon of Harmon School soil); remainder is light olive gray, has very weak lime concentration in upper 0.7 ft (Cca horizon of same soil).	3±	4.5±
	Disconformity.		
Sehoo fm., dendritic mbr.	Silty clay and clayey silt, light olive gray; strong columnar jointing, joints closer spaced in top 1± ft; lacustrine; base not exposed.	1.5	6.0

17 (S)

Soil-profile section at type locality of Harmon School soil. Location: 2/3 mi. N. of old Harmon schoolhouse; exposed in banks of branch irrigation canal about 150 ft E. of county road bridge across main irrigation canal, SW1/4NW1/4 sec. 24, T. 19 N., R. 29 E. Topographic position: Plain. Slope: None. Erosion: None. Exposure: Vertical channel dug into canal bank. Altitude: 3,932 ± ft. Parent material: Colluvium of upper member of Indian Lakes formation, derived from clay of Sehoo formation. Overlying material: Harmon School soil is buried beneath about 11 in. of silt, fine sand, and basal tufa of upper member of Sehoo formation, in which the stronger Toyeh soil has developed. The Cca horizon of the Toyeh soil extends down into, and somewhat modifies the Harmon School soil. Precipitation: Five inches per year. Natural cover: Sarcobatus vermiculatus, some shadscale (Atriplex confertifolia). Past and present use: none.

Depth (inches)	Thickness (inches)	Soil horizon	Description	Geologic unit
0-3.5	3.5	A	Light gray clay loam; Structure: vesicular, grading to granular in lower part; Consistence: harsh to floury.	Toyeh soil (vesicular horizon).
			Abrupt boundary.	
3.5-8	4.5	B_2	Light brown loam; Structure: weakly columnar to granular; Consistence: hard (dry), brittle.	Toyeh soil on silt and fine sand of upper mbr. of Sehoo fm.
			Gradual boundary.	
8-11	3	B_3-Cca	Light brown loam; Structure: weakly columnar; contains abundant hard tufa masses and some soft lime concretions; Consistence: hard (dry), brittle.	Toyeh soil on silt and early lithoid tufa of upper mbr. of Sehoo fm.: silt probably wave-reworked from B horizon of Harmon School soil.
			Clear boundary.	

17 (S) (continued)

Depth (inches)	Thickness (inches)	Soil horizon	Description	Geologic unit
11-12±	1±	Cca (Toyeh soil) and B(Harmon School soil).	Light brown clay loam; Structure: weakly columnar to granular: contains some white lime coatings and concentrations; Consistence: hard, (dry), brittle. Locally absent (eroded).	B horizon of Harmon School soil, developed in colluvium of upper mbr. of Indian Lakes fm. Cca horizon of Toyeh soil is superposed.
			Clear boundary.	
12-20±	8±	Cca (both soils).	Yellow gray clay loam; Structure: coarse granular; Consistence: moderately hard. Weak to very weak lime coatings and concentrations.	Cca horizon of Harmon School soil and superposed Cca horizon (lower part) of Toyeh soil, on colluvium of upper mbr. of Indian Lakes fm.
			Diffuse boundary.	

Note: Total thickness of colluvium of upper member of Indian Lakes formation is about 32 inches. It rests on clay of the Sehoo formation, which was the source material for the colluvium.

17 a (L)

SE1/4NW1/4 sec. 23, T. 19 N., R. 30 E.; 3,910 ± ft altitude. Driller's log of water well; owner, George Dalton; driller, George Norcutt; well completed September 22, 1947.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon and Sehoo fms.	Yellow clay.	50	50
Wyemaha fm.	Quicksand (aquifer).	5	55
Do.	Black sludge.	6	61
Do.	Quicksand.	5	66
Do.	Black mud.	4.5	70.5
Do.	Fine sand.	14.5	85
Do. (?)	Clay.	5	90

17 b

NW1/4NE1/4 sec. 20, T. 19 N., R. 31 E.; 3,898 ± 5 ft altitude. 1904 water test borehole, no. 51 in Stabler (1904) report; dry in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fellom fm.	"Self-rising ground".	0.5	0.5
Do.	Loam.	7.5	8.0
Sehoo fm.	Yellow clay.	9	17.0
Do.	"White salt" (volcanic ash).	0.2	17.2
Do.	Yellow clay.	11	28.2

17 c

1,900 ft due E. from NW cor. sec. 25, T. 19 N., R. 30 E. Stratigraphic section exposed in drainage canal bank (8-ft exposure), and 23-ft auger hole in Stillwater Slough floodplain. Top of section 3,910 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm.	Silt and silty clay, nearly black (carbonaceous), saline, commonly somewhat sandy in upper 2 ft, grading to silty clay in lower foot. Upper part mainly alluvial, lower part, lacustrine.	1	3	3
Do.	White volcanic ash (silt), soft, unsemented. Lacustrine.	2	0.1	3.1
Fallon fm., lower mbr.	Silty clay, dark grey, nearly black, carbonaceous; lacustrine.	3	3.1	6.2
	Disconformity representing subaerial exposure.			
Soho fm., & Marine mbr.	Clay, light greyish olive-green, except upper 1½ ft is mottled and streaked with black (probably due to ferruginous plant roots); lacustrine.	4	1.8	8.0
Do.	Pale greenish, nearly white silt (volcanic ash?); lacustrine.	5	0.05	8.05
Soho fm., dendritic and/or lower mbr.	Clay, light green to greenish-grey; lacustrine.	6	8.95	17.0

17 c (continued)

ehoo fm., lower mbr.	Silty clay, gray (with slightly greenish cast) to tan-gray, mottled with rusty spots. Rusty-brown sand parting 1 ft from bottom. Lacustrine.	7	5.5	22.5
Do.	Silty clay, greenish gray, with rusty olive gray partings; a few sand and sandy clay partings; lacustrine.	8	1.5	24.0
Do.	White volcanic ash; lacustrine.	9	0.1	24.1
Sehoo fm.	Silty clay similar to unit 8.	10	0.9	25.0
Do.	Pure ostracod sand (coquina); lacustrine.	11	0.9	25.9
emaha fm.	Silty clay, darker greenish gray than unit 10, with rusty tan laminae, some sandy clay partings. Lacustrine. Base not reached.	12	5.1+	31

NE1/4SE1/4 sec. 25, T. 19 N., R. 29 E. Stratigraphic section exposed in bank of drainage canal, and 6-ft auger hole, in delta of second Fallon lake. Top of section 3,931 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm., second lake unit, bearing "I" Drain soil.	Coarse and medium sand, somewhat pebbly, especially in basal 1/2 ft (pebbles to 1/3 in. diam.); well sorted, except top 0.5 ± ft, which is silty; top 1.2 ± ft slightly indurated by "I" Drain soil. Upper part lacustrine, lower part is distributary (deltaic) alluvium.	1	4.1±	4.1±
	Sharp contact, disconformity.			
Fallon fm., first lake unit.	Silt, well-sorted, light brown-grey; some sand-filled desiccation cracks, rusty spots and spots of weak $CaCO_3$ concentration. Lacustrine.	2	1.5	5.6±
Do.	Medium sand grading to fine-medium sand in lower part, well sorted, light yellow-brown-grey. Lacustrine.	3	1.9	7.5±
Turupah fm.	Coarse and medium sand with grit and very small pebbles (typical Carson River assemblage); indistinctly bedded. Alluvium (Carson River channel sand). Base not reached.	4	7	14.5±

18 a

NE1/4NW1/4 sec. 25, T. 19 N., R. 29 E. Stratigraphic section exposed in S. bank of drainage canal, 300 ft due E. of stratigraphic section 18 b, within Sagouspe fault zone (buried); 10.5-ft auger hole below water level in canal. Top of section about 3,926 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm., lower mbr.	Coarse and medium sand, poorly sorted, in top 1± ft medium and fine sand, moderately well sorted, in lower part; light tan-gray. Lacustrine.	2.0±	2.0±
	Disconformity (1 to 3 ft local relief).		
Sehoo fm., upper mbr. possibly bearing Tuyek soil (eroded).	Sandy silt; grades somewhat sandier downward; mottled medium brown-gray and white; much soil-lime concentration (possible Cca horizon of Tuyek soil). Lacustrine.	0.8±	2.8±
Sehoo fm., upper mbr.	Coarse and medium sand, fairly well sorted, gray tan, upper 0.5 ft somewhat rust-stained; [illegible] fragments of white sandy lithoid tuff of this mbr. at base. Lacustrine.	1.9±	4.7±
	Disconformity.		
Sehoo fm., dendritic and/ or lower mbr.	Clay, somewhat silty, light gray (dry); much fissured, with a few sand dikes. Lacustrine.	2.3	6.5±
Do., lower mbr.	Sandy-clayey silt and very silty clay, gray; lacustrine.	1.7	8.2±

18 a (continued)

Lehoo fm., lower mbr.	Clay, nonsandy, light grey; lacustrine.	0.5	8.7±
	Sharp contact.		
Wyemaha fm.	Fine sand grey-brown; lacustrine. Base not reached.	4.7	13.4±

18 b

NE1/4NW1/4 sec. 25, T. 19 N., R. 29 E. Stratigraphic section exposed in N. bank of drainage cone1 cut through low hill in river floodplain; probably just E. of westernmost fault (buried) of Sagouspe fault zone, in a graben of this zone. Top of section about 3,927 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm., lower mbr.	Medium sand, poorly sorted, light gray; grades into unit below. Lacustrine.	3.8	3.8
Do.	Silty clay, tan-gray, slightly limy. Lacustrine.	2.0	5.8
	Sharp contact, possible disconformity.		
Sehoo fm., upper mbr.(?)	Medium and fine sand, gray-tan; lacustrine.	3.4	9.2
Do.	Silt, light tan-gray, slightly limy; has thin sand lens. Lacustrine.	1.0	10.2
Sehoo fm., upper mbr.	Medium sand, well sorted, tan-grey. Lacustrine.	1.3	11.5
Do.	Coarse sand, well sorted; local lens of pebbly coarse sand, pebbles like in present Carson River channel. Lacustrine and alluvial. Base not exposed.	1.5	13.0

18 c

NE1/4NW1/4 sec. 25, T. 19 N., R. 29 E. Stratigraphic section exposed in bank of irrigation canal cut through low hill in river floodplain, and 5-ft auger hole; several hundred ft W. of Segouspe fault zone. Top of section about 3,930 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm., lower mbr.	Silty fine sand and medium sand, graded into underlying unit; light tan-gray. Lacustrine.	2.5±	2.5±
Do.	Medium and fine sand, grayish tan; lacustrine.	0.9	3.4±
Do.	Medium sand, well sorted, gray-tan; lacustrine.	1.5	4.9±
	Disconformity.		
Lahoo fm., dendritic and/ or lower mbrs.	Silty to sandy and silty clay; becomes increasingly sandy downward, with some sand partings; lacustrine. Base not reached.	7.0	11.9±

18 d

SE1/4 sec. 26, T. 19 N., R. 29 E. Stratigraphic section exposed in bank of road cut through low erosion remnant in river floodplain; top of section 3,935 ± ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Turupah fm., bearing Toyeh soil (eroded).	Top 0.1 ft is silty medium sand, light gray, poorly sorted, somewhat calcareous, with nearly vesicular structure (post-Toyeh vesicular horizon). Remainder is medium sand with much coarse sand and grit (mostly fragments of tufa of upper mbr. of Senco fm.); indistinctly bedded. Eolian. Upper 1 1/2 ft somewhat cemented by Toyeh soil (slightly eroded), part below soil almost uncemented.	1	2.3	2.3
Do.	Silty coarse-medium sand, light gray, nearly vesicular structure, slightly calcareous. Eolian.	3	0.2	2.5
	Disconformity.			
Senco fm., upper mbr.	Medium sand, with some granules (tufa and some hard-rock fragments); light yellow-brown gray; slightly lime-cemented. Lacustrine.	4	1.5	5.0
Do.	Oolitic medium sand, medium yellow-brown gray, abundant ostracods, also rare aggregates of tiny thinolite crystals. Lacustrine.	5	0.5-1.5	6.0±
	Sharp, undulatory contact (± 1 1/2 ft maximum local relief); disconformity.			

18 d (continued)

Sehoo fm., lower mbr.	Clay, light gray; moderately indurated, well jointed; closer jointing and sand-filled desiccation cracks in top several inches. Lacustrine.	6	5.3-6.3	11.8±
	Sharp, even, conformable contact.			
Wyemaha fm.	Medium sand, very clean, bright orange-brown yellow in top 2± ft, grading downward to fine-medium sand and some fine sand; light gray to brown-gray; well-bedded to thinly bedded; commonly micaceous. Lacustrine.	7	10±	21.8±
Do.	Clay, medium brown-grey; lacustrine.	8	0.3	22.1±
Do.	Fine, micaceous sand, well sorted; lacustrine. Base not reached.	9	0.3	22.4±

SE1/4NW1/4 sec. 27, T. 19 N., R. 29 E. Stratigraphic section exposed in canal bank and dug pit at base, N. side of outlet canal for "S Line" reservoir; top of section 3,940 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Turupah fm., bearing Toyeh soil (eroded).	Coarse to medium sand, some granules and small fragments to 1/3 in. of tufa of upper mbr., Sehoo fm.: poorly sorted; pale pinkish gray; indistinctly bedded. Eolian. Coherently cemented by calcareous horizon (eroded) of Toyeh soil.	1	1±	1±
	Indistinct, probably disconformable, contact.			
Sehoo fm., upper mbr.	Medium sand, some coarse sand; light yellow-gray; uncemented. Lacustrine.	2	2±	3±
	Sharp, undulatory contact; marked disconformity.			
Sehoo fm., dendritic and/ or lower mbrs.	Clay and silty clay, light brownish gray, commonly with faint greenish cast; tough, moderately indurated; well-bedded, faint varve-like laminations. Lacustrine. Strong prismatic jointing, with joints more closely spaced in upper 1-2 ft; local sand-filled fissures (clastic dikes) along joints.	3	7	10
	Sharp, even, conformable contact.			
Kyamtsa fm.	Medium sand, well-sorted, bright orange-yellow; lacustrine.	4	0.7	10.7
Do.	Fine-medium sand, well-sorted, thinly bedded, light gray; lacustrine.	5	0.7	11.4
Do.	Clay and fine sand, thinly interbedded, light gray to medium brown gray, as follows: 1/2 in. clay, 1 in. fine sand, 1/2 in. clay, 1 in. fine sand, 3/4 in. clay, 6 in. fine clean medium brown-gray sand. Lacustrine. (Base not reached).	6	0.9±	12.3

19 (L)

SW1/4 SW1/4 sec. 30, T. 19 N., R. 29 E. Carson River floodplain, 3,960± ft altitude. Driller's log of water well drilled in 1948; owner, City of Fallon; driller, John Champion.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Surface soil.	5	5
Do.	Fine sand.	7	12
Do.	Sand and gravel, water-bearing.	4	16
Wyemaha fm.	Sandy clay.	4	20
Do.	Fine sand and soft clay.	13	33
Do.	Hard blue clay.	1	34
Do.	Fine sand and soft clay.	3	37
Do.	Fine "tule" sand (with dark-colored organic matter), very bad odor.	32	69
Do.	Coarse sand and gravel; bad-smelling water.	10	79
Do.	Very fine "tule" sand.	4	83
Do.	Coarse sand and gravel; "tule" (swamp) water.	8	91
Do.	Brown clay.	1	92
Do.	Fine sand.	8	100
Do.	Fine sand and gravel, water-bearing.	9	109
Do.	Brown clay.	1	110
Do.	Fine sand.	13	123
Do.	Brown clay.	2	125
Do.	Brown sandy clay.	2	127
Do.	Black soft "tule" (organic) clay.	23	150
Do.	Brown soft sandy "tule" (organic) clay.	15	165
Do.	Coarse sand and gravel.	2	167

19(L) (continued)

Nyemaha fm.	Hard black clay.	3	170
?	Fine-sandy clay and mud.	138	308
?	Soft brown clay.	5	313
?	Fine sand, clay and mud.	17	330
?	Light sandy clay.	2	332
?	Hard brown clay.	2	334
?	Gray clay.	2	336
?	Soft cley and mud.	56	392
?	Sand.	63	455
Probably basalt of Rattlesnake Hill, or Bunejug fm.	Hard black basalt.	3	458
Do.	Porous lava rock.	2	460
Do.	Porous lava, slightly harder.	15	475
Do.	Porous lava.	40	515
Do.	Very hard lava.	6	521

19 a (L)

SE1/4SW1/4 sec. 30, T. 19 N., R. 29 E. Carson River floodplain, 3960± ft altitude. Driller's log of water well, drilled 1941; owner, City of Fallon; driller, John Champion.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Surface soil.	5	5
Do.	Fine sand.	7	12
Do.	Sand and gravel, water-bearing.	4	16
Wyemaha fm.	Sandy clay.	4	20
Do.	Fine sand and soft clay.	13	33
Do.	Hard blue clay.	1	34
Do.	Fine sand and soft clay.	3	37
Do.	Fine "tule" sand (with dark-colored organic matter), very bad odor.	32	69
Do.	Coarse sand and gravel, bad-smelling water.	10	79
Do.	Very fine "tule" sand.	4	83
Do.	Coarse sand and gravel, bad-smelling "tule" water.	8	91
Do.	Brown clay.	1	92
Do.	Fine sand.	8	100
Do.	Fine sand and gravel, water-bearing.	9	109
Do.	Brown clay.	1	110
Do.	Fine sand.	13	123
Do.	Brown clay.	2	125
Do.	Brown sandy clay.	2	127
Do.	Black soft "tule" (organic) clay.	23	150
Do.	Brown, soft, sandy "tule" clay.	15	165
Do.	Coarse sand and gravel.	2	167

19 a (L) (continued)

Wyemaha fm.	Hard black clay.	3	170
?	Fine sand, clay and mud.	138	308
?	Soft brown clay.	5	313
?	Fine sand, clay and mud.	17	330
?	Light sandy clay.	2	332
?	Hard brown clay.	2	334
?	Brown sandstone.	2	336
?	Soft clay, mud and silt.	56	392
?	Soft, sandy, clay.	36	428
?	Two-inch black rocks.	1	429
?	Brown soft clay.	3	432
?	Fine sand.	1	433
?	Hard brown clay.	15	448
Probably basalt of Rattlesnake Hill or Dunajug fm.	Large black rocks.	58	506

19 b

SW1/4SE1/4 sec. 33, T. 19 N., R. 27 E., 4,010 ± 5 ft altitude. 1904 water test borehole, no. 45 in Stabler (1904) report; water level 17.5 ft below surface in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Wyemaha fm.	Sand.	12	12
Do.	Clay and sand.	4	16
Do.	Clay.	1	17
Do.	Sand.	4.5	21.5

NW1/4 sec. 35, T. 19 N., R. 27 E.; 3,995 ± 5 ft altitude. 1904 water test borehole, no. 46 in Stabler (1904) report; water level 11 ft below surface in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Wyemoha fm.	Coarse sand.	2	2
Do.	Sand.	1	3
Do.	Silt loam.	1	4
Do.	"Alkali hardpan".	0.5	4.5
Do.	Sand.	2.5	7
Do.	Coarse sand.	3	10
Do.	Gravel.	2	12

21 (L)

SE1/4NE1/4 sec. 33, T. 19 N., R. 28 E.; Carson River floodplain, 3,982 ± 2 ft altitude. Driller's log of water well, drilled in 1944 by Geo. F. Shuey, Fallon, Nev. Had to seal off lower part of well; using water from pea gravel at 98-100 ft.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm. and Wyemaha fm.	Sand.	22	22
Wyemaha fm.	Clay.	4	26
Do.	Sand with streaks of clay (aquifer).	34	60
Do.	Black sand.	10	70
Do.	Clay.	5	75
Do.	Sand with streaks of clay (aquifer).	18	93
Do.	Clay.	5	98
Do.	Pea gravel (good aquifer).	2	100
Do.	Clay.	3	103
Do.	Gravel.	2	105
Do.	Clay.	2	107
Do.	Black sand with sulfur water.	3	110

21 a

About 200 ft E. of W1/4 cor. sec. 35, T. 19 N., R. 29 E. Composite stratigraphic section exposed by pits in side of erosion remnant in river floodplain, and by septic tank pit at Bauman ranch. Top of section 3,942 ± ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm., 1st lake unit.	Medium sand, well sorted, light brown-gray; tufa fragments. Lacustrine.	0.5±	0.5±
	Disconformity.		
Sehoo fm., upper mbr.	Medium sand, light brown-gray, well sorted; lower 0.1 to 0.5 ft has fragments of tufa of this mbr. and of platy limestone from older mbrs. of Sehoo fm. Lacustrine.	1.5	2.0
Do.	Medium sand, well sorted, thinly-bedded; numerous clay pellets; some ostracod coquina partings and thin lenses with tufa fragments. Lacustrine.	0.6-0.8	2.8
	Sharp, irregular contact, disconformity.		
Sehoo fm., dendritic and lower mbrs.	Clay and silty clay, some interbedded fine sand and silt in lower several feet. Light brownish-gray, faint green cast; ostracods, especially in lower part; thin interbeds and laminae of ostracod coquina near base. Lacustrine.	9.5	12.5±
	Sharp, even, conformable contact.		
Wyemaha fm.	Fine micaceous sand, light brown-gray, some thin interbeds of olive greenish-gray silt. Lacustrine.	2±	14.5±

21b

NE1/4NE1/4 sec. 35, T. 19 N., R. 30 E. Auger hole in Stillwater Slough floodplain, beside Stillwater Reservoir diversion canal. Top of section 3,935 ± 3 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm., upper mbr.	Sandy silt, dark gray. Alluvium	1	1½	1½
	Disconformity			
Fallon fm., lower mbr. probably 2d lake unit.	Clay, silty, dark gray, mottled with tan; highly saline, gypsiferous. White pumiceous ash 1/2 to 1 in. parting about 4 in. above base. Lacustrine.	2	2.2	3.7
Fallon fm., possibly 1st interlake unit.	Clayey, sandy silt, poorly sorted, probably alluvium.	3	0.7	3.9
	Disconformity?			
Fallon fm., probably 1st lake unit	Clayey silt, olive drab; lacustrine.	4	0.2	4.1
fm.	Fine sand, silty in top 0.1 ft, clean below; tan and tan-gray; lacustrine	5	1.2	5.3
fm.	Fine sand, clean, interbedded with silt and silty fine sand, lacustrine.	6	1.2	6.5
fm.	Silty clay and clayey silt, dark brown; lacustrine.	7	0.5	6.6

21b (continued)

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Do.	Silty fine sand, dark tan-gray; lacustrine.	8	0.6	7.5
Do.	Silty clay, dark tan-gray, with some silty-sandy clay; lacustrine.	9	1.3	8.8
	Disconformity.			
Sehoo fm., upper or dendritic mbr.	Clay, dark olive tan mottled with black; lacustrine.	10	0.8	9.6
Do.	Silty clay, olive mottled with dark gray; lacustrine.	11	0.9	10.5
Sehoo fm., dendritic mbr(?)	Clay, olive; lacustrine.	12	2.6	13.1
Sehoo fm., dendritic mbr. and possibly lower mbr.	Clay like unit 12, but with tufa nodules, oolites, and ostracods, especially abundant in top 2 ft. Lacustrine	13	5.0	18.0
Do., probably lower mbr.	Silty clay, olive to olive-tan, tan, and olive tan gray, mottled with rust-brown spots. Lacustrine. Base not reached.	14	2.8	20.8

22

NW1/4SW1/4 sec. 35, T. 19 N., R. 30 E. Auger hole in flat between Schoo Mountain and Stillwater Slough. Top of section 3,919 ± 3 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm., lower mbr.	Clayey fine sand, hard-cemented, dark gray to nearly black, saline. Grades to fine-sandy clay at base. Mainly lacustrine.	1	1.5	1.5
Do.	Clay, locally with silt and a little very fine sand; dark brown-gray to nearly black; saline segregations, especially in lower part. Lacustrine.	2	2.5	4.0
Do.	Do., with abundant lime nodules and salt segregations. Lime nodules are mostly 1/8 to 1/4 in., rarely 1/2 in. diam., irregular forms.	3	1.0	5.0
Do.	Clay, tan-gray, without lime nodules; lacustrine.	4	0.3	5.3
Do.	Clay, silty, black mottled with tan; lacustrine.	5	0.3	5.6
	Alternatively segregating subcapill aquifer.			
Schoo fm., upper mbr.	Clay, greyish olive green mottled with black (carbonaceous matter--probably from vegetation during deposition). Lacustrine.	6	0.2	5.8

22 (continued)

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Sehoo fm., upper mbr.	Silty clay, dark yellow brown, saline; lacustrine.	7	0.6	6.4
Do.	Silty clay, dark yellow brown to dark olive tan, mottled with rusty brown spots; selenite xls and white saline segregations (probably mostly gypsum). Lacustrine.	8	2.3	8.7
Sehoo fm., dendritic mbr.	Silty clay, grading downward to clay; olive. 1.3 to 1.8 ft below top of unit contains whitish partings or segregations, some with abundant ostracods. Lacustrine.	9	4.0	12.7
Do.	Silty clay, mostly olive, some brown spots; lacustrine.	10	1.3	14.0
Do.	Clay, limy (effervesces strongly with HCl); tufa nodules; lacustrine.	11	0.7	14.7
Do.	Clay, olive; lacustrine.	12	1.5	16.2
Sehoo fm., thinolite mbr.	Do., contains minute thinolite crystals. Lacustrine.	13	0.2	16.4
Sehoo fm., lower mbr.	Clay, olive; lacustrine. Base not reached.	14	0.6+	17.0

22a

NE1/4 sec. 36, T. 19 N., R. 30 E. Auger hole in flat between Rainbow Mountain and Stillwater Slough. Top of section 3,917 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm., second and first lake units.	Fine-medium sand; brown, silty in upper few inches; gray-brown lithoid tufa (of first lake unit) fragments on surface; lower 1/2 ft increasingly clayey. Lacustrine.	1	1.2	1.2
Fallon fm., first lake unit.	Clay, dark greenish gray, much carbonaceous matter and some admixed sand, small shell fragments, small fragments of tufa of this unit, lime nodules, oolites, and ostracods; a little coarse sand and grit in uppermost part. Lacustrine.	2	1.8	3.0
	Disconformity			
Sehoo fm., dendritic mbr.	Clay, olive-greenish gray; some partings of entrained coquina and rusty tan sandy clay; lacustrine.	3	3.0	6.0
Sehoo fm., thinolite mbr.	Do., with rare thinolite crystals (about 1/8 in. long by 1/32 in. thick); lacustrine.	4	2.0	8.0
Sehoo fm., lower mbr.	Clay and silty clay, grayer and less green, and siltier than units 3 and 4. 6.4 ft from the top of unit is 1-in. bed of rusty brown fine-medium sand. Lacustrine.	5	8.2	16.2

22a (continued)

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Sehoo fm., lower mbr.	Volcanic ash, silt and very fine sand-sized, pure white; $CaCO_3$-cemented, top very hard, bottom softer; aquifer. Lacustrine.	6	0.1	16.3
Kyanahe fm.	Silt and clayey silt, some interbedded very fine sand; greenish yellow brown to olive gray; some gray green silty clay; abundant ostracods. Lacustrine.	7	2.7	19.0
Do.	Upper 1 ft is silty clay, gray green, mottled with olive tan-gray; abundant ostracods. Below becomes increasingly darker greenish gray downward, with thin interbeds of very fine sand and silt. Slight organic odor. Lacustrine.	8	3.0	22.0
Do.	Silty clay and clay, moderately dark green-gray; lacustrine.	9	2.0	24.0
Do.	Do., but with many thin interbeds of very fine sand, silty fine sand, and silt. Lacustrine. Base not reached.	10	3.7+	27.7+

22b

SW1/4 sec. 31, T. 19 N., R. 31 E. Auger hole in flat N. of Rainier Mountain, at road intersection. Top of section 3,939 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm., upper mbr.	Sand with admixed grit and very small pebbles, loose. Eolian.	1	0.2	0.2
Fallon fm., 1st lake unit, bearing "L" Brain soil.	Fine-medium sand; top ½ in. is silty, light grey, somewhat vesicular, slightly $CaCO_3$-cemented (vesicular horizon of "L" Brain soil), remainder is well sorted, light brown changing downward to tan (lower part of "L" Brain soil profile). Lacustrine.	2	1.0	1.2
Fallon fm., 1st lake unit.	White pumiceous ash; lacustrine.	3	0.1	1
Po(?)	Fine, silty sand, olive tan at top, becoming darker downward; lacustrine.	4	0.7	2.0
	Disconformity			
Sehoo fm., upper and/or dendritic mbrs.	Olive-green clay, with a few sandy clay partings, generally rust-brown colored, 1/2 in. parting of white pumiceous ash 1.9 ft below top of unit. Lacustrine.	5	6.0	8.0
Sehoo fm., dendritic and/or lower mbrs.	Clay, somewhat silty and/or sandy, greenish-gray, with a few interbeds of olive-tan gray clay. Lacustrine.	6	4.5+	12.5

22c

SE1/4SE1/4 sec. 31, T. 19 N., R. 31 E. Auger hole in flat E. of Rainbow Mountain. Top of section 3,933 ± 3 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm., 1st lake unit.	Clayey fine sand grading to fine sandy clay, olive; abundant fragments of platy tufa (generally less than 1/8 in. thick); gray. Lacustrine.	1	0.5	0.5
Sehoo fm.	Clay (little silt), olive; no lime nodules; lacustrine.	2	5.0	5.5
Do., lower mbr.	At top, silty clay, olive gray, grading to clayey fine sand and sandy clay at base; lacustrine.	3	0.6	9.1
Do.	Gritty medium sand (fairly clean medium sand with abundant granules and some pebbles to rarely more than 1/2 in. diam.). Lacustrine.	4	0.7	9.8
Truckee fm.	Probably tuff or altered tuff; top 0.4 ft white, remainder bright orange-yellow.	5	1.2+	11.0

22d (1)

SW1/4SW1/4 sec. 32, T. 19 N., R. 31 E.; on flat 2/3 mile NW from N. end of Rainbow Mountain; 3,935 ± 5 ft altitude. Driller's log of test well for oil and gas. Drilled about 1922 by A. L. Robinson and others for the Calneva Oil Co. and its successors, Calneva Trust Co. and Last Chance Oil Co., to total (reported) depth of about 1,472 ft (reached in Sept. 1924).

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Drift sand	3	3
Sehoo fm.	Yellow clay	6	9
Do.	Brown clay	11	20
Wyemaha fm.	Blue clay	10	30
Wyemaha fm.	Fine black sand	8	38
Retna fm.?	Coarse gravel	5	43
?	"White porous substance, saline precipitant"	12	55
	"Lime conglomerate"	3	58
Dunajuy fm.?	Vesicular or amygdaloidal basalt	104	162
Truckee fm.?	Sandy ashy substance	60	222
Do.	Soft blue shale, occasional chalky layers	136	358
Do.	Brown shale with lead-blue and siliceous [illegible]	81	439
Do.	Brown sandy shale	58	497
Do.	Brown shale	28	525
Do.	"Gray clay consolidation"	10	535
Do.	Brown clay	2	537
Do.	Fine gray sand	21	555
Do.	Hard siliceous silt	1	556
Do.	Brown shale, chalky	9	565

22d (L) (continued)

Geologic unit	Description	Thickness (feet)	Depth (feet)
Trucker fm.?	Fine grey sand	2.5	566.5
Do.	Brown shale, with hard ribs	103.5	671
Do.	Brown sandy shale	33	704
Do.	Hard grey shale; "basaltic injection"	44	748
Do.	Brown sandy shale	12	760

22e

N ½ sec. 4, T. 18 N., R. 31 E. Stratigraphic section exposed by dug pits and trenches in lake bar northeast of Rainbow Mountain. Top of section 3,970 ± 5 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., upper mbr., bearing Toyeh soil.	Pebbly fine-medium sand; pebbles are dendritic tufa and late lithoid tufa of this mbr., Lacustrine. Toyeh soil in top 14± in.	4±	4±
Sehoo fm., dendritic mbr.	Fine-medium and medium sand, well sorted. Lacustrine.	4±	8±
Sehoo fm., lower and dendritic mbrs.	Mostly sandy silt; some clayey silt and silt in top 2 ft.; lacustrine.	6	14±
Sehoo fm., lower lacustrine mbr., transgressive phase.	Medium and fine-medium sand, well sorted, well bedded; lacustrine	5±	19±
	Unconformity.		
Wyemaha fm.	Medium and fine-medium sand, lake or eolian; base not exposed.	1+	20+

SE1/4NW1/4 sec. 2, T. 18 N., R. 30 E. Auger hole in flat north of Sehoo Mountain; altitude, top of section 3,922 ± 3 ft.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm., 2d lake unit.	Fine-medium sand, tan, clean; lacustrine	1	0.6	0.6
Do.	Fine-medium sand, silty to clayey, dark brown-grey; lacustrine.	2	0.6	1.2
Fallon fm., 1st lake unit	Silty clay, dark brown to black; lacustrine	3	0.5	1.7
Do.	Silty clay, tan, with black streaks, and some sandy clay; lacustrine	4	0.8	2.5
Do.	Silty clay, dark brown-grey; lacustrine	5	0.5	3.0
	Disconformity			
Sehoo fm., upper mbr.	Clay, mottled black to olive-tan; lacustrine	6	1.2	4.2
Sehoo fm., dendritic mbr.	Clay, olive, with rusty spots; lacustrine	7	0.8	5.0
Do.	Clay, slightly silty, olive grey; very limy, with ostracods, oolites, and small olive [illegible] tufa nodules (small irregular [illegible] [illegible] resembling [illegible] of oolites) [illegible] thin [illegible] of limy [illegible] which is [illegible] and [illegible] in lower 2 1/2 ft with small selenite segregations. Lacustrine.	8	5.0	10.0
Sehoo fm., thinolite mbr.	Do., but with minute crystals of thinolite tufa.	9	2.0	12.0
Sehoo fm.	Clay, somewhat silty, dark olive-brown gray (more silty and brown, less green than unit 8); sparse mica flakes. Oolites and small tufa nodules common in top 1 ft, none below. Below top 2 ft the clay commonly contains some very thin sand and is very constant in lithology. Lacustrine.	10	11.4	2[illegible]
Do.	White volcanic (pumiceous) ash, cemented, very hard. Lacustrine	11	[illegible]	2[illegible]

24

SE1/4SW1/4 sec. 2, T. 18 N., R. 30 E. Auger hole in flat north of Sehoo Mountain. Top of section 3,926 ± 3 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm., fluvial lake unit.	Fine-medium sand, more or less silty and clayey (esp. near bottom); somewhat soft; removed. Lacustrine.	1	2.0	2.0
	Unconformity.			
Sehoo fm., bentonitic rhy.	Clay, somewhat silty, with tuffaceous, calcite, and carbonate, white grey. Lacustrine.	2	3.0½	5 0½
Sehoo fm., thinolite rhy.	Do., with thinolite tuff crystals, generally ∠ 1/32 in. thick and 1/32 to 1/8 in. long, most abundant 2 ft below top of unit, decreasing upward and downward from this level. Lacustrine.	3	1.5	8.½
Sehoo fm., lower mbr.	Silty clay, becoming more silty downward, white grey. 2 1/4 ft below top of unit is ½ in. layer of grit and small pebbles to 1/4 in. diam. Starting at 4 ft below top of unit are a few pockets of fine-sandy silty clay, and in here 1 1/2 ft thick are scarce. Lacustrine.	4	13	21 ½
Do.	White pumiceous ash, hard-cemented. Lacustrine.	5	0.3	21 ½

24 a

S¼ cor. Sec. 4, T. 18 N., R. 29 E. Stratigraphic section exposed in bank of drainage canal in delta of first Fallon lake. Top of section, 3,945 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm., upper mbr.	Silt and fine sand. Alluvium.	3±	3±
Fallon fm., first lake unit.	Fine sand, clean, gray-brown. Lacustrine.	1	4±
Do.	Fine-sandy clay, dark tan. Lacustrine.	0.3	4.3±
	Sharp contact, disconformity.		
Turupah fm.(?)	Clayey coarse sand, gray brown. Alluvium. Base not exposed.	0.7±	5±

25

¼ mi E of SW cor. sec. 4, T. 18 N., R. 29 E. Stratigraphic section exposed in bank of drainage canal and 2-ft auger hole at bottom of canal. Top of section 3,947 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Pelhon fm., first interlake unit, bearing "I" Drain soil	Fine sand and very fine sand, clean, light brown tan; eolian. Top 1½ ft is weakly indurated by very weak soil profile ("I" Drain soil).	1.5±	1.5±
Pelhon fm., first interlake unit.	Fine sand. Same as above; clean, lacustrine.	1.5±	3±
Do.	Sandy silt, dark-olive gray; lacustrine.	0.3-0.5±	3.5±
	Disconformity.		
Pelhon fm., upper mbr.(?)	Fine-sandy clay, gray-brown; lacustrine. Base not reached.	3±	6.5±

26(L)

NW1/4NW1/4 sec. 5, T. 18 N., R. 29 E., 3,960± ft. altitude. Driller's log of water well; owner, Heck's Meat Market, Fallon; J. B. Reynolds, driller; well completed January 3, 1948.

Geologic unit	Description	Thickness (ft)	Depth (ft)
Fallon fm.	Sand and soil	18	18
Sehoo fm.	Clay	5	23
Wyemaha fm.	Sand, water	22	45
Do.	Black sand	16	61
Do.	Blue sand	24	85
Do.	Blue clay	11	96
Do.	Blue sand, water containing sulphur	6	102

26c(1)

SE1/4NE1/4 sec. 6, T. 18 N., R. 29 E. Carson River floodplain; altitude, 3,960 ± ft. Driller's log of water well; owner, Newlands Agricultural Experiment Station of Univ. of Nevada; well completed December, 1948.

Geologic unit	Description	Thickness (ft)	Depth (ft)
Fallon fm.	Coarse sand, some streaks of clay	20	20
	Alluvium		
Wyemaha fm.	Fine sand	11	31
Do.	"Lahontan" clay	1	32
Do.	Black fine sand	3	35
Do.	Brown clay	1	36
Do.	Black fine ("clean") sand[1]	12	48
Do.	Black "muck" (organic) mud, H_2S odor	2	50

[1] White "granitic" sand coated with black organic matter, with considerable charred (black) wood fragments. Water and decant have H_2S odor.

26b (1)

NE1/4NE1/4 sec. 1, T. 12 S., R. 28 E. Carson River floodplain, altitude, 3,962 ± ft. Driller's log of water well drilled in 1948 by J. S. Reynolds to 110 ft depth; 6-in. casing.

Geologic unit	Description	Thickness (ft)	Depth (ft)
Fallon fm.	Sand	12	21
Sehoo fm.	"White" clay	7	28
Wyemaha fm.	Sand	10	38
Do.	Soft clay	9	47
Do.	Blue sand	18	65
Do.	Black mud	22	87
Do.	Black quartz sand	24	91
Do.	Blue clay	7	98
Do.	Blue sand	12	110

27 (1)

SW1/4SW1/4 sec. 4, T. 18 N., R. 22 E. Driller's log of water well; altitude 3,980± ft, owner, Ben A. Pflum; driller, Hal Meyer; well completed August 18, 1949.

Geologic unit	Description	Thickness (ft)	Depth (ft)
Fallon fm.	Topsoil	10	10
Sehon fm.	Clay, orange	5	15
Wyanche fm.	Fine sand	30	45
Do.	Black clay (swamp)	5	50
Do.	Black sand, fine	5	55
Do.	Green-grey sand	5	60
Do.	Grey sand	5	65
Do.	Coarse sand	2	67
Do.	Black clay	8	75
Do.	Grey sand	5	80
Do.	Fine blue sand (quick)	1	81
Do.	Fine grey sand (quick)	7	90
Do.	Fine grey sand (quick)	18	108
Do.	Green sandy clay	2	110
Do.	Fine grey sand (quick)	4	114
Do.	Blue clay	11	125
Do.	Black and white sand (quick)	22	147
Do.	Black fine sand (quick)	18	165
Do.	Grey coarse and fine sand, rotun	10	175

Mine between sec. 8-9, T. 18 N., R. 22 E. Altitude, top of section, 3,946 ft. Stratigraphic section exposed in bank of drainage canal in Carson River floodplain, and auger hole in bed of canal (lower 3 ft of section).

Geologic unit	Description	Bed no.	Thickness (ft)	Depth (ft)
Fallon fm., upper mbr.	Fine to coarse sand, poorly-sorted, light tan-gray; moderately ($CaCO_3$ cemented. Alluvium.	1	1.2	1.2
Fallon fm., first lake unit	Fine sand, clean, light brown. Lacustrine.	2	0.4	1.6
fm.	Interbedded fine sand (clean, light brown) and sandy silt (medium brown). Lacustrine.	3	1.0	2.6
fm.	Sand, light tan-gray; grades from thinly interbedded very fine sand, silt and clay, to very fine-grained to poorly-sorted coarse sand. Lacustrine, probably prodelta deposit into alluvium. Sharp contact; disconformity	4	4.5	7.1
Lahontan fm., upper mbr.	Clay, olive-brown gray. Lacustrine	5	3+	10.1

1/4 mile W. of NE cor. sec. 11, R. 16 E., R. 23 E. Stratigraphic section exposed in bank of drainage canal, and 3-ft auger hole in canal bed; in delta of 1st and 2d Fallon lakes. Top of section, 3,930± ft. altitude.

Geologic unit	Description	Thickness (ft)	Depth (ft)
Fallon fm.,	Fine and medium sand, poorly indurated		
2d. lake unit	sorted. Light tan-gray. Lacustrine.	3	3
Fallon fm.,	Silty sand. Lacustrine.	2	5
1st lake unit.			
Do.	Clay, brown gray. Lacustrine.	4	9
	Disconformity.		
Sehoo fm.,	Sandy and silty clay. Lacustrine.	5	14
upper mbr.			
Sehoo fm.,	Clay, greenish-gray. Tough,		
dendritic	lacustrine. Hard and massive	3.5	17.5
and/or lower mbrs.			

0.2 mi. E. of 1/2 sec. cor. between sec. 9 and 10, T. 18 N., R. 30 E.

Auger hole in flat north of Fish Cove at 3,927-ft shoreline of the second Yellow Lake. Top of section 3,927± ft altitude.

Geologic unit	Description	Unit no. (Top)	Thickness (ft)	Depth (ft)
Yellow fm., second lake unit.	Fine-medium sand, dark gray to black; silty, carbonaceous; many clay and shell shells.			
	Lacustrine.	1	0.2	0.2
Id.	Fine-medium sand, yellow-brown; lacustrine	2	0.5	0.7
	Disconformity.			
Yellow fm., first lake unit	Silt and clay, dark gray to black (with local rusty spots, along lower part), carbonaceous.			
	Lacustrine.	3	3.6	4.3
Id.	Fine sand, clayey and silty, with some interbeds of fine sandy silt; medium dark yellow-gray.			
	Lacustrine	4	2.1	6.4
	Disconformity.			
Fisher fm., Cantrillia unit.	Clay, [illegible] silty, greenish gray;			
	lacustrine	5	1.0	7.4
Fisher fm., Thinolite unit.	Id., with abundant small Thinolite crystals in upper 0.6 ft and a few in lower part;			
	lacustrine	6	1.6	9.0
Fisher fm., Lower unit.	Silty clay, olive-gray with rust-brown spots;			
	upper part [illegible] lacustrine	7	10.0	19.0
Id.	Medium sand, clayey to clay, rust-brown	8	0.2	19.2
	lacustrine			

29 (continued)

Geologic unit	Description	Unit no.	Thickness (ft)	Depth (ft)
Eocene Sa.	Clay, silty and fine-sandy, green grey;			
Lower mbr.	lower half contains abundant lime nodules and			
	siliceous-bonded pebbles to 1/8 in. diam.;			
	laminated.	9	0.3	19.5
Do.	sandy clay, green-grey, with silty clay,			
	reddish-brown, at base; laminated.	10	0.5	20.0
Upper mbr.	lime mud, clayey, greyish olive-tan;			
	laminated.	11	0.5	20.5
Do.	silt, green, with many lyths;			
	laminated.	12	0.5	21.0
Do.	silt, clayey silt and silty clay, dark			
	greyish-reddish brown, organic matter			
	(reddish to obscuring vegetation)			
	laminated.	13	0.5	21.5
	silty clay, dark greenish-grey, with grey,			
	to locally black, organic matter.			
	laminated.	14	1.5+	24.5

29c

SE1/4NE1/4 sec. [illegible], T. 13 N., R. 30 E. Auger hole in flat north of Fish Cave, at approximate high shoreline of second Fallon Lake. Top of section 3,928± ft altitude.

Stratigraphic unit	Description	Bed no.	Thickness (ft)	Depth (ft)
Fallon Fm.	Sandy silt, dark gray, very saline (sodium			
Lower Unit	carbonate, etc., "salt-crust" ground), [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] sand, [illegible] containing, [illegible] dark gray to [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] sand, clean, [illegible] [illegible] saline [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

29b

SW1/4SW1/4 sec. 10, T. 18 N., R. 30 E. Auger hole in flat north of Fish Cave, 1/4 mile E. of road. Top of section 3,729± ft altitude.

Geologic unit	Description	Unit no. (Top)	Thickness (ft)	Depth (ft)
Fallon fm., lower mbr.	Clayey sand, locustrine	1	0.2	0.2
	Disconformity.			
[illegible] fm.	Clay, quite silty and sandy, greenish tan-gray; quite constant top to bottom, except upper 2 ft deeper olive-green, with a few partings of fine sand and of entrained coquina. Ostracod partings continue to 1 1/2 ft below top. No thinolite. Lacustrine	2	12.3	12.5
Truckee fm.	Silty clay, dark gray to gray-tan, with 1 to 2 in. clean fine sand. Lacustrine	3	1	13.5
[illegible]	Silty clay, jet black; highly carbonaceous mush; organic and some H_2S odor. Lacustrine	4	3	17.5
[illegible]	Silt, jet black, with partings of black fine sand; organic and slight H_2S odor. Lacustrine	5	0.5	18
No.	Fine-medium sand, black; organic and slight H_2S odor; lacustrine	6	0.5	18.5

10

SE1/4SE1/4 sec. 12, T. 18 N., R. 30 E. Stratigraphic section exposed at head of miniature box canyon in gully at northern edge (base) of pediment between Sahoo Mountain and Rainbow Mountain. Top of section 4,020 ± 10 ft altitude.

Geologic unit	Description	Unit no.	Thickness (ft)	Depth (ft)
Lahontan group and Fallon fm., undifferentiated.	Lake gravel and sand and eolian sand, undifferentiated.	1	0 to 10	10±
Pre-Lake Lahontan Quaternary lake deposits, bearing weak Cocoon soil. (much eroded)	Coarse sandstone and pebbly gritstone well cemented, hard, with thick, parallel bedding. Fractures are filled with caliche-like calcium carbonate, resembling that in lower part of the Cca horizon of the Cocoon soil. Probably lacustrine.	2	4±	14±
Pre-Lake Lahontan Quaternary lake deposits	Sand, pebbly sand, and gravel, mostly rather poorly sorted; partly consolidated. Indistinct, parallel bedding. Probably lacustrine.	3	5±	19±
Lo.	White tuffaceous sandstone, hard.	4	0.1	19±
Lo.	Pebbly sand and sand, clean, cross-bedded, partly consolidated; probably lacustrine. Base not exposed	5	5±	24±

Note: Units 2 to 5 probably are shore sediments of a pre-Lake Lahontan Pleistocene lake. At the section locality they dip northward about 2° and are displaced by three small faults, downward on north sides. Twenty feet to north unit 2 is eroded and the lower units grade rapidly to poorly sorted medium gravel dipping about 45° to the southeast, evidently part of a lacustrine bar or spit. This gravel contains pebbles of white tuff and diatomite similar to material in the upper part of the Truckee formation on the pediment to the south. This exposure appears to be in a fault sliver that is bounded by two inferred (concealed) east-west faults near its upper and lower ends (pl. 1, 3c).

30a

T. 18N., R. 30E.

NE1/4NE1/4 sec. 12, ∧ Auger hole in flat at base of saddle between Eagles House and Rainbow Mountain. Top of section 3,945 ± 5 ft altitude.

Geologic unit	Description	Unit no. (top)	Thickness (feet)	Depth (feet)
Fallon fm., first like unit	Fine-medium sand, fairly clean, rusty tan; lacustrine.	1	1.2	1.2
	Disconformity			
Wahco fm.	Clayey sand, grading to very sandy clay,			
Sandwich mbr	drab olive green. Lacustrine.	2	0.6	1.8
Do.	Sandy and silty clay; olive drab; lacustrine	3	3.8	5.6
Wahco fm.,	Medium sand, with some course sand, olive			
lower mbr.	tan; lacustrine	4	0.2	5.8
Do.	Silty fine sand and fine-sandy silt, some clayey silt interbeds; olive, brownish.			
	Lacustrine.	5	0.5	6.3
Do.	Many rubbly sandy layers (about 1 to 2 in. thick) underlain by thin red brown sand, very fossiliferous, some silty tan or clayey, olive gray. Hole stopped by hard sandy layer (apparently thin, perhaps a tufa or cemented layer, probably not a boulder). Lacustrine.	6	0.5	6.8

NW1/4NW1/4 sec. 7 (unsurveyed) T. 18 N., R. 31 E. Stratigraphic section, from dug pits in high-shore sand bar of first Fallon lake and 2-ft auger hole in flat NW. of Rainbow Mountain. Top of section 3,948 ± 3 ft altitude.

Geologic unit	Description	Unit no. (top)	Thickness (feet)	Depth (feet)
Fallon fm., first lake unit.	Pebbly sand, mostly medium sand, fairly clean, some small pebbles, gray platy tufa like in unit 3 and of the local Tertiary volcanic rocks: mostly pumice, some Eagles' House rhyolite and Hunejug formation. Lacustrine.	1	2±	2.0±
Id.	Medium sand, with rare pebbles, tan, grading downward to fine-medium sand, mostly clean, rusty to golden brown, and then to clayey fine-medium sand, olive tan, near base. Lower part contains some fragments of tufa, like in unit 3. Highly saline, much gypsum. Lacustrine.	2	2.5±	4.5±
	Disconformity.			
Sehoo fm., upper mbr.	Lithoid tufa, white to pale gray, discontinuous layer of irregular masses (early lithoid tufa of this mbr.).	3	0-0.3	4.7±
	Disconformity.			
Sehoo fm., dendritic mbr., bearing Toyeh soil (eroded)	Silty clay, olive green; some pale greenish gray interbeds of silt and silty clay, possibly altered volcanic ash; some lenticular limestone partings generally less than 1/8 in. thick and several inches across; very saline; some soil-lime concentration (eroded Cca horizon of Toyeh soil). Lacustrine.	4	0.5	5.2

31 (continued)

Geologic unit	Description	Unit no. (top)	Thickness (feet)	Depth (feet)
Sehoo fm., dendritic and lower mbrs.	Silty and silty sandy clay. Upper several feet has some thin laminae of fine sand, abundant oolites, ostracods, some bumpsty tufa nodules. Some segregations of gypsum and/or other salines. Lacustrine.	5	7.5	12.5±
Sehoo fm., lower mbr.	Pebbly sand and sandy gravel. Upper 1± foot is interbedded clean medium sand and fine-medium sand with pebbles to 1/2 in. diam., lower part is sandy gravel with some pebbles more than 1 in. diam., some gastropod shell fragments. Hole bottomed on cobble or boulder. Lacustrine.	6	2.3	14.8±

SE1/4 sec. 4, T. 18 N., R. 31 E. Stratigraphic section exposed in bank of wash in saddle between Stillwater Range and Rainbow Mountain. Top of section 4,040 ± 10 ft altitude.

Geologic unit	Description	Thickness (feet) (Top)	Depth (feet)
Sehoo fm., dendritic mbr., bearing Toyeh soil.	Fine-medium sand, light gray, with some small pebbles. Lacustrine. Top 14 in. bears Toyeh soil.	4±	4±
Sehoo fm., dendritic mbr., transgressive phase.	Fine gravel, well sorted, containing "heads" of dendritic tufa in situ. Lacustrine.	3±	7±
Sehoo fm., lower mbr.	Fine-medium sand, lacustrine.	0.7±	7.7±
Fe.	Silty fine sand and fine-sandy silt, with many platy limestone and ostracod-rich partings; lacustrine.	1.5±	9.2±
Sehoo fm., lower mbr., transgressive phase.	Fine-medium sand with rare pebbles; well sorted; lacustrine.	3+	12.2±

Mr
500 ft N. of SE cor. sec 9
~~SE¼ sec. 15~~ (unsurveyed), T. 18 N., R. 31 E. Stratigraphic section exposed in wash bank, trenched, at edge of Stillwater Range. Top of section about 4,300 ft altitude.

Geologic unit	Description	Thickness (feet) (top)	Depth (feet)
Sehoo fm., Lower mbr., regressive phase	Sandy gravel (fine-medium sand matrix); lacustrine.	1±	1±
Sehoo fm., Lower mbr., transgressive phase.	Pebble and cobble gravel, coated by cellular tufa; lacustrine	1.5±	2.5±
Do.	Fine-medium sand, loose and unconsol. lacustrine	1.5±	4.0±
	Unconformity.		
Grenache fm., bearing Churchill soil (eroded)	Fine-medium sand, pale yellow grey; eolian; semi-indurated by soil-lime.	4.5±	7±
Sehoo fm.	Boulder gravel, lacustrine.	2±	9±

12

Stratigraphic section at type locality of the dendritic member of the Sehoo formation. S1/2 sec. 17, (unsurveyed) T. 18 N., R. 31 E. Gully beside road on E. side of Rainbow Mountain, several hundred feet S. of 4,160-ft benchmark. Exposed by several trenches, from top of high-shore bar of middle Sehoo lake, down bank of gully, and by pit dug into bed of gully. Top of section 4,175 ± 5 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
		(top)	
Sehoo fm., dendritic mbr., bearing Toyeh soil.	Fine-gravelly sand and sand, well sorted; top 14 inches shows complete profile of Toyeh soil (see soil profile section 6-18-31-17-2) lacustrine; high-shore bar deposit of middle Sehoo lake.	3.5	3.5
Sehoo fm., lower mbr.	Medium sand, well sorted, unconsolidated; lacustrine.	3.5	7
Sehoo fm., lower mbr., transgressive part.	Cobble gravel; lacustrine.	0.5	7.5
Nyemaha fm., bearing Churchill soil	Sandy fine gravel, somewhat clayey and mottled red-brown and gray in upper foot (oxide horizon of Churchill soil); pale yellow brown in next foot and containing some white soil-like concretions and crystals; balance is yellow-gray, with pink soil like (see horizon of Churchill soil). Alluvial gravel.	3.5	11.5
Eetna fm.	Fine gravel, well sorted, with a little soil-like; lacustrine.	1.5	12.5
Do.	Medium gravel, well sorted, with a little lake tufa cementation; lacustrine; base not exposed.	3.5	16.5

32 (5)

Soil-profile section at type profile of Tcyeh soil. Location: About 300 ft E. of road on E. side of Rainbow Mountain, in SE1/2 sec. 17, T. 18 N., R. 31 E. Topographic position: Top of lake bar (highest shoreline of the middle Sehoo lake). Slope: 1 percent. Erosion: Very slight. Exposure: Dug pit. Altitude: 4,176± ft. Parent material: Sand of the dendritic member of the Sehoo formation. Overlying material: None. Vegetation: Greasewood and shadscale, about 6 ft apart; some Artemesia spinescens.

Depth (inches)	Thickness (inches)	Soil horizon	Description
-0.75 to 0	0.75	(lag gravel)	Fine gravel and loose sand.
			Abrupt, smooth boundary.
0-3	3	A	Pinkish gray (7.5 YR 7/2) very fine gravelly sandy loam; structure, vesicular, weakly platy; consistence, hard, brittle, harsh, floury.
			Abrupt, smooth boundary.
3-7	4	B	Light reddish brown (5 YR 6/3) gravelly sandy loam; structure, slightly columnar to medium cloddy; consistence, hard, slightly harsh. Some soft $CaCO_3$ segregation in lower part.
			Clear, smooth boundary.
7-14	7	Cca	Light red-brown (5 YR 6/3) gravelly sand; structure, weakly columnar; consistence, friable. Slight $CaCO_3$ accumulation.
14-35	21	C	Pinkish-gray (5 YR 6/2) gravelly sand; structure, single-grain; consistence, loose

Soil profile 7 (8)

Analyses of physical and chemical properties

(Sampling and analyses by M. E. Springer, Division of Soils, Univ. of California, Berkeley, Calif.)

Soil horizon	Depth inches	Apparent density	Percent <2mm	pH	Percent N (whole soil)	C/N	CO_2 from carbonates (whole soil)	Particle size distribution. Percentage of <2mm (organic matter and carbonate-free soil)						
								2.0-1.0 mm	1.0-0.5 mm	0.5-0.25 mm	0.25-0.10 mm	0.10-0.05 mm	0.05-0.002 mm	<0.002 mm
A	0-3	1.34	97.1	8.8	0.013	7.0	3.5	2.5	6.1	12.1	39.9	13.3	14.4	11.7
B	3-7	1.47	96.3	8.8	0.016	7.3	2.3	1.8	3.9	9.2	41.2	12.9	6.4	24.6
Cn	7-14	1.44	95.5	8.9	0.012	6.9	2.5	2.1	3.6	6.6	52.2	13.9	6.2	13.4
D	14-24	1.16	92.9	9.0	0.009	8.6	3.3	2.2	3.5	8.3	59.2	13.7	6.9	6.4
D	24-35	1.43	93.9	8.9	0.009	8.4	3.1							

Partial stratigraphic section in lower part of the Bruckse formation in gulch on N. side of hill about 1/4 mile S. of Eagles House, in SE1/4SW1/4 sec. 13, T. 18 N.; R. 30 E.; top of section starts about 1,750 ft due east of SW corner of sec. 13, at about 4,430 ft altitude.

Description	Unit no.	Thickness (feet)
Silicified tuff--variegated red, gray, buff, and white ("Wonderstone"); well bedded; poorly exposed, forms top of hill.	1	10±
Oolitic tuffaceous sandstone, generally sandier than unit 3. Pink-gray to gray-pink. Hard, well to massively bedded, some beds ripple-marked. Together with oolite below forms cliffs 20 to 30 ft high.	2	25±
Oolitic limestone with some interbedded tuffaceous calcareous sandstone. Gray-pink to gray. Hard, well to massively bedded.	3	5±
Tuffaceous sandstone. Pink, light gray to tan-gray and greenish tan-gray. Upper 18± ft oolitic and generally calcareous, well indurated. Lower 12 ft soft, though generally somewhat better indurated than some 7 below.	4	30±
Interbedded material like zones 6 and 7.	5	2±
Clay, some soft siltstone; greyish light red; semi-indurated, thinly bedded.	6	3±
Tuffaceous sandstone, soft, semi-indurated; medium-grained sand with silky matrix; probably large percentage of silicic tuff. Mostly pale red, especially upper part, with bright green grains. Well bedded. Some silty and clayey beds, especially in lower part, where many beds are gray and greenish gray.	7	35±
Dense fine-grained limestone. Light tan-gray.	8	1/0 ±
Clay, buff-yellow (base not exposed)	9	3±
(Fault cuts off section at base.)		
	Approximate total thickness	115

Stratigraphic section at type locality for Churchill soil (see also soil profile section 34(S)), and also for lower members of the Sehoo and Indian Lakes formations. Exposed in east bank of wash on west side of Churchill Valley, 75 ft S. of small basalt hill in middle of valley, SE1/4SW1/4 sec. 15, T. 18 N., R. 30 E. Top of section 4,190 ± 10 ft altitude.

Geologic unit	Description	Thickness (feet) (top)	Depth (feet)
lower mbr. of Sehoo fm., bearing Loyeh soil.	Medium sand and fine sand, limy, very pale yellowish gray; some small pebbles; abundant small snail shells (Parapholyx nevadensis); at base a few heads of "coralline" tufa (grew upward in the sand from bases attached to cobbles or pebbles in gravel bed below). Lacustrine. Top 6± in. is weakly cemented by $CaCO_3$ (See horizon of Loyeh soil, slightly eroded). (About 250 ft to south the sand contains dendritic tufa heads of dendritic mbr. of Sehoo fm., but the high shore of the dendritic Sehoo lake is not clearly marked.)	4	4
Lower mbr. of Sehoo fm., transgressive phase.	Cobble and pebble gravel with sandy matrix; limy; thin lime coatings on roundstones, and uppermost cobbles and pebbles have thin, discontinuous coatings of coralline tufa. Roundstones are all basalt or fine-grained ss. Unit thickens to 5 ft thick 30 ft to north and host contains some small boulders.	2	6
Do.	Medium sand, very pale gray (10YR6/2 to 10YR7/2); very clean, almost no pebbles or silt; very incoherent, except somewhat lime-cemented in top 1 to 1 1/2 ft. Probably lacustrine.	10	16
Indian Lakes fm., lower mbr.	Medium sand with some pebbles and cobbles; light tan-gray; slightly indurated; probably alluvial.	2.5	18.5
Do.	Medium sand with some pebbles and cobbles, especially at base; bright yellow-tan; moderately coherent; some weak lime concentrations. Alluvial. Thickens to 5 ft thick 30 ft to south. Sharp contact, dips about 10° southward: slight disconformity.	1.5	20

34 (continued)

Geologic unit	Description	Thickness (feet)	Depth (feet)
Wyanske fm., bearing Churchill soil.	Medium sand, with a few pebbles, cobbles, and angular rock fragments in uppermost 1 ft. Grains mostly frosted. Eolian. Top 4± ft bears the Churchill soil, which is exceptionally well preserved here (see soil profile 34S). Upper few feet of the sand are partly indurated by the soil development, lower part of the sand is unconsolidated. Mostly parallel bedded, dipping several degrees southward; locally crossbedded. Base of sand not exposed here, but about 60 ft to north it overlies boulder gravel of the Batza formation.	16	40

A (2)

Type locality of Churchill soil (sampled and described by M. E. Springer and R. B. Morrison). Location: East bank of wash gully on west side of Churchill Valley, SW1/4SW1/4 sec. 15, T. 18 N., R. 30 E. Topographic position: Steep bank of small mountain wash. Exposure: Vertical channel dug into bank. Altitude: 4190 ft. Parent material: Eolian sand of the Wyemaha formation. Overlying material: Churchill soil is buried under 15 to 20 ft of sand and gravel of the Indian Lakes and Sahoo formations (see stratigraphic section 18-30-15-A).

Depth (inches)	Thickness (inches)	Soil horizon	Description
4-6	10	B_2	Light brown (7.5YR6/3) medium sand with sparse rock fragments; structure, very coarse angular blocky; consistence, hard. Clear, smooth boundary.
6-12	6	B_3	Light brown (7.5YR6/3) medium sand with few white lime concretions; structure, almost massive. Clear smooth boundary.
12-92	80	Cca	Very pale brown (10YR7/3) medium sand with white lime streaks, "concretions", and irregular concentrations; structure, structureless, massive to single-grain; consistence, very hard to loose. Lime concentration decreases somewhat irregularly from top to bottom; upper 2 ft have numerous to common lime streaks, concretions, etc., and are massive and locally almost cemented, and very hard to hard; remainder of thickness has some to few lime concentrations, is single-grain and slightly hard to loose, except for a 1/2 in. to 1 in. white $CaSO_3$ cemented layer at 45-50 in. depth. Diffuse boundary.
92-112	20	C	Light grey medium sand (10YR7/2) with sparse white lime streaks and concretions; structure, single-grain; Consistence, loose.

Soil-profile 34 (5) chemical and physical properties.

(Churchill soil as the type locality)

(Sampling and analyses by M. E. Springer, University of California, Berkeley, Calif.

Depth Inches	Apparent Density	Per-cent <2mm	pH	Percent N (Whole Soil)	C/N	CO_2 from Carbonates (Whole Soil)	Particle size distribution Percentage of <2mm (Organic matter and carbonate free soil) 2.0-1.0 mm	1.0-0.5 mm	0.5-0.25 mm	0.25-0.10 mm	0.10-0.05 mm	0.05-0.002 mm	<0.002 mm
							1.3	44.1	13.7	17.9	1.7	0.8	0.5
0 - 6	1.69	98.6	8.6	0.012	9.6	0.3	0.9	8.5	16.5	44.0	12.3	10.0	7.8
6 - 12	1.50	97.8	8.6	0.009	8.7	1.3	0.5	10.9	19.4	37.8	10.9	4.6	15.9
12 - 18	1.45	97.8	8.9	0.005	---	3.8	0.6	20.8	21.3	35.2	9.3	4.1	8.7
18 - 24	1.47	96.9	8.9	0.005	8.8	3.5							
24 - 36	1.53	98.3	9.1	0.002			0.4	16.5	28.2	42.0	8.2	3.0	3.7
36 - 48	1.56	99.4	9.1	0.002		0.3							
50 - 62	1.56	99.9	8.9	0.002		0.1							
62 - 80	1.49	99.8	8.8	0.002		0.1							
80 - 92	1.55	100.0	9.0	0.002		0.2							
92 - 112	1.53	100.0	9.2	0.001		0.4							

NW1/4 sec. 17, T. 18 N., R. 30 E. Stratigraphic section exposed in bank of drainage canal, and 5-ft auger hole, in flat near former course of Stillwater Slough. Top of section 3,924 ± 3 ft altitude.

Geologic unit	Description	Unit no. (Top)	Thickness (feet)	Depth (feet)
Fallon fm., second lake unit.	Fine-medium sand, light tan-gray, uncemented, clean parallel-bedded, lacustrine.	1	2	2
Fallon fm., first lake unit	Clay, silty and sandy, brown, many small shells. Lacustrine.	2	0.9	2.9
Do.	Fine sand, gray, some small-shell fragments; lacustrine; weak $CaCO_3$ cementation (probably soil lime).	3	0.5	3.4
Do.	Fine-medium sand, brown. Lacustrine.	4	0.8	4.2
Turupah fm., bearing Toyah soil.	Fine sand, eolian, somewhat $CaCO_3$ cemented, especially in lower foot (Cca horizon of Toyah soil).	5	2	6.2
Do.	Sand, fine and fine-medium relatively uncemented. Eolian.	6	0.9	7.1
	Disconformity.			
Sehoo fm., upper unit.	Clay, brown, many small [illegible] Lacustrine.	7	0.5	7.6
	Disconformity.			
Sehoo fm., dendritic mbr.	Clay, greenish-gray; top several feet darker and more or less carbonaceous. Lacustrine.	8	6.3	13.9
Sehoo fm., thinolite mbr.	Lean clay, rust-colored, and with light gray limy segregations; lacustrine.	9	0.3	14.2

35 (continued)

Geologic unit	Description	Unit no. (Top)	Thickness (feet)	Depth (feet)
Sehoo fm., thinolite mbr.	Lean clay, greenish gray, with small crystals and crystal aggregates of thinolite and small rounded tufa nodules; some ostracod coquina partings, commonly showing rusty staining. Lacustrine.	10	0.5	14.7
Sehoo fm., lower mbr.	Clay, olive-green gray; lacustrine.	11	4+	18.7
	(Base not reached)			

(Analyzed by Dr. M. E. Springer, Division of Soils, University of California, Berkeley.)

Soil horizon	Depth inches	Apparent density	Percent <2 mm	pH	Percent N (whole soil)	C/N	CO_2 from carbonates (whole soil)	Particle size distribution: Percentage of <2 mm (soil free of organic matter and carbonate) 2.0-1.0 mm	1.0-0.5 mm	0.5-0.25 mm	0.25-0.10 mm	0.10-0.05 mm	0.05-0.002 mm	0.002 mm
A (vesicular)	0-1	1.51	91.1	9.6	0.006		0.4							
B (oxide)	1-3	1.46	94.9	9.5	0.006	10.0	0.3	11.2	8.2	7.0	34.1	20.1	8.5	10.3
Cca	3-7	1.51	99.6	9.5	0.006	8.9	0.3	13.2	18.2	10.2	26.1	16.3	6.9	9.2
	7-13	1.58	95.7	9.6	0.006	6.9	0.2	17.6	28.4	12.0	22.7	9.2	3.6	6.5
	13		87.5	9.6	0.005		0.2	20.2	31.4	13.4	16.3	5.9	3.4	3.5

36 (S)

Type soil-profile section of the "L" Brain soil. Location: Northwestern part of Navair Flat, NE1/4 sec. 16, T. 18 N., R. 29 E. Topographic position: Nearly level plain. Exposure: Dug pit. Erosion: none. Altitude: 3,939 ± 3 ft. Parent material: Alluvial sand coeval with the first lake unit of the Fallon formation. Overlying material: 1 1/2 in. of eolian sand of the upper mbr. of Fallon formation.

Depth (inches)	Thickness (inches)	Soil horizon	Description
-1.5- 0	1.5		Sand, single-grain, loose (overlying material).
0-1	1	A	Brown (7.5YR5/2) sandy loam; structure, weak vesicular.
1-3	2	A	Brown (7.5YR5/4) sandy loam; structure, weak granular; consistence, friable, slightly hard. Abrupt, smooth boundary.
3-7	4	B	Brown (7.5YR5/2) loamy sand; structure, very weak granular; consistence, slightly hard.
7-13	6	C or(?)	Brown (7.5YR5/2) sand; structure, very weak granular; consistence, mainly loose.

East edge of sec. 17, T. 18 N., R. 29 E. Carson River floodplain. Stratigraphic section exposed in drainage canal bank, and auger hole in canal bed (lower 3 ft of section). Top of section 3,944± ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm., first lake unit	Fine-medium sand grading downward to fine sand; light tan-gray; well indurated. Lacustrine.	1	2.2	2.2
	Sharp contact.			
Do.	Clay, brown, with rust-colored (iron) and black (carbonaceous) stains.	2	2.1	4.3
Do. or Turupah fm.	Coarse sand, with some granules (of quartz, basalt, and other volcanic rocks, subrounded), clean. Alluvial or lacustrine.	3	1.0	5.3
	Disconformity			
Sehoo fm., upper mbr.	Clay, brown, sandy; medium to fine-sand grains of quartz and volcanic rocks. Lacustrine.	4	1.0	6.3
Do.	Fine sand, clean, dark grayish yellow-brown, alluvial or lacustrine.	5	0.5	6.8
Do.	Medium and coarse sand, lacustrine.	6	1.1±	7.9

36b

NE1/4SW1/4 sec. 23, T. 18 N., R. 27 E. Edge of small playa; altitude 3,975 ft, 1904 water test borehole, no. 34 in Stabler (1904) rept; water level 19 ft below surface in 1904.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm. (top foot or so) and Wyemaha fm.	"Alkali hardpan"	6.5	6.5
Wyemaha fm.	Sand	2	8.5
Do.	"Alkali hardpan"	4	12.5
Do.	Clay	3.5	16.0
Do.	Sand	4	20.0
Do.	Black sand	0.5	20.5
Do.	Sand	0.5	21

NE cor. sec. 20, T. 16 N., R. 25 E. Top of section 3,940 ft altitude. Carson River floodplain. Stratigraphic section exposed in drainage canal bank, a[illegible] 5.5 ft auger hole.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm., first lake unit	Coarse, medium, and fine sand, moderately well to poorly sorted, light tan-gray to locally dark-gray; mostly rather lenticular parallel-bedded, but some small-scale crossbedding near base. Lacustrine.	1	2.5	2.5
	Sharp contact, undulating; minor disconformity.			
Do.	Fine sand and very fine sand, grading downward to silt; some irregular thin nodules and gypsum(?) segregations; iron stains; at base 1-in. of medium sand, very dark gray. Lacustrine.	2	[illegible]	[illegible]
Do.	Sand and silt, interbedded, parallel bedded. At top, 0.5-1 ft silty coarse to fine sand, poorly sorted, medium gray; then 2½ in. tan-gray silt. [illegible] ½-1 in. fine-medium sand, clean, loose; then ½ in. blue-gray to light tan gray silt, and silty clay. Some iron stains, abundant gypsum segregations [illegible]. Lacustrine.	3	1-1.5	4.[illegible]
	Sharp contact, possible minor disconformity			

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
[illegible] fm., first lake unit	Silt (very fine sandy silt to slightly clayey silt); top 0.3-0.5 ft dark gray to nearly black, due to carbonaceous matter, and sandy; remainder tan-gray and better sorted; some interbeds of fine sand in lower part. A few gypsum segregations, iron stains, laminations. Sharp contact, possible disconformity.	4	1-1.5	3.5±
Bonneyville fm.	Coarse sand, medium sand, local beds of fine-pebbly coarse to medium sand, clean, well-sorted (loose); pebbles rarely to one-half inch diameter, typical Green River assemblage). Top 3 in. locally well-cemented. Alluvium (Green River channel sand). Sharp contact, disconformity.	5	3-4	5±
[illegible] fm., upper unit.	Grey-brown "sandy" clay, compact; iron stains, some carbonaceous matter (black stains). [illegible]	6	0.7-1.5	36±
Bo.	Fine sand, clean, grey-brown, laminated	7	0.7	37±
Bo.	Medium sand, clean, gray-brown, laminations	8	0.7	38±
Bo.	Silt, [illegible]	9	0.3	[illegible]

37a

N. edge of sec. 20, T. 17 N., R. 29 E. Carson River floodplain. Stratigraphic section exposed in drainage canal bank, and 3-ft auger hole. Top of section 3,931 ft altitude.

Geologic unit	Description	Bed no.	Thickness (feet)	Depth (feet)
Fallon Fm., upper mbr.	Silt to medium-fine sand, poorly sorted, poorly bedded. Alluvium	1	0.9	[illegible]
Fallon Fm., second lake unit.	Medium sand, clean, uncemented. Lacustrine.	2	0.5	[illegible]
Fallon Fm., first lake unit.	Clay, light tan grey. Local iron stains, some gypsum(?) [illegible] [illegible]. Lacustrine.	3	[illegible]	[illegible]
Fe.	Clay, very dark brown (nearly black), much carbonaceous matter. Lacustrine.	4	1.6	[illegible]
Turupah Fm.	Coarse to medium sand, [illegible] light tan-grey, grading to [illegible] medium sand at middle [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]	5	[illegible]	[illegible]

18 (1)

SW1/4 sec. 23, T. 18 N., R. 29 E. U. S. Naval Auxiliary Air Station. 3,925± ft altitude. Driller's log of best well for water; owner, U. S. Dept. Navy, well completed Feb. 1944.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Sand	12	12
Sehoo fm.	Sandy clay	36	48
Nyranha fm.	Black clay	101	149
Correlation uncertain	Gray clay	67	216
Do.	Soft black clay	53	269
Do.	Gray clay	76	345
Do.	Gray clay and lime marl	45	390
Do.	Black clay	92	482
Do.	Greenish gray clay	146	628
Do.	Gray-green clay	50	678
Do.	Gray clay	175	853
Do.	Brown clay	25	878
Do.	Gray clay	30	908
Do.	Brown-gray clay	25	933
Do.	Gray clay and streaks of mud	75	1008
Do.	Gray clay	44	1052
Do.	Gray clay and sandy clay	54	1106
Do.	Gray clay	173	1279
Do.	Fine sand	3	1282
Do.	Gray clay	32	1314

Geologic unit	Description	Thickness (feet)	Depth (feet)
Do.	Sandy gray clay	27	1327
Do.	Gray clay	3	1330
Do.	Sandy gray clay	32	1362
Do.	Gray clay	27	1389
Do.	Sandstone	1	1390
Do.	Gray clay	27	1417
Do.	Soft gray clay	9	1426
Do.	Hard gray clay and sand	2	1428
Do.	Soft gray clay	12	1440
Do.	Gray clay	4	1444
Do.	Gray clay, some sand streaks	28	1472
Do.	Gritty green clay	From 1472	

Total depth reported to be about 1,[illegible] ft. Fragments of what appeared to be fine-grained water-laid tuff are said to have been obtained from bottom of well.

Floor of Hidden Cave, on E. side of Eetza Mountain, SW1/4 sec. 21, T. 18 N., R. 30 E. Stratigraphic section exposed in west wall of pit H6 (dug in 1951 by Univ. of California-U. S. Geological Survey archaeologic field party). Top of section 4,105 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm. (correlated with upper mbr.)	Silt, some very fine and fine sand; light gray; eolian. Sparse pebble-size angular fragments of red basalt and tufa, probably roof fragments. Well bedded, beds thin and parallel. Somewhat coherent, tends to form soft blocky fragments. Thickness somewhat variable, due to deposition over irregular surface sloping slightly toward interior of cave; top surface originally was almost level	1	0.7	0.7
Fallon fm. (correlated with 2nd lake unit).	"Top midden": rat and bat guano, with abundant Typhetum (cattail) leaves, some clam shells, a few feathers, and Lovelock (cultural) Phase occupation debris. (Over 95 percent of artifacts recovered from the cave in 1951 were from this bed.)	2	0.3± 0.15	1.0±
Fallon fm. (correlated with 1st intralake unit).	Silt and fine sand, poorly sorted, with many angular roof fragments, probably [illegible]. Local [illegible] bedding, 0.1 to 0.2 in. thick, about [illegible] below top. Rather coherent sandy silt (eolian?) layer about 0.2 ft. thick in middle of unit, with dark brown staining and local midden parting at top. Very few artifacts of Lovelock Phase.	3	[illegible]	[illegible]

39 (continued)

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm., (correlated with 1st interlake unit).	Silt and fine sand, probably eolian; well bedded, bedding thin and parallel.	4	0.2±	1.9±
Fallon fm., correlated with 1st lake unit.	"32-inch midden". One or more midden layers, interstratified with silt and fine sand (eolian?) and with rocky silt (slopewash) layers. Continuous midden 0.2±0.15 ft thick at top; several discontinuous local midden partings below. Midden consists of rotted bat guano, plant matter (tule, cane, cattail, etc.), numerous Lovelock Phase artifacts.	5	1.1±	3.0
Turupah fm.	Loess, silt and fine sand, pale grey, evenly and horizontally bedded (eolian), with local lenticular layers of gravelly silt (slopewash); latter increase in proportion toward cave portal; 3/4 in. midden parting in middle. Unit thickens to more than 3 ft in east wall of pit and here contains a white pumiceous ash parting, 1/4 to 1/2-in. thick, several inches above base. Two obsidian points obtained from upper part of unit.	6	1.7±	4.7±
Indian Lakes fm., (late Sehoo correlative).	Coarse to fine gravel, poorly sorted, much interstitial sand and silt, many blocks and boulders, some 1.5 ft diam. Slopewash. Thickens to more than 1 ft in east wall of pit. Local discontinuous rotted guano partings. Numerous bones of small mammals and birds, and 4 projectile points (Hidden Cave Phase of Grosscup, 1956).	7	0.9±	5.4±

39 (continued)

Stratigraphic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Seboo fm., dendritic mbr. (regressive phase).	Very fine pebble gravel (lacustrine); well sorted (little interstitial sand or silt), unconsolidated. Thickens to about 1/2 ft at east wall of pit, and here is underlain by 0.6 ft of lake sand. Barren of artifacts.	8	0.1	5.7
Seboo fm., dendritic mbr.	At top, 1/2 ft of massive lacustrine limestone, white; smooth upper surface, dips eastward 15°±, thickening to less than 5" at east wall of pit. Well bedded, beds about 1 in. thick, thinning to eastward; numerous fish bones. In lower several inches thinly bedded brown lake clay alternates with partings of white, soft lacustrine limestone; this part becomes increasingly clayey eastward. Barren of artifacts.	9	0.5	6
Indian Lake fm., middle mbr.	Coarse gravel; very poorly sorted, containing angular blocks and boulders as much as 10 in. but mostly less than 6 in. in diam., with [illegible] interstitial sand and silt; slightly limy-cemented. Slope wash. Barren of artifacts. Yielded a block of cellulose nuts. Thins rapidly eastward to 0-0.1 ft thick at east wall of pit.	10	1.7	6
Seboo fm., lower mbr. (regressive phase).	Pebbly lake sand, clean, unconsolidated. No artifacts.	11	0.5	7

39 (continued)

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Sehoo fm., lower mbr. (high-level phase).	lake clay, silt and silty fine sand. Top third is faintly laminated brown clay; middle third is brown silt; lower third, brown silty fine sand. Clay is slightly gypsiferous. Nearly uniform in thickness over pit floor, but dips several degrees westward. Upper surface broken by deep gaping cracks, probably desiccation cracks, and these are filled by gravelly sand from bed 11. A bird bone was found in one of the cracks.	12	1.3	9.7
Sehoo fm., lower mbr. (transgressive phase).	Pebble and cobble lake gravel. Roundstones locally derived, mainly of red volcanic breccia and black andesite similar to that in walls of Hidden Cave and exposed in slopes above the cave. Unmeasured. Base not exposed.	13	1+	11.7

SE1/4SW1/4 sec. 21, T. 18 N., R. 30 E. Stratigraphic section exposed in bank at head of main gulch in Eetza Mountain, east of Hidden Cove. Top of section, 4,224 ft altitude, is crest of a Lake Lahontan bar built across divide between bedrock ridges to the east and west.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Sehoo fm. lower mbr., regressive phase, bearing Toyeh soil.	Coarse gravel, fairly clean, mostly pebbles and cobbles of Dunejug Fm.; also some cellular tufa; some have waterworn coatings of lithoid tufa (reworked from unit 3). Lacustrine. Top 1-1 1/2 ft bears Toyeh soil.	1	3 ± 1	3[illegible]
Sehoo fm. lower mbr., transgressive phase.	Cellular tufa in situ (irregular layer). Lacustrine	2	1/2±	3 1/2±
Sehoo fm., lower mbr. transgressive phase	Coarse gravel, many cobbles to 10 in. diam.; matrix of fairly well-sorted medium gravel; coated and cemented with lithoid tufa, especially in upper part. Lacustrine. Unit thins rapidly southeastward from crest of bar.	3	1 1/2±	5±
Do.	Medium gravel with a few cobbles. (Base of unit poorly exposed.)	4	[illegible]	[illegible]
Do.	Coarse gravel, with some small boulders to 1½ ft. No tufa coatings except very thin discontinuous white ones which may be secondary. Lacustrine.	5	[illegible]	[illegible]
Do.	Medium gravel with some cobbles (poorly exposed). Lacustrine.	6	3±	[illegible]

40 (continued)

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Do.	Boulder gravel, many boulders more than 1 ft diam. Lacustrine.	7	3½	16 1/2±
Do.	Grit and fine gravel, well-cemented by lithoid tufa. Lacustrine.	8	1/2±	17±
Do.	Coarse and medium gravel, interbedded. Coarse layers contain cobbles and small boulders to about 1 ft diam. Some lithoid tufa coatings on [illegible], but evidently reworked, not deposited in situ. Lacustrine.	9	5	22±
Do.	Medium gravel, sandy, especially in lower part. Lacustrine.	10	3	25±
	Disconformity			
Wyemaha Fm., bearing Churchill soil (eroded).	Fine-medium and medium sand, pale yellow-gray; eolian. Considerable $CaCO_3$ cementation in upper part (Cca horizon of Churchill soil). Decreasing downward to slight local cementation near bottom; $CaCO_3$ generally forms [illegible] in thickish streaks, irregular nodules, and some cylindrical bodies 1/8 to 1 in. in diam. (apparently precipitated around former roots). Base not exposed.	11	10+	35+

Note: Several units range considerably in thickness within short distances; the thicknesses cited are averages in the line of section. The contact between the Wyemaha Fm. and gravel of the Sehoo Fm. is well exposed in several small tributary gulches within a quarter of a mile to the southeast.

SE1/4 sec. 21, T. 18 N., R. 30 E. Stratigraphic section exposed in bank of small gully on SW side of saddle at N. end of Hyemans Valley (figs. 5 and 7). Top of section about 3,995 ft altitude. Lower 2 ft is dug pit.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fr. dendritic mbr.	Scattering of water-rounded pebbles and cobbles. Lacustrine	0.2±	0 ±
Do.	Very fine gravel and grit cemented by litheid tufa; top several inches most densely cemented, weathers into slabs; pebbles mostly less than 1 in.; many dendritic tufa fragments; parallel-bedded. Lacustrine.	2.2	2 ±
	Disconformity(?)		
Do.	Medium gravel, pebbles mostly under 1 1/2 in., rarely over 2 in., some dendritic tufa fragments, rare "rondorstone"; locally cross-bedded. Lacustrine.	1.0	3 ±
Do.	Medium sand with a few pebbles in top 6 in., grit (well sorted) in lower 4 in. Numerous dendritic tufa "heads" 2 in. to 1 ft. diam., commonly slightly water-worn. Lacustrine.	1.0	4 ±
Do.	Silt, pale buff-gray. Lacustrine.	0.5	4 ±
Do.	Fine sand with some partings of grit-sized, also some extremely-fine pebbles. Lacustrine.	0.1	5 ±
	Small disconformity(?)		

40a (continued)

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., dendritic mbr.	Silt, tan-gray, with thin beds of ostracod-rich fine sand and silty clay; some lime nodules in upper 4 in. to 6 in. Lacustrine.	0.6±	7.2±
Do.	Silty clay, tan-gray, no lime nodules. Lacustrine.	1.2±	8 ±
Sehoo fm., thinolite mbr.(?)	Alternating silty clay, silt, and fine sand; some lime nodules, commonly crystalline and resembling thinolite. Lacustrine.	0.5	8 ½
Do.	Fine sand and fine sandy silt, thin pockets of silty clay and silt; ostracods. Top half has crystalline lime nodules (having sharp terminated crystals, resembling thinolite, though forms generally are obscure). No lime nodules in lower half. Lacustrine.	0.6	9 ±
Sehoo fm., lower mbr.	Fine sand and fine-medium sand, well sorted, with some grit and pebbles in lower part. Lacustrine.	2.6	11 ±
Do.	Coarse, mildly gravel; lacustrine, base not sighted	0.5	12 ±

SE1/4 sec. 21, T. 16 N., R. 30 E. Stratigraphic section exposed in bank of small gully at SW side of saddle at N. end of [illegible] Valley. Top of section about 3,996 ft altitude. Lower 2 ft is dug pit.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., dendritic mbr.	Very fine gravel, well sorted, lithoid-tufa-cemented; top several inches densely cemented, weathers to slabs. Lacustrine.	3.0±	3±
	Unconformity representing subaerial exposure.		
Sehoo fm., thinolite mbr., bearing incipient (unnamed) soil.	Silty clay, grading to silt, clayey silt and fine sand in lower part. Some pebbles and platy lime partings locally at top and near base, drusy-crystalline tufa nodules at base (no definite thinolite seen, however). Lacustrine. Top several inches are weathered and show incipient soil development--clay is checked, stained rusty red-brown, and has some white [illegible] lime concentrations.	[illegible]	[illegible]
Sehoo fm., lower mbr.	[illegible] fine gravel, well sorted, uncemented; [illegible] 1/2 in. [illegible]. Lacustrine.	[illegible]	[illegible]
Do.	[illegible]	[illegible]	[illegible]
Do.	Coarse pebble gravel. Lacustrine. Base not reached.	[illegible]	[illegible]

Mile

SW1/4 sec. 21, T. 18 N., R. 30 E. Stratigraphic section exposed in bank of ...ge gully on SW side of saddle at N. end of Quesha Valley (figs. 5 and 7). Top of section about 4,600 ft.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm. Hendrix member, Ubr., bearing Doyel soil.	Pebbly medium sand, and coarse sand; top 1½ ft partly indurated by Doyel soil. Lacustrine.	3.0	3.0
Sehoo fm. Hendrix member, Ubr.	Very fine gravel, dominantly cemented by lutoid tufa; pinches out a few ft to SE. Lacustrine.	0.7	3.7
	Unconformity.		
Sehoo fm. lower mbr.	Fine sand and very fine sand, thickens slightly southward, 1/2 to 1 ft, parting of platy limestone and limestone nodules at base. Lacustrine.	2.1	5.8
Ls.	Clayey silt and silty clay, very hard; thin lenticles of ostracod coquinite; clay in lower part. Lacustrine	0.8	6.6
Ve.	Clayey silt and silty clay, hard; ostracods. Lacustrine.	0.7	7
Ls.	[illegible]		
Do.	Fine sand, silty, [illegible] silty; some ostracods. Lacustrine.	1.4	7
Ls.	Pebbly fine sand. Lacustrine.	1.0	8
Do.	Medium gravel, mostly limestone; base not exposed.	0.7	8

SE1/4 sec. 21, T. 19 N., R. 30 E. Stratigraphic section exposed in bank of large gully at SW side of saddle at N. end of Wyemaha Valley (figs. 5 and 7). Type area of Wyemaha and Sehoo fms. Top of section about 4,012 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., dendritic mbr., bearing Toyeh soil.	Gravel. Medium gravel in top 1 ft and bottom 1 ft., remainder is grit, very well sorted, with some small pebbles. Many unworn fragments of dendritic tufa. Lacustrine. Top 1½ ft bears Toyeh soil.	7½	7½
	Disconformity.		
Sehoo fm., lower mbr., bearing incipient (unnamed) soil (eroded)	Clayey silt and silt, very limy. Top appears weathered (incipient soil devel., somewhat eroded). Mainly silt in lower part. Limestone parting at base. Lacustrine.	1.5	[illegible]
Sehoo fm., [illegible]er mbr.	Very fine sand and fine sand, with some very fine sandy silt in middle; [illegible]. Lacustrine.	0.7	[illegible]
Do.	Mainly medium sand. Lacustrine.	[illegible]	[illegible]
Do.	Medium gravel and medium sand. Lacustrine.	[illegible]	[illegible]
	Disconformity.		
Wyemaha fm., bearing Churchill soil (eroded).	Fine-medium and medium sand, pale yellow-gray, somewhat crossbedded. Eolian. Firmly indurated, with irregularly disseminated white soil-lime concentrations, commonly along bedding, joints, etc. (eroded Cca horizon of Churchill soil). Base not exposed.	[illegible]	[illegible]

42a

SE¼ sec. 21, T. 18 S., R. 30 E. Stratigraphic section exposed in bank of large gully on SW side of saddle at N. end of Wyemba Valley (figs. 5 and 7). Type area for Wyemba and Schoo fms. Top of section about 4,015 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Schoo fm., dendritic mbr. bearing Toyah soil.	Grit with small pebbles; very thin coatings of lithoid tufa on pebbles in top 1 to 2-in. Unusually abundant waterworn fragments of platy lacustrine limestone. Lacustrine. Top 1½ ft bears Toyah soil.	2.5	2.5
Schoo fm. dendritic mbr.	Grit sand with ranging amounts of medium and fine gravel, most commonly gravel, uncemented, many waterworn fragments of dendritic tufa. Lacustrine.	6.5	9.0
Do.	Fine sand, rare pebbles, with dendritic tufa heads (several in. diam.) in situ at base. Lacustrine.	0.4±	9.4±
Do.(?)	Thin sandy silt, some clayey silt, very hard, with many platy limestone pisolites, especially at top and bottom. Lacustrine.	0.6	10.0±
	Disconformity?		
Schoo fm., lower mbr.	Grit, top part generally has 1 to 2-in. pebbles to ½-in. diam., many fragments of platy limestone, and a few 'mud-balls' of sandy silt; 4 in. clean medium sand at base. Locally the whole unit is entirely clean medium sand with cross-bedded layers. Lacustrine.	3.0±	13.0±

40 (continued)

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., Lower mbr.	Medium sand with some pebbles 1/2 in. to 1 in. Lacustrine.	1.0±	9.5±
Do.	Medium gravel, sandy, with cobbles to 4 in. diam. at base. Lacustrine.	1.5	11.0±
	Disconformity.		
Wyemaha fm., bearing Churchill soil (eroded).	Fine-medium and medium sand, pale yellow-gray. Eolian. Semi-indurated by Cca horizon of Churchill soil (eroded). Base not exposed.	1.5	12.5±

SE1/4 sec. 21, T. 10 N., R. 30 E. Stratigraphic section exposed in bank of large gully at SW side of saddle at N. end of Kyemahe Valley (figs. 5 and 7). Type area for Kyemahe and Schoo fms. Top of section about 4,025 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Schoo fm., dendritic mbr., bearing Toyeh soil.	Grit and very fine gravel, sandy near base; many water-worn fragments of dendritic tufa, some "wonderstone" pebbles. Lacustrine. Top 14 in. bears Toyeh soil.	6.5	6.5
Schoo fm., dendritic mbr.	Silt and sandy silt, very limy, with thin limestone partings. Dendritic tufa *in situ*. Lacustrine.	1.7	8.2
	Disconformity.		
Schoo fm., lower mbr.	Medium sand, slightly pebbly, well sorted; some "wonderstone" pebbles. Lacustrine.	1.5	9.7
Do.	Very fine gravel in top 1/2 to 1/2 ft, cobble gravel below (cobbles to 8 in.); mostly dendritic fm. but some "wonderstone" pebbles. Lacustrine.	1.0+	10.7+
Do.	Medium sand, well sorted, a few pebbles. Lacustrine.	0.5+	11.2+
	Disconformity.		
Kyemahe fm., bearing Churchill soil (eroded).	Fine-medium and medium sand, pale yellow-gray, remnant cross-bedded. Eolian (semi-indurated, with irregularly discontinuous soil-like concentrations (eroded Cca horizon of Churchill soil). Base not exposed.	6	17.2+

42c

SW1/4 sec. 22, T. 13 N., R. 30 E. Stratigraphic section exposed in bank of large gully on SW side of saddle at N. end of Wyemaha Valley (figs. 5 and 7). Type area for Wyemaha and Sehoo fms. Top of section about 4,047 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., dendritic mbr., bearing Toyeh soil.	Fine sand, some medium sand, somewhat silty; a few pebbles, especially near base. Lacustrine. Top 1½ ft bears Toyeh soil.	2.5±	2.5±
Sehoo fm., dendritic mbr.	Silt and sandy silt, very limy, with some thin limestone partings. Lacustrine.	1.5	4.0±
Sehoo fm., dendritic and lower mbrs.(?)	Pebbly sand, grading to medium gravel at base, containing some cobbles. Lacustrine.	2.0	6.0±
	Disconformity.		
Sehoo fm., bearing Cavehill soil (eroded)	Medium and fine-grained sand, pale yellow-gray, resistant cross-bedded. Eolian. Lens eroded for burrows of Cavehill soil. Base not exposed.	6.0	12.0±

43

SE1/4 sec. 21, T. 18 N., R. 30 E. Stratigraphic section exposed in bank of large gully at SW side of saddle at N. end of Kyemaha Valley (figs. 5 and 7). Type area for Kyemaha and Sehoo fms. Top of section about 4,045 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., dendritic mbr., bearing Foyeh soil.	Gravel and pebbly sand. Top 2½ ft is very fine gravel and grit with some pebbles over 1 1/2 in.; middle part coarse sand and grit with some small pebbles, well sorted and uncemented; lower 2½ ft is sandy medium gravel grading to clean medium gravel at base. Many vesicular fragments of dendritic tufa throughout. Lenticular. Top 1½ ft bears Foyeh soil.	8.5	8.5
	Disconformity.		
Sehoo fm., dendritic mbr.	Silt and sandy silt, a little clayey silt, very limy, with platy limestone partings. Limestone partings 1-2 in. thick at base cracks top of underlying gravel. Lenticular.	1.3½	9.8½
Sehoo fm., dendritic and lower mbr.	Medium gravel, grading to cobble gravel at base. Many "rondavelstone" pebbles in upper part, few in lower. Lenticular. The lower cobble gravel member (lying like bar), is separated from the upper gravel by a 1 to 1 1/2 ft mid layer; also the lower gravel contains and roundstones are almost entirely from Buneju fm., indicating derivation from above drift from NE. Derivation of upper gravel (and its "rondavelstone" pebbles) is unknown. Lower gravel is lower mbr.; upper gravel probably is dendritic mbr.	2.0	11.8½

43 (continued)

Geologic unit	Description	Thickness (feet)	Depth (feet)
Schoo fm., lower mbr.	Pebbly medium sand; lenticular.	0.5	12.3±
	Disconformity.		
Wymaho fm., bearing Churchill soil (eroded)	Fine-medium and medium sand, pale yellow-gray, somewhat crossbedded. Pebbly. Semi-indurated, especially in upper 5± ft because of lime cementation by Gnc horizon (eroded) of Churchill soil. Base not exposed.	17	29.3±

SE1/4 sec. 21, T. 18 N., R. 30 E. Stratigraphic section exposed in bank of large gully at SW side of saddle at W. end of Wyemaha Valley (Figs. 5 and 7). Type area for Wyemaha and Sehoo fms. Top of section about 4,045 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., dendritic mbr., bearing Loyeh soil.	Dendritic tufa "heads" to 1½ ft diam., widely scattered, more or less in silty matrix on or in upper part of layer of silt and fine sand, very limy, with platy limestone partings. Lacustrine. Bears Loyeh soil.	0.5-1	0.7±
Sehoo fm., dendritic and lower mbrs.	Medium gravel, sandy, unconsol; no dendritic tufa, abundant "rendezstone" pebbles throughout, a few cobbles near base. Lacustrine.	2.5	3.4±
Sehoo fm., lower mbr.	Medium sand, well sorted, with a few pebbles. Lacustrine.	1.5	4.7±
	Disconformity.		
Wyemaha fm., bearing Churchill soil (eroded).	Sandy fine and medium gravel and medium sand, interbedded. Mildly silicified, though some sand beds may be soliun. Sand-irrupted in top 8± ft by irregular soil-like concretionary "roots" of eroded Cm horizon of Churchill soil. Base not exposed.	16.5	21.4±

Note: Between this section and stratigraphic section 18-30-21-23, about 2 ft below base of this section, boulder gravel of the Pauna fm. is exposed in the road bed. The boulders have thin lithoid tufa coatings, generally less than 1/16 in. thick.

SE1/4 sec. 21, T. 18 N., R. 30 E. Stratigraphic section exposed in bank of large gully at SW side of saddle at W. end of Wyemaha Valley (figs. 5 and 7). Type area for Wyemaha and Sehoo fms. Top of section about 4,048 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., dendritic mbr. bearing Toyeh soil.	Sand. Lacustrine. Bears Toyeh soil.	0.5	0.5
Sehoo fm., dendritic mbr.	Silty sand, some sandy silt, very limy, with limestone partings, especially at base. Lacustrine.	2.0±	2.5±
Do.	Pebbly medium sand. Lacustrine.	2.0	4.5±
Sehoo fm., lower mbr.	Medium gravel and cobble gravel.	1.5-2.0	6.5±
Do.	Pebbly medium sand.	1.0±	7.5±
	Unconformity.		
Wyemaha fm., bearing Churchill soil (eroded)	Fine-medium and medium sand, pale yellow-gray, somewhat consolidated. Eolian. Lime-indurated in upper 6± ft. because of caliche-like concentration in lower part of Churchill soil (upper part has been eroded).	12	19[illegible]

44

SE1/4 sec. 21, T. 18 N., R. 30 E. Stratigraphic section exposed in bank of large gully at SW side of saddle at W. end of Nyencha Valley (figs. 5 and 7). Type area for Nyencha and Sehoo fms. Top of section about 4,046 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., dendritic mbr.	Dendritic tufa "heads" in situ, to 1½ ft diam. Lacustrine.	0.5±	0.5±
Do.	Sandy silt and fine sand, limestone partings. Lacustrine.	1.0±	1.5±
Sehoo fm., dendritic and lower mbrs.	Sand. Lacustrine.	1.5	3.0±
Sehoo fm., lower mbr.	Very sandy cobble gravel. Lacustrine.	1.0±	4.0±
	Disconformity.		
Nyencha fm., bearing Churchill soil (eroded)	Medium and fine-medium sand; eolian; locally soil-influenced by lower part of (or horizon of Churchill soil.	6.0±	10.0±
Otse fm.	Medium gravel well sorted. Lacustrine	0.5±	10.5±
Do.	Boulder gravel. Lacustrine.	1.5±	12.0±
Dalute fm. bearing Cocoon soil (eroded)	Boulder gravel, poorly sorted, bearing mammoth eroded Cocoon soil. In top several inches the interstitial fines are reddish brown, somewhat clayey, and nearly lime-free--the lower part of the B horizon of this soil; beneath is densely caliche cement--the top of the Cca horizon. Base not exposed.	1.5	13.5±

SE1/4 sec. 21, T. 18 N., R. 30 E. Stratigraphic section exposed in bank of large gully on W side of saddle at N. end of Nyamba Valley (figs. 5 and 7). Type area for Nyumba and Sehoo fms. Top of section about 4,0[illegible] ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., dendritic mbr., overlying Toyeh soil.	Fine gravel and grit, loosing Toyeh soil. Lacustrine.	0.5	0.5
do.	Silty fine sand, very limy, with limestone partings. Lacustrine.	1.5±	2.±±
Sehoo fm., dendritic and lower mbrs.	Sand with some pebbles. Lacustrine.	2.5±	4.5±
Sehoo fm., lower mbr.	Fine gravel and medium gravel, sandy. Lacustrine.	0.5-0.8	5.2±
do.	Coarse pebble gravel with some small cobbles. Disconformity.	0.5±	5.7±
Nyumba fm., overlying Churchill soil (eroded)	Medium sand, with some pebbly sand; probably mostly silica, partly clastic. Sand-indurated by lower part of the horizon of Churchill soil. Less than exposed.	4.0	9.7±

44b

SW1/4 sec. 21, T. 18 S., R. 30 E. Stratigraphic section exposed in bank of large gully on SW side of saddle at N. end of Wyemaha Valley. Type area for Wyemaha and Schoo fms. Top of section about 4,035 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Schoo fm., Sandritic mbr. bearing loyah soil.	Fine sand and silty fine sand, very limy, with limestone partings. Lacustrine.	0.5-1.0	0.5±
Schoo fm., Sandritic and/or lower mbr.	Fine gravel well sorted, with "rotdarrows" pebbles. Lacustrine.	0.5	1.0±
Schoo fm., lower mbr.	Cobble gravel, with lime-coatings (from gravel below) partly worn off. Lacustrine.	1.0±	2.0±
	Unconformity		
Retsam fm. bearing Yaurehill soil (eroded)	Cobble gravel (cobbles to 8 in. dia.), lacustrine, with irregularly recipiere chalky-white lime concretions, probably relicts of the horizon of Yaurehill soil. Base not exposed.	2.0	4.0±

44c

SW1/4 sec. 21, T. 18 N., R. 30 E. Stratigraphic section exposed in bank of large gully at SW side of saddle at N. end of Wyemba Valley (figs. 5 and 7). Type area for Wyemba and Sehoo fms. Top of section about 4,062 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., dendritic mbr. bearing Toyeh soil.	Fine gravel, lacustrine. Top 3 1/2 ft is very fine gravel and fine gravel with pebbles mostly 1/4 to 2-in., and many platy limestone fragments; middle 1 1/2± ft is coarse and medium sand, grit, and some fine gravel; bottom 1± ft is fine gravel with some platy limestone fragments and many wormworm dendritic tufa fragments. Top 14± in. bears Toyeh soil.	5.9	5.9
Sehoo fm., dendritic mbr.	Fine sand, very limy, with limestone partings. Lacustrine.	0.5-1.0	6±

SE¼ sec. 21, T. 18 N., R. 17 E. Stratigraphic section exposed in bank of large gully at SW side of saddle at N. end of Kyarabo Valley. Type area for Nyemaha and Schoo fms. Top of section about 4,057 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Schoo fm., Dendritic mbr., bearing Type-h soil.	Lacustrine limestone, thinly bedded, with much sand. Lacustrine. Bears Type-h soil.	1.0±	1.0±
Schoo fm., lower mbr.	Pebbly medium sand (some "honeycomb" pebbles). Lacustrine.	1.6	2.6±
Schoo fm., lower mbr.	Medium pebble gravel to cobble gravel. Lacustrine. Thin lithoid tufa coatings on roundstones; some roundstones are pecked; "pebbles" and cobbles-abraded. Unit rapidly plunges downward to SE and becomes finer and sandy.	4.0	6.6±

44e

SE1/4 sec. 21, T. 18 N., R. 30 E. Stratigraphic section exposed in bank of large gully at SW side of saddle at N. end of Wyemaha Valley (figs. 5 and 7). Type area for Wyemaha and Schoo fms. Top of section about 4,052 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Schoo fm., dendritic mbr.	Lacustrine limestone, thinly bedded, with silty fine sand. Lacustrine.	1.0±	1.0±
Schoo fm., lower mbr.	Pebbly sand. Lacustrine.	1.5±	2.5±
Schoo fm., lower mbr.	Medium gravel, with thin lithoid tuff coatings. Lacustrine.	2.0±	4.5±
Do.	Medium sand. Lacustrine.	1.5±	6.0±
	Disconformity		
Wyemaha fm., bearing Churchill ash (erratic)	Medium sand, pale yellow-gray; solid. Faintly indurated by few lenses of Churchill ash. Does not appear	2.0	8.0±

SE1/4NE1/4 sec. 21, T. 18 N., R. 30 E. Generalized stratigraphic section in bank of large gulch on N. side of saddle between Eetza Mtn. and Sehoo Mtn. (western end of Wyemaha Valley). In type area for Wyemaha and Sehoo fms. Top of section 4,020± 10 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Sehoo fm., dendritic mbr., bearing Toyeh soil.	At surface, 1/2 to 1 in. of small pebbles and grit (lag gravel). Underneath is 3 1/2± in. of sandy silt, slightly calcareous, with some grit and some pebbles, having prominent vesicular structure (vesicular horizon of Toyeh soil). Balance is grit and fine gravel with some water-rounded fragments of dendritic tufa; upper 4± in. is slightly oxidized and leached of lime and grades into 8 to 11 in. horizon showing moderate soil-lime accumulation. (B and Cca horizons of Toyeh soil.) Incoherent.	1	1.3-±	1.3±
Sehoo fm., dendritic and lower mbrs.	Medium and fine sand and silt, highly calcareous, with many [illegible] well-cemented by $CaCO_3$ and several [illegible] (generally 1/2 to 1 in. thick) of nearly pure limestone. Abundant [illegible] and small-shell fragments. Top 1/2 ft contains many water-rounded fragments of dendritic tufa. Incoherent.	2	9±	[illegible]

Disconformity

45 (continued)

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Sehoo fm., lower mbr.	Coarse cobbly gravel with sand; well-rounded roundstones; locally dips about 10° (lake bar). Lacustrine.	3	1 1/2	6
Do.	Medium to fine-medium sand, clean, with a few small pebbles; evenly bedded; some ostracods. Lacustrine.	4	1-3	8
	Disconformity			
Wyanska fm., bearing Churchill soil (eroded).	Fine-medium to medium sand, well-sorted, pale yellow-gray; evenly bedded (not crossbedded); bedding approx. flat, or dips 1° - 2° downslope (to NW). No fossils. Sand is almost entirely quartz grains, well frosted. Eolian. Upper several feet are partly indurated by soil-like cementation, with irregularly dispersed white $CaCO_3$ segregations, especially along bedding planes, joint cracks, and as dispersed cylindrical holes 1/4 to 3/4 in. diam.; latter have hollow centers (generally less than 1/8 in. diam.), and probably were precipitated about former roots. Most segregations terminate irregularly downward; lower 1-2' normally are poorly indurated. Base not exposed.	5	8	16

45a

SW1/4NW1/4 sec. 22, T. 18 N., R. 30 E. Stratigraphic section exposed in southeast wall of 1952 gravel pit on north side of saddle between Schoo and Betza Mountains, at western end of Wyemaha Valley. Top of section (former land surface) about 4,080 ft altitude. Shown in plate 18d.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Schoo fm., dendritic mbr., bearing Toyeh soil.	Fine sand with some small pebbles; pale tan-grey; very limy; abundant dendritic tufa in heads commonly more than 1 ft in diameter and about 1 ft high, which grew upward from gravel bed below. Upper several inches (B horizon of Toyeh soil) is darker and browner than material beneath. Lacustrine.	1	1
Schoo fm., dendritic mbr.	Cobble gravel with some small boulders to 1 ft diameter, and some pebbles and sand in matrix; roundstones are all basalt of the Sumejug fm.; heavily lime-coated in top 1/2 to 1 ft (just below dendritic tufa layer); next 1/2 to 1 ft is almost free of lime coatings; next 1 ft has heavy lime (lithoid tufa) coatings, and one boulder coated with "coralline" tufa (removed from a bar of gravel of lower number 30 20 to west). Lacustrine.	2	3
Do.	Fine pebble gravel to coarse grit sand; well sorted; relatively nonlimy, slightly indurated. Lacustrine.	1	4

45e (continued)

Geologic unit	Description	Thickness (feet)	Depth (feet)
Indian Lakes fm., middle mbr.	Fine sand, somewhat silty and gravelly; with variable amounts of pebbles (mostly small), cobbles, and locally, small boulders; very limy, with some lime root casts; poorly sorted; indistinctly bedded; variable in thickness and discontinuous, but can be traced around 3 sides of this gravel pit; pinches out 20 ft to west. Possible very weak soil development in uppermost several inches. Colluvium (slope wash).	1.5	5.5
Seboo fm., lower mbr.	Coarse gravel; mostly lenses of small-boulder gravel and cobble gravel; some pebble-gravel beds, generally fairly well sorted, with little interstitial sand. Upper part very limy. About 35 ft to west thickens to 7 ft and upper 3 ft is cemented by lithoid tufa and topmost sandstones bear coatings of "coralline" tufa. Lacustrine.	4	9.5
-Do.	Sand, mostly medium sand, well sorted, some lenses of small-pebbly sand; limy; well indurated. Lacustrine. Sharp contact; small disconformity.	1	10.5

[illegible] (continued)

Geologic unit	Description	Thickness (feet)	Depth (feet)
Wyemaha Fm., bearing Churchill soil (eroded).	Silty gravelly sand in upper part (poorly sorted, with some pebbles and rare cobbles and small boulders); grades downward to sandy coarse gravel in lower part. Colluvium (slopewash). Bears a strong soil (Churchill soil); B horizon is mostly eroded--top 3 to 4 inches is Bca horizon, grayish brown with some lime concentration, remainder of unit is Cca horizon, with strong lime concentration, causing much white mottling; Cca horizon extends about 2 ft into underlying gravel. Small disconformity.	1.5	12
Eetza Fm.	Coarse gravel--small boulders and cobbles in matrix of pebble gravel, with a local lens of small-pebble gravel; constituents all basalt of the Bunejug Fm.; many of them are more or less "rotten"; those in upper 2 ft are strongly to moderately lime-coated [illegible], those in next 2 ft have only weak lime coatings. [illegible] top of unit is [illegible] 2 to 3 inches [illegible] underlain by several inches with very weak soil-lime concentration (possible Cca horizon). Lowermost 1 ft is entirely lime-free, unconsolidated, with matrix of black basaltic medium sand. Faintly crossbedded; beds dip several degrees eastward; apparently are part of a spit or bar. Lacustrine. Base not exposed.	6.5	18.5

46a (1)

SW1/4 sec. 20 (unsurveyed) T. 18 N., R. 31 E. Summit of saddle between Stillwater Range and Rainbow Mountain, 4,215 ± 5 ft altitude. Driller's log of test well for oil and gas, drilled 1921-23 for Lahontan Nevada Oil Co.

Geologic unit	Description	Thickness (feet)	Depth (feet)
		(top)	
Lahontan group and Palute fm.	Sand and gravel	20	20
Correlation uncertain; possibly Truckee fm.	Red clay	10	30
Do.	Sand	15	45
Do.	Clay	75	120
Do.	Gravel	10	130
Do.	Clay	35	165
Do.	Sand	5	170
Do.	Clay	85	255
Do.	Sandstone	70	325
Do.	Gravel; salt water	35	360
Do.	Sand	20	380
Do.	Gravel	6	386
Do.	Sandstone	14	400
Do.	Hard sand	3	403
Do.	Sandstone	17	420
Do.	Gravel	10	430
Do.	Clay	90	520
Correlation uncertain, possibly lower mbr. of Rainbow Mountain fm./	Blue shale	80	600
Do.	Brown shale	20	620
Do.	Blue shale	50	670

46a (1) (continued)

Geologic unit	Description	Thickness (feet)	Depth (feet)
		(top)	
Do.	Brown "shale"	155	825
Do.	Blue "shale"	60	885
Do.	Gray "shale"	40	925
Do.	Brown "shale"	125	1050
Do.	Gray "shale"	15	1065
Do.	Brown "shale"	40	1105
Do.	Gray "lime"	30	1135
Do.	Brown "shale"	85	1220
Do.	"Conglomerate"	15	1235
Do.	Gray "lime"; "lava" at 1,370 ft.	210	1445
Do.	Black "lime".	15	1460
Do.	Gray "shale"	30	1490
Do.	Gray "sand", carries water	20	1510
Do.	Gray "lime"	135	1645
Do.	Black "lime"	20	1665
Do.	Blue "lime"	10	1675
Do.	Black "lime"	10	1685
Do.	Gray "lime"	65	1750
Do.	Black "lime"	60	1810
Do.	Gray "lime"	120	1930
Do.	Black "lime"	60	1990

Total depth reported to be 2,015 or 2,060 ft.

/Mud pit and cores lying on surface in 1950 showed dark brown and reddish [illegible]ite, typical of the lower members of the Kelvyn Mountain formation; and greenish and reddish tuff, typical of the Preuss formation, but no limestone or normal shale.

46b

NW1/4SW1/4 sec. 30 (unsurveyed), T. 1[illegible] N., R. 3[illegible] E. Stratigraphic section in base of gulch between south end of Rainbow Mountain and 4,450 peak; exposed by trenching. Top of section 4,210 ± ft altitude.

Geoligic unit	Description	Unit no. (top)	Thickness (feet)	Depth (feet)
Sehoo fm., lower mbr., regressive phase, bearing upper part of Toyeh soil.	Medium gravel. (Thickens to as much as 5 ft. on gravel bars within several hundred feet to N. and NW.) No tufa. Lacustrine. Bears upper part of Toyeh soil.	1	0.5±	0.5±
Sehoo fm., lower mbr., bearing lower part of Toyeh soil	Sand. Lacustrine. (a) top 1± ft is fine sand, slightly rusty deep yellow to light brick red, bearing lower part (calcareous horizon) of Toyeh soil; (b) 3 to 5 ft fine sand, generally quite silty, bright yellow-tan, weathering to very pale yellow, somewhat salty (NaCl) taste, also contains gypsum; (c) 3 to 4 ft fine sand interbedded with silt, bright yellow tan, resembles (b) in fresh cuts but contains more silt, weathers deeper yellow, and non-saline; (d) 2 1/2± ft medium sand, clean and loose, few small pebbles, light gray, locally thickens to 20± ft at this locality, and to 30 ft at mouth of this gulch, about 1/2 mile to south.	2	[illegible]	[illegible]
Sehoo fm., lower mbr., transgressive phase.	Gravel. Lacustrine. (a) [illegible] 1 1/2 ft medium gravel, clean; (b) 2 1/2 ft sandy fine gravel, grading to gravelly coarse-medium sand in lower 2 ft; clean and loose. Base not exposed.	3	5±	15-[illegible]

SW1/4 sec. 30 (unsurveyed), T. 16 N., R. 31 E. Stratigraphic section in bank of gulch between southern end of Rainbow Mountain and 4,450 peak, exposed by trenching. Top of section 4,190 ± 20 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., lower mbr., regressive phase.	Medium gravel, subangular throughout. Largest (top) 1 1/2 ft. Finest, next 3 to 4 ft are coarsest, some cobbles to 8 in. diam. Pebbles mostly Rainbow Mbr. fm. Little material from 4,450 peak; none in gravels quite "pretty" weathered before transport. Lenticular.	Calc. 2.5	
Sehoo fm., lower mbr.	Medium sand, pebbly in upper part; dark rusty tan; lenticular. Seems oxidized as if by weathering, but no calcareous soil horizon apparent. Some very fast alive grains, probably of Rainbow Mbr. fm.	1.5	12±
[illegible]	Very fine sand, fine sand some silt, coarse pebbles; light greenish tan; possibly some volcanic ash. Lenticular.	2.	3±
Sehoo.	Pebbly medium sand, pebbles mostly less than 1/2 in. diam.; slightly silty; medium pretty well lenticular.	1.5	4.5
	Disconformity.		
Wyemaha fm.	Fine sand, with sparse pebbles; well sorted, unconsolidated; light tan-grey, soluble in HCl (acid lime) penetrable. Base not exposed.	4.5	9±

46d (L)

SW1/4SE1/4 sec. 27, T. 18 N., R. 29 E. Altitude 3,923 ± ft. Driller's log of water well; owner, E. S. Berney and Son; Driller, Shuey Drilling Co.; well completed May 28, 1950.

Geologic unit	Description	Thickness (ft)	Depth (feet)
Fallon fm. and Sehoo fm.	Stiff yellow clay	45	45
Wyemaha fm.	Black soft clay	85	130
Do.	Fine sand, layers of clay	8	138

47

T.18N., R.29E.,

400 ft S. of 1/2 sec. cor. between sec. 28 and 29, Carson River floodplain.
Stratigraphic section exposed in drainage canal bank, and 4-ft auger hole.
Top of section 3,927 ± ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm., 2nd lake unit.	Fine sand, light tan-gray, clean, thinly bedded, beds dip northward as much as 20°. Coherent. Bottom 1-3 in. is clean medium sand, grading to clean coarse sand. Alluvial and lacustrine (deltaic).	1	1.4	1.4
	Disconformity			
Fallon fm., 1st lake unit.	Clay, chocolate brown to light brown (darkest and iron stained at top). Becomes more fatty in lower part. Lacustrine.	2	4.9	6.3
Do., or Turupah fm.	Medium sand, clean, blue-gray grading downward to orange-tan gray. Alluvial or lacustrine.	3	2.0	8.3
Turupah fm.	Medium sand, some pebbly coarse sand. Alluvial.	4	4+	12.3

47a

NE cor. sec. 29, T. 18 N., R. 29 E. Carson River floodplain. Stratigraphic section exposed in drainage canal bank, and 5.5-ft auger hole. Top of section 3,930 ft altitude.

Geologic unit	Description	Bed no.	Thickness (feet)	Depth (feet)
Fallon fm., 2d lake unit	Coarse sand, clean, light tan gray. Upper 0.5 ft is pebbly grit, next 2 ft generally coarse sand with some pebbles, lower 2 ft same, but has some clay balls. Alluvium (Carson River channel sand).	1	4.6	4.6
Fallon fm., lower mbr.	Clay, compact, "fatty", dark brown with some black carbonaceous matter; becomes sandy in lower part. Lacustrine.	2	4.1	8.7
Turupah fm.	Coarse and medium sand, clean, light tan-gray. Lacustrine or alluvial.	3	2.2	10.9
	Disconformity.			
Sehoo fm., upper mbr.	Very fine sandy silt, grading to fine-medium sand, tan-gray; mica prominent. [illegible]. Base not reached.	4	4.7	15.6

E. edge of sec. 29, T. 16 N., R. 29 E. Uinta River floodplain. Stratigraphic section exposed in drainage canal bank and 5-ft auger hole. Top of section 3,929 ft altitude.

Geologic unit	Description	Lab no.	Thickness (feet)	Depth (feet)
Fallon fm., upper mbr.	Sand; clean fine sand in upper 4 in., coarse-medium sand in lower 2 in. Lacustrine. Sharp contact, disconformity.	1	0.5	0.5
Fallon fm., lower mbr.	Clay, silty, brown gray, with some calcareous matter; incipient columnar jointing; suggestive of desiccation after deposition. Lacustrine.	2	1.5	2.0
Do.	Fine sand, clean.	3	2.2	4.2
Burnham fm.	Brown mud, with very coarse sand, in lower part alternating with some silt and thin sand. Alluvial(?).	4	6-	10.2

47c (1)

SW1/4NW1/4 sec. 30, T. 19 N., R. 29 E. Altitude 3,945± ft. Driller's log of water well; owner, [illegible] and son, driller, [illegible] J. [illegible]; well completed Nov. 1, 1947

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Clay	2	2
Do.	Fine sand	4	6
Do.	Fine gravel	4.5	10.5
Sehoo fm.	Blue clay	4.5	15
Wyemaha fm.	Fine sand	5	20
Do.	Coarse sand	3	23
Do.	Yellow clay	10	33
Do.	Yellow clay	10	43
Do.	Yellow clay	5	48
Do.	[illegible]-colored sand	4	52

478

NW¼NW¼ sec. 25, T. 10 N., R. 27 E. In edge of small playa; altitude, 3,363 ± 5 ft, 1914 water test borehole, no. 35 in Mendenhall (1909) report; water level 16 ft below surface in 1909.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	"Wall-rocking ground"	1	1
Hazelton fm.	Sand	9	10
Do.	Clay	1	11
Do.	Sand	1	12
Do.	Clay	4	16
Do.	Sand	1	17

E. edge sec. 32, T. 19 N., R. 29 E. Carson Lake plain. Stratigraphic section exposed in drainage canal bank and 3-ft auger hole. Top of section 3,920 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon fm., third lake unit	Medium and coarse sand, poorly to moderately well-sorted; lacustrine.	1	1.5	1.5
	Unconformity.			
Fallon fm., second lake unit	Clayey silt, very dark-gray, carbonaceous; lacustrine	2	0.3-0.5	2±
Fallon fm., third interlake unit	Medium sand, clean, light tan-gray; very [illegible] (low mound-like [illegible]) [illegible].	3	3	5±
	[illegible] contact. [illegible]conformity			
[illegible] first lake unit	[illegible]	4	1-1.5	6±
Do	Fine sand, [illegible], gray, carbonaceous	5	0.7	7±
[illegible] fm.	Coarse pebbly sand, pebbles to 1/2 in. diam. Typical Carson River [illegible]; alluvium (Carson River channel sand).	6	2.5+	9.5

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E. edge sec. 32, T. 15 S., R. 29 [illegible]. Stratigraphic [illegible] exposed in drainage canal bank, and 3-ft auger hole. Dip of section 2.5° ± E in strata.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Pelion Fm., upper div.	Silty clay, dark brown, carbonaceous, brecciated, iron-stained. Highly [illegible] 1/2-in. layer at base. Laccolithic.	1	1.5	1.5
Pelion Fm., [illegible]	Fine sand and silt, thinly [illegible]; light gray-tan to yellow brown. Laccolithic.	2	1.5	3
[illegible]	[illegible]	3	[illegible]	[illegible]
[illegible]	[illegible]	4	[illegible]	[illegible]
[illegible]	[illegible]	5	[illegible]	[illegible]

SW cor. sec. 34, T. 10 N., R. 25 E. Pinethgrandis section exposed in bank of drainage ditch in dense pine thicket, top of section 5,[illegible] ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Fallon Mb., Sarig Mbr. interbeds with.	Fine sand, with small lime nodules. Lacustrine.	1	1.5	1.5
Ic	Silty fine sand, saline, lacustrine.	2	1.0	2.5
[illegible]	Clay fine sand, calcareous; alluvial (Grass Alvord channel sand).	3	1.5	4.0
Do.	Fine sand, with small clay pellets; mostly black, micaceous; alluvial.	4	0.5	4.5
	Unconformity			
Fallon Mb. in Delks route.	Clay, black; lacustrine.	5	1.0	5.5
Fallon Mb., Sar[illegible] interbeds with.	Pellet sandy clays; lacustrine or alluvial.	6	1+	6.5

50

SE1/4 sec. 26, T. 18 N., R. 30 E. Stratigraphic section exposed in NE bank of gravel pit in gravel bar at base of mountain slope, near Salt Wells. Top of section 3,990 ± 5 ft elevation.

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Sehoo fm., upper mbr., bearing Toyeh soil (eroded).	Fine-medium sand, silty and gravelly; pale tan-gray. Lacustrine. Lag gravel of pebbles and small cobbles at surface. Very limy (eroded calcareous horizon of Toyeh soil).	1	0.2-0.5	0.5±
Do.	Do., but less sandy; mostly poorly sorted coarse-medium gravel, with moderate soil-lime development. Lacustrine.	2	0.5±	1.0±
Do.	Pebbly coarse-medium sand, moderately well sorted; very limy (soil-lime). Thickens to 1-1 1/2 ft 200 ft to westward. Lacustrine.	3	0.5-0.7	1.5±
Sehoo fm., upper mbr.	Pebbly coarse-medium sand, poorly sorted, very limy, pale tan-gray (nearly white). Thickens to westward. Lacustrine.	4	0.2-0.9	2.[illegible]±
	Sharp contact; disconformity.			
Do.	[illegible] tufa, cementing and coarsening medium gravel (max. pebbles to 3-4 in. diam.). Tufa is pale gray, nearly white. Locally with [illegible]; probably early lithoid tufa of upper [illegible]. On south side of gravel pit the tufa diminishes to thin coatings on pebbles, especially the undersides, in a 2 to 5 in. layer of medium gravel.	5	0.2-0.5	2.5±

50 (continued)

Geologic unit	Description	Unit no.	Thickness (feet)	Depth (feet)
Phase C, [illegible] dendritic mbr.	Very fine gravel and grit, [illegible]; fairly clean, slightly cemented by lithoid tufa; 10-40 percent dendritic tufa fragments; remainder are basalt, andesite, silicified tuff, and rhyolite. Lacustrine.	6	1-1.5	3.5
	[illegible] contact			
[illegible], lower unit, transgressive phase	[illegible] gravel to medium gravel, overlain by pavement 1 to 2 in. layer of nodular and lithoid tufa *in situ*. Lacustrine.	7	0.5-0.7	[illegible]
Do.	Very fine gravel, clean, heavily cemented by lithoid tufa. Lacustrine.	8	2-2.5	6.[illegible]
Do.	[illegible] sand, [illegible], [illegible]; [illegible].	9	[illegible]	[illegible]
[illegible]	[illegible] interbedded with medium sand, [illegible] Lacustrine.	10	[illegible]	[illegible]
[illegible]	[illegible] sand, pebbles, [illegible] a few boulders as much as [illegible]. Lacustrine.	11	[illegible]	[illegible]

50 (continued)

Triangle unit	Description	Test no.	Thickness (feet)	Depth (feet)
Granite fm., Dunkley Channahill soil (eroded).	Alluvial gravel, as follows: (a) upper 2½ ft, sandy fine gravel (mostly coarse, medium, and fine sand and grit with very fine gravel, some pebbles to 3-4 in. diam.; most pebbles are angular to subangular; Channahill soil low concentration (eroded) fm. Dunkley of Channahill soil); large percentage of pebbles are surface-checked and have a loose "rotten"; (b) 3/4± ft cobble gravel, pebbles and cobbles mostly subangular, (c) lower-2 ± ft similar to (b), but has less sand; mostly grit and very fine gravel.	12	4.5±	12.6±
Dunkley fm.	Cobble gravel (boulders to more than 8 in. diam) interstitial. Fine not exposed.	13	3.5±	4±

50a

NE1/4 sec. 15 (unsurveyed), T. 17 N., R. 30 E. Stratigraphic section exposed in gully bank, northeastern edge of [illegible] Mts., altitude (top of section) 4,020 ± 10 ft.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo Fm., dendritic mbr.	Fine gravel, somewhat sandy; abundant fragments of dendritic tufa. Lacustrine.	4	4
Sehoo Fm.	Fine gravel, well sorted. Lacustrine	8	12
Sehoo Fm., lower lacustrine mbr.	Fine gravel with coralline and stony lithoid tufa *in situ*. Lacustrine	2½	14½
Wyemaha Fm., bearing Churchill soil	Medium sand, eolian; bears Churchill soil, including several in. of the zeta horizon, partly [illegible] by the lowlier tufa. Base not exposed.	2+	16½

50h

N. line sec. 13, T. 37 N., R. 30 E. Stratigraphic section exposed in wash bank at NE edge of [illegible] Mtn., altitude 4,[illegible]50 ± 10 ft.

Geologic unit	Description	Thickness (feet)	Depth (feet)
[illegible] fm., [illegible] mbr.	Gray thin and platy lacustrine limestone. Thickens to 1 ft. 150 ft. to E., and there is overlain by 2 ft of fine lake gravel of same member. Lacustrine.	0.3	0.3
[illegible] fm., [illegible] mbr.	Medium gravel at top (mostly 1 to 3 in., max. 5 in. diam.), grading downward to cobble gravel (mostly 1 in. to 5 in., max. 10 in.); well sorted. Basalt and andesite pebbles. Lacustrine.	1.0	1.3
Do.	Fine gravel, max. about 2 in., mostly 1/4 in. to 1 in. diam. Lacustrine.	1.5±	2.8±
	Unconformity.		
[illegible] fm.	Grit, somewhat altered. Lacustrine.	[illegible]	[illegible]
Do.	[illegible] gravel. Bleached and [illegible], [illegible]. Lacustrine.	[illegible]	[illegible]
Do.	[illegible] 1/4 [illegible] fine sand mixed with grit; [illegible] well sorted, [illegible] 2 in. [illegible]. Lacustrine.	[illegible]	[illegible]
Do.	Sandy medium and coarse gravel, max. size 6 in. to 8 in., Lacustrine. Highly altered, probably due to artesian spring action, matrix is bright yellow, clayey and pebbles and cobbles appear bleached or surface iron-stained, and many are "rotten". Unit is practically unaltered 150 ft to east. Base not exposed.	5±	10.[illegible]±

51 (L)

SE1/4NW1/4 sec. 18, T. 17 N., R. 29 E. Plain northeast of Carson Lake; Jones and Newell ranch; 3,918 ± 5 ft altitude. Driller's log of test well for oil and gas drilled Aug. 1, 1921 to Oct. 1923, for Syndicate Oil Co. (also known as Miller Syndicate Oil Co. and Syndicate Oil and Gas Co.). Reported total depth either 3,132 or 3,300 ft (Richards, 1947); rotary rig used to 3,026 ft; churn-drilled below.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Surface	20	20
Sehoo fm.	Pinkish yellow clay	25	45
Wyemaha fm.	Sand and gravel	30	75
Do.	Blue clay	15	90
Do.	Gravel	25	115
Do.	Black gumbo, gas showing	15	130
Do.	Black gumbo	64	194
Correlation uncertain	Shale(?)	2	196
Do.	Gumbo and sand	54	250
Do.	Sand	85	335
Do.	Hard sand	3	338
Do.	Soft gray shale	10	348
Do.	Blue sand	20	368
Do.	Coarse sand	13	381
Do.	Hard [illegible] shale	16	[illegible]
Do.	Hard sand	30	[illegible]
Do.	Blue sand	10	[illegible]
Do.	Hard sand	4	[illegible]
Do.	Gravel	2	[illegible]
Do.	Blue sand	7	[illegible]
Do.	Hard sand	10	[illegible]
Do.	Rotten (crumbling?) black shale; turns gray on exposure to air	10	[illegible]
Do.	Blue sand	7	[illegible]
Do.	Very hard sand; small crevices and thick hard "shells"	8	[illegible]
Do.	Blue sand	22	[illegible]

32. (1) (continued)

Geologic unit	Description	Thickness (feet)	Depth (feet)
Cretaceous materials	Sandy gray shale	11	511
Do.	Hard sand, some shale	17	528
Do.	Gray shale	6	534
Do.	Sandy shale, gas showing at 544 ft	13	547
Do.	Gray shale; coarse	9	556
Do.	Shale, some streaks	10	566
Do.	Sandy shale	5	570
Do.	Hard shale	19	589
Do.	Rough blue clay	6	595
Do.	Sand	6	601
Do.	Hard shale	21	622
Do.	Rough blue clay	5	627
Do.	Hard sand	14	641
Do.	Rough blue clay	6	647
Do.	Shale	7	654
Do.	Very hard sand	6	660
Do.	Very hard shale	17	677
Do.	Gas sand shale	35	712
Do.	Hard rock shale	3	715
Do.	Sandy shale	4	719
Do.	Hard shale	3	722
Do.	Sandy shale	12	734
Do.	Rough shale	3	737
Do.	Sandy shale	6	743
Do.	Blue shale	3	746
Do.	Coarse sand; water at 749 ft	3	749
Do.	Hard rock	4	753
Do.	Hard shale	5	758
Do.	Very shale and rock	6	764
Do.	Hard sand	7	771
Do.	Broken rocks and shale	8	779
Do.	Shale	5	784
Do.	Sandy rock	6	790
Do.	Shale	12	802

51 (L) (continued)

Geologic unit	Description	Thickness (feet)	Depth (feet)
[illegible]	Sand	7	757
Do.	Hard shale	1	758
Do.	Soft shale	6	[illegible]
Do.	Coarse hard sand	10	814
Do.	Sandy shale	8	822
Do.	Shale	7	829
Do.	Hard shale	1	830
Do.	Hard sand	7	837
Do.	Sticky clay	25	[illegible]
Do.	[illegible] sand	10	[illegible]
Do.	Tough gray shale	46	[illegible]
Do.	Tough gray shale with sand streaks	20	[illegible]
Do.	Tough gray shale	5	[illegible]
Do.	Fine sand	12	[illegible]
Do.	Hard sand and clay	[illegible]	[illegible]
Do.	Fine sand and shale	[illegible]	[illegible]
Do.	Shale with sand streaks	[illegible]	[illegible]
Do.	Sandy shale	[illegible]	[illegible]
Do.	Shale	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
Do.	Hard shale	7	[illegible]
Do.	Shale	10	[illegible]
Do.	Hard sand	[illegible]	[illegible]
Do.	Sandy shale	7	[illegible]
Do.	Coarse sand	21	[illegible]
Do.	Fine sand	[illegible]	[illegible]
Do.	Sandy shale	[illegible]	[illegible]
Do.	Hard sand	[illegible]	[illegible]
Do.	Hard shale	[illegible]	[illegible]
Do.	[illegible]	4	[illegible]

[illegible] (L) (continued)

Geologic unit	Description	Thickness (feet)	Depth (feet)
Correlation uncertain	Hard shale	2	121[illegible]
Do.	Shale and streaks of hard sand	9	121[illegible]
Do.	Sandy shale	[illegible]	12[illegible]
Do.	Dark gray shale	26	12[illegible]
Do.	Shale	16	12[illegible]
Do.	Hard limestone shale	0.5	12[illegible]6.5
Do.	Sandy shale	9.5	12[illegible]6
Do.	Hard limestone shale	[illegible]	12[illegible]
Do.	[illegible] shale with limestone streaks	[illegible]	[illegible]
Do.	Sand	[illegible]	[illegible]
Do.	Limestone shale	2	[illegible]
Do.	Blue shale	16	[illegible]
Do.	Blue shale and limy shale beds	54	[illegible]
Do.	Blue shale	[illegible]	[illegible]
Do.	Hard sand	[illegible]	[illegible]
Do.	[illegible]	[illegible]	[illegible]
Do.	"[illegible]"	[illegible]	[illegible]
Do.	[illegible] very hard	[illegible]	[illegible]
Do.	[illegible]	[illegible]	[illegible]
Do.	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
Do.	[illegible]	[illegible]	[illegible]
Do.	[illegible]	[illegible]	[illegible]
Do.	Blue shale	7	[illegible]
Do.	Hard shale	[illegible]	[illegible]
Do.	Blue shale	[illegible]	[illegible]
Do.	Sand	[illegible]	[illegible]
Do.	Hard shale	[illegible]	[illegible]
Do.	Shale and sand, [illegible] gas showing	[illegible]	[illegible]
Do.	Shale	[illegible]	[illegible]
Do.	Shale and sand	[illegible]	[illegible]
Do.	[illegible]	[illegible]	[illegible]
Do.	[illegible]	[illegible]	[illegible]
Do.	Shale and [illegible] sand	[illegible]	[illegible]

51 (3) (continued)

Geological unit	Description	Thickness (feet)	Depth (feet)
Carboniferous undivided	Shale	28	1548
Do.	Hard coal	4	1552
Do.	Sand and shale	12	1564
Do.	Hard sand and shale	22	1586
Do.	Shale	31	1617
Do.	Very hard shale	8	1625
Do.	Sand and shale	36	1661
Do.	Coal	5	1666
Do.	Shale	11	1677
Do.	Hard and shale	12	1689
Do.	Hard sand	5	1694
Do.	Shale	25	1719
Do.	Sand	11	1730
Do.	Hard sand	2	1732
Do.	Coal and shale; erratic, local elimination	21	1753
Do.	Shale	26	1779
Do.	Hard shale, gas showing	3	1782
Do.	Shale with sand, local elimination	13	1795
Do.	Shale	4	1799
Do.	Hard dark shale	3	1802
Do.	Coal, local elimination	4	1806
Do.	Soft dark shale	11	1817
Do.	Silty sandy shale	21	1838
Do.	Hard coal	5	1843
Do.	Grey shale	14	1857
Do.	Hard sand	2	1859
Do.	Grey shale	35	1894
Do.	Hard sand	5	1899
Do.	Shale	17	1916
Do.	Hard and shale	34	1950
Do.	Hard shale	4	1954
Do.	Coal and shale	8	1962
Do.	Shale	38	2000
Do.	Hard sand	7	2007

53 (1) (continued)

Geologic unit	Description	Thickness (feet)	Depth (feet)
Pennsylvanian undivided	Shale	27	2060
Do.	Hard sand	6	2065
Do.	Shale	20	2085
Do.	Brown shale	14	2099
Do.	Hard sand	6	2105
Do.	Sand and shale	24	2129
Do.	Running sand	14	2143
Do.	Shale	19	2162
Do.	Hard sand	7	2169
Do.	Shale	32	2201
Do.	Hard sand and shale	20	2221
Do.	Quicksand	16	2237
Do.	Sand and shale	30	2267
Do.	Hard lime	2	2269
Do.	Pebble blue shale	13	2282
Do.	Sand and shale	22	2304
Do.	Pebble blue shale	44	2348
Do.	Hard sand	3	2351
Do.	Shale, blue	6.5	2357.5
Do.	Hard sand	1.5	2359
Do.	Pebble shale	8	2367
Do.	Pebble shale	13	2380
Do.	Dark coaly shale	10	2390
Do.	Pebbly shale	18	2408
Do.	Pebble and sand	73	2481
Do.	Sand	44	2525
Do.	Silver shale	61	2586
Do.	Lime sand	14	2600
Do.	Lime shale	16	2616
Do.	Shale	18	2634
Do.	Hard sand	14	2648
Do.	Lime sand, gas showing	12	2660
Do.	Shale	26	2686

etc.

51 (3) (continued)

Note: D. F. Hewett, of U. S. Geological Survey, visited this well in May 1922, when it was 2,8[illegible] ft deep. He reported (U. S. Geol. Survey file report, 1922): water level about 500 ft below surface, gas bubbled up from outside the casing and was under slight pressure in casing; cuttings were "largely greenish shaly clay, probably derived from finely divided water laid tuff, and no volcanic flow or breccia material was recognized. Cuttings contained minute shells, which in field were considered to be gastropods and bivalves. Specimens were submitted to the National Museum and the only fossils found were simple ostracods considered to be derived from fresh water Tertiary rocks." R. W. Richards (U. S. Geol. Survey file report, 19[illegible]) mentions that various items in the Churchill County Eagle between June 24, 1920 and October 1923 stated that the well reached 3,096 ft depth with rotary equipment, then was deepened either 56 or possibly 156 ft by cable-tool, between September 1922 and October 1923. In June 1922 6 1/4-in. casing was set at 2,5[illegible] ft; later this casing was pulled and 4-in. casing was run to 3,025 ft and 3-in. to 3,128 ft. Seventy feet of hard sandstone with "oil and gas showing" was reported below about 2,875 ft, and below 3,125 ft, very hard sandstone with drilling rates from 1 to 3 ft a day and a "strong gas flow" below [illegible] ft. Richards reports [illegible] [illegible] the cable-tool drilling, recollected in 1926 that [illegible] white clays.

NE/SW/4 sec. 13, T. 17 S., R. 24 E. Former bed of Carmen Lake;
elevation 3,920 ± ft. Driller's log of test hole; well owner, George Dalton;
driller, Delage Drilling.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Pellier Gr.	Dry soil	8	8
Qa	Sand	2	10
Pleist Gr.	Yellow clay	40	50
Pyramid Fm.	Black shale	30	80
Qa	Dry clay	6	86
Qa	Black shale	22	108
Qa	Blue clay	7	115
Qa	Black shale	9	124
Qa	Blue clay	3	127
Qa	Sand	2	129
Qa	Yellow clay	4	133
Qa	Black shale	3	136
Qa	Blue clay	2	138
Qa	Black shale	3	141
Qa	Blue clay	11	152
Qa	Black shale	3	155
Qa	Blue clay	5	160
Qa	Black shale	5	165
Qa	Blue clay	5	170
Qa	Sand	3	173
Qa	Blue clay	10	183
Qa	Yellow clay	10	193
Qa	Blue clay	73	266
Qa	Yellow clay	9	275
Qa	Blue clay	20	295
Qa	Black limestone	5	300
Qa	Blue clay	17	317
Qa	Sand	1	318
Qa	Blue clay	7	325

55 (T)

Generalized stratigraphic section of the [illegible] formation along western side (approximately 4 miles long) of the Dunsing Mountains, secs. 21 and 28, T. 17 N., R. 30 E.

Description	Unit no.	Thickness (feet)
Black olivine basalt, vesicular to fairly dense; almost no interbedded tuff. Weathers brownish-black to purple-brownish-black along joints.	1	75-1[illegible]
Local unconformity.		
In north, mainly red basaltic(?) tuff-breccia or highly vesicular basalt flow grading downward from black to red. In south, 10 to 15 ft red scoria at top, over 1 to 5 ft white ash, over 15 to 20 ft buff-colored basic tuff.	2	15-[illegible]
Basaltic andesite(?), [illegible] dark gray, a few plagioclase phenocrysts in aphanitic groundmass with a peculiar silky luster. [illegible] commonly contorted, not parallel to flow. Apparently [illegible].	3	30-[illegible]
Black platy basalt, [illegible] has slight purplish cast [illegible] phenocrysts of plagioclase [illegible]. Probably absent in north.	4	[illegible]
In north, mainly red, purple-red, and black basaltic(?) scoria; in south, mainly red basalt and red scoriaceous basalt, some purple to black basalt (in middle part) and red to black scoria, with 4 to 5 ft pink tuff at base. Thickness [illegible] regularly from north to south.	5	5-75

Description	Unit no.	Thickness (feet)
Black vesicular olivine basalt and scoria. Absent in north, gradually thickens southward, to 50± ft at extreme southwestern edge of mountains.	6	0-50±
Main light-colored tuffaceous zone. In north, 15 to 35 ft thick, with about 6 ft light buff to pink tuff and tuffaceous gravel at top, remainder gray to nearly white tuffaceous gravel and water-laid grit, containing fragments of rhyolitic glass, white pumice, and considerable basaltic andesite or basalt, including red to black scoria. Locally 15± ft olive green palagonitic tuff at base. At 4,550 peak this unit is abnormally thick and includes, at top, 35± ft pink quartz latite or rhyolite, strongly flow-banded; 20± ft light to dark gray perlite; 50± ft white pumiceous tuff and tuffaceous grit, and gravel, with several ft ox yellow tuff containing some basic fragments near base.	7	15-95±
Undifferentiated basic flows. Black to dark gray and dark greenish gray basalt and/or andesite flows, in places somewhat altered.	8	100-
Base not exposed		
Approximate total thickness		350-5??

553a

SE1/4 sec. 22, T. 27 N., R. 31 E. Auger hole at northeastern edge of Eightmile Flat, altitude, 1,540 ft.

Geologic unit	Description	Thickness (Feet)	Depth (Feet)
[illegible]	Clay, silty, with some fine sand; olive, soft, oxidized; lacustrine.	7.5	7.5
[illegible]	Medium sand, black to medium gray, carbonaceous, organic odor; lacustrine.	1.5	9.0
[illegible]	Pure white pumiceous ash, very fine sand sized, well sorted.	0.3	9.3
[illegible]	Silt, fine sand, and medium sand, interbedded; strong organic odor. Black at top, alternating gray and black in lower part. Lacustrine.	1.5+	10.8

53b

NE1/4 sec. 28, T. 17 N., R. 31 E. Auger hole in Eightmile Flat (playa), altitude, 3,910 ± 2 ft.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fanco fm.	Clay, olive-gray, salty. At 5 ft, a thin layer of medium sand, well sorted, olive gray, with grains of quartz, basalt, etc. Lacustrine.	9.6	9.6
Tyrone fm.	Clay, black, very soft, slight H_2S odor. Lacustrine.	12	21.6

53c

NW1/4NE1/4 sec. 35, T. 17 N., R. 30 E. Stratigraphic section exposed in bank of deep gully in large lake bar, southwestern edge of Bunejug Mts., altitude, 4,000 ± 20 ft.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo Fm., dendritic mbr.	Fine gravel, containing fragments of dendritic tufa. Lacustrine.	2	2
Sehoo Fm., lower mbr.	Cobble gravel; roundstones 90 percent andesite and basalt of Bunejug fm., several percent of metamorphics (see below). Lacustrine.	7	9
	Disconformity.		
Wyemaha Fm.	Sandy, bouldery alluvium. Pebble count: 65 percent andesite and basalt, probably mostly of the Bunejug fm.; 35 percent metamorphic rocks (slate, quartzite, phyllite, hornfels, etc.); 1 percent lithoidic tufa (from Eetza fm.?). Boulders commonly exceed 1 ft in diam., max. 3 ft, in matrix of small pebbles, sand, and silt, very bad [illegible] to fine pebbly sand. [illegible]-indurated in upper part due to [illegible], clayey and [illegible] (lower part of the horizon of Churchill soil). Source of metamorphics is unknown, unless it is the volcanic vent about 1/2 mile to the north, which may have supplied xenoliths to the Bunejug fm. Later eroded into Quaternary gravels.	15	24

54 (T)

Eunejug formation at its type locality. Stratigraphic section exposed in western face of 4,886-ft mountain, Eunejug Mts., NW1/4NE1/4 sec. 33 and NW1/4NW1/4 sec. 34 (unsurveyed), T. 17 N., R. 30 E.

	Approximate thickness (feet)
Upper unit:	
Black olivine basalt flows, vesicular to fairly dense; almost no interbedded tuff. Weathers brownish-black to purple-brownish black.	125
Local unconformity.	
Lower unit:	
1. Red basaltic tuff-breccia.	20
2. Basaltic andesite, olive dark gray, sparse plagioclase phenocrysts in cyanitic groundmass with silky luster. Thin platy structure, commonly contorted, not parallel with flow.	35
3. Dark gray platy basalt or andesite, slight purplish cast. Sparse plagioclase phenocrysts.	30
4. Red basic tuff-breccia with some red to purple highly vesicular flow.	120
5. Light greenish gray platy andesite or basalt resembling unit 3.	5
6. Predominantly red. Top 15 ft is brick red to purplish tuff; middle part, white to light gray pumiceous tuff, well bedded as if water-laid, with some basaltic or andesitic fragments; lower part, light buff and light grayish-buff tuff.	90
7. Black to red basalt, red scoriaceous basalt and red scoria (exposed only in northern part of west face of mountain).	90
Base not exposed.	
Approximate total thickness	495

54a (T)

SE1/4NE1/4 sec. 35 (unsurveyed), T. [illegible] N., R. 30 E. Stratigraphic section exposed in northern end of [illegible] Mtn., on western side of 4,652-ft Mtn. just north of the pass on the north branch of the old Simpson ("Pony Express") road. Top of section about 4,500 ft altitude.

Geologic unit	Description	Unit no.	Thickness (feet)
[illegible] fm. (upper part).	Olivine basalt, mainly black, vesicular flows, some tuff-breccia. Top eroded. Dips eastward 5° to 10°.	1	50±
	Small angular unconformity.		
[illegible] fm. (lower part).	Dacite tuff, olive green; dips eastward about 15°	2	15±
Do.	Tuff, bright red in upper part, grading to tan and white in lower part.	3	10
Do.	Dacite tuff, olive, hard to massive.	4	10±
Do.	Tuff, bright red in upper part, grading to tan and white in lower part.	5	15±
Do.	[illegible] (basalt or andesite), reddish.	6	[illegible]
Do.	[illegible], dark gray to black, with contorted platy structure.	7	[illegible]
Do.	[illegible], tan-gray and black, [illegible] dips eastward about [illegible]	8	[illegible]
	(Base not exposed.)		
	Approximate total thickness		220±

(Note: All units in lower part appear to be nearly conformable, but dip gradually increases downward, from about 15° in unit 2 to about 30° in unit 6.)

SW¼ sec. 33, T. 17 N., R. 31 E. Auger hole at southern edge of Eightmile Flat; altitude, 3,210 ± 2 feet.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Medium sand, silty, very coarse/small pebbles and grit. Alluvium.	1.7	1.7
Schee fm.	Clay, palin, tan-brown, grading downward to olive tan grey and to light olive gray. This layers and portings in clay as follows: at 3.7 ft total depth, ostracod-rich clay; 4.5 ft ostracods; 4.7 ft very dark grey caliche or bentonitic mud; 5.3 ft, sandy clay and ostracods; 6 ft, medium sand; 7 ft, ostracods; 7.3 ft, fine-sandy clay, olive-grey mottled with tan; 7.7 ft fine-sandy clay; 8.3 ft fine-sandy clay. Lacustrine.	6.7	8.4
Tyrone fm.	Clay, dark blue-grey mottled with black; ostracods common, especially in black areas. Ky clay. Lacustrine.	3.0	11.4
[illegible]	Coarse sand and medium sand, well sorted, dark blue-grey; quartz mainly quartz and [illegible]	3.0	14.4

54c

SW1/4 sec. 33, T. 17 N., R. 31 E. Auger hole at crest of low ridge above northern edge of Edgewile Flat, altitude, 3,925 ±5/20.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Fine-medium sand; very salty. Eolian	0.1	0.1
Sehoo fm.	Clay, olive grey, salty; lacustrine.	0.3	0.3
Do.	Fine-medium sand, yellow brown; a little interbedded olive-green clay; lacustrine.	1.2	1.5
Do.	Fine sand, very little clay; lacustrine.	1.0	2.5
Do.	Clay, yellow olive; lacustrine.	1.0	3.5
Tyrone fm.	Clay, dark grey with bluish-green cast. Spots of whitish textureless material (gypsum?). Nearly black in lower part. Lacustrine.	3.0	6.5
Do.	Clay, blue-black to dark blue-green, mottled with tan-brown streaks. Lacustrine.	1.5	8.0
Do.	Dark blue-green-grey clay, slightly sandy in upper part, to sand in lower part. Lacustrine.	8.3	16.3

NE1/4SE1/4 sec. 4 (unsurveyed) T. 16 N., R. 31 E. Stratigraphic section exposed in bluff beside wash, and auger hole (lower 10 ft), near western side of Fossil Flat; top of section 5,950 ± 10 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehco Fm., upper mbr.	At top, platy lithoid tufa about 1/2 in. thick, gray (late lithoid tufa of this member). Balance is fine sand and medium sand, well bedded. Lacustrine.	3.5±	3.5±
Do	At top, discontinuous layer about 1/2 to 1 in. thick, of lithoid tufa, mainly white, some gray, platy to vesicular and irregular forms (early lithoid tufa of this member). Lower part is white oolite sand. Lacustrine.	0.2	3.7±
	Disconformity.		
Sehco fm., [illegible] mbr.	Fine sand, some silt; abundant ostracods, particularly ostracod coquina in lower part. Lacustrine.	1±	4.7±
	Disconformity.		
Sehco fm., [illegible] and lower mbr.	Clay, olive gray; top 2 to 3 in. somewhat disturbed, sandy, with a few [illegible] crystals and flakes of platy light gray tufa; very silty and calcareous in lower 1 1/2 ft, with limestone horizontal and vertical partings; commonly salty; prismatic jointing; joint cracks commonly rust-stained. Lacustrine.	8±	[illegible]
Sehco fm., lower mbr.	Medium and fine sand, bright orange and orange-tan; parallel, horizontally bedded; partly cemented with calcite; no lime. Lacustrine.	0.5	13.2±
	Disconformity.		

546 (continued)

Geologic unit	Description	Thickness (feet)	Depth (feet)
Nyemba fm., bearing Churchill soil (eroded)	Fine sand, interbedded with some medium and a little coarse sand, light gray-tan to light gray. Upper 8 ft has inclined bedding, dipping 25° to E.; middle part nearly flat, parallel-bedded; in lower half beds dip 12° to E. Eolian. Upper part partly lime-cemented (eroded Ca horizon of Churchill soil), cementation decreases downward.	19.5	32.7
	Unconformity.		
Nyemba fm.	Fine sand, red-brown and orange-brown, interbedded with sandy clay, olive gray, gypsiferous; local limy concretions.	3.7	36.4
	Unconformity.		
do.	(Approximately) sand interbedded with medium sand; reddish brown at top grading to light gray downward. Travertine(?) in upper part, veiled below.	6	42.4

54e

SE1/4 sec 5, (unsurveyed) T. 16 N., R. 31 E. Paiute Wash, on piedmont northeast of Cocoon Mts ; general stratigraphic section for about 800 ft diagonally (due E.) up wash bank, showing Sehoo fm. over ancient dune of eolian sand of Wyemaha formation Top of section 4,100 ± 20 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm	Fine-medium and medium sand, unconsolidated; eolian	3±	3±
	Disconformity		
Sehoo fm Dendritic mbr	Fine-medium sand, poorly consolidated; lacustrine	3±	6±
Do	Dendritic tufa "heads" in situ in sand (grade eastward into thicker layer of platy lacustrine limestone; pl. 22, A and B).	1±	7±
Sehoo fm lower mbr	Fine-medium and medium sand, white, poorly consolidated, well sorted	4±	11±
	Disconformity		
Wyemaha fm bearing Cocoon soil	Fine-medium and medium sand, cross bedded, partly buried by soil [illegible] horizon of Cocoon soil in top [illegible]; loose and [illegible] Eolian	11±	22±
[illegible] fm	Medium gravel, well [illegible] lacustrine	2	24±
	Local disconformity		
Paiute fm bearing Cocoon soil.	Coarse gravel, boulders to 3 ft, subangular; poorly sorted matrix of sand and finer gravel. Altered [illegible] several inches are red brown, clayey, and relatively lime free (cambic horizon of Cocoon soil); are locally eroded; gravel below is densely cemented by caliche (Cca horizon of Cocoon soil).	3+	27±

55

SE1/4 sec. 6 (unsurveyed), T. 16 N., R. 31 E. Northeast edge of Cocoon Mts. Stratigraphic section exposed in bank of deep gully (to crest of adjoining ridge); altitude (top of section), 4,280 ± 20 ft.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., lower mbr.	Fine gravel, grades downward to grit; sparse snail and ostracod shells; 2 in. medium gravel at top with local cellular tufa in situ. Lacustrine.	3±	3±
Do.	Medium sand, some grit; snail and ostracod shells Lacustrine.	3	6±
Do.	Fine and fine-medium sand, well-sorted; snail and ostracod shells. Lacustrine.	4	10±
Do.	Fine sand, bright brown-yellow; lacustrine	6	16±
Do.	Medium sand, grading downward to coarse sand; well sorted. Lacustrine.	1	17±
Do.	Medium gravel. Lacustrine.	1 1/2±	18 1/2±
Do.	Boulder gravel, boulders to 2 ft diam. Lacustrine	6±	24 1/2±
Wyemaha fm.	Medium and fine sand, pale yellowish gray. Eolian.	10±	34 1/2±
Betza fm.	Boulder gravel and cobbly pebble gravel. Lacustrine. Base not here exposed, but unit overlies Bonejug fm. about 200 ft downstream.	5±	39 1/2±

55a

NW1/4SE1/4 sec. 2, T. 16 N., R. 29 E. Stratigraphic section exposed in bluff of Wildcat scarp at Wildcat Station (ruins of abandoned pioneer express station); lower 5 feet exposed by dug pit; top of section 3,960 ± 10 feet altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Slope wash and lag pebble gravel.	0.4	0.4
Sehoo fm., upper mbr. bearing Toyeh soil	Silt and fine sand with numerous small basalt pebbles (about 1/4 in. diam.) Lacustrine. Bears Toyeh soil	1.2	1.6
Do.	Very fine sand, light yellow-brown, slightly micaceous. Numerous round segregations of salts or lime, especially near top. Lacustrine.	0.7	2.3
Sehoo fm., dendritic mbr.	Silt, with fine sand in top 3 in. and in bottom 1/2 in.; gray; numerous white salt or lime segregations. Lacustrine.	0.7	3.0
Do.	Clay, with a few thin partings of fine sand; olive gray, slightly saline. Lacustrine.	0.7	3.7
Sehoo fm., dendritic mbr.	Fine sand, clear, light gray to light buff; similar to fine sand bed above except no salt segregations. Lacustrine.	0.5	4.2
Sehoo fm., dendritic and lower mbrs.	Clay, olive gray, slightly saline; a few partings of fine sand or sandy clay (rare below top 3 ft.); "fatty" feel, though most of the clay is somewhat sandy. More compact and thinly bedded in lower 2 ft. Lacustrine.	12.1	16.3

55a (continued)

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., lower mbr.	Silt, light grey, containing much NaCl (most coherent bed in the section). Thinly but faintly bedded. Numerous discontinuous hard limestone partings, 1/5 in. or less thick. Strong prismatic jointing. Much fine sand in lower 1/2 ft.	8.0	24.3
Wyemaha fm.	Fine sand, clean, fairly homogeneous, light gray to light buff. Perfectly unconsolidated except for several somewhat cemented partings. Bedding regular, level, but faint. Grains well rounded; even smallest ones commonly frosted. Lacustrine.	6.9	31.2
Do.	Sand similar to above, but with fairly numerous partings and fragments of greenish gray clay; many ostracods in places. Lacustrine.	4.6	35.8
Do.	Clay, "fatty", dark gray, with many ostracods along partings. Lacustrine.	4.7	40.5
Do.	Fine sand, unconsolidated, light gray. Lacustrine or eolian. Base not exposed.	1+	41.5

NE1/4SE1/4 sec. 5, T. 16 N., R. 29 E. Hand-auger hole in flat (former bed of Carson Lake) about 200 yards north of [illegible] scarp, altitude 3,915 ± 5 feet

Stratigraphic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm.	Silt, some fine-sandy silt and clayey silt, light to dark tan-gray; some salt segregations and possible lime nodules. Clam shells (Unio) common on surface. Lacustrine.	2.2	2.2
Do (?)	Fine sand, yellow, interbedded with some gray fine sandy silt. Lacustrine.	0.8	3.0
	[illegible]		
Sehoo fm., lower mbr.	Silt, medium to light olive gray and light gray. Lacustrine.	1.0	4.0
Do.	Silt and fine-sandy silt, light gray to light tan to grayish white; 1/2 in. olive silty fine sand [illegible]. Lacustrine.	2.1	6.1
Do.	[illegible] dark olive gray; [illegible] interbedded light gray silt and some very fine sand; [illegible]. Lacustrine.	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] very sandy [illegible].	0.5	10.5

55c

NE1/4NW1/4 sec. 5, T. 16 N., R. 29 E. Hand-auger hole in clay flat (former bed of Carson Lake), about 1 1/3 miles north of White Throne Mts.; 3,909 ± 1 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Fallon fm., upper mbr.	Silty clay and clayey silt, gray, with abundant clam (mussel) shells. Lacustrine.	0.2	0.2
Fallon fm.	Clayey silt, medium gray to drab grey; some silty clay and sandy-clayey silt. Lacustrine.	3.8	4.0
	Disconformity.		
Sehoo fm., dendritic mbr.	Silty clay, very limy, with oolites; light greenish gray. Lacustrine.	0.8	4.8
Do.	Clay, very limy, commonly silty, some sandy partings; many powdery white to light gray limy partings; abundant colites. Lacustrine.	4.2	9.0
Do.	Silty clay, greenish grey; some light gray silty calcareous partings and sandy partings; some oolites, ostracods, and hard lime nodules. A few bright yellowish-green or yellow-brown-green partings of silty clay between 10 and 11.5 ft. Lacustrine.	3.0	12.0
Sehoo fm., lower mbr.	Silty clay, greenish gray. No oolites below top 1 ft.; a few ostracods in top 3 ft., none below. Some sand and sandy clay partings in top 2 ft. Remaining 10 ft. very uniform silty clay (somewhat sandy), olive gray (with rusty streaks and spots), noncalcareous and non-saline. Lacustrine	12.0	24.0

55c (continued)

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm.,	Silty clay similar to above, but with several partings of reddish-tan fine-medium sand. Lacustrine.	1.2	25.6
Do.	Hard white (locally rust-colored) ash layer. Dry.	0.7	26.9
Do.	Silty-sandy clay similar to above. Micro-gray. Lacustrine.	0.3+	26.2

Hole was dry throughout, although level of Goose Lake was about 3,908 feet altitude.

55d

SW1/4NW1/4 sec. 5, SE1/4NE1/4 sec. 6, T. 16 N., R. 28 E. Stratigraphic section exposed in bluff at edge of flat, near mouth of Sam Spring Wash; top of section 4,020 ± 10 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., dendritic mbr.	Sandy fine gravel, pebbles to 2 in. maximum diam. Mainly rhyolite, some fragments of dendritic tufa. Lacustrine.	0.8	0.8
Do.	Fine sand, micaceous, light yellow to grey, well sorted, unconsolidated. Some gravelly coarse sand near base. Lacustrine.	2±	2.8±
	Disconformity.		
Sehoo fm., dendritic and lower mbrs.	Mainly silt, some silty clay and clayey silt in uppermost and lowermost parts, otherwise very uniform, commonly contains calcite and somewhat saline. Well bedded; prismatic jointing. Lacustrine.	40±	42.8±
	Sharp regular contact.		
Pyramid fm.	Medium sand, clean, well bedded. Lacustrine, possibly partly eolian. Base not exposed.	10±	52.8±

55e

NW1/4SW1/4 sec. 8, T. 16 N., R. 29 E. Stratigraphic section exposed in bank of gravel pit on pediment northwest of White Mtns.; top of section 3,995 ± 10 feet altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., dendritic mbr.	Medium and fine gravel, sand and silty matrix. Pebbles in lower 1 ft. commonly have thin lime coatings. Lacustrine.	2±	2±
	Unconformity.		
Sehoo fm. lower mbr.	Medium gravel, cobble gravel, and gravelly sand, interbedded; moderately well sorted; parallel-bedded. Boulder layer at bottom, 1 boulder thick, coated with lithoid tufa. Lacustrine.	4±	6±
	Angular unconformity.		
Wetna fm.	Silt at top and bottom, silty clay in middle; light olive gray; parallel bedded; nearly horizontal. Grades laterally into gravel in subparallel dipping embankments, which are eroded split) in about 200 ft to W. and 100 ft. to E. Lacustrine.	2±	8±
do.	Fine sand, yellow to pale yellow gray; well bedded, parallel bedded, nearly horizontal. Grades into gravel to E. and W. Lacustrine. Base not exposed.	6	14±

Near center of sec. 11, T. 16 N., R. 29 E. Stratigraphic section exposed in bank of wash in northeastern White Basin (Nev.) Top of section 4,180 ± 20 feet altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Below Tn., dendritic shw.	Pebble gravel (medium), unconsolid; some interbeds fragments of dendritic tufa; dips northward several degrees. Lacustrine.	4+	4+
Do.	Pebble gravel (medium), cemented by lithoid tufa; dips northward several degrees; thickness somewhat northward; about 25 ft to north because unconsolid and contains a few "heads" of dendritic tufa in situ. Lacustrine.	3+	4+
Below Tn., lower shw.	Pebble gravel (medium), unconsolid, with some sandy matrix. Lacustrine. Dips northward several degrees; increases to 20 ft thick about 50 ft to S., with about 10 ft of pebble gravel in central portion, underlain and overlain by fine and medium pebble gravel.	4+	8+
	Unconformity.		
[illegible] Tn	[illegible] pebble gravel, generally unconsolidated; pale [illegible] dips [illegible] northward (in southward to northward dip of overlying lake gravels) and thins to nothing 30 ft to E.	6+	14+
	Unconformity.		
Below Tn	Pebble gravel (medium) unconsolid. Lacustrine. Overlain with overlying sand dips northward several degrees.	8+	22+

Type locality of Paiute fm. Generalized stratigraphic section for several hundred feet along banks of Paiute Wash, about 0.[illegible] miles above where abandoned wagon road from Salt Wells to [illegible] crosses this wash, 7.7 miles airline northeast from Salt Wells, in NE1/4NE1/4 sec. 8, (unsurveyed), T. 16 N., R. 31 E. Top of section 4,200 ± 20 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Sehoo fm., lower mbr., bearing Toyeh soil.	Medium gravel pebble gravel with some cobbles and a few small boulders (rarely more than 1 ft diam.); bears Toyeh soil. Lacustrine.	2-6	4±
	Contact generally sharp, locally gradational.		
Sehoo fm., lower mbr., and Wyemaha fm.	Medium sand, unconsolidated, poorly exposed. Upper part is sand of lower mbr., Sehoo fm., disconformable upon local lower part of Eolian sand of Wyemaha fm.	4-8	10±
	Sharp contact.		
Eetza fm.	Pebble gravel to boulder gravel, boulders generally less than 1 1/2 ft; subrounded to subangular. Indistinctly bedded; roundstones all of Bunejug fm. Lacustrine.	2-4	13±
	Local disconformity.		
Paiute fm., bearing Cocoon soil.	Poorly sorted [illegible] gravel; boulders (1 ft max. diam.), cobbles, pebbles, sand, and silt in varying proportions; roundstones mostly subangular to angular, all of Bunejug fm.; indistinctly stratified; dips about 1° to 2° basinward. In places top several inches have red-brown, clayey, relatively lime-free matrix (eroded argillic horizon of Cocoon soil); remainder of thickness is lime-cemented (Cca horizon of this soil), with dense caliche in upper 4 to 6 ft., decreasing below. Base not here exposed, but unit thickens in exposures upstream, to locally 30 ft., and in places rests disconformably on the Bunejug fm.	10±	23±

SW1/4NW1/4 sec. 10 (unsurveyed), T. 16 N., R. 31 E. Auger hole at west edge of Fourmile Flat (playa), altitude 3,930 ± 10 ft.

Geologic Unit	Description	Thickness (feet)	Depth (feet)
Indian Lakes fm., (of Lake Lahontan age), bearing Toyah soil	Boulder alluvium, bearing Toyah soil.	1±	1±
Sehoo fm., Dendritic mbr.	Fine sand, grading downward to very fine sand; rusty yellow to pale greenish gray. Lacustrine.	1 1/2±	2 1/2±
Sehoo fm., lower mbr.	Silt, sand interbedded, very fine sandy, light olive. Lacustrine.	1 1/2±	4±
Do.	White pumiceous ash, well sorted. Lacustrine	1/2	4.5±
Do.	Silt and very fine sand, interbedded. Lacustrine	1 1/2±	6±
Dendritic fm.	Fine sand, well-sorted, rusty yellow. Lacustrine	2 1/2±	8 1/2±
Do.	Medium sand, well sorted, pale tan gray. Base not reached. Lacustrine?)	1 1/2±	10±

57 (2)

General stratigraphic section of Bunejug Formation in central Cocoon Mountains near southern edge of Carson Lake quadrangle; sec. 13 (unsurveyed), T. 16 N., R. 30 E. and sec. 18 (unsurveyed), T. 16 N., R. 31 E.

Description	Unit no.	Thickness (feet)
Olivine basalt, dark gray to black, vesicular; six or more flows in places.	1	75-100+
Local angular unconformity.		
Tuff, mostly light gray.	2	15-20
Small angular unconformity.		
Andesite and(or) basalt flows, dark gray.	3	75±
Tuff, bright red to pink	4	25±
Andesite and(or) basalt flows, dark gray	5	20±
Tuff, pale pink to light gray; poorly exposed	6	30±
Andesite and(or) basalt flows, dark gray	7	75±
Tuff. Upper 10± feet reddish, pink, orange, or tan; remainder white or light gray and contains much pumice and light-colored fragments. Locally at top of unit are thin beds of lapilli	8	50±
Andesite and(or) basalt flows, dark gray to black;	9	30±
Base not exposed.		

58 (S)

Soil-profile section of the Cocoon soil, sampled and described by M. E. Springer and F. B. Morrison. Location: Summit plateau of White Throne Mountains, 19 miles south of Fallon, Nev., NE1/4NW1/4 sec. 15, T. 16 N., R. 29 E. (1/4" SW of T of Mountains, in Cocoon Lake quad.) Topographic position: Broad, nearly flat ridge crest. Exposure: Pit. Altitude: 4,740 feet. Slope: 1 percent. Erosion: Very slight to none. Parent material: Solifluction and creep mantle about 15" thick, underlain by vesicular olivine basalt of the Dumajuy formation. Natural cover: Sparse shrubs (Shadscale, 30 percent; little grassland, 60 percent), very sparse Bromus tectorum.

Depth (inches)	Thickness (inches)	Soil horizon	Description
-1 to 0	1½	--/	Desert pavement of dark brown varnished floggy basalt blocks and pebbles, covering 90 percent of surface.
0-2	2	A	Pinkish gray (5 YR 7/2) fine sandy loam; structure, vesicular, moderate coarse columnar; weak medium platy; consistence, slightly hard, harsh. Abrupt, smooth boundary.
2-6	4	B_2	Pinkish brown (5 YR 5/3) clay loam; structure, medium granular; consistence, friable. Contains more roots than layers above and below. Clear irregular boundary.
6-9	3	B_3ca	Light reddish brown (5 YR 6/3) sandy loam; structure, weak granular; consistence, loose. A few roots; prismatic $CaCO_3$ concretions below 7 inches. Gradual boundary.
9-15	6	C_1ca	Pink (5 YR 7/3), gravelly sandy loam; contains many flat $CaCO_3$ concretions; structure, structureless, massive; consistence, mainly cemented, hard. Gradual boundary.
15		C_2ca	White $CaCO_3$ cementing fractured dark gray basalt.

/Probably has formed below than the Cocoon soil proper and hence not properly a part of the profile.

Soil-profile 58(B) chemical and physical properties

(Profile sampled and analyzed by M. E. Springer, Univ. of California, Berkeley, Calif.)

Soil horizon	Depth inches	Apparent density	Percent < 2 mm	pH	Percent N (whole soil)	C/N	CO_2 from carbonates (whole soil)	Particle size distribution (percentages of <2 mm (O.M. and carb. free soil))						
								2.0-1.0 mm	1.0-0.5 mm	0.5-0.25 mm	0.25-0.10 mm	0.10-0.05 mm	0.05-0.002 mm	<0.002 mm
A_1	0 - 2	1.33	97.2	9.3	0.017	8.3	1.4	0.5	0.3	0.6	18.6	26.7	35.2	18.1
A_2	2 - 6	1.04	99.8	7.6	0.047	12.5	0.1	0.3	0.4	0.6	14.1	19.8	21.5	43.3
B_{2ca}	6 - 9	1.35	57.2	8.4	0.026	10.4	13.7	1.1	1.3	4.5	26.0	24.5	28.1	12.5
C_{ca}	9 -15	1.47	21.5	8.5	0.014		23.2	2.6	6.0	3.6	25.7	23.4	22.7	20.0
	15		0.8				20.0							

59 (8)

Soil-profile section of the Cocoon soil, showing especially well preserved upper part of profile (sampled and described by H. E. Springer and R. B. Morrison). Location: Top of White Throne Mountains, 15 miles south of Fallon, Nevada. On line between sec. 15 and 16, T. 16 N., R. 29 E., at southern margin of Carson Lake quadrangle. Topographic position: Crest of ridge. Exposure: Dug pit. Altitude: 4,6[illegible] ft. Slope: ± 1 percent. Erosion: Very slight to none. Parent material: Colluvium (solifluction and creep mantle) about 1 1/2 feet thick, underlain by olivine basalt of the Lunajug formation. Present climate: Average mean annual precipitation about 6 inches; average mean annual temperature about 49°F. Natural cover: Sparse, covers less than 3/4 of surface; mainly shadscale (Atriplex confertifolia), little greasewood (Sarcobatus Baileyi), but sage (Artemisia tridentata), and rarely other shrub species, together with sparse grasses (mostly Bromus tectorum and forbs. Most of the bare part of the surface is covered by a desert pavement of slabby blocks and pebbles of basalt, only one stone thick; generally oriented parallel with the surface. The top surfaces of the stones are mostly shiny dark brown, dark reddish brown, to nearly black due to desert varnish, whereas the under surfaces are dull brownish gray or gray.

Depth (inches)	Thickness (inches)	Horizon	Description
0-1.0	1±	--	Desert pavement of dark brown varnished, flaggy blocks and pebbles of basalt, covering 90 percent of surface.

59 (S) (continued)

Depth (inches)	Thickness (inches)	Horizon	Description
0-2.5	2.5	A1/	Pinkish gray (7.5 YR 7/2) very fine sandy loam; structure, vesicular (numerous spherical or tubular voids 1/4 to 3 mm in diameter) moderate coarse columnar, weak medium platy; consistence, slightly hard, harsh, floury. Cracked vertically to form polygonal blocks 2.4-4 in. in diameter. Sharp smooth boundary.
2.5-7	4.5	B_1	Reddish brown (5 YR 5/4) clay loam; structure, medium granular to moniform (upper 1/4 inch is fine-granular and friable); consistence, slightly hard. Clear, irregular boundary.
7-10	3	B_{2ca}	Light reddish-brown (5YR 6/4) clay loam; structure, granular to moniform; consistence, slightly hard. Some $CaCO_3$ concretions. Clear, wavy boundary.
10-19	9	C_{ca_2}	Pink (5 YR 7/3) gravelly sandy loam, strong $CaCO_3$ cementation; structure, weak granular; consistence, very hard Gradual boundary.
19-45	26	C_{ca_3}	Pink (5 YR 8/3) stony sandy loam, some $CaCO_3$ cementation; structure, weak granular; consistence, very hard. Gradual boundary.
45-60	15	C_{ca_4}	Fractured basalt, cemented with $CaCO_3$ (soil line).

/Probably younger than the Cromer soil and hence not properly a part of the profile.

Soil profile 59(S) chemical and physical properties.

(Sampled and analyzed by M. E. Springer, Univ. of California, Berkeley, Calif.)

Soil horizon	Depth inches	Apparent density	Percent < 2 mm	pH	Percent N (whole soil)	C/N	CO_2 from carbonates (whole soil)	Particle size distribution: Percentage of < 2 mm. (O.M. and carb. free soil) 2.0-1.0 mm	1.0-0.5 mm	0.5-0.25 mm	0.25-0.10 mm	0.10-0.05 mm	0.05-0.002 mm	< .002 mm
A	0 - 2.5	1.52	99.1	9.0	0.012	9.7	0.7	0.5	0.5	0.7	22.8	26.7	35.9	12.9
B_2	2.5 - 7	1.03	93.3	6.4	0.026	12.6	0.1	0.5	0.6	1.0	14.9	20.0	22.7	40.3
B_{3ca}	7 - 10	1.12	50.3	7.3	0.014	11.0	0.8	5.5	4.8	4.7	25.2	23.8	22.9	14.1
C_{ca_2}	10 - 14	1.56	47.8	8.7	0.011	10.0	4.4	4.3	5.0	8.7	36.0	23.0	19.6	3.3
	14 - 19		15.4	8.6	0.004		5.7							
C_{ca}	19 - 36		22.3	8.5	0.005		5.2	7.9	8.3	10.0	30.9	20.3	15.9	7.4
	36 - 60						3.8							

SE1/4NW1/4 sec. 13, T. 16 N., R. 28 E. Stratigraphic section exposed in bank of gully through high gravel embankment at northern front of Desert Symbol; top of section 4,250 ± 20 ft altitude.

Geologic unit	Description	Thickness (feet)	Depth (feet)
Tcbcc fn.; lower div.	Fine gravel, entirely rhyolite pebbles; thickens northward. Lacustrine.	2-10	6±
Tc.	Fine and medium gravel, entirely rhyolite pebbles, cemented by lithoid tuff with 0 to 1/2 ft of cellular tuff at top. Lacustrine.	2±	8±
	Unconformity.		
Tcbcc fn. (probably regressive shore deposit of Ed Pahse Lake).	Cobble gravel, with much interstitial fine gravel and coarse sand. 85 percent of rounded stones are rhyolite, remainder basalt and andesite; many are subangular. Lacustrine.	13±	21±
Tcbcc fn. (probably offshore deposit of Ed Pahse Lake).	Upper 20in zone (top to bottom): 3.5 ft white, light gray-yellow, 0.5 ft silty clay, tan; 1.5 ft very fine sand, clean, tan; 1.0 ft white, tan; 0.5 ft very fine sand, tan. Lacustrine.	7.0	28±
Tcbcc fn. (probably shore deposit of Ed Pahse Lake).	Cobble gravel with interbedded fine gravel, sand, silt, and clay; angular; entirely rhyolite. Lacustrine to alluvial.	2	30±
Disconformity between Tcbcc and Ed Pahse Lake?	Unconformity.		

60 (continued)

Geologic unit	Description	Thickness (feet)	Depth (feet)
Betza fm., (probably high-stage offshore deposit of Lst Betza Lake).	Silt; lacustrine; weakly prismatic structure and pale red-brown color suggest incipient soil development.	0.5±	30.5±
Bo.	Very fine sand, light tan; lacustrine.	0.5	31±
	Probable disconformity (subaerial exposure?)		
Bo.	Clayey silt, silt, and some silty clay, tan-brown, with chocolate-brown staining along irregular prismatic partings, and carbonaceous streaks (root remains?) Lacustrine.	2	33±
Bo.	Silty clay, grayish brown, with some white gypsum streaks. Lacustrine.	0.6	33.5±
Bo.	Sand, medium, fine, and very fine, interbedded, well sorted. Lacustrine.	1.5	35±
Alluvium of Betza age?	Fine gravel, angular, practically all rhyolite. Alluvial gravel?	?	37±
	Disconformity, probable subaerial exposure.		
Betza fm.	Medium sand, yellow, pebbly in top 1/2 ft. Some white limy spots, probably soil lime (possibly incipient soil profile). Lacustrine.	0.6	37.6±
Bo.	Fine gravel, angular, mostly rhyolite. Lacustrine. Base not exposed.	0.6	38± Bottom of exposure

60 (continued)

Note: The banks of a main wash 1/4 mile to southwest expose 20 to 85 ft of Estaz fm. between 4,390 to about 4,200 ft altitude. Unconformably underlying gravel and tufa of the lower member of the Schoo fm. at about 4,300 ft altitude (top of section) are the following Estaz sediments, from top to bottom: 20 ft of cobble gravel, then 15 ft of sandy fine- to medium-gravel, then a 25-ft zone of alternating sand (coarse to fine), silt, and some clean medium gravel (the lower part is mostly sand and fine-gravelly sand). The last zone transgresses 5 to 25 ft of coarse boulder gravel that is the basal deposit of the Estaz fm. The basal gravel can be traced continuously up to the highest shoreline (Lahontan beach), which it underlies.

60a

SW1/4 sec. 20 (unsurveyed), T. 16 N., R. 29 E. Stratigraphic section exposed in dug pit at crest of small, highest, spit at northwest end of Russell spit (Russell's spit A [1885, pl. 19]), just below highest shoreline of Lake Lahontan; altitude, 4,380 ± 2 ft.

Geologic Unit	Description	Thickness (inches)	Dep (in
Hetza fm., bearing Churchill soil.	Pebbles, very angular of andesite and basalt, and some cobbles, mainly rhyolite; desert varnish on upper surfaces. Lag gravel.	1±	1±
Do.	Silty sand with some pebbles; vesicular structure. Vesicular soil horizon.	3	4±
Do.	Medium gravel, matrix of fine sand and some flocculated clay, pale reddish brown, non-calcareous. Lake gravel with oxide horizon of Churchill soil.	8	12±
Do.	Medium gravel, very well sorted; white soil-lime coatings (chalky, soft and powdery) on bottom 3/4's of pebbles. Lake gravel with Cca horizon of Churchill soil. Base not exposed.	14	26±

Table 1. Major Cenozoic rock-stratigraphic units in the Carson Desert area

59-87

Time		Rock-stratigraphic units	Maximum exposed thickness in feet
Period	Epoch		
Quaternary	Recent	Fallon formation. Post-Lake Lahontan lake and subaerial sediments.	35
		Lahontan Valley group. Sediments of Lake Lahontan and associated subaerial sediments.	330
	Pleistocene	Paiute formation. Fan gravel and colluvium.	40
		Basalt of Rattlesnake Hill. Basalt flows and agglomerate, coeval with Paiute formation or earlier.	200
		—unconformity?—	
		Pre-Lake Lahontan lacustrine sediments. Sand and gravel; one exposure.	20
		—unconformity?—	
Tertiary	Pliocene	Bunejug formation. Olivine basalt flows, some basaltic tuff, in upper part; andesitic to basaltic flows in lower part, with some dacite and basic to silicic tuff. Commonly unconformable upon Truckee formation, but in places possibly interfingers with Truckee.	650
		—Local unconformity—	
		Truckee formation. Silicic to basic tuff, tuffaceous sandstone and gravel, diatomite, and limestone.	500
		—Local unconformity—	
	Miocene and older	Eagles House rhyolite. Rhyolitic to dacitic flows; thick and massive in lower part, thin and locally perlitic and/or pumiceous in uppermost part, which locally grades laterally into lower part of Truckee formation.	400
		—Unconformity—	
		Dacite of Rainbow Mountain. Mainly dacitic flows.	200?
		—Unconformity?—	
		Basalt of Rainbow Mountain. Basaltic, and some andesitic, flows; some tuff; much faulted and generally considerably altered. Base not exposed.	700?