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Inventory of Glaciers in the Sierra Nevada, California

Open-File Report 2006–1239

U.S. Department of the Interior
U.S. Geological Survey

Cover. Darwin Glacier, below Mount Darwin, Photo by G.K. Gilbert Kings Canyon National Park, California, August 14, 1908. The image is digitally stitched from photographs ggk0372, ggk0373, and ggk0374 archived at the US Geological Photo Library, Denver, CO.

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DIRK KEMPTHORNE, Secretary

U.S. Geological Survey
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Conversion Factors

Multiply	By	To obtain
cubic foot (ft^3)	0.02832	cubic meter (m^3)
mile (mi)	1.609	kilometer (km)
foot (ft)	0.3048	meter (m)
inch (in.)	25.4	millimeter (mm)
square mile (mi^2)	2.590	square kilometer (km^2)

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Forward

The inventory of the Glaciers in the Sierra Nevada, California, was completed and being readied for publication in the Professional Paper series of the U.S. Geological Survey in late 1991. At that time, it was to be published as U.S. Geological Survey Professional Paper 705-B, the second chapter in a planned multi-chapter series of inventories of "Glaciers in the United States." The first in the series, U.S. Geological Survey Professional Paper 705-A had been published in 1971:

> Post, Austin, Richardson, Don, Tangborn, W.V., and Rosselot, 1971, Inventory of glaciers in the North Cascades, Wash.: U.S. Geological Survey Professional Paper 705-A (Glaciers in the United States), 26 p. with plates in pocket.

A rough draft of U.S. Geological Survey Professional paper 705-C, Inventory of Glaciers in the Olympic Peninsula, Wash., was written by Richard C. Spicer. This third chapter was based on his master's degree dissertation, and is being finalized for publication at the time of this writing.

Because of changing research priorities and budget limitations, the completed unpublished manuscript languished until Professor Andrew G. Fountain, Departments of Geology and Geography, Portland State University, Portland, Oregon 97207, who had been "storing" the manuscript, asked Richard S. Williams, Jr., Chief, Glacier Studies Project

[http://www.glaciers.er.usgs.gov], U.S. Geological Survey, if the Glacier Studies Project could optically scan the text and graphics, including four plates, and publish the report. It was decided that that was possible, and that the U.S. Geological Survey's Open-File Report series was the best way of making the report available to the glaciological community and the general public.

Prof. Fountain had previously worked as a field glaciologist for the U.S. Geological Survey. Publication of the Inventory of the Glaciers in the Sierra Nevada, California would provide access and a citable reference to this report. He employed Mr. Hassan Basagic, a graduate student with extensive knowledge of the glaciers in the Sierra Nevada to recompile the manuscript to make certain that all text pages, figures, and plates were included. The recompiled manuscript was sent to Richard S. Williams, Jr., for publication in the U.S. Geological Survey's Open-File Report series under the ægis of the Glacier Studies Project.

Under the national, inter-agency Federal U.S. Global Change Research Program and its successor, the U.S. Climate Change Science Program, and from the various books periodically published by the multi-national Intergovernmental Panel on Climate Change, there has been a rapidly growing interest in changes in the Earth's cryosphere [for example, glaciers, snow cover, floating ice (sea, lake, and river), and permafrost]. The recently published (2004) Arctic Climate Impact Assessment report [http://acia.uaf.edu] addresses the impact of changes in the Arctic cryosphere. Reductions in volume (and area) of the Earth's glaciers (from alpine glaciers to ice sheets) because of the meltwater contribution to sea-level rise, is a change that has global implications to the future economic and ecologic sustainability of low-lying coastal regions and islands.

Accurate inventories of the Earth's glaciers establishes a "baseline" reference for comparison of post-baseline changes in area and volume, either positive or negative. Open-File Report 2006–1239 is another contribution to the compilation of global glacier inventories, one of the major objectives of the World Glacier Monitoring Service headquartered in Zürich, Switzerland [http://www.geo.unizh.ch/wgms].

The participation of Andrew G. Fountain and Hassan J. Basagic was supported by the USGS Glacier Studies Project and the Western Mountain Initiative. Support was also received from NSF grant BCS-0351004, NASA grant NNGO4GJ41G.

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INVENTORY OF GLACIERS IN THE SIERRA NEVADA, CALIFORNIA

by William Raub[1], C. Suzanne Brown[2], and Austin Post[2]

ABSTRACT

All perennial bodies of ice in the Sierra Nevada are listed and classified. The inventory includes 497 glaciers covering a total area of 50 square kilometers and 788 small ice bodies which do not meet the definition of a glacier, covering a total of 13 square kilometers. The listings include each ice body's drainage basin, location, orientation, altitude, area, and length the glaciers are also classified as to form, source, surface condition, and nature and activity of the terminus.

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SETTING

The Sierra Nevada (fig. 1; pls. 1 - 4) is a continuous range of high mountains extending 620 km from the volcanic Cascade Mountains of Washington, Oregon, and Northern California, to the Tehachapi Mountains and Mojave Desert of Southern California. The "High Sierra" is a common name for the rugged central plateau area about 40 km wide, which extends northward from Mt. Whitney, and definitions of its length range from 160 km (Wahrhaftig and Birman, 1965) to 260 km (Richard Ellefson, oral commun., 1974). This region was severely glaciated during the Pleistocene, leaving dozens of basins separated by a spectacular array of peaks and spires, with summits ranging from 3,900 m to 4,300 m in altitude. Serrated ridges and glacier-gouged cirques abound; hundreds of the cirques contain lakes. Here in the highest and most protected cirques are the glaciers described in this report. Major streams head in series of broad glaciated basins. Western rivers descend into spectacular valleys deeply eroded by the Pleistocene glacial advances, Yosemite and Kings Canyon are such remarkable examples that both are preserved as National Parks. Below the level of ice erosion these canyons are V shaped, narrow, and crooked; they continue on to where the rugged foothills abruptly merge into the Great Central Valley of California. East of the crest, the streams are much smaller and descend steep, glaciated valleys to the desert basins of eastern California and Nevada.

Figure 1. Orientation map of California and the Sierra Nevada.

All the streams draining the Sierra Nevada are of great commercial importance, as practically all the water is used for irrigation, industrial, and household use. Most of the westward-draining rivers are dammed and the reservoirs provide stabilized runoff, which is used in part for power generation, city water supplies, and recreation, but primarily to irrigate the Central Valley. Practically all water from the southeastern Sierra Nevada is captured by an aqueduct and piped across the Mojave Desert to the Los Angeles basin, where it has made possible the tremendous growth of the cities there.

Much of the Sierra Nevada is forested, with climatic zones ranging from Alpine-Arctic in the high mountains to upper Sonoran in the lower foothills. In the High Sierra, scattered sub-alpine forests and open, park-like glades add greatly to the beauty of this upland area. Dense coniferous forests, predominantly of fir and pine, and superb groves of magnificent Sequoias, occupy the mid-altitudes. The finest of these groves are preserved in Sequoia, Kings Canyon, and Yosemite National Parks. The foothills of the Sierra Nevada are hot and dry on the western slopes and they are lightly forested with various species of oak. In the spring, both east and west of the Divide, and during the summer at high altitudes, wild flowers blossom in profusion, adding to the beauty of the region.

The Sierra Nevada is a great westward-tilted fault block with a long, gentle western slope and a high, steep eastern escarpment. It is as much as 120 km wide in the north, narrowing to less than 80 km in the southernmost part, the Tehachapi Mountains. The range trends generally NNW. The highest altitude, 4421 m, occurs at Mt. Whitney, latitude 36°34'42", and the general altitude level decreases gradually northward from this point.

HISTORICAL OBSERVATIONS

Prior to 1871 no glaciers of the Sierra Nevada of California had been reported. In October of that year the Black Mountain Glacier in a shadowy amphitheater on the side of Merced Peak was discovered (John Muir, 1871). Shortly after, Muir, joined in later years by Joseph LeConte, studied and sketched the Lyell and McClure Glaciers to support his theory of glaciation in the formation of Yosemite Valley's geological features.

In the 1860's and 70's Clarence King, while working under state geologist J. D. Whitney, explored the Kings-Kern Divide and the Mt. Brewer vicinity. Later, King described what evidently was a glacier in the Ritter Range. He went on to describe and name a glacier on Mt. Shasta after J. D. Whitney, who had convinced his field crews that no glaciers existed in the Sierra.

I. C. Russell (1897) of the U.S. Geological Survey mapped and photographed the Yosemite region glaciers in 1883. In the U.S. Geological Survey Fifth Annual Report, Russell (1885) mentions nine small glaciers, including those on Mt. Lyell, Dana Mountain, the Parker Creek group, Mt. Gibbs, and Mt. Conness. He published a map and photograph of the Mt. Lyell glaciers in the Eighth Annual Report (Russell, 1889) and explained that those glaciers were not remnants of

the Pleistocene glaciers, but that they had reformed after the earlier glaciers had completely disappeared. A. C. Lawson (1904) further discussed glaciers in the Sierra in his paper on "The Geomorphology of the Upper Kern Basin."

Modern study of the glacial history of the Sierra Nevada was begun in 1930 by Matthes (1930) and Blackwelder (1931). In 1939 the American Geophysical Union Committee on Glaciers, headed by Matthes, was working on Sierra glaciers in the Yosemite region when they witnessed a lake behind the Mt. Conness Glacier moraine front break through, exposing the banded ice core of the rock-mantled terminal moraine so common on Sierra glaciers. This observation suggested that ice cores were present throughout the Sierra on similar glaciers (Matthes, 1940). Matthes considered the possibility of glaciers south to 37°60'30", and the existence of very small glaciers at this latitude was confirmed by W. Raub in 1971. Raub also observed glaciers in the Kaweah Peaks in 1938. Yosemite National Park naturalists have made periodic observations since 1931 and periodic surveys since the 1950's on the park glaciers. The American Alpine Club (AAC) and Sierra Club have also been active in examining California glaciers. In 1946 the AAC mapped the Palisade Glacier (Heald, 1947). The Sierra Club bulletins also contain several excellent articles on the Sierra Nevada glaciers (Adams, 1932; Farquhar, 1920; Gilbert, 1904; Harrison, 1950 and 1951; Matthes, 1948).

PLEISTOCENE GLACIATION

There is evidence glaciers began forming in the Sierra Nevada between 2.7 and 3 million years ago. There were also major Pleistocene glacial advances about 750,000 years B.P. (before present), about 400,000 years B.P., again about 130,000 years B.P., and several advances from 60,000-20,000 years B.P. (Birkeland, and others, 1971; Hill, 1975, p. 145).

During these glaciations, ice sheets covered much of Canada and northeastern North America, and in the west they covered parts of northern Washington, Idaho, and Montana. Other ranges, such as the middle and southern Cascades and most of the Rocky Mountains, contained ice fields and valley glaciers separate from the continental ice sheets. At the height of glaciation, the Sierra Nevada bore a mountain icefield 435 km long and 32-50 km wide (Wahrhaftig and Birman, 1966, p. 158) (fig. 2). It consisted mainly of a series of ice-filled basins from which valley glaciers descended east and west. The steep glaciers on the east side generally filled their outlet valleys to a thickness of about 300 m on the west, ice flowing into the narrow canyons of the major rivers filled them to greater depths (Wahrhaftig and Birman, 1966, p. 161).

Moraines from the advances of 60,000-20,000 B.P. are particularly well developed on the eastern slope of the Sierra. The glaciers did not spread as piedmont lobes, but maintained about the same widths they had in their mountain canyons, being enclosed by sharp-crested lateral moraines several hundred meters high. Noteworthy examples of these classic lateral and terminal moraines are present along many streams such as Green, Virginia, Mill, Leevining, and Walker Creeks. "Many of these morainal ridges have double or triple crests, with narrow trenches running the length of the ridge between the crests, indicating two or three advances of the ice during their construction" (Wahrhaftig and Birman, 1966, p. 161). Little Walker Lake above Mono Lake, for example, is enclosed by moraines deposited by three glacier advances (Hill, 1975, p. 146; Sharp and Birman, 1963).

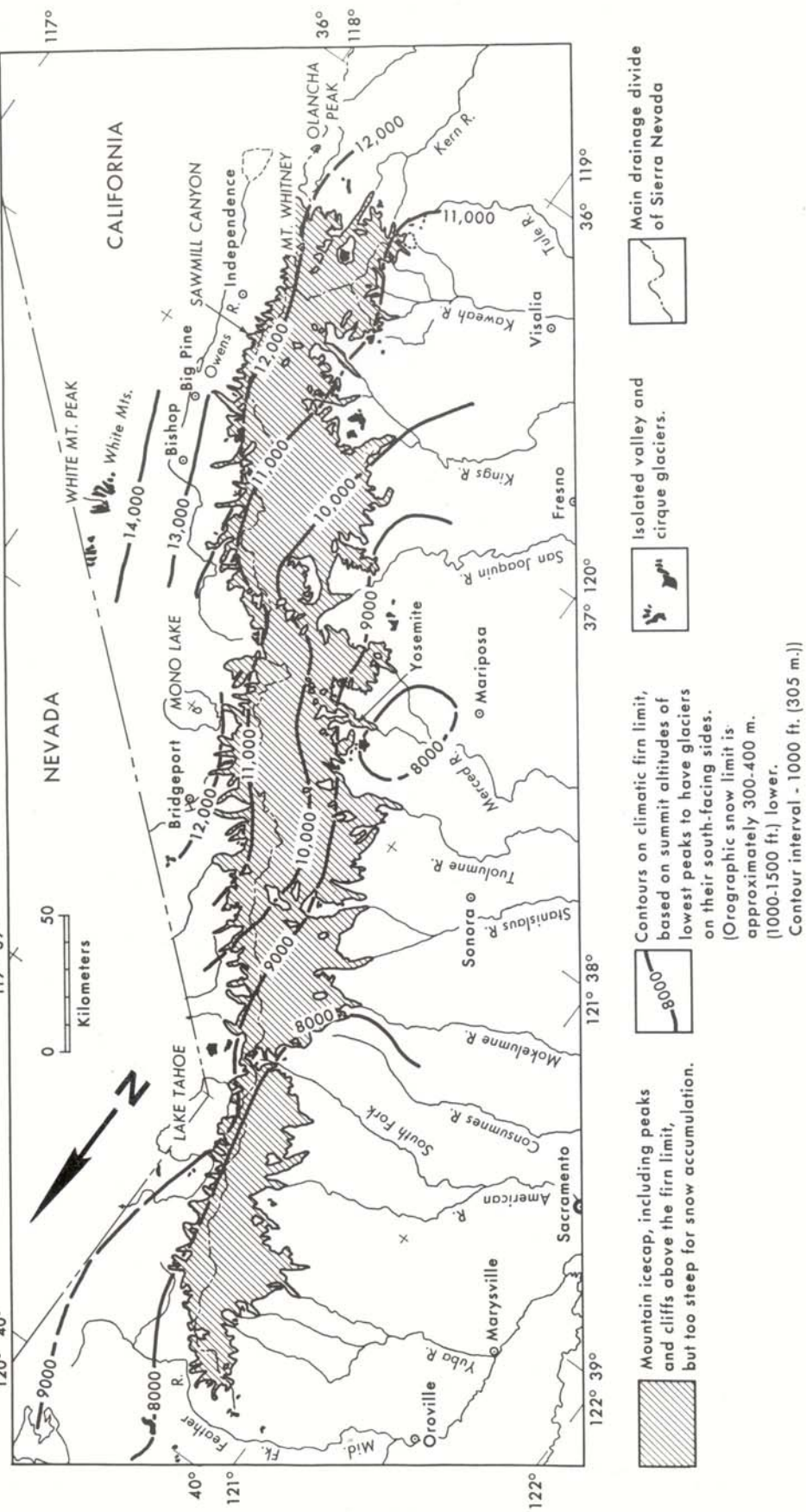

Figure 2. Map showing Wisconsin glaciation and climatic firn limit in the Sierra Nevada and White Mountains.

RECENT ACTIVITY

During the last 6,000 years of the Holocene, now called the Neoglacial (Denton and Porter, 1967), climatic conditions have been favorable for glaciers to form several times in various parts of the world. There have been three glaciations in the Sierra Nevada (Burke and Birkeland, 1983), during which time there was extensive glacial and rock-glacial activity.

Present-day glaciers, although occupying cirques carved by the Pleistocene glaciers, were formed during the most recent glaciation, the Matthes, named after Francois Matthes. This glaciation began about 500 years ago, with the glaciers reaching maximum size about 1700-1750. Immediately after 1750 the glaciers retreated somewhat conditions favoring glacier growth again resulted in slight advances until the turn of this century. The ice then began to thin, with general rapid retreat of glaciers from their terminal moraines taking place, particularly in the 1930's. Farquhar (1920) first noticed thinning of Lyell Glacier (#4435 1, 2[1], pl. 2) in 1919. From reports of Assistant Park Naturalist M. E. Beatty, East Lyell (#4435 1, pl. 2) lost almost twice as much volume in the three-year period 1936-39 as in the three-year period 1933-36 (Matthes, 1940). Mt. Conness Glacier (#4223 15, pl. 2) once a very active glacier a hundred meters or more thick (Matthes, 1948), retreated 30 m in 1936-37 and 14 m between 1937 and 1939 (Matthes, 1940) and was "disappearing most rapidly" in 1949 (Harrison, 1950).

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[1]#4435 1, 2 refers to the number in Table 1A. See pg 16 for explanation of the numbering system.

During the 1940's a few of the glaciers actually increased in thickness and, although the termini continued to recede, the drastic glacier recession experienced during the 1930's appeared to be slowing down. Harrison (1951) reported a thickness increase between 1937 and 1949 of 8 m near the icefall on Lyell Glacier, and approximately 7 m under a cliff at the east end of the glacier a rock shoulder exposed in a 1937 photograph was completely covered in a 1953 photograph (Harrison, 1950, 1951, 1956). He also reported (Harrison, 1951) an increase in the thickness of Dana Glacier (#4223 6, pl. 2) between 1940 and 1949 and Heald (1947) reported that Palisade Glacier (#4214 11, pl. 4) had increased in thickness in 1946.

This period of thickening, however, was short-lived Meier and Post (1962) reported that most of the Sierra Nevada glaciers experienced strongly negative net budgets in the late 1950's, and this rapid decline continued into the 1960's. The heavy-precipitation winters of 1966-67, 1968-69, and 1972-73 resulted in a temporary increase in the size of many Sierra glaciers. In 1975, the National Park Service at Yosemite reported that the rapid decline of the 1960's had slowed and the glaciers were about the same size in 1975 as in 1970, with some showing a slight increase in the upper regions and a decreased thickness in the middle and terminus regions (National Park Service, 1976). Between 1975 and 1980 periods of severe drought (1976 and 1977) and record precipitation (1978 and 1980) have resulted in both extremes in ice loss and rapid recovery of Sierra Nevada glaciers. Thus, no generalizations of either a present thickening or a thinning trend may be made.

PRESENT GLACIERS

Most of the present-day glaciers in the Sierra Nevada are small cirque glaciers, ice in niches, or in perched clefts, scattered widely from near Lake Tahoe in the north to just south of Mount Whitney and the great Western Divide (pls. 1-4). Even glaciers less than 0.01 km^2 in area may show a bergschrund, a high steep front, or crevasses, and outlet streams contain fine suspended sediment, demonstrating glacier flow. Many glaciers have exposed ice in the upper portions with heavily debris-covered termini. These debris-covered termini are often very high and unusually large for the size of the glacier occasionally the slope of these fronts exceed 45°-60°.

Besides the small alpine glaciers, the Sierra has many rock glaciers. These rock glaciers evidently formed in early Neoglacial time when the onset of conditions favoring glacier growth caused ice to form in massive rock deposits formed by mass wasting in Pleistocene cirques. As ice accumulated, these deposits began to flow and many still continue to do so. The present alpine glaciers also formed in the highest of these cirques many of the present glaciers are in part glacier ice and in part rock glaciers. In some places, the clear ice and debris-covered ice are no longer in contact, the latter consisting of massive arcuate ice-cored moraines or series of looped moraines.

GLACIER DISTRIBUTION

The Sierra Nevada to the north of Sonora Pass is generally lower in altitude than that to the south, but greater snowfall causes some small glaciers to exist at these much lower altitudes, such as in the Crystal Range (pls. 1 and 2). Farther south, somewhat larger glaciers are found at the head of the Lyell Fork of the Tuolumne River and at the head of Robinson Creek (pls. 1 and 2). Medium to large (0.6-1.0 km^2) glaciers abound at the head of Bishop Creek, the South Fork San Joaquin River, Pine Creek, and the Middle Fork Kings River (pls. 3 and 4). The Palisade Glacier at the head of Big Pine Creek is the largest in the Sierra, with an area of 1.6 km^2. Clusters of small glaciers, situated mainly at the base of protective headwalls, are found along the northern Great Western Divide, on the north side of the Kings-Kern Divide, and on the Kaweah Peaks at the headwaters of the Kern-Kaweah River. The most southerly group of glaciers is in the Mt. Whitney region, extending south to Mt. Pickering (Kehrlein, 1950).

INVENTORY COMPILATION METHOD

On August 23 and 24, 1972, during a period of severe drought, with a minimum of snow cover on the glaciers, the U.S. Geological Survey made a detailed glacier photography flight which covered the entire Sierra Nevada. This inventory is compiled from data collected on that flight. All glaciers and ice patches plus many ice-cored rock glaciers are included. The glaciers and ice patches, after being identified on the vertical and oblique photographs, were outlined on 1:62,500 scale U.S. Geological Survey topographic quadrangles and inventoried by William Raub, assisted by George Curtis.

For this study, a glacier is defined as any perennial ice exhibiting one or more of the following: (1) snow and/or ice accumulated over several years, (2) a bergschrund or crevasses, (3) heavily debris-covered ice which exhibits evidence of flow, and (4) moraines and trim lines. The minimum size mapped in this survey is 0.01 km^2. Included are (1) active glaciers, (2) perennial ice patches derived from direct snow accumulation, wind drift, or snow avalanches, (3) relict ice from former active glaciers, and (4) rock glaciers.

This report has been compiled using data derived from approximately 300 vertical and oblique aerial photographs. USDA Forest Service aerial photos aided in some terminus mapping. This information was augmented by many personal observations by Raub. The glaciers' and ice patches' geographic coordinates, altitudes at the headwall and terminus, and area were recorded. Due to the small size of most of the glaciers and the relatively large contour interval (80 ft) on the maps, some altitudes are accurate only to within 10 to 15 m. Each glacier was classified as to type, source, surface condition, nature of the terminus, and orientation the standard glacier-inventory guide recommended by the International Commission on Snow and Ice (UNESCO/IASH, 1970) was used, but modified to better describe the many tiny Sierra Nevada glaciers. The tabulation scheme and computer compilation program were designed for all types of glaciers occurring in the United States thus, not all the categories have been used in this particular study. Appendix 1 gives a brief description of all items tabulated in the inventory.

LIST OF GLACIERS

The resulting glacier tabulation is shown in table 1*A*, and the ice patch tabulation in table 1*B*, unless otherwise noted in the explanation, any missing values indicate the data were not available.

TABLE 1A.--*Glaciers of the Sierra Nevada*
East Carson River Basin

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4111	1	38 24.0	119 36.8	N	3170	3121	3109	0.150	0.200	0.015	0.015	3	0.200	75121311	
4111	2	38 23.9	119 37.2	N	3243	3146	3097	0.180	0.280	0.070	0.110	3	0.540	74211342	
4111	3	38 24.7	119 37.6	N	3194	3170	3170	0.125	0.125	0.020	0.020	3	0.200	75111311	
4111	4	38 24.6	119 37.8	N	3292	3243	3194	0.125	0.170	0.020	0.022	3	0.190	75511332	
4112	1	38 21.4	119 37.9	N	3316	3291	3279	0.100	0.150	0.015	0.020	3	0.150	75111311	

No. glaciers 5 Total ice area 0.140 Total ice and moraine area 0.187
Average ice area 0.028 Average ice and moraine area 0.037
Mean altitude of ice 3218 Mean altitude ice and moraine 3206

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4121	1	38 8.3	119 30.7	N	3292	3246	3194	0.175	0.200	0.060	0.070	2	0.300	65651346	
4121	2	38 8.7	119 32.6	N	3414	3371	3322	0.170	0.190	0.040	0.060	2	0.300	64631332	
4121	3	38 8.9	119 32.8	E	3414	3383	3383	0.130	0.130	0.034	0.034	2	0.400	76631311	
4121	4	38 9.4	119 32.7	N	3292	3122	2952	0.200	0.200	0.040	0.040	2	0.190	75321311	
4121	5	38 9.3	119 35.7	NE	3292	3255	3194	0.100	0.100	0.010	0.032	2	0.150	98521374	
4121	6	38 16.0	119 35.7	SE	3231	3197	3197	0.250	0.250	0.020	0.020	2	0.100	75111311	
4121	7	38 17.2	119 38.8	NE	3389	3365	3365	0.150	0.150	0.035	0.035	2	0.225	74851356	
4122	1	38 22.2	119 36.2	N	3292			0.150	0.150	0.020	0.020	3	0.300	75021300	
4122	2	38 22.6	119.36.6	NE	3292	3243	3188	0.270	0.300	0.050	0.070	3	0.300	74551300	
4122	3	38 22.9	119 36.8	N	3414	3377	3322	0.100	0.200	0.020	0.050	4	0.500	76001300	

No. glaciers 10 Total ice area 0.329 Total ice and moraine area 0.431
Average ice area 0.033 Average ice and moraine area 0.043
Mean altitude of ice 3308 Mean altitude ice and moraine 3284

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
East Walker River Basin

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4131	1	38 2.2	119 17.2	N	3414	3292	3292	0.180	0.180	0.020	0.020	3	0.800	75725356	
4131	2	38 2.1	119 18.3	N	3536	3444	3444	0.150	0.150	0.020	0.022	2	0.150	75521316	
4131	3	38 2.1	119 18.6	NE	3511	3426	3365	0.280	0.600	0.040	0.110	2	0.200	64751377	
4131	4	38 5.2	119 20.6	NE	3536	3487	3414	0.100	0.200	0.025	0.040	2	0.220	74831356	
4132	1	38 6.0	119 19.1	N	3571	3219	3219	0.200	0.200	0.026	0.026	3		75021312	
4132	2	38 5.3	119 21.1	N	3487	3353	3267	0.500	1.000	0.180	0.380	2	0.600	64721377	
4132	3	38 5.3	119 21.4	N	3566	3243	3231	1.100	1.180	0.275	0.315	2	1.050	64721347	
4132	4	38 5.5	119 22.0	N	3292	3206	3206	0.100	0.180	0.020	0.030	2	0.200	75721346	
4132	5	38 5.4	119 22.2	N	3255	3206	3206	0.200	0.200	0.030	0.030	2	0.200	75522311	
4132	6	38 5.7	119 22.4	NE	3389	3194	3194	0.400	0.400	0.042	0.043	2	0.200	75541352	
4132	7	38 5.7	119 22.7	N	3536	3267	3243	0.450	0.650	0.130	0.160	2	0.400	64721347	
4132	8	38 6.0	119 23.1	N	3438	3304	3292	0.400	0.500	0.120	0.175	2	0.520	64851347	
4132	9	38 6.4	119 23.6	N	3462	3328	3322	0.350	0.400	0.720	0.820	2	0.300	65751336	
4132	10	38 6.4	119 23.9	N	3389	3316	3316	0.090	0.090	0.021	0.023	2	0.030	76321331	
4132	11	38 6.4	119 24.1	N	3341	3280	3146	0.200	0.500	0.023	0.095	2	0.300	75731367	
4132	12	38 6.3	119 24.4	N	3365	3261	3146	0.180	0.480	0.025	0.140	2	0.300	65821377	
4132	13	38 6.8	119 27.3	N	3219	3158	3133	0.200	0.300	0.030	0.055	2	0.200	75751347	
4133	1	38 9.5	119 26.5	N	3316	3243	3097	0.180	0.700	0.035	0.110	3	0.300	64721377	

No. glaciers 18 Total ice area 1.782 Total ice and moraine area 2.594
Average ice area 0.099 Average ice and moraine area 0.144
Mean altitude of ice 3356 Mean altitude ice and moraine 3337

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Owens River Basin

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4211	1	36 32.1	118 17.7	E	3901	3865	3816	0.100	0.200	0.012	0.045	3	0.125	74721366	
4211	2	36 32.3	118 14.8	E	3901	3853	3731	0.200	0.790	0.015	0.140	3	0.125	98721299	
4211	3	36 33.5	118 16.3	N	3780	3627	3566	0.300	0.675	0.080	0.180	2	0.450	98941377	
4211	4	36 33.5	118 17.0	N	3901	3853	3853	0.150	0.200	0.015	0.025	2	0.150	75631366	
4211	5	36 33.8	118 17.2	N	3901	3840	3780	0.150	0.650	0.030	0.110	3	0.200	95731376	
4211	6	36 34.0	118 17.3	E	3901	3840	3780	0.100	0.350	0.020	0.080	2	0.200	98831366	
4211	7	36 34.5	118 17.2	E	3877	3780	3708	0.200	0.600	0.035	0.180	2	0.450	98711377	
4211	8	36 36.0	118 16.4	N	3853	3731	3609	0.150	0.400	0.020	0.055	2	0.180	74721367	
4211	9	36 36.4	118 17.4	N	3682	3566	3536	0.150	0.600	0.050	0.140	2	0.450	98721377	
4211	10	36 36.8	118 17.9	E	3731	3658	3572	0.100	0.600	0.020		3	0.200	75821301	
4211	11	36 37.3	118 18.0	NE	3658	3596	3414	0.200	1.050	0.050	0.240	2	0.450	98736381	
4211	12	36 39.4	118 17.8	NE	3755	3670	3511	0.130	0.800	0.025	0.110	3	0.390	98721377	
4211	13	36 39.4	118 17.8	NE	3780	3670	3444	0.100	0.850	0.013	0.040	3	0.200	75001301	
4211	14	36 39.2	118 19.9	NE	3901	3828	3774	0.100	0.450	0.035	0.175	2	0.400	98931377	
4212	1	36 44.7	118 21.3	NE	3828	3708	3548	0.100	0.750	0.040	0.170	3	0.500		
4212	2	36 45.1	118 21.4	N	3780	3566	3414	0.300	0.500	0.050	0.150	3	0.400	74721367	
4212	3	36 47.8	118 21.7	N	3865	3517	3438	0.800	0.470	0.020	0.080	3	0.120	98821367	
4212	4	36 48.8	118 22.9	N	3853	3767	3767	0.300	0.300	0.020	0.020	2	0.200	75521337	
4212	5	36 49.7	118 23.2	NE	3891	3621	3584	0.350	0.550	0.060	0.105	2	0.320	64721367	
4212	6	36 55.3	118 22.5	NE	3584	3462	3194	0.150	0.900	0.015	0.100	2	0.150	72721367	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Owens River Basin--Continued

Basin	Gl	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4214	1	37	4.2	118	27.1	N	3755	3621	3414	0.400	1.600	0.140	0.480	2	0.225	68721357	South Fk
4214	2	37	4.2	118	27.6	N	3962	3633	3621	0.750	0.800	0.380	0.480	2	0.950	64821347	E. Middle Palisade
4214	3	37	4.5	118	28.0	NE	3901	3633	3609	0.450	0.550	0.230	0.300	2	0.800	64821347	W. Middle Palisade
4214	4	37	4.8	118	28.6	N	3901	3365	3341	1.000	1.100	0.500	0.520	2	1.280	64521337	Norman Clyde
4214	5	37	5.0	118	29.2	NE	4023	3804	3780	0.400	0.450	0.080	0.090	2	0.400	65751336	
4214	6	37	5.2	118	29.3	SW	3901	3633	3609	0.500	0.600	0.240	0.260	2	1.300	66821366	
4214	7	37	5.7	118	29.8	NE	3974	3792	3780	0.450	0.600	0.130	0.155	2	0.500	64751357	Sill
4214	8	37	5.9	118	30.1	N	4096	3999	3968	0.100	0.200	0.015	0.020	2	0.100	75721366	
4214	9	37	6.2	118	29.8	NE	3901	3804	3804	0.160	0.160	0.020	0.025	2	0.200	75721341	
4214	10	37	6.8	118	29.2	N	3853	3682	3682	0.250	0.250	0.033	0.040	2	0.290	75821236	
4214	11	37	6.2	118	30.6	N	4148	3670	3609	1.450	1.900	1.320	1.585	1	1.900	64621357	Palisade
4214	12	37	6.5	118	31.5	NE	3974	3816	3816	0.460	0.500	0.110	0.115	2	0.300	64751336	
4214	13	37	7.5	118	30.7	N	3633	3536	3420	0.100	0.400	0.015	0.045	2	0.180	75721366	Winchell
4214	14	37	6.9	118	31.5	NE	3682	3524	3389	0.140	0.500	1.300	0.445	2	0.500	64721377	Mt. Agassiz
4214	15	37	7.8	118	31.6	N	3828	3682	3658	0.120	0.300	0.027	0.060	2	0.300	98721366	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Owens River Basin

Basin	Gl	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4214	16	37	7.7	118	32.1	N	3901	3828	3804	0.110	0.200	0.020	0.025	2	0.180	98821365	
4215	1	37	9.4	118	32.2	N	3755	3633	3609	0.150	0.300	0.020	0.040	3	0.100	74751277	
4215	2	37	7.0	118	32.0	NW	3755	3720	3536	0.200	0.800	0.020	0.150	2	0.150	95721387	
4215	3	37	6.9	118	32.3	NW	3731	3633	3633	0.200	0.200	0.040	0.0420	3	0.100	77552331	
4215	4	37	6.9	118	33.0	N	3658	3584	3566	0.110	0.170	0.025	0.028	2	0.200	75851301	
4215	5	37	6.9	118	33.8	NE	3804	3749	3737	0.150	0.200	0.035	0.037	3	0.320	74551336	
4215	6	37	7.7	118	33.6	N	3658	3487	3365	0.270	0.850	0.025	0.080	2	0.150	98751396	
4215	7	37	7.5	118	34.0	NE	3780	3633	3609	0.150	0.350	0.110	0.210	2	1.000	64431366	
4215	8	37	7.5	118	34.9	NE	3731	3633	3627	0.150	0.220	0.040	0.050	2	0.310	75551346	
4215	9	37	7.9	118	35.1	NE	3682	3609	3511	0.140	0.600	0.045	0.130	2	0.390	68831366	
4215	10	37	8.5	118	35.8	N	3804	3609	3566	0.800	1.100	0.280	0.375	2	0.800	64551357	Mt. Gilbert
4215	11	37	8.6	118	36.3	NE	3877	3708	3627	0.750	1.200	0.195	0.310	2	0.700	64851377	
4215	12	37	9.1	118	36.6	NW	3755	3708	3682	0.090	0.100	0.020	0.025	2	0.290	75821341	
4215	13	37	8.5	118	37.0	N	3901	3755	3536	0.400	1.150	0.250	0.420	2	1.190	64831357	
4215	14	37	8.8	118	37.4	N	3804	3676	3658	0.300	0.450	0.035	0.060	2	0.200	75751346	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Owens River Basin--Continued

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4215	15	37 8.5	118 37.7	N	3950	3755	3566	0.800	1.860	0.280	0.600	2	0.700	64721357	Mt. Powell
4215	16	37 8.3	118 38.0	N	3999	3825	3816	0.250	0.260	0.055	0.057	2	0.200	64721346	
4215	17	37 8.3	118 38.4	N	3780	3664	3645	0.300	0.400	0.080	0.100	2	0.390	64751366	
4215	18	37 8.6	118 39.1	NE	3828	3708	3658	0.150	0.320	0.040	0.055	2	0.400	76721366	
4215	19	37 9.0	118 39.5	E	3974	3916	3920	0.220	0.300	0.050	0.060	2	0.280	75951611	
4215	20	37 9.2	118 39.1	N	3780	3694	3694	0.200	0.300	0.050	0.080	2	0.300	75751366	
4215	21	37 9.2	118 39.4	N	3901	3853	3810	0.200	0.280	0.020	0.025	2	0.200	75721346	
4215	22	37 9.2	118 39.7	N	3853	3804	3804	0.100	0.110	0.035	0.036	2	0.300	75921341	
4215	23	37 9.7	118 39.6	N	3804	3720	3658	0.250	0.600	0.055	0.120	2	0.300	64721367	
4215	24	37 9.8	118 39.9	NE	3755	3761	3708	0.150	0.290	0.050	0.120	2	0.520	66841366	
4215	25	37 10.9	118 39.7	N	3780	3664	3658	0.190	0.300	0.070	0.095	4	0.550	74851340	
4215	26	37 12.0	118 40.1	N	3901	3609	3536	0.500	0.900	0.230	0.400	2	0.600	64731367	Lamarck
4215	27	37 12.3	118 40.4	NE	3828	3720	3658	0.350	0.700	0.080	0.190	2	0.550	64721356	
4215	28	37 12.9	118 40.2	N	3708	3615	3609	0.150	0.190	0.020	0.030	3	0.390	76821341	
4215	29	37 13.0	118 40.5	NE	3828	3682	3584	0.250	0.600	0.035	1.050	2	0.200	75751377	
4215	30	37 13.4	118 40.5	NE	3780	3682	3536	0.180	0.600	0.025	0.085	3	0.225	98821386	
4215	31	37 14.9	118 39.3	N	3536	3426	3389	0.100	1.000	0.055	0.185	3	0.600	98836385	
4216	1	37 15.7	118 39.4	N	3708	3474	3140	0.300	1.040	0.110	0.280	2	0.600	64721367	
4216	2	37 16.1	118 40.0	E	3780	3694	3658	0.210	0.400	0.040	0.070	2	0.250	75721346	Mt. Humphreys SE
4216	3	37 16.5	118 40.1	NE	3974	3658	3566	0.500	0.800	0.240	0.440	2	0.800	64821367	Mt. Humphreys

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Owens River Basin

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4216	4	37 16.7	118 40.2	NE	3901	3780	3572	0.250	0.500	0.030	0.060	2	0.200	64721377	
4216	5	37 16.9	118 40.8	N	4023	3865	3865	0.675	0.675	0.065	0.065	2	0.100	77122311	
4216	6	37 17.6	118 41.0	NE	3708	3505	3499	0.600	0.625	0.120	0.130	2	0.400	64721346	
4216	7	37 17.8	118 41.1	NE	3731	3414	3365	0.400	0.900	0.115	0.235	2	0.300	68921376	
4216	8	37 18.5	118 41.7	N	3708	3590	3450	0.400	0.850	0.080	0.170	2	0.400	64721377	Four Gables
4216	9	37 18.7	118 42.1	N	3658	3566	3530	0.125	0.300	0.020	0.030	2	0.150	75721366	
4216	10	37 18.9	118 42.2	NE	3658	3584	3511	0.140	0.400	0.014	0.040	2	0.150	75721360	
4216	11	37 19.9	118 42.9	E	3658	3609	3603	0.100	0.140	0.012	0.020	2	0.175	94826396	
4216	12	37 20.3	118 42.2	N	3487	3389	3389	0.100	0.300	0.023	0.040	3	0.300	74071341	
4216	13	37 20.2	118 42.5	N	3609	3438	3316	0.200	0.600	0.060	0.170	2	0.500	68821377	
4216	14	37 20.1	118 46.7	N	3755	3658	3608	0.175	0.500	0.025	0.075	2	0.450	75821366	
4216	15	37 20.4	118 46.9	NE	3755	3658	3608	0.175	0.300	0.020	0.040	2	0.175	75721366	
4216	16	37 21.5	118 45.5	NE	3780	3705	3566	0.100	0.450	0.020	0.075	3	0.200	98721386	
4216	17	37 21.7	118 48.8	NE	3901	3708	3633	0.100	0.600	0.045	0.080	0	0.600	98821386	
4217	1	37 24.0	118 44.5	N	3749	3682	3627	0.120	0.400	0.030	0.090	3	0.200	98021301	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Owens River Basin--Continued

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4217	2	37 22.6	118 45.2	N	3658	3627	3596	0.175	0.375	0.025	0.050	3	0.200	75721366	
4217	3	37 22.3	118 45.8	N	3780	3708	3708	0.150	0.300	0.030	0.045	3	0.150	76621346	
4217	4	37 22.2	118 46.0	NE	3901	3780	3755	0.125	0.150	0.030	0.035	3	0.300	76721346	
4217	5	37 22.5	118 46.1	NE	3877	3708	3658	0.030	0.350	0.060	0.095	2	0.400	75821366	
4217	6	37 22.6	118 46.5	NE	3901	3828	3804	0.200	0.300	0.070	0.100	2	0.400	79921207	
4217	7	37 23.2	118 46.8	NE	4023	3828	3780	0.400	0.425	0.130	0.160	2	0.900	66821346	Mt. Dade
4217	8	37 23.6	118 46.5	NE	3780	3708	3708	0.100	0.150	0.020	0.025	2	0.250	75721366	
4217	9	37 23.5	118 47.0	N	3901	3743	3708	0.450	0.700	0.065	0.110	2	0.300	65721377	Mt. Abbot
4217	10	37 24.7	118 46.8	NE	3780	3708	3658	0.125	0.250	0.015	0.050	2	0.300	79821386	
4217	11	37 29.9	118 47.4	NE	3731	3676	3664	0.125	0.150	0.012	0.022	2	0.100	79921201	
4217	12	37 29.5	118 47.9	N	3658	3560	3341	0.150	1.000	0.020	0.130	3	0.150	98721397	
4217	13	37 29.5	118 48.1	N	3536	3474	3353	0.150	0.700	0.020	0.110	3	0.150	98821381	
4217	14	37 28.9	118 49.9	N	3584	3487	3462	0.100	0.125	0.025	0.030	3	0.250	74521336	
4217	15	37 28.7	118 50.9	NE	3536	3414	3408	0.400	0.420	0.040	0.042	2	0.200	75621341	
4217	16	37 29.0	118 51.2	NE	3633	3548	3426	0.100	0.350	0.015	0.040	2	0.250	98721366	
4217	17	37 29.4	118 51.3	NE	3682	3438	3438	0.500	0.520	0.035	0.035	2		75721336	
4217	18	37 32.6	118 50.9	N	3622	3491	3491	0.300	0.300	0.020	0.020	4	0.080	74021000	
4217	19	37 34.0	118 51.4	N	3741	3156	3156	0.650	0.650	0.050	0.050	4	0.070	75021300	
4217	20	37 30.5	118 51.5	N	3859	3728	3682	0.300	0.400	0.065	0.105	2	0.500	65821377	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Owens River Basin

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4217	21	37 30.6	118 52.0	NE	3932	3806	3806	0.225	0.250	0.055	0.070	2	0.425	65721346	
4217	22	37 30.8	118 52.2	N	3780	3676	3570	0.225	0.425	0.035	0.065	2	0.250	65721346	
4217	23	37 33.9	118 56.5	NE	3702	3596	3596	0.200	0.200	0.025	0.025	2	0.100	79021300	
4217	24	37 33.9	118 56.9	N	3676	3643	3643	0.100	0.100	0.025	0.025	3	0.300	76821300	
4217	25	37 33.9	118 58.9	N	3649	3543	3412	0.125	0.500	0.015	0.045	3	0.110	78821370	

No. glaciers 124 Total ice area 10.551 Total ice and moraine area 18.272
Average ice area 0.085 Average ice and moraine area 0.147
Mean altitude of ice 3724 Mean altitude ice and moraine 3690

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Mono River Basin

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4221	1	37 43.0	119 12.9	N	3609	3450	3450	0.400	0.400	0.650	0.650	2	0.250	65521336	
4221	2	37 43.2	119 13.2	N	3341	3267	3267	0.250	0.250	0.040	0.040	3		65121311	
4221	3	37 43.0	119 13.2	N	3609	3462	3462	0.375	0.375	0.065	0.065	2	0.375	65521336	
4221	4	37 43.2	119 13.4	N	3682	3182	3182	0.700	0.700	0.095	0.095	2	0.400	64521337	
4221	5	37 43.6	119 14.2	E	3536	3389	3389	0.300	0.300	0.080	0.080	2	0.300	75921331	
4221	6	37 43.7	119 14.4	N	3566	3328	3328	0.490	0.490	0.080	0.080	2	0.225	75221311	
4221	7	37 43.9	119 14.6	NE	3365	3328	3328	0.150	0.155	0.055	0.055	2	0.300	75523331	
4221	8	37 43.8	119 14.6	NE	3584	3377	3377	0.225	0.225	0.035	0.035	2	0.200	75421311	
4221	9	37 43.8	119 14.9	N	3658	3341	3341	0.100	0.100	0.040	0.040	2	0.400	76421336	
4221	10	37 43.6	119 15.4	N	3828	3590	3590	0.550	0.550	0.090	0.090	2	0.300	64621357	
4221	11	37 44.4	119 15.4	NE	3682	3499	3499	0.400	0.400	0.060	0.060	2	0.190	77922311	
4221	12	37 44.0	119 15.5	NE	3828	3731	3731	0.200	0.200	0.037	0.037	2	0.200	75621331	
4221	13	37 44.2	119 15.8	NE	3780	3596	3596	0.275	0.275	0.155	0.155	2	0.725	74541356	
4221	14	37 47.8	119 11.5	N	3536	3365	3328	0.200	0.350	0.035	0.040	2	0.200	75921336	
4221	15	37 47.8	119 11.9	NE	3658	3524	3524	0.350	0.400	0.055	0.060	2	0.250	74921351	
4222	1	37 49.2	119 11.3	N	3536	3414	3536	0.400	0.400	0.060	0.060	2	0.300	75521241	
4222	2	37 49.1	119 11.4	N	3708	3524	3524	0.250	0.250	0.055	0.055	2	0.300	75522242	Parker Creek
4222	3	37 49.0	119 11.7	N	3767	3609	3609	0.300	0.300	0.100	0.100	2	0.400	65621336	
4222	4	37 49.3	119 12.2	N	3609	3530	3530	0.150	0.150	0.025	0.025	2	0.450	76821341	
4222	5	37 48.9	119 12.3	N	3877	3694	3658	0.800	1.050	0.225	0.285	2	0.600	64851357	Kuna

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Mono River Basin

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4222	6	37 52.9	119 12.4	E	3731	3682	3645	0.250	0.500	0.050	0.110	2	0.300	65751356	
4223	1	37 53.3	119 11.9	N	3780	3572	3566	0.220	0.240	0.040	0.040	2	0.300	75322311	
4223	2	37 53.5	119 12.2	N	3414	3328	3194	0.200	0.800	0.100	0.230	2	0.500	64921367	
4223	3	37 54.9	119 12.3	NE	3462	3243	3243	0.250	0.250	0.025	0.025	2	0.150	75722311	
4223	4	37 55.1	119 12.4	NE	3414	3219	3207	0.150	0.150	0.027	0.027	2	0.150	75722312	
4223	5	37 55.5	119 22.9	N	3292	3206	3200	0.300	0.300	0.085	0.110	2	0.450	64722366	
4223	6	37 54.1	119 13.0	NE	3780	3438	3438	0.500	0.525	0.125	0.150	2	0.500	64651346	Dana
4223	7	37 54.2	119 13.2	N	3901	3487	3487	0.100	0.100	0.035	0.035	2	0.300	75621211	
4223	8	37 56.1	119 16.8	NE	3511	3389	3389	0.150	0.150	0.060	0.060	2	0.475	75221311	
4223	9	37 56.9	119 18.1	N	3536	3414	3414	0.200	0.200	0.024	0.024	2	0.200	75722316	
4223	10	37 57.1	119 18.4	N	3499	3414	3414	0.300	0.300	0.030	0.030	2	0.140	77821332	
4223	11	37 57.0	119 18.4	N	3627	3536	3536	0.175	0.180	0.018	0.019	2	0.100	75121311	
4223	12	37 57.8	119 18.8	E	3548	3487	3487	0.180	0.180	0.012	0.012	2	0.150	75121311	
4223	13	37 57.8	119 18.8	E	3708	3493	3493	0.070	0.070	0.020	0.020	2	0.300	76621311	
4223	14	37 58.2	119 18.3	N	3536	3450	3444	0.090	0.100	0.015	0.015	2	0.350	76821311	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Mono River Basin--Continued

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4223	15	37 58.2	119 19.0	N	3682	3474	3483	0.670	0.800	0.320	0.380	2	1.220	64651247	Conness
4224	1	37 59.2	119 15.6	N	3414	3316	3316	0.200	0.200	0.010	0.010	2	0.100	64721366	
4224	2	37 59.0	119 18.5	NE	3316	3219	3219	0.015	0.015	0.015	0.015	2	0.190	75021311	
4224	3	37 59.1	119 18.9	NE	3536	3462	3444	0.150	0.160	0.032	0.032	2	0.350	76851336	
4224	4	38 1.4	119 17.9	N	3596	3511	3511	0.150	0.150	0.015	0.015	2	0.150	75721336	
4224	5	38 1.4	119 17.9	NE	3609	3487	3414	0.400	0.525	0.065	0.130	2	0.350	64721346	

No. glaciers 41 Total ice area 3.160 Total ice and moraine area 3.556
Average ice area 0.077 Average ice and moraine area 0.087
Mean altitude of ice 3520 Mean altitude ice and moraine 3517

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Kings River Basin

Basin	Gl	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4311	1	37	2.0	118	44.1	N	3609	3474	3462	0.290	0.310	0.030	0.035	2	0.200	75721337	
4312	1	37	1.9	118	43.8	N	3584	3487	3487	0.070	0.070	0.025	0.025	4	0.400	76621308	
4312	2	37	3.3	118	40.7	E	3658	3621	3621	0.180	0.180	0.035	0.035	4	0.300	75921311	
4312	3	37	3.9	118	41.1	NE	3780	3536	3414	0.325	0.600	0.047	0.100	2	0.200	75721361	
4312	4	37	4.5	118	41.1	NE	3633	3511	3414	0.150	0.425	0.020	0.050	2	0.200	75721366	
4312	5	37	4.7	118	41.4	NE	3780	3670	3633	0.240	0.310	0.070	0.090	2	0.400	65721346	
4312	6	37	5.0	118	41.1	N	3708	3450	3438	0.625	0.740	0.085	0.095	2	0.250	65721357	Scylla
4312	7	37	5.3	118	41.8	N	3731	3682	3658	0.090	0.110	0.020	0.025	3	0.300	75621331	
4312	8	37	5.4	118	40.2	N	3755	3572	3511	0.300	0.400	0.095	0.170	3	0.600	66821377	Charybdis
4312	9	37	4.5	118	38.8	N	3780	3682	3670	0.180	0.200	0.020	0.030	4	0.175	75721377	
4312	10	37	2.9	188	37.5	N	3755	3688	3688	0.130	0.130	0.020	0.025	3	0.230	77522331	
4313	1	37	1.7	118	36.6	N	3487	3365	3341	0.300	0.400	0.020	0.028	2	0.900	75751347	
4313	2	37	2.5	118	36.7	N	3511	3371	3365	0.100	0.100	0.035	0.035	2	0.400	76823336	
4313	3	37	3.2	118	37.5	N	3645	3566	3548	0.100	0.130	0.025	0.025	2	0.200	74721336	
4313	4	37	3.5	118	37.8	N	3658	3523	3438	0.350	0.700	0.070	0.150	2	0.320	64721377	
4313	5	37	4.1	118	37.9	N	3584	3487	3462	0.190	0.200	0.060	0.065	2	0.480	76821366	
4313	6	37	4.4	118	38.0	NE	3804	3652	3645	0.250	0.260	0.090	0.100	2	0.480	65851346	
4313	7	37	5.3	118	37.5	N	3720	3609	3596	0.160	0.160	0.025	0.030	3	0.200	75721336	
4313	8	37	6.1	118	37.6	N	3536	3450	3389	0.180	0.470	0.025	0.090	2	0.200	64751377	
4313	9	37	5.7	118	38.1	NE	3609	3511	3499	0.100	0.160	0.020	0.035	2	0.200	75751366	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Kings River Basin

Basin	Gl	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4313	10	37	5.8	118	38.4	NE	3792	3609	3566	0.320	0.400	0.095	0.120	2	0.600	65821367	
4313	11	37	6.1	118	38.6	NE	3731	3566	3536	0.300	0.350	0.040	0.050	2	0.300	64751347	Black Giant E
4313	12	37	6.3	118	38.7	NE	3828	3574	3542	0.290	0.340	0.095	0.125	2	0.540	65751346	Black Giant
4313	13	37	6.5	118	39.1	N	3804	3658	3633	0.300	0.320	0.040	0.045	2	0.200	75721336	
4313	14	37	6.7	118	39.1	NE	3670	3609	3584	0.110	0.200	0.012	0.022	2	0.110	75721346	
4313	15	37	6.2	118	39.7	NE	3804	3694	3682	0.900	0.110	0.040	0.060	2	0.500	76821366	
4313	16	37	8.1	118	37.3	E	3901	3792	3792	0.200	0.400	0.035	0.050	2	0.150	75851367	
4313	17	37	7.8	118	35.4	W	3682	3584	3584	0.150	0.200	0.015	0.020	4	0.150	75721366	
4313	18	37	5.6	118	32.1	N	3670	3639	3633	0.100	0.150	0.020	0.030	3	0.300	76821366	
4313	19	37	5.5	118	32.5	NW	3658	3609	3536		0.400	0.015	0.055	3	0.200	98721387	
4313	20	37	4.7	118	33.0	N	3609	3566	3511	0.900	0.300	0.025	0.070	3	0.200	98721387	
4313	21	37	4.7	118	33.7	N	3645	3578	3536	0.100	0.280	0.020	0.055	3	0.380	76831366	
4313	22	37	4.8	118	34.2	NE	3566	3511	3487	0.140	0.190	0.015	0.020	3	0.100	75721366	
4313	23	37	4.9	118	34.3	N	3536	3462	3462	0.100	0.150	0.015	0.030	3	0.300	75721346	
4314	1	37	5.5	118	30.5	E	4267	4148	4148	0.480	0.500	0.042	0.043	2	0.140	77521331	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Kings River Basin--Continued

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4314	2	37 2.0	118 28.5	N	3658	3578	3523	0.150	0.250	0.025	0.050	4	0.350	76821360	
4314	3	37 2.2	118 28.9	NE	3780	3708	3658	0.150	0.300	0.030	0.035	4	0.400	76721357	
4314	4	37 6.4	118 31.1	N	3536	3450	3414	0.200	0.300	0.030	0.040	3	0.180	75721346	
4314	5	37 6.5	118 31.4	N	3536	3487	3474	0.140	0.200	0.020	0.030	3	0.300	75551346	
4314	6	37 6.9	118 31.7	N	3462	3438	3414	0.150	0.200	0.020	0.025	4	0.160	74721346	
4314	7	37 0.0	118 31.1	N	3584	3501	3487	0.180	0.270	0.030	0.045	3	0.200	74721347	
4314	8	36 56.5	118 32.7	N	3658	3639	3524	0.080	0.300	0.025	0.070	3	0.400	74721360	
4314	9	36 56.7	118 32.9	N	3566	3524	3424	0.100	0.200	0.015	0.040	3	0.100	75902141	
4314	10	36 57.1	118 33.2	N	3444	3395	3341	0.160	0.300	0.030	0.050	2	0.320	75721346	
4315	1	36 52.3	118 34.4	N	3566	3462	3426	0.120	0.200	0.027	0.040	3	0.300	76821360	
4315	2	37 0.9	118 25.8	N	3901	3780	3780	0.150	0.200	0.040	0.045	3	0.200	74721346	
4315	3	37 0.9	118 25.9	N	3901	3682	3682	0.350	0.400	0.060	0.070	3	0.200	64721336	
4315	4	36 57.5	118 24.8	N	3658	3609	3566	0.150	0.360	0.028	0.065	2	0.200	75721366	
4315	5	36 55.9	118 29.3	N	3652	3444	3414	0.200	0.300	0.045	0.110	2	0.450	64813266	
4316	1	36 56.9	118 23.8	N	3804	3708	3708	0.100	0.100	0.020	0.020	2	0.200	75921331	
4316	2	36 57.1	118 24.1	NE	3828	3694	3694	0.500	0.500	0.060	0.060	4	0.200	75551351	
4316	3	36 51.8	118 22.2	N	3780	3645	3609	0.100	0.200	0.010	0.020	2	0.100	75721346	
4316	4	36 51.8	118 22.4	N	3780	3596	3536	0.250	0.450	0.040	0.155	2	0.400	64821367	Baxter
4316	5	36 52.2	118 21.1	N	3755	3652	3524	0.150	0.950	0.022	0.100	3	0.300	92721387	
4316	6	36 52.5	118 24.0	N	3566	3536	3438	0.150	0.400	0.015	0.100	3		94721387	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Kings River Basin--Continued

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4316	7	36 50.3	118 23.3	N	3755	3536	3530	0.300	0.330	0.060	0.090	2	0.260	64921366	
4316	8	36 47.7	118 22.6	NW	3536	3505	3420	0.120	0.560	0.020	0.120	3	0.150	94721396	
4316	9	36 46.9	118 23.2	N	3780	3670	3609	0.180	0.300	0.028	0.075	3	0.320	75721377	
4316	10	36 47.2	118 23.6	N	3682	3609	3566	0.100	0.300	0.025	0.080	2	0.280	98821376	
4316	11	36 47.2	118 24.0	N	3708	3609	3487	0.100	0.600	0.020	0.155	2	0.250	94821386	
4316	12	36 47.2	118 24.2	N	3633	3536	3487	0.180	0.400	0.023	0.055	2	0.200	75721377	
4316	13	36 49.2	118 26.3	NE	3566	3530	3609	0.180	0.350	0.013	0.032	2	0.200	74821366	
4316	14	36 50.2	118 26.4	N	3633	3566	3511		0.200		0.035	3	0.200	74921366	
4316	15	36 50.1	118 27.0	NW	3444	3341	3316	0.100	0.400	0.050	0.100	3	0.500	65721366	
4316	16	36 47.1	118 26.9	NE	3658	3566	3536	0.130	0.440	0.047	0.125	2	0.450	64951367	
4316	17	36 47.2	118 27.2	N	3731	3682	3682	0.100	0.190	0.010	0.020	4	0.200	75821341	
4317	1	36 41.9	118 21.4	NE	3901	3687	3687	0.100	0.100	0.030	0.030	3	0.300	75921341	
4317	2	36 41.7	118 22.0	NW	3926	3828	3780	0.100	0.500	0.020	0.085	3	0.100	98721397	
4317	3	36 42.1	118 22.5	N	3780	3731	3584	0.130	0.900	0.070	0.320	2	0.750	98721397	
4317	4	36 42.0	118 23.3	N	4023	3804	3708	0.350	1.200	0.145	0.425	2	0.800	68711387	
4317	5	36 42.3	118 23.5	NE	3901	3767	3828	0.200	0.300	0.040	0.080	2	0.300	75821366	
4317	6	36 42.7	118 23.6	N	3901	3807	3682	0.200	0.500	0.035	0.110	2	0.300	78721377	
4317	7	36 43.5	118 23.2	NE	3658	3630	3609	0.050	0.200	0.010	0.035	3	0.200	98721387	
4317	8	36 42.7	118 24.2	N	3780	3658	3572	0.100	0.600	0.040	0.150	3	0.300	98721297	
4317	9	36 43.0	118 24.6	NE	3780	3720	3658	0.150	0.250	0.015	0.030	3	0.120	75721366	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Kings River Basin--Continued

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4317	10	36 42.0	118 24.6	N	3780	3676	3609	0.250	0.800	0.040	0.175	2	0.300	64751377	
4317	11	36 38.0	118 25.3	N	3780	3658	3414	0.100	0.900	0.025	0.150	3	0.200	94721387	
4317	12	36 41.4	118 26.9	N	3688	3462	3414	0.200	0.400	0.025	0.065	3	0.180	75721377	
4317	13	36 40.3	118 27.2	N	3780	3731	3731	0.100	0.010	0.035	0.035	3	0.400	76821331	
4317	14	36 40.3	118 27.9	N	3901	3780	3774	0.180	0.200	0.030	0.030	2	0.300	75621361	
4317	15	36 40.2	118 28.2	N	3853	3780	3749	0.200	0.300	0.040	0.050	2	0.300	75721346	
4317	16	36 40.3	118 28.5	NE	3901	3767	3767	0.230	0.230	0.035	0.038	2	0.200	75721346	
4317	17	36 41.1	118 28.4	NE	3670	3596	3536	0.130	0.550	0.017	0.060	2	0.200	98931377	
4317	18	36 42.4	118 27.8	NE	3658	3536	3536	0.100	0.200	0.030	0.050	2	0.350	75821366	
4317	19	36 42.3	118 28.6	NE	3780	3682	3609	0.400	0.600	0.060	0.110	2	0.300	65721357	
4317	20	36 42.3	118 28.9	NE	3901	3755	3572	0.400	0.600	0.075	0.150	2	0.700		
4317	21	36 43.1	118 29.2	N	3767	3658	3652	0.100	0.110	0.030	0.035	2	0.380	76721336	
4317	22	36 43.1	118 29.5	NW	3780	3658	3511	0.250	0.750	0.060	0.170	3	0.500	98731367	
4317	23	36 44.0	118 29.9	NE	3536	3499	3414	0.125	0.290	0.012	0.030	3	0.325	98921387	
4318	1	36 39.6	118 28.8	NW	3853	3708	3658	0.300	0.700	0.080	0.230	2	0.500	65721377	
4318	2	36 36.9	118 30.4	N	3658	3596	3584	0.140	0.200	0.030	0.060	3	0.300	75821341	
4318	3	36 36.6	118 31.0	N	3609	3462	3462	0.100	0.400	0.040	0.050	3	0.400	76821361	
4318	4	36 36.2	118 31.3	N	3658	3609	3566	0.180	0.250	0.030	0.060	3	0.400	76621341	
4318	5	36 35.7	118 31.3	NW	3682	3609	3609	0.200	0.200	0.035	0.035	2	0.180	75621341	

No. glaciers 94 Total ice area 3.383 Total ice and moraine area 6.938
Average ice area 0.036 Average ice and moraine area 0.074
Mean altitude of ice 3659 Mean altitude ice and moraine 3638

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Kaweah River Basin

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4321	1	36 34.4	118 32.9	N	3536	3402	3389	0.225	0.225	0.025	0.027	2	0.200	75821336	
4321	2	36 34.3	118 33.2	N	3414	3292	3279	0.200	0.250	0.061	0.070	2	0.410	65821336	Lilliput
4321	3	36 34.3	118 33.4	N	3292	3243	3243	0.900	0.100	0.020	0.022	2	0.300	76621331	
4321	4	36 32.9	118 33.5	N	3414	3304	3292	0.130	0.170	0.033	0.050	2	0.300	76621331	
4321	5	36 32.3	118 33.9	N	3542	3438	3438	0.200	0.200	0.028	0.030	2	0.400	76621341	
4321	6	36 27.4	118 33.2	N	3536	3487	3474	0.125	0.150	0.030	0.040	2	0.375	75721346	
4322	1	36 24.4	118 33.3	N	3438	3389	3385	0.180	0.300	0.018	0.030	3	0.120	76721366	

No. glaciers 7 Total ice area 0.215 Total ice and moraine area 0.269
Average ice area 0.031 Average ice and moraine area 0.038
Mean altitude of ice 3408 Mean altitude ice and moraine 3404

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Kern River Basin

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4331	1	36 23.1	118 31.2	NE	3487	3414	3401	0.100	0.150	0.020	0.025	2	0.200	75821341	
4331	2	36 27.2	118 31.9	N	3414	3353	3353	0.100	0.200	0.024	0.045	3	0.300	75821366	
4331	3	36 33.0	118 30.8	NW	3755	3596	3596	0.300	0.300	0.020	0.020	0	0.100	75621311	
4331	4	36 32.8	118 30.9	N	3952	3755	3755	0.130	0.150	0.028	0.030	2	0.300	75721336	
4331	5	36 32.9	118 31.0	N	3780	3570	3570	0.150	0.150	0.030	0.080	3	0.300	75921331	
4332	1	36 32.2	118 27.7	N	3688	3523	3536	0.100	0.700	0.050	0.165	2	0.600	98731367	
4332	2	36 32.0	118 29.2	E	3780	3670	3536	0.200	1.000	0.110	0.320	2	0.600	68721367	
4332	3	36 32.2	118 29.6	NE	3883	3682	3584	0.400	0.600	0.090	0.170	1	0.450	65721377	
4332	4	36 32.3	118 29.9	NE	3883	3792	3780	0.125	0.350	0.030	0.090	2	0.500	75821376	
4332	5	36 32.5	118 30.1	NE	3901	3731	3633	0.200	0.700	0.077	0.210	2	0.550	65821377	
4332	6	36 32.8	118 30.3	NE	3950	3834	3822	0.110	0.200	0.040	0.060	2	0.410	65821336	
4332	7	36 33.7	118 29.3	N	3780	3658	3645	0.200	0.220	0.040	0.420	2	0.400	76721336	
4332	8	36 33.4	118 30.0	N	3901	3731	3731	0.400	0.400	0.105	0.150	2	0.600	65851366	
4332	9	36 33.5	118 30.6	NE	3901	3731	3708	0.490	0.550	0.100	0.125	2	0.370	64721347	
4332	10	36 33.9	118 30.8	N	3780	3633	3633	0.350	0.400	0.100	0.160	2	0.600	64821346	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Kern River Basin--Continued

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4332	11	36 34.0	118 31.2	NE	3708	3652	3652	0.900	0.110	0.020	0.022	2	0.250	76721336	
4332	12	36 34.7	118 31.5	N	3365	3255	3255	0.400	0.400	0.030	0.030	2	0.150	75521331	
4333	1	36 35.8	118 26.4	NE	3658	3536	3536	0.180	0.220	0.030	0.033	2	0.220	74721346	
4333	2	36 36.7	118 27.7	NE	3578	3633	3633	0.175	0.175	0.025	0.025	4		75921301	
4333	3	36 37.4	118 28.1	N	3780	3658	3658	0.200	0.200	0.035	0.040	2	0.360	75821346	
4333	4	36 38.0	118 28.3	N	3889	3720	3720	0.100	0.100	0.030	0.030	2	0.300	76821341	
4333	5	36 38.0	118 28.6	NE	3901	3780	3767	0.220	0.300	0.055	0.075	2	0.400	65821346	
4333	6	36 38.8	118 28.9	SW	3974	3804	3804	0.100	0.200	0.030	0.040	2	0.280	74821366	
4333	7	36 39.8	118 28.2	NE	3962	3828	3780	0.200	0.470	0.063	0.105	2	0.400	65721366	
4333	8	36 41.4	118 23.3	N	4148	3974	3950	0.015	0.015	0.020	0.022	2	0.210	75721336	
4333	9	36 35.9	118 17.0	E	3950	3904	3904	0.120	0.120	0.040	0.040	2	0.600	77912311	
4333	10	36 35.5	118 17.2	NE	4023	3913	3913	0.100	0.100	0.025	0.025	2	0.300	76923311	
4333	11	36 35.5	118 17.6	N	4145	3944	3944	0.200	0.200	0.050	0.050	3	0.400	77622211	
4333	12	36 35.3	118 18.5	N	3780	3658	3658	0.200	0.550	0.060	0.155	2	0.300	68721356	
4334	1	36 32.1	118 18.5	N	3658	3536	3511	0.100	0.200	0.040	0.070	2	0.400	76821366	
4334	2	36 31.7	118 17.5	NE	3901	3755	3731	0.100	0.400	0.025	0.070	2	0.200	74721366	Howell

No. glaciers 31 Total ice area 1.442 Total ice and moraine area 2.902
Average ice area 0.047 Average ice and moraine area 0.094
Mean altitude of ice 3744 Mean altitude ice and moraine 3736

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued

Mokelumne River Basin

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4411	1	38 39.1	120 1.8	NE	2855	2781	2769	0.200	0.250	0.020	0.030	0	0.100	0	

No. glaciers 1 Total ice area 0.020 Total ice and moraine area 0.030
Average ice area 0.020 Average ice and moraine area 0.030
Mean altitude of ice 2818 Mean altitude ice and moraine 2812

Stanislaus River Basin

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4421	1	38 17.3	119 39.0	N	3389	3267	3176	0.100	0.400	0.025	0.050	3	0.500	95511376	
4421	2	38 17.4	119 39.5	N	3341	3231	3213	0.200	0.300	0.032	0.045	2	0.250	75951366	
4421	3	38 17.6	119 39.6	N	3243	3194	3097	0.100	0.450	0.020	0.070	3	0.200	94731376	
4421	4	38 17.9	119 40.5	N	3316	3109	3025	0.200	0.250	0.020	0.030	3	0.200	74551336	
4421	5	38 18.0	119 40.7	N	3170	3109	3025	0.150	0.400	0.035	0.085	2	0.325	75511377	
4421	6	38 14.9	119 39.1	N	3048	2928	2928	0.014	0.014	0.013	0.020	3	0.125	74511312	
4421	7	38 13.9	119 39.8	N	3219	3121	3109	0.100	0.140	0.025	0.030	2	0.300	75511342	
4421	8	38 14.0	119 41.1	N	3121	3048	3048	0.100	0.100	0.011	0.013	2	0.125	75511342	
4421	9	38 14.1	119 41.4	NE	3072	3001	3001	0.200	0.200	0.023	0.023	2	0.200	75111331	

No. glaciers 9 Total ice area 0.204 Total ice and moraine area 0.366
Average ice area 0.023 Average ice and moraine area 0.041
Mean altitude of ice 3162 Mean altitude ice and moraine 3140

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Tuolumne River Basin

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4431	1	38 9.5	119 34.7	N	3304	3158	3146	0.100	0.140	0.080	0.120	2	0.300	65721357	
4431	2	38 9.9	119 34.8	N	3304	3127	3048	0.400	0.630	0.017	0.025	2	0.300	75721336	
4432	1	38 5.3	119 24.4	N	3383	3298	3298	0.150	0.150	0.017	0.017	2	0.180	75721362	
4433	1	38 4.3	119 23.2	N	3524	3328	3304	0.200	0.300	0.100	0.150	2	0.800	76821366	
4433	2	38 4.4	119 23.6	N	3365	3261	3243	0.900	0.170	0.020	0.030	2	0.220	75821361	
4433	3	38 4.1	119 21.4	N	3511	3377	3377	0.200	0.200	0.030	0.030	2	0.210	75921351	
4433	4	38 5.0	119 21.3	E	3658	3584	3584	0.150	0.150	0.038	0.038	3	0.250	77025311	
4433	5	38 0.3	119 18.5	N	3536	3444	3438	0.220	0.250	0.023	0.025	3	0.150	75751336	
4433	6	38 0.4	119 18.8	N	3536	3462	3462	0.120	0.120	0.012	0.012	3	0.100	75721336	
4433	7	38 0.5	119 19.0	N	3536	3414	3414	0.280	0.280	0.022	0.022	0	0.100	75121311	
4433	8	38 1.1	119 19.6	NE	3414	3335	3292	0.150	0.270	0.022	0.040	3	0.200	75751366	
4433	9	38 1.0	119 19.9	N	3889	3304	3267	0.180	0.230	0.030	0.055	2	0.200	75751366	
4435	1	37 44.6	119 15.7	N	3780	3499	3389	0.575	0.850	0.375	0.606	2	1.050	64721256	Lyell
4435	2	37 44.6	119 16.3	N	3926	3652	3596	0.850	0.975	0.405	0.460	2	0.900	64821247	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Tuolumne River Basin--Continued

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4435	3	37 45.4	119 16.5	N	3584	3487	3487	0.300	0.300	0.020	0.020	2	0.020	77022011	
4435	4	37 45.1	119 16.7	NW	3658	3499	3499	0.300	0.300	0.035	0.035	2		75221341	
4435	5	37 44.8	119 16.8	N	3780	3596	3536	0.450	0.700	0.225	0.385	2	0.750	64351257	McClure
4435	6	37 45.1	119 17.2	NE	3658	3590	3590	0.225	0.300	0.025	0.040	2	0.200	75851331	
4435	7	37 45.4	119 17.3	N	3731	3542	3542	0.300	0.300	0.030	0.035	2	0.190	75821361	
4435	8	37 45.4	119 17.4	N	3720	3548	3548	0.300	0.300	0.020	0.020	2		75121331	
4435	9	37 45.8	119 17.4	N	3658	3536	3536	0.100	0.100	0.020	0.020	2	0.300	76931341	
4435	10	37 46.0	119 17.5	N	3633	3566	3566	0.100	0.100	0.020	0.020	2	0.300	76831341	

No. glaciers 22 Total ice area 1.586 Total ice and moraine area 2.205
Average ice area 0.072 Average ice and moraine area 0.100
Mean altitude of ice 3515 Mean altitude ice and moraine 3505

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
Merced River Basin

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4441	1	37 46.9	119 18.8	NW	3462	3341	3341	0.180	0.180	0.022	0.022	3	0.300	77021300	
4441	2	37 47.0	119 19.3	N	3487	3414	3402	0.200	0.200	0.300	0.350	3	0.300	76621310	
4441	3	37 47.1	119 19.5	N	3359	3341	3328	0.100	0.100	0.016	0.025	3	0.400	76821300	
4441	4	37 45.0	119 17.5	N	3767	3658	3670	0.275	0.300	0.060	0.080	2	0.400	64851266	
4441	5	37 45.2	119 17.8	N	3609	3526	3526	0.120	0.120	0.030	0.030	2	0.400	77521331	
4441	6	37 45.5	119 19.1	N	3523	3389	3438	0.100	0.250	0.020	0.040	2	0.220	75721366	
4441	7	37 45.5	119 19.6	NE	3536	3389	3383	0.120	0.200	0.032	0.050	2	0.400	75751366	
4441	8	37 44.5	119 18.7	N	3633	3462	3462	0.100	0.100	0.045	0.045	2	0.600	76871342	
4441	9	37 44.5	119 19.2	N	3609	3450	3389	0.350	0.600	0.082	0.160	2	0.500	75751367	
4441	10	37 43.3	119 17.6	N	3609	3365	3292	0.175	0.500	0.040	0.110	2	0.400	75721377	
4441	11	37 42.9	119 15.6	W	3804	3682	3682	0.300	0.300	0.250	0.250	2	0.300	77122331	
4441	12	37 42.0	119 16.4	N	3511	3414	3365	0.225	0.375	0.040	0.080	2	0.350	65751366	
4441	13	37 41.5	119 17.2	N	3536	3462	3456	0.125	0.150	0.020	0.025	2	0.250	75821316	
4441	14	37 38.0	119 26.1	N	3414	3316	3292	0.225	0.350	0.045	0.065	2	0.400	75821356	
4441	15	37 38.2	119 23.2	N	3389	3328	3328	0.225	0.225	0.020	0.020	3		76821331	
4441	16	37 39.4	119 24.5	NE	3438	3313	3313	0.275	0.275	0.035	0.035	2	0.225	75721356	
4441	17	37 41.6	119 25.3	N	3292	3188	3188	0.300	0.300	0.060	0.060	3	0.325	76921311	
4442	1	37 38.2	119 23.7	NW	3414	3328	3316	0.200	0.250	0.050	0.070	2	0.400	64751246	

No. glaciers 18 Total ice area 1.167 Total ice and moraine area 1.517
Average ice area 0.065 Average ice and moraine area 0.084
Mean altitude of ice 3465 Mean altitude ice and moraine 3459

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
San Joaquin River Basin

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4451	1	37 42.2	119 14.9	N	3536	3267	3267	0.175	0.175	0.055	0.055	3	0.550	75021341	
4451	2	37 42.4	119 15.4	NE	3682	3596	3596	0.250	0.250	0.040	0.040	2	0.200	74021311	
4451	3	37 42.8	119 15.0	NE	3536	3462	3462	0.200	0.200	0.040	0.040	2	0.300	75821341	
4551	4	37 43.0	119 15.4	NE	3658	3511	3511	0.200	0.360	0.065	0.065	2	0.300	74951341	
4551	5	37 43.4	119 54.1	E	3658	3566	3566	0.200	0.200	0.040	0.040	2	0.300	74521331	
4451	6	37 42.7	119 13.3	SW	3462	3389	3389	0.100	0.100	0.025	0.025	2	0.200	77521331	
4451	7	37 42.8	119 13.0		3682	3645	3645	0.100	0.100	0.025	0.025	2	0.250	77121311	
4451	8	37 41.9	119 11.9	NW	3658	3474	3474	0.350	0.350	0.055	0.055	2	0.225	65721316	
4451	9	37 41.7	119 12.0	NW	3780	3362	3362	1.000	1.050	0.190	0.200	2	0.300	65321337	Mt. Ritter
4451	10	37 41.0	119 12.1	W	3755	3658	3658	0.200	0.200	0.020	0.020	2		75021331	
4451	11	37 40.8	119 12.3	NW	3694	3414	3414	0.800	0.800	0.300	0.300	2	0.750	64521337	
4451	12	37 40.3	119 13.0	NW	3389	3279	3279	0.125	0.125	0.025	0.025	2	0.175	75821331	
4451	13	37 39.5	119 10.9	NW	3487	3341	3341	0.225	0.225	0.050	0.055	2	0.400	75821346	
4451	14	37 39.4	119 10.2	SE	3584	3462	3462	0.250	0.250	0.420	0.420	2	0.200	75921331	
4452	1	37 36.6	119 9.5	NE	3255	2995	2995	0.500	0.500	0.060	0.060	2	0.200	75551331	
4452	2	37 36.6	119 9.7	NE	3243	3182	3182	0.200	0.200	0.040	0.040	2	0.225	75921311	
4452	3	37 38.8	119 9.7	N	3292	3206	3164	0.200	0.300	0.090	0.105	2	0.550	64821346	
4452	4	37 38.9	119 10.0	NE	3292	3170	3170	0.250	0.250	0.050	0.050	2	0.375	75721356	
4452	5	37 39.4	119 9.9	NE	3389	3267	3267	0.225	0.225	0.035	0.035	2	0.200	75521336	
4452	6	37 39.4	119 10.1	NE	3414	3243	3243	0.350	0.350	0.075	0.075	2	0.390	75721346	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
San Joaquin River Basin--Continued

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4452	7	37 40.7	119 8.5	NW	3243	3194	3097	0.200	0.200	0.035	0.035	2	0.150	75851346	
4452	8	37 40.0	119 10.3	NE	3170	3025	3025	0.300	0.300	0.060	0.060	2	0.300	75823341	
4452	9	37 39.9	119 10.6	NE	3487	3219	3219	0.300	0.300	0.137	0.137	2	0.850	66221311	
4452	10	37 40.3	119 10.6	N	3170	3001	3001	0.250	0.250	0.040	0.040	2	0.150	75521331	
4452	11	37 40.2	119 10.9	NE	3414	3267	3267	0.325	0.325	0.090	0.090	2	0.450	65421331	
4452	12	37 40.4	119 11.2	N	3414	3279	3279	0.200	0.200	0.035	0.035	2	0.400	76621331	
4552	13	37 40.4	119 11.4	NE	3408	3286	3286	0.750	0.750	0.030	0.030	2	0.300	75121331	
4452	14	37 40.7	119 11.4	E	3414	3328	3328	0.250	0.250	0.040	0.040	2	0.300	75151371	
4552	15	37 40.9	119 11.4	E	3609	3438	3438	0.300	0.300	0.035	0.035	2	0.175	75721356	
4452	16	37 41.0	119 11.2	NE	3353	3231	3231	0.350	0.350	0.050	0.050	2	0.175	75621341	
4452	17	37 41.0	119 11.7	NE	3780	3474		0.600	0.800	0.110	0.125	2	0.350	64621316	
4452	18	37 41.2	119 11.9	SE	3853	3755	3755	0.125	0.125	0.035	0.035	2	0.300	77222311	
4452	19	37 41.5	119 11.7	E	3658	3426	3426	0.350	0.350	0.062	0.062	2	0.235	75621331	
4452	20	37 41.9	119 11.6	N	3328	3216	3216	0.125	0.125	0.035	0.035	2	0.350	76621341	
4452	21	37 41.9	119 11.4	NE	3566	3353	3341	0.300	0.310	0.052	0.062	2	0.200	75821336	
4452	22	37 42.1	119 11.7	N	3645	3438	3438	0.325	0.325	0.072	0.072	2	0.250	75721336	
4452	23	37 42.2	119 11.8	N	3511	3377	3377	0.180	0.180	0.050	0.050	2	0.200	77821341	
4452	24	37 42.5	119 12.5	E	3609	3371	3371	0.325	0.325	0.080	0.080	2	0.550	76521331	
4453	1	37 33.3	118 58.9	N	3702	3649	3590	0.200	0.390	0.035	0.060	2	0.350	75721377	
4453	2	37 31.8	118 54.2	NW	3806	3774	3676	0.100	0.325	0.010	0.038	2	0.125	78721366	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
San Joaquin River Basin--Continued

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4453	3	37 31.8	118 54.4	N	3806	3728	3676	0.150	0.425	0.055	0.120	2	0.440	64721367	
4453	4	37 31.5	118 54.8	N	3886	3806	3780	0.170	0.250	0.025	0.050	2	0.300	74721346	
4453	5	37 29.5	118 51.8	N	3694	3578	3578	0.300	0.300	0.025	0.025	3	0.100	74821340	
4453	6	37 29.5	118 52.0	N	3536	3511	3414	0.750	0.400	0.010	0.055	4	0.250	74821361	
4453	7	37 28.9	118 51.4	NW	3755	3633	3578	0.225	0.500	0.030	0.070	3	0.200	74521346	
4453	8	37 28.2	118 53.5	N	3536	3474	3316	0.200	0.500	0.050	0.145	2	0.400	64721356	
4453	9	37 28.3	118 53.9	N	3474	3341	3338	0.150	0.150	0.025	0.025	2	0.300	74721366	
4453	10	37 28.7	118 54.5	N	3462	3389	3353	0.125	0.300	0.025	0.055	3	0.300	74821356	
4453	11	37 28.5	119 1.1	NE	3341	3316	3261		0.200	0.010	0.020	4		74821361	
4453	12	37 29.1	119 1.6	N	3365	3316	3243	0.100	0.300	0.010	0.030	3		75921360	
4454	1	37 28.0	118 48.7	N	3566	3487	3353	0.125	0.425	0.020	0.060	2	0.200	74721367	
4454	2	37 28.6	118 49.1	N	3658	3578	3542	0.150	0.350	0.015	0.040	2	0.125	75721366	
4454	3	37 25.9	118 46.5	N	3596	3511	3487	0.125	0.150	0.012	0.020	3	0.125	75721341	
4454	4	37 23.9	118 47.4	N	3901	3414	3536	0.450	1.250	0.130	0.340	2	0.450	64751377	Mt. Mills
4454	5	37 23.9	118 47.6	N	3804	3714	3708	0.175	0.200	0.030	0.320	2	0.250	75721346	
4454	6	37 24.3	118 48.0	NE	3804	3767	3767	0.200	0.250	0.020	0.030	2	0.200	75621341	
4454	7	37 24.5	118 48.1	N	3658	3566	3517	0.125	0.400	0.020	0.075	2	0.250	98721386	
4454	8	37 24.4	118 48.5	N	3633	3584	3584	0.150	0.250	0.025	0.040	2	0.250	74621241	
4454	9	37 24.9	118 48.9	NW	3682	3596	3517	0.250	0.600	0.053	0.145	4	0.370	64721306	
4554	10	37 23.3	118 47.2	W	3804	3749	3584	0.150	0.775	0.020	0.100	3	0.225	94721377	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
San Joaquin River Basin--Continued

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4454	11	37 22.9	118 48.0	NE	3901	3708	3584	0.550	0.900	0.116	0.250	3	0.400	64721366	Mt. Gabb
4454	12	37 22.8	118 48.4	N	3780	3720	3682	0.200	0.400	0.045	0.085	2	0.325	64751366	
4454	13	37 22.3	118 49.9	N	3755	3682	3639	0.175	0.225	0.035	0.060	2	0.425	76851366	
4454	14	37 22.9	118 50.9	N	3708	3621	3609	0.020	0.025	0.030	0.045	3	0.200	74751346	
4454	15	37 23.0	118 51.0	NE	3708	3633	3633	0.200	0.200	0.020	0.020	3	0.150	79521231	
4454	16	37 23.1	118 51.3	N	3658	3609	3536	0.125	0.400	0.035	0.095	4	0.350	74721360	
4454	17	37 23.7	118 51.9	NE	3511	3341	3292	0.750	0.200	0.040	0.040	4	0.600	76621300	
4455	1	37 18.1	118 48.9	NE	3633	3578	3517	0.125	0.200	0.015	0.025	3	0.125	75021301	
4455	2	37 18.4	118 49.4	N	3682	3609	3462	0.075	0.400	0.010	0.050	3	0.150	76821366	
4456	1	37 17.9	118 49.0	NE	3780	3708	3688	0.125	0.200	0.015	0.020	2	0.125	75521346	
4456	2	37 19.3	118 46.0	NE	3780	3645	3584	0.250	0.375	0.030	0.045	3	0.200	75721346	
4456	3	37 19.7	118 46.7	NE	3804	3720	3658	0.150	0.300	0.015	0.040	3	0.150	75721367	
4456	4	37 13.0	118 40.8	NW	3804	3714	3708	0.160	0.210	0.025	0.032	2	0.210	75751366	
4456	5	37 12.9	118 41.0	N	3865	3720	3720	0.490	0.500	0.085	0.095	2	0.250	64551331	Keyhole
4456	6	37 12.8	118 41.9	N	3780	3682	3584	0.050	0.250	0.020	0.075	2		98821386	
4456	7	37 12.6	118 42.5	N	3974	3670	3584	0.600	0.800	0.440	0.660	2	1.390	64751357	Goethe
4456	8	37 12.9	118 43.0	N	3780	3670	3584	0.300	0.600	0.165	0.300	2	0.800	84831376	
4456	9	37 13.4	118 43.8	N	3682	3566	3487	0.300	0.500	0.045	0.090	2	0.200	65721366	
4456	10	37 13.4	118 44.0	N	3755	3670	3511	0.210	0.400	0.050	0.110	2	0.350	65751366	
4556	11	37 13.5	118 44.3	N	3755	3590	3584	0.200	0.300	0.065	0.090	2	0.500	64751366	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
San Joaquin River Basin

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4456	12	37 13.5	118 44.6	N	3755	3548	3468	0.400	0.700	0.050	0.120	2	0.200	65751377	
4456	13	37 18.5	118 44.9	N	3755	3609	3511	0.400	0.625	0.132	0.235	2	0.550	64741367	
4456	14	37 13.5	118 45.3	N	3749	3664	3658	0.100	0.200	0.023	0.035	2	0.210	75621361	
4456	15	37 13.8	118 45.3	N	3500	3566	3444	0.500	0.850	0.210	0.385	2	0.900	64851377	
4456	16	37 14.0	118 46.0	NE	3755	3609	3584	0.300	0.400	0.053	0.080	2	0.300	65751367	
4456	17	37 14.3	118 46.1	N	3767	3566	3462	0.300	0.550	0.120	0.200	2	0.600	64851367	
4456	18	37 14.3	118 46.5	N	3682	3523	3444	0.490	0.800	0.107	0.185	2	0.300	64721277	
4456	19	37 14.2	118 47.0	NW	3682	3566	3560	0.180	0.200	0.023	0.035	3	0.200	75821231	
4457	1	37 10.2	118 40.2	N	4121	3853	3853	0.200	0.200	0.060	0.060	2	0.380	65521236	Mt. Darwin E
4457	2	37 10.3	118 40.5	N	3974	3792	3780	0.390	0.400	0.155	0.165	2	0.690	64751346	
4457	3	37 10.8	118 40.9	NE	3999	3694	3658	0.500	0.820	0.135	0.255	2	0.390	64751377	Mt. Mendel
4457	4	37 8.5	118 39.4	NW	3920	3792	3708	0.200	0.500	0.040	0.090	3	0.150	75921366	
4457	5	37 8.4	118 39.9	N	3950	3804	3804	0.450	0.500	0.130	0.140	2	0.450	64751346	
4457	6	37 7.9	118 40.5	N	3901	3816	3816	0.390	0.420	0.090	0.105	2	0.230	64951346	
4457	7	37 8.5	118 40.9	N	3731	3572	3511	0.200	0.400	0.012	0.037	2	0.100	95723386	
4457	8	37 6.6	118 40.5	N	3780	3682	3670	0.200	0.250	0.060	0.070	2	0.400	75721346	
4457	9	37 6.7	118 41.2	N	3633	3578	3566	0.120	0.180	0.015	0.025	4	0.180	79821261	
4457	10	37 8.5	118 41.9	N	3609	3566	3536	0.100	0.150	0.010	0.020	2	0.100	75751366	
4457	11	37 8.5	118 44.2	N	3658	3548	3511	0.300	0.420	0.070	0.125	2	0.400	64851367	
4457	12	37 8.6	118 44.5	NE	3658	3566	3536	0.130	0.350	0.030	0.060	2	0.300	68721367	

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
San Joaquin River Basin--Continued

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4457	13	37 8.9	118 44.8	N	3584	3505	3462	0.170	0.300	0.030	0.095	2	0.450	98751367	
4457	14	37 9.4	118 45.4	N	3658	3609	3536	0.200	0.330	0.022	0.055	2	0.200	75721366	
4457	15	37 10.1	118 45.7	N	3511	3462	3383	0.100	0.360	0.015	0.040	2	0.140	75721366	
4457	16	37 10.1	118 45.8	N	3658	3536	3536	0.100		0.010	0.020	3	0.100	75821341	
4458	1	37 6.5	118 42.1	NW	3889	3548	3536	0.350	0.400	0.290	0.300	2	1.100	64821347	
4458	2	37 6.6	118 42.8	N	3804	3609	3609	0.370	0.390	0.100	0.110	2	0.400	64721366	
4458	3	37 6.9	118 43.0	NE	3658	3584	3572	0.100	0.120	0.015	0.020	3	0.190	75721361	
4458	4	37 7.3	118 44.1	N	3566	3487	3438	0.100	0.200	0.015	0.025	3	0.100	75721366	
4458	5	37 6.5	118 43.1	NW	3974	3755	3755	0.180	0.200	0.050	0.058	2	0.300	74751346	Mt. Goddard
4458	6	37 6.3	118 43.4	NW	3853	3566	3584	0.400	0.500	0.105	0.125	2	0.300	64751357	
4458	7	37 10.1	118 48.9	N	3536	3462	3462	0.080	0.080	0.030	0.030	4	0.400	74921311	
4458	8	37 10.2	118 49.2	N	3584	3566	3536	0.100	0.240	0.020	0.045	4	0.220	74751366	

No. glaciers 112 Total ice area 6.931 Total ice and moraine area 10.243
Average ice area 0.062 Average ice and moraine area 0.091
Mean altitude of ice 3582 maan altitude ice and moraine 3566

TABLE 1A.--*Glaciers of the Sierra Nevada*--Continued
American River Basin

Basin	Gl	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	A	Width	Class	Gl Name
4561	1	38 50.7	120 9.6	N	2928	2763	2763	0.270	0.290	0.020	0.025	3	0.120	75121331	
4562	1	38 51.6	120 10.2	NE	2928	2891	2891	0.180	0.180	0.030	0.030	2	0.200	76831331	
4562	2	38 51.7	120 10.2	E	2928	2903	2903	0.090	0.090	0.018	0.020	2	0.020	7613133	
4563	1	38 39.8	119 59.8	NE	3013	2964	2964	0.160	0.160	0.015	0.015	2	0.100	75111312	
4563	2	38 39.8	120 0.3	N	3048	2977	2977	0.150	0.150	0.020	0.020	2		77121311	

No. glaciers 5 Total ice area 0.103 Total ice and moraine area 0.110
Average ice area 0.021 Average ice and moraine area 0.022
Mean altitude of ice 2933 Mean altitude ice and moraine 2933

TABLE 1B.--*Ice patches of the Sierra Nevada*
East Carson River Basin

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4111	0.1	38	24.0	119	36.6	N	3170	3121				0.010		
4111	2.1	38	24.3	119	37.5	N	3243					0.010		
4111	2.2	38	24.8	119	37.3	N	3146					0.010		
4111	4.1	38	25.3	119	37.8	N	3170	3141				0.010		0.200
4111	4.2	38	25.1	119	38.1	N	3146					0.010		0.100
4112	0.1	38	26.2	119	38.5	N	3146					0.010		
4112	0.2	38	26.4	119	38.9	N	3146					0.010		
4112	0.3	38	24.8	119	38.8	N	3170	3060				0.010		0.200
4112	1.1	38	21.5	119	38.2	N	3341					0.010		
4112	1.2	38	22.9	119	39.3	N	3072			0.080		0.010		0.100
4112	1.3	38	23.0	119	39.5	N	3170	3097		0.100		0.010		

No. ice pockets 11 Total ice area 0.110 Total ice and moraine area 0.110
Average ice area 0.010 Average ice and moraine area 0.010
Mean altitude of ice 3137 Mean altitude ice and moraine 3137

Table 1B.--Ice patches of the Sierra Nevada--Continued
West Walker River Basin

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4121	0.1	38	8.3	119	30.4	N	3219	3170		0.100		0.010		
4121	1.1	38	8.5	119	30.9	N	3243	3170		0.150		0.010		
4121	1.2	38	8.6	119	30.9	N	3121	3097		0.100		0.010		
4121	1.3	38	8.7	119	31.1		3072	2977		0.250		0.010		
4121	1.4	38	8.7	119	32.1		3162	3048				0.010		
4121	1.5	38	8.7	119	32.4	NE	3304	3249	3249	0.120		0.010	0.015	0.100
4121	3.1	38	9.1	119	32.6		3279	3243				0.010		
4121	3.2	38	9.3	119	32.7	N	3194	3097				0.010		0.100
4121	4.1	38	9.3	119	32.9	NE	3146	3103		0.100		0.010		0.090
4121	4.2	38	9.3	119	33.1	N	3103	3072		0.090		0.010		0.190
4121	4.3	38	9.3	119	33.4		3279	3103				0.010		
4121	5.1	38	9.4	119	33.9	N	3341	3267		0.090		0.020		0.200
4121	5.2	38	9.4	119	33.2		3292	3170				0.010		
4121	6.1	38	15.9	119	36.4	N	3194	3146		0.100		0.020		0.250
4121	6.2	38	16.6	119	37.8	NW	3133	3072				0.010		
4121	6.3	38	16.5	119	38.0	NE	3170	3133				0.010		

Table 1*B*.--*Ice patches of the Sierra Nevada*--Continued
West Walker River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4121	6.4	38	17.0	119	38.1	NE	3164	3121		0.200		0.010		
4121	6.5	38	17.3	119	38.2		3243	3146				0.015		
4121	7.1	38	17.6	119	38.4	NE	3292	3243		0.100		0.010		0.100
4122	0.1	38	20.7	119	37.2	N	3097					0.010		0.125
4122	0.2	38	22.2	119	35.9	N	3170					0.010		0.200
4122	1.1	38	22.5	119	36.4	NE	3316			0.100		0.010		0.100
4122	3.1	38	23.3	119	36.7	N	3170			0.100		0.010		

No. ice pockets 23 Total ice area 0.255 Total ice and moraine area 0.260
Average ice area 0.011 Average ice and moraine area 0.011
Mean altitude of ice 3173 Mean altitude ice and moraine 3173

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
East Walker River Basin

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4131	0.1	38	2.2	119	17.2	N	3414	3267		0.200		0.010		0.100
4131	2.1	38	2.2	119	18.4		3462	3389		0.180		0.010		
4131	3.1	38	3.9	119	18.8	NE	3365	3243		0.200		0.010		0.800
4131	3.2	38	3.7	119	19.3	N	3462	3292		0.250		0.027		0.150
4131	3.3	38	3.8	119	19.4		3365	3316		0.220		0.018		
4132	1.1	38	6.0	119	19.1		3505	3474		0.100		0.020		0.280
4132	1.2	38	5.5	119	20.6	N	3389	3341	3292	0.080	0.200	0.010	0.023	0.080
4132	4.1	38	5.6	119	22.1	N				0.200		0.015		
4132	8.1	38	6.1	119	23.4	NE	3536	3438		0.100		0.010		0.130
4132	8.2	38	6.2	119	23.5	NE	3536	3462		0.080		0.010		0.180
4132	11.1	38	6.4	119	24.2	N	3316	3261	3170	0.080	0.200	0.015	0.030	0.200
4132	12.1	38	6.6	119	26.8	N	3365	3243		0.200		0.020		0.100
4132	12.2	38	6.0	119	26.8		3219	3133		0.100		0.010		
4132	12.3	38	6.0	119	27.0	N	3292	3146		0.200		0.015		
4132	12.4	38	5.8	119	27.3	N	3267	3194		0.150		0.010		0.100

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
East Walker River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4132	12.5	38	5.8	119	27.5		3267	3121		0.300		0.010		
4132	13.1	38	6.9	119	27.6	N	3146	3048		0.180		0.010		
4132	13.2	38	6.8	119	27.7	N	3146	3072		0.100		0.012		
4132	13.3	38	6.6	119	27.6		3243	3176		0.100		0.010		
4133	1.1	38	9.6	119	26.3	N			3219		0.500		0.050	
4133	1.2	38	9.5	119	27.0	N	3365	3170		0.300		0.018		0.080

No. ice pockets 21 Total ice area 0.270 Total ice and moraine Area 0.358
Average ice area 0.013 Average ice and moraine area 0.016
Mean altitude of ice 3301 Mean altitude ice and moraine 3295

Table 1*B.--Ice patches of the Sierra Nevada*--Continued
Owens River Basin

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4211	0.1	36	31.7	118	14.7	NE	4184	3780				0.010		
4211	7.1	36	35.7	118	15.6	N	3536	3511	3462	0.050	0.200	0.010	0.025	0.125
4211	8.1	36	36.1	118	16.4	NE	3658	3609				0.010		
4211	9.1	36	36.5	118	17.6	NE	3682	3633	3609	0.150	0.200	0.010	0.020	0.110
4211	11.1	36	37.6	118	18.8	N	4017	3986		0.100		0.010		0.100
4211	11.2	36	38.6	118	19.2	N	4005	3901		0.150		0.015		0.150
4211	12.1	36	38.9	118	19.5	N	3974	3901				0.010		
4211	12.2	36	39.0	118	19.6	NE	3926	3828		0.100		0.010		0.100
4211	14.1	36	39.3	118	19.9	NE	3901	3828	3774	0.100	0.450	0.010		0.400
4211	14.2	36	39.3	118	19.9		3901	3828	3774			0.010		
4211	14.3	36	39.5	118	20.0	N	3901	3828						
4212	0.1	36	44.2	118	20.6		3658	3536				0.020	0.060	
4212	0.2	36	44.5	118	21.0		3877	3780				0.010	0.015	
4212	2.1	36	45.0	118	22.0		3749	3658				0.010		
4212	2.2	36	45.2	118	22.0	NE	3609	3536	3536	0.220	0.230		0.010	0.070
4212	2.3	36	46.9	118	22.4		3767					0.010		
4212	2.4	36	46.9	118	22.7		3901	3828		0.100		0.010		
4212	2.5	36	47.2	118	22.2	NE	3682	3633	3536		0.300	0.010		
4212	2.6	36	47.2	118	22.3		3767	3658				0.010		
4212	3.1	36	47.8	118	21.9	N	3865	3474	3365		0.500	0.010	0.050	

Table 1*B.--Ice patches of the Sierra Nevada*--Continued
Owens River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4212	3.2	36	49.0	118	21.2	E			3365		0.550	0.010	0.100	
4212	3.3	36	49.1	118	21.9	N					0.800			
4212	4.1	36	49.0	118	22.8	NE	3780	3676		0.140		0.010		
4212	4.2	36	49.8	118	22.7		3536					0.010		
4212	4.3	36	49.4	118	22.2	N			3682		0.400			
4212	4.4	36	49.4	118	23.3	E	3901	3883	3883	0.090	0.100	0.010	0.012	0.110
4212	6.1	36	57.0	118	22.8	NE			3292		0.300			
4212	6.2	36	57.1	118	23.1	NE			3341		0.300			
4212	7.1	36	58.8	118	24.3	NE	3596	3536		0.230		0.019		
4213	4.1	37	1.3	118	24.8		3780	3658				0.010		
4213	7.1	37	1.9	118	25.3	NE	3778	3648				0.015		
4213	11.1	37	3.0	118	25.5		3708	3645				0.010		
4213	11.2	37	3.0	118	25.8	E	3780	3682	3438	0.350	1.150	0.045		0.300
4213	12.1	37	3.8	118	25.6	N	3670	3536		0.100		0.050		
4213	13.1	37	4.3	118	26.4	NE	3780	3627				0.015		
4214	3.1	37	0.4	118	29.3	N	3658	3609				0.020		
4214	3.2	37	5.0	118	28.0	NE	3584	3517		0.100		0.010		0.150
4214	3.3	37	5.4	118	28.0	N	3565	3487				0.012		
4214	3.4	37	4.4	118	28.3	N	3365	3292				0.020		
4214	9.1	37	6.8	118	29.2	N	3414	3353				0.020		

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
Owens River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4214	11.1	37	5.6	118	30.7		4267	4194		0.100		0.015		0.150
4214	11.2	37	6.5	118	30.8		3645			0.500		0.010		
4214	11.3	37	6.4	118	31.1		3780	3755		0.300		0.010		
4214	11.4	37	6.4	118	31.2		3828	3780		0.150		0.010		
4214	11.5	37	6.3	118	31.3	N	3901	3859		0.090		0.015		0.200
4214	11.6	37	6.5	118	31.3			3780				0.010		
4214	12.1	37	7.1	118	30.8	NE	3755	3658		0.150		0.010		0.100
4214	12.2	37	6.8	118	30.7	N	3682	3596		0.120		0.010		
4214	12.3	37	6.8	118	50.8	NE	3682	3596		0.100		0.010		
4214	12.4	37	6.8	118	31.3	N	3901	3865		0.090		0.010		0.150
4214	13.1	37	7.1	118	31.1		3536	3414		0.700		0.040		
4214	14.1	37	7.3	118	31.5			3426				0.015		
4214	14.2	37	7.1	118	31.5		3816	3780		0.100		0.015		0.180
4214	15.1	37	7.7	118	31.7	N	3828	3708		0.120		0.015		
4214	15.2	37	7.7	118	31.9	N	3901	3731		0.280		0.010		
4215	1.1	37	8.4	118	32.0	NW	3932	3804	3658	0.090	0.200	0.010		0.080
4215	3.1	37	6.8	118	32.3	NW	3731	3633	3633	0.200		0.010		0.050
4215	4.1	37	6.9	118	33.3	N	3658	3609	3462	0.140	0.600	0.015	0.080	0.120
4215	7.1	37	7.7	118	34.5	N	3670	3584	3572	0.100	0.200	0.012	0.020	0.100
4215	7.2	37	7.6	118	34.6	N	3708	3621	3621	0.180	0.180	0.015	0.020	0.120

Table 1*B*.--*Ice patches of the Sierra Nevada*--Continued
Owens River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4215	7.3	37	7.4	118	34.7	N	3804	3737	3731	0.100	0.120	0.012		0.200
4215	9.1	37	8.2	118	35.2	N	3688	3658		0.060		0.020		0.450
4215	11.1	37	9.0	118	36.0		3767	3658		0.150		0.010		
4215	11.2	37	8.9	118	36.2	N	3804	3682		0.100		0.010		0.300
4215	14.1	37	9.1	118	37.5	N	3780	3720		0.100		0.010		0.100
4215	14.2	37	9.2	118	37.7		3658	3566		0.300		0.015		
4215	14.3	37	8.8	118	37.6		3755	3731		0.250		0.010		
4215	15.1	37	9.4	118	37.9					0.500		0.010		
4215	15.2	37	8.8	118	37.9		3804	3658				0.010		
4215	15.3	37	8.7	118	38.1	NW	3658	3645		0.120		0.015		0.100
4215	15.4	37	8.6	118	38.1	W	3731	3658		0.200		0.012		
4215	15.5	37	8.5	118	38.1	N	3913	3780		0.150		0.010		
4215	16.1	37	8.5	118	38.5			3548				0.010		
4215	17.1	37	8.5	118	38.7	N	3658	3609		0.070		0.010		0.250
4215	17.2	37	8.5	118	38.8	N	3780	3731		0.060		0.010		0.100
4215	18.1	37	8.9	118	39.2		3853	3755				0.010		
4215	19.1	37	9.3	118	38.5		3536	3438	3414			0.010	0.025	
4215	19.2	37	9.3	118	38.7				3462		0.180	0.010	0.030	
4215	19.3	37	9.4	118	38.9						0.200	0.010		0.100
4215	20.1	37	9.3	118	39.4			3780				0.010		
4215	22.1	37	9.4	118	39.8	SE	3853	3804		0.150		0.010		
4215	22.2	37	9.8	118	39.3		3731	3658		0.100		0.010		

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
Owens River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4215	22.3	37	9.8	118	39.5		3708	3658		0.220		0.010		
4215	24.1	37	10.0	118	40.0	E	3926	3853	3834	0.090	0.100	0.015	0.017	0.190
4215	24.2	37	10.4	118	39.5		3682	3633		0.100		0.010		
4215	25.1	37	12.1	118	38.8		3578	3548		0.100		0.010		
4215	25.2	37	12.2	118	39.2	N	3609	3536		0.120		0.010		0.100
4215	25.3	37	11.8	118	39.5	NE	3804	3780		0.180		0.015		0.100
4215	25.4	37	11.6	118	39.5	N	3968	3859		0.080		0.010		0.180
4215	25.5	37	11.4	118	40.0	NE	3926	3889		0.080		0.015		0.220
4215	25.6	37	12.1	118	39.7	NE	3609	3536		0.300		0.020		
4215	27.1	37	12.5	118	40.2			3620				0.010		
4215	27.2	37	12.9	118	39.7	N	3566	3536		0.060		0.010		0.300
4215	27.3	37	12.9	118	39.9	N	3584	3572	3566	0.050		0.010	0.012	0.150
4215	30.1	37	14.2	118	40.8			3481				0.010		
4215	31.1	37	14.8	118	39.5		3658	3609		0.100	0.100	0.025	0.075	0.310
4215	31.2	37	14.5	118	38.5	NE	3645				0.100			0.600
4216	2.1	37	16.6	118	38.6	N	3511	3414		0.200		0.010		
4216	5.1	37	16.2	118	40.9		4020	3804		0.090		0.010		0.100
4216	5.2	37	17.7	118	40.5		3658	3511				0.020		0.150
4216	7.1	37	18.0	118	41.1		3365	3353				0.016		
4216	8.1	37	18.6	118	41.9	NE	3708	3609		0.100		0.010		0.080

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
Owens River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4216	8.2	37	18.7	118	41.9		3609	3414				0.015		
4216	13.1	37	20.1	118	43.0	N				0.100		0.010		0.200
4216	13.2	37	20.2	118	46.3	N	3755	3633	3584	0.200	0.300	0.010	0.015	0.040
4216	13.3	37	20.1	118	46.4	N	3755	3682		0.200		0.010		0.200
4216	15.1	37	21.3	118	46.6	SE	3780	3708	3658	0.100	0.300	0.015	0.080	
4216	17.1	37	22.0	118	45.6	NE	3780	3708		0.100				0.150
4217	0.1	37	24.5	118	43.0	N				0.100	0.300	0.010		
4217	0.2	37	24.9	118	43.6	N	4023	3658		0.080	0.200	0.010	0.040	0.250
4217	1.1	37	23.3	118	45.5		3414					0.010		
4217	2.1	37	22.8	118	45.6		3566					0.015		
4217	2.2	37	22.6	118	45.8	N	3536					0.020		
4217	2.3	37	22.4	118	45.6		3720					0.010		
4217	5.1	37	22.9	118	45.8	N	3487	3462	3450	0.100	0.150	0.010	0.015	0.100
4217	5.2	37	23.0	118	46.2		3566	3511				0.020		
4217	7.1	37	23.6	118	46.2		3658					0.010		
4217	11.1	37	29.9	118	47.0	NE	3536	3389		0.150	0.200	0.020		0.350
4217	13.1	37	29.3	118	49.2		3414		3292		0.350	0.010	0.120	
4217	14.1	37	28.9	118	50.5	N		3414				0.010		
4217	17.1	37	29.9	118	51.3		3511	3474				0.010		
4217	17.2	37	31.0	118	47.5	N		3806	4055	0.050	0.450	0.010	0.080	

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
Owens River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4217	17.3	37	31.0	118	47.9	NE		3806	4003	0.050	0.400	0.010	0.080	
4217	17.4	37	30.4	118	50.7	NE	3925	3754		0.190		0.012		0.080
4217	17.5	37	30.4	118	51.1	NW	3859	3833	3806	0.100	0.225	0.010	0.015	0.100
4217	17.6	37	30.2	118	51.5		3859	3833				0.015		
4217	17.7	37	31.8	118	50.5	NE			3491		0.300		0.050	
4217	17.8	37	32.1	118	51.2	N	3806	3676		0.200		0.012		0.060
4217	22.1	37	31.2	118	52.3		3543					0.012		
4217	22.2	37	31.0	118	52.5		3859	3833		0.900		0.030		
4217	22.3	37	30.5	118	52.5		3963	3937				0.020		
4217	22.4	37	31.5	118	53.6		3806	3702	3676		0.175	0.020	0.080	
4217	22.5	37	31.6	118	53.9	NE	3780	3696		0.100		0.020		
4217	22.6	37	32.3	118	54.3		3728		3596			0.010	0.110	
4217	22.7	37	33.9	118	54.5	N	3754	3570	3281	0.325		0.010	0.120	
4217	22.8	37	33.1	118	55.9	N	3806	3676	3622			0.010	0.020	
4217	22.9	37	35.0	118	55.1		3543	3412				0.015		
4217	22.10	37	34.0	118	56.4	N	3439	3399		0.050	0.300	0.020	0.045	0.350
4217	24.1	37	34.8	118	57.0		3412		3281		0.400	0.010	0.130	
4217	24.2	37	33.9	118	58.5	N	3596	3465	3439		0.300	0.012	0.062	
4217	25.1	37	34.2	118	59.8		3596	3543				0.010		
4217	25.3	37	34.3	119	6.0	NE	3389	3261	3194	0.200	0.300	0.020	0.030	0.100

No. ice pockets 142 Total ice area 1.771 Total ice and moraine area 3.035
Average ice area 0.013 Average ice and moraine area 0.022
Mean altitude of ice 3660 Mean altitude ice and moraine 3458

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
Mono River Basin

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4221	0.1	37	43.5	119	12.5	N	3219	3146		0.200		0.030		
4221	0.2	37	43.4	119	12.8	N	3170	3084		0.150		0.020		
4221	3.1	37	43.3	119	13.3		3170	3146				0.010		
4221	4.1	37	43.7	119	13.8		3389	3292				0.025		
4221	5.1	37	43.9	119	13.9		3341	3316				0.010		
4221	5.2	37	43.9	119	14.0		3414	3322				0.010		
4221	5.3	37	43.9	119	14.1		3474	3426				0.010		
4221	5.4	37	43.7	119	14.1	NE	3511	3438		0.150		0.015		0.050
4221	5.5	37	44.2	119	13.9	NE	3292	3243				0.015		
4221	5.6	37	44.6	119	14.1	N	3267	3219				0.015		
4221	5.7	37	44.3	119	14.2		3414	3310				0.035		
4221	8.1	37	43.9	119	14.8		3511	3341				0.040		
4221	9.1	37	44.2	119	14.9		3462	3426				0.015		
4221	9.2	37	44.6	119	14.8		3487	3474				0.015		
4221	9.3	37	44.7	119	14.4	NE	3267	3219				0.015		
4221	9.4	37	44.8	119	14.6	NE	3414	3292				0.012		0.225
4221	9.5	37	43.9	119	15.0		3658	3578				0.010		
4221	10.1	37	44.2	119	15.1	NE	3578	3420		0.350		0.045		
4221	12.1	37	44.0	119	15.7	NE	3804	3755		0.100		0.012		0.125
4221	13.1	37	44.9	119	15.1	NE	3609	3536				0.015		0.300

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
Mono River Basin--Continued

Basin	IP	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4223	8.1	37 56.2	119 17.1	N	3487	3383		0.100		0.017		0.175
4223	8.2	37 56.2	119 17.4	E	3572	3487		0.150		0.015		0.140
4223	8.3	37 56.5	119 17.6		3523	3450				0.020		
4223	8.4	37 56.7	119 17.8	N	3462	3414				0.012	0.015	0.200
4223	8.5	37 56.9	119 17.9		3341	3304		0.075		0.010		0.075
4223	9.1	37 56.7	119 18.1	N	3487	3414		0.075		0.010		0.100
4223	10.1	37 57.6	119 18.8		3609	3499				0.010		
4223	12.1	37 57.7	119 18.5	NE	3658	3578		0.100		0.010		0.180
4223	13.1	37 58.5	119 17.5	N	3316	3146	3121			0.010		
4223	13.2	37 58.1	119 18.1	N	3523	3487	3487			0.010		0.100
4223	14.1	37 58.3	119 18.5	N	3389	3279		0.125		0.010		0.090
4224	0.1	37 59.2	119 15.6	N	3414	3316			0.200	0.010		0.100
4224	1.1	37 59.8	119 16.1	N	3414	3365	3292	0.200	0.220	0.010	0.022	0.120
4224	1.2	37 59.0	119 18.3		3292	3194				0.010		

Table 1*B.--Ice patches of the Sierra Nevada*--Continued
Mono River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4224	3.1	37	59.3	119	18.9	NE	3487	3365		0.100		0.020		0.350
4224	3.2	38	0.3	119	18.1		3511	3267				0.030		
4224	3.3	38	0.9	119	17.3	E	3279	3206		0.100	0.150	0.010	0.017	
4224	3.4	38	0.9	119	18.1			3261				0.010		
4224	3.5	38	1.0	119	18.1		3536	3517				0.020		0.280

No. ice pockets 60 Total ice area 0.959 Total ice and moraine area 0.981
Average ice area 0.016 Average ice and moraine area 0.016
Mean altitude of ice 3429 Mean altitude ice and moraine 3428

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
Kings River Basin

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4310	0.1	37	7.7	118	48.1	N	3414	3341		0.130		0.010		0.100
4310	0.2	37	7.6	118	48.6	N	3720	3572	3444			0.010		0.180
4310	0.3	37	7.2	118	49.2		3600	3566	3536	0.120		0.010		
4311	0.1	37	6.9	118	46.2	N	3566	3511	3584			0.010		
4311	0.2	37	3.3	118	44.0		3596	3511		0.200		0.010		
4311	1.1	37	2.0	118	44.3		3487					0.010		
4311	1.2	37	2.2	118	44.5	N	3444	3341		0.190		0.010		
4312	0.1	36	59.8	118	41.1	N	3462	3414		0.100		0.010		
4312	0.2	36	59.9	118	41.4			3438				0.010		
4312	0.3	37	0.1	118	40.5		3292	3097		0.100		0.010		
4312	0.4	37	0.3	118	41.6		3414	3389	3365			0.010		
4312	0.5	37	1.4	118	41.5		3365	3292		0.100		0.010		0.110
4312	0.6	37	1.3	118	41.5		3462	3414		0.090		0.010		
4312	0.7	37	1.3	118	42.1		3511	3462				0.010		
4312	0.8	37	1.7	118	42.6		3536	3414	3389			0.010		
4312	0.9	37	1.8	118	43.5		3584	3511				0.010		0.130
4312	1.1	37	3.9	118	43.6		3536	3462				0.010		
4312	1.2	37	4.2	118	43.8	N	3536	3505	3487	0.080		0.010		0.100
4312	1.3	37	4.2	118	44.0	N	3633	3578				0.010		
4312	1.4	37	6.1	118	43.0		3877	3828				0.010		

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
Kings River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4312	1.5	37	5.4	118	42.6		3731	3708		0.090		0.015		0.200
4312	1.6	37	5.4	118	42.5		3658	3652				0.010		
4312	1.7	37	5.1	118	42.1		3720	3603		0.475		0.020		
4312	1.8	37	5.0	118	41.4		3708	3670				0.010		
4312	2.1	37	3.7	118	40.9	NE	3658	3566		0.100	0.120	0.013		0.200
4312	3.1	37	4.1	118	41.0	E	3755	3658		0.140		0.018		0.120
4312	4.1	37	4.4	118	41.1	NE	3682	3584		0.100		0.012		0.150
4312	5.1	37	4.8	118	40.7	NE	3780	3670	3633			0.010		
4312	5.2	37	4.8	118	41.6	NW	3853	3780		0.150		0.010		
4312	5.3	37	4.8	118	41.6	NW	3828	3755		0.200		0.012		
4312	6.1	37	5.2	118	41.0		3462	3426		0.180		0.010		
4312	7.1	37	5.4	118	41.5					0.290		0.040		
4312	7.2	37	6.0	118	41.7		3780	3731				0.010		
4312	8.1	37	5.8	118	39.2	N	3755	3664		0.100		0.010		0.100
4312	8.2	37	5.6	118	38.9		3828	3804		0.180		0.010		
4312	8.3	37	4.9	118	38.7		3708	3645				0.010		
4312	8.4	37	4.7	118	38.6					0.100		0.010		
4312	9.1	37	2.0	118	37.7	N		3682		0.110		0.010		
4312	10.1	37	2.8	118	37.8	N	3774	3731		0.100		0.010		
4312	10.2	37	1.4	118	37.2	N		3414	3365	0.050	0.300	0.010	0.028	0.150

Table 1*B.--Ice patches of the Sierra Nevada*--Continued
Kings River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4313	1.1	37	1.6	118	36.7	E	3487	3414	3414	0.130		0.012		0.130
4313	1.2	37	1.8	118	36.6	NE	3402	3365	3341	0.050	0.100	0.010		0.100
4313	1.3	37	1.8	118	36.8	N	3487	3438		0.060	0.110	0.012	0.016	0.160
4313	1.4	37	1.9	118	36.8		3487	3426		0.100		0.010		
4313	2.1	37	2.5	118	36.5	N	3414	3341		0.100		0.015		0.110
4313	2.2	37	2.6	118	36.7	N	3219	3182				0.010		0.120
4313	2.3	37	2.4	118	37.2	N	3462	3389		0.160		0.010		
4313	2.4	37	4.0	118	36.8			3292				0.010		
4313	2.5	37	3.9	118	36.7	N	3438	3328		0.100		0.012		0.090
4313	2.6	37	3.6	118	36.9	NW			3322		0.350	0.010		
4313	2.7	37	3.6	118	37.1	N	3444	3395	3383		0.100	0.015		0.140
4313	3.1	37	3.5	118	37.4	N	3523	3468		0.060		0.010		0.200
4313	4.1	37	3.7	118	37.8		3584	3487		0.300		0.015		
4313	4.2	37	3.8	118	38.0	N	3721	3670		0.100		0.010		0.100
4313	5.1	37	4.1	118	38.0	N	3682	3566		0.190	0.200	0.045		0.390
4313	6.1	37	5.1	118	37.1	NE	3584	3487		0.060		0.015		0.300
4313	7.1	37	5.2	118	38.0							0.015		
4313	7.2	37	5.3	118	38.3	E	3780	3749		0.100		0.012		0.120
4313	7.3	37	6.1	118	36.6	N	3414	3292				0.015		0.160
4313	7.4	37	6.1	118	36.9	N	3414	3377		0.080		0.010		0.150

Table 1*B.--Ice patches of the Sierra Nevada*--Continued
Kings River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4313	14.1	37	6.8	118	39.1	NE	3682	3578	3554	0.200		0.010		
4313	14.2	37	6.9	118	39.0	NE	3566	3487	3414			0.010	0.015	0.200
4313	14.3	37	7.0	118	39.3		3682	3639			0.100	0.015		0.100
4313	14.4	37	6.6	118	39.4							0.015		
4313	15.1	37	6.4	118	40.2	NE	3822	3731	3708	0.100				0.140
4313	15.2	37	7.7	118	39.3	N	3755	3708				0.010		0.180
4313	15.3	37	18.1	118	39.4	NE	3877	3792		0.200		0.010		
4313	15.4	37	8.0	118	38.5		3596	3536		0.140		0.010		
4313	15.5	37	8.0	118	38.1					0.350		0.010		
4313	16.1	37	8.3	118	37.2	E	3877	3780		0.250		0.015		
4313	16.2	37	8.1	118	37.0	NE	3780	3699		0.100		0.015		0.200
4313	17.1	37	7.6	118	35.4		3708	3682		0.200		0.010		
4313	17.2	37	6.9	118	34.4	NW	3658	3609		0.050	0.080	0.010	0.020	0.210
4313	17.3	37	6.8	118	34.1		3877	3780		0.200		0.010		
4313	17.4	37	6.6	118	32.4	N	3658	3633		0.090		0.010		0.200
4313	17.5	37	5.8	118	31.4	W			3658	0.100	0.400	0.010	0.040	
4313	17.6	37	5.7	118	31.5	NW	3755	3708				0.010		
4313	17.7	37	5.6	118	31.7	N	3755	3658				0.010		0.100
4313	18.1	37	5.5	118	32.3	NW	3658	3633	3536	0.090	0.150	0.010	0.035	0.300
4313	23.1	37	4.9	118	34.4	N	3523	3462	3462	0.100	0.150	0.010		0.100

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
Mono River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4221	13.2	37	45.0	119	15.1	NE	3548	3487		0.080		0.010		0.120
4221	13.3	37	47.0	119	11.3	N	3548	3505		0.100		0.010		0.150
4221	13.4	37	47.7	119	11.2	NE	3511	3389				0.010		
4221	15.1	37	48.2	119	11.7		3548	3487				0.010		
4222	0.1	37	49.0	119	10.8		3682	3645		0.100		0.010		
4222	3.1	37	49.0	119	12.0	NE	3755	3708		0.100		0.010		0.100
4222	4.1	37	49.4	119	12.0		3566	3524				0.012		
4222	4.2	37	49.5	119	11.8		3566	3511				0.020		
4222	4.3	37	49.6	119	12.1	NE	3584	3536		0.125		0.012		
4222	4.4	37	49.8	119	12.0		3536	3462		0.100		0.012		
4222	5.1	37	49.2	119	12.4		3708	3609				0.030		
4222	5.2	37	49.1	119	12.6		3780	3708				0.015		
4222	5.3	37	50.8	119	11.6	N	3438	3371		0.100		0.020	0.020	0.250
4223	2.1	37	53.4	119	12.3		3621	3462				0.020		
4223	2.2	37	54.1	119	12.7		3584	3511				0.010		
4223	5.1	37	55.7	119	12.0		3243	3146				0.030		
4223	5.2	37	55.5	119	13.5	N	3414	3341		0.090		0.020		0.300
4223	7.1	37	56.1	119	16.2	N	3316	3279		0.090		0.010		0.120
4223	7.2	37	56.5	119	16.6		3219	3194		0.150		0.010		
4223	7.3	37	56.2	119	16.6		3414	3292				0.030		
4223	7.4	37	56.3	119	16.9	N	3347	3304		0.400		0.020		

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
Kings River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4314	1.1	37	5.4	118	30.2	E	4145	4023		0.180		0.010		
4314	1.2	37	5.2	118	29.9		3877	3804		0.100		0.040		0.500
4314	3.1	37	0.4	118	29.3	N	3658	3609				0.020		
4314	3.2	37	5.4	118	30.0					0.100		0.010		
4314	3.3	37	0.9	118	30.0	N	3536	3487	3487	0.100		0.010		0.100
4314	6.1	37	6.7	118	32.0		3481	3438	3414	0.080		0.010		0.100
4314	6.2	37	6.3	118	31.7	NW	3580			0.100		0.010		
4314	6.3	37	5.9	118	31.9	N	3609	3572	3548	0.100	0.200	0.010	0.020	0.100
4314	6.4	37	5.8	118	32.0		3572	3487		0.100		0.010		0.100
4314	7.1	36	58.4	118	20.3		3389					0.010		0.200
4314	7.2	36	58.4	118	29.6		3536		3420			0.010		0.200
4314	7.3	36	57.9	118	29.9	N	3511	3462	3452	0.080		0.018		0.200
4314	7.4	36	57.8	118	30.4	NW	3511		3450			0.010	0.040	0.200
4314	7.5	36	57.6	118	31.4		3658					0.010		0.180
4314	7.6	36	56.7	118	32.1	N	3609					0.010		0.160
4314	10.1	36	57.2	118	33.3	NE	3414		3365	0.120	0.300	0.010	0.013	0.330
4314	10.2	36	53.6	118	35.1		3341		3316			0.010		
4314	10.3	36	53.8	118	35.7		3317					0.010		
4314	10.4	36	52.2	118	38.0		3219					0.010		
4314	10.5	36	52.3	118	38.4		3365					0.010		

Table 1*B*.--*Ice patches of the Sierra Nevada*--Continued
Kings River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4314	10.6	36	53.6	118	40.0		3292					0.010		
4315	0.1	36	58.8	118	28.2	N	3731	3383				0.010		0.120
4315	1.1	36	55.9	118	31.9	NE	3566		3462		0.290		0.010	
4315	1.2	36	56.1	118	32.2		3609					0.010		
4315	4.1	36	56.1	118	25.5	N	3682		3511			0.010		
4316	5.1	56	52.2	118	23.1		3755	3682				0.010		
4316	5.2	36	52.3	118	23.4	N	3804	3708	3450	0.150		0.020		0.150
4316	10.1	36	47.2	118	23.6				3566		0.300	0.010		
4316	12.1	36	47.9	118	25.3		3658					0.010		
4316	12.2	36	47.7	118	26.0	N	3658	3578	3548	0.080	0.150	0.010	0.020	
4316	15.1	36	50.2	118	27.7	N	3462	3438	3365	0.100	0.200	0.010	0.025	
4316	17.1	36	47.4	118	27.3	N	3658	3566		0.120		0.015		0.300
4316	17.2	36	48.9	118	27.8	N	3438	3316		0.100		0.015		0.140
4316	17.3	36	48.6	118	28.5	N	3341	3279		0.100		0.010		0.300
4316	17.4	36	48.8	118	28.8	N	3316	3255		0.090		0.010		0.200
4317	0.1	36	45.1	118	22.3				3536			0.010		
4317	5.1	36	42.5	118	23.6		3932	3578				0.015	0.020	
4317	5.2	36	42.7	118	23.3	N	3780	3720				0.010		
4317	7.1	36	44.9	118	23.8	N	3170	3097	3072	0.100		0.010		0.100
4317	7.2	36	42.0	118	24.0	NW	3901	3807	3682	0.050	0.500	0.015	0.155	0.050

Table 1*B.--Ice patches of the Sierra Nevada*--Continued
Kings River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4317	9.1	36	44.9	118	25.1	N				0.200		0.015		0.100
4317	9.2	36	43.8	118	25.0	NE				0.100	0.150	0.015	0.020	0.100
4317	11.1	36	41.1	118	26.3	N	3755	3658				0.010		
4317	11.2	36	41.2	118	26.7	NE	3780	3688		0.100		0.010		0.200
4317	12.1	36	41.3	118	27.0	N	3682	3609	3609		0.100	0.012	0.020	0.120
4317	18.1	36	42.3	118	28.2	N	3780	3708		0.080		0.015	0.020	0.300
4317	20.1	36	42.9	118	29.0	NE	3853	3731		0.150		0.013		0.200
4317	20.2	36	42.8	118	29.1	NE	3780	3708		0.200		0.010		
4318	0.3	36	42.1	118	28.9	W	3780	3749		0.100		0.015		0.225
4318	1.1	36	39.2	118	28.9	W	3901	3767	3682	0.100	0.500	0.027	0.120	0.250
4318	1.2	36	37.7	118	29.7	N				0.200		0.030	0.070	0.325
4318	2.1	36	36.9	118	30.6	N	3658	3566				0.008		
4318	5.1	36	37.1	118	33.5	N	3658	3560	3548	0.100		0.012	0.020	0.200
4318	5.2	36	36.7	118	35.9	NE	3292	3243		0.100		0.015		0.280
4318	5.3	36	36.8	118	36.1	NE	3292	3267		0.080	0.120	0.015	0.020	0.190

No. ice pockets 135 Total ice area 1.633 Total ice and moraine area 2.112
Average ice area 0.012 Average ice and moraine area 0.016
Mean altitude of ice 3597 Mean altitude ice and moraine 3600

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
Kaweah River Basin

Basin	IP	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4321	0.1	36 35.0	118 32.0	N	3566	3414				0.025		
4321	0.2	36 34.9	118 32.3	N	3633	3578		0.125		0.011		0.100
4321	3.1	36 34.3	118 33.7	N	3219	3146	3121	0.110	0.150	0.010	0.017	
4321	4.1	36 32.8	118 33.7	N	3414	3365	3359			0.007	0.018	0.120
4321	5.1	36 30.1	118 34.3	N	3536	3414		0.180		0.015		0.200
4321	5.2	36 30.2	118 34.5	N	3414	3377	3341			0.010	0.030	
4321	5.3	36 28.1	118 34.5	N	3365	3341		0.090		0.010		0.225
4321	5.4	36 27.8	118 33.7	N	3414	3365		0.080		0.010		0.300
4321	5.5	36 27.5	118 33.4	NE	3414	3353		0.200		0.015		
4322	1.1	36 24.4	118 33.4	N	3438	3389		0.090	0.100	0.010		0.120

No. ice pockets 10 Total ice area 0.123 Total ice and moraine area 0.161
Average ice area 0.012 Average ice and moraine area 0.016
Mean altitude of ice 3407 Mean altitude ice and moraine 3404

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
Kern River Basin

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4331	1.1	36	25.1	118	32.3	N	3414	3353		0.085		0.007		
4331	1.2	36	25.0	118	32.4	N	3462	3414		0.085		0.007		
4331	1.3	36	26.1	118	33.1	NE	3438			0.150		0.008		
4331	1.4	36	26.8	118	31.2	E	3444	3402		0.100		0.010		
4331	1.5	36	27.4	118	31.4	N	3505	3353		0.090		0.013		0.190
4331	2.1	36	28.2	118	32.4	N	3414	3353		0.150		0.010		
4331	2.2	36	29.5	118	33.4	N	3536	3468		0.150		0.010	0.050	0.100
4331	2.3	36	29.6	118	33.8	NE	3542	3462		0.100		0.016		0.160
4331	2.4	36	30.0	118	33.9	NE	3536	3462		0.175		0.010		0.100
4331	2.5	36	31.9	118	33.8		3566	3523				0.010		
4331	2.6	36	33.7	118	31.3	N	3633	3542		0.090		0.018		0.300
4331	5.1	36	33.0	118	31.6	N	3658	3570		0.090		0.020		0.400
4332	0.1	36	32.7	118	26.8	N	3572	3534				0.010		
4332	0.2	36	32.4	118	27.3	NE	3731	3682				0.010		
4332	1.1	36	21.8	118	28.5	NE	3825	3760		0.100		0.020	0.030	0.200
4332	6.1	36	34.7	118	28.4	N	3536	3456		0.100		0.012		0.150
4332	7.1	36	33.6	118	29.5	N	3548	3450		0.300		0.025		0.225
4332	8.1	36	33.4	118	30.3	N	3901	3828	3731	0.100		0.010		0.100
4332	10.1	36	33.9	118	30.9		3780	3682	3633	0.080		0.010		0.200
4332	11.1	36	34.2	118	31.2	NE	3682	3584		0.140		0.010		

Table 1*B.--Ice patches of the Sierra Nevada*--Continued
Kern River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4333	3.1	36	37.3	118	28.1	N	3780	3658	3658	0.100	0.150	0.015		0.100
4333	5.1	36	38.3	118	28.9	NE	3938	3853		0.200		0.010		
4333	5.2	36	38.3	118	28.9	NE	3926	3853		0.200		0.020		0.100
4333	6.1	36	38.9	118	29.0	E	3950	3901		0.080		0.015		0.200
4333	6.2	36	39.1	118	28.1		3877	3780				0.015		
4333	6.3	36	39.6	118	27.9	N	3889	3749		0.200		0.020		0.200
4333	7.1	36	39.8	118	28.3	NE	3901	3853	3853	0.100		0.010		0.100
4333	8.1	36	40.2	118	20.4	NW	3731	3659		0.300		0.020		0.080
4333	8.2	36	39.8	118	20.3	N	3682	3667				0.010		
4333	8.3	36	39.7	118	20.3	N	3871	3702				0.010		
4333	8.4	36	38.0	118	19.8	N	3658	3609				0.010		
4334	0.1	36	35.0	118	17.5	N	3974	3926	3926	0.100		0.010		0.100
4334	0.2	36	34.8	118	17.7	N	4243	4023		0.250		0.020		
4334	0.3	36	33.7	118	34.0		3633	3889				0.010		

No. ice pockets 34 Total ice area 0.441 Total ice and moraine area 0.491
Average ice area 0.013 Average ice and moraine area 0.014
Mean altitude of ice 3668 Mean altitude ice and moraine 3666

Table 1*B.--Ice patches of the Sierra Nevada*--Continued
Mokelumne River Basin

Basin	IP	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4411	1.1	38 37.8	119 59.9	N	2891	2879		0.100		0.010		
4411	2.1	38 37.6	119 58.7	N	2867	2757		0.100		0.012		0.150
4411	2.2	38 37.8	119 59.2	NE	2928	2855		0.150		0.015		0.125
4412	0.1	38 30.4	119 50.9	N	2879	2855		0.150		0.015		0.150
4412	0.2	38 30.2	119 50.9	NW	2830	2769		0.100		0.012		0.150

No. ice pockets 5 Total ice area 0.064 Total ice and moraine area 0.064
Average ice area 0.013 Average ice and moraine area 0.013
Mean altitude of ice 2850 Mean altitude ice and moraine 2850

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
Stanislaus River Basin

Basin	IP	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4421	2.1	38 17.4	119 39.6		3377	3292				0.010		
4421	3.1	38 17.8	119 40.2	NE	3292	3219		0.100		0.010		
4421	6.1	38 13.5	119 38.0	N	3292	2940		0.300		0.012		
4421	6.2	38 13.9	119 38.5	N	3072	2977		0.200		0.010		
4421	7.1	38 14.0	119 40.2		3097	3060		0.100		0.010		
4421	8.1	38 14.0	119 41.3	N	3146	3097		0.090		0.010		0.100
4421	9.1	38 14.1	119 42.0	N	3219	3176		0.100		0.017		0.180
4421	9.2	38 12.4	119 42.5	NE	3121	3048		0.200		0.011		
4421	9.3	38 12.5	119 43.1	N	3072	3019		0.200		0.010		
4421	9.4	38 12.7	119 43.0	N	2964	2922		0.120		0.010		
4421	9.5	38 12.8	119 43.7	N	3048	2977		0.300		0.010		
4421	9.6	38 12.9	119 43.8	N	3048	3001		0.300		0.010		
4421	9.7	38 12.8	119 43.9		3060	3042				0.010		
4421	9.8	38 12.9	119 44.0		3072	3037		0.100		0.010		
4421	9.9	38 12.9	119 44.1		3121	3072		0.150		0.010		
4421	9.10	38 12.9	119 44.3	NW	3097	3001		0.190		0.018		
4421	9.11	38 13.0	119 44.7	N	3078	3019		0.100		0.018		0.200
4421	9.12	38 13.0	119 44.9	N	3048	2977		0.290		0.018		

No. ice pockets 18 Total ice area 0.214 Total ice and moraine area 0.214
Average ice area 0.012 Average ice and moraine area 0.012
Mean altitude of ice 3085 Mean altitude ice and moraine 3085

Table 1*B.--Ice patches of the Sierra Nevada*--Continued
Tuolumne River Basin

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4431	0.1	38	9.0	119	34.1	N	3170	3140				0.010		
4431	0.2	38	9.0	119	32.9	NW	3316	3206		0.200		0.023		0.100
4432	0.1	38	8.4	119	32.8		3341	3267				0.010		
4432	0.2	38	8.0	119	31.1	NW	3243	3146		0.100		0.014		0.100
4432	0.3	38	8.0	119	31.3	N	3219	3140		0.150		0.012		
4432	0.4	38	8.0	119	31.4		3164	3097		0.100		0.010		
4432	0.5	38	7.9	119	31.3		3292	3219		0.100		0.010		
4432	0.6	38	7.9	119	31.4		3292	3219		0.100		0.010		
4432	0.7	38	8.0	119	31.5		3243	3170				0.010		
4432	1.1	38	5.3	119	24.1	N	3267	3243				0.010		
4433	0.1	38	5.0	119	22.8	SE	3536	3414		0.150		0.017		0.150
4433	2.1	38	2.3	119	21.5	NE	3267	3200				0.010		0.090
4433	2.2	38	3.1	119	21.6	NE	3511	3487		0.200		0.028		0.250
4433	2.3	38	3.1	119	21.4	NE	3505	3487		0.100		0.010		
4433	2.4	38	3.2	119	21.3	NE	3462	3420		0.200		0.012		
4433	2.5	38	3.3	119	20.8	N	3414	3377		0.200		0.010		
4433	3.1	38	4.8	119	21.3		3728	3664		0.200		0.015		
4433	3.2	38	4.9	119	21.3	SE	3728	3664		0.200		0.018		
4433	7.1	38	0.6	119	19.1	N	3511	3408		0.180		0.010		0.080
4433	7.2	38	0.6	119	19.3	N	3438	3365		0.120		0.010		0.100

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
Tuolumne River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4433	9.1	37	59.4	119	19.3	N	3365	3292		0.200		0.013		
4433	9.2	37	59.2	119	19.9	N	3365	3292				0.012		
4433	9.3	37	58.6	119	20.7	N	3487	3408		0.090		0.020		0.300
4434	0.1	37	58.4	119	19.3	N	3511	3487		0.060		0.010		0.200
4434	0.2	37	56.7	119	19.0		3389	3304				0.010		
4434	0.3	37	56.2	119	17.7	N	3438	3359		0.080		0.018		
4434	0.4	37	55.9	119	19.9		3304	3219				0.010		
4434	0.5	37	55.7	119	20.3		3316	3267				0.010		
4435	0.1	37	51.6	119	16.1	N	3402	3365		0.080		0.010		0.180
4435	0.2	37	49.9	119	14.6		3633	3548				0.010		
4435	0.3	37	49.9	119	14.5		3621	3487				0.015		
4435	0.4	37	50.0	119	12.6		3414	3365				0.015		
4435	0.5	37	49.7	119	12.6		3566	3511				0.012		
4435	0.6	37	49.6	119	12.7		3731	3658				0.010		
4435	0.7	37	49.2	119	13.2		3780	3584				0.025		
4435	0.8	37	44.8	119	15.3	N	3584	3548		0.100		0.010		
4435	2.1	37	44.6	119	16.6	E	3901	3780		0.125		0.015		
4435	2.2	37	45.5	119	16.4	N	3584	3279				0.030		
4435	5.1	37	44.8	119	17.2	E	3720	3658		0.125		0.015		0.100
4435	6.1	37	45.5	119	17.1		3584	3536				0.010		

Table 1*B*.--*Ice patches of the Sierra Nevada*--Continued
Tuolumne River Basin--Continued

Basin	IP	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4435	10.1	37 46.1	119 17.6	NE	3487	3450		0.160		0.012		0.100
4435	10.2	37 47.3	119 17.0	NE	3462	3438				0.010		
4435	10.3	37 47.4	119 17.4	N	3365	3292		0.200		0.010		
4435	10.4	37 47.3	119 17.6	N	3341	3286		0.080		0.020		0.400
4435	10.5	37 46.8	119 17.6	NE	3402	3377				0.010		
4435	10.6	37 46.6	119 17.7		3438	3426				0.010		
4435	10.7	37 46.5	119 17.9		3462	3444				0.010		
4435	10.8	37 46.8	119 18.2	NE	3468	3438		0.120		0.010		0.800
4435	10.9	37 46.8	119 18.3	NE	3536	3487		0.100		0.010		
4435	10.10	37 46.9	119 17.9		3341	3328				0.010		
4435	10.11	37 47.0	119 18.0		3383	3341				0.010		
4435	10.12	37 47.1	119 18.3		3341	3274				0.010		
4435	10.13	37 48.3	119 18.7	N	3280	3231		0.100		0.010		
4435	10.14	37 48.1	119 19.0		3267	3243				0.010		
4435	10.15	37 47.7	119 19.0		3292	3280				0.010		
4435	10.16	37 50.0	119 22.5	N	3146	3048		0.300		0.010		
4435	10.17	37 50.5	119 22.5	N	3146	3072		0.120		0.010		
4435	10.18	37 50.2	119 23.0	N	3292	3146				0.012		
4435	10.19	37 50.2	119 23.4	N	3255	3206		0.120		0.010		0.800
4435	10.20	37 50.3	119 23.6	N	3194	3097				0.010		

No. ice pockets 60 Total ice area 0.753 Total ice and moraine area 0.753
Average ice area 0.013 Average ice and moraine area 0.013
Mean altitude of ice 3386 Mean altitude ice and moraine 3386

Table 1*B.--Ice patches of the Sierra Nevada*--Continued
Merced River Basin

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4441	0.1	37	48.3	119	21.9	N	3146	3292				0.010		
4441	1.1	37	46.8	119	18.9	N	3462	3414				0.010		0.100
4441	3.1	37	45.8	119	17.7	W	3584	3536				0.010		
4441	3.2	37	45.8	119	17.6	W	3658	3609	3584	0.090	0.100	0.010	0.012	0.120
4441	3.3	37	45.6	119	17.8	N	3584	3548		0.090		0.010		0.100
4441	3.4	37	45.6	119	18.0	N	3474	3414		0.070		0.010		0.110
4441	5.1	37	45.3	119	17.9	N	3584	3505		0.200		0.010		
4441	5.2	37	45.3	119	18.1	N	3536	3474		0.095		0.010		0.150
4441	5.3	37	45.4	119	18.2	N	3474	3505		0.100		0.010		
4441	5.4	37	45.3	119	18.3	N	3609	3505		0.150		0.010		0.090
4441	5.5	37	45.4	119	18.5	N	3536	3487		0.060		0.010		0.150
4441	6.1	37	45.4	119	19.2	N	3536	3487		0.080		0.015		0.200
4441	7.1	37	45.0	119	17.9	E	3487	3462		0.070		0.010		0.200
4441	7.2	37	44.9	119	17.9		3658	3548		0.100		0.025		0.300
4441	7.3	37	44.9	119	17.6		3658	3633				0.010		
4441	7.4	37	44.6	119	17.3		3658	3609				0.010		
4441	7.5	37	44.6	119	17.4		3609	3566				0.010		
4441	7.6	37	44.6	119	17.6		3584	3536				0.015		
4441	7.7	37	44.7	119	17.7							0.097		
4441	9.1	37	44.1	119	16.7					0.175		0.075		

Table 1*B*.--*Ice patches of the Sierra Nevada*--Continued
Merced River Basin--Continued

Basin	IP	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4441	9.2	37 44.2	119 16.5		3708	3633		0.125		0.020		0.150
4441	9.3	37 44.1	119 16.6		3658	3596		0.100		0.010		
4441	9.4	37 44.1	119 16.7		3633	3584		0.100		0.010		
4441	10.1	37 43.9	119 16.0							0.050		
4441	10.2	37 43.9	119 16.2		3584	3566				0.010		
4441	10.3	37 44.1	119 16.1		3755	3646				0.010		
4441	10.4	37 43.0	119 15.9		3682	3658				0.010		
4441	10.5	37 43.7	119 15.6	SW	3658	3584	3536	0.100	0.150	0.015		
4441	10.6	37 43.5	119 15.7	NW	3584	3505		0.175		0.015		
4441	10.7	37 42.9	119 15.8	NW	3536	3438		0.200		0.020		
4441	10.8	37 43.0	119 15.7	NW	3609	3524				0.020		
4441	11.1	37 42.6	119 15.7							0.060		
4441	11.2	37 42.6	119 15.7		3536	3511				0.010		
4441	11.3	37 42.6	119 15.6		3633	3566				0.015		
4441	11.4	37 42.4	119 15.7		3633	3584				0.010		
4441	11.5	37 42.3	119 15.6		3731	3670		0.150		0.015		
4441	11.6	37 42.1	119 15.9							0.065		
4441	11.7	37 42.2	119 15.8		3566	3536				0.015		
4441	11.8	37 42.1	119 15.7		3633	3566				0.015		
4441	12.1	37 42.0	119 16.7							0.020		

Table 1*B.--Ice patches of the Sierra Nevada*--Continued
Merced River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4441	12.2	37	41.6	119	16.8							0.030		
4441	12.3	37	41.7	119	16.7		3487	3438				0.010		
4441	12.4	37	41.5	119	16.8		3536	3487				0.015		
4441	14.1	37	38.1	119	22.3	N	3389	3365		0.150		0.015		
4441	15.1	37	38.7	119	23.7		3414	3353				0.030		
4441	15.2	37	39.1	119	24.3	NE				0.100		0.010		
4441	16.1	37	40.2	119	24.8	NE	3267	3206		0.150		0.015		
4441	16.2	37	40.5	119	24.9	NE	3292	3243				0.015		
4441	16.3	37	41.3	119	24.9	NE	3292	3243				0.010		
4441	17.1	37	41.9	119	25.6		3267	3219				0.010		
4441	17.2	37	41.9	119	25.8		3267	3194				0.010		

No. ice pockets 51 Total ice area 0.962 Total ice and moraine area 0.964
Average ice area 0.019 Average ice and moraine area 0.019
Mean altitude of ice 3513 Mean altitude ice and moraine 3512

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
San Joaquin River Basin

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4451	0.1	37	40.0	119	17.3		3438	3341				0.036		
4451	0.2	37	39.9	119	17.5		3438	3389				0.010		
4451	0.3	37	40.2	119	17.5		3375	3341				0.010		
4451	0.4	37	41.6	119	15.4		3414	3386				0.010		
4451	0.5	37	42.1	119	14.4	N	3292	3170				0.025		
4451	0.6	37	42.1	119	14.7	NW	3389	3292				0.015		
4451	1.1	37	42.2	119	15.2	NE	3566	3487				0.020		
4451	2.1	37	42.5	119	15.5		3658	3609				0.013		
4451	3.1	37	42.9	119	14.7	NE	3365	3206				0.020		
4551	3.2	37	42.8	119	14.9	NE	3450	3377				0.015		
4551	4.1	37	43.0	119	15.4	NE	3658	3609		0.125		0.030		0.300
4451	4.2	37	43.3	119	15.3		3780	3609				0.035		
4451	4.3	37	43.4	119	15.0		3755	3682				0.010		
4451	5.1	37	43.6	119	14.7	E	3511	3414				0.015		
4451	5.2	37	43.5	119	14.5		3536	3589				0.030		
4451	5.3	37	42.9	119	13.3	SW	3633	3536				0.010		
4451	5.4	37	42.7	119	13.5	S	3353	3304				0.010		
4451	7.1	37	42.8	119	13.0		3694	3670				0.012		
4451	7.2	37	42.7	119	12.9	SE	3658	3621				0.015		
4451	7.3	37	42.3	119	12.6		3530	3487				0.012		

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
San Joaquin River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4451	7.4	37	42.1	119	13.0		3511	3365				0.037		
4451	7.5	37	42.0	119	12.5		3401	3362				0.012		
4451	9.1	37	41.4	119	12.5		3536	3304				0.043		
4451	9.2	37	41.2	119	12.2		3658	3389				0.015		
4451	10.1	37	41.0	119	12.2	W	3633	3584				0.010		
4451	10.2	37	41.0	119	12.3	NW	3462	3377				0.015		
4451	10.3	37	41.0	119	12.5	NE	3438	3389				0.010		
4551	10.4	37	40.9	119	12.6		3414	3365				0.015		
4451	10.5	37	40.9	119	12.0	SW	3780	3731				0.010		
4451	11.1	37	40.6	119	12.6	W	3511	3401				0.030		
4451	12.1	37	40.4	119	12.0		3462	3292				0.020		
4451	12.2	37	40.4	119	11.6		3462	3267				0.025		
4451	12.3	37	39.9	119	11.0	W	3292	3243				0.015		
4451	12.4	37	39.7	119	10.9		3414	3316				0.020		
4451	14.1	37	39.3	119	10.5	SW	3584	3536				0.010		
4451	14.2	37	38.3	119	11.6	N	3219	3072				0.015		
4451	14.3	37	36.6	119	10.0	N	3243	3170		0.100		0.012		0.175
4451	14.4	37	36.6	119	10.1	N	3243	3194				0.010		
4451	14.5	37	36.6	119	10.3	N	3194	3133				0.010		
4451	14.6	37	36.7	119	10.6	NE	3097	3048				0.010		

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
San Joaquin River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4452	0.1	37	35.8	119	9.1	SE	3048	3001		0.050		0.010		0.200
4552	0.2	37	36.1	119	9.0	N	3170	3084		0.075		0.030		0.200
4452	0.3	37	36.2	119	8.9	NW	3001	2830				0.025		0.300
4452	0.4	37	36.4	119	9.0	NE	2830	2775		0.250		0.045		0.275
4452	0.5	37	36.3	119	9.0	NE	3194	3146				0.015		0.200
4452	0.6	37	36.4	119	9.3	E	3243	3048				0.017		
4452	2.1	37	36.8	119	9.7	NE	3206	3013				0.032		
4452	2.2	37	36.9	119	9.6	NE	2976	2964				0.012		
4452	2.3	37	36.9	119	9.9	N	3170	3097				0.020		
4452	2.4	37	37.0	119	9.9		3158	3043				0.010		
4452	2.5	37	37.9	419	9.8	N	3267	3194				0.015		
4452	2.6	37	38.0	119	9.9	N	3243	3121				0.015		
4452	2.7	37	38.2	119	10.0		3146	3031				0.010		
4452	2.8	37	38.5	119	9.0	N	3170	3013		0.050		0.025		0.250
4452	2.9	37	38.5	119	9.1	N	3170	3072				0.010		
4452	3.1	37	38.9	119	9.8	N	3206	3121		0.075		0.025		0.300
4452	4.1	37	39.3	119	9.7	NE	3267	3219				0.010		
4452	5.1	37	39.6	119	9.9	NE	3194	3146				0.020		
4452	6.1	37	39.6	119	10.0	N	3243	3194				0.015		
4452	6.2	37	39.6	119	10.2	E	3414	3243				0.020		

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
San Joaquin River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4452	6.3	37	39.7	119	10.2	NE	3462	3292				0.020		
4452	6.4	37	40.3	119	9.2	NE	3316	3231				0.020		
4452	6.5	37	40.3	119	9.1		3292	3146				0.020		
4452	7.1	37	40.7	119	9.4		3121	3025				0.055		
4452	7.2	37	40.4	119	9.3	NE	3304	3146				0.025		
4452	10.1	37	40.1	119	10.6	N	3341	3243				0.015		
4452	15.1	37	40.9	119	11.3	NE	3642	3377				0.010		
4452	16.1	37	41.3	119	11.1	E	3121	3084		0.150		0.035		0.350
4452	16.2	37	41.1	119	11.4	NE	3487	3389				0.015		
4452	16.3	37	41.2	119	11.4		3438	3341				0.010		
4452	18.1	37	41.3	119	11.3		3292	3146				0.015		
4452	18.2	37	41.5	119	11.3	E	3267	3158		0.200		0.030		0.200
4452	19.1	37	41.7	119	11.3		3414	3377				0.020		
4452	19.2	37	41.8	119	10.6		3231	3182				0.015		
4452	20.1	37	41.8	119	11.3	NE	3414	3292				0.015		
4452	21.1	37	42.2	119	11.4	NE	3414	3316						
4452	21.2	37	42.3	119	11.4	N	3231	3170				0.015		
4452	22.1	37	42.2	119	11.8	N	3365	3328						
4452	22.2	37	42.2	119	11.8	N	3389	3365						
4452	23.1	37	42.1	119	12.0	N	3389	3353				0.012		

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
San Joaquin River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4452	23.2	37	42.1	119	12.1	N	3438	3414				0.020		
4452	23.3	37	42.4	119	12.2	NE	3267	3182				0.010		
4452	23.4	37	42.4	119	12.3	NE	3389	3292				0.015		
4452	23.5	37	42.3	119	12.4	NE	3536	3414				0.010		
4452	24.1	37	42.7	119	12.4	E	3414	3353				0.020		
4452	24.2	37	42.7	119	12.5	E	3487	3420				0.030		
4452	24.3	37	42.8	119	12.8	E	3633	3536				0.015		
4452	24.4	37	43.0	119	12.5	N	3475	3401				0.025		
4453	1.1	37	33.2	118	56.3		3702	3649	3590	0.075		0.010		
4453	4.1	37	30.7	118	53.0		3937	3859		0.150		0.020		
4453	4.2	37	30.3	118	52.0		4199	4068				0.010		
4453	4.3	37	30.2	118	52.0		4068	3963				0.010		
4453	4.4	37	29.6	118	51.6		3584	3536				0.010		
4453	10.1	37	28.0	118	54.8		3414	3341				0.012		
4453	10.2	37	27.2	118	59.3	N	3676	3649	3543	0.080	0.200	0.010	0.035	0.300
4453	10.3	37	27.5	119	0.1	N	3462	3402		0.100	0.110	0.010		
4453	10.4	37	28.4	119	0.9	NE	3365		3341			0.010	0.020	0.100
4453	12.1	37	26.9	119	1.3	N	3383	3341	3200	0.100	0.450	0.010	0.055	0.100
4454	0.1	37	28.1	118	53.1	NE	3511	3474				0.010		
4454	0.2	37	28.6	118	51.8	NE	3474	3414				0.015		

Table 1*B.--Ice patches of the Sierra Nevada*--Continued
San Joaquin River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4454	2.1	37	28.9	118	49.9	N	3609	3511		0.150	0.175	0.015	0.020	0.075
4454	3.1	37	24.4	118	47.2		3694	3584		0.250		0.015		
4454	8.1	37	25.0	118	48.5		3536					0.010		
4454	10.1	37	22.9	118	47.5		3658					0.010		
4454	12.1	37	23.0	118	48.6	N	3755	3708	3688	0.100	0.125	0.010	0.020	0.100
4454	12.2	37	22.0	118	48.9	N	3731					0.015		
4454	12.3	37	22.2	118	49.2	N	3658			0.050	0.100	0.010	0.015	0.100
4454	12.4	37	22.1	118	49.5	N	3731	3633	3517	0.125	0.600	0.025	0.150	0.350
4454	13.1	37	22.7	118	50.6	NE	3658	3584		0.200		0.015		0.100
4454	16.1	37	23.1	118	51.4	N	3658	3596	3584	0.125	0.150	0.010	0.015	0.100
4455	0.1	37	22.1	118	46.2		3962					0.015		
4455	0.2	37	21.6	118	46.2	NW	3780	3708		0.100	0.125	0.025	0.030	0.100
4455	0.3	37	21.6	118	46.5	N	3780	3658		0.250		0.010		
4455	0.4	37	21.4	118	47.2	N	3658					0.010		
4455	0.5	37	21.5	118	47.4		3536				0.300	0.010		
4455	0.6	37	20.6	118	47.3	NW	3731	3658				0.025		
4455	0.7	37	20.8	118	47.7	N	3633	3584	3566	0.200		0.010		0.300
4455	0.8	37	20.4	118	48.8	NE	3658					0.010		
4455	0.9	37	20.1	118	49.5	NE	3658					0.010		
4455	0.10	37	18.6	118	47.9	N	3658					0.010		

Table 1*B.--Ice patches of the Sierra Nevada*--Continued
San Joaquin River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4455	0.11	37	18.0	118	48.3	N	3566	3450		0.200		0.020		0.150
4455	2.1	37	18.5	118	49.6	N	3658	3621		0.100		0.020		0.300
4455	2.2	37	16.9	118	50.3		3487					0.010		
4455	2.3	37	16.7	118	51.5		3658					0.010		
4455	2.4	37	16.8	118	51.8	N	3584					0.010		
4455	2.5	37	17.0	118	53.2		3536					0.010		
4455	2.6	37	17.6	118	53.7	N	3536	3474				0.010		
4456	1.1	37	17.1	118	47.3	NE	3536	3487		0.050	0.475	0.010	0.050	0.150
4456	1.2	37	18.7	118	45.9	N	3755					0.010		
4456	2.1	37	19.4	118	46.1		3780					0.010		
4456	2.2	37	19.5	118	46.3	N	3609	3566		0.350		0.025		
4456	3.1	37	19.9	118	46.7		3720	3682		0.100		0.010		
4456	3.2	37	19.1	118	45.1		3584					0.010		
4456	3.3	37	18.3	118	42.1	N	3658	3566		0.180		0.010		
4456	3.4	37	18.3	118	41.8	SE	3877	3804		0.150		0.020		0.180
4456	3.5	37	16.6	118	44.0	N	3566	3438	3462			0.010		
4456	5.1	37	13.0	118	41.1			3584				0.010		
4456	5.2	37	13.4	118	41.4	N	3731	3658	3652	0.100	0.150	0.015	0.018	0.120
4456	5.3	37	13.6	118	41.7			3456				0.010		
4456	5.4	37	12.8	118	41.7	N	3780	3731	3714	0.080	0.100	0.010	0.015	0.180

Table 1*B.--Ice patches of the Sierra Nevada*--Continued
San Joaquin River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4456	6.1	37	12.8	118	42.0	N	3731	3682	3584	0.050	0.250	0.010	0.040	
4456	8.1	37	13.5	118	43.6		3511	3402		0.120		0.010		
4456	8.2	37	13.4	118	43.6	N	3609	3517				0.010		0.200
4456	14.1	37	13.8	118	45.1		3658					0.010		
4456	15.1	37	13.9	118	45.7	NE	3506	3566	3536	0.320	0.450	0.070	0.135	0.350
4456	18.1	37	14.3	118	46.8		3658					0.010		
4456	19.1	37	14.1	118	47.2		3627					0.010		
4456	19.2	37	13.0	118	47.1	N	3438	3377		0.120		0.010		0.100
4457	0.1	37	13.8	118	46.8		3536			0.090		0.010		
4457	0.2	37	13.0	118	44.9	E	3658	3566		0.100		0.015		
4457	0.3	37	13.2	118	44.7	E	3658	3596		0.140	0.150	0.015		0.150
4457	0.4	37	12.5	118	41.6		3755	3658				0.015		
4457	0.5	37	11.6	118	40.7	NW	3780	3682		0.110		0.025		0.380
4457	0.6	37	11.6	118	41.0	N	3731	3645		0.180		0.015		0.200
4457	0.7	37	11.7	118	41.3		3688	3633				0.015		
4457	0.8	37	10.6	118	39.9	N	3853	3731		0.380		0.035		
4457	3.1	37	9.2	118	40.0		3780	3694	3688			0.010	0.015	
4457	3.2	37	9.3	118	42.3			3341		0.290		0.010		
4457	3.3	37	9.5	118	42.8		3536					0.010		
4457	3.4	37	8.6	118	39.4	NW	3804	3780		0.150		0.010		0.110

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
San Joaquin River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4457	4.1	37	8.5	118	39.5		3780	3731		0.200		0.010		
4457	4.2	37	8.5	118	39.6	N	3901	3682		0.400		0.015		
4457	5.1	37	8.6	118	39.9		3714	3682		0.100		0.010		
4457	5.2	37	8.5	118	40.3	NW	3658			0.100		0.015		
4457	5.3	37	7.9	118	40.3		3804	3731		0.100		0.015		
4457	6.1	37	8.2	118	40.7		3870	3840	3828	0.150		0.010	0.015	
4457	7.1	37	6.5	118	40.3		3828	3755				0.010		
4457	8.1	37	6.6	118	40.7		3755	3633		0.100		0.010		
4457	8.2	37	6.7	118	41.1	N	3694	3438		0.120	0.140	0.010		0.100
4457	9.1	37	6.5	118	41.6		3708	3627		0.150		0.015		
4457	9.2	37	6.3	118	43.3		3584	3536				0.010		0.100
4457	13.1	37	9.0	118	45.1	NE	3658	3566	3548			0.012	0.013	
4457	16.1	37	10.3	118	46.1	N	3566	3493	3487	0.080	0.100	0.010	0.015	0.200
4458	1.1	37	6.7	118	42.6			3511		0.100		0.012		
4458	1.2	37	6.4	118	42.5		3901	3828				0.010		0.200
4458	3.1	37	7.1	118	43.3		3708	3627		0.100		0.010		
4458	3.2	37	7.3	118	43.6	N	3584	3536		0.100	0.100	0.010		0.100
4458	6.1	37	6.0	118	43.6	NW	3853	3658		0.200		0.010		
4458	6.2	37	5.6	118	43.2		3708	3652		0.100		0.025		0.210
4458	6.3	37	5.4	118	43.6		3658	3584		0.110		0.010	0.015	0.080

Table 1B.--*Ice patches of the Sierra Nevada*--Continued
San Joaquin River Basin--Continued

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4458	6.4	37	5.0	118	44.0		3600	3584				0.010		
4458	6.5	37	4.9	118	44.1	N	3609	3578		0.100		0.012		0.180
4458	6.6	37	6.5	118	46.1	N	3566	3523				0.010		0.100
4458	6.7	37	7.3	118	46.7	N	3511	3438		0.180		0.012		0.100
4458	6.8	37	7.4	118	47.2	N	3536	3444		0.150		0.013		0.150
4458	6.9	37	8.8	118	47.5	N	3487	3438		0.140		0.010		
4458	6.10	37	9.1	118	48.0	N	3536	3474				0.010		0.120
4458	8.1	37	11.1	118	49.5	N	3536	3462		0.080	0.140	0.018		0.020

No. ice pockets 188 Total ice area 2.906 Total ice and moraine area 3.305
Average ice area 0.016 Average ice and moraine area 0.018
Mean altitude of ice 3784 Mean altitude ice and moraine 3781

Table 1*B*.--*Ice patches of the Sierra Nevada*--Continued
American River Basin

Basin	IP	Lat		Long		O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4560	0.1	38	53.6	120	9.3	NW	2855	2629				0.015		
4560	0.2	38	52.4	120	9.9		2537	2476				0.010		
4560	0.3	38	52.2	120	10.5		2928	2781				0.010		
4560	0.4	38	54.8	120	11.9	N	2701	2538				0.015		
4560	0.5	38	54.4	120	12.0		2800	2733				0.010		
4560	0.6	38	55.0	120	12.5	NE	2806	2769		0.100		0.016		0.200
4560	0.7	38	55.1	120	12.7	NE	2806	2769		0.100		0.020		0.250
4560	0.8	38	55.2	120	12.9	NE	2806	2757		0.080		0.010		0.110
4560	0.9	38	55.8	120	13.3		2684	2659				0.010		
4561	0.1	38	51.8	120	10.8		2952	2727				0.030		
4562	0.1	38	50.7	120	9.9	E	2830	2733		0.200		0.020		
4562	0.2	38	50.9	120	9.3	E	2830	2757	2751	0.140	0.160	0.022	0.047	0.200
4562	0.3	38	51.3	120	8.9		2562	2537				0.010		
4562	0.4	38	51.1	120	9.3	NE	2806	2751		0.100		0.010		0.100
4562	0.5	38	51.3	120	9.5	NE	2855	2818		0.075		0.010		0.120
4562	0.6	38	51.4	120	9.3	NE	2830	2781		0.100		0.020		0.200
4562	0.7	38	51.4	120	9.8	NE	2855	2830		0.100		0.010		0.120
4562	0.8	38	51.5	120	9.9	NE	2879	2855		0.100		0.010		0.120
4562	0.9	38	51.6	120	10.1	E	2861	2836		0.080		0.010		0.120
4562	0.10	38	51.5	120	10.0	N	2903	2855		0.100		0.010	0.021	0.110

Table 1*B*.--*Ice patches of the Sierra Nevada*--Continued
American River Basin--Continued

Basin	IP	Lat	Long	O	Top	Bot	Bott	Lnth	Lntht	Area	Areat	Width
4562	2.1	38 51.8	120 10.3	E	2928	2903		0.050		0.010		0.100
4562	2.2	38 51.9	120 10.3	E	2928	2903		0.250		0.010		
4562	2.3	38 51.9	120 10.3	E	2928	2903		0.050		0.010		0.090
4563	0.1	38 39.8	119 59.3	N						0.043		
4563	2.1	38 39.9	120 0.6	N	3025	2861				0.026		
4563	2.2	38 39.7	120 1.2	NW	2781	2757		0.100		0.010		
4563	2.3	38 39.2	120 2.2	NW	2964	2781		0.350		0.025		0.070
4563	2.4	38 39.1	120 2.2	NW	2952	2855		0.250		0.025		0.200
4563	2.5	38 39.2	120 2.4	N	2928	2891		0.150		0.012		
4563	2.6	38 39.3	120 2.5	NE	2855	2830		0.100		0.010		

No. ice pockets 30 Total ice area 0.459 Total ice and moraine area 0.495
Average ice area 0.015 Average ice and moraine area 0.017
Mean altitude of ice 2803 Mean altitude ice and moraine 2803

TABLE 1 Basin-Number-(BASIN) gives the glacier location in four digits, each denoting a subdivision as follows, from left to right (table 2):

First digit. The number 4 signifies the State of California.

Second digit. The major river basins are delineated as follows:

1 North Lahontan

2 South Lahontan

3 Tulare Lake

4 San Joaquin

5 Sacramento

Third digit. Indicates a secondary river basin (fig. 2).

Fourth digit. Indicates a tertiary drainage basin of one or more smaller streams.

Appendix 2 lists the identification numbers used in this report and the equivalent International Identification Numbers to identify these glaciers in the world glacier inventory being assembled by the International Commission on Snow and Ice (ICSI).

Glacier-Number-(GL) refers to individual glaciers and ice patches numbered in a clockwise direction, in each tertiary sub-basin (pls. 2 and 4). The glaciers are assigned whole numbers. The ice patches are assigned decimal numbers relative to the glacier just previous to them following the clockwise system. If any ice patches appear in a basin before the first glacier, they are given a glacier number "0" (0.5). Note that the first ice patch relative to a glacier 7, for example, is numbered 7.1 and the tenth ice patch relative to that glacier is 7.10.

Latitude-and-Longitude-(LAT,-LONG) refer to the latitude (60°N) and longitude (60°W) of the glacier or ice patch in degrees, minutes, and tenths of minutes. The point of measurement is approximately the center of the ice.

Orientation-(O) of the glacier is based on an 8-point compass. The orientation represents an average where varying directions of flow were present. For glaciers in the Sierra Nevada, the orientation of the accumulation zone is almost always the same as the orientation of the ablation zone, thus an "average" is a reliable representation.

Top-Altitude-(TOP) is the altitude in meters of the highest point of the glacier or ice patch, not including snow chimneys.

Bottom-Altitude,-Exposed-Ice-(BOT) is the altitude in meters of the lowest point of exposed ice.

Bottom-Altitude,-Moraine-Covered-Ice-(BOTT) is the altitude in meters of the crest of the innermost ice-cored moraine. On many Sierra glaciers the moraine crest is higher than the exposed ice by 10-40 m. For most ice patches, there is no moraine-covered ice and this is indicated by the absence of a value in this column.

Length,-Exposed-Ice-(LNTH) is the length in kilometers from the head of the glacier to the lower end of the exposed ice.

Length,-Total-(LNTHT) is the length in kilometers from the head of the glacier to the crest of the innermost ice-cored moraine. Very few ice patches have a total length different from their exposed-ice length, and no value is given in those cases.

Area,-Exposed-(AREA) is the area in square kilometers of the exposed ice.

Area,-Total-(AREAT) is the area in square kilometers of exposed ice and moraine-covered ice. Very few ice patches have any debris-covered area.

Accuracy-(A) is the probable accuracy of the area, for glaciers only, defined in the following four categories:

1. Excellent: 0-5%
2. Good: 6-10%
3. Fair: 11-15%
4. Approximate: 16-25%

Width-(WIDTH) refers to the width of the headwall in meters.

Classification-(CLASS) of the glaciers only is given by a series of eight digits, explained in table 3.

Glacier-Names-(GL-NAME), both official and unofficial are given. Unofficial names are placed in parentheses.

Table 2.--*Sierra Nevada river basin divisions and inventory identification numbers.*

Major Basin Sub Basin	Secondary River Basin	Assigned Basin Number	Tertiary
NORTH LAHONTAN	East Carson	411	1, 2
	West Walker	412	1, 2
	East Walker	413	1, 2, 3
SOUTH LAHONTAN	Owens	421	1, 2, 3, 4, 5, 6, 7
	Mono	422	1,2,3,4
TULARE LAKE	Kings	431	1, 2, 3, 4, 5, 6, 7, 8
	Kaweah	432	1, 2
	Kern	433	1, 2, 3, 4
SAN JOAQUIN	Mokelumne	441	1
	Stanislaus	442	1
	Tuolumne	443	1, 2, 3, 4, 5
	Merced	444	1, 2
	San Joaquin	445	1, 2, 3, 4, 5, 6, 7, 8
SACRAMENTO	American	456	1, 2, 3

TABLE 3.--*Glacier classification and description*

Code no.	Pimary classification	Form	Frontal characteristics	Longitudinal profile	Major source of nourishment	Activity on tongue	Moraines and debris on glacier surface	Marginal moraines
0	Insufficient information to classify.							
1			Bare, smooth ice, low gradient, single tongue	Even, low gradient >10%	Mainly direct snow assumulation	Marked retreat	No morained	None
2			Bare, smooth ice, low gradient, irregular tongue	Even, steep gradient >10%	Mainly drift snow accumulation	Slight retreat	Medial moraines	Single terminal only, not ice cored
3			Bare ice, steep gradient	Irregular, moderate gradient 10-20%	Avalanche snow (90% or more from avalanching)	Stationary	0-10% debris cover	Lateral moraines not ice cored
4		Cirque	Spills over cliff	Irregular, steep gradient >20%	Avalanche ice		10-40% irregular, debris cover	Terminal and raines, not ice cored
5		Niche	Bare ice merges into thin, low gradient debris cover, single tongue	Concave	Super imposed ice		10-40% arcuate looped moraines	Multiple series of moraines of different ages, not ice cored
6	Mountain glacier	Band of ice under headwall	Bare ice merges into thin, low gradient debris cover, irregular terminus	Ice fall	Freezing of water in debris		40-80% irregular,	Ice-cored terminal moraine connected to glacier
7	Glacier-ette	Drift in exposed area	Debris-covered, steep rock at angle of repose, single tongue	Interrupted			40-80% arcuate, looped moraines	Ice-cored terminal and lateral moraines connected to glacier
8		Combination bare ice and rock glacier	Debris-covered steep rock at angle of repose, single tongue				80-100% irregular, debris cover	Ice-cored terminal moraine, separate from glacier
9	Rock Glacier	Remnant	Ends in lake				80-100% arcuate, looped moraines	Ice-cored terminal and lateral moraines, separate from glacier

RESULTS OF THE INVENTORY

Previous estimates of the number of glaciers in all of California were between 80 and 100 (Dean, 1974 Hill, 1975b), with a total area of 20 km^2 (Dean, 1974). The present inventory lists many more glaciers in the Sierra Nevada alone this is due to including smaller glaciers than in former compilations as well as many previously unidentified glaciers as the result of new and better mapping techniques. Listed in this inventory are 497 glaciers and 788 ice patches with an exposed ice area of 35 km^2, and a total (exposed ice plus moraine-covered ice) area of 63 km^2, (table 4) the glaciers alone have a total area of 50 km^2 (tables 4 and 5). East of the crest of the Sierra Nevada 198 glaciers with a total area of about 25 km^2 are identified; 124 of these are in the Owens basin. West of the crest, 299 glaciers with a total area of slightly less than 25 km^2 drain into 13 river basins. The largest glaciers (>0.3 km^2) represent only 5 percent of the number of glaciers, but account for 20 percent of the total glacierized area. The Palisade Glacier (#4214 11, pls. 3 and 4) is the largest Sierra Nevada glacier, with a total area of 1.6 km^2 the smallest glacier (#4121 5, pls. 1 and 2) has an area of 0.01 km^2. In the North Cascade glacier inventory (Post and others, 1971), each size class contributed a roughly equal share to the total glacier area this relationship does not exist with the Sierra Nevada glaciers (figs. 3 and 4). Fifty-two rock glaciers with a total area of 5 km^2 were identified, 28 of them in the Owens basin. More rock glaciers doubtless exist, but they were observed only in the vicinity where exposed-ice glaciers were studied.

Table 4.--*Summary of data for Sierra Nevada glaciers and ice patches. "Total area" refers to exposed ice plus moraine-covered ice.*

GLACIERS		
Number	497	
Area exposed ice	24.1	km^2
Total area	49.6	km^2
Weighted mean altitude	3,543	m
ICE PATCHES		
Number	788	
Area exposed ice/snow	11.0	km^2
Total area	13.3	km^2
Weighted mean altitude	3,492	m

Table 5.--*Glacier data by basin.*

Basin No.	Basin Name	Number of Glaciers	Latitude (°N)	Longitude (°W)	Total Glacierized Area (km^2)	Mean Altitude (masl)
411	Carson	5	38 24.2	119 37.9	0.187	3206
412	W. Walker	10	38 15.1	119 35.1	0.431	3284
413	E. Walker	18	38 6.0	119 22.6	2.594	3337
421	Owens	124	37 8.6	118 35.2	18.272	3690
422	Mono	41	37 51.7	119 15.5	3.556	3527
431	Kings	94	36 55.2	118 31.8	6.938	3638
432	Kaweah	7	36 31.9	118 33.8	0.269	3404
433	Kern	31	36 34.0	118 27.5	2.902	3736
441	Mokelumne	1	38 39.1	120 1.8	0.030	2812
442	Stanislaus	9	38 16.6	119 40.6	0.366	3140
443	Tuolumne	22	37 55.9	119 20.9	2.205	3505
444	Merced	18	37 43.6	119 20.4	1.517	3459
445	San Joaquin	112	37 25.8	120 0.4	10.243	3566
456	American	5	38 47.2	120 6.5	0.110	2933
TOTAL		497			49.620	

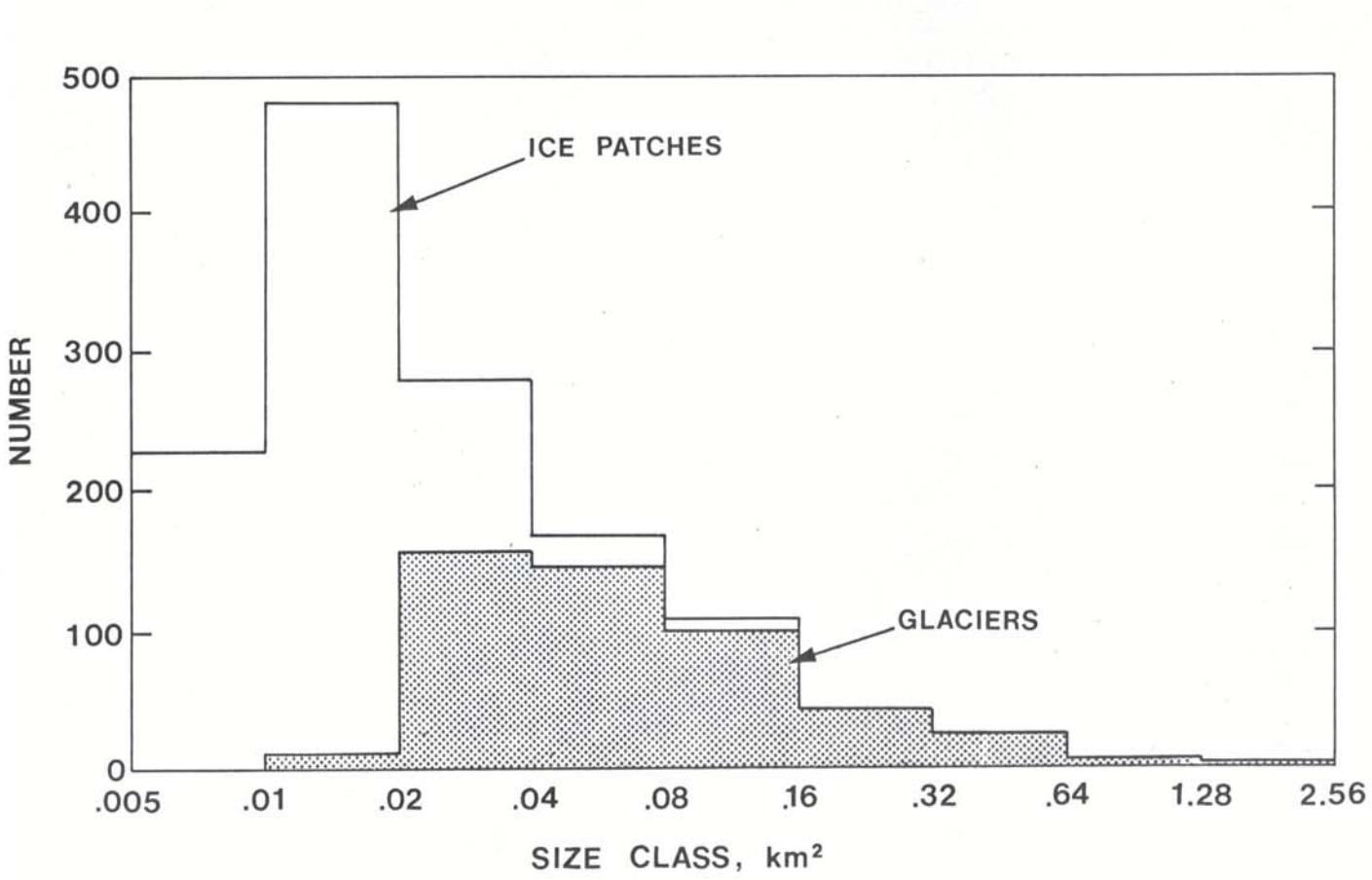

Figure 3. Graph showing number of glaciers and ice patches by size class distribution.

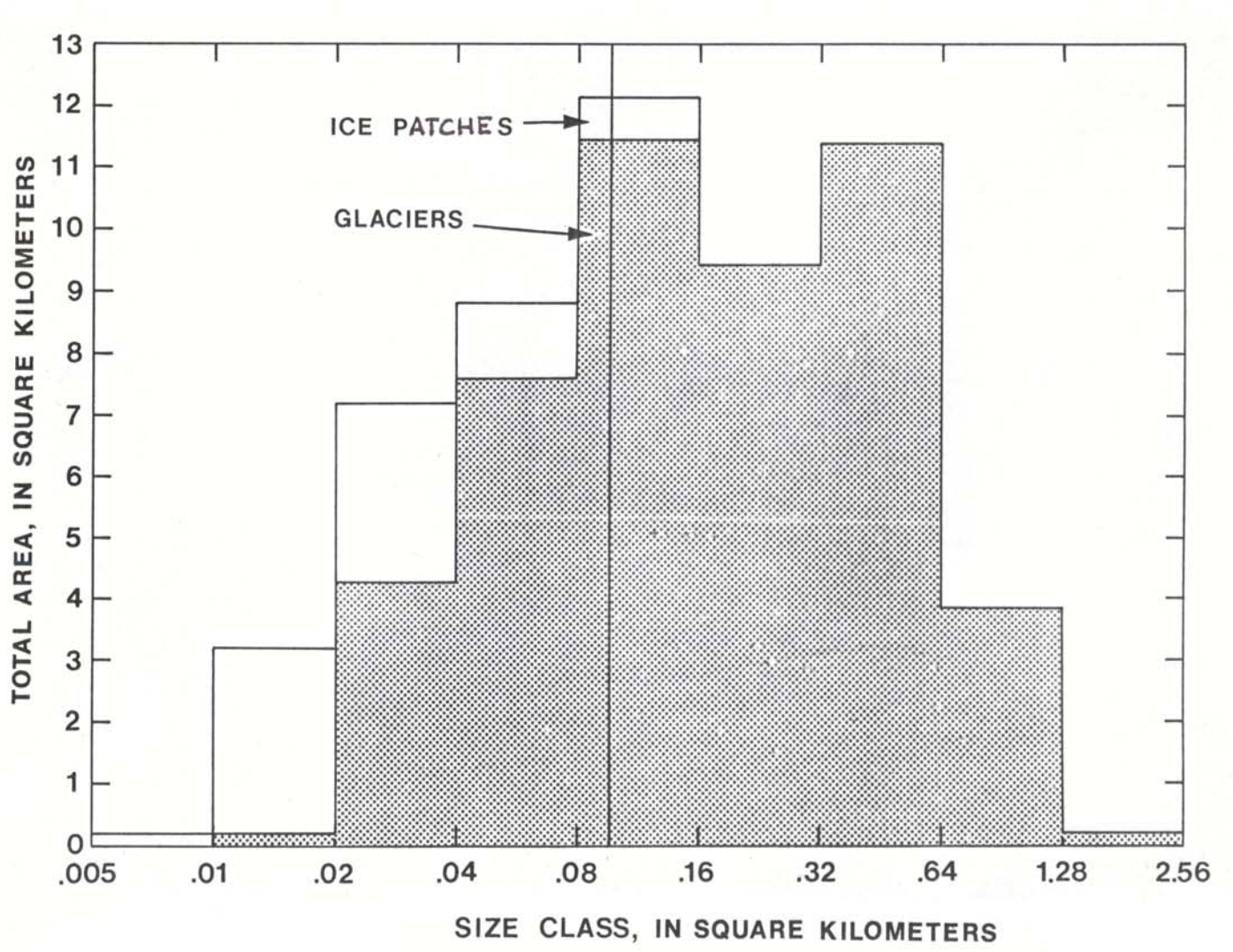

Figure 4. Graph showing glacier and ice patch area by size class distribution.

Most of the glaciers in the Sierra Nevada exist because of their predominantly northerly orientation, high altitude, (fig. 5), and accumulation from direct snowfall and from drift snow brought by the southwest storm winds into the north-facing steep-walled cirques in which the glaciers are situated. These deep cirques also reduce ablation from direct solar radiation.

The glaciers occur from 3,000 to 4,000 m altitude, with the terminus of the lowest glacier at 2,769 m (fig. 6) and the head of the highest glacier at 4,267 m. Although the mean altitude of the glaciers is 3,543 m, by far the largest number terminate between 3,500 and 3,600 m, demonstrating the relatively small vertical relief of most of these features. The largest total glacier area, 18 km^2, occurs in the Owens basin, which is the highest basin in the Sierra Nevada, with a mean altitude of 3,690 m (fig. 7).

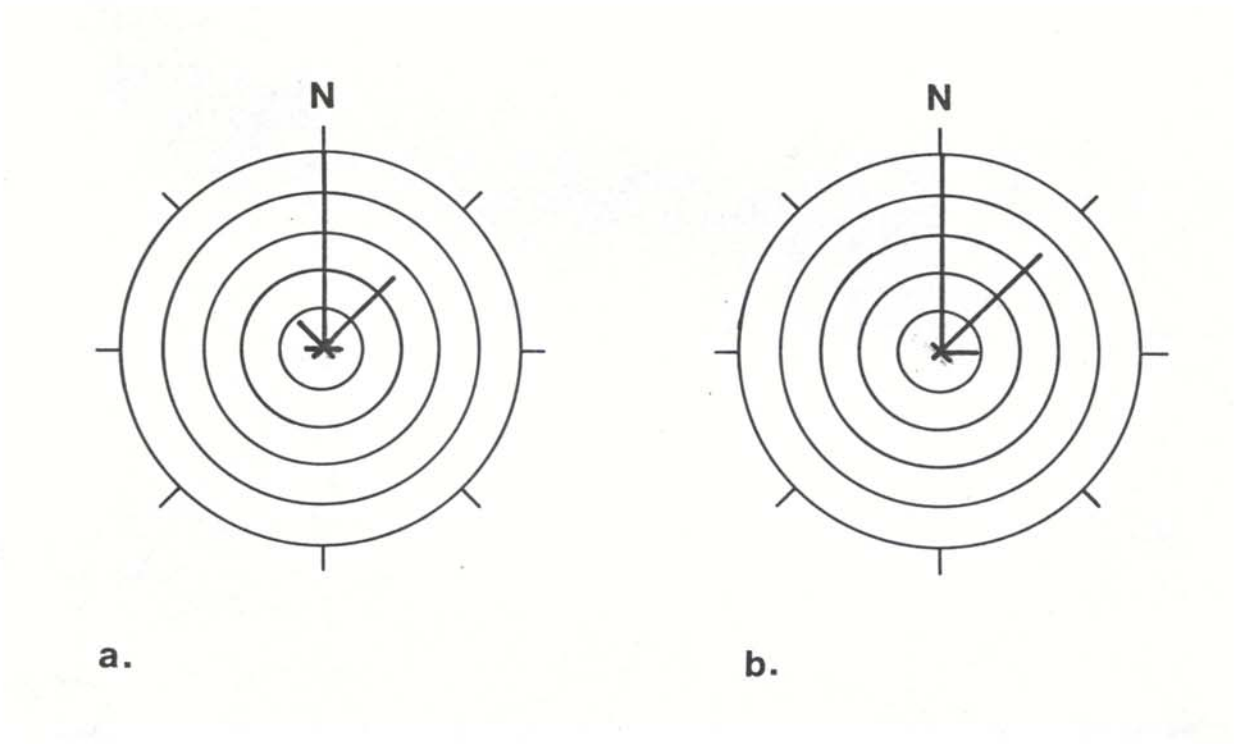

Figure 5. Diagrams showing orientation of glaciers west of the crest and east of the crest.

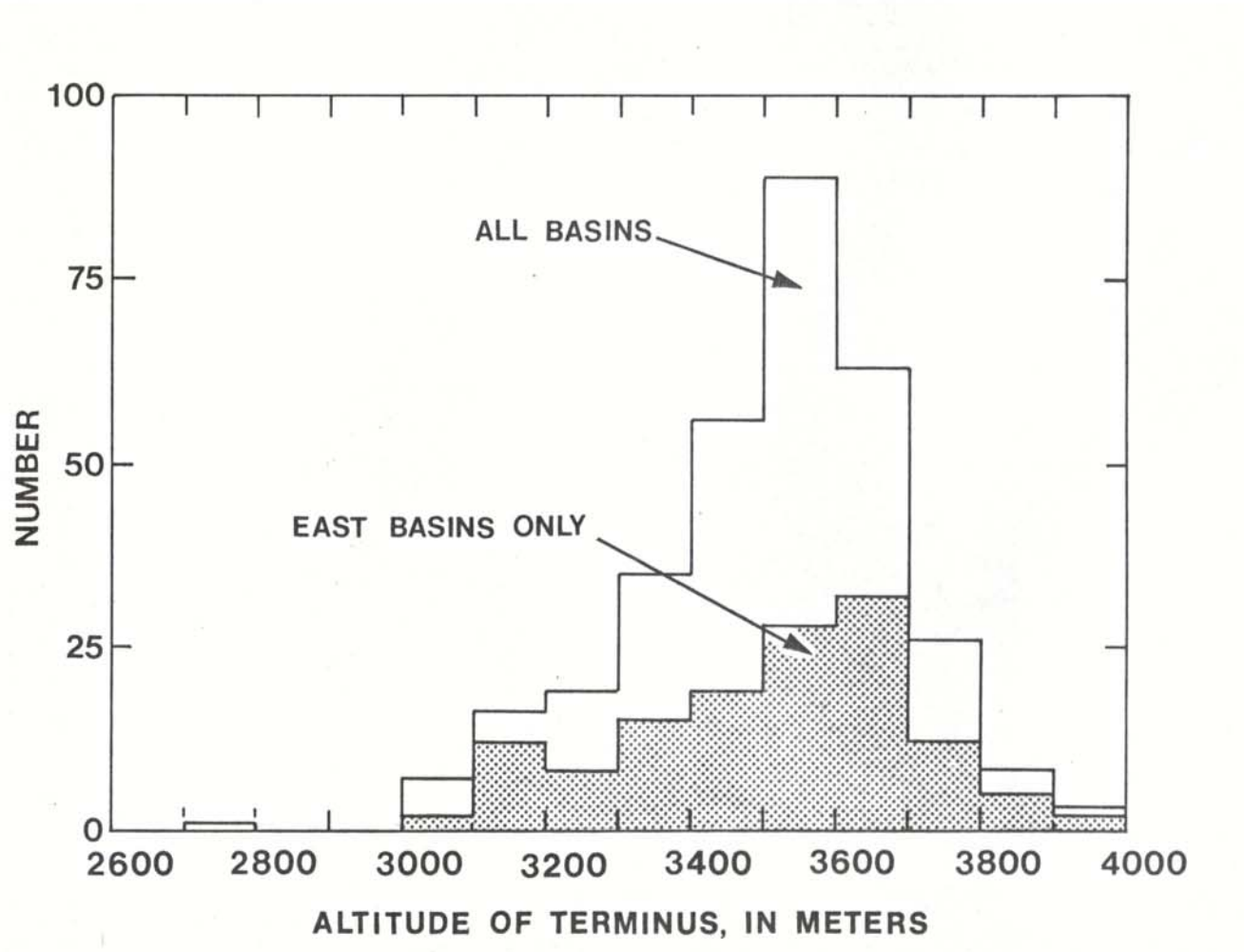

Figure 6. Graph of distribution of glaciers by terminus altitude.

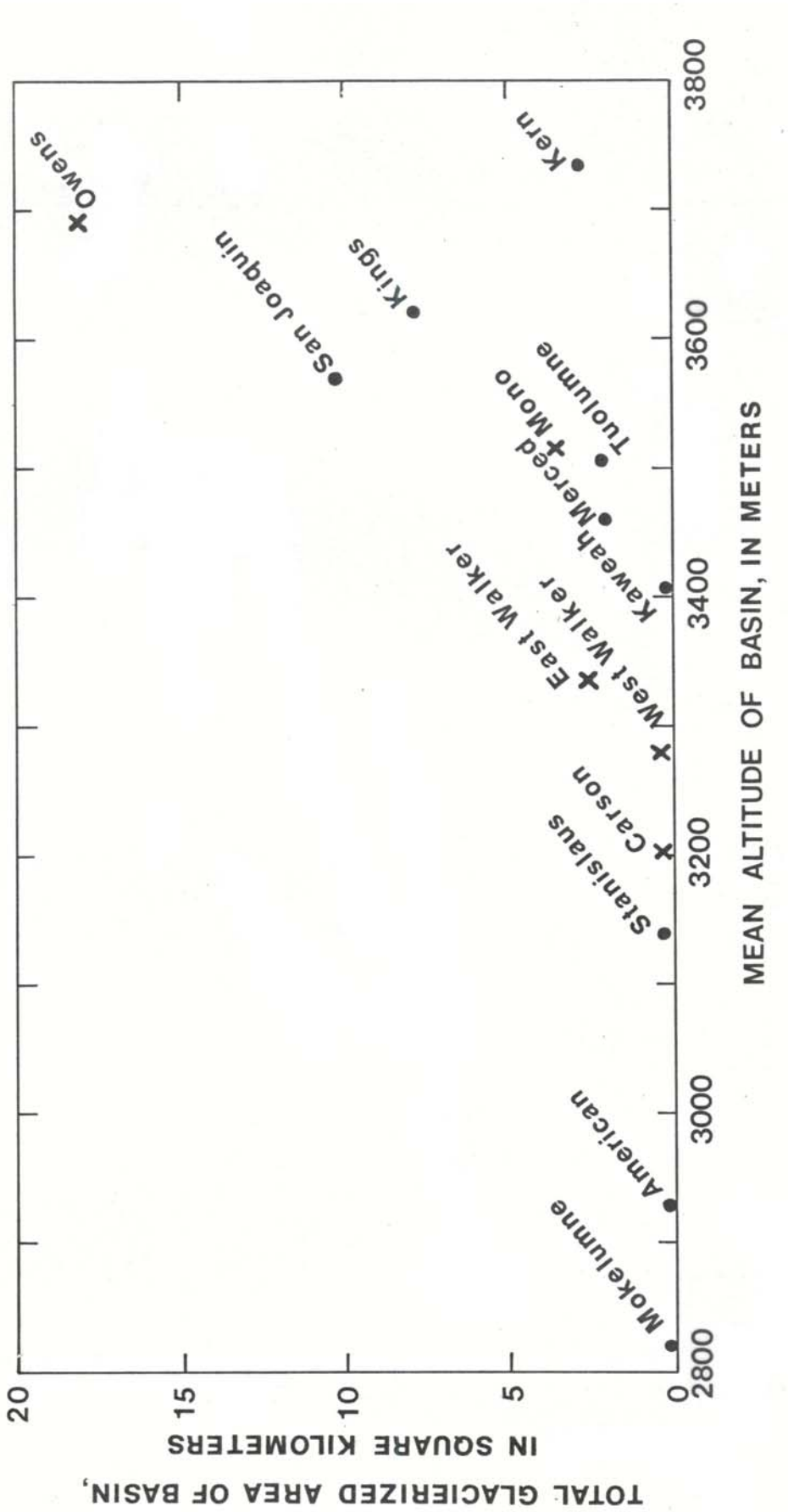

Figure 7. Graph of mean glacier altitude, by basin, versus total glacierized area of each basin.

A plot of mean altitude of each glacierized basin versus its mean latitude (fig. 8) reflects the decrease in altitude of the Sierra Nevada in a northerly direction. This decrease in the mean altitude of the glaciers is to be expected from the cooling effects of increasing latitude there is also a much greater amount of precipitation in northern California (fig. 9) and this likewise should be taken into account. By a curious coincidence, only the highest parts of the range at any point rise above the annual snowline because the mean altitude of the range rises in a southerly direction slightly more rapidly than the snowline, the largest glaciers are all near the southern end.

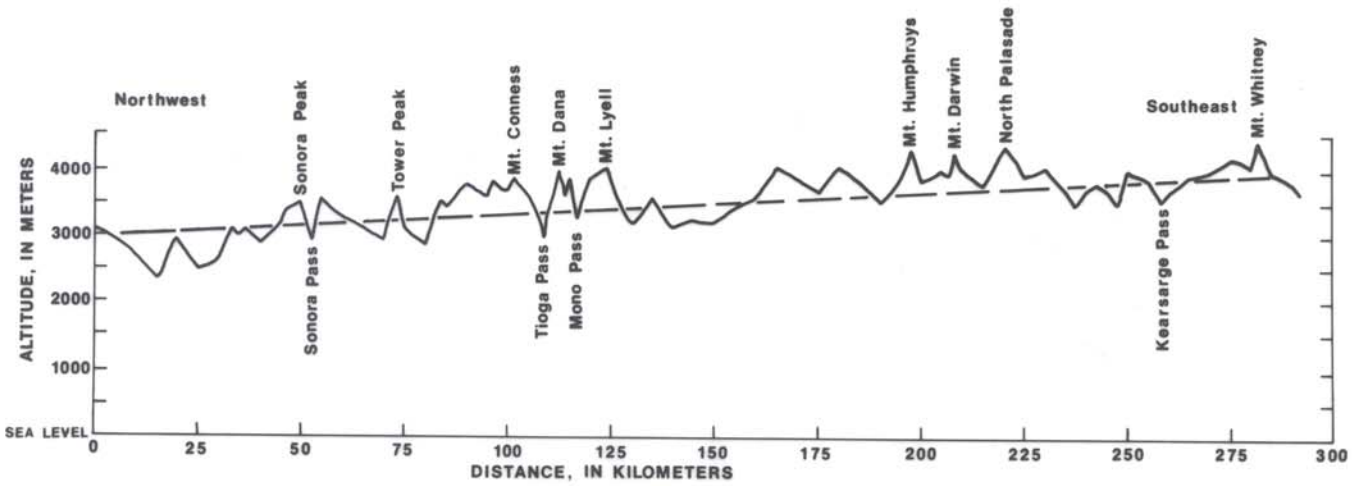

Figure 8. Northwest to southwest profile along the glaciated crest of the Sierra Nevada showing topography and gradient of mean glacier altitude.

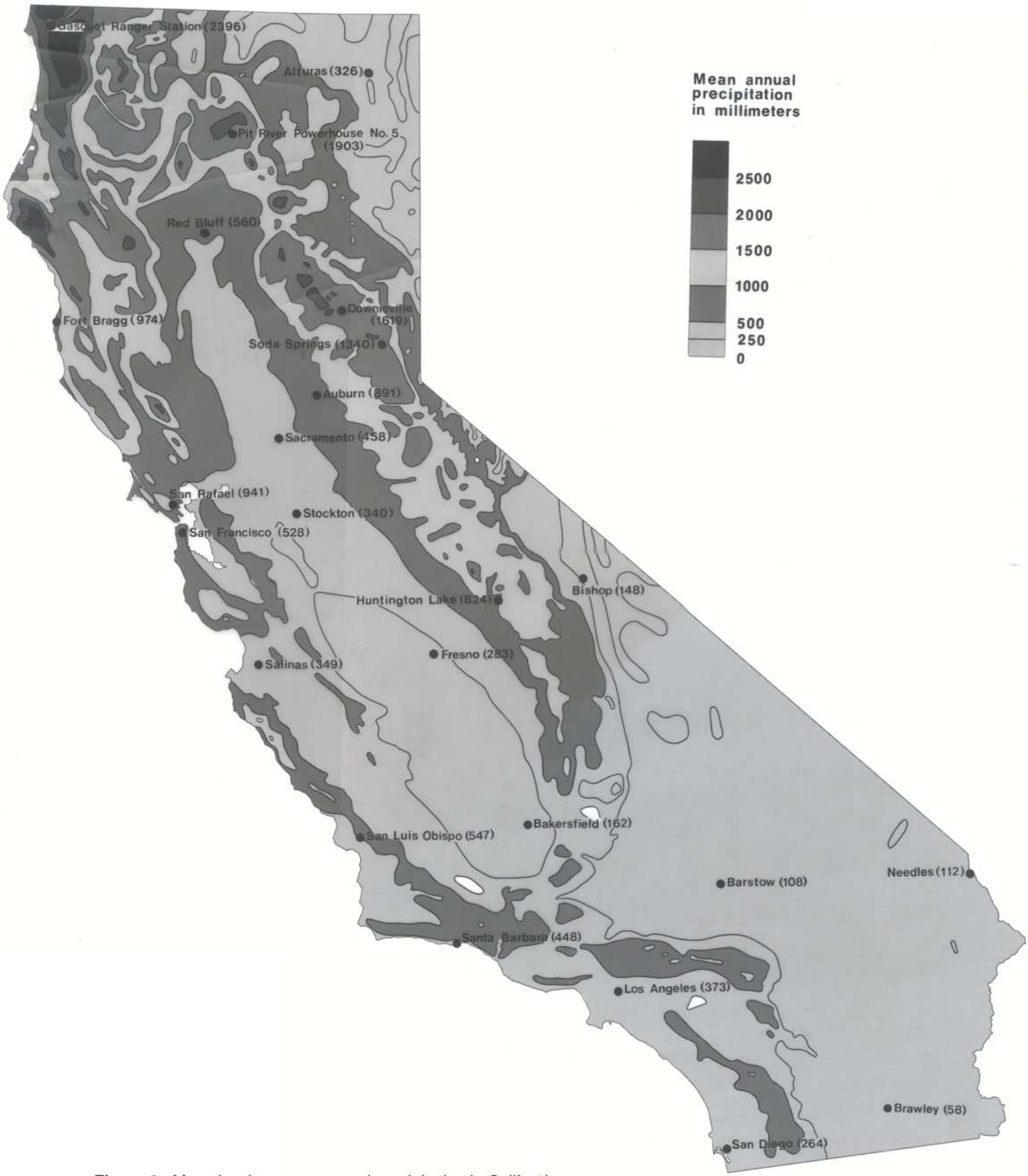

Figure 9. Map showing mean annual precipitation in California.

HYDROLOGIC ASPECTS

PRECIPITATION

The Sierra Nevada is a great physical barrier to the eastward passage of moisture from the Pacific. Much moisture is precipitated out on the Coast ranges but a large amount remains to be deposited on the western slopes and crest of the Sierra Nevada, primarily in the form of snowfall. Winter is the season of prolonged general storms and thus of highest precipitation this is an important consideration in the continuing existence of the glaciers in the Sierra Nevada because this heavy precipitation falls as snow in the high basins. Precipitation is greatest in northern California and decreases dramatically southward (fig. 9) two-thirds of the average annual state total falls on the northern one-third the state (State of California, 1978, p. 3), and the southern part is one of the most arid regions in the United States. There is also a large spatial variation in evaporation in California. This of course affects the amount of water available for runoff. In the high Sierra, the annual evaporation amounts to less than 1,000 mm, about half the amount of the local precipitation, while in the southeastern deserts the annual evaporation rises above 1,800 mm (State of California, 1978).

There is a large year-to-year variation in the amount of annual precipitation California receives (fig. 10). During years of drought there is a critical water shortage, and the wasting of glaciers and ice patches in the Sierra Nevada provides an additional source of water.

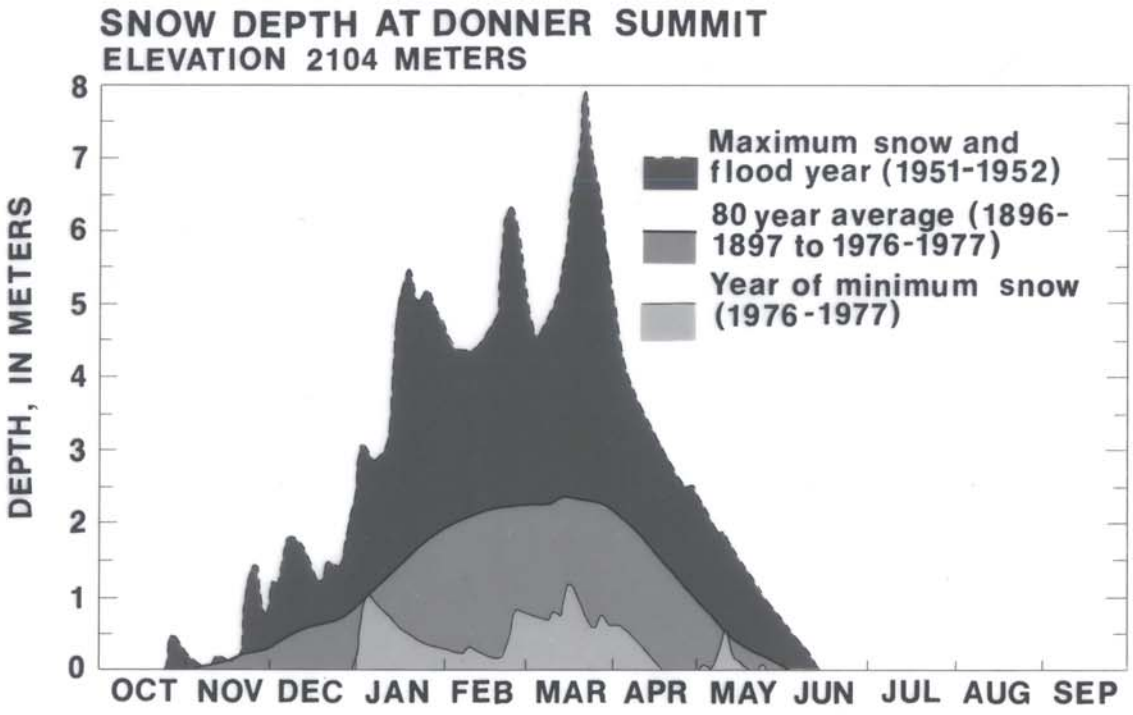

Figure 10. Graph illustrating snowfall variablility at Donner Summit.

RUNOFF

Most of the snowfall in the Sierra Nevada remains until Spring, such that more than 60 percent of the mean annual runoff in most basins occurs after March 31 (State of California, 1978, p. 9). Snow at high altitudes melts later in the year than snow at low altitudes. The presence of glaciers plays an important role in delaying runoff. It has been shown (Krimmel and Tangborn, 1974; Fountain and Tangborn, 1985) that the presence of only a few glaciers (less than 5 percent of the total basin area) has a substantial effect on reducing the year-to-year variance of summer streamflow, as well as delaying the runoff. In years of low snow accumulation, the exposure of the low albedo glacier ice to radiation earlier than in years with normal or high accumulation will cause greater glacier melt and offset for the diminished runoff from snowmelt. The exposure and melting of this low albedo glacier ice late in the season is also a factor in the seasonal delay of runoff from glacierized basins. Another factor in this delay of the seasonal runoff is englacial water. The release each summer of this liquid water stored in the glacier during the previous fall, winter, and spring is nearly independent of any external climatic variations (Tangborn and others, 1972).

The Kern, Kaweah, and Merced River watersheds (fig. 11) receive as much as 1,250-1,400 mm of precipitation. Runoff in these basins peaks during May and June and remains significant through July and August in part due partly to precipitation that occurs as snowfall into May at their headwaters and due to the presence of glaciers (fig. 12). Similar effects are observed in the Kings, San Joaquin, the East and West Walker and the Carson watersheds. Runoff in the Big Pine Creek in Owens basin on the eastern side of the mountain crest peaks in June and July (California Department of Water Resources, written commun., 1974). This later runoff is due to the higher proportion of glaciers per area, and the higher elevation and northeastern orientation of the glaciers. Nearly all the streams along this entire 8-km divide head in glaciers. This is the most glacier-influenced runoff in the entire Sierra Nevada, with the glaciers serving as a small natural "water storage" facility for the Los Angeles aqueduct during the summer. Although precipitation increases northward to more than 1,800 mm in the Yuba and Feather River watersheds, there is a significant decrease in the altitude of the Sierra (fig. 8) such that the watersheds are not high enough to contain glaciers (fig. 2). This results in a massive early runoff during April or May, usually declining rapidly in June (fig. 12).

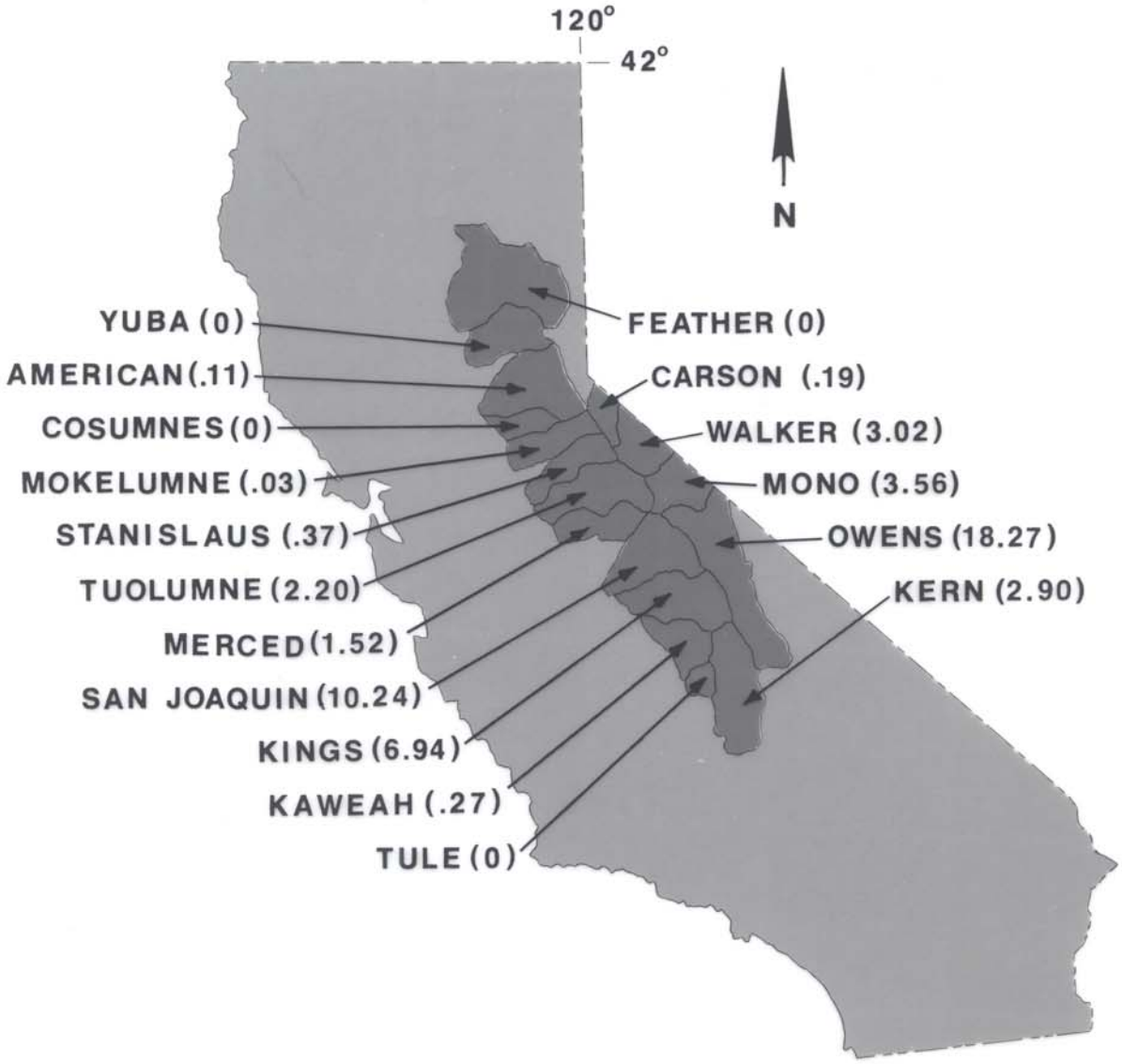

Figure 11. Map showing the location of the glacierized basins in the Sierra Nevada.

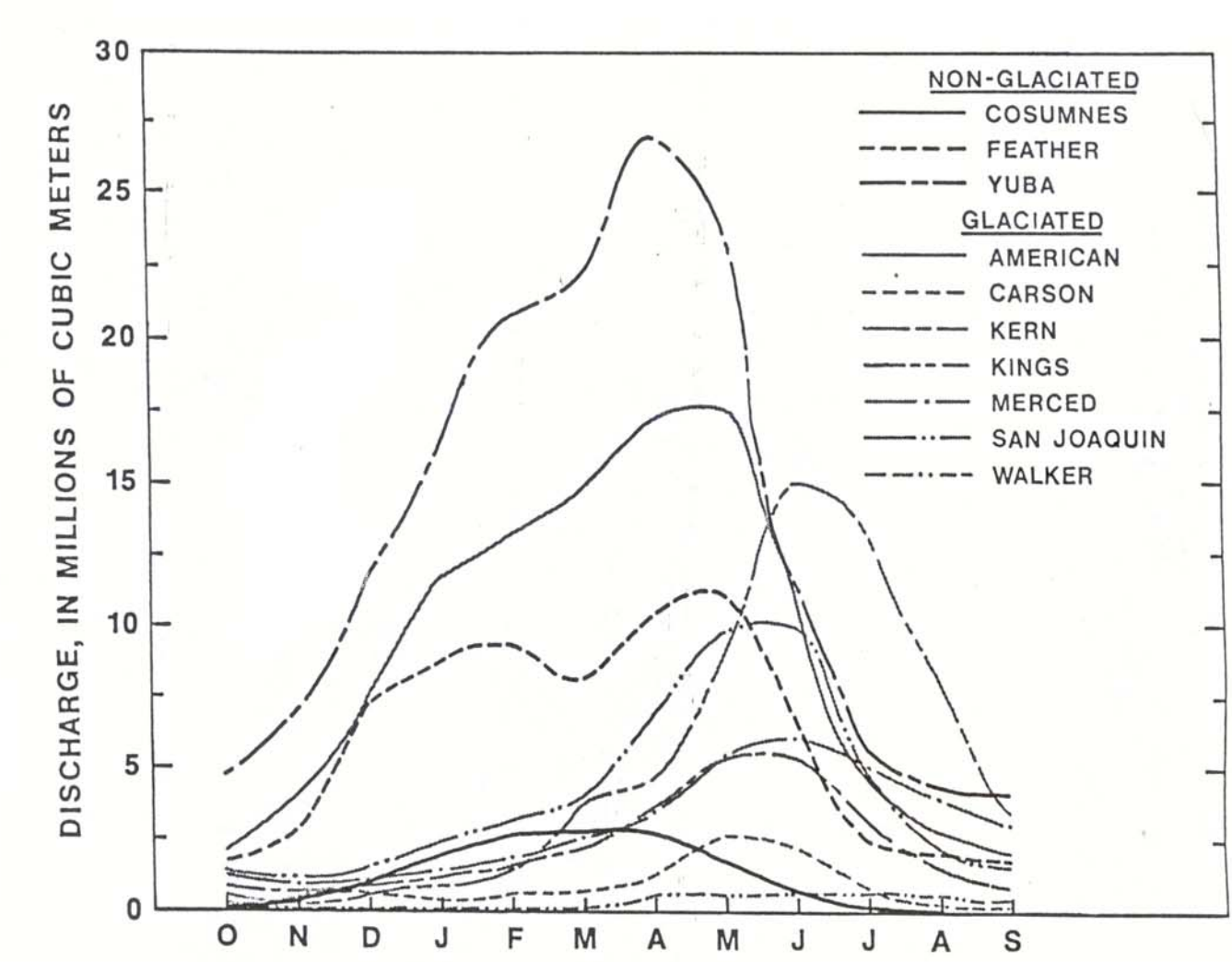

Figure 12. Graph showing comparison of times of maximum and minimum runoff in glacierized and nonglacierized basins.

HYDROLOGIC SIGNIFICANCE

Besides having a large population, California is highly developed agriculturally and industrially. The resulting demands on water are high, with an overall average daily per capita water use in 1975 of 1,800 gallons, up from 600 gallons in 1900 (State of California, 1978, p. 1). Irrigated agriculture and electrical power generation are the two most significant users of water in California. Agriculture accounts for approximately 85 percent of the total yearly water consumption (State of California, 1978, p. 81). The entire flows of the Kern, Kaweah, and Kings Rivers, and the San Joaquin River south of Madera (figs. 1 and 2, pls. 3 and 4) are used for irrigation during dry years. Glaciers south of Kearsage Pass (pl. 3) help stabilize the flow on the South Fork Kings River during the dry summer months, as do the many small-to-medium-sized glaciers in the Kern River basin (U.S. Geological Survey, 1972).

The significance of meltwater from even the small Sierra glaciers, ice-cored moraines, ice patches, and snowpack can be seen by comparing the September runoff (normally the month of minimum flow) versus the average annual (October through September) runoff for Cottonwood Creek, a nonglacierized basin and Big Pine Creek, a glacierized basin, both located in the Owens basin (fig. 13 and table 6). The September flow from the glacierized basin (Big Pine Creek) is more than four times that of the nonglacierized basin. If the difference in September runoff is caused by melting glaciers (neglecting lingering snow patches) then the glaciers must be melting about 0.5 m of ice averaged over the surface of each glacier. This large average melt rate agrees qualitatively with the observations of mass wastage of these glaciers described in the section on recent activity. These glaciers, small as they are, help stabilized streamflow, especially in severe drought years when the snowpack disappears early.

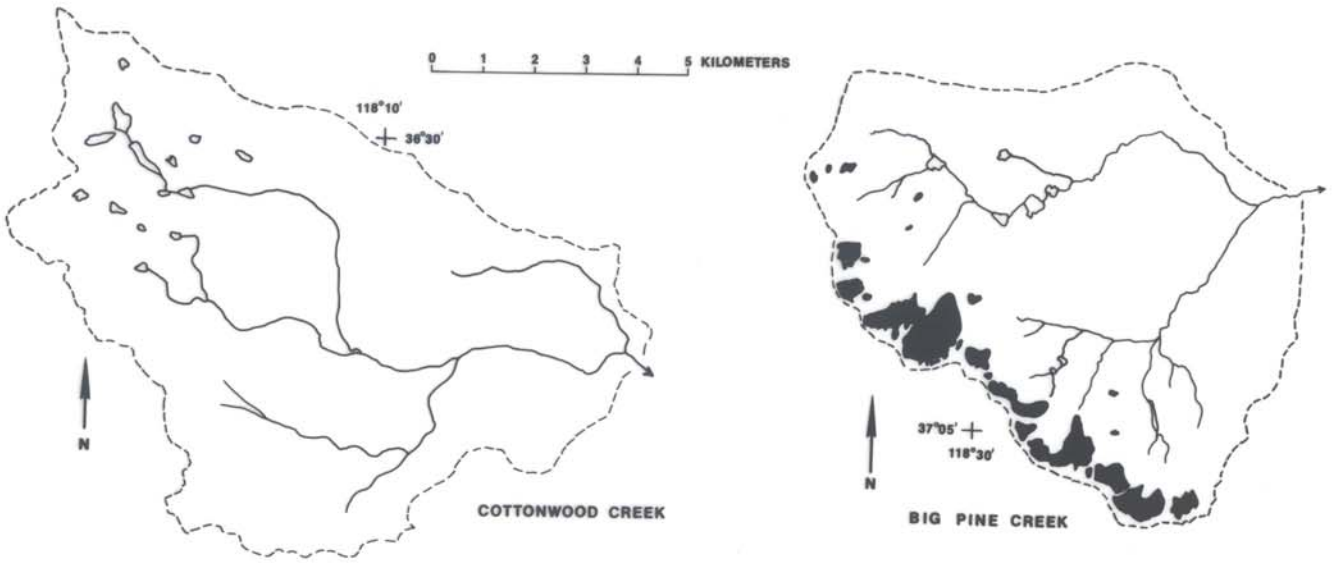

Figure 13. Depiction of the nonglaciated basin of Cottonwood Creek and the glaciated basin of Big Pine Creek. The dark polygons in the latter basin represent glacier extent. The open polygons represent lakes and ponds.

Table 6.--*Comparison of 34-year average precipitation*[1] *and 40-year average runoff*[2] *of a glacierized basin (Big Pine Creek) and a non-glacierized basin (Cottonwood Creek). August and September discharges show hydrologic significance of the glaciers. Both creeks are in Owens Basin.*

	Cottonwood Creek	Big Pine Creek near Big Pine
Watershed area	104 km^2	101 km^2
Glacier area	0	645 km^2
Annual runoff	.16 m	.37 m
Average altitude of basin crest	3,795 m	4,188 m
Altitude of precipitation gage	3,233 m	2,501 m
Average annual precipitation	434 mm	422 mm
Average annual discharge	19.58 x 10^6 m^3	37.63 x 10^6 m^3
Annual runoff	.19 m	.37 m
Average September precipitation	21 mm	21 mm
Average September discharge	.59 x 10^6 m^3	2.71 x 10^6 m^3
September % of total	8.3 %	22 %

[1] Precipitation data from City of Los Angeles Department of Water and Power, Division of Hydrography.

[2] Discharge data from R. Wells, Los Angeles Department of Water and Power, personal communication.

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APPENDIX 1.--*Description of items in tables 1 and 2.*

4111

0.1 Snow in niche.

1 Two ice-filled chutes at head of Silver King Creek.

2 Glacier at head of Silver King Creek.

2.1 Snow patches under headwall.

2.2 Snow patch or patches in cirque at head of Fly Valley.

3 Small glacierette(?) in cirque at head of Fly Valley.

4 Small glacierette(?) in cirque at head of Fly Valley.

4.1 Ice pocket(?) with snow-filled chute at head of Bull Canyon.

4.2 Snow in saddle above Whitecliff Lake.

4112

0.1 Snow patch in cirque on NW side of Whitecliff Peak.

0.2 Snow in col.

0.3 Snow in chute at the head of a cirque.

1 Tiny glacierette NNE side of Sonora Peak cirque.

1.1 Snow under headwall in the western part of Sonora Peak cirque.

1.2 Ice pocket in niche.

4121

0.1 Snow under small headwall.

1 Glacierette on Ehinbeck Peak. Bergschrund, glacial ice, small crevasses. Sinuous moraine front.

1.1 Snowdrift.

1.2 Snowfield, Nivation cirque forming?

1.3 Cluster of snow patches, some long, filling clefts or joints.

1.4 Cluster of long, slender snow fingers. Snow-filled joints?

1.5 Ice pocket in cleft. Two shades of snow or ice, small bergschrund.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

2 Tower Peak glacier in granite cirque under steep, shady headwall. Small bergschrund, several shades of snow to ice.

3 Cliff accumulation under W headwall of Tower Peak.

3.1 Snowdrift.

3.2 Snow or ice in cleft.

4 Ice pocket or tiny glacierette in cleft, ice-filled chutes. Few cracks in upper area, trace of bergschrund.

4.1 Snow accumulation. Drift?

4.2 Snowdrift.

4.3 Snow in clefts.

5 Ice pocket lies under steep, shady headwall. Moraine, but with no sharp-crested front.

5.1 Snowdrifts in shelves.

5.2 Snow in chutes and clefts.

6 Probably snowfield in high, level saddle extending down into small shallow cirque.

6.1 Snow accumulation.

6.2 Snow accumulation. Considerable talus and/or moraine below.

6.3 Probably buried ice and interstitial ice and rock. Wide bergschrund-like separation. Moraine is rounded.

6.4 Snow accumulation in bottom of a draw.

6.5 Cluster of snow patches above and below Latopie Lake.

7 Small glacierette in cirque. Light crack in upper area. Sharp-crested moraine, steep front.

7.1 Snow or ice pocket.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

4122

0.1 Snow under small, steep headwall.

0.2 A possibly permanent snow or ice body in a narrow cirque.

1 Glacierette? Moraine front.

1.1 Snow in chute.

2 Glacierette? Moraine front.

3 Headwall accumulation on N Side. Several small moraine fronts.

3.1 Snow or ice pockets under chutes. Small moraine fronts.

4131

0.1 Snow-ice pocket in niche under cliff.

1 Glacierette(?) under shady cliff. Short, lumpy, moraine-like accumulation.

2 Ice pocket in shallow cirque or cliff. Lumpy moraine.

3 Glacier with small bergschrund, dark, fine-textured rock mantle on lower half. Sharp crest, steep front.

3.1 Snow in niche at head of shallow, narrow cirque. Appears deep.

3.2 Tiny glacierette? Low, arcuate moraine.

3.3 Cliff ice accumulation appears deep. Suggestion of small arcuate moraine.

4 Glacierette above Par Value Lake. Trace of bergschrund, several shades of snow. Morainal loops, older deflated moraine lies below.

4132

1

1.1 Snowfield perched in high saddle.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

1.2 Ice pocket accumulation under ice-filled chute. Tongue-like moraine extension.

2 Fairly large glacier. Bergschrund, snow-filled chutes, pedestal rocks, rock-mantled lower part. Looping ridges, low, steep front.

3 Large glacier. Bergschrund, snow-filled chutes, crevasses, banded ice. Rock mantles part of glacier. Sharp-crested moraine, older deflated moraine below.

4 Tiny glacierette in headwall cleft. Few checks in upper area. Moraine spills talus to canyon floor.

4.1 Snow-ice pockets in niche under cliff. Appear deep.

5 Small glacierette lies on N side of saddle in cleft. Lumpy moraine.

6 Dying glacier. Bergschrund, cracks, new moraine forming half way up. Old remnant terminates at pond which lies in back of old moraine loop (trees).

7 Large glacier on N side of Matterhorn Peak. Bergschrund, ice-filled chute, pedestal rocks, some rock mantle. Sharp-crested moraine.

8 Fairly large glacier, two headwall sources. Bergschrund, cracks, pedestal rocks, mantle. Sharp-crested but low moraine. Three talus spillages.

8.1 Cliff ice pocket. Cracks, dirty ice.

8.2 Cliff ice pocket. Cracks, dirty ice.

9 Glacier above Avalanche Lake. Bergschrund, bare ice with pedestal rocks, rock mantle. Moraine crest.

10 Cliff ice accumulation. Associated with glacier to W.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

11 Small glacier(?) in jointed granitic headwall. No bergschrund but several shades of snow. Much rock mantle. Moraine.

11.1 Cliff ice pockets just west of glacier 11.

12 Dirty remnant cliff glacier. Trace of bergschrund, much rock mantle. Two low moraine snouts, pond under western snout.

12.2 Snow accumulation in niche. Deep appearance.

12.3 Snow accumulation under shady cliff. Has cracks, appears deep.

12.4 Cliff snow accumulation.

12.5 Deep snow pocket filling cleft.

12.6 Snow filling eroded granitic joint.

13 Glacierette. Trace of bergschrund, cracks cut ice-filled chute in small cleft-like cirque on N side of Crown Point. Rock mantle on ice, pedestal rocks(?). Moraine crest front.

13.1 Ice pocket in shady niche or chute.

13.2 Snow pocket in cleft. Appears deep, has cracks.

13.3 Shallow snow patch on slope.

4133

1 Humewill Peak glacier. Long, thin moraine.

1.1 Possible small rock glacier.

1.2 Snow or ice in chute above cirque.

4211

0.1 Mt. Langley snow- or ice-filled chutes.

1 Mt. Corcoran's SE headwall glacierette. Small front at angle of repose. Deflated older moraine below with discharge from terminus.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

2 Mt. Corcoran's NE rock glacier. Some permanent ice in headwall. Arcuate, stepped loops on surface for 900 m below the headwall. Ice core is thinning out in back of lowest front, discharge from base.

3 Mt. McAdie remnant glacier, still inflated, pedestal rocks on dirty ice. Bergschrund about 300 m across, looping rock-mantled ridges. Front terminates in Consultation Lake.

4 Small cliff glacierette, E side of Whitney Pass. Dirty surface, moraine front.

5 Trail Crest rock glacier. About six stepped, looping ridges, front. Some bare ice in upper areas. Inflated look.

6 Tiny cliff glacierette with steep, dirty headwall ice. Crack across top of ice. Inflated body with double front. Tiny pond on surface. Tiny ponds at base of front.

7 Dying glacierette and ice-filled chutes lie below steep headwall. Cracks in upper ice. Hummocky, gently-sloping, rock-mantled lower areas, still inflated with ice, but low front.

7.1 Ice pocket.

8 Solid, well-formed small glacier lies in shady niche or narrow cirque. Ice-filled chute, bergschrund, rock mantle. Discharge from crest of high moraine front. Front spills to basin floor at pond.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

8.1 Probably snow accumulation.

9 Small dying cliff glacier lies under steep, shady headwall just W of Tunnabora Peak. Ice in chutes, pedestal rocks, bergschrund. Inflated look with looping ridges. Discharge from base of front. Partial snow-ring[1] lies in moat.

---

[1] Snow-ring: Term used by Raub for the "ring of snow" in the moat area on each side of the inflated snout and around the base of the moraine front of many Sierra Nevada Glaciers.

9.1 Ice pocket.

10 Ice pocket with dirty ice lies under steep, shady headwall. Moraine deflated in lower areas. Discharge from base of lower areas. Small glacier probably occupied cirque until recently.

11 Remnant headwall glacier with rock glacier extension. Headwall has dirty ice with cracks in bergschrund area. Many looping, low morainal ridges. Appears to be thinning out--either remnant ice core or much interstitial ice, still has steep front. Discharge below base rubble.

11.1 Snow patch.

11.2 Snow accumulation.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

12 Remnant glacier or active rock glacier at head of N Fork Bairs Creek. Headwall ice (ice-filled chutes?). Thick, inflated rock-glacier extension. Steep front. Good discharge shows from older moraine below.

12.1 Icy snow accumulation.

12.2 Snow accumulation.

13 Cliff ice accumulation in shady niche, NW side of Mt. Williamson. Sharp moraine front.

14 Compound, remnant glacier. Triple body, steep front. Each lobe has looping ridges. Headwall ice has few cracks, deep, steep chutes, some with ice. Occupies niches of large cirque. Tiny ponds below fronts to SE. Sharp-crested moraine terminates in lake.

14.1 Two lesser ice parts to this feature.

14.2

14.3 Snow patches.

4212

0.1 Cluster of snow patches.

0.2 Snow patch.

1 Remnant glacier on SE side of University Peak. Has arcuate moraine whose front overrides side of the inflated, rock-mantled main body. Terminus of main body narrows below to a snout.

2 Small glacier with rock out-crops through snow in upper areas. Inflated, rock-mantled. Front spills talus far below.

2.1 Snow patches under headwall.

2.2 Snow or ice pocket.

2.3 Snow patches lie in scattered niches.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

2.4 Snow in perched niche.

2.5 Small rock glacier? Front snow patch on western headwall.

2.6 Small ice pocket in headwall niche.

3 Active rock glaciers or rock-loaded glacierettes near Parker Lakes. Several inflated snouts and steep fronts. Shady chutes may contain ice or snow. Older deflated moraines below present fronts.

3.1 Ice under headwall, possible glacierette. Lobate extension, front, several looping ridges.

3.2 Rock glacier? Snow patches at head.

3.3 Front parallel with side wall. Rock glacier or continuous talus front? Some associated snow patches.

4 Ice pocket in shallow niche N side of Black Mt. Tiny pond at base.

4.1 Snow or ice patch just north of glacier 4. More snow patches at head of cirque.

4.2 Snow patches under low headwall.

4.3 Possible rock glacier. Many folds and loops. Snow patches and ice in chute above.

4.4 Snow or ice pocket in shallow tiny cirque. Tiny moraine?

5 Small glacier. Bergschrund cuts ice in shady cleft in shady cirque. Cracks in ice. Steep front. Pond sits on rock-mantled, lobate, inflated body.

6 Narrow, dying, bare ice glacierette with rock glacier extension at head of Armstrong Canyon. Headwall ice. Still-inflated body. Sharp crest, front. Older deflated ground morainal ridges below the present steep front.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

6.1 Possible tiny rock glaciers. Low loops, fronts.

6.2 Rock glacier? Sharp-crested front but a few dwarf trees are growing upon it.

7 Perched ice pocket in N side of peak. Tiny, arcuate, low moraine spills talus onto inflated rock glacier below. Narrow front spills into a narrow pond.

7.1 Snow or ice pocket.

4213

1 Glacierette(?) just E of main Cardinal Glacier. Two ice-filled chutes, small bergschrund. Rock-mantle front. Complex moraine system below. Grades into rock glacier.

2 Large bergschrund cuts ice-filled chutes. Crevasses, root pendant above, dark rock-mantled, flow-looping, ice-core inflated in lower areas. Collapse wells. Steep front, complex moraine system.

3 Cliff glacierette under steep headwall just to NW of Cardinal Glacier. Crevasses, sharp-crested moraine.

4 Long rock glacier.

4.1 Ice pocket with many crevasses.

5 Small cliff glacierette lies under dark, fluted, headwall of Split Mt. Small bergschrund, crevasses. Discharge cuts slot in crest of moraine. Long talus descends to Red Lake. Banded surface.

6 Small glacierette to NNW of Red Lake. Small crevasses, two shades of snow. Tongue-like moraine with sharp front. Older, deflated moraine below.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

7 Glacier with bergschrund which cuts ice-filled chutes. Crevasses, fine-textured, looping, rock mantle ridges. Low but steep front. Ice core or rock glacier extension.

7.1 Snowy area, part of glacier 7.

8 Crevassed, rock-mantled ice. Unusual snout is bent to E as the glacier just to W deflects it. Narrow snout widens to a lobate front which spills into Tinemaha Lake.

9 Dying glacier, now a dirty, ice-filled chute. Trace of bergschrund cuts rock-mantled ice. The inflated lobate terminus deflects the snout to the SE. Steep front.

10 Mostly rock glacier. Upper part is dirty, ice-filled chutes. Trace of a bergshcrund. Looping, rock-mantled, still-inflated body. Low but steep front suggests mostly active rock glacier.

11 Dying glacier grading into active rock glacier. Dirty ice in chutes and upper area. Looping, folded ridges. Deflating look towards the snout.

11.1 Avalanche accumulations.

11.2 Mostly rock glacier, but some dirty rock-covered ice in the upper area.

12 Glacier with at least three shades of snow to ice. Bergschrund cuts ice-filled rocks. Rock-mantle over lower part. Snow ring lies in the moats. Steep front.

12.1 Snow ring filling the moat area.

13 Beautiful glacier. Bergschrund, crevasses, pedestal ice. Sinuous, sharp-crested moraine, steep front. Discharge from base.

13.1 Ice pockets, remnants of past glacierette?

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

14 Small glacierette. Moraine front and small associated ice pockets.

4214

1 Small bergschrund. Collapse well pond on rock-mantled surface. Many looping surface ridges. Snow ring lies in the moat. Banded ice. Probable ice core to the terminus crest.

2 Main Middle Palisade Glacier. Fluted headwall, large bergschrund, banded glacial ice, pedestal rocks, cravasses, ice-filled chutes. Sinuous, multi-ridged end moraine. Two fronts. Discharge from crest of E snout and from base of W front.

3 Western part of Middle Palisade Glacier. Steep, fluted headwall, large bergschrund, crevasses, banded ice and many pedestal rocks. Sharp-crested, sinuous end moraine. Talus spills to lake below, discharge from base. Separated from other glacier by narrow moraine. There is an ice pocket perched in shallow cleft above.

3.1 Perched permanent snow.

3.2 Ice patch with possible crevasses; arcuate moraine.

3.3 Small snow accumulation under cliff.

3.4 Avalanche snow. Lower patch is crevassed.

4 Huge, ragged bergschrund cuts ice-filled chutes. Crevasses, banded ice. Perched wing of ice extends under headwall to W. Long snout descends below average elevation. Square-fronted moraine snout. Pedestal rocks, snow pockets in clefts near snout.

5 Steep, fluted headwall. Bergschrund, crevasses, banded ice, and pedestal rocks. V-shaped, sharp-crested end moraine, discharge from near crest.

APPENDIX 1.--*Description of items in tables 1 and* 2--Continued

6 Really two cliff glaciers under Palisade Crest, share some headwall and same sinuous end moraine with sharp crest and steep front. Steep, fluted headwall, bergschrund, crevasses, pedestal rocks. Discharge from crest of the E snout. Both snouts discharge into Elinore Lake.

7 Steep, fluted headwall. Good bergschrund cuts ice-filled chutes. Cliff ice-pockets nearly connect with glacier to the SE. Banded ice, pedestal rocks, tongue-like snout terminates in lakelet.

8 Ice pocket with ice-filled chute on N side of Mt. Sill. Few cracks, lumpy moraine.

9 Ice pocket with tiny moraine occupies cleft on NE side of Mt. Gayley. Cracks, tiny moraine.

9.1 Avalanche snow accumulation.

10 Ice pocket or tiny glacierette occupies niche on N side of Mt. Gayley. Cracks. Sinuous, sharp-crested moraine.

11 Palisade Glacier. Largest glacier in the Sierra. Occupies giant cirque between Mt. Sill, North Palisade, and Mt. Winchell. Huge bergschrund, crevasses, ice-filled chutes. E snout has pond, arcuate, high moraine. W snout is rock mantled and has high moraine. Terminates in Robin's Egg Lake.

11.1 Snow lies on fairly flat area perched high above the N side of North Palisade.

11.2 Remnant snow ring lies under moraine front.

11.3 Snow-ice pocket lies in cleft (part of snow ring) on NW side of east lobe of Palisade Glacier.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

11.4 Steep snow in cleft.

11.5 Steep snow ice. Few cracks, rock accumulation too steep for moraine crest to form.

11.6 Snow ring under end moraine of Winchell Glacier.

12 Occupies Mt. Winchell's N cirque. Bergschrund cuts ice-filled chute. Cracks, banded ice, pedestal rocks, sharp-crested moraine. Associated cliff ice just to the E.

12.1 Snow accumulation in cleft. Gray, has wrinkles.

12.2 Snow or ice in cleft above San Mack Lake.

12.3 Snow or ice pocket in cleft above Sam Mack Lake. Several shades of snow, tiny cracks. Terminates at edge of pond.

12.4 Ice pocket. Has tiny moraine.

13 Tiny glacierette occupies niche above lake. Snow-filled chutes, moraine.

13.1 Snow ring along the SE side of Agassiz Glacier.

14 Agassiz Glacier in N cirque of Mt. Agassiz. Bergschrund cuts ice-filled chutes. Banded ice, pedestal rocks, long, looping, mantled, ice-cored body. Steep, low front. Snow ring in the moat area.

14.1 Snow patches in clefts and under wall.

14.2 Snow accumulation in niche. Terminates in tiny pond.

15 Tiny glacierette below peak. Ice-filled chutes. Rock-mantled, lumpy, inflated look. Steep front.

15.1 Snow-filled chutes, dirty ice. Sharp-crested moraine with front.

15.2 Snow-filled chute. Dirty ice, rock mantle to moraine front. Deflated moraine material below.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

16 Remnant cirque glacierette under peak. Cracks in headwall ice, pedestal rocks, ice-filled chutes, steep front. Deflated moraine below with little or thin interstitial ice.

4215

1 Glacierette in cirque at N end of the Inconsolable Range. Staircase of morainal ridges, all arcuate and steep. Possible ice-filled chutes.

1.1 Tiny ice accumulation with moraine and front.

2 Ice-filled chutes charge inflated, mantled rock glacier. Active front.

3 Shallow glacierette or drift snow. Terminates in pond in back of low arcuate moraine.

3.1 Snow accumulation, part of glacier 3. Shares same end moraine.

4 Glacierette occupies niche under peak. Has small bergschrund-like headwall crack.

4.1 Ice descending from tiny cirque. Long, slightly curved snout, front terminates onto S end of Bishop Lake.

5 Bowl-like glacierette occupies cirque on E side of peak. Small, ice-filled chute, cracks(?). Moraine front.

6 Dirty glacierette in niche on NE side of Mt. Goode. Very spectacular "stair-stepped" (about 16) broad-arcuate ridges making up a funnel-shaped rock glacier. Steep fronts.

7 Wide cliff glacier. Wide bergschrund (800 m) cuts many ice-filled chutes. Crevasses, pedestal rocks, complex moraines. Front spills over shelf onto the edge of rock glacier below. Discharge from crest of moraine.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

7.1 Snow/ice pocket just above a lake.

7.2 Snow/ice pocket alongside feature 7.3. Moraine front.

7.3 High perched ice pockets under cliff. Some moraine, but rounded crest.

8 Small headwall niche glacier above lake. Ice-filled chutes, few cracks, pedestal rocks. Low, acruate moraine. Associated ice pockets to the NE.

9 Glacier and steep ice-filled chutes. Much rock mantle, few pedestal rocks, double snouts. Steep front spills talus into pond below.

9.1 Cliff ice. Few cracks, rock accumulation.

10 Mt. Gilbert glacier. Wide glacier with wide bergschrund cutting ice-filled chutes. Banded ice, pedestal rocks, crevasses, looping morainal ridges, pond in depression. Narrow, low front spills into lakelet.

11 Occupies cirque on E side of Mt. Thompson. Huge bergschrund cuts ice-filled chutes. Crevasses, pedestal rocks, banded ice. Long, flowing, narrowing snout butts against the glacier snout just to the E. Lateral moraine spills talus over slope to lakelet below.

11.1 Snow chute in eroded joint.

11.2 Cliff ice in shallow cirque.

12 Glacierette on N side of peak.

13 Wide headwall glacier with two snouts in cirque on NW side of Mt. Thompson. The W snout just above Sunset Lake, the E snout butts against the former. Large bergschrund, banded ice, pedestal rocks, crevasses. Discharge from crest of the E snout, W snout is rock mantled.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

14 Small glacier with ice-filled chute, occupies niche on the E side of peak above Sunset Lake. Banded ice, cracks. Discharge from crest of the moraine.

14.1 Snow patch in shallow cleft.

14.2 Snow accumulation in cleft above moat area. A partial broken snow ring persists in moat area also.

14.3 Dirty snow or ice accumulation.

15 Powell Glacier. Bergschrund cuts ice-filled chutes, banded ice, pedestal rocks, snow rings in the moat. Rock-mantled, inflated, ice-cored snout. Steep sharp-crested front spills talus to basin floor just above Moonlight Lake. The longest glacier in the Sierra from bergschrund to front.

15.1 Snow patches in front area of Powell Glacier.

15.2 Partial snow ring in moat area.

15.3 Snow accumulation under steep wall.

15.4 Snow or ice accumulation in cleft. Connected to feature 15.7 below.

15.5 Shallow part of glacier 15.

16 Glacier SE of Echo Lake. Upper areas may be shallow, floor outcrops through snow(?). Debris mantle. Discharge from crest of moraine. Two associated ice or snow pockets to the W and below.

16.1 Snow patches terminating at edge of Echo Lake.

17 Small glacier occupies cirque due S of Echo Lake. Pedestal rocks, much dirty mantle. Sharp-crested moraine crest spills talus into the upper end of Echo Lake. Several more associated snow pockets above Echo Lake.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

17.1 Cliff ice above Echo Lake. Dirty talus goes into lake.

17.2 Cliff ice in same cirque as 17.1. Dirty ice, rock bottom.

18 Cliff ice and glacierette under peak. Few ice-filled chutes. Snout with steep, low front terminates in pond on shelf above Echo Lake.

18.1 Snow patches.

19 Bowl-like glacierette occupies the SE cirque of Mt. Haeckel. Lakelet with bergs lies upon the lower ice areas. Low moraine.

19.1 Dirty ice accumulation, ice-filled chute. Small moraine front runs into lake.

19.2 Dirty ice, cliff accumulation. Snow-ice filled chutes. Debris goes into lake.

19.3 Snow patches in clefts.

20 Glacier in cirque just SW of Hungry Packer Lake. Ice-filled chute, cracks, much rock mantle. Steep arcuate front.

20.1 Snow ring accumulation around sides and base of glacier 29.

21 Small glacierette on NE side of Mt. Haeckel. Crack in upper area, pedestal rocks, narrow, arcuate maraine. Snow ring surrounds entire body. Older deflated moraine below.

22 Ice-filled chutes, main glacier terminates into a lake. Another part forms tiny arcuate moraine which spills talus into the SE part of the lake. Deflated moraine below the lake.

22.1 Snow patch.

22.2 Snow accumulation under cliff. Cracks.

22.3 Snow accumulation in E moat area of glacier 23.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

23 Small glacier due S of Blue Heaven Lake. Bergschrund, crevasses, pedestal rocks, mantle. Steep, squared-off front.

24 Cliff glacier under Mt. Darwin's SE headwall. This moraine merges with that of the Blue Heaven Lake glacier. Has pedestal rocks, much mantle. Steep front.

24.1 Ice patch. Moraine front spills into lakelet below.

24.2 Snow patch.

25 Small glacier(?) above Schober Lakes and on the N side of peak. Several ice-filled chutes. Double arcuate front?

25.1 Snow patch.

25.2 Snow or ice pocket in niche under cliff.

25.3 Snow patches lie in shallow through NE of Lamarck Col.

25.4 Steep snow or ice in cleft, same trough as feature 25.3.

25.5 Snow in niche under NE side of Lamarck Col. Pond below.

25.6 Cliff snow accumulation in SE moat area of Lamarck Glacier.

26 Lamarck Glacier. Wide, ice-filled chutes. Large bergschrund, crevasses, pedestal rocks, much rock mantle, flow-looping ridges. Concave upper part, convex lower half.

27 Glacier along side Lamarck Glacier. Small bergschrund, pedestal rocks, inflated look, looping ridges. Low, steep front.

27.1 Ice-rimmed pond.

27.2 Cliff snow or ice accumulation. Dirty ice in chutes.

27.3 Cliff ice pocket lies under ice-filled chute. Tiny moraine.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

28 Small cliff glacierette occupies niche on N side of arete SW of Wonder Lakes. Low moraine. Associated cliff ice approximately 1 km wide.

29 Bergschrund cuts wide ice-filled chute, with head in broadening summit cornice. Thick, broad, looping, rock-mantled lobate front. Discharge from crest of steep front. Discharge from crest of steep front suggests thick buried ice core beneath shallow protective rock mantle.

30 Small glacier, two ice-filled chutes, inflated, rock-mantled body. Sinuous but low front terminates just above Emerson Lake. Older deflating moraines below.

30.1 Snow patches in joints, upon ledges, etc.

31 Cliff ice or remnant glacier on NW side of Mt. Emerson (rock glacier?). Ice in chutes, few cracks. Dirt and rock mantle conceal more ice. Flow-like moraine loops.

31.1 Headwall ice, ice-filled chutes. Rock mantle.

31.2 Remnants of rock glacier with few snow patches and some ice in chutes. Mostly deflated areas.

4216

1 Fairly large glacier. Bergschrund, crevasses, ice-filled chutes, few pedestal rocks. Rock mantle shows arcuate ridges of darker rock. Steep ice-cored front. West area at base of front.

2 Glacierette perched high in cleft of large cirque, SE side of Mt. Humphreys. Trace of bergschrund. Discharge from crest of moraine. Talus from crest to basin floor.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

2.1 Dirty snow or ice in cleft just E of Humphreys Glacier. Has a tiny moraine.

3 The main part of the Mt. Humphreys Glacier. One common headwall ice body with two snouts. A large bergschrund cuts several ice-filled chutes. Several shades of snow to bare, structurally banded glacial ice. Pedestal rocks, surface mantle with two circular collapse cracks in back of the front.

4 This glacier heads in the same cirque headwall as glacier 3, but is detached near upper areas and flows downward separately. Cracks cut off ice-filled chutes, several shades of snow to ice. Stream issues from crest of moraine front. A snow patch with cracks lies in cleft just N of the glacier.

5 Thin glacierette with three parts, connected by narrow necks of snow. Lies in a gently sloping, high-perched narrow cleft with a low headwall on the W side. Several shades of snow. Discharge stream issues from under the lowest edge.

5.1 Snow in pocket at the head of a shallow cirque. Nivation cirque forming?

5.2 Many snow patches and little ice pockets lie under cliffs, upon ledges, etc.

6 Small pear-shaped glacier. Appears shallow, much rock mantle, few cracks in upper area. Narrow moraine front.

7 Glacier above Horton Lake. Bergschrund cuts several ice-filled chutes, crevasses, pedestal rocks, looping ridges. Lobate front spills into lake.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

7.1 Snow accumulation in cleft along lobe of glacier. Possibly frozen pond.

8 Four Gables Glacier. Bergschrund cuts ice and talus. Ice-filled chutes, pedestal rocks, looping surface ridges, snow rings around main body. Nearby headwall snow just to W.

8.1 Ice pocket detached from Four Gables Glacier, but same cirque. Two shades of snow.

8.2 Snow ring fills moat on both sides of glacier.

9 Headwall ice pockets with two main ice-filled chutes. Common moraine front.

10 Small glacierettes (ice-filled chutes?). Cracks in ice. Long rock-mantled, narrow front.

11 Ice pocket in cirque with inflated body, steep front. Rock glacier descends from N headwall area.

12 Dirty glacierette under step shady headwall. Bergschrund?

13 Dying glacier, ice-filled chutes. Much rock mantle, long looping ridges on inflated body. Steep front terminates near stunted trees. (Rock glacier extension?)

13.1 Ice pocket perched high in a shallow cirque. Three shades of snow.

13.2 Eroded joint filled with ice or snow.

13.3 Ice pocket. Several shades of ice. Small moraine.

14 Small glacierette lies in headwall niche above Granite Park. Ice-filled chutes, cracks, steep front. Discharge from base.

15 Ice pocket or glacierette under Granite Park's headwall. Small moraine. Discharge from base of moraine.

15.1 Snow patches occupying depression behind moraine.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

16 Ice accumulation. Ice-cored, rock-mantled tongue with lobate front. Part of glacier 17.

17 Headwall or dying cliff glacierette. Inflated, rock-mantled snout with steep front. Part of 16.

17.1 Ice pocket in niche with several shades of snow or ice.

4217

0.1 Snow in cirque.

0.2 Snow and ice in chutes. Rock glacier(?) below.

1 Mostly rock glacier. Some headwall ice, snow-filled chutes.

1.1 Snow or ice patches occupying niches under shady headwall.

2 Glacierette? Cracks in headwall area, several shades of snow. Lumpy, steep moraine.

2.1 Snow or ice patches at base of front of glacier 5.

2.2 Snow or ice patches.

2.3 Snow or ice occupying eroded joints in granitic rock.

3 Small glacierette. Cracks, may be connected at the headwall to glacierette just to W. Sharp moraine front.

4 Small glacierette with same headwall as glacier just to E.

5 Small steep glacier. Sharp-crested moraine. Long talus front spills to lake below.

5.1 Small ice pocket with tiny sharp-crested front.

5.2 Snow or ice patches with several shades of snow or ice.

6 Remnant cirque glacier on SSE side of Mt. Dade. Thin, steep ice sheet plunges into lake. (Probably on ice core.) "Dam-like" moraine spills talus cone to basin floor.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

7 Large glacier. Wide bergschrund, banded ice, pedestal rocks, ice-filled chutes. Sinuous, sharp moraine with discharge from crest. Ice probably connects with Abbot Glacier just to the N.

7.1 Tiny ice pockets with front under steep headwall.

8 Glacierette in shady cirque. Cracks, pedestal rocks, small bergschrund. Talus spills to lakelet below. Ice-core collapse at crest of front.

9 Headwall glacier. Bergschrund cuts ice-filled chutes, cracks, pedestal rocks, much rock-mantle. Long, tapering, looping, ridged snout with pond on surface. Low but steep front. Lake below filling in.

10 Thin, dying glacierette in cirque above Ruby Lake. Ice-filled chute, some dirty ice. Moraine, steep talus front.

11 Small moraine crest.

11.1 Ice pockets under cliff. Several tones of snow and ice.

12 Small glacier. Cracks, pedestal rocks, with long curving rock-glacier extension which terminates near Steelhead Lake.

13 Glacierette in narrow cirque with long rock-glacier snout. Butts against and joins front of feature to the E. Dirty ice at head, several shades of snow.

13.1 Headwall ice behind sharp-crested moraine.

14 Glacierette in steep cirque of Mt. Crocker. Dirty ice, pedestal rocks(?), several shades of snow. Small acruate moraine.

14.1 Small ice pockets hugging headwall.

15 Ice pocket in niche on SE side of Red and White Mt. Several shades of snow.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

16 Small dyig rock-mantled glacierette on NE side of Red and White Mt. Headwall ice, sharp-crested moraine of dark and light-colored rocks, steep front. Inflated ice core.

17 String of snow or ice pockets in long cleft. Front talus spills into lake.

17.1 Snow and ice nearly filling lake. Arcuate crack where ice is calving off into the lake.

17.2 Buried ice core?

17.3 Buried ice core?

17.4 Ice pocket with tiny moraine.

17.5 Ice pocket on talus material beind sharp-crested moraine.

17.6 Snow patch on talus.

17.7 Possible rock glacier. Buried core?

17.8 Snow in chute.

18 Snow or ice accumulation in cirque.

19 Ice-filled chutes on N side of Mt. Morrison. Come together at small moraine?

20 Small glacier above Constance Lake. Bergschrund cuts ice-filled chutes. Crevasses, inflated, rock-mantled lobate moraine.

21 Glacier on N side of Red Slate Mt. Barely detached from the glcier just to the E, some cracks, small bergschrund. Sharp-crested moraine.

22 Small glacier with bergschrund cutting ice-filled chutes. Sinuous moraine with V-snout is sharp crested, spills talus into Constance Lake.

22.1 Snow accumulation with dirty snow-ice, fluted by erosion.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

22.2 Cluster of snow and ice patches on talus at base of narrow trough.

22.3 Snow-ice accumulation on metamoraphic rock.

22.4 String of ice pockets hugging steep headwall.

22.5 Small snow and ice patches. Moraine with pond below front.

22.6 Dirty snow patches behind slightly inflated moraine.

22.7 Rock glacier? Thin mantle of fine, dark metamoraphic rock on ice, several cracks on surface near the bergschrund. Sharp-crested moraine. Several older moraines with trees lie below the present active front. Several ice- or snow-filled chutes.

22.8 Small ice pocket behind sharp-crested moraine.

22.9 Small headwall ice pockets in niches.

22.10 Headwall ice pockets and dirty snow at head of glacier 22.12.

23 Dirty ice or snow in shallow cirque with small discharge from below terminus.

24 Cliff ice accumulation under headwall. Behind small moraine?

24.1 Snow patches lie above active moraine front behind possible deflated rock glacier. Trees growing on surface, small lake at terminus.

24.2 Ice pockets fluted by erosion. Lie behind moraine front.

25 Small niche glacierette. Has ridges, possible cracks near headwall. Terminus narrows. Small moraine.

25.1 Ice pocket with dirty ice above steep-fronted moraine. Partially covered by trees on eastern flank.

25.3

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

4221

0.1 Several snow patches under steep slope.

0.2 Several snow patches under steep slope.

1 Glacier. Small bergschrund. Moraine accumulation.

2 Snowfield lying at base of glacier moraine.

3 Mt. Davis glacier. Trace of bergschrund, bare ice with rings.

3.1 Snow patches in niches near front of Mt. Davis glacier.

4 Glacier. Several shades of snow and ice. Lateral-like moraine on W side with snow ring filling moat. End moraine terminates into Davis Lake.

4.1 Cluster of snow-ice pockets lying in niches.

5 Glacierette with snow cover spilling over end moraine and terminating in small pond.

5.1 Snow patch in niche.

5.2 Snow patch in niche.

5.3 Snow patch in niche.

5.4 Snow or ice pocket in niche.

5.5 Snow patch on shelf.

5.6 Snow patch.

5.7 Small snow patches persist in joints, niche, etc.

6 Glacier. Two shades of white, snowfield partially over end moraine.

7 Probably accumulation glacierette, just above Lake Marie.

8 Snow ice pocket perched in shallow cirque.

8.1 Cluster of shallow snow patches lying on slope.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

9 Wide, shallow headwall glacierette. Small crevasse at headwall. Moraine spills over steep slope.

9.1 Snow patches in small niche.

9.2 Snow patches.

9.3 Snow accumulation.

9.4 Snow lying in eroded joint.

9.5 Snow patch.

10 Glacierette? A rock glacier-like moraine with many narrow loops.

10.1 Steep ice wall terminating in Upper Marie Lake. Bergschrund-like crevasses above water.

11 Snowy glacier. Some crack in lower area. Terminates in pond. Thin moraine below.

12 Small glacier in shallow cirque. Some moraine material.

12.1 Snowfield lying upon a perched, gentle slope above glacier 13.

13 Fairly large glacier ESE of Mt. Lyell, head under cirque headwall. Bergschrund, many bands show with a few crevasses. Pond on ice surface in back of moraine front.

13.1 Snow patch?

13.2 Snow patch.

13.3 Snow accumulation under headwall, several snow-filled chutes. Terminates in lake.

13.4 Snow accumulation lies behind tiny moraine under shady cirque headwall. Snow patch below.

14 Small, shallow glacierette. Several shades of snow. Small arcuate moraine front terminates in Upper Alger Lake.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

15 Pond at terminus. New steep moraine forming higher up.

15.1 Snow accumulation under shady cliff. Several shades of snow. Terminates in pond.

4222

0.1 Snow patch. Shallow nivation cirque possibly forming.

1 Shallow glacierette in Parker pass. Several shades of snow. Some fine-textured surface accumulation, trace of moraine. Nivation cirque possibly forming.

2 Solid but shallow glacierette in Parker Pass. Several shades of snow ice. Nivation cirque possibly forming.

3 Westermost Parker Pass Glacier. Bergschrund, banded ice, sharp arcuate moraine.

3.1 Snow pocket.

4 Small cliff glacierette. Cracks in headwall area, several shades of snow or ice.

4.1 Cluster of many snow patches which lie in clefts, upon ledges, etc.

4.2 Snow patches in clefts, niches, etc.

4.3 Snow or ice pocket in niche. Several shades of snow.

4.4 Snow pocket and several snow patches in shady niche. Several shades of snow.

5 Kuna Glacier. Large bergschrund, several shades of snow, crevasses, pedestal rocks. Multiple-ridged moraine. Older deflated moraines below.

5.1 Snow ring in front of Kuna Glacier moraine. Terminates in large snow patch.

5.2 As above, but on W part of snout under wall.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

5.3 Ice patch with snow-filled chute. Moraine crest with front terminating in pond below.

6 Glacier high in shallow cirque on NE side of Mt. Gibbs. Arcuate moraine.

4223

1 High perched glacierette nearly at crest. Small, sharp-crested moraine loop.

2 Commonly called a rock glacier. Photo shows bare ice terminating into lake with a thin covering of rock.

2.1 Snow and cornices at headwall crest above glacier 2.

2.2 Snow and dirty ice in chutes E of Dana Glacier.

3 Glacierette? Has moraine.

4 Glacierette? Has moraine.

5 Dana Plateau Glacier. Bergschrund. Moraine front, with long thin waterfall descending.

5.1 Snow ring fills moat area on both sides of glacier 5.

5.2 Snow or ice at head of cirque, NW side of Dana Plateau.

6 Dana Glacier. Huge bergschrund, much crevassed ice, ice-filled chute, pedestal rocks, steep front. Lobate moraine.

7 Thin ice accumulation of Dana Glacier. Talus cone separates from main glacier. Two shades of ice in chute.

7.1 Snowfield?

7.2 Snow lodged in deep, narrow gully.

7.3 Many snow patches lying in clefts, niches, and upon narrow ledges.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

7.4 Snowfield lying in niche on slope. Has snow-filled chute connecting with glacierette lying above. Two shades of snow are visible.

8 Glacierette. Trace of bergschrund, two tones of snow.

8.1 Snowfield lying in cleft upon slope (nivation?).

8.2 Ice pocket lying in niche just under a saddle.

8.3 Ice pockets under steep headwall. Central feature has a tiny moraine.

8.4 Small ice pocket lies under steep cirque headwall.

8.5 Small ice pocket lies under steep cirque headwall.

9 Glacierette fills niche in cirque. Several shades of snow, cracks in upper area. Arcuate moraine terminates in tiny pond.

9.1 Dirty snow accumulation with some narrow, dark snow-filled chutes above.

10 Shallow glacierette. Small, arcuate moraine.

10.1 Headwall snow patches.

11 Shallow glcierette high on ridge, part under headwall. Several shades of snow. Possible small moraine.

12 Glacierette. Cracks in upper area, several shades of snow.

12.1 Ice pocket lies under shady headwall. Several shades of snow.

13 Cliff glacierette under shady cirque headwall.

13.1 Small rock glacier. Some surface ice, flow, front.

13.2 Ice pocket lies in niche of the Mt. Conness headwall.

14 Headwall glacierette. Cracks, several shades of snow. Tiny arcuate moraine, irregular.

14.1 Snow accumulation under cliff.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

15 Mt. Conners Glacier. Large bergschrund, both lobes have banded ice, crevasses. E lobe shows cirque floor in back of moraine? Detached moraine. Both parts are classed as one glacier.

4224

0.1 Probably permanent snow in high cleft.

1 Glacierette. Several shades of snow, inflated look, rock mantle.

1.1 Several shades of snow, rock mantle, front.

1.2 Snow patches.

2 Glacierette? Appears deep, several shades of snow.

3 North Peak Glacier. Many cracks in upper areas. Several shades of snow. Well-developed end moraine.

3.1 Snow-ice pockets fill narrow niche.

3.2 Snow patches in clefts and saddles of a shallow cirque. Some look deep and straddle the stream.

3.3 Ice pocket lies under shady cliff. Some cracks or wrinkles. Moraine extends below.

3.4 Snow patch in shallow cirque.

3.5 Snow patch in shallow cirque.

4 Tiny glacierette in small shallow cirque.

5 Glacier in cirque on NNE side of Excelcior Mt.

4310

0.1 Snow patch in shallow cirque.

0.2 Snow under steep cliff S of Blackrock Lake.

0.3 Snow patches in niches under steep headwall.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

4311

0.1 Snow or ice in headwall cleft.

0.2 Snow streak under joint in headwall.

1 Glacierette in cirque W of Finger Peak. May be only glacier in N Fork Kings River. Snow-filled chute, arcuate moraine, steep front.

1.1 Snow patches under cliff.

1.2 Snow or ice in niche. Snow-filled chute above, moraine(?) below.

4312

0.1 Headwall snow.

0.2 Headwall snow.

0.3 Snow patches, accumulation under cliff.

0.4 Snow patches in north headwall. Largest appears to have tiny moraine-like rock accumulation.

0.5 Snow pocket N side of a Col.

0.6 Snow or ice pocket lying in same narrow trough a snow pocket 0.5.

0.7 Tiny snow patches under cliff.

0.8 Snow accumulation under cliffs of Blue Canyon Peak. The westernmost feature has a moraine with usual front.

0.9 Snow or ice accumulation under E part of Finger Peak headwall.

1 Cliff ice or remnant headwall glacierette on N side of Finger Peak.

1.1 Snow streaks in clefts or joints lie in shaded area of cirque.

1.2 Small snow or ice pocket. Suggestion of small rock spillage.

1.3 Cliff ice or snow accumulation. Several shades of snow.

1.4 Snow patches under steep slope S side of Mt. Goddard.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

1.5 Snow patch lying in niche.

1.6 Snow patch in cleft at S end of long unmapped lake.

1.7 Snow accumulations in eroded niche.

1.8 Snow in clefts and niches.

2 Glacierette or ice pocket. Calves off into lake. Ice wall about three meters high.

2.1 Ice pocket in shallow cleft. Small cracks, several shades of snow. Moraine-like material but too steep for formation of a front.

3 Small glacier in niche on N side of peak. Cracks, steep ice, rock mantle.

3.1 Snow or ice in cleft below steep slope. Few cracks.

4 Small glacier on ragged spur in shallow cleft. Cracks in ice, sharp crest. High, steep talus front.

4.1 Snow-ice pocket in cleft above talus cone and headwall. Few cracks. Rock accumulation at base.

5 Small niche glacier on ragged spur on E side of peak. Cracks in ice. Sharp crest, talus is high and steep.

5.1 Snow patch at base of The Sirens.

5.2 Snow-filled eroded cleft.

5.3 Snow-filled eroded cleft.

6 Scylla Glacier. Odd-shaped double glacier on N side of Scylla Peak. Small bergschrund in W upper part, steep ice and moraine snout spills onto lower part to the E, small bergschrund again. Snow-filled chutes, pedestal rocks. Sharply-crested moraine.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

6.1 Snow at base of moraine.

7 Small ice accumulation in cleft on NW side of peak. Associated snow patches lie in clefts and eroded joints.

7.1 Snow patch.

7.2 Snow patches occupy eroded slope area between contact of Alaskite and sheared granitics.

8 Charybdis Glacier. Much rock-covered ice. Several tongues spill into Ionian Basin from a common headwall ice accumulation.

8.1 Snow patch.

8.2 Snow in cleft.

8.3 Snow in cleft.

8.4 Snow patch.

9 Glacierette on NW side of Mt. McDuffie. Cracks, ice-filled, chuted, rock-mantled steep front.

9.1 Snow or ice, part of talus front. Crack across front.

10 Perched snow field lies in saddle on NE side of Wheel Mt. Appears deep and permanent.

10.1 Ice pocket in niche on W side of Wheel Mt.

10.2 Snow pocket at head of tiny cirque. Much rock, dirty ice.

4313

1 Narrow glacierette lies in niche between Mt. Woodworth and Peak 11858. Narrow front.

1.1 Tiny ice pocket. Lies under steep headwall under Mt. Woodworth. Cracks in headwall ice. Sharp-crested moraine front of dark, fine-textured rocks.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

1.2 Ice pocket under cliff. Several tiny cracks. Tiny moraine of same description as above.

1.3 Dirty ice patch. A small bergschrund. Snout with arcuate front.

1.4 Snow patch in moat area of above glacierette.

2 Small cliff glacierette. Few cracks. Talus spills into lake below.

2.1 Snow or ice pocket below the Devils Crags glacierette. Possibly tied to glacierette above, but thin layer of fine-textured dark rock mantles the connecting ice. Too steep for a sharp-crested moraine.

2.2 Ice pocket, partially rock covered. Terminates in lake at head of Rambaud Creek.

2.3 Dirty snow that belongs to a folded-looking talus accumulation. Tiny front, probably some ice core.

2.4 Snow patches under cliffs of The Citadel.

2.5 Tiny, dirty ice pocket perched in cleft on NW side of The Citadel. Tiny, moraine-like rock accumulation.

2.6 Some dirty rock-covered ice in upper areas. Long snout with five or more steps above the front.

2.7 Small ice pockets. Easternmost has ice with rock-covered tongue and front.

3 Small cirque glacierette occupies small cirque just S of peak. Few cracks. Tiny sharp-crested moraine.

3.1 Shallow cliff ice accumulation. Dirty ice.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

4 Cirque glacier. Bergschrund cuts ice-filled chutes, has cracks and pedestal rocks. A rock-mantled, inflated body. Sharp crest spills talus into pond below.

4.1 Snow pocket (remnant snow ring) lies in moat area on NW side of glacier 4.

4.2 Steep ice pocket under headwall. Several shades of ice. Terminates in lake.

5 Cliff glacierette just to W of Ladder Lake. Some cracks, ice-filled chutes. Sinuous moraine crest spills talus into ponds below.

5.1 Chutes (joints). Cracks or wrinkles in ice. Probably all parts connected under a thin rock mantle. All share the same sinuous end moraine with steep front.

6 Fairly large glacier occupies shallow cirque. Bergschrund, crevasses. Sinuous, sharp-crested moraine spills talus over long steep front to lake below.

6.1 Snow or ice cliff accumulation.

7 Glacierette perched upon shelf under cliff on N end of peak. Moraine crest. Front spills into lake.

7.2 Steep snow patch. Tiny moraine-like rock accumulation, but too steep for a sharp-crested moraine front.

7.3 Ice pockets lie in clefts under cliff on Langille Peak.

7.4 Ice pocket under Langille Peak headwall. Cracks in ice or snow.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

8 Small glacier. Many rock-mantled, looping ridges, low but steep front. Possible rock glacier, although large ice core.

9 Dying cliff glacier occupies S end of basin E of the Black Giant. Dirty, rock-mantled. Crest and steep front.

10 Two glaciers possibly connected under headwall by interstitial ice. Trace of bergschrund, cracks, chutes. Double, steep sinuous front on the main glacier to the SE. Steep front spills dark, fine-textured talus to basin floor.

11 Small glacier occupies narrow cirque on ESE side of the Black Giant. Multiple cracks in bergschrund area, debris spills onto the dirty ice. Sharp-crested front spills talus to basin floor.

12 Largest glacier on the Black Divide. Wide bergschrund, banded ice, crevasses. Discharge from crest of moraine, talus spills to basin floor.

13 Small niche glacier. Cracks in ice. Sharp-crested moraine spills talus to a shelf below.

14 Small glacierette. Few cracks in upper area, arcuate front.

14.1 Snow or ice pocket. Two shades of snow-ice. Terminates in tiny, partially-frozen unmapped lake.

14.2 Small cliff ice accumulation. Tiny moraine accumulation, front terminates in unmapped lake.

14.3 Snow patches S of Helen Lake. Largest shows rock accumulation.

14.4 Snow patches. Largest one terminates in the upper end of a lakelet.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

15 Small cliff glacierette due S of Helen Lake. Moraine front terminates at the lake. Ice-filled chutes.

15.1 Snow pocket. Small moraine?

15.2 Snow or ice pocket. Small moraine?

15.3 Snow patches.

15.4 Snow patch in cleft above lake.

15.5 Snow patches.

16 Tiny rock-mantled glacierette. Dirty, ice-filled chutes. Inflated body. Low, steep front terminates in lake. Bare ice and snow terminates in unmapped pond to the NW of the lake. Pure ice core?

16.1 Dirty, bare ice associated with glacier 16. Terminates in small unmapped lakelet.

16.2 Snow patch. Ice in chute and partially rock-covered ice terminates in lake.

17 Tiny glacierette? Few cracks. Moraine terminates in pond.

17.1 Snow cornice on saddle crest above glacier 17.

17.2 Snow accumulation. Has moraine.

17.3 Snow in niche.

17.4 Moraine lies between snow and lakelet, but may be older.

17.5 Snow accumulation cone under chute. Few cracks.

17.6 Snow or ice accumulation under cliff. Dirty.

17.7 Snow ice accumulation. Small moraine-like accumulation.

18 Tiny glacierette(?) with moraine under N cliff of Isoceles Peak.

18.1 Ice patch. Moraine.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

19 Small glacierette or rock glacier. Sharp crest.

20 Small glacierette N side Giraud Peak. Much rock mantle, sharp front.

21 Small cliff glacierette. Cracks in upper areas, much rock mantle. Small moraine.

22 Glacierette in chute lies above Rainbow Lake. Small front.

23 Ice pocket with rock mantle and steep front lies above the Western Rainbow Lakes.

23.1 Snow below glacier 23. Shares same moraine front.

4314

1 Shallow glacier in a high-perched saddle. May be the highest glacier in the Sierra. Tiny moraine. Source of Glacier Creek.

1.1 Snow in chute.

2 Cracks, trace of bergschrund? Moraine.

3 Crevasses.

3.1 Snow patch.

3.2 Snow patch?

3.3 Snow or ice pocket. Tiny moraine descends.

4 Small glacierette occupies tiny cirque on E side of Observation Peak. Heads in col. Small, narrow moraine front.

5 Glacierette occupies narrow cirque on W side of Observation Peak. Steep, small moraine front. Snow fills joint below.

6 Ice pocket occupies cirque on SE side of Mt. Shakespeare. Dirty ice and lumpy moraine.

6.1 Snow patch.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

6.2 Snow patches.

6.3 Snow pocket? Tiny moraine.

6.4 Snow patch?

7 Glacierette with moraine occupies cirque above the westernmost Dumbell Lake. Cracks in ice. Sharply-crested, long talus front.

7.1 Snow patch under headwall.

7.2 Very small snow patches. Tiny moraine into lake.

7.3 Headwall ice.

7.4 Three cliff ice pockets. Two show some small arcuate moraine accumulations.

7.5 Cliff snow accumulations.

7.6 Cliff snow accumulations.

8 Remnant cliff glaciertte in crest of cirque on N side of peak. Talus terminates in pond.

9 May be two glaciers side by side under cliff. Moraine?

10 Small glacierette in steep, shady cirque headwall. Moraine.

10.1 Ice pocket in niche. Moraine.

10.2 Snow or ice pocket in niche.

10.3 Snow patches under headwall.

10.4 Cliff snow accumulations.

10.5 Snow or ice pocket?

10.6 Cliff snow pocket. Moraine?

4315

1 Small glacierette under N side of Goat Mt. Ice-filled chutes. Moraine with sharp crest?

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

1.1 Snow pocket. Tiny moraine extends below.

1.2 Snow patch under cliff.

2 Same cirque as glacier just to W--probably joined. Small bergschrund(?), arcuate moraine, ice-filled chutes, steep front.

3 Small glacier tapers to make two ice-filled chutes. Narrow, arcuate moraine spills into lake. Probably connected to small glacier just to the E.

4 Glacierette? Upper ice in shady cleft, inflated tongue.

4.1 Moraine front, some snow or ice above.

5 Small glacier under high, steep, fluted headwall of Goat Mt. Moraine.

4316

1 Tiny ice pocket. Lake below.

2 Tiny glacierette.

3 Tiny glacierette, snow-filled chute to near top of headwall. High, steep front spills against the glacier to the W.

4 Dying, mantle-loaded glacier. Ice-filled chutes, some small cracks, fine-textured surface ridges. Steep front spills into stocking Lake.

5 Dirty, rock-mantled, dyig glacierette(?). Ice-filled chute, looping ridges on narrowing front. Mostly rock glacier now?

5.1 Dirty ice at head of moraine below glacier 5.

5.2 Ice pocket perched high in a saddle.

6 Cirque containing either two inflated rock glaciers or small, dying, ice-cored glaciers. Headwall ice, steep moraine fronts.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

7 Glacier located in steep, shady cirque. Two ice-filled chutes. Bergschrund cuts ice and rock mantle. Two fronts, steep talus spills into lake. Discharge from crest of moraine.

8 Rock glacier? Still inflated (ice-cored) morainal ridges. Discharge from base of low front. Some headwall ice remains.

9 Small glacierette. Longitudinal surface ridges. Steep front terminates in lake. Lower part rock glacier?

10 Small vanishing glacierette, probably mostly rock glacier. Snow in shade, longitudinal ridges on W part. E part has looping ridges, ponds on surface. Two fronts.

10.1 Possible rock glacier, some snow in moat area. Adjoins glacier 10.

11 Permanent ice-filled chutes. Surface mantled. Inflated by ice core, lobate body. Front terminates in triangular-shaped pond.

12 Glacier in cleft below chute. Inflated moraine merges against the glacier to its E side. Both make a common front. Two colors or shades of rock on lower moraine.

12.1 Snow patch.

12.2 Cliff ice with short front terminating in lake.

13 Tiny ice pocket or cliff glacierette under Mt. Cotter. Inflated moraine.

14 Tiny glacierette on NE side of Mt. Clarence King. Front terminates in lake.

15 Small cliff glacier under shady headwall on NW side of Mt. Clarence King. Moraine, steep front.

15.1 Tiny ice pocket and moraine.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

16 Beautiful, small glacier under steep headwall. May have crevasses, inflated look. Steep front spills into the upper lake.

17 Cliff or headwall ice pocket. Moraine spill separated from glacier just to E by sharp, short rock divide.

17.1 Small snow or ice patch.

17.2 Tiny snow patches.

17.3 Ice pocket under steep headwall.

17.4 Ice pocket under steep headwall.

4317

0.1 Moraines with fronts, few snow patches.

1 Steep ice, part terminates in lake.

2 Active rock glacier(?) under Forester Pass. Ice and snow in upper areas, inflated body, looping ridges.

3 Large dying glacier. Bergschrund is over 600 m wide, cuts through rock mantle. Fine-textured, rock-mantled, ridged surface. Pedestal rocks, front, with pond at base.

4 Dying glacier lies on N side of Kings-Kern Divide, just E of Gregory's Monument. Bergschrund over 650 m wide cuts rock-mantled upper ice. Much rock cover, pedestal rocks(?). Rock glacier extension in lower parts, with many low loops, and low, steep front. Discharge at base.

5 Beautiful small glacier on NE side of Mt. Stanford. Small crevasse in upper area. Steep moraine front, spills into lakelet. Discharge from near crest of moraine. Small detached ice pocket to W in same cirque also has small moraine.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

5.1 Snow patches.

5.2 Snow patch accumulation?

6 Small glacier. Trace of small bergschrund, much rock mantle, cracks in upper W ice. Lobate moraine front.

7 Upper area is rock glacier with ice-filled, shady chutes; lower area rock mantle. Moraine front. Associated rock glacier hugs arete headwall shadow, many loops, probably some ice core. Front spills talus to basin floor.

7.1 Avalanche snow accumulation, always present. Very low altitude. Arcuate moraine.

7.2 Ice core appearance.

8 Dying glacier. Headwall ice dirty, pedestal rocks possibly in upper ice area, looping, inflated, rock-mantled central area, sagging lower areas. Low, sgging moraine front.

9 Ice pocket and ice-filled chute lie on Deerhorn Mt. Moraine, steep front. Appears solid.

10 Glacier, shady ice-filled chutes. Fairly large bergschrund, crevasses, rock mantle. Front terminates in lake.

11 Dying glacier, thinning out, probably mostly rock glacier. Permanent exposed ice only in upper, shady areas. Steep front. Discharge from base. "Lucy's Foot Pass Rock Glacier".

11.1 Snow under cliff.

11.2 Snow or ice under cliff?

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

12 Small glacier(?) lies in a shady niche on N side of Mt. Jordan, above Lake Reflection. Trace of bergschrund. Inflated, rock mantled. Sharp arcuate or lobate front.

12.1 Snow or ice pocket.

13 Headwall ice accumulation on NW side of peak. Moraine?

14 Shallow ice lies in niche. Rock mantle on lower parts.

15 Glacierette on NE side of Thunder Mt. Appears healthy. Much snow nearly surrounds entire inflated lower area. Steep front.

16 Small, well-formed glacier lying in shady niche of a compound cirque. Bare ice, banded ice(?), pedestal rocks(?). Moraine front.

17 Small glacier in niche under steep headwall. Ice-filled chutes. Trace of bergschrund. Has stepped, arcuate ridged lobe, inflated, rock-mantled ower area with rock spilling over into lake.

18 Small cliff glacierette lies under peak. Shady, cracks, ice-filled chute. Moraine front spills rock far below.

18.1 Snow or ice under cliff.

19 Small glacier at head of Ouzel Creek. Bergschrund. Forked discharge comes from top of front.

20 Mt. Brewer glacier or glacierette. Probably still active. Bergschrund, pedestal rocks. Sharp-crested moraine front. Another small ice pocket just to N separated from Brewer Glacier by sharp, dike-like ridge.

20.1 Ice or snow associated with but separated from Brewer Glacier by small dike-like ridge.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

20.2 Snow or ice under headwall.

21 Northguard Glacierette, in shady cirque. High fluted headwall, bergschrund. Sharp-crested, sharply arcuate moraine. Front spills talus far below.

22 Glacierette (ice-filled chute?) with rock glacier extension spilling front into lake.

23 Cliff glacier with rock glacier extension (ice-filled chute?). Band of headwall ice extends westward to a point even with front. Much rock mantle, and inflated look. Moraine front.

4318

0.3 Snow patches under headwall.

1 Table Mt. Glacier, many ice-filled chutes. Bergschrund over 300 m across, dirty ice, pedestal rocks, much rock mantle. Pond at low moraine front.

1.1 Ice-filled chutes, dirty small glacierette? Rock mantle and moraine front.

1.2

2 Cliff accumulation lies under shadowy headwall niche. Moraine.

2.1 Probably avalanche snow patch.

3 Ice lies under steep, shady cirque headwall. Tongue with few loops. Discharge from base of older, deflated front.

4 Cliff accumulation in cirque headwall. Moraine below.

5 Ice pocket lies under headwall of Triple Divide Peak.

5.1 Snow or ice accumulation under cliff. Small moraine.

5.2 Snow or ice accumulations under cliff.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

5.3 Snow or ice accumulations under cliff.

4321

0.1 Cluster of snow or ice patches lying in niches and in cirque above Upper Lion Lake. Tiny moraine into lake.

0.2 Snow or ice in niche.

1 Under steep headwall, barely separated from the main (West) Lilliput Glacier. Appears solid. Moraine.

2 Lilliput Glacier, lies under steep headwall. Bergschrund, suggests rough ice or pedestal rocks in lower area. Moraine.

3 Glacier under steep NW headwall of Mt. Stuart. Cracks, moraine. Glacier at low elevation for the latitude.

3.1 Tiny glacierette or ice pocket. Has a moraine front.

4 Tiny glacier or ice pocket lies perched on a ledge under steep headwall of Eagle Scout Peak. Cracks.

4.1 Snow patch probably permanent.

5 Cliff accumulation lies under steep headwall. Small moraine-like accumulation.

5.1 Small ice pocket on Mt. Eisen.

5.2 Small ice pockets on Mt. Eisen. Moraine fronts.

5.3 Snow accumulation.

5.4 Lies under steep headwall.

5.5 Snowfield. Appears to have a few cracks and pedestal rocks.

6 Well-developed glacierette. Crevasses, arcuate end moraine with tiny ribbon of water descending from crest.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

4322

1

1.1 Ice pocket separated from the main glacierette under Mt. Florence. Has a few crevasses and a tiny moraine-like accumulation.

4331

1 Ice pocket in cirque ESE of Shotgun Pass. Cracks or wrinkles. Lumpy moraine. Older moraine below.

1.1 Snow patch.

1.2 Snow patch. Moraine.

1.3 Snow patch.

1.4 Snow patch.

1.5 Lies under steep headwall.

2 Small cliff glacierette. Many parallel cracks. Sharp-crested moraine.

2.1

2.2 Little snow in headwall. Moraine of dark metamorphic rocks.

2.3 Tiny glacierette or ice pocket in niche.

2.4 Snow patch in niche.

2.5 Snow patch.

2.6 Dirty permanent snow or ice accumulation under cliff. Terminates in lake.

3 Crevasses in snowfield, pedestal rocks. Probably deep ice body.

4 Small, perched glacierette. Sharp moraine spills talus over snow ice body below.

5 Ice wall terminates in lake.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

5.1 Snow ice avalanche pockets that terminate on lake edge. Some crevasses or cracks seen.

4332

0.1 Avalanche snow terminating as ice wall in lake.

0.2 Small permanent snow. Some moraine.

1 Steep W wall ice, rock glacier? Some crevasses. High bold front.

1.1 Avalanche snow. Terminates as snow wall in lake.

2 Dying glacier. Small bergschrund, pedestal rocks, much rock mantle, crevasses. Big discharge from base and waterfall from crest.

3 Active glacier. Bergschrund, crevasses, pedestal rocks, discharge from crest. High talus front spills into lake below. May be southernmost active glacier in continental USA.

4 Same headwall as glacier #3. Small bergschrund, pedestal rocks(?), lower part rock-mantled. Double moraine fronts.

5 Red Kaweah Glacier. Perched on shelf under steep headwall, many cracks. Two moraine fronts (high), discharge from near crest of front.

6 Small glacier in chute. Crack. Sharp-crested moraine.

6.1 Ice pocket. Terminates in small lake.

7 Very steep cliff glacierette. Small headwall cracks or trace of bergschrund. Sharp-crested, V-shaped end moraine.

7.1 Several snow or ice patches, probable remnant of shallow glacierette.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

8 Glacier seen in 1938. Sharply-crested moraine, bold front, pedestal rocks. Tiny pond lies in back of moraine crest. Discharge from near moraine crest.

8.1 Snow ice field in same cirque with glacier 8.

9 Small, well-formed glacier lies in cirque at head of Picket Creek. Bergschrund.

10 Glacier at head of Kern-Kaweah River. Bergschrund, banded glacial ice, pedestal rocks, some rock mantle. Pond lies on ice in back of sharp-crested moraine. Front spills into two ponds.

10.1 Ice area below glacier 10, lower part shares same moraine. A detached ice pocket lies under cliff.

11 Glacierette under cliff. Trace of bergschrund, pedestal rocks, Sharp-crested moraine. Appears tiny pond lies in back of crest.

11.1 Snow patch.

12 Avalanche catch basin. Tiny pond suggested at snout. Moraine?

4333

1 Small glacier? Lies in narrow, steep, small, shady cirque. Crevasses. Sharp moraine front.

2 Terminates in lakelet.

3 Ice pockets in narrow niche along Kern Ridge. Rock-mantle lower parts. Sharp-crested fronts.

3.1 Kern Ridge ice pocket. Has small moraine front.

4 Cliff ice accumulation. Dirty, talus-covered parts. Ice-filled chutes above. Talus spills into pond below.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

5 Milestone Mt. Glacier. Bergschrund, crevasses, dirty ice, pedestal rocks. Lower part rock mantled. Sharp-crested moraine. Discharge in three places from base of front.

5.1 Permanent snow in eroded joint.

5.2 Snow.

6 Ice pockets below Midway Mt. Largest has moraine, upper one has tiny moraine. One body with two fronts.

6.1 Ice pocket. Has moraine front.

6.2 Snow accumulation.

6.3 Snow patches.

7 Table Mt. glacier. Trace of bergschrund, crevasses, pedestal rocks, dirty ice, usual rock mantle. Moraine crest spills talus to basin floor. Discharge from front.

7.1 Small ice pocket. Small moraine, dumps into lake.

8 Caltech Peak's tiny glacierette. Cracks. Small moraine spills talus into lakelet below.

8.1 Snowin an eroded joint or niche.

8.2 Snow (lower chute) in joint or niche.

8.3 Snow (upper chute) in joint or niche.

8.4 Snow avalanche accumulation?

9 Lake Tulamyo snow ring ("Dangerous Glacier"). High vertical wall of snow calves off into lake. Lake sometimes frozen through the entire season.

10 Remnant glacier in shady niche in cirque on Mt. Russel. High ice cliffs, cracks. Ice calves off into lake.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

11 Mt. Russel's NW sheet of snow-ice. Thin? Tiny pond lies on older deflated moraine below.

12 Remnant Mt. Hale glacier. Bergschrund, pedestal rocks(?), rock mantle over lower areas. Moraine front terminates in lakelet.

4334

0.1 Avalanche snow accumulation. Small moraine.

0.2 Snow in chutes.

0.3 Snow accumulation.

1 Headwall hugger. Crevasses in upper ice area. Moraine terminates in tiny lake.

2 Howell Glacier. Cracks in upper area. Moraine front.

4411

1 Glacierette.

1.1 Drift snowfield on slope.

2 Glacierette. Traces of crevasses in headwall area.

2.1 Snow ice pocket. Possible crack in upper dark area.

2.2 Snow avalanche accumulation in bottom of shallow cirque.

4412

0.1 Ice pocket or tiny glacierette. Possible crack on upper area. May show thin moraine.

0.2 Snowdrift on slope.

4421

1 Glacierette(?) on N side of Leavitt Peak. Much dark rock mantle on ice. Front terminates in lakelet. Complex moraine.

2 Glacierette. Thin rock mantle in mid-part. Moraine front terminates in Dead Horse Lake.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

2.1 Snow patches and dirty ice pocket perched above and W of Deadhorse Lake.

3 Active rock glacier. Many loops, fronts. Terminates above Blue Canyon Lake.

3.1 Snow accumulation under steep slope.

4 Glacierette at head of cirque. Surface dirty. Moraine crest spills dark volcanic rocks onto glacial feature below.

5 Glacierette. Appears to have thin load of volcanic rock mantle. Moraine ridges, sharp front.

6 Tiny glacierette in cirque on N side of Kennedy Peak. Bold Moraine front.

6.1 Cluster of snow patches occupying clefts in rock.

6.2 Cluster of snow patches occupying clefts in rock.

7 Glacierette under volcanic headwall. Two shades of snow and ice. Fine-textured, dark end moraine.

7.1 Snow patch.

8 Snow ice pocket in volcanic cirque. Fine-textured moraine.

8.1 Snow pocket.

9 Glacierette(?)or ice pocket E side of Relief Peak. Several shades of snow. Dark volcanic rocks.

9.1 Snowfield.

9.2 Snowdrift lying in depression of volcanic-granitic contact.

9.3 Snow-filled, eroded joint in granite above Black Hawk Lake.

9.4 Snow accumulation in cleft. Small crevasses near top.

9.5 Snow-filled eroded joint in granite above Lewis Lakes.

9.6 Snow-filled eroded joint in granite above Lewis Lakes.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

9.7 Snowdrift lying in depression at volcanic-granitic contact.

9.8 Snow cornice on volcanic pendant atop granitic headwall.

9.9 Snow cornice on volcanic pendant atop granitic headwall.

9.10 Permanent snow or ice pocket. Several shades of snow lie under granitic headwall.

9.11 Snow accumulation under small granitic headwall.

9.12 Snowdrift N side of pass. Appears rather thick.

4431

0.1 Avalanche snow terminating in lake under N side of Saurian Crest.

0.2 Snowfield, forming nivation cirque?

1 Main glacier on Forsyth Peak. Trace of bergschrund in shadowy headwall area, area of dirty ice and rock mantle. Long, tapering moraine.

2 Western glacier on Forsyth Peak. In shady cirque, several shades of snow to ice.

4432

0.1 Snowdrift.

0.2 Snowfield, two shades of snow.

0.3 Snowfield, two shades of snow.

0.4 Avalanche snow accumulation fromsnow patches 0.5 and 0.6 below.

0.5 Snow patches under cirque headwall.

0.6 Snow patches under cirque headwall.

0.7 Snow lying on shelf under cliff.

1 Ice pocket in chute under col on Finger Peaks.

1.1 Snow in niche, E part of Finger Peaks.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

4433

0.1 Snow accumulation on slope.

1 Mostly cliff huggers on N side of Whorl Mt. Moraine.

2 Glacierette under ice-filled chute on Whorl Mt. Moraine crest.

2.1 Snow patch in niche under steep slope.

2.2 Oval-shaped snow body lies at the head of valley trough between Stanton Peak and Gray Butte. Snow appears to be deep and forming a nivation cirque.

2.3 Elongated snow patch on gentle slope above patch 2.4.

2.4 Elongated snow patch on gentle slope.

2.5 Snow patch on slope.

3 Small cirque glacier under Virginia Peak. Small lumpy moraine. High wall of snow terminates in lake.

3.1 Snow patch on gently-sloping plateau of Twin Peaks.

3.2 Snow patch on gently-sloping plateau of Twin Peaks.

4 Shallow glacierette? Lies in high sunny saddle.

5 Glacierette in cleft. Crack in headwall area. Lumpy moraine.

6 Snow ice under cliff.

7 Tiny cliff glacierette? Several shades of snow.

7.1 Snow-ice niche under Shepherd Crest.

7.2 Ice pocket.

8 Glacierette in cleft. Moraine crest with high front.

9 Glacierette lies at NW end of Shepherds Crest. Lumpy moraine.

9.1 Snow patch above Upper McCabe Lake.

9.2 Snow patches above Middle McCabe Lake.

9.3 Snow pockets in cirque above Lower McCabe Lake.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

4434

NOTE: To date only small ice or snow patches are proved in this basin. Phot coverage not sufficient at present to properly map features.

0.1 Snow occupies shallow niche-like cirque above Roosevelt Lake.

0.2 Snow patches W side of White Mt.

0.3 Snow patches above Skeleton Lake. Lower one terminates in lake.

0.4 Snow patches above Upper Young Lake.

0.5 Snow patches above Upper Young Lake.

4435

0.1 Ice pocket in nivation cirque. Feature noticed since 1945.

0.2 Snow or ice pocket lies above lake.

0.3 Snow or ice pocket.

0.4 Snow or ice pockets above Parker Pass Lake.

0.5 Snow or ice pocket.

0.6 Cluster of snow or ice pockets.

0.7 Cluster of snow or ice pockets SE of Helen Lake.

0.8 Snow accumulation wedged against lower part of E Lyell moraine. Several shades of snow.

1 Lyell Glacier, E lobe. Large glacier for this latitude. Bergschrund, crevasses, many pedestal rocks, rock-mantled snout area. Source of Tuolumne River.

2 Lyell Glacier, W Lobe. Large glacier for this latitude. Large central bergschrund, crevasses, several shades of snow, pedestal rocks, rock-mantled snout area. Ponds below well-developed, sharp-crested moraine.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

2.1 Many snow patches in the vicinity of Lyell Glaciers. Lie in joints, clefts, upon shelves, drift, etc.

2.2 Snowfield perched above W lobe of Lyell Glacier.

3 Snow-filled, eroded joint in granitic rocks.

4 Shallow glacierette or permanent snow. Terminates in upper lakelet. Tiny moraine-like accumulation.

5 McClure glacier. Bergschrund about 500 m across, crevasses, banded ice, rock-mantled lower third. Ice to W connected at headwall.

5.1 Part of the McClure Glacier system. A humped-up moraine lies below this ice. The western part of the upper McClure Glacier spills steep ice into this part.

6 Shallow glacierette. Several shades of snow, small moraine.

6.1 Dirty snow accumulation.

7 Dirty, rock-mantled look. Terminates in pond.

8 Associated with glacier 7. Terminates in pond.

9 Headwall ice pocket.

10 Mostly cliff hugger. Separate snow tongue below terminates in oblong lake.

10.1 Snowfield. Terminates at upper end of a lake.

10.2 Snow patch on N side of Amelia Earhart Peak.

10.3 Snow patch.

10.4 Snow patch E of Ireland Lake.

10.5 Snow patch.

10.6 Snow patch.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

10.7 Snow patch.

10.8 Snow patch S of Ireland Lake.

10.9 Snow patch.

10.10 Snow patch SE of Ireland Lake.

10.11 Snow patch SE of Ireland Lake.

10.12 Small snow patches at edge of Ireland Lake.

10.13 Snow patch.

10.14 Snow patch.

10.15 Snow patch.

10.16 Appears to be snow lying in joint.

10.17 Snow patch.

10.18 Snow patches lying in clefts, joints, and under walls.

10.19 Snow patches lying in clefts, joints, and under walls.

10.20 Snow patches lying in clefts, joints, and under walls.

4441

0.1 Snow patches in clefts.

1 Glacierette?

1.1 Snow under cliff.

2 Glacierette in cirque headwall. Moraine.

3 Headwall glacierette. Moraine.

3.1 Snow patches.

3.2 Glacierette-like headwall ice. Two shades of snow.

3.3 Ice pocket or tiny glacierette. Crack near head. Tiny moraine.

3.4 Snow patch below moraine crest of ice pocket 3.3 above.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

4 Dying cirque glacier. Large pond has formed on ice core in back of moraine crest. Snow ring below point.

5 Rock glacier. Front overrides snow field.

5.1 Dirty snow terminating in tiny pond.

5.2 Ice pocket terminates in lake. Two shades of snow.

5.3 Ice pocket terminates in lake. Two shades of snow.

5.4 Ice pocket above ice pockets 5.1 and 5.3. Appears to have some moraine accumulation.

5.5 Headwall snow patches.

6 Dying cliff glacierette. Moraine front. More cliff ice just to W.

6.1 Dirty headwall ice under same cirque headwall as glacier.

7 Dying cliff glacierette. Sag in back of sharp crest.

7.1 Snow accumulation shelf.

7.2 Headwall snow patches.

7.3 Snow patches.

7.4 Snow patch under peak.

7.5 Snow patch under peak.

7.6 Snow patch under peak.

7.7 Snow patches lying in S facing cirque at the head of Hutching Creek.

8 Cliff ice on ledge under headwall. Dirty, several shades of snow. Moraine.

9 Dying glacier under Mt. Florence. Dirty ice, much rock cover, small cracks in headwall area. Big moraine front spills to floor.

9.1 Snow patches and accumulations in cirque to SW of Mt. Lyell.

9.2 Snow patches and accumulations in cirque to SW of Mt. Lyell.

APPENDIX 1.--*Description of items in tables 1 and* 2--Continued

9.3 Snow patches and accumulations in cirque to SW of Mt. Lyell.

9.4 Snow patches and accumulations in cirque to SW of Mt. Lyell.

10 Small glacier. Several cracks, several shades of snow. Bold moraine front. Ponds at base.

10.1 Cluster of snow patches lying in cirque S of Mt. Lyell.

10.2 Snow patch in joint.

10.3 Snow in cleft.

10.4 Snow patch.

10.5 Ice/rock pocket. Has moraine.

10.6 Partially rock-covered snow pocket terminating in lake.

10.7 Snow accumulation in niche above lake.

10.8 Snow patch, result of avalanche chute.

11 Snowfield(?) perched high on slope.

11.1 Snow patch cluster. Some show several shades of snow.

11.2 Snow patch in cleft.

11.3 Headwall snow patch.

11.4 Snow patch.

11.5 Perched snow patch.

11.6 Snow patches and headwall ice pocket.

11.7 Snow accumulation in joint.

11.8 Ice pocket under steep, shady headwall of peak. Has crack.

12 Small cirque glacier. Cracks in upper ice, much rock and dirty ice. Bold front spills talus to basin floor.

12.1 Headwall ice pockets just W of glacier 12. Cracks in upper shady chute area, several shades of ice. Moraine.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

12.2 Small ice pockets under steep, shady headwall just E of
12.3 Foerster Peak. Several shades of snow-ice. Several small
12.4 arcuate end moraine.

13 Forester Peak glacierette, associated with cluster of headwall ice pockets. Moraine with double arcuate crest and steep front.

14 Triple Divide Peak glacierette under cirque headwall. Has two parts, each with its own arcuate end moraine with steep front.

14.1 Ice pocket lying in niche under same headwall area as Triple Divide Peak Glacier. Appears to have small moraine.

15 Ice pocket in niche in cirque E of Merced Peak.

15.1 Snow patches and tiny ice pockets lying under headwall ridge of Ottoway Peak.

15.2 Snowfield? Terminates in pond.

16 Tiny glacierette. Steep headwall, moraines.

16.1 Ice pockets in niche, SE cirque of Gray Peak. Terminates in lake.

16.2 Ice pocket in joint-niche, part of NE cirque of Gray Peak.

16.3 Snow accumulation under headwall.

17 Under steep headwall. Moriane.

17.1 Headwall snow under N side Mt. Clark.

17.2 Headwall snow under N side Mt. Clark.

4442

1 J. Muir's first glacier seen in Sierra. Trace of bergschrund, cracks. Has moraine with sharp crest.

4451

0.1 Snow patches lying in Long Mt. cirque.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

0.2 Snow patch.

0.3 Snow patch.

0.4 Snow or ice pocket. Appears deep.

0.5 Snow patches below headwall.

0.6 Snowfield terminating in lakelet.

1 Shallow glacierette.

1.1 Cliff ice. Several shades of snow. Rocky accumulation.

2 Shallow ice.

2.1 Snowfield perched above unmapped lake.

3 Tiny glacierette under small cirque headwall. Several shades of snow. Tiny crested moraine.

3.1 Snow accumulation.

3.2 Snow in narrow niche.

4 Two glaciers, one perched above the other, in S side of cirque. Upper glacier lies under steep headwall and appears to overrun lower glacier. Has sharp moraine. Lower glacier has several shades of snow. Terminates in lake, cracks where calving off. Moraine material.

4.1

4.2 Snow patches lying on shelves in cirque.

4.3 Snow ice pocket which extends nearly to top of headwall.

5 Glacierette in cirque. Tiny moraine.

5.1 Snow patches.

5.2 Snowdrifts and snow patches.

5.3 Snow patch.

5.4 Snow patch.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

6 Shallow snowfield? Rounded moraine.

7 Snowfield perched high in shallow cirque. Two other shallow bodies nearby.

7.1 Snowfield on top of gently sloping saddle.

7.2 Snowfield on top of gently sloping saddle.

7.3 Snowfield on top of gently sloping saddle.

7.4 Cluster of snow patches lying in clefts, joints, etc.

7.5 Snow patches.

8 Glacier in shady cirque NW side of Banner Peak. Small bergschrund, few crevasses, several shades of snow. Sharp-crested end moraine.

9 Main glacier on Mt. Ritter. Complex bergschrund system, crevasses, several shades of snow. Terminates at edge of Lake Catherine. Moraine material at crest of divide.

9.1 Cluster of snow patches and ice pockets lying in clefts, joints, etc.

9.2 Snow patches.

10 Snow pocket on shelf above lake.

10.1 Snow or ice pocket lying above glacier 10, under cliff.

10.2 Snow lying below moraine of large glacier. Terminates in lake.

10.3 Snow in cleft, terminates in lake.

10.4 Two snow patches lying under cliff, probably formed along a joint.

10.5 Snow patch.

11 Fairly large glacier. Bergschrund, banded and crevassed ice. Small moraine.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

11.1 Cluster of snow or ice pockets lying under headwall of a shallow cirque.

12 Niche in volcanic rocks.

12.1 Snow patches at base of shady cirque wall.

12.2 Snowdrifts.

12.3 Snow patch occupying an eroded joint.

12.4 Snow patches and ponds lying in back of old end moraine.

13 Glacierette at head of cirque. Steep, shady headwall, wrinkles or cracks. Sharp-crested moraine.

14 Glacierette(?) high in narrow cirque. Terminates in narrow end of lakelet.

14.1 Snow patch lying in shallow saddle.

14.2 Snow patches lying in niche of a cirque.

14.3 Ice pocket under same headwall as snow patch 14.4. Several shades of snow ice. Tiny moraine-like accumulation into Iron Lake.

14.4 Snow patch under headwall. Several shades of snow, tiny cracks.

14.5 Snow or ice pocket under tiny cirque headwall. Terminates in a lakelet.

14.6 Snow patches.

4452

0.1 Snow accumulation.

0.2 Snow patches under headwall.

0.3 Snow lying in avalanche chutes (eroded joint).

0.4 Tiny glacierette-like feature with crevasses. Small moraine.

0.5 Snow patch under headwall.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

0.6 Snow or ice pocket lying on shelf under headwall. Supplied from snow chute occupying eroded joint.

1 Long, narrow glacierette in slot-like cirque. Two shades of snow. Some moraine material.

2 Glacierette in small cirque. Small crack near headwall. Moraine and snow terminate in unmapped lake.

2.1 Small ice pocket with snow-filled chute.

2.2 Snow patches.

2.3 Snow under headwall.

2.4 Tiny ice pocket associated with snow patch 2.3. Small moraine?

2.5 Snow patch lying above small moraine material in cirque above Upper Beck Lake.

2.6 Snow pocket above small moraine in cirque above Upper Beck Lake.

2.7 Snow patch on steep talus slope.

2.8 Snow in niche or narrow cirque.

2.9 Snow in niche or narrow cirque.

3 Three main ice bodies. Ice-filled chutes, several cracks, several shades of snow. Undulating end moraine, spills over into Deadhorse Lake.

3.1 Snow ice pocket lying below moraine of glacier 3, and against shady cliff. Several shades of snow.

4 Glacierette in chute. Cracks across headwall, several shades of snow. End moraine. Snow patches below moraine on both sides.

4.1 Snow patch under headwall.

5 Glacierette. Several shades of snow. Arcuate moraine accumulation.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

5.1 Snow chute.

6 Glacier above Cecil Lake. Bergschrund cracks, several shades of snow. Sharp-crested, sinuous end moraine terminating on slope above Cecil Lake.

6.1 Snow patch.

6.2 Snow patch.

6.3 Snow patches lying under cliff.

6.4 Snowdrift in saddle.

6.5 Snow patch below saddle.

7 Glacier in niche in volcanic rocks. Bergschrund. End moraine.

7.1 Snow ice pockets, some appearing deep, lying in clefts and along cirque sidewall.

7.2 Snowfield at head of narrow cirque.

8 Glacierette formed from snow spillover from the glacier above it. Several shades of snow. Moraine spills into Iceberg Lake.

9 Glacier under minoret. Bergschrund in S part which rests deep in a niche, several shades of snow ice. Moraine.

10 Snow ice pocket under cliff.

10.1 Snow lying on shelf under cirque sidewall.

11 Glacier perched in high cirque. Traces of cracks, several shades of snow. Some moraine, spills over cliff.

12 Glacierette. Cracks in upper ice area. Some debris nearly covers a narrow central part. A small tongue descends from the N part.

13 Glacierette? Looks thin, several shades of snow. Small moraine.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

14 Glacierette in high shallow cirque. Several shades of snow. Rounded end moraine.

15 Glacier W of Lake Ediza. Narrow bergschrund, several shades of snow. Moraine.

15.1 Shallow snow covering moraine front of glacier 15.

16 Tiny snow-covered glacierette or snowfield. Several shades of snow.

16.1 Snow accumulation in ice chute.

16.2 Ice patch, dependent and barely separated from glacier 17. Lies above common end moraine of that glacier.

16.3 Snow below moraine.

17 Large glacier in cirque SE of Mt. Ritter. Bergschrund, crevasses, banded glacial ice, moraine. Includes lower ice patches. Lower two ice bodies with moraine almost disconnected from glacier.

18 Perched snowfield SSE side of Mt. Ritter.

18.1 Crevasses, bare ice and snow shades. Possibly buried ice.

19 High, perched glacier in E cirque between Banner Peak and Mt. Ritter. Chute has many cracks in ice. Trace of bergschrund. Moraine.

19.1 Snow in cleft.

19.2 Snow lying in saddle of ridge crest.

20 Small cliff glacierette under steep, shady headwall. Cracks in snow. Moraine.

20.1 Snowfield lying in cleft under saddle.

21 Glacier in niche on Banner Peak. Bergschrund, crevasses, several shades of snow. Arcuate moraine.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

21.1 Snow patch under cliff.

21.2 Snow patch under cliff.

22 Glacier on N side Banner Peak. Many cracks above and below wide bergschrund, several wide crevasses, several shades of snow. Sinuous, sharp-crested moraine.

22.1 Snow accumulation from glacier 22.

22.2 Snow in cleft.

23 Shallow glacierette. Two parts barely connected, trace of bergschrund. Tiny moraine.

23.1 Snow accumulation in cleft below saddle.

23.2 Snow accumulation in saddle.

23.3 Snow patch.

23.4 Snow patch.

23.5 Ice pocket with long, slender snow-filled chute.

24 Cliff glacier on two levels. Small moraine.

24.1 Snow in cleft.

24.2 Snow accumulation. Receives snow-rock spillover from glacier #24.

24.3 Snow patches under headwall.

24.4 Snow accumulation in eroded joint?

4453

1 Glacierette with dirty ice and snow. Wide, ice-filled chute, pedestal rock(?), cracks at base of headwall. Long tapering snout with low, step front.

1.1 Snow patch in niche.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

2 Glacierette on N side of peak. Nearly squared off front. Discharge from base.

3 Glacier with dirty ice and snow, several ice-filled chutes, main chute reaches to top of crest. Few cracks, pedestal rocks. Glacier has two snouts with steep fronts and the W snout terminates in Franklin Lake.

4 Glacierette under shady cirque headwall. Cracks, pedestal rocks. Sharply-crested, pointed arcuate moraine, much deflated moraine below.

4.1 Snow ice accumulation near ridge crest. Nivation cirque?

4.2 Ice pocket in niche.

4.3 Ice pocket in niche.

4.4 Dirty banded snow patch.

5 Cornice and ice-filled chute supply glacierette. Cracks, several shades of snow and ice. Moraine.

6 Tiny glacierette hugging headwall. Small moraine.

7 Small cirque glacierette. Cracks. Moraine narrows at terminus.

8 Izaak Walton Glacier. Cirque glacier. Bergschrund, crevasses, pedestal rocks. Discharge from crest of hig moraine.

9 Izaak Walton W. Glacier. Bergschrund, cracks near headwall. Moraine crest.

10 Glacierette, cracks near headwall. Moraine crest.

10.1 Snow or ice pocket. Tiny moraine?

10.2 Ice or snow accumulation under the north headwall of Graveyard Peak. Small moraine.

10.3 Small snow accumulation lies under headwall. Possible tiny moraine.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

10.4 Snow under chute. Tiny moraines.

11 Cliff snow accumulation or ice pockets under steep headwall. Two small moraine snouts.

12 Snow or ice pocket, may be small glacierette. Several chutes, inflated body crest. Tall front spills into narrow pond below.

12.1 Ice pocket, inflated look in lower rock-mantled area. Sharp crest and high front.

4454

0.1 Snow or ice pocket. Tiny moraine?

0.2 Snow accumulation. Lumpy deflated moraine below.

1 Glacierette in narrow cirque on N side of Mt. Hopkins. Ice-filled chute, cracks, mantle, tongue-like snout.

2 Tiny glacierette. Low, sharp-crested moraine.

2.1 Small, dirty ice pockets. Low moraines below.

3 Ice pocket in cleft above Neelle Lake. Moraine.

3.1 Snow patch in joint or cleft.

4 Lies on N side of Mt. Mills. Bergschrund cuts ice-filled chutes, banded glacial ice, cracks, pedestal rocks. Rock-mantled snout with arcuate looping ridges. Steep front. Pond on surface. Two discharge streams from base of front.

5 Mt. Mills' NW glacier to W of main glacier. Bergschrund. Sharp-crested moraine.

6 Ice pocket in small shady cirque, SSW of Upper Snow Lake. Several shades of snow.

7 Dying glacierette, occupies steep shady cirque. Much rock-mantle, steep front.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

8 Glacierette in cirque. Cracks. Lumpy moraine.

8.1 Snow patch accumulations under steep slope.

9 Glacier with bergschrund? Much inflated moraine with steep front.

10 Small, dying, rock-mantled glacierette in cirque on NW side of Mt. Abbot. Long curving rock glacier tongue. Shady ice in headwall. Discharge from base of steep front.

10.1 Snow patches.

11 Above Upper Mills Creek Lake. Large bergschrund; pedestal rocks, rock-mantled, low front.

12 Occupies cirque on NW side of Mt. Gabb. Head of Mills Creek. Pedestal rocks; small bergschrund; mantle; high, prominent front. Discharge from crest.

12.1 Possible bergschrund, dirty ice behind sharply-crested, steep-fronted moraine.

12.2 Snow patch accumulations lie under headwall cliff.

12.3 Ice pocket with small front terminates into lakelet below. Partial snow ring in shallow moat.

13 Glacierette above Mist Lake. Bergschrund or cracks; dirty, rock-mantled mid-section. Sinuous, sharp-crested moraine crest. High, steep front.

13.1 Two ice pockets behind sharply-crested moraines.

14 Small glacierette occupies cirque on E side of Recess Peak. Sharp-crested moraine front. Pond at base.

15 Ice pocket under steep wall NE side of Recess Peak. Same cirque as glacier to E.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

16 Cliff glacierette at head of First Recess. Possible cracks near headwall. Sharp-crested moraine.

16.1 Cliff ice pocket with dirty ice and possible cracks near the headwall. Complex moraine front.

17 Cliff-hugging ice under NW side of peak. Cracks. Dirty, rock-mantled ice with crack near headwall.

4455

0.1 Snow patches perched at head of fluted chutes. Snow patch below.

0.2 Cliff or headwall ice pockets behind small moraine. Crack at head of largest ice pocket.

0.3 Snow ice in chute. Terminates as snow wall in lake.

0.4 Ice pockets behind lobate front terminating in upper Lake Italy.

0.6 Shallow snow or ice accumulation on slope.

0.7 Rocky ice pocket with inflated talus and front terminating in Jumble Lake.

0.8 Snow accumulation under steep headwall.

0.9 Snow patches under headwall.

0.10 Snow patches.

0.11 Ice pocket behind small moraine front.

1.11 Ice pocket in cleft above Upper Seven Gables Lake. Tiny, lumpy, moraine-like accumulation.

2 Small cliff glacierette in Seven Gables cirque. Associated cliff ice accumulation extends west for 600 m. Moraine with steep front.

2.1 Headwall hugging cliff ice. Cracks near headwall.

2.2 Snow or ice accumulation in niches.

2.3 Snow or ice accumulation in niches.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

2.4 Snow or ice accumulation occupying eroded joints.

2.5 Snow or ice accumulation under steep headwall.

2.6 Ice pocket under steep headwall. Possibly tiny glacierette with moraine crest and front. Snow-filled chutes.

4456

1 Ice pocket in cleft on N side of Gemini Peak. Snow rings. Lumpy, fronted moraine spills into the narrow lakelet below.

1.1 Tiny remnant glacierette hugging steep headwall behind long sharply-crested moraine. Crack in headwall ice.

1.2 Snow patches under steep headwall.

2 Small glacierette in cleft on N side of Royce Peak. Cracks, pedestal rocks(?). Rock mantle, front spills into Royce Lake.

2.1 Snow accumulation under headwall.

2.2 Snow in joints under col.

3 Tiny glacierette or ice pocket. Cracks, sharp-crested moraine spills front talus into Upper Royce Lake.

3.1 Ice pocket.

3.2 Snow patch in possible eroded joint.

3.3 Snow streak in joint.

3.4 Snow lies in a saddle perched high on S side of Four Gables.

3.5 Snow under chutes N base of peak. Tiny moraine.

4 Ice pocket or tiny glacierette lies just NE of the Keyhold Glacier. Rocky mantle, pond on surface.

5 Keyhole Glacier, lies on N side of "The Keyhole". Banded ice, steep, some pedestal rocks.

5.1 Snow patch below Keyhole Glacier.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

5.2 Snow or ice pocket. Small moraine.

5.3 Snow patches at head of Muriel Lake.

5.4 Ice pocket. Moraine.

6 Ice in chutes. Small fronts, inflated.

6.1 Ice in chute.

7 Geothe Glacier. Occupies large cirque on N side of Mt. Goethe. Many spectacular, inclined, ice-filled chutes cut a huge bergschrund. Crevasses, many pedestal rocks. Much rock mantle, looping ridges, surface ponds, high, steep front.

8 Thin bergschrund cuts ice-filled chute. Steep, pedestal rocks, high wall of vertical ice, crevasses. Bergs calve into water.

8.1 Snow patch in lower E moat of glacier 9.

8.2 Snow patch E side of glacier 9.

9 Small, narrow, step glacier S of Paine Lake on the Glacier Divide. Small bergschrund and cracks cut ice-filled chute, pedestal rocks. Sharp crest, mantle, steep front spills into the lake.

10 Glacier high on Glacier Divide above Paine Lake, occupies perched cirque. Cracks cut ice-filled chute. Rocky mantle, pond. Very sharp crest. Discharge from near crest of moraine.

11 Located on Glacier Divide above Packsaddle Lake. Small bergschrund cuts ice-filled chutes. Rock mantle, pedestal rocks. Sharp-crested, sinuous moraine. Talus spill forms cone below.

12 Thinly-proportioned glacier occupies a niche on Glacier Divide, SSW of Packsaddle Lake. Two levels of bergschrund cracks, rock mantle, pedestal rocks. Sharp crest spills talus to basin below.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

13 Occupies cirque on Glacier Divide, SSW of Packsaddle Lake. Wide bergschrund, banded ice, pedestal rocks, usual mantle. Sharp front butts against lower side of the glacier to the E.

14 Ice pocket or tiny glacierette. Has lumpy moraine accumulation.

14.1 Snow patch accumlations under cliff. Associated with glacier #14.

15 Bergschrund cuts several ice-filled shutes, banded ice, pedestal rocks, steep headwall. Two main snouts. Talus to basin floor.

15.1 Ice pocket just W of glacier 15. Connected at the headwall, but have separate snouts. Trace of a bergschrund, cracks in upper dirty ice, much rock mantle. Moraine with steep front.

16 Western-most glacier above Lobe Lakes. Headwall cracks, horseshow-shaped moraine.

17 Cirque glacier above Honeymoon Lake. Trace of bergschrund, cracks, snow-filled chute, pedestal rocks. Sinuous moraine crest.

18 Long, narrow glacier in cirque above Ramona Lake. Bergschrund cuts ice-filled chute area. Ponds with icebergs form on surface, banded ice, pedestal rocks. Long, ice-cored, looping rock-mantled snout. Narrow steep front.

18.1 Cliff-hugging snow or ice patches.

19 Remnant Glacier. Small, lumpy accumulation occupies only part of cirque headwall.

19.1 Small ice pockets in cliff.

19.2 Ice pocket in narrow cirque.

4457

0.1 Snow accumulations under fluted cliff. Talus accumulation.

0.2 Snow patches in cirque.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

0.3 Ice pocket or tiny glacierette in same cirque as snow patch 0.2. Three shades of snow to ice. Rounded moraine surrounds entire feature.

0.4 Snow patches lie at base of cliff, onto edge of large lake S of the Keyhole.

0.5 Snow accumulations under cliff high above large lake just W of Mt. Lamarck.

0.6 Snow patch lies under cliff just W of feature 0.6. Several cracks seen.

0.7 Snow patches under chute and cliff. Moraine front which terminates in lake W of Mt. Lamarck.

0.8 Long snow accumulations lie in depressions and saddles. Lower one appears fairly deep. Several shades of snow.

1 Glacier has a huge, ice-filled chute cut by a bergschrund. Banded ice. Sharp-crested moraine. Both parts of Darwin Glacier may be barely connected interstitial ice.

2 Main lobe of Darwin Glacier. High, ice-filled chute, large bergschrund, well-banded ice, pedestal rocks. Discharge from crest of sharp-crested arcuate moraine. Talus spills to basin floor.

3 Occupies cirque on N side of Mt. Mendel. Wide open bergschrund cuts a large ice-filled chute. Banded ice, pedestal rocks, rock mantle. Discharge from crest of tongue-like moraine.

3.1 Snow accumulation. Tiny moraine.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

3.2 Snow streaks in joint.

3.3 Snow patches. Some moraine material.

3.4 Snow accumulation.

4 Glacierette on SW side of Mt. Wallace. Snout terminates in lake. Inflated, steep front. Nearby ice-filled chute.

4.1 Snow-ice part of glacier 4.

4.2 Snow in narrow chute.

5 Well-formed glacier on Mt. Fiske. Wide bergschrund, banded ice, pedestal rocks. Arcuate-shaped moraine front spills talus into the side of lake.

5.1 Snow patch at moraine front area of glacier.

5.2 Snow patches under cliff.

5.3 Snow patches in cirque just E of glacier 6.

6 Bergschrund cuts ice-filled chutes. Steep, bare ice, pedestal rocks. Arcuate front terminates in the lake below. Detached snow body just to the E.

6.1 Tiny ice pocket under Mt. Huxley. Cracks in upper ice, partial snow ring in moat. Sharp moraine crest.

7 Ice-filled chute on N side of Mt. Huxley. Thick ice-cored, inflated talus front, lobate. Moraine.

7.1 Snow patches.

8 Glacier in small niche NW side of Mt. Solomons. Sharp-crested moraine.

8.1 Snow streaks or patches.

8.2 Upper ice pocket above Wanda Lake.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

9 Shallow ice pocket and some snow patches lie in shallow cirque just S of Wanda Lake. Two separate small fronts. Much rock mantle over dirty, gray ice and snow.

9.1 Snow in clefts just E of Goddard Glacier.

9.2 Snow patch in cirque.

10 Dirty, rock-covered ice pocket and ice chute on NE side of Mt. McGee. Detached from the main glacier. Sharp-crested moraine.

11 Mt. McGee Glacier. Large bergschrund cuts ice-filled chute. Crevasses, banded ice in lower bare ice area. Small pond in depression between the two snouts. Sinuous sharp-crested moraine spills talus to the basin floor.

12 Mt. McGee W Glacier. Cracks in upper headwall. Fine-textured dark rock mantle.

13 Peter Peak Glacier. Dying glacier(?) occupies shady cirque and shady chutes. Fine-textured rock mantle. Some cracks in ice, ice-filled chutes(?). Squared-off steep front spills talus into the pont at base. Older, deflated moraines below.

13.1 Small ice or snow pocket. Tiny moraine?

14 Glacierette in niche, upper ice in shadow. Fine-textured rocks. Long, steep front.

15 Small headwall glacierette. Several shades of snow. Fine-textured front merges with the ice pocket to the W.

16 Ice pocket under shady chute. Cracks in ice moraine.

16.1 Ice pocket in small shady cleft. Cracks in upper ice, some fine-textured rock mantles the ice or snow. Moraine crest, long front terminates in lake below.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

4458

1 Goddard Glacier. Main glacier on N side of Goddard Divide. Huge, undulating bergschrund cuts ice-filled chutes, banded ice, crevasses, pedestal rocks. Sinuous, sharp-crested moraine. Many tiny discharge streams issue from the base of the moraine.

1.1 Snow accumulations below moraine of Goddard Glacier.

1.2 Perched snow above Goddard Glacier.

2 Fairly large glacier S of Upper Dans Lake. Bergschrund cuts ice-filled chutes, banded ice, pedestal rocks, sharp-crested moraine of darker, fine-textured rocks.

3 Glacierette(?) occupies niche on E side of peak. Tiny, moraine-like accumulation.

3.1 Snow in niche.

3.2 Snow or ice pocket in narrow cirque.

4 Tiny glacierette or ice pocket. Lies in niche on E side of peak. Small moraine.

5 Glacierette heads in summit cornice. Dirty, fine-textured mantle. Sharp-crested moraine spills tapering talus nearly to edge of lake below.

6 Glacier on NW side of Mt. Goddard. Wide bergschrund cuts ice-filled chutes, crevasses, banded ice, pedestal rocks, dark mantle, pond on surface. Many low, arcuate morainal ridges. Low, steep front.

6.1 Snow streaks and talus cone in eroded slot.

6.2 Snow accumulation in cleft above Martha Lake. Cracks, vertical wall of snow or ice, approximately 6 m. Terminates in lake.

6.3 Tiny snow accumulation. Small moraine.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

6.4 Snow patch in niche due S of Martha Lake.

6.5 Snow or ice pocket in small cirque under Mt. Reinstein.

6.6 Snow patch.

6.7 Snow patch.

6.8 Small ice pockets(?) lie under steep headwall.

6.9 Snow in niche near Hell For Sure Pass. Appears to have small accumulation below.

6.10 Snow patch.

7 Cliff ice pockets.

8 Small, stubby glacierette in cirque under peak. Lumpy, inflated body.

8.1 Tiny headwall or cliff ice pocket under steep headwall. May be tiny glacierette with moraine.

4560

0.1 Snow patches lying on slope in clefts and against joints on NW slope of Jacks Peak.

0.2 Snow patches under cliff.

0.3 Snow patches, probably shallow, NE side of Crystal Range above Clyde Lake.

0.4 Snow patches lying on slope, joints, and clefts.

0.5 Snow patches in clefts above Lake Doris.

0.6 Headwall snow or ice pocket. Small headwall crack?
Moraine has snow patch and possibly small trees.

0.7 Snow or ice pocket under same headwall as snow pocket 0.6.

0.8 Snow pockets under same headwall as snow pockets 0.6 and 0.7.

0.9 Snow patch lying in shallow cirque above Leland Lakes.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

4561

0.1 Snow patches under cirque wall of Mt. Price.

1 Glacierette near top of narrow cirque on W side of Pyramid Peak.

4562

0.1 Snow or ice pocket in cleft on side of Pyramid Peak. Two shades of snow and small moraine accumulation.

0.2 Snowfield in shallow cirque between pyramid Peak and Peak 9686. Older shade of snow with fresh. Moraine accumulation.

0.3 Snow lying in cleft above a joint.

0.4 Snow in shady cleft.

0.5 Snow patch lying under steep headwall of the Crystal Range.

0.6 Small ice pockets above pond under Crystal Range headwall. Shallow arcuate end moraine.

0.7 Small ice under same steep, shady headwall as ice pocket 0.6.

0.8 headwall ice pocket perched high in cleft under shady wall. Rock accumulation just below ice or snow lies below.

0.9

0.10 Upper part of snowfield, in cirque.

1 Few headwall cracks. Moraine lies under steep, shady headwall.

2 Lies under steep headwall.

2.1 Snow patch probably connected to glacier 2 in shadowy headwall area.

2.2 Snow patch occupies joint and spreads out into ledges.

2.3 Headwall snow or ice pockets lying under same shady, steep headwall as snow patches 2.1 and 2.2.

APPENDIX 1.--*Description of items in tables 1 and 2*--Continued

4563

0.1

1 Glacierette under steep headwall in highest part of cirque. Trace of bergschrund-like crack in shadowy area moraine.

2 Fairly deep glacier N side of a saddle.

2.1 Cluster of snow patches.

2.2 Drift snow in niche.

2.3 Snow in avalanche chute.

2.4 Small cirque snow or ice pocket. Has a small arcuate moraine of Neoglacial age.

2.5 Snow in niche.

2.6 Drift snow N side of saddle.

APPENDIX 2.--*Glacier inventory numbering systems*

U.S. Geological Survey
(Table 1A)

Major basin	River	Basin number	Glacier number	ICSI identification number
North Lahontan	East Carson	4111	1	US2L11101004
		4111	2	US2L11102004
		4111	3	US2L11103004
		4111	4	US2L11104004
		4112	1	US2L11201004
	West Walker	4121	1	US2L12101004
		4121	2	US2L12102004
		4121	3	US2L12103004
		4121	4	US2L12104004
		4121	5	US2L12105004
		4121	6	US2L12106004
		4121	7	US2L12107004
		4122	1	US2L12201004
		4122	2	US2L12202004
		4122	3	US2L12203004
	East Walker	4131	1	US2L13101004
		4131	2	US2L13102004
		4131	3	US2L13103004
		4131	4	US2L13104004
		4132	1	US2L13201004
		4132	2	US2L13202004
		4132	3	US2L13203004
		4132	4	US2L13204004
		4132	5	US2L13205004
		4132	6	US2L13206004
		4132	7	US2L13207004
		4132	8	US2L13208004
		4132	9	US2L13209004
		4132	10	US2L13210004
		4132	11	US2L13211004
		4132	12	US2L13212004
		4132	13	US2L13213004
		4133	1	US2L13301004
South Lahontan	Owens	4211	1	US2L21101004
		4211	2	US2L21102004
		4211	3	US2L21103004
		4211	4	US2L21104004
		4211	5	US2L21105004

APPENDIX 2.--*Glacier inventory numbering systems*--Continued

U.S. Geological Survey
(Table 1A)

Major basin	River	Basin number	Glacier number	ICSI identification number
South Lahontan (Cont.)	Owens	4211	6	US2L21106004
		4211	7	US2L21107004
		4211	8	US2L21108004
		4211	9	US2L21109004
		4211	10	US2L21110004
		4211	11	US2L21111004
		4211	12	US2L21112004
		4211	13	US2L21113004
		4211	14	US2L21114004
		4212	1	US2L21201004
		4212	2	US2L21202004
		4212	3	US2L21203004
		4212	4	US2L21204004
		4212	5	US2L21205004
		4212	6	US2L21206004
		4212	7	US2L21207004
		4213	1	US2L21301004
		4213	2	US2L21302004
		4213	3	US2L21303004
		4213	4	US2L21304004
		4213	5	US2L21305004
		4213	6	US2L21306004
		4213	7	US2L21307004
		4213	8	US2L21308004
		4213	9	US2L21309004
		4213	10	US2L21310004
		4213	11	US2L21311004
		4213	12	US2L21312004
		4213	13	US2L21313004
		4213	14	US2L21314004
		4214	1	US2L21401004
		4214	2	US2L21402004
		4214	3	US2L21403004
		4214	4	US2L21404004
		4214	5	US2L21405004

APPENDIX 2.--*Glacier inventory numbering systems*--Contiued

U.S. Geological Survey
(Table 1A)

Major basin	River	Basin number	Glacier number	ICSI identification number
South Lahontan (Cont.)	Owens	4214	6	US2L21406004
		4214	7	US2L21407004
		4214	8	US2L21408004
		4214	9	US2L21409004
		4214	10	US2L21410004
		4214	11	US2L21411004
		4214	12	IS2:21412004
		4214	13	US2L21413004
		4214	14	US2L21414004
		4214	15	US2L21415004
		4214	16	US2L21416004
		4215	1	US2L21501004
		4215	2	US2L21502004
		4215	3	US2L21503004
		4215	4	US2L21504004
		4215	5	US2L21505004
		4215	6	US2L21506004
		4215	7	US2L21507004
		4215	8	US2L21508004
		4215	9	US2L21509004
		4215	10	US2L21510004
		4215	11	US2L21511004
		4215	12	US2L21512004
		4215	13	US2L21513004
		4215	14	US2L21514004
		4215	15	US2L21515004
		4215	16	US2L21516004
		4215	17	US2L21517004
		4215	18	US2L21518004
		4215	19	US2L21519004
		4215	20	US2L21520004
		4215	21	US2L21521004
		4215	22	US2L21522004
		4215	23	US2L21523004
		4215	24	US2L21524004

APPENDIX 2.--*Glacier inventory numbering systems*--Continued

U.S. Geological Survey
(Table 1A)

Major basin	River	Basin number	Glacier number	ICSI identification number
South Lahontan (Cont.)	Owens	4215	25	US2L21525004
		4215	26	US2L21526004
		4215	27	US2L21527004
		4215	28	US2L21528004
		4215	29	US2L21529004
		4215	30	US2L21530004
		4215	31	US2L21531004
		4216	1	US2L21601004
		4216	2	US2L21602004
		4216	3	US2L21603004
		4216	4	US2L21604004
		4216	5	US2L21605004
		4216	6	US2L21606004
		4216	7	US2L21607004
		4216	8	US2L21608004
		4216	9	US2L21609004
		4216	10	US2L21610004
		4216	11	US2L21611004
		4216	12	US2L21612004
		4216	13	US2L21613004
		4216	14	US2L21614004
		4216	15	US2L21615004
		4216	16	US2L21616004
		4216	17	US2L21617004
		4217	1	US2L21701004
		4217	2	US2L21702004
		4217	3	US2L21703004
		4217	4	US2L21704004
		4217	5	US2L21705004
		4217	6	US2L21706004
		4217	7	US2L21707004
		4217	8	US2L21708004
		4217	9	US2L21709004
		4217	10	US2L21710004
		4217	11	US2L21711004

APPENDIX 2.--*Glacier inventory numbering systems*--Continued

U.S. Geological Survey
(Table 1A)

Major basin	River	Basin number	Glacier number	ICSI identification number
South Lahontan (Cont.)	Owens	4217	12	US2L21712004
		4217	13	US2L21713004
		4217	14	US2L21714004
		4217	15	US2L21715004
		4217	16	US2L21716004
		4217	17	US2L21717004
		4217	18	US2L21718004
		4217	19	US2L21719004
		4217	20	US2L21720004
		4217	21	US2L21721004
		4217	22	US2L21722004
		4217	23	US2L21723004
		4217	24	US2L21724004
		4217	25	US2L21725004
	Mono	4221	1	US2L22101004
		4221	2	US2L22102004
		4221	3	US2L22103004
		4221	4	US2L22104004
		4221	5	US2L22105004
		4221	6	US2L22106004
		4221	7	US2L22107004
		4221	8	US2L22108004
		4221	9	US2L22109004
		4221	10	US2L22110004
		4221	11	US2L22111004
		4221	12	US2L22112004
		4221	13	US2L22113004
		4221	14	US2L22114004
		4221	15	US2L22115004
		4222	1	US2L22201004
		4222	2	US2L22202004
		4222	3	US2L22203004
		4222	4	US2L22204004
		4222	5	US2L22205004

APPENDIX 2.--*Glacier inventory numbering systems*--Continued

U.S. Geological Survey
(Table 1A)

Major basin	River	Basin number	Glacier number	ICSI identification number
South Lahontan (Cont.)	Mono	4222	6	US2L22206004
		4223	1	US2L22301004
		4223	2	US2L22302004
		4223	3	US2L22303004
		4223	4	US2L22304004
		4223	5	US2L22305004
		4223	6	US2L22306004
		4223	7	US2L22307004
		4223	8	US2L22308004
		4223	9	US2L22309004
		4223	10	US2L22310004
		4223	11	US2L22311004
		4223	12	US2L22312004
		4223	13	US2L22313004
		4223	14	US2L22314004
		4223	15	US2L22315004
		4224	1	US2L22401004
		4224	2	US2L22402004
		4224	3	US2L22403004
		4224	4	US2L22404004
		4224	5	US2L22405004
Tulare Lake	King's	4311	1	US2K31101004
		4312	1	US2K31201004
		4312	2	US2K31202004
		4312	3	US2K31203004
		4312	4	US2K31204004
		4312	5	US2K31205004
		4312	6	US2K31206004
		4312	7	US2K31207004
		4312	8	US2K31208004
		4312	9	US2K31209004
		4312	10	US2K31210004
		4313	1	US2K31301004
		4313	2	US2K31302004
		4313	3	US2K31303004
		4313	4	US2K31304004

APPENDIX 2.--*Glacier inventory numbering systems*--Continued

U.S. Geological Survey
(Table 1A)

Major basin	River	Basin number	Glacier number	ICSI identification number
Tulare Lake (Cont.)	King's	4313	5	US2K31305004
		4313	6	US2K31306004
		4313	7	US2K31307004
		4313	8	US2K31308004
		4313	9	US2K31309004
		4313	10	US2K31310004
		4313	11	US2K31311004
		4313	12	US2K31312004
		4313	13	US2K31313004
		4313	14	US2K31314004
		4313	15	US2K31315004
		4313	16	US2K31316004
		4313	17	US2K31317004
		4313	18	US2K31318004
		4313	19	US2K31319004
		4313	20	US2K31320004
		4313	21	US2K31321004
		4313	22	US2K31322004
		4313	23	US2K31323004
		4314	1	US2K31401004
		4314	2	US2K31402004
		4314	3	US2K31403004
		4314	4	US2K31404004
		4314	5	US2K31405004
		4314	6	US2K31406004
		4314	7	US2K31407004
		4314	8	US2K31408004
		4314	9	US2K31409004
		4314	10	US2K31410004
		4315	1	US2K31501004
		4315	2	US2K31502004
		4315	3	US2K31503004
		4315	4	US2K31504004
		4315	5	US2K31505004
		4316	1	US2K31601004

APPENDIX 2.--*Glacier inventory numbering systems*--Continued

U.S. Geological Survey
(Table 1A)

Major basin	River	Basin number	Glacier number	ICSI identification number
Tulare Lake (Cont.)	King's	4316	2	US2K31602004
		4316	3	US2K31603004
		4316	4	US2K31604004
		4316	5	US2K31605004
		4316	6	US2K31606004
		4316	7	US2K31607004
		4316	8	US2K31608004
		4316	9	US2K31609004
		4316	10	US2K31610004
		4316	11	US2K31611004
		4316	12	US2K31612004
		4316	13	US2K31613004
		4316	14	US2K31614004
		4316	15	US2K31615004
		4316	16	US2K31616004
		4316	17	US2K31617004
		4317	1	US2K31701004
		4317	2	US2K31702004
		4317	3	US2K31703004
		4317	4	US2K31704004
		4317	5	US2K31705004
		4317	6	US2K31706004
		4317	7	US2K31707004
		4317	8	US2K31708004
		4317	9	US2K31709004
		4317	10	US2K31710004
		4317	11	US2K31711004
		4317	12	US2K31712004
		4317	13	US2K31713004
		4317	14	US2K31714004
		4317	15	US2K31715004
		4317	16	US2K31716004
		4317	17	US2K31717004
		4317	18	US2K31718004
		4317	19	US2K31719004

APPENDIX 2.--*Glacier inventory numbering systems*--Continued

U.S. Geological Survey
(Table 1A)

Major basin	River	Basin number	Glacier number	ICSI identification number
Tulare Lake (Cont.)	King's	4317	20	US2K31720004
		4317	21	US2K31721004
		4317	22	US2K31722004
		4318	1	US2K31801004
		4318	2	US2K31802004
		4318	3	US2K31803004
		4318	4	US2K31804004
		4318	5	US2K31805004
	Kaweah	4321	1	US2K32101004
		4321	2	US2K32102004
		4321	3	US2K32103004
		4321	4	US2K32104004
		4321	5	US2K32105004
		4321	6	US2K32106004
		4322	1	US2K32201004
	Kern	4331	1	US2K33101004
		4331	2	US2K33102004
		4331	3	US2K33103004
		4331	4	US2K33104004
		4331	5	US2K33105004
		4332	1	US2K33201004
		4332	2	US2K33202004
		4332	3	US2K33203004
		4332	4	US2K33204004
		4332	5	US2K33205004
		4332	6	US2K33206004
		4332	7	US2K33207004
		4332	8	US2K33208004
		4332	9	US2K33209004
		4332	10	US2K33210004
		4332	11	US2K33211004
		4332	12	US2K33212004
		4333	1	US2K33301004
		4333	2	US2K33302004
		4333	3	US2K33303004

APPENDIX 2.--*Glacier inventory numbering systems*--Continued

U.S. Geological Survey
(Table 1A)

Major basin	River	Basin number	Glacier number	ICSI identification number
Tulare Lake (Cont.)	Kaweah	4333	4	US2K33304004
		4333	5	US2K33305004
		4333	6	US2K33306004
		4333	7	US2K33307004
		4333	8	US2K33308004
		4333	9	US2K33309004
		4333	10	US2K33310004
		4333	11	US2K33311004
		4333	12	US2K33312004
		4334	1	US2K33401004
		4334	2	US2K33402004
San Joaquin	Mokelumne	4411	1	US2K41101004
	Stanislaus	4421	1	US2K42101004
		4421	2	US2K42102004
		4421	3	US2K42103004
		4421	4	US2K42104004
		4421	5	US2K42105004
		4421	6	US2K42106004
		4421	7	US2K42107004
		4421	8	US2K42108004
		4421	9	US2K42109004
	Tolumne	4431	1	US2K43101004
		4431	2	US2K43102004
		4432	1	US2K43201004
		4433	1	US2K43301004
		4433	2	US2K43302004
		4433	3	US2K43303004
		4433	4	US2K43304004
		4433	5	US2K43305004
		4433	6	US2K43306004
		4433	7	US2K43307004
		4433	8	US2K43308004
		4433	9	US2K43309004
		4435	1	US2K43301004
		4435	2	US2K43302004
		4435	3	US2K43303004

APPENDIX 2.--*Glacier inventory numbering systems*--Continue

U.S. Geological Survey
(Table 1A)

Major basin	River	Basin number	Glacier number	ICSI identification number
San Joaquin	Tuolumne	4435	4	US2K43304004
		4435	5	US2K43305004
		4435	6	US2K43306004
		4435	7	US2K43307004
		4435	8	US2K43308004
		4435	9	US2K43309004
		4435	10	US2K43310004
	Merced	4441	1	US2K44101004
		4441	2	US2K44102004
		4441	3	US2K44103004
		4441	4	US2K44104004
		4441	5	US2K44105004
		4441	6	US2K44106004
		4441	7	US2K44107004
		4441	8	US2K44108004
		4441	9	US2K44109004
		4441	10	US2K44110004
		4441	11	US2K44111004
		4441	12	US2K44112004
		4441	13	US2K44113004
		4441	14	US2K44114004
		4441	15	US2K44115004
		4441	16	US2K44116004
		4441	17	US2K44117004
		4442	1	US2K44201004
	San Joaquin	4451	1	US2K45101004
		4451	2	US2K45102004
		4451	3	US2K45103004
		4451	4	US2K45104004
		4451	5	US2K45105004
		4451	6	US2K45106004
		4451	7	US2K45107004
		4451	8	US2K45108004
		4451	9	US2K45109004
		4451	10	US2K45110004

APPENDIX 2.--*Glacier inventory numbering systems*

U.S. Geological Survey
(Table 1A)

Major basin	River	Basin number	Glacier number	ICSI identification number
San Joaquin	San Joaquin	4451	11	US2K45111004
		4451	12	US2K45112004
		4451	13	US2K45113004
		4451	14	US2K45114004
		4452	1	US2K45201004
		4452	2	US2K45202004
		4452	3	US2K45203004
		4452	4	US2K45204004
		4452	5	US2K45205004
		4452	6	US2K45206004
		4452	7	US2K45207004
		4452	8	US2K45208004
		4452	9	US2K45209004
		4452	10	US2K45210004
		4452	11	US2K45211004
		4452	12	US2K45212004
		4452	13	US2K45213004
		4452	14	US2K45214004
		4452	15	US2K45215004
		4452	16	US2K45216004
		4452	17	US2K45217004
		4452	18	US2K45218004
		4452	19	US2K45219004
		4452	20	US2K45220004
		4452	21	US2K45221004
		4452	22	US2K45222004
		4452	23	US2K45223004
		4452	24	US2K45224004
		4453	1	US2K45301004
		4453	2	US2K45302004
		4453	3	US2K45303004
		4453	4	US2K45304004
		4453	5	US2K45305004
		4453	6	US2K45306004
		4453	7	US2K45307004
		4453	8	US2K45308004
		4453	9	US2K45309004
		4453	10	US2K45310004
		4453	11	US2K45311004

APPENDIX 2.--*Glacier inventory numbering systems*--Continued

U.S. Geological Survey
(Table 1A)

Major basin	River	Basin number	Glacier number	ICSI identification number
San Joaquin	San Joaquin	4453	12	US2K45312004
		4454	1	US2K45401004
		4454	2	US2K45402004
		4454	3	US2K45403004
		4454	4	US2K45404004
		4454	5	US2K45405004
		4454	6	US2K45406004
		4454	7	US2K45407004
		4454	8	US2K45408004
		4454	9	US2K45409004
		4454	10	US2K45410004
		4454	11	US2K45411004
		4454	12	US2K45412004
		4454	13	US2K45413004
		4454	14	US2K45414004
		4454	15	US2K45415004
		4454	16	US2K45416004
		4454	17	US2K45417004
		4455	1	US2K45501004
		4455	2	US2K45502004
		4456	1	US2K45601004
		4456	2	US2K45602004
		4456	3	US2K45603004
		4456	4	US2K45604004
		4456	5	US2K45605004
		4456	6	US2K45606004
		4456	7	US2K45607004
		4456	8	US2K45608004
		4456	9	US2K45609004
		4456	10	US2K45610004
		4456	11	US2K45611004
		4456	12	US2K45612004
		4456	13	US2K45613004
		4456	14	US2K45614004
		4456	15	US2K45615004

APPENDIX 2.--*Glacier inventory numbering systems*--Continued

U.S. Geological Survey
(Table 1A)

Major basin	River	Basin number	Glacier number	ICSI identification number
San Joaquin (Cont.)	San Joaquin	4456	16	US2K45616004
		4456	17	US2K45617004
		4456	18	US2K45618004
		4456	19	US2K45619004
		4457	1	US2K45701004
		4457	2	US2K45702004
		4457	3	US2K45703004
		4457	4	US2K45704004
		4457	5	US2K45705004
		4457	6	US2K45706004
		4457	7	US2K45707004
		4457	8	US2K45708004
		4457	9	US2K45709004
		4457	10	US2K45710004
		4457	11	US2K45711004
		4457	12	US2K45712004
		4457	13	US2K45713004
		4457	14	US2K45714004
		4457	15	US2K45715004
		4457	16	US2K45716004
		4458	1	US2K45801004
		4458	2	US2K45802004
		4458	3	US2K45803004
		4458	4	US2K45804004
		4458	5	US2K45805004
		4458	6	US2K45806004
		4458	7	US2K45807004
		4458	8	US2K45808004
Sacramento	American	4561	1	US2K56101004
		4562	1	US2K56201004
		4562	2	US2K56202004
		4563	1	US2K56301004
		4563	2	US2K56302004

DOCUMENT 2

Data on 106 glaciers comprise the U.S. contribution to Fluctuations of Glaciers, Volume IV. All glaciers listed in the General Information Table have data in the present volume. The quadrangles referred to in the General Information are all U.S. Geological Survey topographic maps. The majority of the data is terminus variations 16 glaciers have terminus position addenda dating back at least 50 years (Columbia, 1899; Blue, 1938; Carrie, 1889; Eel, 1920; "Bear Pass", 1933; Unnamed # 2123, 1933; Hoh, 1933; Ice River, 1924; Hubert, 1907; Black, 1924; White, 1924; Humes, 1907; Queets, 1913; Anderson, 1909; Grinnell, 1925 and Sperry, 1935). There are 10 glaciers with mass balance and/or thickness change data. Pre-1975 mass balance versus altitude and thickness change data are given for 5 glaciers that were not included in Volume III. Some glaciers are measured using the fixed-date system, and some are measured using the stratigraphic system Gulkana and Wolverine have mass balance data also available from the investigators in the combined fixed-date/stratigraphic system. Seven glaciers have a gaging station and/or a meteorological station nearby. This low number of stations is an indication of how inaccessible most glaciers are in the U.S., especially those in Alaska.

The first digit of the PSFG number for the U.S. glaciers denotes the state where the glacier is located the second digit denotes the range, the mountains, or a specific mountain:

1st-Digit

0, 1 Alaska

0001-0199 Brooks Range

0200-0399 Alaska Range, Aleutian Range

0400-0599 Kenai Mtns.

0600-1099 Chugach Mtns.

1100-1299 Wrangell Mtns.

1300-1799 St. Elias Mtns.

1800-1999 Coast Mtns.

2 Washington

2001, 2102-2150 Olympic Mtns.

2002-2012 Mount Baker

2014-2019 Glacier Peak

2020-2040 Mount Rainier

2050-2065 Mount Adams

2075-2090 Mount St. Helens

3 Oregon

4 California

5 Montana

Sources of data and sponsoring agencies for the glaciers, listed in the order in which they appear in Table A are:

Gulkana--L.R. Mayo and D.C. Trabant (USGSF)

Falling to Taylor--W.O. Field (WOF)

Wolverine--L.R. Mayo and D.C. Trabant (USGSF)

Lawrence to Meares--W.O. Field (WOF)

Columbia USA627--A. Post and M.F. Meier (USGST), and L.R. Mayo and D.C. Trabant (USGSF)

Shoup to Saddlebag--W.O. Field (WOF)

"Betseli" to Chetaslina--C. Benson, M. Sturm, P. MacKeith (UA)

Variegated--C.F. Raymond (UW) and W.D. Harrison (UA)

Geikie to Wright--W.O. Field (WOF)

Blue--R. Spicer (UW), B. Kamb and K. Echelmeyer (CalTech)

South Cascade--R.M. Krimmel (USGST)

Carbon to N. Mowich--C. Driedger (USGST)

Carrie to Anderson--R.C. Spicer (USGST)

Shoestring--M. Brugman (USGST)

Grinnell and Sperry--W.A. Blenkarn (USGSH)

Quelceaya Ice Cap--L. Thompson (OSU)

Abbreviations and addresses of sponsoring agencies:

CalTech Division of Geological and Planetary Sciences
California Institute of Technology
Pasadena, CA 91109

ONP Olympic National Park
Port Angeles, WA

OSU Institute of Polar Studies
Ohio State University
Columbus, OH 43210

UA Geophysical Institute
University of Alaska
Fairbanks, AK 99701

USGSF U.S. Geological Survey
Cold Regions Hydrology Project Office
Federal Building-Box 11
101 12th Avenue
Fairbanks, AK 99701

USGSH U.S. Geological Survey
Federal Building, Room 428
301 South Park Avenue, Drawer 10076
Helena, MT 59626

USGST U.S. Geological Survey
Project Office - Glaciology
1201 Pacific Avenue, Suite 450
Tacoma, WA 98401

UW Geophysics Department
University of Washington
Seattle, WA 98195

WOF William O. Field
P.O. Box 583
Great Barrington, MA 01230