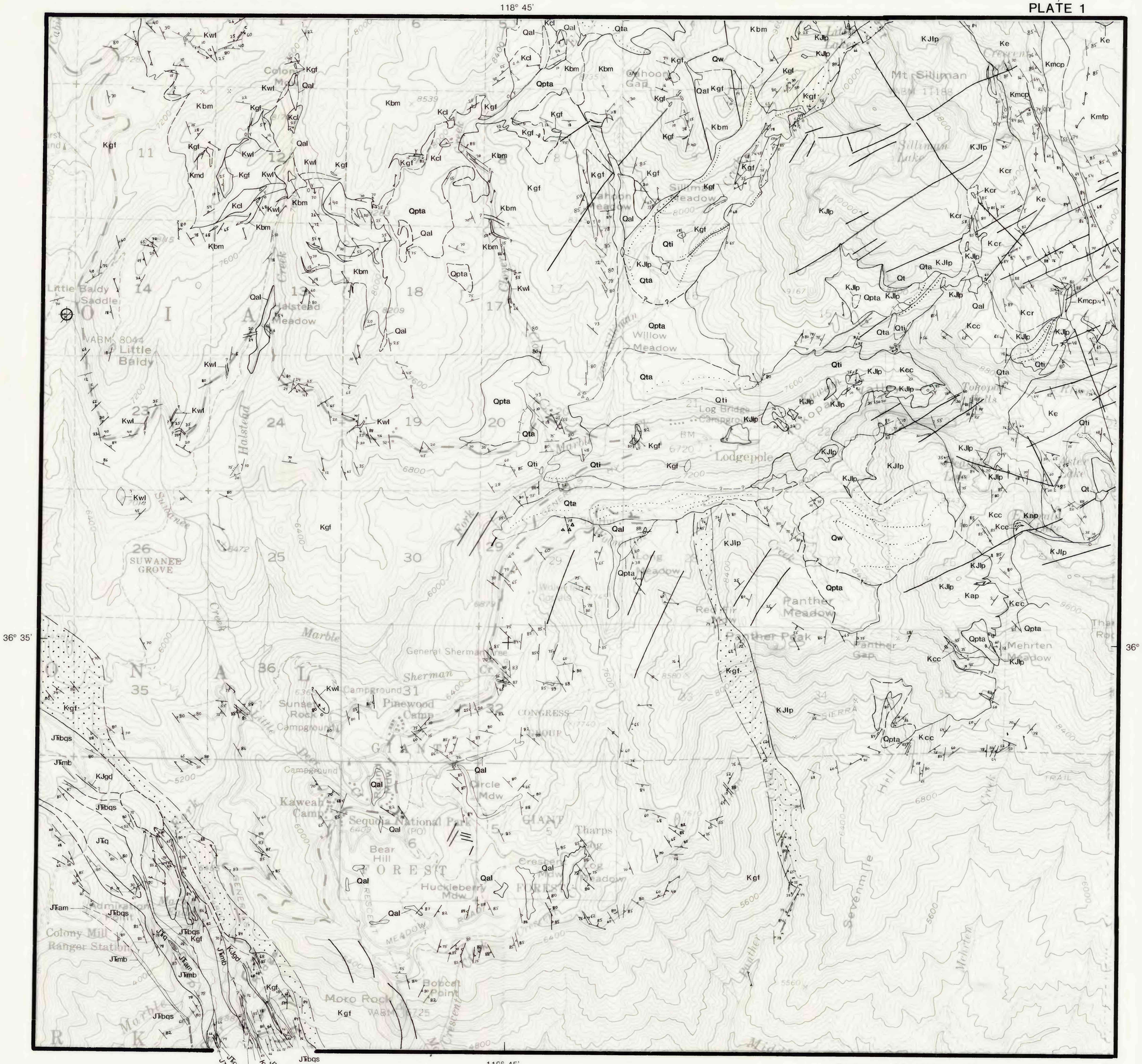
DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

OPEN FILE REPORT 84-400

PLATE 1



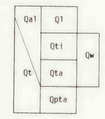
Geology by T.W.Sisson, J.G.Moore, and C.Wahrhaftig, 1983

This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature

GEOLOGIC MAP OF GIANT FOREST AND LODGEPOLE AREA SEQUOIA NATIONAL PARK, CALIFORNIA

CORRELATION OF MAP UNITS

SURFICIAL DEPOSITS



QUATERNARY

GRANITIC ROCKS

Dark-colored rocks (Generally more than 10 percent dark minerals)	Medium-colored rocks (Generally 6-10 percent dark minerals)	Light-colored rocks (Generally less than 6 percent dark minerals)	
Kmfp			
Kmcp			
Ke			
Kcc	age relation unknown		Kap
Kcl	age relation unknown		Kwl
Kmd		Kbm	
Kgf	age relation unknown		
Kcr			
KJgd	age relation unknown	KJlp	

CRETACEOUS

CRETACEOUS OR JURASSIC

METAMORPHIC ROCKS

JTmb	JTbqs	JTq	JTcss	JTam

JURASSIC OR TRIASSIC

DESCRIPTION OF MAP UNITS

SURFICIAL DEPOSITS

Qal — ALLUVIAL DEPOSITS (QUATERNARY)—Alluvium underlying meadows; largely unconsolidated sands ponded behind glacial moraines, and gravels in stream valleys

Ql — LANDSLIDE DEPOSITS (QUATERNARY)—Landslide on west side of Marble Fork, north of Admiration Point

TILL AND TALUS (QUATERNARY)—Morainal crests shown by dotted line

Qti — Tioga Till; well defined glacial morphology, largely unweathered boulders

Qta — Tahoe Till; subdued glacial morphology, sandy, weathered boulders

Qw — Tahoe and Tioga Tills; undifferentiated

Qpta — Pre-Tahoe Till; glacial morphology highly subdued or absent; extensively weathered boulders; triangles, isolated erratics

Qt — Talus, alluvial fan deposits, slopewash, and glacial deposits, undivided

GRANITIC ROCKS
(Rock names from classification of Streckeisen, 1973)
Dark-colored rocks

Kmfp — PORPHYRITIC GRANODIORITE OF MITCHELL PEAK (CRETACEOUS)—Fine-grained, K-feldspar-hornblende-biotite-plagioclase porphyritic granodiorite with abundant mafic inclusions. U-Pb age 91 m.y. (Chen and Moore, 1982)

Kmcp — COARSE, PORPHYRITIC GRANODIORITE OF MITCHELL PEAK (CRETACEOUS)—Coarse-grained, plagioclase-K-feldspar porphyritic granodiorite

Ke — HORNBLENDE GRANODIORITE OF EMERALD LAKE (CRETACEOUS)—Medium-grained, equigranular, hornblende-rich granodiorite with abundant mafic inclusions; marginal to granodiorites of Mitchell Peak

Kcc — HORNBLENDE GRANODIORITE OF CASTLE CREEK (CRETACEOUS)—Medium-grained, equigranular, hornblende-rich granodiorite. Contains wispy schlieren layering at higher elevations. U-Pb age 98 ± ? m.y. (C. Busby-Spera, written comm., 1982), K-Ar age 91.1 (Enverden and Kistler, 1970; Steiger and Jaeger, 1977)

Kcl — PORPHYRITIC GRANODIORITE OF CLOVER CREEK (CRETACEOUS)—Fine-grained, K-feldspar-plagioclase porphyritic granodiorite. Locally with abundant mafic inclusions, and quartz xenocrysts rimmed with amphibole

Kmd — SYNPLUTONIC MAFIC DIORITE DIKES (CRETACEOUS)—Highly contorted and veined fine-grained diorite dikes within the granite of Big Meadows

Kgf — GRANODIORITE OF GIANT FOREST (CRETACEOUS)—Medium-grained, equigranular, hornblende-rich granodiorite with abundant mafic inclusions. Mafic inclusions are highly variable in size, shape, and texture. A lighter colored, K-feldspar porphyritic marginal facies lies along the outer contacts and is designated by a stipple pattern. U-Pb age 97-102 m.y. (Chen and Moore, 1982)

Kcr — PORPHYRITIC GRANODIORITE SOUTH OF CRESCENT LAKE (CRETACEOUS)—Medium-grained, granodiorite with small (1-2 cm) plagioclase and K-feldspar phenocrysts and abundant mafic inclusions. Texturally similar to granodiorite of Clover Creek, but designated as a separate intrusion due to its position east of the granite of Lodgepole Campground

KJgd — SHEARED AND VEINED GRANODIORITE AND GRANITE WITHIN THE MARBLE FORK METAMORPHIC PENDANT (CRETACEOUS OR JURASSIC)—Strongly foliated and quartz-veined granodiorite and granite dikes intrusive into the Marble Fork metamorphic rocks. Some similar rocks lie within the large granodiorite of Giant Forest dike that splits the pendant

Medium-colored rocks

Kbm — GRANITE OF BIG MEADOWS (CRETACEOUS)—Largely medium-grained, equigranular biotite granite, locally with small (1-2 cm) K-feldspar phenocrysts. U-Pb age 98 m.y. (Chen and Moore, 1982)

Light-colored rocks

Kap — APLITE (CRETACEOUS)—Mappable bodies of aplite concentrated along the margins of the granodiorite of Castle Creek

Kwl — PORPHYRITIC GRANITE OF WEAVER LAKE (CRETACEOUS) — Very light-colored and fine-grained, K-feldspar porphyritic granite dikes and sills intrusive into the granodiorites of Giant Forest and Clover Creek, and the granite of Big Meadows. Includes equigranular alaskite dikes at Colony Meadow, Sunset Rock, and pt. 7014. U-Pb age 97-99 m.y. (Chen and Moore, 1982)

KJlp — GRANITE OF LODGEPOLE CAMPGROUND (CRETACEOUS OR JURASSIC)—Coarse-grained, light-colored granite with widely scattered large (≤1.5 m) porphyritic and small (≤15 cm) porphyritic and non-porphyritic mafic inclusions. U-Pb age >115 m.y. (Chen and Moore, 1982)

METAMORPHIC ROCKS

JTmb — MARBLE (JURASSIC AND(OR) TRIASSIC) — Coarsely crystalline grey and white marble with highly contorted calc-silicate nodules and stringers

JTbqs — BIOTITE-FELDSPAR-QUARTZ SCHIST (JURASSIC AND(OR) TRIASSIC)—Reddish-brown weathering biotite-feldspar-quartz schist with thin (≤10 cm) layers of micaceous quartzite. Includes minor calc-silicate schist layers. Schist is increasingly coarse-grained and migmatitic to the southwest

JTq — QUARTZITE (JURASSIC AND(OR) TRIASSIC)—Fine- and medium-grained white, micaceous quartzite. Medium-bedded to massive

JTcss — CALC-SILICATE SCHIST (JURASSIC AND(OR) TRIASSIC)—Quartz-rich calc-silicate schist along Deer Ridge

JTam — AMPHIBOLITE (JURASSIC AND(OR) TRIASSIC)—Massive and schistose amphibolite, biotite amphibolite, and mafic biotite schist. Probable volcanic and mixed volcanic-sedimentary protoliths

EXPLANATION OF SYMBOLS

Contact, showing dip—Dashed where approximately located, queried where inferred. O, older rock; Y, younger rock; designated where age relations clearly visible

Small shear faults, showing dip—Arrow shows relative horizontal displacement; m, mylonitic shear; c, cataclastic shear; U, upthrown side; D, downthrown side

Strike and dip of igneous layering—No younger direction is designated

Strike and dip of foliation

Inclined

Vertical

Inclined, dip variable

Inclined or vertical, strike variable

Strike of foliation or bearing of lineation, dip unknown

No foliation

Bearing and plunge of lineation

Joints

Strike and dip of joint

Strike of vertical joint

Trace of large joints mapped on aerial photographs

Crest of glacial moraine

Location of orbicular granitic rock

Note: Primary foliation in igneous rocks measured on elongate mineral grains and mafic inclusions. Foliation in metamorphic rocks measured on mineral grains and mineral aggregates, schistosity, and cleavage.