U. S. DEPARTMENT OF THE INTERIOR

U. S. GEOLOGICAL SURVEY

Preliminary geologic map of the Sunland 7.5' quadrangle Southern California

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INTRODUCTION

This map is a preliminary product of the Southern California Digital 1:100, 000 Geologic Map Series (Southern California Areal Mapping Project-SCAMP; Morton and Kennedy, 1989). The 1:24,000 manuscript for this map was compiled from original sources, chiefly at 1:24,000, and scanned and processed digitally using the U. S. Geological Survey Alacarte menu-driven interface (Wentworth and Fitzgibbon, 1991) for ARC/INFO, a commercial geographic information system (GIS) avaialable from Environmental Systems Research Institute, Redlands, California.

This 1:24,000 quadrangle is one of sixteen that form the east half of the Los Angeles 1:100,000 quadrangle; the 1:24,000 quadrangles form the basic data supporting the regional-scale quadrangle, and thus include available data on exploratory oil wells and fossil collections.

Stratigraphic nomenclature is largely that of the source materials; it is subject to further modification as compilation progresses. Minor adjustments have been made in geologic boundaries to conform to the metric base, which was enlarged from 1:100,000.

Base-map layers, drainage, roads, and topo contours, were prepared from publicly-available digital line graph (DLG) data for the 1:100,000 Los Angeles metric topographic map (1979 edition) by R. H. Campbell, U. S. Geological Survey, Reston, VA.

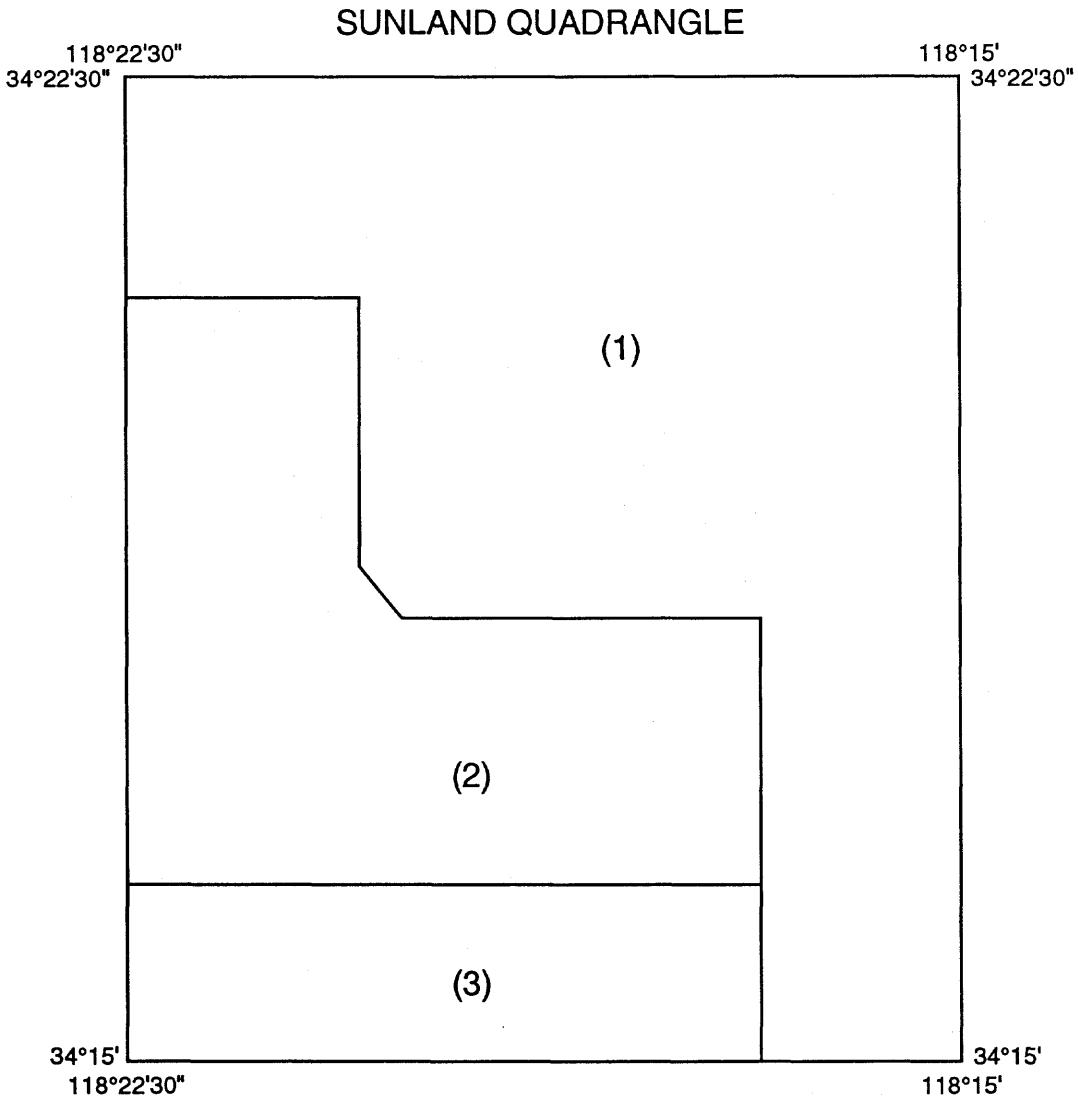
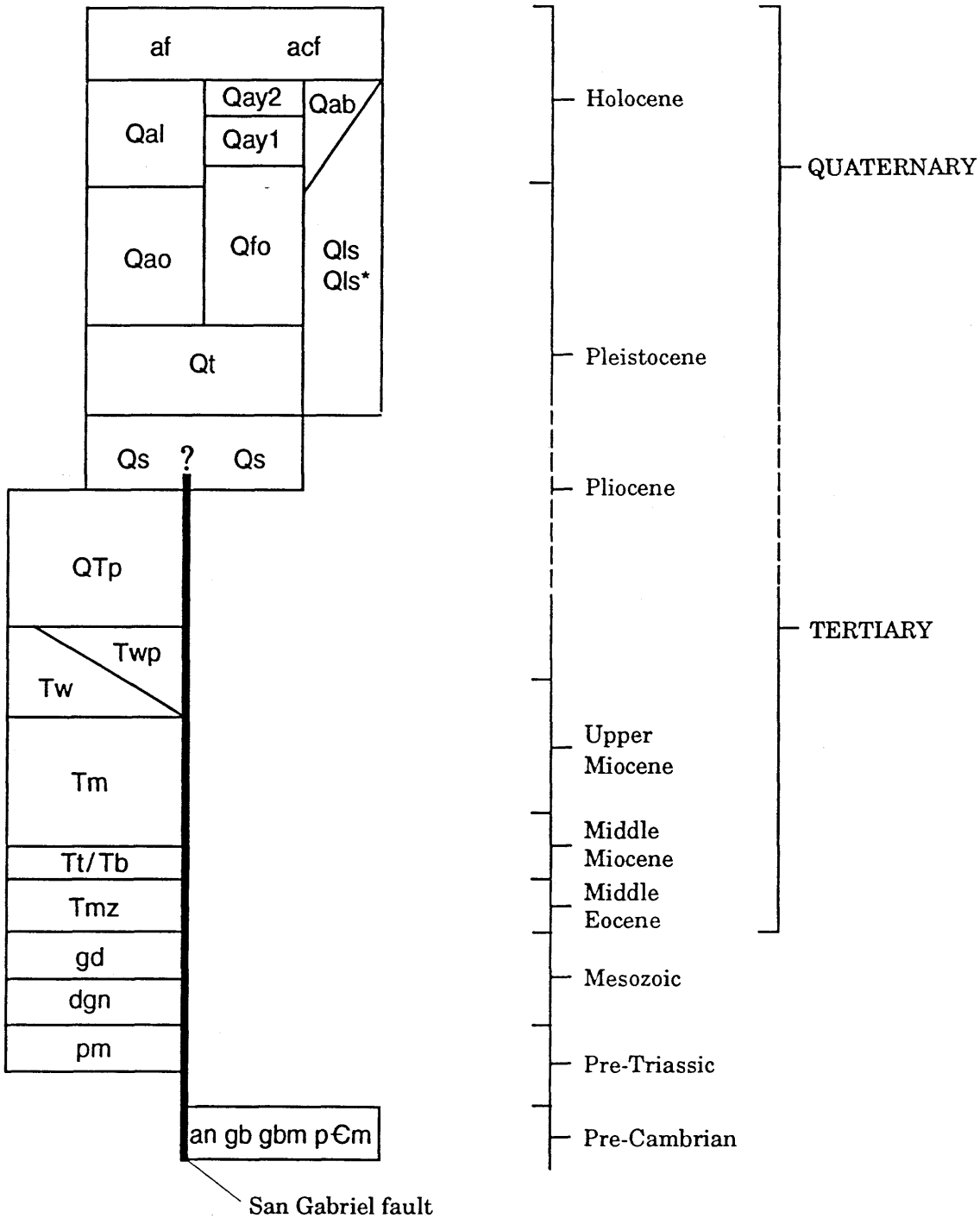


FIGURE 1-- INDEX MAP SHOWING SOURCES OF GEOLOGIC MAPPING

1. Oakeshott, 1958 b
2. Barrows and others, 1974; Tinsley and others, 1985
3. Weber, 1980; Tinsley and others, 1985

CORRELATION OF MAP UNITS, PRELIMINARY GEOLOGIC MAP OF SUNLAND QUADRANGLE



EXPLANATION, PRELIMINARY GEOLOGIC MAP, SUNLAND QUADRANGLE

DESCRIPTION OF MAP UNITS

af Artificial fill; locally faulted or cracked during 1971 San Fernando earthquake; structures built wholly or partly on fill commonly damaged during earthquake; acf, artificial cut and fill

Qal **Alluvium** (Holocene)--Deposits in present drainages, alluvial fans, and flood plains: sand and gravel, fine- to coarse-grained, unconsolidated and uncemented, locally includes young colluvium; locally faulted, uplifted, and tilted during 1971 San Fernando earthquake; Qay_2, areas that have flooded historically, thickness 0-3 m, age less than 1,000 years; Qay_1, undifferentiated Holocene alluvium, age 1,000-10,000 years

Qab **Alluvium-breccia deposits** (Holocene and Pleistocene)--Fluvial sand, fine to coarse grained; gravel of well-rounded pebbles; and sedimentary breccia of angular chips of shale from Modelo Formation; commonly mixed with debris-flow deposits

Qls **Landslide deposits** (Holocene and Pleistocene)--Fractured and sheared bedrock and surficial materials, commonly slumps; **Qls***, reactivated during 1971 earthquake

Qao **Older alluvium** (Pleistocene)--Fine to coarse grained sand and gravel; unconsolidated to moderately consolidated, commonly has reddish clay-bearing soil; uplifted/tilted, faulted, and dissected before 1971 earthquake

Qfo **Older alluvial fan deposits** (Pleistocene)--Sand and gravel, slightly consolidated

Qt **Terrace deposits** (Pleistocene)--Gravel with cobbles and boulders, interbedded coarse-grained sand and fine-pebble gravel, moderately consolidated; thickness up to about 200 feet

Qs **Saugus Formation** (Pleistocene)--Pebble conglomerate and coarse-grained sandstone, poorly sorted, cross bedded, loosely consolidated to poorly cemented, nonmarine; thickness about 800 m

Tp **Pico Formation** (upper Pliocene)--Marine, chiefly pale gray, resistant, coarse-grained sandstone and pebble conglomerate, massive, friable, locally fossiliferous in San Fernando quadrangle to west; thickness about 420 m

Tm **Modelo Formation** (upper Miocene)--Shale, diatomaceous to cherty; sandstone and conglomerate in upper part; thickness about 450 m

Tt **Topanga Formation** (middle Miocene)--Coarse-grained arkosic sandstone and conglomerate, rare pelecypod casts; **Tb**, basaltic flows, dense, vesicular, minor reddish breccia

gd **Granodiorite** (Cretaceous)--Gray, medium- to coarse-grained granitic rocks, varying from quartz diorite to granite, locally gneissic near contacts with older rocks

dgn **Diorite gneiss** (Mesozoic)--Mostly dark gneisses, but include meta-diorites, hornblende diorite, local amphibole schist

pm **Placerita Formation** (pre-Triassic?)--Marble, white crystalline lime-stone, and dolomite

North of San Gabriel fault

an **Anorthosite Complex** (PreCambrian)--Medium- to very coarse-grained, pale gray to white plagioclase, chiefly basic andesine (1190 MA, Barth and others, 1995); **gb--gabbroic rocks** --varieties of gabbro, anortho-site, and norite bordering anorthosites; **gbm**--ilmenite-magnetite gabbro

pCm **Mendenhall Gneiss** (PreCambrian)--Blue quartz-plagioclase gneiss, dominantly quartzo-feldspathic granulites, intruded by rocks of the anorthsite complex

MAP SYMBOLS

——?—— **Contact or mapped horizon**—Long-dashed where approximately located, short-dashed where inferred

——?—··· **Fault**— Long-dashed where approximately located, short-dashed where inferred, dotted where concealed, queried where doubtful

Surface ruptures of 2/9/71—Shown in red

Thrust fault—Dashed where approximately located, dotted where concealed; sawteeth on upper plate

Photolineament—Approximately located

Anticline— Approximately located, dotted where concealed; showing crestline

Syncline— Approximately located, dotted where concealed; showing troughline

70 **Strike and dip of inclined beds**—Approximately located

70 **Strike and dip of folaition**—Approximately located

211 **Exploratory well**—Number refers to table 1, below

FM1 **Fossil locality**—Number refers to table 2, below

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Table 1 - DATA ON EXPLORATORY WELLS, SUNLAND QUADRANGLE[1]

MAP NO.	T	RW	Sec.	OPERATOR	NAME/NUMBER	ELEV-ATION (ft)	TOTAL DEPTH (ft)	BOT-TOM[2]
211	3N	14	22	Russian Oil Co.	1	2150	1874	gr
212	3N	14	26	Tujunga Oil Co.	1	2000	420	Q
214	3N	14	33	Tesoro	Cleeves 1	1399	4251	Mu
215	3N	14	33	Tesoro	Cleeves 2	1493	1537	gr
376	2N	14	2	E.L. Grafton	1	1350	1845	Mu
377	2N	14	5	E.L. Doheny	E.L.D. DeMille 1	1350	2611	Mu
378	2N	14	5	Oceanic Oil Co.	De Mille 1	1140	2001	gr
384	2N	14	11	Cotton & Fleming	1	1305	400	Mu
385	2N	14	11	Jos. Kummel	1	1331	800	Mu
386	2N	14	15	Interstate Oil	Conoco Inc. 1	1375	2885	Mu

[1] Data from Yerkes and Showalter, 1990.
[2] gr, granitic basement; M, Miocene; Q, Quaternary; u, upper.

Table 2 - DATA ON FOSSIL LOCALITIES, SUNLAND QUADRANGLE

MAP NO[1]	TN	RW	Sec	COLL-ECTOR	AGE	MAP UNIT	SOURCE
FM1	3	14	34	CDMG	Mu	Tm	Oak.
FM2, 3	2	14	3	BFH	Mu	Tm	do.
FR1	2	14	5	UCB	Pl	QTp	do.
FR2	2	14	4	BFH	P	QTp	do.
fM6	2	14	11	CDMG	Mu	Tm	do.

[1] F, macrofossil collection; f, microfossil collection; number as collector's number.
[2] BFH, B. F. Howell, 1949; CDMG., Calif. Div. Mines and Geology; UCB, Univ. California, Berkeley.
[3] M, Miocene; P, Pliocene, l, lower; u, upper.
[4] Oak., Oakeshott, 1958.