U. S. DEPARTMENT OF THE INTERIOR

U. S. GEOLOGICAL SURVEY

Preliminary Geologic Map of the Thousand Oaks 7.5' Quadrangle, Southern California

by

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INTRODUCTION

This map is a preliminary product of the Southern California Digital 1:100,000-Scale Geologic Map Series (Morton and Kennedy, 1989). The 1:24,000 compilation was scanned and processed digitally using the U. S. Geological Survey A La Carte menu-driven adaptation (Wentworth and Fitzgibbon, 1990) of the ARC/INFO geographic inform-ation system. Minor adjustments have been made in geologic boundaries to conform to the metric base, which was enlarged from 1:100,000.

This 1:24,000 quadrangle is one of eight that form the southwest quarter of the Los Angeles 1:100,000 quadrangle; the 1:24,000-scale maps are intended to form the basic data supporting the regional-scale quadrangles, and thus include data on exploratory wells and relevant fossil collections.

Stratigraphic nomenclature is largely that used by the source materials, modified where necessary to reflect that of Yerkes and Campbell (1979), particularly in regard to units of the Topanga Group; it is subject to further modification as compilation progresses.

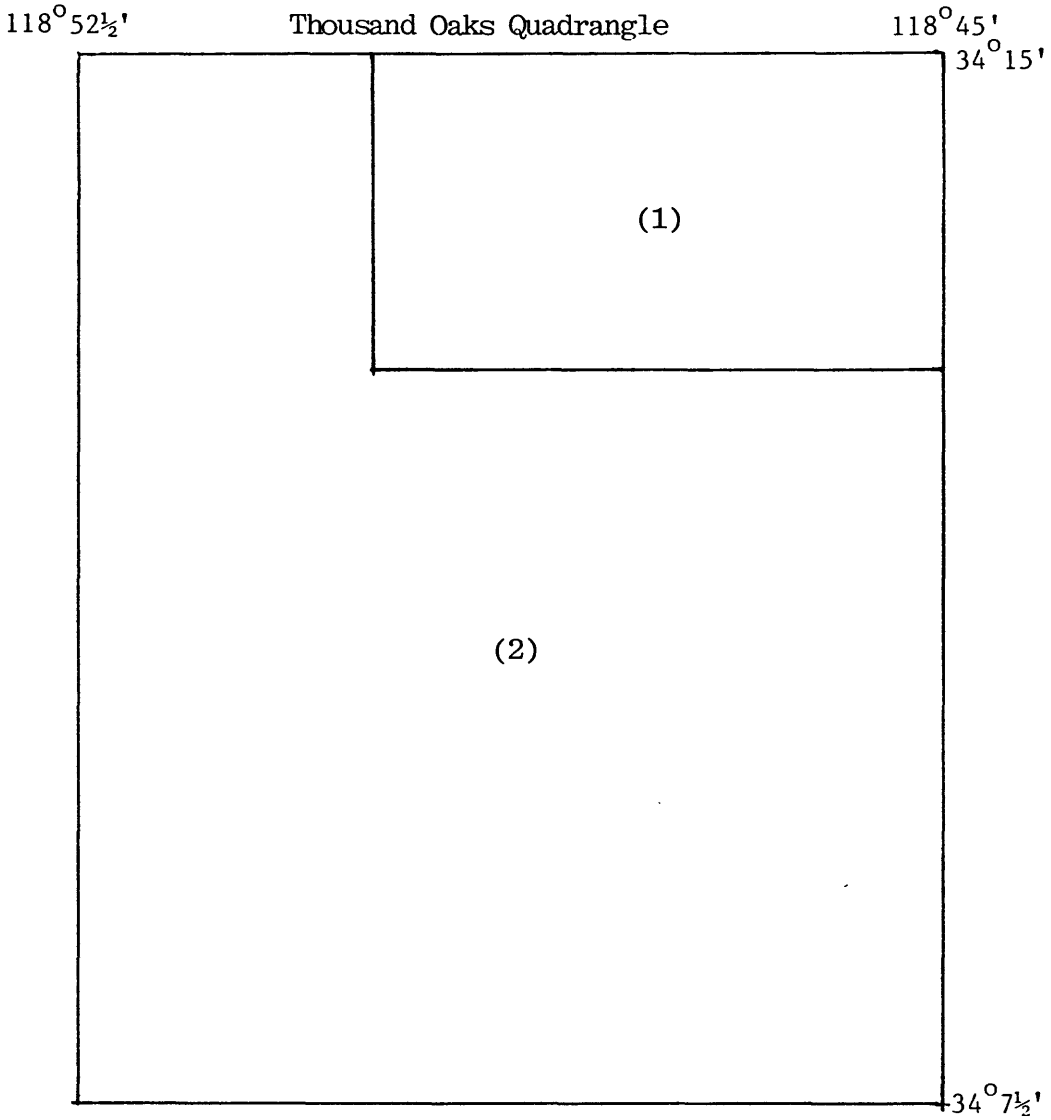
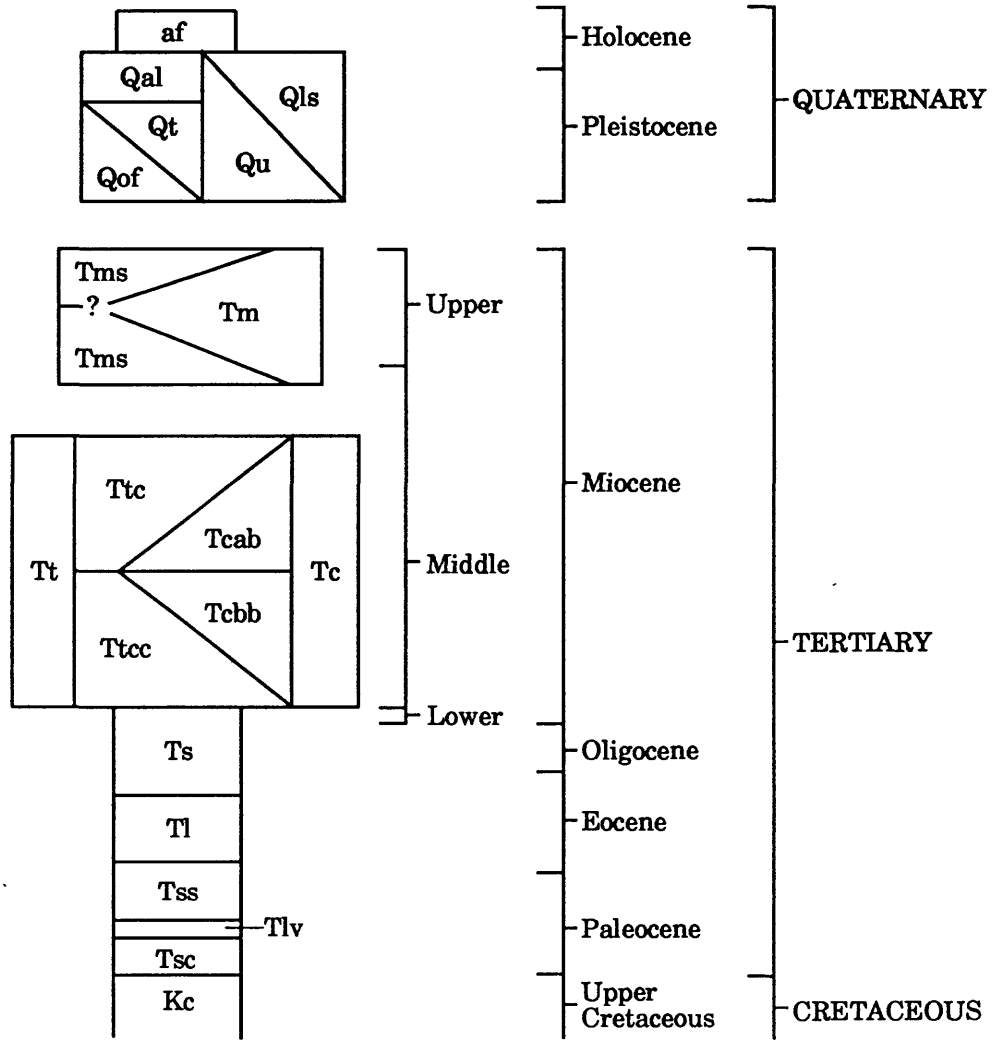


Figure 1–Sources of geology

1. Squires, (1983a) with additions from Weber (1984).
2. Weber (1984), with additions from Morton (1972).

CORRELATION OF MAP UNITS, PRELIMINARY GEOLOGIC MAP, THOUSAND OAKS QUADRANGLE



DESCRIPTION OF MAP UNITS

af	Artificial fill
Qal	**Alluvium**-unconsolidated clay, silt, sand, and gravel in stream beds and valley fill; locally includes colluvium, slopewash, and talus
Qu	**Alluvium, undivided**-slightly to well consolidated gravel, sand, silt, and clay; chiefly floodplain deposits
Qt	**Terrace deposits**-gravel, sand, silt, and clay, slightly to well consolidated, chiefly on flanks of valleys or streams
Qof	**Fanglomerate**-partially cemented, locally deformed
Qls/Qls?	**Landslide deposits**-parent materials include both surficial deposits and bedrock
Tm	**Modelo Formation**-dominantly siliceous or diatomaceous shale or siltstone, minor fine-grained sandstone; thickness at least 900 m; shales in the northwest quarter of the quadrangle yield upper Luisian to middle Mohnian foraminifers.
Tms	Interbedded sandstone
Tt	**Topanga Group**, undivided-fine- to medium-grained sandstone, minor interbedded siltstone and shale; as much as 1500 m thick; locally yields gastropods and pelecypods characteristic of the Pacific Coast "Temblor Stage" (middle Miocene)
Ttc	**Calabasas Formation**-marine sandstone, pebbly conglomerate, clasts chiefly volcanic, locally quartzite; minor siltstone, silty shale;
Tc	**Conejo Volcanics**-chiefly basaltic flows, volcanic breccia and agglomerate, minor andesitic and dacitic units; thickness >900 m; microfaunal age Saucesian to Relizian (early Miocene); K/Ar age 15.5-13.9 m.y. Turner and Campbell, 1979).
Tcab	Andesitic to dacitic flow breccia and agglomerate in area of Ladyface Mountain;
Tcbb	Basaltic breccia, pillow breccia, aquagene tuff
Ti	**Intrusive rocks**, chiefly basalt

Ts **Sespe Formation**-nonmarine pebbly to conglomeratic sandstone, commonly having reddish or greenish clayey siltstones; thickness about 1365 m; late Eocene to early Miocene in age.

Tl **Llajas Formation**-well-laminated fine-grained resistant sandstone, silty sandstone, and conglomerate; thickess of type section 545 m; early to middle Eocene in age (Squires, 1983)

Tss **Santa Susana Formation**-sandstone, generally thin bedded, fine- to medium-grained, and siltstone, local beds of fossiliferous limey sandstone and bluish limestone; as thick as 1030 m; lower sandy facies contains a fauna of late Paleocene (Zinsmeister, 1983) to early Eocene (Squires, 1991) age.

Tlv **Las Virgenes Sandstone**-nonmarine to marine sandstone and mudstone; as thick as 195 m, but thins to west

Tsc **Simi Conglomerate**-reddish, clayey conglomerate, chiefly of quartzite cobbles and boulders; up to 200 m thick

Kc **Chatsworth Formation** (of Colburn and others, 1981)-Thick-bedded, well-cemented arkosic sandstone, minor siltstone, and conglomerate. Thickness at least 1830 m; diverse molluscan faunas indicate a mid-Campanian to early Maestrichtian age range (Saul and Alderson, 1981), whereas benthic foraminifera from thin mudstones indicate that the lower and middle part of the formation is assignable to the late Campanian (Almgren, 1981). Base not exposed or drilled

MAP SYMBOLS

——————? Contact or mapped horizon--long-dashed where approximately located, short-dashed where inferred, dotted where concealed, queried where doubtful

——————— Fault--long-dashed where approximately located, short-dashed where inferred, dotted where concealed

Anticline--approximately located, showing crestline

Syncline--approximately located, showing troughline

70 Strike and dip of inclined beds

Exploratory well--number refers to table 1 below

* Fossil locality--F, macrofossil collection; f, microfossil collection; number refers to table 2 below.

Table 1--DATA ON EXPLORATORY WELLS, THOUSAND OAKS QUADRANGLE[1]

MAP NO.	T	RW	SEC	OPERATOR	NAME/NUMBER	ELEV-ATION (ft)	TOTAL DEPTH (ft)	BOT-TOM[2]
381	2N	19	27	Tesoro Pet. Corp.	McCrea 1	1,080	3,979	E
384	2N	19	35	Conejo Oil Synd.	Erbe 1	1,000	1,128	O
385	2N	19	36	W. G. Helis	1	975	500	O
415	2N	18	20	H. R. Dabney	G-1	900	1,506	O
416	2N	18	21	L. T. Mayo	Montgomery 1	1,005	4,000	E
422	1N	19	3	CONOCO, Inc.	Janss 1	836	8,829	E
423	1N	19	4	Conejo Oil Synd.	1	900	2,674	M
428	1N	19	13	Triunfo Expl. Co.	Triunfo 1	940	1,300	M
429	1N	19	24	Bennett Expl. Co.	24-Triunfo 2	910	3,191	O
430	1N	19	24	Triunfo Oil Co.	1	980	2,762	M
433	1N	18	6	Gulf Oil Corp.	Dinsmore 1	1,360	4,116	K
436	1N	18	15	Macmillan Pet. Corp.	Albertson 1	1,012	4,872	M
437	1N	18	19	Morgan Brown, Inc.	The Albertson Co.	975	1,050	M
440	1N	18	34	B. Waring	1	800	300	M

[1]Data from Yerkes and Showalter, 1990.
[2]E, Eocene; K, Cretaceous; M, Miocene; O, Oligocene (Sespe Fm).

Table 2--DATA ON FOSSIL LOCALITIES, THOUSAND OAKS QUADRANGLE

MAP NO[1]	T	RW	SEC	COLL-ECTOR[2]	AGE[3]	MAP UNIT	SOURCE
F615	2N	19	23	CDMG	Mm	Tt	Weber, 1984
F3339	2N	18	31	UCLA	Kl	Kc	Saul and Alderson, 1981
F3702	2N	19	36	CDMG	Mm?	Tt	Weber, 1984
F3703	2N	19	26	CDMG	Mm?	Tt	Weber, 1984
F3704	2N	19	35	USGS	Mem	Tt	Weber, 1984
F3709	1N	19	2	USGS	Ml?	Tm	Weber, 1984
F3710	2N	19	26	CDMG	Ml?	Tm	Weber, 1984
F3711	2N	19	26	CDMG	Mm?	Tt	Weber, 1984
F3712	2N	19	27	CDMG	Mem?	Tt	Weber, 1984
F3812	2N	19	36	UCLA	Kl	Kc	Saul and Alderson, 1981
F3813	2N	19	36	UCLA	Kl	Kc	Saul and Alderson, 1981
F3814	2N	19	36	UCLA	Kl	Kc	Saul and Alderson, 1981
F3815	2N	18	31	UCLA	Kl	Kc	Saul and Alderson, 1981
F6936	2N	18	31	UCLA	Kl	Kc	Saul and Alderson, 1981
F71C2	1N	18	30	USGS	Mm	Tt	RHC*, unpub.
F8105	2N	18	30	USGS	P	Tss	Kew, 1924
F8111	2N	18	28	USGS	P	Tss	Kew, 1924
F8113	2N	18	31	USGS	P	Tss	Kew, 1924
F8116	2N	18	22	USGS	E	Tl	Kew, 1924
F8117	2N	18	22	USGS	E	Tl	Kew, 1924
F8120	2N	18	29	USGS	P	Tss	Kew, 1924
F8125	2N	18	22	USGS	E	Tl	Kew, 1924
f307	1N	19	22	CDMG	Mm	Tt	Weber, 1984
f310b	1N	19	24	CDMG	Ml?	Tt	Weber, 1984
f327	1N	18	18	CDMG	Ml?	Tm	Weber, 1984
f332	1N	19	2	CDMG	Ml	Tm	Weber, 1984
f353	1N	18	22	CDMG	Mem	Tt	Weber, 1984
f356	1N	19	11	CDMG	Ml	Tm	Weber, 1984
f357	1N	19	11	CDMG	Mm	Tm	Weber, 1984
f448	2N	19	26	CDMG	Ml	Tm	Weber, 1984
f457b	2N	19	35	CDMG	Ml	Tm	Weber, 1984
f467	2N	19	23	CDMG	Mm?	Tc	Weber, 1984
f502	2N	19	23	CDMG	Mml	Tc	Weber, 1984
f595	1N	19	2	CDMG	Mm	Tm	Weber, 1984
f598	1N	19	2	CDMG	Ml	Tm	Weber, 1984
f656	1N	19	1	CDMG	Mm	Tm	Weber, 1984
f65C35	1N	18	22	USGS	Mm	Tt	RHC*, unpub.
f68C6	2N	19	27	USGS	Ml	Tm	RHC*, unpub.
f69C14	1N	19	23	USGS	Mm	Tt	RHC*, unpub.
f69C15	2N	19	35	USGS	Ml	Tm	RHC*, unpub.
f772	1N	18	21	CDMG	Mm	Tm	Weber, 1984
f773	1N	18	21	CDMG	Mm	Tm	Weber, 1984
f961	1N	18	18	CDMG	Ml	Tm	Weber, 1984

[1]F, macrofossil collection; f, microfossil collection; number same as collector's number.
[2]CDMG, Calif. Div. Mines and Geology; UCLA, Univ. Calif. at Los Angeles; USGS, U. S. Geol. Survey.
[3]E, Eocene; K, Cretaceous; M, Miocene; P, Paleocene; e, early; l, late; m, middle. Example: Mem, Miocene, early to middle.
*RHC, R. H. Campbell, U. S. Geol. Survey field investigation.

References

Colburn, I. P., Saul, L. R., and Almgren, A. A., 1981, The Chatsworth Formation: a new name for the Upper Cretaceous strata of the Simi Hills, California: in Link, M. H., Squires, R. L., and Colburn, I. P., eds., Simi Hills Cretaceous Turbidites, Southern California, Pac. Sec. Soc. Econ. Paleon. & Mineral. Fall Field Trip Guidebk., Oct. 10, 1981, p. 9-16.

Kew, W. S. W., 1924, Geology and Oil resources of a part of Los Angeles and Ventura Counties, California: U. S. Geological Survey Bull. 753, 202 p., map at 1:62,500.

Morton, D. M., 1972, Reconnaissance photo-interpretation map of major landslides, southern Ventura County, California: Calif. Div. Mines and Geology Prelim. Rpt. 14, pl. 5, scale 1:48,000.

Morton, D. M., and Kennedy, M. P., 1989, A southern California digital 1:100,000-scale geologic map series: the Santa Ana quadrangle, the first release (abs.): Geol. Soc. Amer. Abstracts with Prog., vol. 21, no. 6, p. A107-A108.

Saul, L. R., and Alderson, J. M., 1981, Late Cretaceous Mollusca of the Simi Hills: an intoduction: in Link, M. H., Squires, R. L., and Colburn, I. P., eds, Simi Hills Cretaceous Turbidites, Southern California: Pac. Sec. Soc. Econ. Paleo. & Mineral. Fall Field Trip Guidebk., Oct. 10, 1981, p. 29-42.

Squires, R. L., 1983a, Geologic map of the Simi Valley area, southern California: in Squires, R. L., and Filewicz, M. V., eds, Cenozoic geology of the Simi Valley area, southern California: Pac. Sec. Soc. Explor. Paleont. and Mineral. vol. and guidebk., Fall field trip, Oct 8-9, 1983, plate, scale 1:24,000.

_____ 1983b, Eocene Llajas formation, Simi Valley, Califor- n ia, in Squires, R. L., and Filewicz, M. V., eds, Cenozoic geology of the Simi Valley area, southern California: Pac. Sec. Soc. Econ. Paleont. and Mineral. vol. and guidebk., Fall field trip, Oct. 8-9, 1983, p. 81-95.

_____1991, Paleontologic investigations of the uppermost Santa Susana formation, south side of the Simi Valley, southern California (abs.): Amer. Assoc. Petrol. Geol. Bull. vol 75, no. 2, p. 382.

Turner, D. L., and Campbell, R. H., 1979, Age of the Conejo Volcanics: U. S. Geol. Survey Bull. 1457-E, p. E18-E22.

Weber, F. H. Jr., 1984, Geology of the Calabasas-Agoura-eastern Thousand Oaks area, Los Angeles and Ventura Counties, California: Calif. Div. Mines and Geol. Open File Rpt. 84-1 LA, 191 p., 4 plates.

Wentworth, C. M., and Fitzgibbon, T. T., 1990, Alacarte User Manual: U. S. Geol. Survey Open File Rpt., 206 p., (draft 8/20/90).

Yerkes, R. F., and Campbell, R. H., 1979, Stratigraphic nomenclature of the central Santa Monica Mountains, Los Angeles County, California: U. S. Geol. Survey Bull. 1457-E, 31 pp., 3 pls.

Yerkes, R. F., and Showalter, P. K., 1990, Exploratory wells drilled in the Los Angeles, California 1:100,000 quadrangle: U. S. Geol. Survey Open File Report 90-627, 46 p., 1 map at 1:100,000.

Zinsmeister, J. W., 1983, New late Paleocene molluscs from the Simi Hills, Ventura County, California: Jour. Paleont. vol. 57, no. 6, p. 1282-1303.

Yerkes, R. F., and Showalter, P. K., 1990, Exploratory wells drilled in the Los Angeles, California 1:100,000 quadrangle: U. S. Geol. Survey Open File Report 90-627, 46 p., 1 map at 1:100,000.

Zinsmeister, J. W., 1983, New late Paleocene molluscs from the Simi Hills, Ventura County, California: Jour. Paleont. vol. 57, no. 6, p. 1282-1303.