

U. S. DEPARTMENT OF THE INTERIOR

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Preliminary geologic map of the Mint Canyon 7.5' quadrangle  
Southern California

Compiled by

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Open File Report 96-89

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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 at 1:9600, 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) available from Environmental Systems Research Institute, Redlands, California.

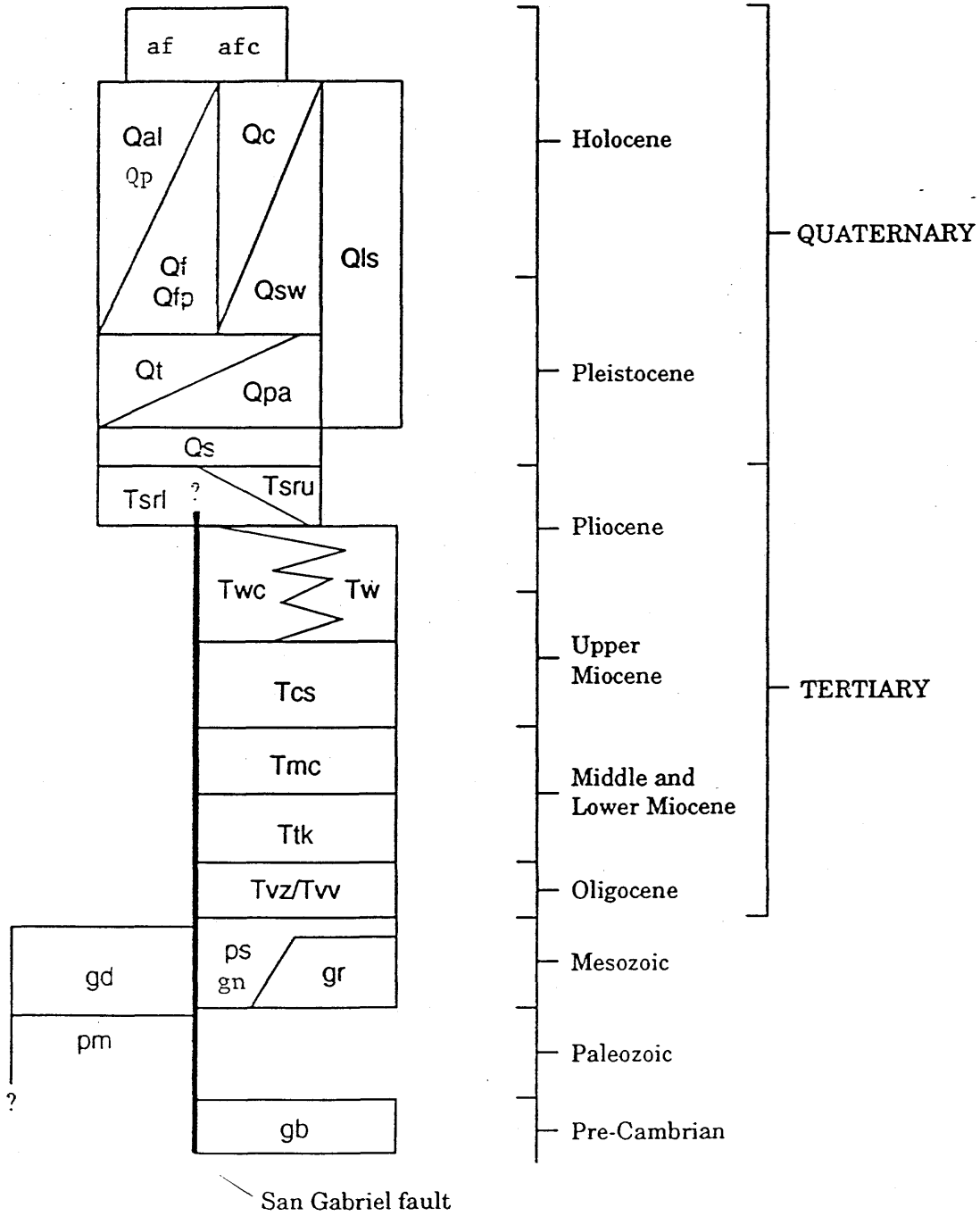
This 1:24,000 quadrangle is one of sixteen that form the east half of the Los Angeles 1:100,000 quadrangle; the 1:24,000 quadrangles form the basic data supporting the regional-scale geologic quadrangle, and thus include available data on exploratory oil wells and fossil collections.

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.

Sources for geology are Saul and Wooton (1983), and Saul (1985).

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

# CORRELATION OF MAP UNITS, PRELIMINARY GEOLOGIC MAP OF MINT CANYON QUADRANGLE



## EXPLANATION, PRELIMINARY GEOLOGIC MAP, MINT CANYON QUADRANGLE

### DESCRIPTION OF MAP UNITS

- af artificial fill, chiefly supporting freeways
- afc artificial cut and fill; graded areas, northeast part of map
- Qal Alluvium (Holocene)-deposits in present drainages, alluvial fans, and flood plains: sand and gravel, fine- to coarse-grained, unconsolidated and uncemented, locally includes colluvium
- Qp Pond deposits (Holocene)-interbedded silt, soil, and organic debris in closed depressions; subject to seasonal flooding
- Qc Colluvium (Holocene)-sheet wash, rock debris, and overbank deposits: sand, silt, and clay, includes stream channel deposits and areas of expansive soils
- Qsw Slope wash (Holocene)-clay-rich mixed soil, rock fragments, and organic debris in dark-colored prisms > 1 m thick; grades into colluvium at base of slopes
- Qfp Flood Plain deposits (Holocene)-silt, sand, gravel, and boulders: unconsolidated, permeable, underlie flood plain of Santa Clara River
- Qf Fan deposits (Holocene and upper Pleistocene)-silt, sand, gravel, and boulders at mouths of some steep canyons
- Qls Landslide deposits (Holocene and upper Pleistocene)-fractured and sheared bedrock and surficial materials: commonly slumps
- Qco Older colluvium (Upper Pleistocene)-rock debris, sand, silt, and clay underlying old erosion surfaces
- Qt Terrace deposits (Pleistocene)-clay, silt, sand, and gravel: compact, clay bonded to unconsolidated; as thick as 30 m
- Qpa Pacoima Formation (Pleistocene)-nonmarine silty, arkosic sandstone, pebbly sandstone, pebble-boulder conglomerate; locally deformed; thickness about 90 m
- Qs Upper Member, Saugus Formation, (Pleistocene)-nonmarine arkosic sandstone, sandy conglomerate, sandy siltstone and claystone; thickness about 366 m; Qsc, upper, coarse-grained facies: poorly consolidated sandstone, sandy conglomerate; Qsg, basal conglomerate (north of Santa Clara River)

**Tsr** **Sunshine Ranch member, Saugus Formation (Pliocene)-Tsr**, upper facies: nonmarine sandy siltstone and mudstone, pebbly sandstone and sandy conglomerate, mapped only north of San Gabriel fault; thickness up to 300 m; **Tsrl**, lower facies: nonmarine arkosic sandstone, silty sandstone, pebbly sandstone, and conglomerate; maximum thickness about 120 m

North of San Gabriel fault

**Tw** **Towsley Formation (Lower Pliocene and Upper Miocene)-marine** shaly siltstone and silty sandstone, local limestone beds; thickness about 245 m; **Twc**, lenses of well-consolidated conglomerate and conglomeratic sandstone

**Tcs** **Castaic Formation (Upper Miocene)-marine** silty or pebbly sandstone, clay shale, tuffaceous and diatomaceous shale, sparse limestone concretions with well-preserved foraminifera; thickness about 150 m

**Tmc** **Mint Canyon Formation (Middle and Lower Miocene)-a** dominantly lacustrine-fluvial sequence divided into coeval facies: **Tmc1**, marginal facies: arkosic sandstone and conglomeratic sandstone, minor siltstone and silty clay shale; **Tmc2**, bottomset facies: interbedded claystone, siltstone, silty sandstone, sandstone, and minor coarse conglomerate and limestone; **Tmc3**, deltaic facies: arkosic, fine- to coarse-grained, sparsely concretionary sandstone, conglomeratic sandstone, and sandy conglomerate, interlayered sandy siltstone and claystone, several tuff beds (T) up to 1.5 m thick; total thickness up to 1825 m

**Ttk** **Tick Canyon Formation (Middle? and Lower Miocene)-dominantly** fluvial sequence of poorly consolidated conglomeratic sandstone and lenses of finer-grained sandstone and siltstone; clasts chiefly volcanic; maximum thickness about 275 m

**Tvz** **Vasquez Formation (Oligocene)-chiefly** lacustrine-fluvial "redbed" sequence of gritty siltstone, locally-derived breccia-conglomerate of gneiss and granite, sandy and silty claystone, mudstone, and limestone; maximum thickness about 300 m; **Tvv**, interlayered andesite near base of Vasquez Formation, northeast corner of map

**gr** **Granite (Cretaceous/Tertiary?)**-biotite-muscovite granite, leucocratic, fine to medium grained, locally gneissoid, common inclusions of older rocks, including Pelona Schist

**gn** **gneiss (Mesozoic)**-hornblende-feldspar-mica gneiss and augen gneiss

**ps** **Pelona Schist (Late Tertiary/Cretaceous)**-exposures at northwest edge of map are of margin of Sierra Pelona, the type area of the schist: greenschist-facies sequence, dominantly mica-chlorite-albite schist, with actinolite-albite schist, quartz-biotite-schist, and dark-colored quartzite; the age of the Pelona and its numerous correlatives has long been speculative, but  $^{40}\text{Ar}/^{39}\text{Ar}$  studies indicate that it is "probably not older than 80-90 my" (Jacobson, 1990)

gb Gabbro (Pre-Cambrian)-altered rocks bordering a large norite-anorthosite complex in the western San Gabriel Mountains

South of the San Gabriel fault

gd Granodiorite (Cretaceous)-medium- to coarse-grained, varies from quartz diorite to granite, locally gneissic

pm Placerita Formation. (Paleozoic?)-interlayered quartz-biotite schist, gneiss, graphitic marble, and orthoquartzite

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
- ▲▲▲▲▲ Thrust fault—Dashed where approximately located, dotted where concealed; sawteeth on upper plate
- ← — — — — Anticline— Approximately located, dotted where concealed; showing crestline
- — — — — → Syncline— Approximately located, dotted where concealed; showing troughline
- 70  
—|— Strike and dip of inclined beds
- ◇ 408 Exploratory well—Number refers to table 1, below

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Table 1 - DATA ON EXPLORATORY WELLS, SAN FERNANDO QUADRANGLE<sup>1</sup>

MAP NO.	T	RW	Sec.	OPERATOR	NAME/NUMBER	ELEVATION (ft)	TOTAL DEPTH (ft)	BOTTOM <sup>2</sup>
213	3N	14	30	Nadot Oil Co.	Nadot 1	2287	3575	Pl
218	3N	15	2	Sandee Oil Co.	Brooks 1	2190	4350	Mm
221	3N	15	3	C.C. Townsend	Townsend-Allen 1	1926	1601	Q
222	3N	15	3	Puccio-Doshay	Puccio-Doshay 1	2000	1200	Gr
223	3N	15	3	Pioneer	White Oil Co. 1	2100	1270	BC
226	3N	15	4	H. E. & J. D. Wilhoit	Wilhoit 1	2200	1778	Mm
229	3N	15	5	W. Y. Lee	Gov't. 1	1504	2602	BC
229A	3N	15	6	Occidental Petroleum Corp.	501	1600	994	?
229B	3N	15	6	Conoco, Inc.	Phillips 1	1646	8253	Gn
230	3N	15	6	H.H. Herrman	Albert-Trinity 1	1650	1040	?
231	3N	15	6	Atlantic Oil Co.	Albert 1	1600	1012	C
232	3N	15	7	Chevron USA, Inc.	Elsmere 23	1450	2821	C
233	3N	15	7	Chevron USA, Inc.	Elsmere 1	1800	1376	E?
235	3N	15	8	H. C. Hicks	Lillie 1	1850	1000	Pl
236	3N	15	17	Graves Oil Co.	1	2200	1500	BC
237	3N	15	18	Chevron USA, Inc.	Elsmere 24	2050	1624	Mm
238	3N	15	18	Buick Oil Co.	2	2140	1485	Pl
239	3N	15	18	M.R. Peck & Sons	Brown 1	2100	796	Gr
240	3N	15	19	Chevron USA, Inc.	Newhall 1	2000	700	Pl
241	3N	15	19	ARCO	T I & T 1	1321	8207	QT
242	3N	15	19	Tesoro Pet. Corp.	T I & T 1	1343	3180	Pl
243	3N	15	20	Ajax O & D Co.	McCloskey-Hansen USL 1	1625	2600	Gr
244	3N	15	21	Sun Oil Co.	Stetson-Sombrero 1	1435	12027	QT
245	3N	15	30	Sun Oil Co.-DX Div.	T I & T 1	1527	8035	Pl
246	3N	15	30	Active Oil Co.	1	1300	2102	Q
247	3N	15	32	San Fernando O & G Co.	1	1150	1953	Mu
248	3N	15	35	H. C. Long	Verda 1-35	1297	6210	Pl
249	3N	15	36	D.W. Griffith Oil Co.	1	1450	1647	Pl
250	3N	15	36	Terminal Drlg. Co.	Lloyd 1	1301	3470	Mu
379	2N	14	6	Bell Pet. Co.	Bartholomaus Canyon- Bush Bar 1	1660	2988	Mu
380	2N	14	6	Bell Pet. Co.	Bartholomaus 74-6	1290	5347	Gr
381	2N	14	6	Oceanic Oil Co.	Oceanic-Dubois 1	1268	3582	Gr
382	2N	14	6	G.C. Parry	Moynier-Parry 1	1220	4216	Mu
383	2N	14	7	W.L. Alexander	1	1125	1239	Mu
387	2N	15	1	Casa Grande Oil Co.	Lopez-Lundy 1	1255	3782	M
388	2N	15	1	E.L. Doheny	E.L.D.-Reeves 1	1650	4568	Mu
389	2N	15	1	Tesoro, Inc.	Toon 1	1250	4553	Mm
390	2N	15	1	K.V. & P.J. Lopez	1	1300	2880	Mu
391	2N	15	2	Pacoima Petroleum & Helium Gas Corp.	1	1000	2700	Mu
392	2N	15	4	Gulf Oil Corp.	Carey 1	1240	10136	Mu
393	2N	15	4	Shell CPI	Mission 1	1173	4953	Mu

<u>MAP NO.</u>	<u>T</u>	<u>RW</u>	<u>Sec.</u>	<u>OPERATOR</u>	<u>NAME/NUMBER</u>	<u>ELEV- ATION (ft)</u>	<u>TOTAL DEPTH (ft)</u>	<u>BOT- TOM<sup>2</sup></u>
394	2N	15	4	Shell CPI	Mission 2	1130	5687	Mu
395	2N	15	4	Chevron USA, Inc.	Rinaldi C.H. 1	1031	4725	Mu
396	2N	15	5	Mission Hills Oil Co.	1	1100	1421	Mu
397	2N	15	6	Gulf Oil Corp.	Panorama 1	1180	9614	M
398	2N	15	6	Exeter Oil Co.	Exeter-Elerath 1	1042	5347	Pl
399	2N	15	6	J.P. Getty	Foothill Orchards 1	1050	3559	Pl
400	2N	15	9	UNOCAL	San Fernando 1-9	1020	8925	C
401	2N	15	10	Occidental Pet. Corp.	Pacoima E.H. 1	999	9291	Mm
402	2N	15	11	Chevron USA, Inc.	Century Props. 1	1050	8055	M
403	2N	15	11	Chevron USA, Inc.	Pacoima 1	1010	9995	Ku
404	2N	15	15	Chevron USA, Inc.	Pacoima 8	955	11294	M?
405	2N	15	15	Chevron USA, Inc.	University 1	945	5938	M
406	2N	15	16	Chevron USA, Inc.	Burnet C.H. 1	927	10227	Ku
407	2N	15	18	Chevron USA, Inc.	Coffman 1	932	6608	Mu

<sup>1</sup> Data from Yerkes and Showalter, 1990.

<sup>2</sup> BC, basement complex; C, confidential; E, Eocene; Gr, granite; Gn, gneiss; K, Cretaceous; M, Miocene; Pl, Pliocene; Q, Quaternary; QT, Pliocene or Pleistocene; m, middle; u, upper.



Table 2 - DATA ON FOSSIL LOCALITIES, SAN FERNANDO QUADRANGLE

<u>MAP NO</u> <sup>1</sup>	<u>TN</u>	<u>RW</u>	<u>Sec</u>	<u>COLL- ECTOR</u>	<u>AGE</u>	<u>MAP UNIT</u>	<u>SOURCE</u>
FR3	3	14	31	BFH	P	Tp	Oak.
FR4	3	15	21	CDMG	P	Tw	do.
FR5	3	15	21	do.	P	Tw	do.
FR6	3	15	20	do.	P	Tw	do.
FR7	3	15	19	do.	P/Mu	Tw	do.
FR8	3	15	17	USGS	P	Tw	Eng.
FR9	3	15	17	G & G	P	Tw	Oak.
FR10	3	15	8	do.	P	Tw	do.
FM11	3	15	2	UCLA	Mu	Tm	do.
FR11A	3	15	8	G & G	P	Tw	do.
FR12	3	15	8	do.	P	Tw	do.
FR13	3	15	8	do.	P	Tw	do.
FR14	3	15	8	do.	P	Tw	do.
FR15	3	15	18	UCLA	P	Tw	do.
FR16	3	15	18	do.	P	Tw	do.
FR17	3	15	7	do.	P	Tw	do.
FP1	3	15	7	G & G	P	Tp	do.
FP2	2	15	5	CDMG	P	Tp	do.
fm4	2	15	12	CDMG	Mu?	Tm	do.
fm5	2	15	5	CDMG	Mu	Tm	do.
fm7	3	15	2	UCLA	Mu	Tm	do.

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- <sup>1</sup> F, macrofossil collection; f, microfossil collection; number same as collector's number.
- <sup>2</sup> BFH, B. F. Howell, 1949; CDMG, Calif. Div. Mines and Geology; G & G, Grant and Gale, 1931; UCLA, Univ. Calif. Los Angeles; USGS, U. S. Geol. Survey.
- <sup>3</sup> M, Miocene; P, Pliocene; u, upper.
- <sup>4</sup> Eng., English, 1914; Oak., Oakeshott, 1958.