120°30' 34°50' 120°20' 34°40'

GEOLOGIC MAP OF SANTA MARIA DISTRICT, SANTA BARBARA COUNTY, CALIFORNIA

Scale 1:24000

1 0 2 Miles

1000 0 5000 Feet

1950

Base from airplane photograph mosaic sheets prepared by Fairchild Aerial Surveys

Geology by W. P. Woodring, M. N. Bramlette, K. E. Lohman, and R. P. Bryson. Surveyed in 1938-40

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.

EXPLANATION

SEDIMENTARY ROCKS

QUATERNARY

Recent

Dune sand

- **Qal** — Alluvium. *Gravel, sand, silt*
- **Qsm** — Modern dune sand. *Actively drifting sand*
- **Qsi** — Intermediate dune sand. *Dune sand more or less anchored by vegetation*
- **Qso** — Old dune sand. *Dune sand anchored by vegetation*

Pleistocene

- **Qt** — Terrace deposits younger than Orcutt sand. *Sand, gravel, rubble on stream and marine terrace; includes locally marine deposits on marine terraces; at places may include Orcutt sand*
- **Qo** — Orcutt sand. *Slightly deformed terrace deposits; sand, gravel*

Upper Pliocene

- **Tpr** (ls) — Paso Robles formation. *Sand, gravel, clay; limestone, ls*

Careaga sandstone

- **Tcg** — Graciosa coarse-grained member. *Coarse-grained sandstone and sand; conglomerate, gravel*
- **Tcc** (f) — Cebada fine-grained member. *Fine-grained sandstone and sand; f, fossiliferous tiny sandstone in Casmalia Hills*
- **Tcu** (f) — Undifferentiated Careaga sandstone. *Sandstone, sand, conglomerate, gravel; f, fossiliferous sandstone corresponding approximately to base of Graciosa coarse-grained member*
- **Tf** (ls) — Foxen mudstone. *Mudstone, siltstone, fine-grained sandstone; ls, limestone in Casmalia Hills*

TERTIARY

FOXEN CANYON–SISQUOC RIVER AREA	PURISIMA HILLS	GATO RIDGE AND GRACIOSA RIDGE	CASMALIA HILLS

Upper Miocene to middle Pliocene — Sisquoc formation

- **Ts** — Diatomaceous strata. *Diatomaceous siltstone, sandstone*
- **Tst** — Tinaquaic sandstone member. *Sandstone, siltstone*
- **Tsm, Tscl, Ts, Tss, Tsd, Tsds** — Sisquoc formation. *Diatomaceous mudstone, clayey mudstone, differentiated locally, Tscl, porcelaneous or diatomaceous light-colored "marker bed", Tsm; laminated diatomite, Tscl; porcelaneous shale, Tsds; somewhat porcelaneous mudstone, Tss*
- **Ts** — Sisquoc formation. *Diatomaceous mudstone; clayey mudstone*
- **Ts, Tsd** — Diatomaceous strata. *Diatomaceous mudstone, clayey mudstone; light-colored diatomaceous strata, Tsd*
- **Tsts** — Todos Santos claystone member. *Somewhat porcelaneous claystone, thin zones of porcelaneous shale*

Upper Miocene — Monterey shale

- **Tmu** — Upper member. *Porcelaneous shale; laminated diatomite and diatomaceous shale, Tmud*
- **Tmm** — Middle member. *Chert, cherty shale, porcelaneous shale*
- **Tml** — Lower member. *Phosphatic shale, porcelaneous shale, limestone*
- **Tps** — Point Sal formation. *Mudstone, siltstone, thin-bedded sandstone*

Middle Miocene

Upper Jurassic — Lower Miocene (?) — Lospe formation

- **Tlu** (tu) — Upper member. *Greenish sandstone, siltstone, and gypsiferous mudstone*
- **Tll** (tu) — Lower member. *Reddish sandstone and conglomerate; tuff, tu*
- **Tl** (tu) — Undifferentiated Lospe formation. *Reddish and greenish conglomerate, sandstone, siltstone and mudstone, tuff, tu*
- **Jk** — Knoxville formation. *Shale, thin-bedded sandstone, conglomerate*

- **tss** — Tar sand
- Burnt shale
- **Qls** (Ql, Qlo) — Landslides and earthflows. *Older, Qlo, and younger, Qls, landslides and earth flows differentiated on north slope of Casmalia Hills*

JURASSIC(?), TERTIARY, TERTIARY(?)

IGNEOUS ROCKS

Miocene (?) Miocene

- **di** — Diabase
- **a** — Augite andesite
- **Jf** — Undifferentiated igneous rocks of Franciscan formation. *Mostly altered basalt and gabbro; minor areas of peridotite and serpentine*

- Boundary or outcrop determined by exposures of mapped bed
- Boundary or outcrop determined by scattered exposures and float
- Boundaries or outcrop inferred
- Boundary or outcrop doubtful
- Trace of exposed fault and dip of fault plane; downthrown side marked
- Trace of imperfectly exposed fault
- Trace of inferred fault
- Trace of doubtful fault
- Axis of anticline and direction of plunge, dashed where doubtful
- Axis of overturned anticline
- Axis of syncline and direction of plunge
- Strike and dip of beds
- Strike and dip of overturned beds
- Strike of vertical beds
- Approximate dip of beds, strike undetermined
- Horizontal beds
- Fossil locality
- Undrained depression
- Drilling well (Jan. 15, 1947)
- Uncompleted idle well
- Dry hole
- Water well in oil field
- Producing oil well
- Shut-in oil well
- Abandoned oil well
- Producing gas well
- Shut-in gas well
- Abandoned gas well
- Oil well producing from deep zone. *Knoxville formation in Santa Maria Valley field, Lospe formation or Point Sal formation in Casmalia field, Monterey shale in West Cat Canyon field*
- Shut-in gas well formerly producing from Knoxville formation in Santa Maria Valley field
- Uncompleted idle well. Deep zone tested but not productive. Deep zones same as above
- Dry hole. Deep zone tested, but not productive. Deep zones same as above
- Producing oil well. Deep zone tested but not productive. Deep zones same as above

