DIVISION OF MINES
Ian Campbell, Chief

STATE OF CALIFORNIA
Edmund G. Brown, Governor

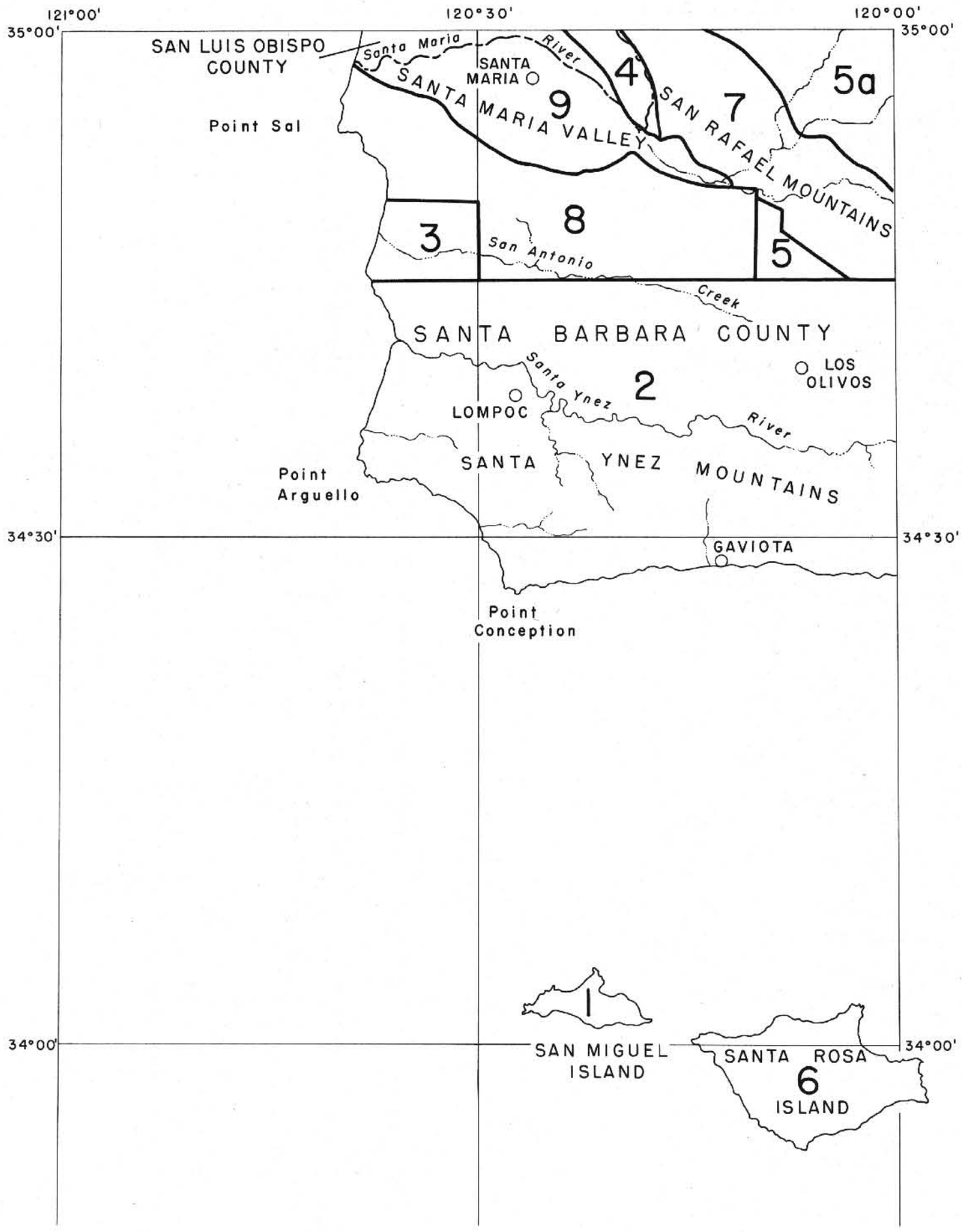
DEPARTMENT OF NATURAL RESOURCES
DeWitt Nelson, Director

EXPLANATORY DATA
SANTA MARIA SHEET
GEOLOGIC MAP OF CALIFORNIA

OLAF P. JENKINS EDITION
Compiled by Charles W. Jennings, 1959

Third Printing, 1977

INDEX TO GEOLOGIC MAPPING
USED IN COMPILATION OF THE SANTA MARIA SHEET



1. Bremner, Carl St. J., 1933, Geology of San Miguel Island, Santa Barbara County, California: Santa Barbara Mus. Nat. History Occasional Papers, No. 2, 23 pp., Pl. 4: Geologic map of San Miguel Island, Santa Barbara County, California, scale 1: 31,250.

2. Dibblee, T. W. Jr., 1950, Geology of southwestern Santa Barbara County, California: California Div. Mines Bull. 150, 95 pp., Pl. 1: Geologic map of the Lompoc, Point Conception, and Point Arguello quadrangles, scale 1: 62,500, Pl. 2: Geologic map of Los Olivos and Gaviota quadrangles, scale 1: 62,500.

3. Dibblee, T. W. Jr., Geologic map of the Point Sal quadrangle, California, scale 1: 62,500, unpublished.

4. Dibblee, T. W. Jr., Geologic map of a part of the Santa Maria quadrangle, California, scale 1: 62,500, unpublished.

5. Dibblee, T. W. Jr., Geologic map of part of the Tepusquet Peak quadrangle, California, scale 1: 62,500, unpublished.

5a. Dibblee, T. W. Jr., Geologic map of part of the Tepusquet Peak quadrangle, California, scale 1: 62,500, unpublished.
Arnold, R. and Anderson, R., 1907, Geology and oil resources of the Santa Maria oil district, Santa Barbara County, California: U. S. Geol. Survey Bull. No. 322, 161 pp., Pl. 1: Preliminary geologic and structural map of the Lompoc and Guadalupe quadrangles, California, scale 1: 125,000.

6. Dibblee, T. W. Jr., Geologic map of Santa Rosa Island, California, scale approx. 1: 45,000, unpublished.

7. Honolulu Oil Corporation, Generalized geological maps of the Tepusquet and Rancho Sisquoc-Figueroa Mountain areas by Lowell Redwine and others, scale 1: 62,500, unpublished (1953). (Cretaceous subdivided by T. W. Dibblee, written communication).

8. Woodring, W. P. and Bramlette, M. N., 1950, Geology and paleontology of the Santa Maria District, California: U. S. Geol. Survey Prof. Paper 222, 185 pp., Pl. 1: Geologic map of Santa Maria district, Santa Barbara County, California, in five sheets by Woodring, W. P., Bramlette, M. N., Lohman, K. E., and Bryson, R. P., scale 1: 24,000.
Woodring, W. P., Bramlette, M. N., and Lohman, K. E., 1943, Stratigraphy and paleontology of Santa Maria district, California: Am. Assoc. Petrol. Geol. Bull., vol. 27, no. 10, pp. 1335-1360, Fig. 1: Generalized geologic map of Santa Maria district, California, scale 1: 180,000.

9. Worts, G. F. Jr., 1951, Geology and groundwater resources of the Santa Maria Valley area, California: U. S. Geol. Survey-Water Supply Paper 1000, 169 pp., Pl. 1: Geologic map of the Santa Maria Valley area, Santa Barbara County, California, scale 1: 62,500.

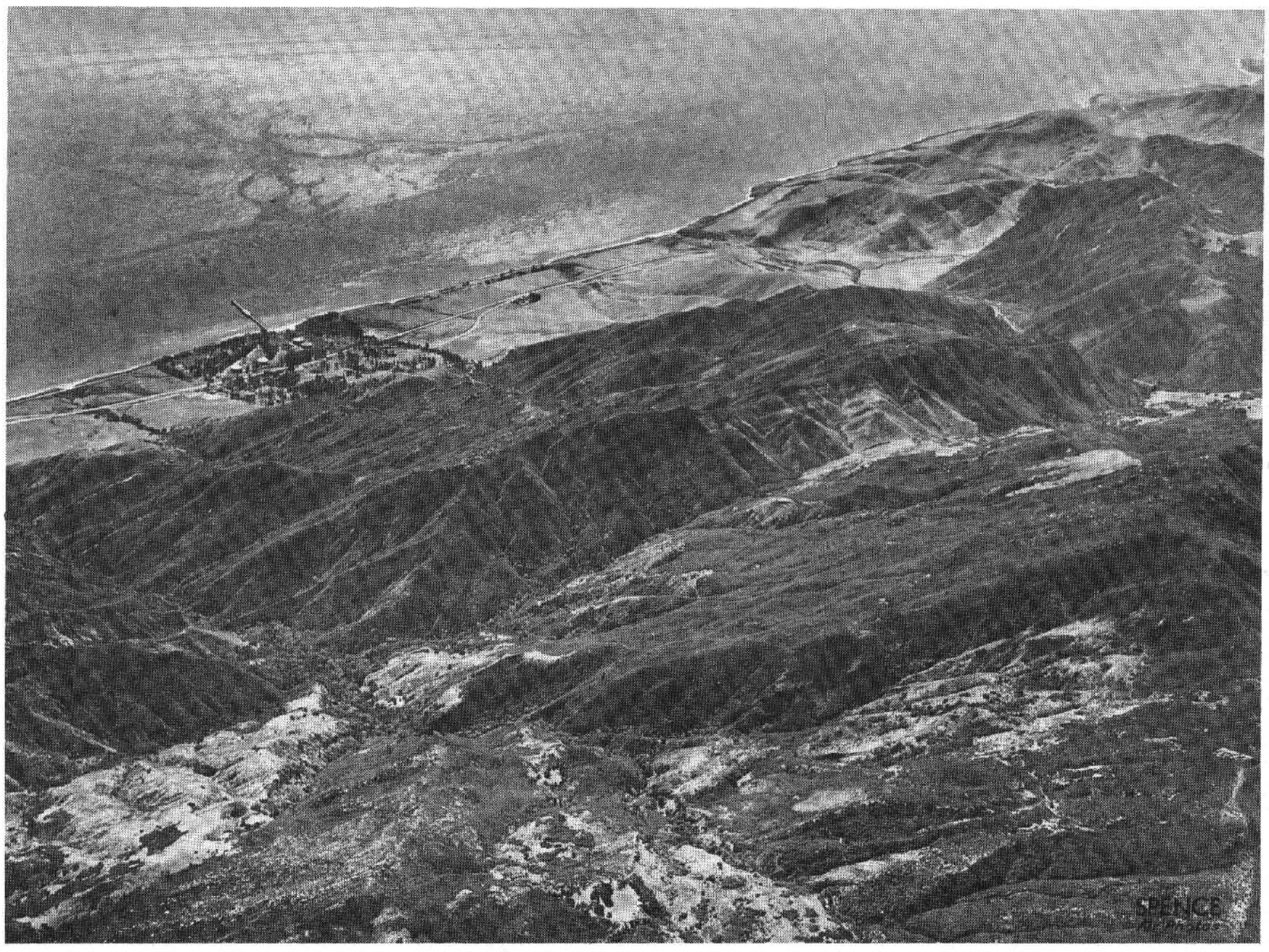
For a complete list of published geologic maps of this area see Division of Mines Special Report 52.

STRATIGRAPHIC NOMENCLATURE—SANTA MARIA SHEET

LEGEND SANTA MARIA SHEET			DATA FROM SELECTED PUBLISHED SOURCES USED TO COMPILE THE SANTA MARIA SHEET Numbers Refer to Index on Reverse Side of Sheet			
AGE	STATE MAP SYMBOL	STATE MAP UNIT	Bremner 1	Dibblee 2	Woodring and Bramlette 8	Worts 9
CENOZOIC / QUATERNARY / Recent	Qs	**RECENT SAND DUNES** (Dune sand)	Dune sands	Dune sand	Dune sand	Dune sand
CENOZOIC / QUATERNARY / Recent	Qal	**RECENT ALLUVIUM** (Alluvium, river channel deposits)		Alluvium	Alluvium	Alluvium, river-channel deposits
CENOZOIC / QUATERNARY / Recent	Qt	**RIVER AND STREAM TERRACE DEPOSITS** (Stream terrace deposits)		Stream terrace deposits	Deposits on stream terraces	Terrace deposits
CENOZOIC / QUATERNARY / Pleistocene	Qm	**PLEISTOCENE MARINE DEPOSITS AND MARINE TERRACE DEPOSITS** (Marine and nonmarine deposits on wave-cut terraces)	Upper and lower marine terrace deposits	Marine and terrestrial gravels on wave-cut terraces	Deposits on marine terraces	
CENOZOIC / QUATERNARY / Pleistocene	Qc	**PLEISTOCENE NONMARINE SEDIMENTARY DEPOSITS** (Orcutt fm.)		Orcutt sand	Orcutt sand	Orcutt fm.
CENOZOIC / QUATERNARY / Pleistocene, Pliocene	QP	**PLIOCENE-PLEISTOCENE NONMARINE SEDIMENTARY DEPOSITS** (Paso Robles fm.)		Paso Robles fm.	Paso Robles fm.	Paso Robles fm.
CENOZOIC / TERTIARY / Pliocene	Pu	**UPPER PLIOCENE MARINE SEDIMENTARY ROCKS** (Careaga sandstone)		Careaga sand	Careaga sandstone	
CENOZOIC / TERTIARY / Pliocene	Pml	**MIDDLE AND/OR LOWER PLIOCENE MARINE SEDIMENTARY ROCKS** (Foxen claystone [upper Pliocene in part])		Foxen claystone (middle and upper Pliocene)	Foxen mudstone (middle ? and upper Pliocene)	
CENOZOIC / TERTIARY / Miocene	Mu	**UPPER MIOCENE MARINE SEDIMENTARY ROCKS** (Santa Margarita sandstone, Sisquoc fm. [middle Pliocene in part])		Sisquoc fm. (upper Miocene to middle ? Pliocene)	Sisquoc fm. (upper Miocene to middle Pliocene)	
CENOZOIC / TERTIARY / Miocene	Mm	**MIDDLE MIOCENE MARINE SEDIMENTARY ROCKS** (Monterey fm. [upper Miocene in part], Point Sal fm.)	Monterey fm. (upper Miocene)	Monterey shale (middle and upper Miocene)	Monterey shale (middle and upper Miocene), Point Sal fm.	
CENOZOIC / TERTIARY / Miocene	Ml	**LOWER MIOCENE MARINE SEDIMENTARY ROCKS** (Rincon claystone, Temblor fm. [middle Miocene in part], Vaqueros fm., unnamed marine beds below Vaqueros in Tepusquet Peak quadrangle; locally contain nonmarine Sespe.)	Temblor fm. (middle Miocene), Vaqueros fm.	Rincon claystone, Vaqueros fm.		
CENOZOIC / TERTIARY / Miocene	Mv, Mv^a, Mv^b, Mv^p	**MIOCENE VOLCANIC ROCKS: UNDIFFERENTIATED—Mv; ANDESITIC—Mv^a; BASALTIC—Mv^b; PYROCLASTIC—Mv^p** (Conejo volcanics—Mv^b and basaltic agglomerate—Mv^p on Santa Rosa Is., Tranquillon volcanics—Mv)	Andesite member of Monterey fm.—Mv^a, basalt member of Vaqueros fm.—Mv^b	Tranquillon volcanics (Lower Miocene rhyolite flows, agglomerate, tuff, bentonite, and basalt—Mv)		
CENOZOIC / TERTIARY / Oligocene	ϕc	**OLIGOCENE NONMARINE SEDIMENTARY ROCKS** (Lospe fm., Sespe fm. [ranges in age from lower Miocene to upper Eocene in places])		Sespe fm. (Oligocene ?)	Lospe fm. (lower Miocene ?)	
CENOZOIC / TERTIARY / Oligocene	ϕ	**OLIGOCENE MARINE SEDIMENTARY ROCKS** (Alegria fm., Gaviota fm.)		Alegria fm., Gaviota fm.		
CENOZOIC / TERTIARY / Eocene	E	**EOCENE MARINE SEDIMENTARY ROCKS** (Anita shale, Cozy Dell shale, Matilija sandstone, Sacate fm., Sierra Blanca limestone, unnamed Eocene rocks on Channel Isls.)	Undifferentiated and unnamed Eocene marine sedimentary rocks	Sacate ("Coldwater") fm., Cozy Dell shale, Matilija sandstone, Anita shale, Sierra Blanca limestone		
CENOZOIC / TERTIARY / Undivided	Ti	**TERTIARY INTRUSIVE ROCKS** (Intrusive basalt and diabase on Santa Rosa Is.)				

STRATIGRAPHIC NOMENCLATURE — Continued

AGE	STATE MAP SYMBOL	STATE MAP UNIT	Bremner 1	Dibblee 2	Woodring and Bramlette 8	Worts 9
MESOZOIC — CRETACEOUS	Ku	**UPPER CRETACEOUS MARINE SEDIMENTARY ROCKS** (Jalama fm., unnamed Upper Cretaceous sedimentary rocks)		Jalama fm.		
MESOZOIC — CRETACEOUS	Kl	**LOWER CRETACEOUS MARINE SEDIMENTARY ROCKS** (Espada fm., unnamed Lower Cretaceous sedimentary rocks)		Espada fm. (Lower Cretaceous and Upper Jurassic—"Knoxville")		
MESOZOIC — CRETACEOUS	KJf	**FRANCISCAN GROUP** (Franciscan fm., Honda fm., Franciscan-Knoxville undivided)		Franciscan fm. (sandstone, shale, chert, minor basalt), Honda fm. (may be member of Franciscan)		Franciscan and Knoxville (?) formations (sandstone, shale, serpentine, chert, schist)
MESOZOIC — CRETACEOUS	KJfv	**FRANCISCAN VOLCANIC AND METAVOLCANIC ROCKS** (Altered basalt and gabbro)			Altered basalt and gabbro of Franciscan fm.	
MESOZOIC — CRETACEOUS	ub	**MESOZOIC ULTRABASIC INTRUSIVE ROCKS** (Peridotite and serpentine)		Serpentine	Peridotite and serpentine of Franciscan fm.	
MESOZOIC — JURASSIC	Jk	**KNOXVILLE FORMATION** (Knoxville fm.)			Knoxville fm.	



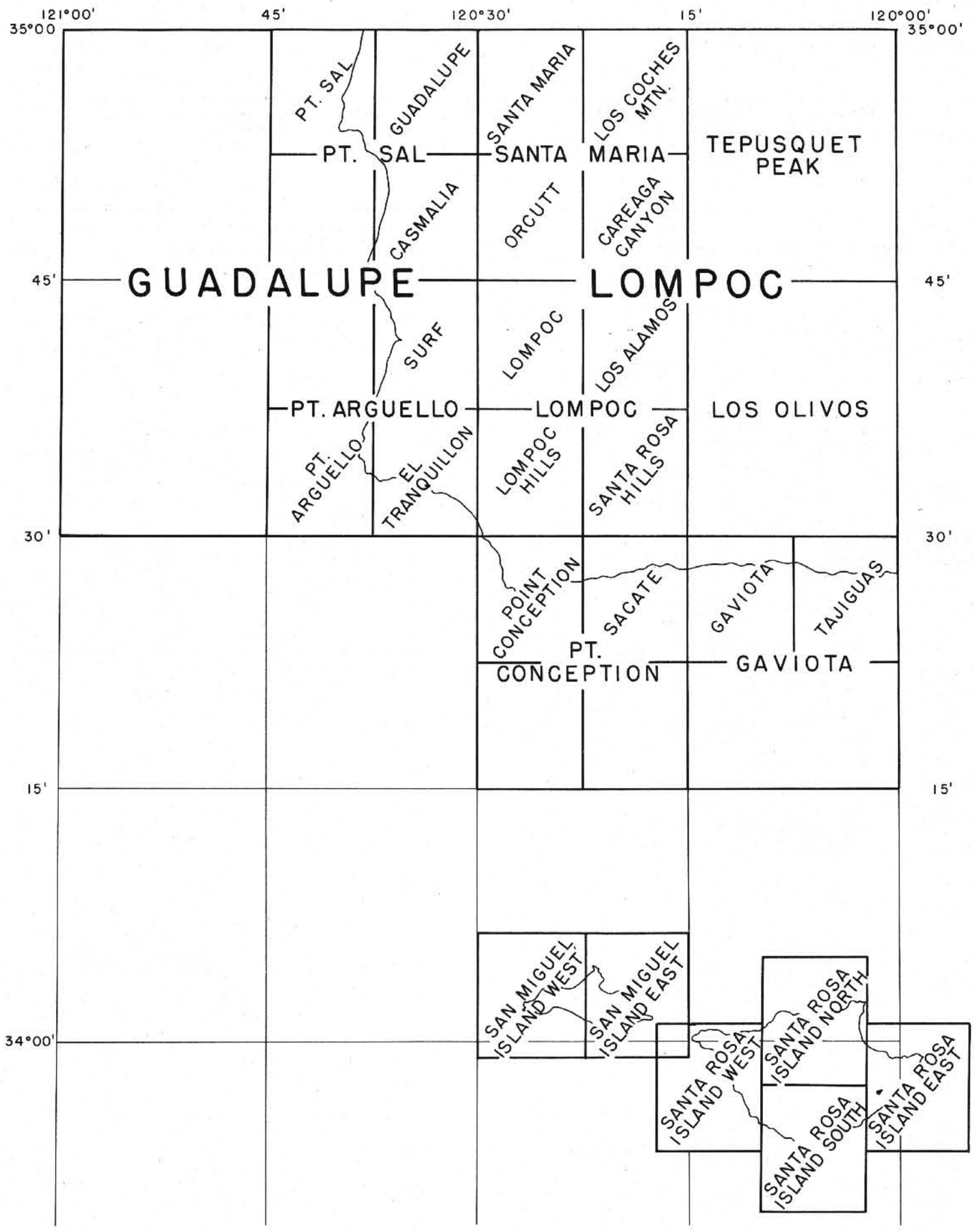
View southwest over Santa Ynez Range toward Pacific Ocean. Highway 101 traverses marine-cut terrace, passes through tank farm at Gaviota, and crosses range through Gaviota Gorge (right, middleground). Light-colored exposures in lower half of view are of the Eocene Sacate formation, which forms prominent dip slopes. Oligocene Gaviota and Alegria formations overlie Sacate beds high along the prominent erosion face that bisects the view parallel to the coast line, and form prominent brush-covered dip-slopes in middleground. Miocene Rincon and Monterey formations are exposed in subdued hills along coast in upper right. *Photo courtesy Spence Air Photos.*

TOPOGRAPHIC QUADRANGLES

WITHIN THE SANTA MARIA SHEET

AVAILABLE FROM THE U.S. GEOLOGICAL SURVEY

1959



View southward across Santa Ynez Valley toward the Santa Ynez Range with Santa Rosa Island in the distance. Rolling topography in the foreground consists largely of river terrace deposits and Paso Robles formation. The prominent San Marcos Pass road bears toward the deeply dissected foothills in the middleground composed of Miocene Monterey shale. Eocene Matilija sandstone forms the crest of the range and extends down to the Santa Ynez fault. The fault trace is marked by a prominent break in slope, and separates strikingly different erosional landforms. *Photo courtesy Spence Air Photos.*