

EXPLANATION

UNCONSOLIDATED DEPOSITS

**af**  
Artificial fill  
Chiefly fill for roadways and small earth dams

**Qal** **Qc** **Qb** **Qd** **Qls** **Qdt** **Qu**

Alluvial, colluvial, beach, dune, landslide, and undifferentiated surficial deposits

*Qal, alluvial gravel, sand, and silt; includes some colluvium and plowed residual soil in Triunfo, La Sierra, and Medea Canyons; generally cohesionless to moderately cohesive*  
*Qc, colluvial silt, clay, and sand, with abundant angular rock fragments; commonly moderately cohesive*  
*Qb, beach sand and minor gravel, cohesionless*  
*Qd, dune sand, cohesionless*  
*Qls, landslide deposits (in many places includes scarp area), unclassified except where otherwise noted (see "map symbols")*  
*Qdt, debris trains and debris fans—chiefly the deposits of debris avalanches*  
*Qu, undifferentiated alluvium and colluvium; locally includes plowed residual soil on bottoms and lower flanks of some valleys and basins; may include some wind-deposited silt and sand*

More than one label may be used for a single mapped feature, for example: Qdt + Qls would indicate that other kinds of landslide deposits were probably present as well as the debris trains

**Qst**  
Stream terrace deposits  
Silt, sand, clay, and gravel; on flanks of present stream valleys; mostly younger than Qtm, but partly older than some Qtm

**Qta** **Qtm**

Coastal terrace deposits

*Qta, alluvial gravel, sand, silt, and clay; moderately cohesive; generally not clearly related to any one modern stream valley; commonly overlies marine platform, in many places separated from bedrock by a few inches to about 1 foot of marine sand and gravel*  
*Qtm, marine sand and gravel with minor silt locally fossiliferous; generally cohesionless commonly overlain by a few inches to several feet of alluvial deposits*

BEDROCK

Area south of Malibu Coast fault

**Tm**  
**Tmd**

Monterey Shale

*Tm, marine clay shale, diatomaceous, bituminous, siliceous, locally cherty, and some interbedded sandstone that is locally glaucofan-bearing; a few thin dolomite beds*  
*Tmd, marine shale, siltstone, and very fine-grained sandstone; commonly dolomitic, locally contains abundant chert; commonly tightly folded*

**Tb** **Tbv**

Unit B

*Tb, marine sandstone, mudstone, claystone, sedimentary breccia (San Onofre Breccia), and interbedded volcanic rocks; sandstone and breccia contain locally plentiful glaucofan schist and other metamorphic rock detritus indicative of a source of Catalina Schist*  
*Tbv, basaltic and andesitic flows, flow breccias, tuff breccias, mudflow breccias, and interbedded siltstone, sandstone, and minor sedimentary breccia (similar to San Onofre Breccia); flows are commonly vesicular and locally pillowed; base not exposed, probably underlain by metamorphic rocks of the Catalina Schist*

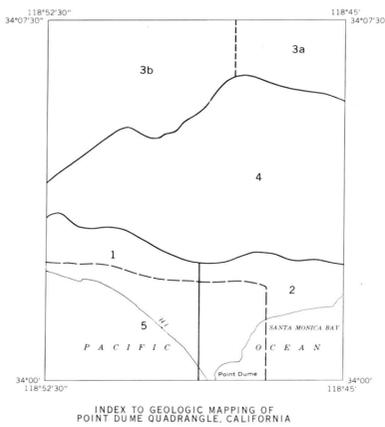
FOSSIL LOCALITIES

62C10 FP  
62C20 fME

Showing U.S.G.S. field number, whether microfossil (f) or macrofossil (F) fauna, and geologic epoch or series: Q, late Pleistocene; MP, Miocene or Pliocene; M, Miocene; MI, late Miocene; Mm, middle Miocene; Me, early Miocene; E, middle Eocene, "Domengine" Stage of Weaver and others, 1944; P, Paleocene, "Martinez" Stage of Weaver and others, 1944; K, late Cretaceous, Campanian Stage; o, older; y, younger; ?, assignment probable, some uncertainty. For example: fMio, microfossils, late Miocene or older; FMme, macrofossils, middle or early Miocene; FE, macrofossils, middle Eocene. Fossils collected during field mapping were identified by W. O. Addicott, Patsy J. Smith, John G. Vedder, R. L. Pierce, and D. L. Jones, all of the U.S. Geological Survey.

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- Campbell, R. H., unpublished mapping done in 1964-68.
- Birkeland, P. W., unpublished mapping of terrace deposits done in 1967-68.

EXPLANATION

MAP SYMBOLS

Fault symbols are long dashed where approximately located, short dashed where inferred, dotted where concealed by surficial deposits, queried where doubtful

**U** **D**  
High-angle fault, showing dip  
U, upthrown side; D, downthrown side; arrows indicate relative horizontal movement

**35**  
Low-angle fault, showing dip  
Sawtooth on upper plate

**90**  
Malibu Coast Fault, showing dip  
Boxes on upper plate of reverse fault

**90**  
Anticline, asymmetric in part  
Showing crestline, approximately located; where asymmetric, short arrow indicates steeper limb

**90**  
Syncline  
Showing trough line and direction of plunge, approximately located

**90**  
Minor anticlines  
Showing plunge and dip of axial plane

**90**  
Minor syncline, showing plunge

**90**  
Minor fold axis, showing plunge

**90**  
Minor fold axis, horizontal

**90**  
Minor folds  
Showing strike and dip of axial surfaces and plunge of fold axes

Spring or seep

Area of colluvium, soil creep, or small slump on steep slopes  
Boundaries not determined, arrow shows general direction of movement

Trend of filled ravine not expressed by present topography

Landslide notations:  
Most landslides are complex; dominant types of movement are indicated as follows:  
ds, debris slide  
rs, rotational slump  
rt, rock fall (includes some talus deposits)  
df, debris flow  
bg, block glide  
da, debris avalanche (may include some debris flows); extent noted on map by following symbol:

Number indicates year of last movement, queried where inferred

( )  
Bedrock unit label in parentheses indicates dominant source of detritus in landslide deposit

Approximate head of landslide scarp

Landslide involved chiefly colluvium and soil

Landslide involved bedrock, or is unclassified

Arrows indicate general direction of movement, queried where origin of feature is uncertain

Area north of Malibu Coast fault

**Ttu**  
Upper Topanga Formation of Durrell (1954) north of Malibu Lake  
Siltstone and sandstone, thin bedded to shaly; many thin turbidites; and some dolomite concretions

**Tcb** **Tcf**  
Conejo Volcanics of Taliaferro (1924)  
Tcb, fragmental volcanic rocks—chiefly basaltic and andesitic volcanic breccias; locally includes pillow breccia and probable mudflow breccia; basal zone includes volcanic sandstone locally, and in the eastern half of the map area the base is locally marked by a black marine shaly siltstone and some minor quartzose sandstone; includes a few thin flows  
Tcf, flow units—chiefly basaltic and andesitic flows; minor interbeds of fragmental volcanic rocks

**Tte** **Ttc**  
Lower Topanga Formation of Durrell (1954)  
Tte, siltstone beds of the Encinal Canyon area—chiefly dark gray platy to shaly siltstone and mudstone, and minor interbedded sandstone; marine  
Ttc, sandstone and siltstone beds north of Castro Peak—chiefly medium- to coarse-grained sandstone, locally conglomeratic, and some interbedded dark gray platy to shaly siltstone; locally contains abundant molluscan marine fauna

**Tva**  
Vaqueros Formation  
Medium- to very coarse-grained sandstone and some conglomerate, interbedded dark gray platy to shaly siltstone and mudstone, and a few interbeds of purple and grayish-blue sandy mudstone; locally contains abundant marine molluscan fauna; map unit may include basal part of overlying unit Ttic in the area between Zuma Canyon and Latigo Canyon Road

**Ts**  
Sespe Formation  
Medium- to very coarse-grained sandstone, conglomeratic sandstone, and cobble conglomerate, generally grayish to very pale orange in color, but locally red; continental, probably mostly fluvial

**Tll**  
Llajas(?) Formation (Rocks questionably correlated with the Llajas Formation of Schenck, 1931)  
Very fine-grained sandstone and siltstone, commonly micaceous, generally platy to shaly; contains a few discontinuous interbeds of medium- to very coarse-grained sandstone, most of which are turbidites; also contains cobble conglomerate in thin discontinuous beds, more continuous at the base; molluscan marine fauna referred to the "Domengine" Stage of Weaver and others, (1944)

Intrusive Rocks

Sills, dikes, and irregular bodies of andesite, basalt, and diabase, intrusive into sedimentary and volcanic rocks; thin dikes and sills shown by line, long dashed where approximately located, short dashed where inferred, dotted where concealed by surficial deposits, queried where doubtful; showing dip; thickness, in feet, measured at triangle; x, small exposure, boundaries not determined  
Tib, basalt and diabase  
Tia, andesite

**Ttuu** **Ttvs** **Ttub** **Ttuc**  
**Ttv** **Ttue** **Ttud** **Ttvr**

Middle and Upper Topanga Formations of Durrell (1954), in the upper plate of the Malibu Bowl fault

**Ttuc**, beds of the Corral Canyon area—siltstone and sandstone, thin bedded to shaly, many thin turbidites; dolomite concretions locally prominent in the siltstone

**Ttvs**, volcanic rocks of the upper Solstice Canyon area—basaltic and andesitic flows, breccias, and tuffs; locally includes water-laid volcanic sandstone

**Ttub**, sedimentary breccia of Latigo Canyon area—includes randomly oriented large clasts of sandstone and conglomerate (Sespe Formation-Ts) and of fossiliferous sandstone (Vaqueros Formation-Tva) in a matrix that is, in some places, sand and, other places, basaltic tuffs, flows (?), and breccia; includes volcanic breccia intertongues-vbx

**Ttue**, shale of Escondido Canyon area—chiefly siltstone, mudstone, and minor sandstone; thin bedded to shaly; many thin turbidites; dolomite concretions are locally prominent; grades and intertongues eastward with Ttud

**Ttud**, sandstone of Dry Canyon—sandstone and siltstone, chiefly thin to medium bedded; many turbidites; dolomite concretions locally prominent in siltstone; grades and intertongues westward to finer-grained Ttue

**Ttvr**, volcanic rocks of Ramona Canyon area—basaltic andesitic breccias, tuff breccias, flows (?), and minor interbedded volcanic sandstone; base not exposed

**Ttuu**, siltstone and sandstone similar to Ttuc, Ttue, and Ttud, but correlation uncertain

**Ttv**, andesitic volcanic rocks—chiefly basaltic and andesitic flows and breccias; correlation uncertain

PRELIMINARY GEOLOGIC MAP OF THE POINT DUME QUADRANGLE  
LOS ANGELES COUNTY, CALIFORNIA

By

R. H. Campbell, B. A. Blackerby, R. F. Yerkes, J. E. Schoellhamer,  
P. W. Birkeland, and C. M. Wentworth

1970

This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey standards and nomenclature.