



GEOLOGIC MATERIALS OF THE SAN FRANCISCO BAY REGION

Compiled by C. M. Wentworth

From the work of Brabb (1989), Ellen and Wentworth (1995), and Helley and Lajoie (1979)

This map shows the distribution of the various kinds of geologic materials in the San Francisco Bay region, California. The flat lowlands are underlain by relatively soft surficial materials (pale colors) that have been deposited largely by streams in the present topography, whereas the eroding hillsides are underlain by deformed bedrock (darker colors) that ranges from partially consolidated sand and gravel to hard rock.

This presentation of map information is one of several that can be prepared from the digital spatial database that is the centerpiece of this report (see description in the Open-File pamphlet). Other kinds of map presentations can be prepared as well, by calibrating the 18 surficial and 359 bedrock units in the database in other ways, such as by the physical properties of the units described in the compilation sources. Although this map has a scale of 1:275,000, the basic resolution of the database is 1:125,000.

The database was compiled from three 1970s compilations: flatland deposits by Helley, Lajoie and others (1979), hillside materials by Ellen and Wentworth (1995), and the geologic map of Santa Cruz County by Brabb (1989). Although new mapping is now available in parts of the region, this is a uniform digital compilation of the whole region in which the map units are keyed to physical descriptions (see

pamphlet). Digital base layers for the map area, such as the drainage layer on this map, are separately available (Aitken, 1997).

The digital database was compiled by C.M. Wentworth, working from original materials, digital bedrock boundaries prepared by N.L. Hoskins, preliminary digital versions of much of the flatlands deposits prepared by T.M. Mahony, and with other GIS assistance from T.J. Felger, S.E. Graham, D.L. Knifong, and P.K. Showalter.

REFERENCES CITED

Aitken, D.S., 1997, A digital version of the 1970 U.S. Geological Survey topographic map of the San Francisco Bay Region, three sheets, 1:125,000; U.S. Geological Survey Open-File Report 97-500.
 Brabb, E.E., 1989, Geologic map of Santa Cruz County, California: U.S. Geological Survey Miscellaneous Investigations Map I-1905, map scale 1:62,500.
 Ellen, S.D., and Wentworth, C.M., 1995, Hillside materials and slopes of the San Francisco Bay Region, California: U.S. Geological Survey Professional Paper 1357, map scale 1:125,000.
 Helley, E.J., Lajoie, K.R., and others, 1979, Flatland deposits of the San Francisco Bay Region, California: U.S. Geological Survey Professional Paper 943, map scale 1:125,000.

AGE AND LITHOLOGY

QUATERNARY			
h-wm	Water-saturated mud	QT-ss	Sandstone and conglomerate
h-m	Mud and silt	QT-fv	Felsic volcanics
h-s	Sand, gravel, silt and mud	QT-ff	Tuff, sandstone, volcanics
ps	Sand, gravel, silt and mud	QT-bv	Mafic volcanics
Q-s	Sand, gravel, silt and mud	UPPER TERTIARY	
Q-es	Clay, silt, sand, and gravel	Tu-md	Mudstone, some sandstone
p-md	Mudstone, some sandstone	Tu-sm	Sandstone and mudstone
p-ss	Sandstone, some mudstone	Tu-ss	Sandstone and conglomerate
Q-ld	Landslide	Tu-sl	Siliceous mudstone, chert
QT-md	Mudstone, some sandstone	Tu-dm	Diatomite, tuff, sandstone
QT-sm	Sandstone and mudstone	Tu-ls	Limestone
		Tu-ff	Tuff, sandstone, volcanics
		Tu-wt	Welded tuff
		LOWER TERTIARY	
		Ti-md	Mudstone, some sandstone
		Ti-sm	Sandstone and mudstone
		Ti-ss	Sandstone and conglomerate
		Ti-sl	Siliceous mudstone, chert
		TH-fv	Felsic volcanics
		MESOZOIC	
		Mz-md	Mudstone, some sandstone
		Mz-sm	Sandstone and mudstone
		Tu-ab	Agglomerate and breccia
		Tu-fv	Felsic volcanics
		Tu-bv	Mafic volcanics
		Tu-sc	Silica-carbonate rock
		Mz-ss	Sandstone and conglomerate
		Mz-fv	Felsic volcanics
		Mz-bv	Mafic volcanics
		Mz-gr	Granitic rock
		Mz-sch	Schist
		FRANCISCAN COMPLEX	
		Mz-mm	Melange
		Mz-ms	Metasandstone
		Mz-mv	Metavolcanics
		Mz-sl	Chert
		Mz-ls	Limestone
		Mz-sp	Serpentine

MAP SCALE 1:275,000



SOURCE: This map is a plot of OP 97-744 Part 5, a digital profile prepared from the spatial database of Part 3. Digital files are available at <http://wsgs.usgs.gov/open/97-744/>. Order the open-file pamphlet or a plot of this map from your local USGS Earth Science Information Center or by phone from 1-800-USAMAPS.

Map projection Universal Transverse Mercator, zone 18, datum base layer from Airless, 1997, originally at a scale of 1:125,000; <http://wsgs.usgs.gov/open/97-500/>.

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