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Preliminary Geologic Map available from:
http://www.conservation.ca.gov/cgs/rghm/rgm/preliminary_geologic_maps.htm

GEOLOGIC MAP OF THE CAMP MEEKER 7.5' QUADRANGLE SONOMA COUNTY, CALIFORNIA: A DIGITAL DATABASE

VERSION 1.0

By
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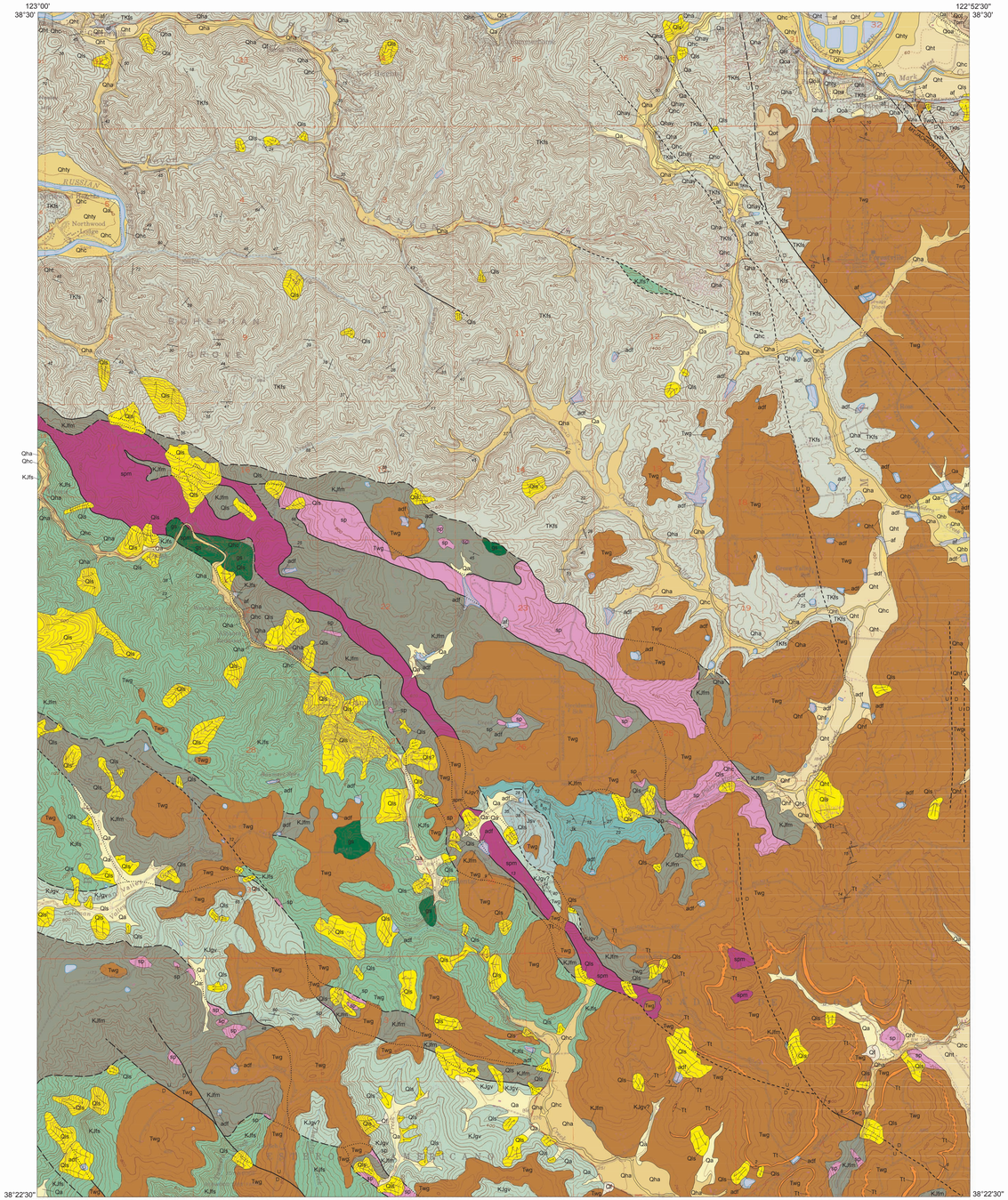
Digital Database
by
Marc P. Delattre[1] and Carlos I. Gutierrez[1]
2009

1. California Geological Survey
2. William Lettis & Associates, Inc., Walnut Creek, CA



Topographic base from U.S. Geological Survey
Camp Meeker 7.5-minute Quadrangle, 1995
UTM projection, Zone 10, North American Datum 1927

Scale 1:24,000

0 .5 1 2 Miles
0 .5 1 2 Kilometers
0 1 2 Thousand Feet

Contour Interval 40 feet
Supplementary Contour Interval 20 feet
Datum is Mean Sea Level

UTM GRID AND 2009 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

This geologic map was funded in part by the USGS National Cooperative Geologic Mapping Program, Statemap Award no. 08HQAG0102

DESCRIPTION OF MAP UNITS

(See Witter and others (2006), for more information on Quaternary units).

af **Artificial fill (historical)** – May be engineered and/or non-engineered.

adf **Artificial dam fill (historical)** – Earth dams, rock-fill dams, and embankments constructed to impound water.

Qhc **Stream channel deposits (modern to latest Holocene)** – Fluvial deposits within active, natural stream channels composed of loose sand, silt, and gravel.

Qhay **Alluvial deposits, undivided (latest Holocene)** – Fluvial sediment deposited on the modern flood plain.

Qhty **Stream terrace deposits (latest Holocene)** – Stream terrace deposits of sand, silt, gravel, and minor clay. Estimated to be latest Holocene in age based on elevation and/or records of historical inundation.

Qhb **Basin deposits (Holocene)** – Sediment accumulated in topographic basins from slow moving or standing water. Consist of horizontally stratified sand, silt, and clay; may be interbedded with lobes of coarser alluvial deposits.

Qhf **Alluvial fan deposits (Holocene)** – Sediment deposited by streams emanating from canyons onto alluvial valley floors. Sediments are typically moderately to poorly sorted and composed of sand, gravel, silt, and occasionally clay.

Qha **Alluvial deposits, undivided (Holocene)** – Alluvium deposited in fan, terrace, or basin environments that could not be readily separated for mapping. Typically, consist of poorly to moderately sorted sand, silt, and gravel that form smooth geomorphic surfaces with little to no dissection.

Qht **Stream terrace deposits (Holocene)** – Moderately well sorted and bedded sand, gravel, silt, and minor clay deposited in overbank and point-bar settings along streams.

Qf **Alluvial fan deposits (Holocene to latest Pleistocene)** – Moderately to poorly sorted deposits of sand, gravel, silt, and clay mapped on gently sloping, fan-shaped, relatively undissected, alluvial surfaces where age of deposits is unknown.

Qa **Alluvial deposits, undivided (Holocene to latest Pleistocene)** – Sand, gravel, silt, and clay mapped in small valleys and where separate fan, basin, terrace, and active stream channel units could not be delineated at the scale of mapping.

Qls **Landslide deposits (historical to Pleistocene)** – Arrows indicate direction of movement; queried where landslide existence is questionable.

Qoa **Older alluvium (early to late Pleistocene)** – Undivided alluvial fan, stream terrace, and basin deposits. Gray to brown, orange- to red-weathering, poorly sorted, sand, silt, and gravel composed of Franciscan basement material with conspicuous red and green chert, and lesser volcanic clasts.

Qot **Older Stream terrace deposits (early Pleistocene?)** – Yellowish-brown, orange to reddish- brown-weathered, silty sand, and gravel. Lithologically similar to Qoa, but more deeply weathered and found at higher elevations.

Tt / Twg **Wilson Grove Formation (late Pliocene to late Miocene)** – Light-gray to yellow-brown marine sandstone. The sandstone is fine- to medium-grained, well-sorted, massive or thick-bedded, and locally fossiliferous or tuffaceous. Well-rounded pebbles of chert and quartz occur in scattered stringers and lenses of pebbly sandstone. Tuffaceous lenses and more persistent beds vary from less than 1 cm to over 5 m thick. Thicker beds distinguishable at map scale (Tt) vary laterally and vertically from gray tuffaceous sandstone to white water-laid tuff and yellow to gray pumice breccia. Portions appear lithologically similar to the informally named Roblar tuff (Sarna-Wojcicki, 1992) that is found interbedded with the Wilson Grove and Petaluma formations farther west, and most reliably dated by Ar/Ar at 6.26 Ma (McLaughlin and others, 2008); however, definitive correlations within the study area remain to be established.

Tpm **Middle Petaluma Formation (late Miocene)** – Fluvial deposits previously mapped as part of the Wilson Grove Formation (Travis, 1952; Blake and others, 1971); assigned to Tpm based on lithology and stratigraphic relationships described by Allen (2008). Light-gray, yellowish-gray, brown-weathering, sandstone and conglomerate. Conglomerate is both clast- and matrix-supported, with sub-angular to sub-rounded clasts of graywacke and other Franciscan basement rocks, with subordinate volcanic clasts.

Franciscan Complex Coastal or Central Belt

TKfs **Franciscan Complex, Coastal or Central Belt Sandstone (late Eocene to Late Cretaceous)** – Composed chiefly of broken, massive to distinctly bedded, light-gray to greenish-gray, brown- and orange-weathering sandstone. Unit also includes some argillite and shale with disrupted bedding. Sandstone is mostly feldspathic-lithic wacke with detrital biotite and muscovite (Blake and others, 2002).

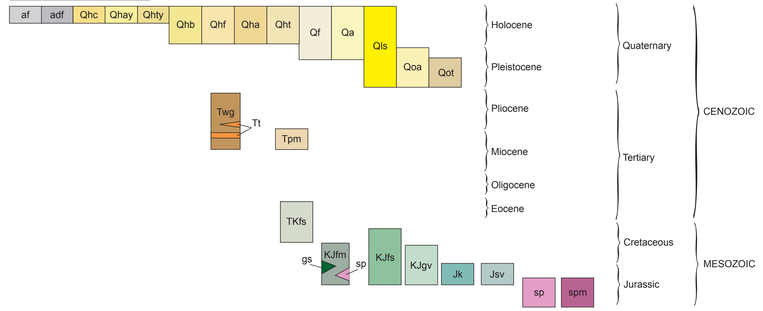
Franciscan Complex Central Belt

KJfs **Franciscan graywacke and mélange (Late Cretaceous to Early Jurassic)** – Predominantly broken and locally sheared, massive to distinctly bedded, gray to green, brown- to orange-weathering, lithic wacke, and dark-gray shale. Also includes areas of mélange (see KJfm) not differentiated from the more coherent graywacke due to extensive forest cover, gradational contacts, and/or size relative to map scale.

KJfm **Franciscan Complex, Central Belt mélange (Late Cretaceous to Early Jurassic)** – Tectonic mixture of penetratively sheared argillite and graywacke that forms a matrix around more coherent rock masses of varied lithology, including greenstone (gs) and serpentinite (sp) blocks large enough to be mapped separately, as well as chert, coherent graywacke, schist, and other metamorphic rocks.

gs **Greenstone** – Variably altered basalt and other mafic volcanic rocks. Dark greenish-gray to black, weathered dark-brown to orange, predominantly massive, occasionally vesicular, or with pillow structure preserved.

CORRELATION OF MAP UNITS



Great Valley Complex

KJgv **Sandstone, shale, and Conglomerate (Early Cretaceous and Late Jurassic)** – Predominantly pebble to cobble conglomerate, but also includes distinctly bedded, dark- to light-gray, brown-weathering, coarse-grained lithic wacke and shale. Clasts include quartz- and plagioclase-porphyry volcanics, black chert and quartzite.

Jk **Knoxville Formation (Late Jurassic)** – Dark-gray to black, thin-bedded shale with occasional interbeds of biotite-lithic wacke; contains only Late Jurassic fossils.

Jsv **Keratophyre and quartz keratophyre tuff (Late Jurassic)** – Well-bedded, white to red- and green-stained, intermediate and silicic tuff, and greenish-gray fine- to coarse-grained tuffaceous sandstone. Contains Late Jurassic (Tithonian) radiolarians, and thought to be correlative with tuff of the Lotta Creek Formation of the western San Joaquin Valley (Blake and others, 2002).

Coast Range Ophiolite

sp **Serpentinite (Late and Middle Jurassic)** - Highly sheared, fault-bounded blocks and slivers of serpentinite and serpentinized harzburgite.

spm **Serpentinite matrix mélange (Late and Middle Jurassic)** – Sheared meta-serpentinite containing blocks and lenses of greenstone, high-grade metamorphic rocks, and graywacke.

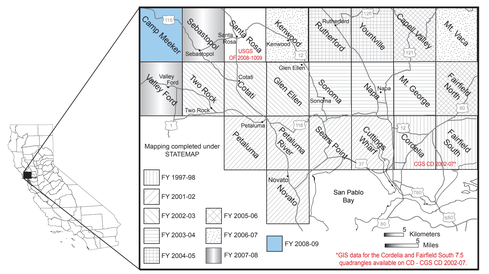
SYMBOL EXPLANATION

Contact between map units - solid where accurately located; dashed where approximately located; short dash where inferred.

Fault - solid where accurately located; dashed where approximately located; short dash where inferred; dotted where concealed; queried where uncertain. U = upthrown block, D = downthrown block. Arrow and number indicate direction and angle of dip of fault plane.

Strike and dip of bedding plane

Landslide - arrows indicate principal direction of movement.



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