CALIFORNIA GEOLOGICAL SURVEY
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GEOLOGIC MAP OF THE SEARS POINT 7.5' QUADRANGLE SONOMA, SOLANO, AND NAPA COUNTIES, CALIFORNIA: A DIGITAL DATABASE

VERSION 1.0

By

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Digital Database
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2002

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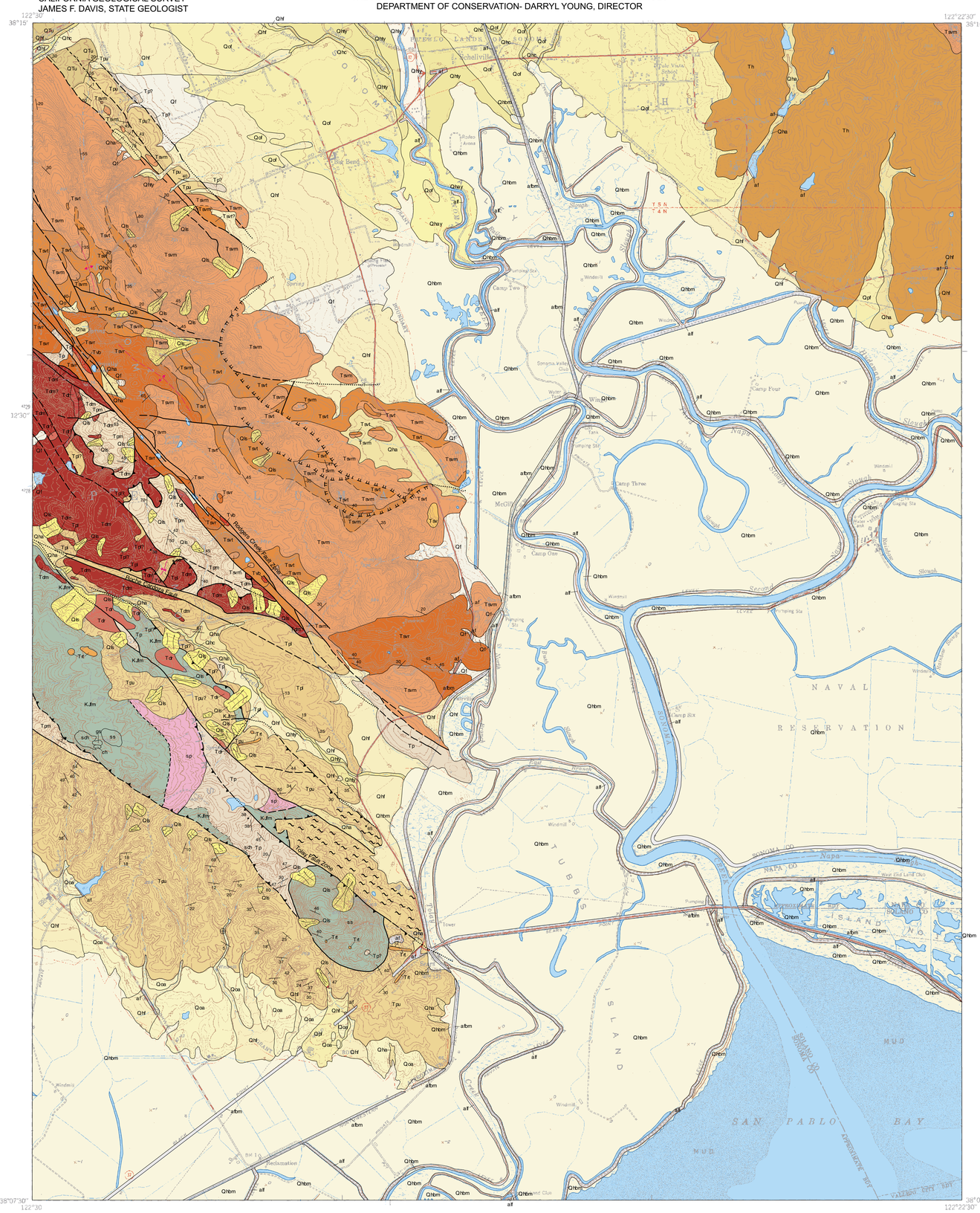


Unit Explanation

(See Knudsen and others (2000), for more information on Quaternary units).

- **af** Artificial fill
- **afbm** Artificial fill placed over bay mud
- **alf** Artificial levee fill
- **Qhc** Late Holocene to modern (<150 years) stream channel deposits in active, natural stream channels. Consists of loose alluvial sand, gravel, and silt.
- **Qhly** Latest Holocene (<~1,000 years) alluvial fan levee deposits. Natural levee deposits of alluvial deposits along Sonoma Creek.
- **Qhty** Latest Holocene stream terrace deposits. Stream terraces are deposited as point bar and overbank deposits by Sonoma Creek.
- **Qhay** Latest Holocene alluvial deposits. Fluvial sediment deposited on the modern flood plain of Sonoma Creek.
- **Qhbm** Holocene (<10,000 years) bay mud. Silt, clay, peat, and fine sand deposited at or near sea level in San Pablo Bay.
- **Qhf** Holocene alluvial fan deposits. Sand, gravel, silt, and clay deposited by streams emanating from canyons onto alluvial valley floors. Sediment is poorly to moderatly sorted and bedded.
- **Qha** Holocene alluvium, undivided. Alluvium deposited on fans, terraces, or in basins. Sand, gravel, and silt that are poorly sorted.
- **Qls** Landslides. Includes debris flow and block slump landslides. Arrows show the direction of movement.
- **Qf** Latest Pleistocene (<30,000 years) to Holocene alluvial fan deposits. Sand, gravel, silt and clay mapped on gently sloping, fan-shaped, relatively undissected alluvial surfaces.
- **Qpf** Latest Pleistocene fan deposits. Sand, gravel, silt, and clay that is moderately to poorly sorted and bedded. Mapped on alluvial fans where greater dissection indicates latest Pleistocene age.
- **Qoa** Early to late Pleistocene alluvial deposits, undivided. Alluvial fan, stream terrace, basin, and channel deposits. Topography is gently rolling with little or no original alluvial surfaces preserved; moderately to deeply dissected.
- **QTu** Gravel, sand, reworked tuff and clay of unknown age. Sediments derived mostly from the Sonoma Volcanics.
- **Th** Huichica Formation. Gravel, sand, reworked tuff and clay. Sediments derived mostly from the Sonoma Volcanics. A tuff interbed yields a K/Ar date of 4.09+-0.19 [Andrei Sarna, written communication, 1981 reported in Kelly (1982)].

Petaluma Formation. A predominantly lacustrine and fluvial deposit with esturine and transitional marine horizons consisting of siltstone, sandstone, shale, conglomerate, with minor silicified tuff, chert, lignite, and limestone. Divided into three subunits:

- **Trt / Tpu / Tpm / Tpl** Tp
  - Tpu- Upper Petaluma Fm. Massive, well sorted sandstone, siltstone, and conglomerate. Conglomerate is rich in laminated siliceous shale (Monterey Fm.) fragments and Tertiary volcanics, with Franciscan clasts. The Roblar Tuff (Trt), dated at 6.26 Ma (Robert Fleck, written communication, 2002) is interbedded with the Upper Petaluma.
  - Tpm- Middle Petaluma Fm. Siltstone with interbedded conglomerate. Clasts in conglomerate are mostly pebbles derived from the Franciscan, but clasts of Cretaceous and Tertiary sandstone as well as Tertiary volcanics are present. Minor siliceous shale fragments from the Monterey Formation are also present.
  - Tpl- Lower Petaluma Fm. Dominantly bluish to green clayey siltstone and shale with interbeds of silicified tuff, siliceous limestone, lignite, and rare bituminous chert. Laminated siltstone near the base in places. Localities near Tolay Creek and elsewhere have yielded transitional marine and estuarine horizons in a predominantly lacustrine and fluvial deposit
- **Tvb** Basalt that occurs along the Rodgers Creek Fault Zone.

Sonoma Volcanics- Mafic lava flows, breccias, agglomerate tuff, tuff breccia with interbedded tuffaceous sediments; also includes dacitic to rhyolitic lava flows, debris flows, tuff, and tuffaceous sediment. The age range for the Sonoma Volcanics on this quadrangle is 8.65 to 3.80 Ma (Fox and others, 1985; Youngman, 1989). The Sonoma Volcanics are divided into the following subunits.

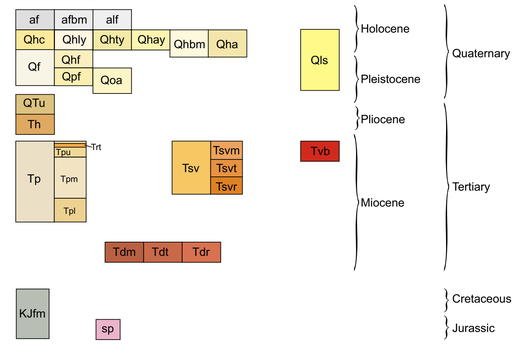
- **Tsvm / Tsvt / Tsvr** Tsv
  - Tsvm- Mafic flows and breccias. Andesite and basaltic andesite. Age range is 7.28 to 3.80 Ma (Youngman, 1989).
  - Tsvt- Silicic tuff and interbedded tuffaceous sediments. Interbedded sand and gravel is similar to the MIddle Petaluma Formation.
  - Tsvr- Rhyolitic to dacitic flows, breccias, and sediments. Pink, white, gray, brown flow banded rhyolite in flows, debris flows and breccia. Interbeds of sand, gravel, and tuff. Dates (Ar/Ar) range from 7.36 to 8.11 Ma (Randolph-Loar, 2002; Youngman, 1989; Fox and others, 1985).

Donnell Ranch Volcanics of Youngman (1989). Basalt and basaltic andesite flows, breccia, and scoria. Rhyolite flow and tuff occur west of Tolay Creek in the western part of the quadrangle. Cream colored tuff is interbedded with the mafic volcanics. The age range for the Donnell Ranch Volcanics is 10.64 Ma to possibly as young as 8.52 Ma. Part of the Tolay volcanics of Morse and Bailey (1935). The Donnell Ranch Volcanics are subdivided as follows.

- **Tdm / Tdt / Tdr**
  - Tdm- Mafic volcanics including mafic flows and breccia. mostly basalt and basaltic andesite flows and breccia. Scoria is abundant locally.
  - Tdt- Light colored tuff interbedded with mafic volcanics.
  - Tdr- Rhyolite to dacite flows and tuff. A radiometric date of 9.56 Ma on the rhyolite was reported by Fox and others (1985). This unit is called the Rhyolite of St. Helena by Weaver (1949).

- **KJfm** Franciscan Complex melange. Tectonic mixture of masses of resistant rock including sandstone, altered mafic volcanics (greenstone), chert, gabbro, exotic metamorphic rocks imbedded in a sheared shaley matrix. Blocks with melange large enough to be shown at this scale are denoted as:
  - ss - sandstone
  - ch - chert
  - gs - greenstone (altered mafic volcanic rocks).
  - sch - schist and semischist
- **sp** Serpentinized ultramafic rocks.

Unit Correlation



Symbol Explanation

- Contact between map units - solid where accurately located, dashed where approximately located; short dash where inferred; dotted where concealed.
- Fault - solid where accurately located, dashed where approximately located; short dash where inferred; dotted where concealed. U = upthrown block, D = downthrown block. Arrow and number indicate direction and angle of dip of fault plane.
- Thrust fault- solid where accurately located; dashed where approximately located; short dash where inferred; dotted where concealed.
- Detatchment surfaces of mega-landslide masses.
- Zone of intense shearing along the Tolay Fault Zone.
- Syncline - Dashed where approximately located; dotted where concealed.

Strike and dip of sedimentary beds:

- 25 Inclined
- Horizontal
- Landslide - arrows indicate principal direction of movement. Queried where questionable.

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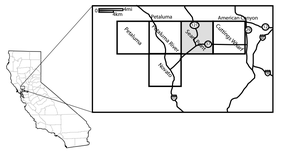
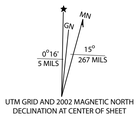


Topographic base from the U.S. Geological Survey Polyconic Projection



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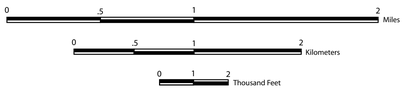

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