U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Description of Map Units

FLUVIAL DEPOSITS

Qhc — ACTIVE STREAM CHANNEL DEPOSITS--Unconsolidated sands and silts of Coast Range origin. These deposits underlie the modern floodplain and low terraces and are reworked by relatively frequent flooding. These deposits generally exhibit no soil development.

- Qhct — Active stream channel deposits of Lone Tree Creek
- Qhcw — Active stream channel deposits of Corral Hollow Creek

Qhl — LEVEE DEPOSITS--Unconsolidated sands, silts, and gravels derived from the Coast Ranges. These deposits form long, raised landforms extending downfan. They represent the locus of deposition of the coarser component of major flows of sediment and water over the fan during flooding. Soils are weakly developed and typically belong to the Salado or Cortina soil series, as mapped by McLaughlin and Huntington (1968).

- Qhlw — Levee deposits of Corral Hollow Creek

Qhf — HOLOCENE FAN AND TERRACE DEPOSITS, undifferentiated--Unconsolidated silts, clays, sands, and gravels derived from the Coast Ranges. Unit includes active channel deposits of smaller drainages. Deposits on the terraces in valleys of the Coast Range are dominantly gravels, sands and silts. Sediments become more fine-grained with distance downfan. Subdivisions of this unit are identified primarily in Coast Range valleys where differences in age are reflected by terrace height. Soil development ranges from none, to weak rubification and stage I-II carbonate accumulation (Birkeland, 1984).

- Qhft — Holocene fan and terrace deposits of Lone Tree Creek, undifferentiated
- Qhft2 — Holocene fan and terrace deposits of Lone Tree Creek, younger
- Qhft1 — Holocene fan and terrace deposits of Lone Tree Creek, older
- Qhfw — Holocene fan and terrace deposits of Corral Hollow Creek, undifferentiated
- Qhfw2 — Holocene terrace mapped near the mouth of Corral Hollow Creek, inset below Qhfw1.
- Qhfw1 — Holocene strath terrace at the mouth of Corral Hollow Creek. About 5 feet of fluvial gravels mantle a planar surface which truncates dipping (10° NE) reddish sandy sediments.
- Qhfe — Holocene fan and terrace deposits of Mountain House Creek

Qpf — PLEISTOCENE FAN AND TERRACE DEPOSITS, undifferentiated--Unconsolidated gravels, sands, silts, and clays derived from the Coast Ranges. Terrace deposits in valleys of the Coast Ranges are dominantly gravels, sands and silts. Sediments become finer with distance downfan. In Coast Range valleys, subdivisions of this unit are identified primarily where differences in age are reflected by terrace height. Soils are characterized by a rubified Bt horizon, overlying a Stage II-III+ carbonate horizon (Birkeland, 1984).

- Qpft — Pleistocene fan and terrace deposits of Lone Tree Creek, undifferentiated
- Qpft3 — Pleistocene fan and terrace deposits of Lone Tree Creek, younger
- Qpft2 — Pleistocene fan and terrace deposits of Lone Tree Creek, intermediate age
- Qpft1 — Pleistocene fan and terrace deposits of Lone Tree Creek, older
- Qpfw — Pleistocene fan and terrace deposits of Corral Hollow Creek, undifferentiated
- Qpfw3 — Late Pleistocene terrace inset below Qpfw2 in Corral Hollow.
- Qpfw2 — Late Pleistocene terrace inset into fluvial gravels of Qpfw1 in Corral Hollow.
- Qpfw1 — Late Pleistocene terrace in Corral Hollow consisting of about 30 feet of fluvial gravel overlying a planar surface which truncates Pliocene sandy units.

PLEISTOCENE PEDIMENT DEPOSITS--Unconsolidated to consolidated, weakly cemented gravels and sands that veneer high erosion surfaces along the eastern flank of the Coast Ranges. These deposits are deeply weathered and highly dissected. Flat hill tops and parallel, concordant ridge crests typically define remnants of the pediment surface. Soils are characterized by a rubified Bt horizon underlain by a stage IV carbonate horizon. Soils typically belong to the Denverton soil series, as mapped by Cole et al. (1943) and McLaughlin and Huntington (1968).

Qppe — Pediment, mapped on the Midway quadrangle in the vicinity of Mountain House Creek, which truncates dipping Cretaceous sedimentary rocks in a band 1.5 km wide, parallel and west of the Midway fault. The surface is rolling to flat and slopes gently toward the northeast, decreasing in elevation from about 700 to 450 feet. Fluvial gravels cap the surface only locally. Soils, formed mainly on the Cretaceous bedrock, are characterized by Stage IV carbonate accumulation, including thick (3-5 cm) plates of laminar and massive carbonate. Estimated age is middle Pleistocene.

Qppw1 — Pediment in the vicinity of Corral Hollow which truncates Tertiary sedimentary rocks on discontinuous remnants parallel to and west of the Black Butte fault. The surface is flat to rolling and slopes gently toward the northeast, decreasing in elevation from about 1200 to 800 feet. Fluvial gravels approximately 10 to 20 feet thick cap the surface. Estimated age is middle Pleistocene.

This pediment correlates with Qppt1, mapped on the Lone Tree Creek quadrangle (Noller et al., 1993). The pediment was recognized by Raymond (1969), who suggested an age of late Pliocene to early Pleistocene.

Qppw2 — Pediment on the north side of Corral Hollow at Lawrence Livermore Laboratory's Site 300. The surface is flat to rolling and slopes southeast toward Corral Hollow Creek, decreasing in elevation from about 1200 to 800 feet. The dip of the pediment surface is approximately parallel to the dip of the underlying Tertiary sediments. Fluvial gravels of Coast Range origin cap the remnants discontinuously (Carpenter et al., 1991). Estimated age is middle Pleistocene.

Qppw3 — Pediment which forms a fan-shaped apron at the mountain front in the vicinity of Corral Hollow. The surface is flat with slightly rounded interfluves, moderately to highly dissected, and slopes northeast decreasing in elevation from about 600 feet, to 250 feet where it joins the valley floor. It is cut on early Pleistocene sediments and is capped by about 20 feet of fluvial gravels. Soils belong to the Denverton soil series as mapped by Cole et al. (1943). Estimated age is middle Pleistocene.

Qppw4 — Small remnant inset about 30 feet below Qppw3 along Corral Hollow Creek. This pediment could be considered a strath terrace. Like Qppw3, it is cut on Tertiary sediments and capped by fluvial gravels. Estimated age is middle to late Pleistocene.

Qppt2 — Extensive pediment surface whose remnants define a fan-shaped apron at the mouth of Lone Tree Creek. The pediment truncates Pliocene to early Pleistocene fluvial gravels (QTg) derived from the Coast Range. The pediment surface is highly dissected and is now present about 300 feet above the present drainages.

PLIOCENE TO EARLY PLEISTOCENE DEPOSITS

QTg — Pliocene to early Pleistocene fluvial deposits consisting of gravels, sands, and clayey silts derived from the Coast Ranges. Texture is finer - dominantly sand and clayey silt - in the Midway quadrangle. These sediments underlie pediment surfaces of Pleistocene age and may be the same age or considerably older than these surfaces. They were mapped as the Carbona unit by Pelletier (1951) and Raymond (1969), and as Pliocene non-marine sediments by Dibblee (1980, 1981). Contact taken from Dibblee (1980, 1981).

NON-FLUVIAL DEPOSITS

Qls — Landslide deposits greater than approximately 1 hectare in area. Landslide scarp is indicated by lined pattern; arrows indicate interpreted direction of downslope movement. Landslides in the western part of the Midway quadrangle include many previously mapped by Nilsen (1972).

B — Pre-Quaternary bedrock, undifferentiated. This mapping unit includes Mesozoic Franciscan Assemblage, and Mesozoic and Tertiary sedimentary rocks.

Qhq — Spoils and disturbed ground at the gravel quarry near the mouth of Corral Hollow Creek. The material is dominantly Holocene fluvial gravels and sands.

Mapping procedure and criteria

Geologic map units were identified chiefly through the interpretation of air photos and topographic maps, augmented by field reconnaissance and comparisons with published and unpublished geologic maps and published soil surveys. Mapping criteria included landform shape and relative geomorphic position, cross-cutting relationships, superposition, depth and degree of dissection, tone and texture on air photographs, and relative degree of soil development. For example, extent and thickness of deposits were used as criteria for discriminating pediments from fans and terraces. Erosion surfaces without significant deposits were also mapped as pediments.

Ages of units were estimated from a reconnaissance assessment of (1) relative degree of dissection, (2) relative degree of soil development on the surface, and (3) on regional stratigraphic correlation to mapped deposits in the west-central San Joaquin Valley (Lettis, 1982, 1985).

Designation of units

Quaternary fluvial units were named according to age (Pleistocene or Holocene), landform type, and, where possible, the drainage of origin and relative age among other units in that drainage. For example, "Qpfm2" means "Quaternary, Pleistocene, fan or terrace, Martin Creek, 2nd oldest Pleistocene terrace on Martin Creek. All numbers are in ascending order from oldest to youngest. Fluvial landform types recognized are fan or terrace (f), levee (l), channel (c), and pediment (p).

Quaternary landslides are labeled "Qls". Lined pattern delineates the scarp of each slide and an arrow on the slide mass shows the interpreted direction of downslope movement.

Older Quaternary to late Tertiary fan deposits which no longer have original fan morphology are designated QTg, or Quaternary-Tertiary gravel, sand, and silt.

FAULTS AND LINEAMENTS

- ——— Fault (after Dibblee, 1980, 1981)
- — — — Fault, inferred (after Dibblee, 1980, 1981)
- ••••••• Fault, concealed (after Dibblee, 1980, 1981)
- • — • — Lineament

Faults shown in the Tracy and Midway quadrangles are those which are believed to have had Quaternary movement. Data for all these faults, except the San Joaquin fault, come from previous studies (Huey, 1948; Pelletier, 1951; Raymond, 1969; Dibblee, 1980, 1981; Throckmorton, 1988; and Carpenter, 1991. The traces of all but the San Joaquin fault are taken primarily from Dibblee (1980, 1981). The trace of the Carnegie fault was modified using data from Carpenter, 1991.

The San Joaquin fault, first described by Herd (1979) south of the study area near Ingram Creek, occurs along the base of the escarpment at the range front southeast of Corral Hollow. It is shown as a solid line where Quaternary surfaces are offset or truncated, and a dotted line elsewhere. Its presence is inferred from (1) the height and linearity of the range front, (2) offset terraces and fans which occur at the range front on adjacent quadrangles, and (3) truncated pediment surfaces along the range front. The surface trace of the San Joaquin fault continues northward as a prominent photo-lineament which terminates at Corral Hollow. We interpret it to be a southwest-dipping reverse fault with an unknown component of lateral slip.

In addition to known faults, we identify six lineaments on the Tracy and Midway quadrangles that may be fault-related. All faults have a northwest strike, approximately parallel to the mountain front. The first and southernmost lineament is located south of Corral Hollow and approximately corresponds to the southwestern edge of Quaternary fan and pediment deposits. It may represent the continuation of the San Joaquin fault.

A second lineament follows a similar trend north of Corral Hollow Creek where it crosses a middle Pleistocene pediment surface. The pediment appears to be warped down-to-the northeast across the lineament, so the lineament may represent a fault or flexure. A third lineament is parallel to and approximately 1 km northeast of the second lineament on the Tracy quadrangle. It marks an abrupt change in slope of the pediment surface from 3-5 degrees to about 2 degrees. This third lineament may represent 1) a flexure, or 2) a difference in sediment source. In the second case the deposits on the steeper slope would be derived from the adjacent mountain front, whereas the deposits on the gentler slope would be derived from Corral Hollow Creek. A fourth lineament crosses diagonally between the third and fourth, and may also represent either a flexure or a boundary between contemporary deposits of different sources.

The fifth and sixth lineaments, located in the northern part of the Midway quadrangle, are parallel to one another and correspond to topographic escarpments, each lower in elevation on the northeast side.

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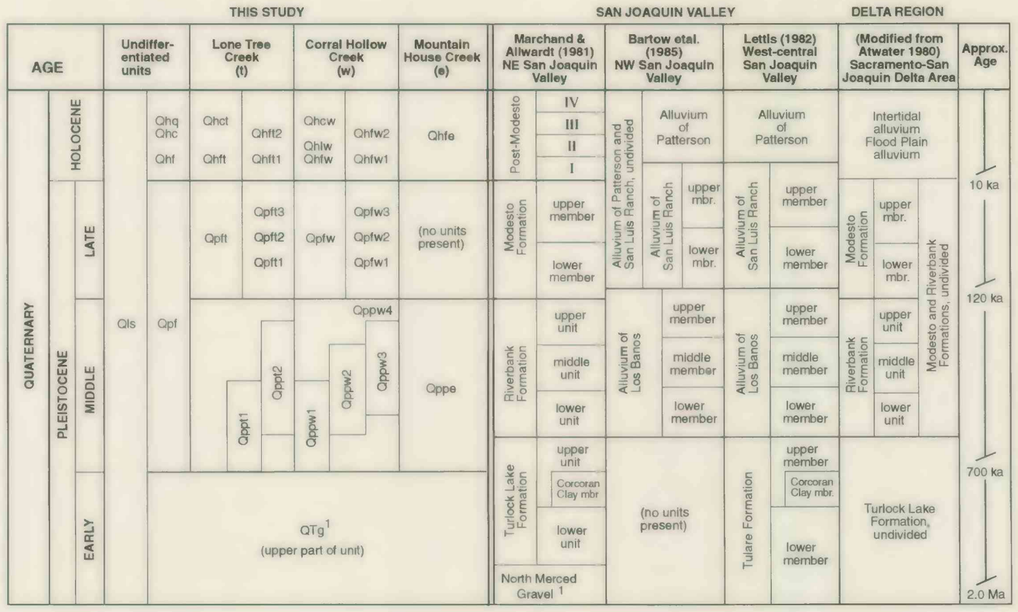

Table 1. Quaternary map units in the Tracy and Midway 7.5-minute quadrangles, correlated with nearby studies. Timing and correlation of units are approximate. Periods of non-deposition and landscape stability typically occur between depositional units.
[1] Unit age is Pliocene to early Pleistocene.

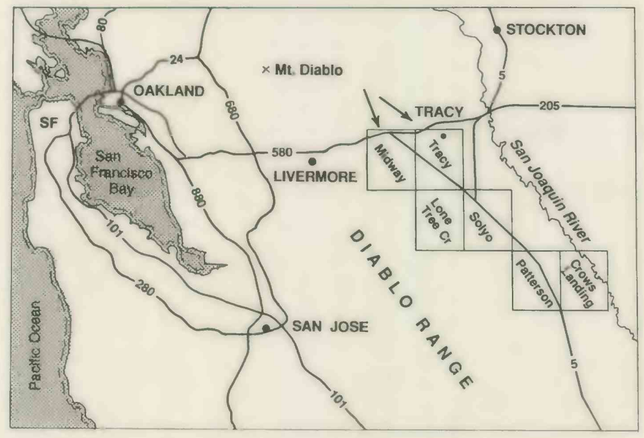

Figure 1: The Tracy and Midway, California 7.5-minute quadrangles are located on the east flank of the northern Diablo Range near Tracy, east of the San Francisco Bay area, California. Heavy lines denote major highways, with corresponding route number. Quaternary geologic maps of the Solyo and Lone Tree Creek, and Patterson and Crows Landing 7.5-minute quadrangles are available as separate USGS Open-File Reports (Noller, et al., 1993, and Sowers et al., 1993)

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PRELIMINARY MAPS SHOWING QUATERNARY GEOLOGY OF THE TRACY AND MIDWAY 7.5-MINUTE QUADRANGLES, CALIFORNIA

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