

Historical Geomorphology of the Santa Clara basin, California

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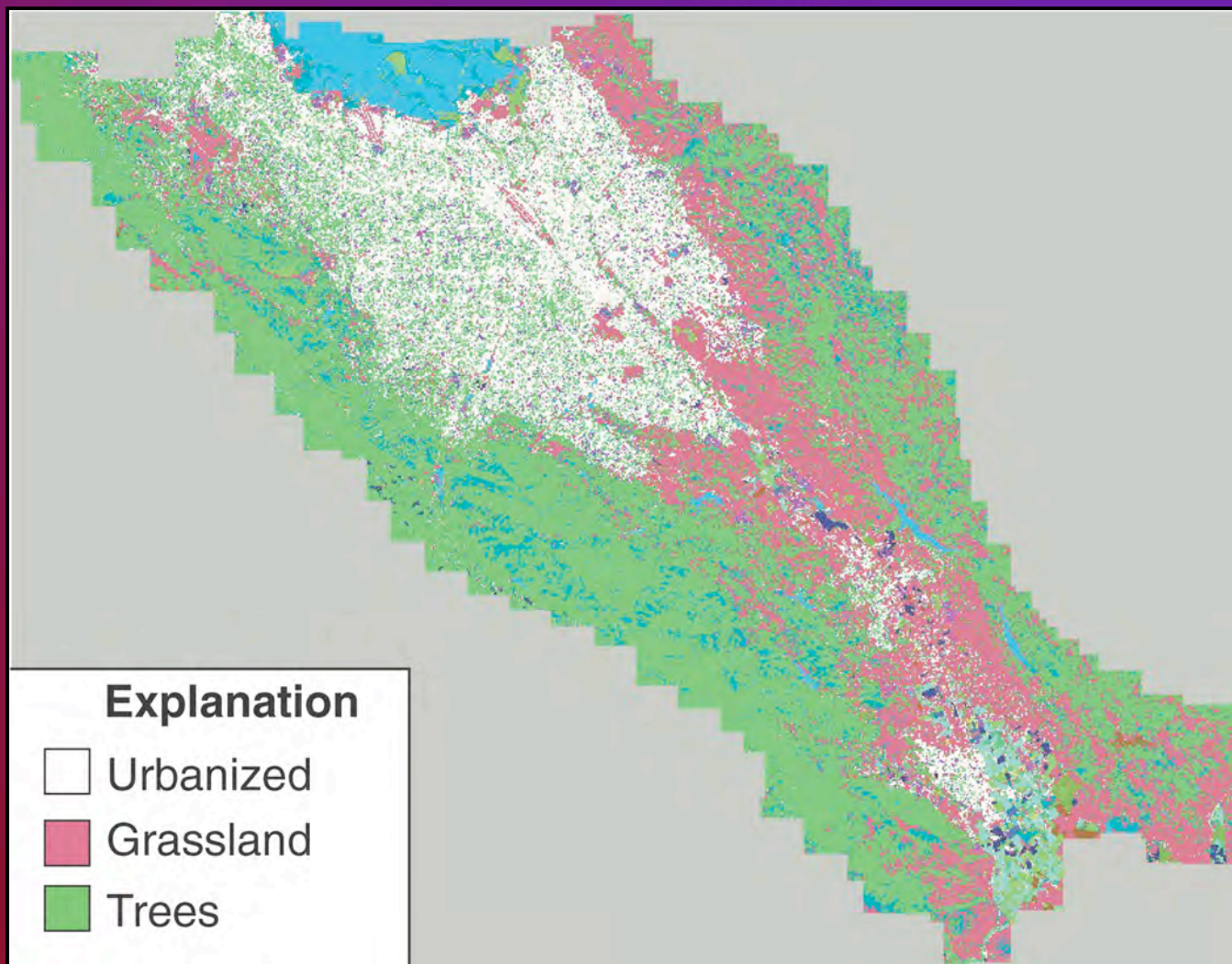
Research supported by:
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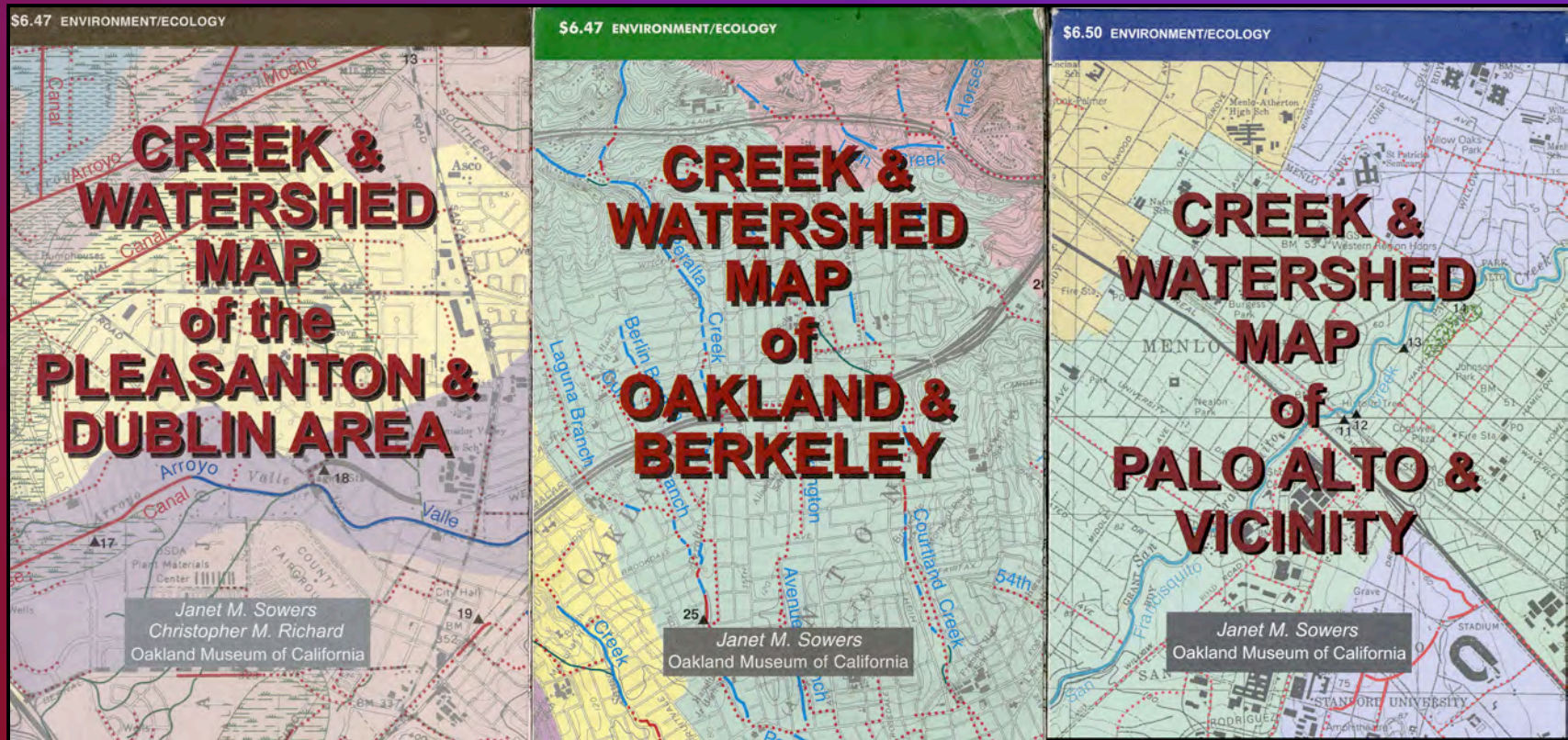
What were the streams of the Santa Clara basin like two hundred years ago?



Land Cover, 2003 Santa Clara Valley



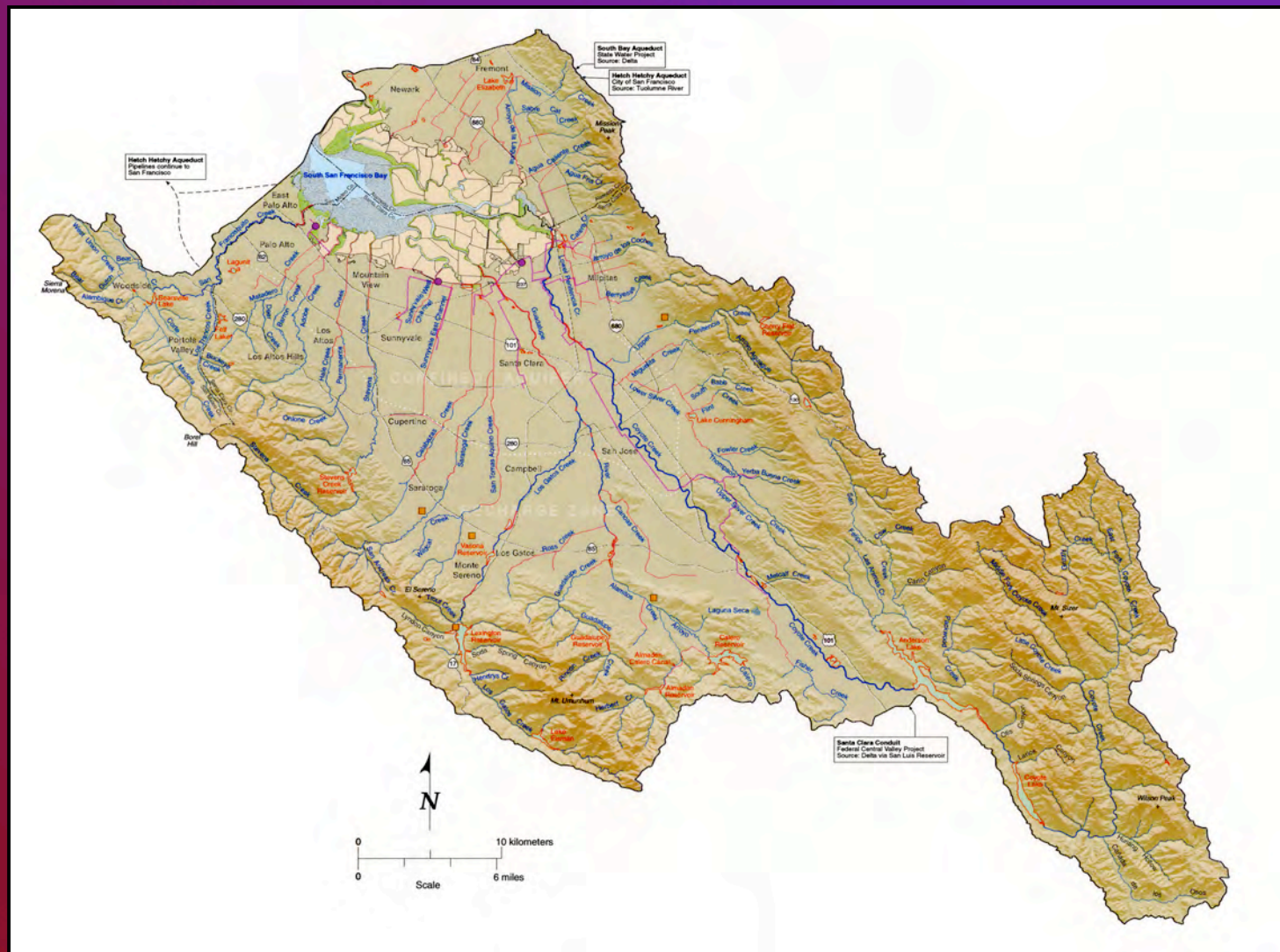
Map series published by the Oakland Museum



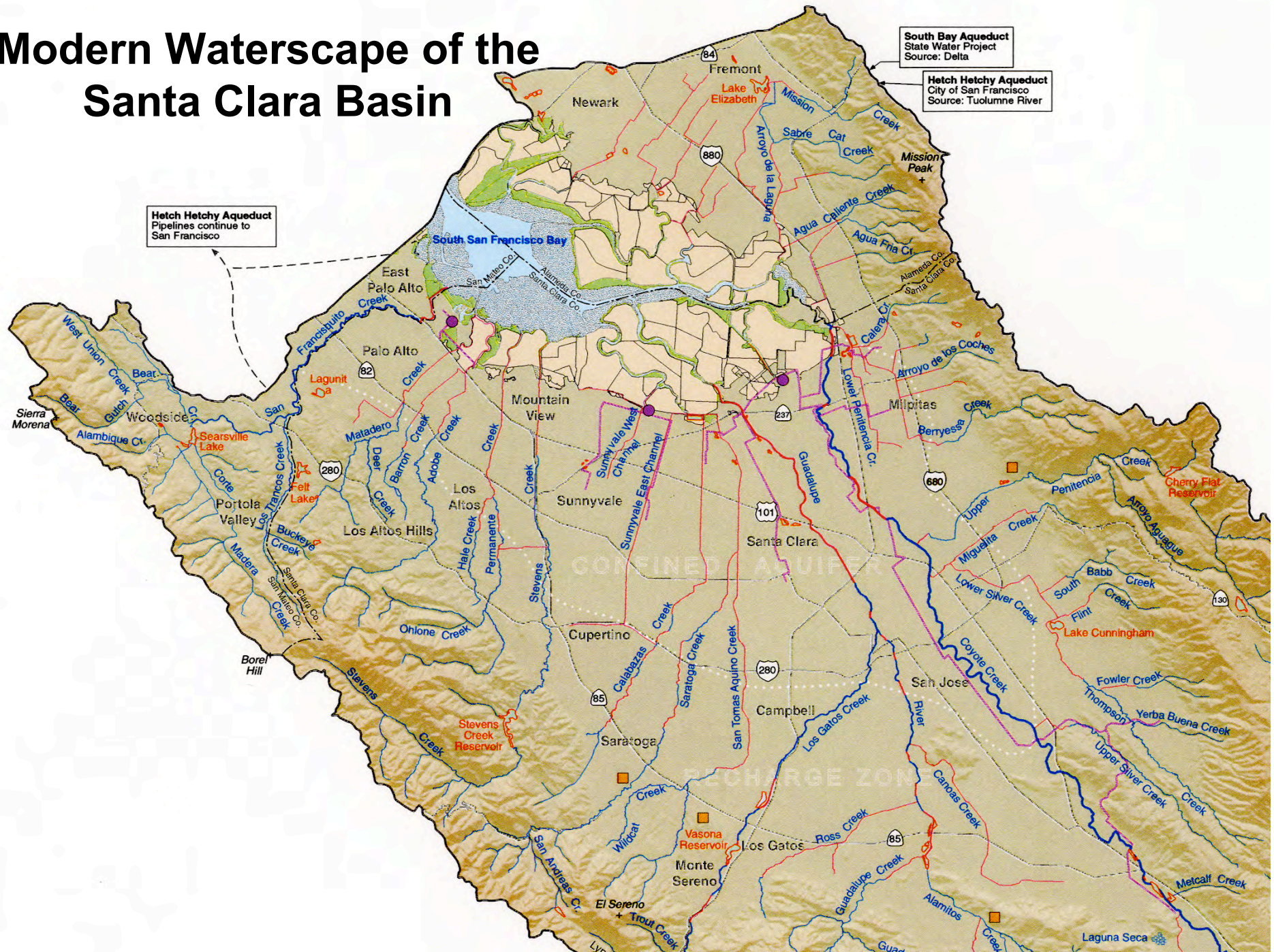
Primary sources of historical information:

- 1939 aerial photography
- 1890's 15-min USGS topographic maps
- 1876 Historical Atlas of Santa Clara County
- 1998 EcoAtlas
- 1958 Soil Survey

Modern Waterscape of the Santa Clara Basin



Modern Waterscape of the Santa Clara Basin

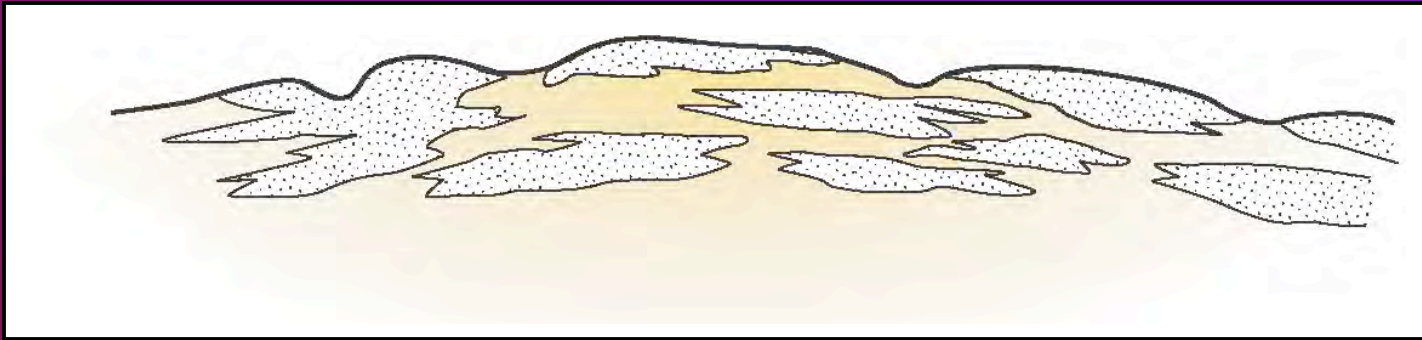


Historical Waterscape of the Santa Clara Basin

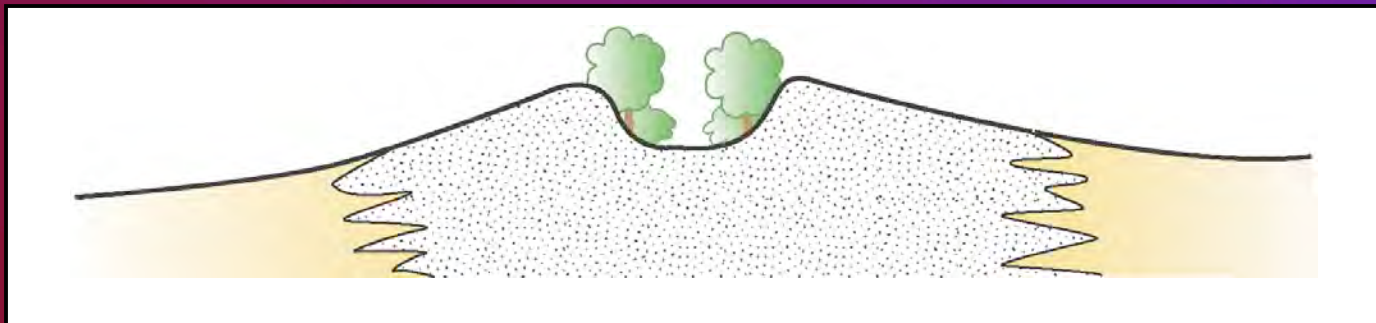


Active alluvial fan systems:

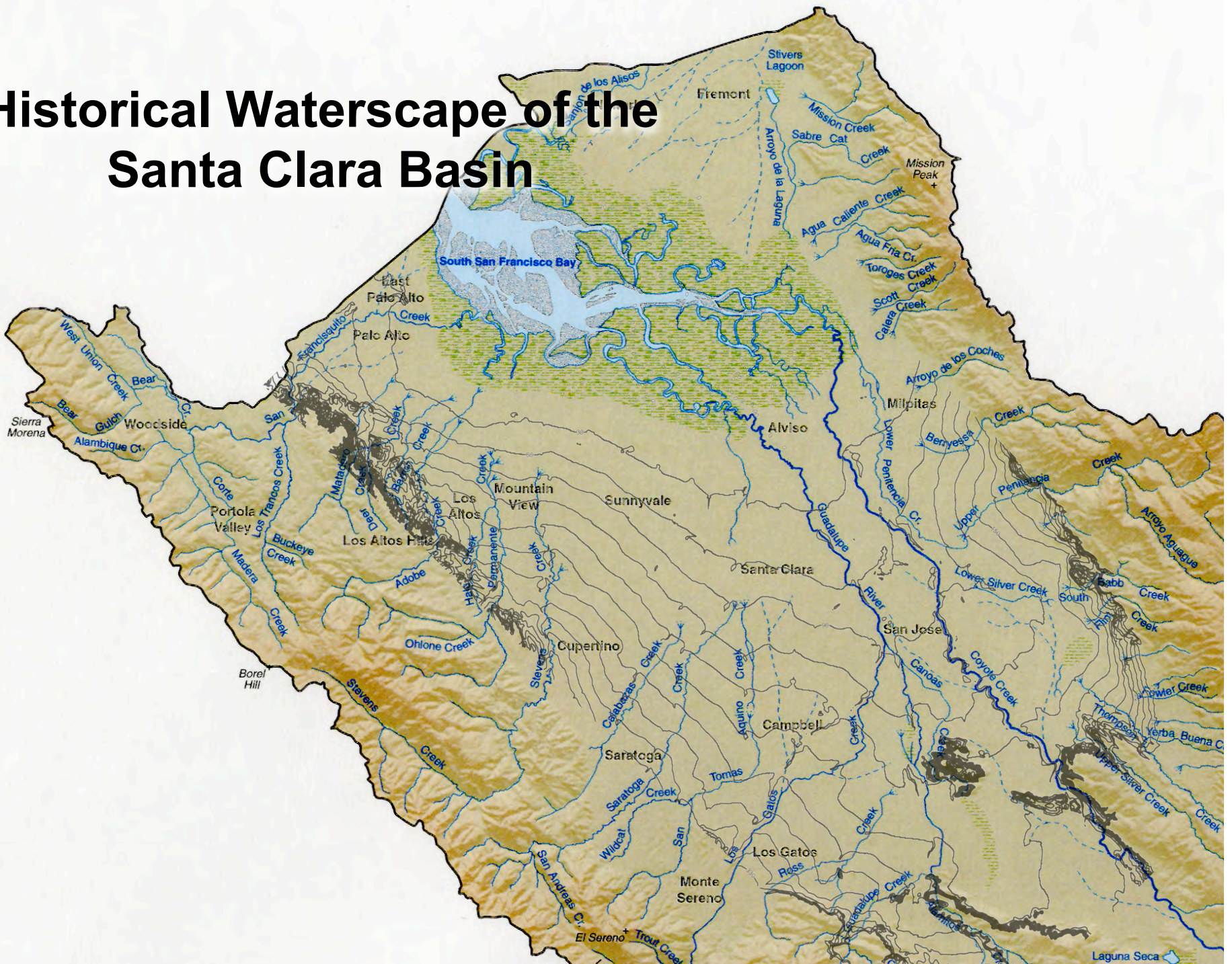
Distributary system: Multiple unstable channels; sediment deposited as lobes.



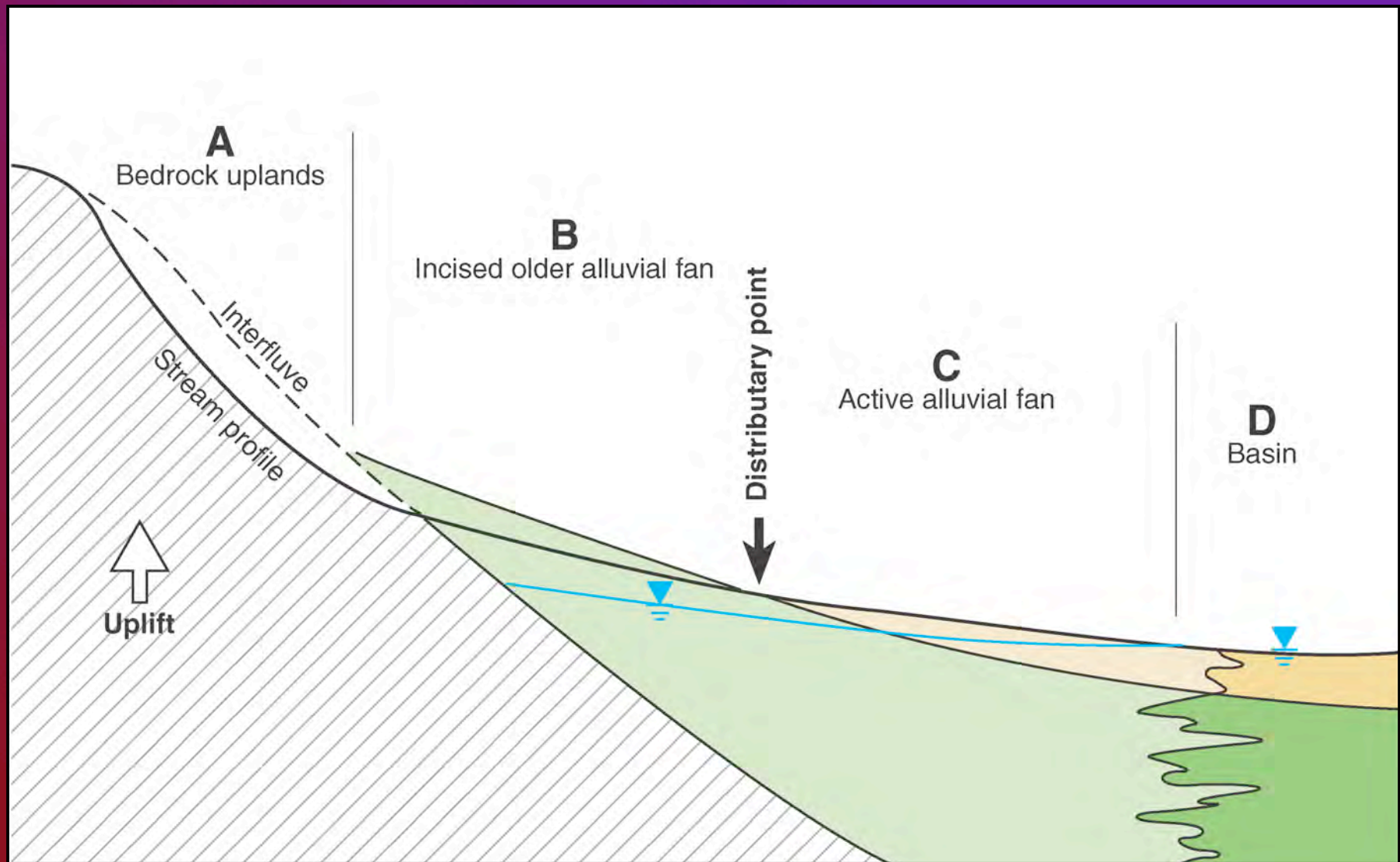
Levee system: Single stable channel; sediment deposited as levees.



Historical Waterscape of the Santa Clara Basin



Schematic Stream Profile



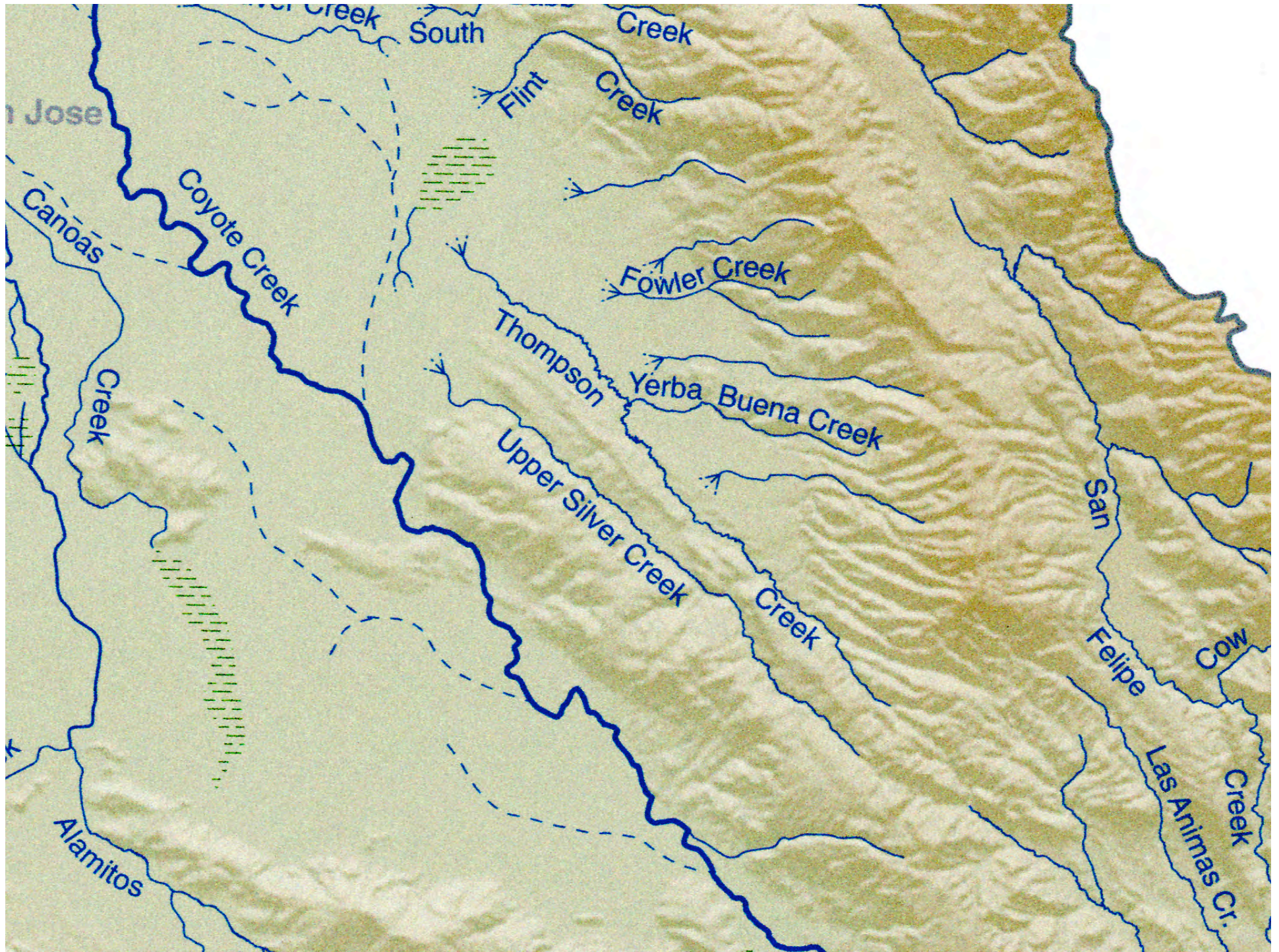
In downstream direction:

↓ Erosion ↑ Deposition

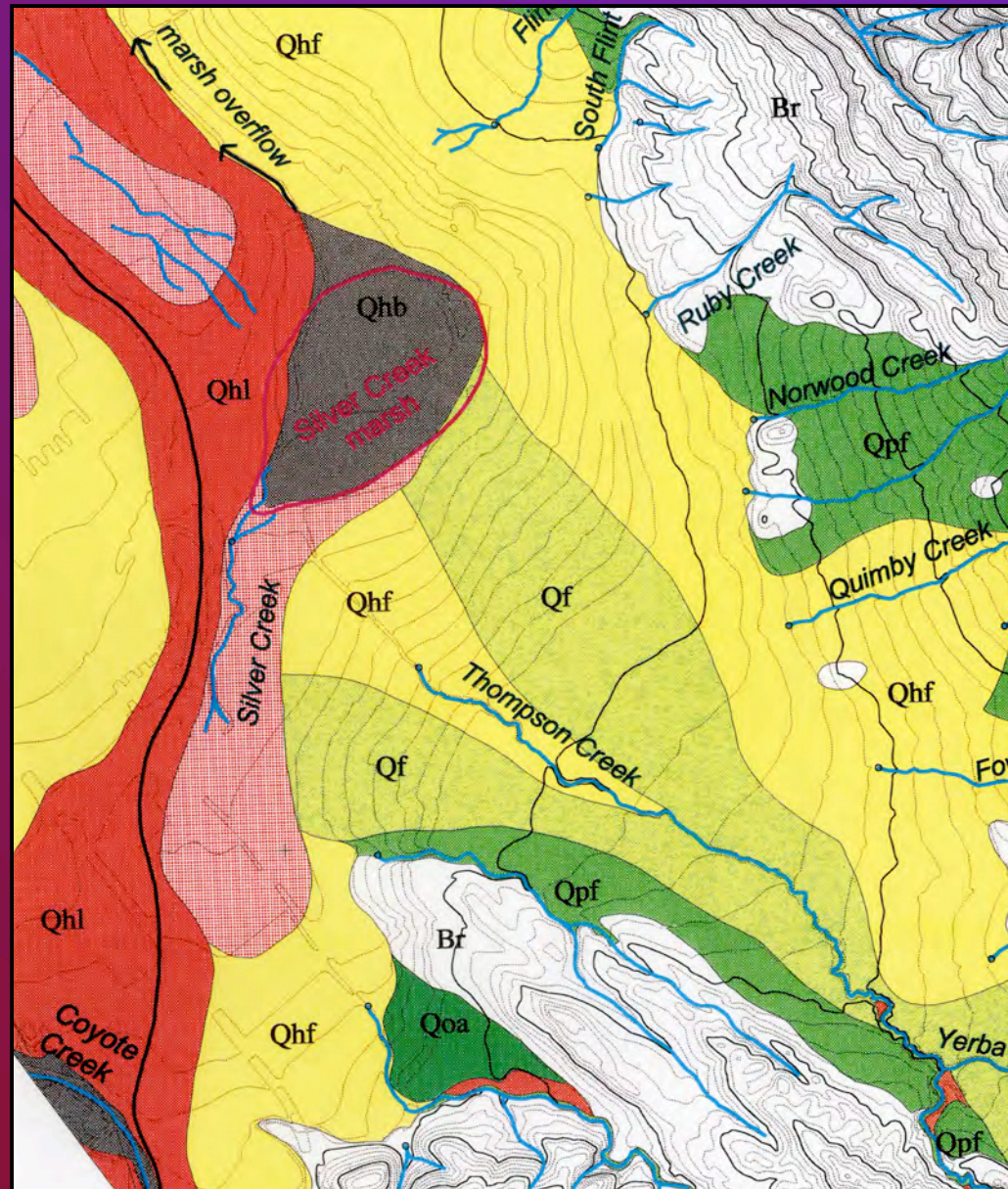
↓ Gradient

↓ Channel depth

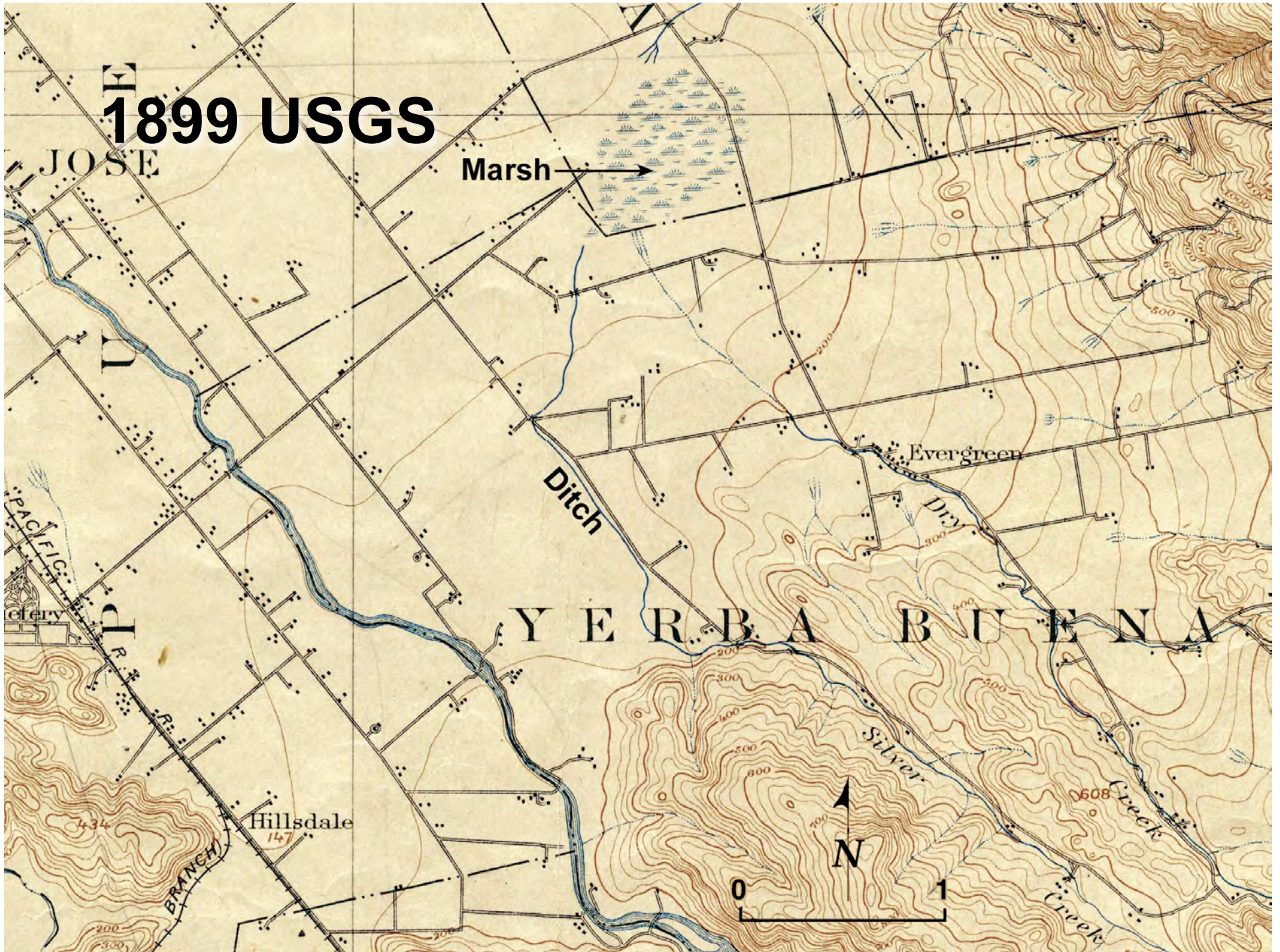
↑↓↑ Discharge



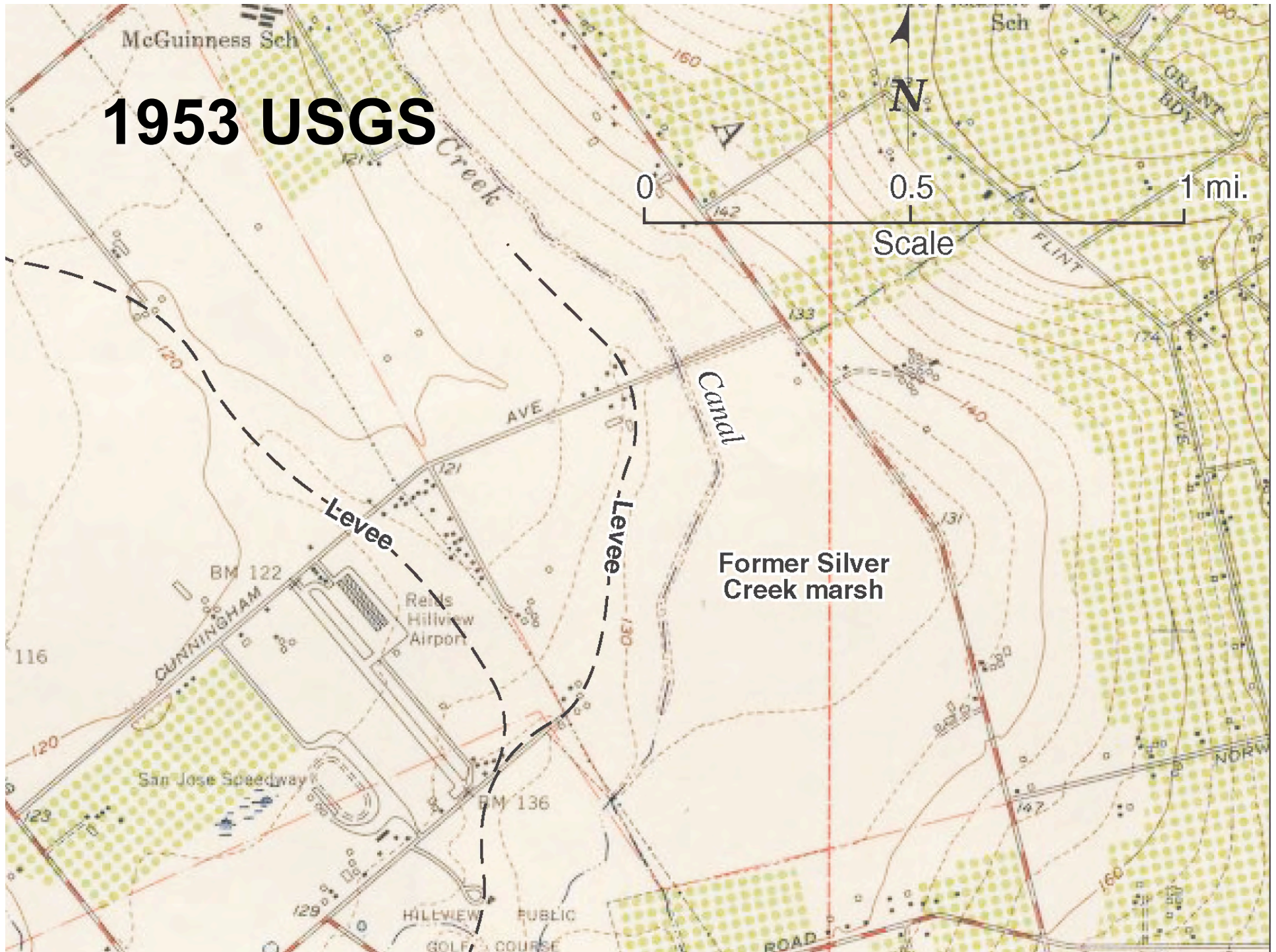
Quaternary Geology



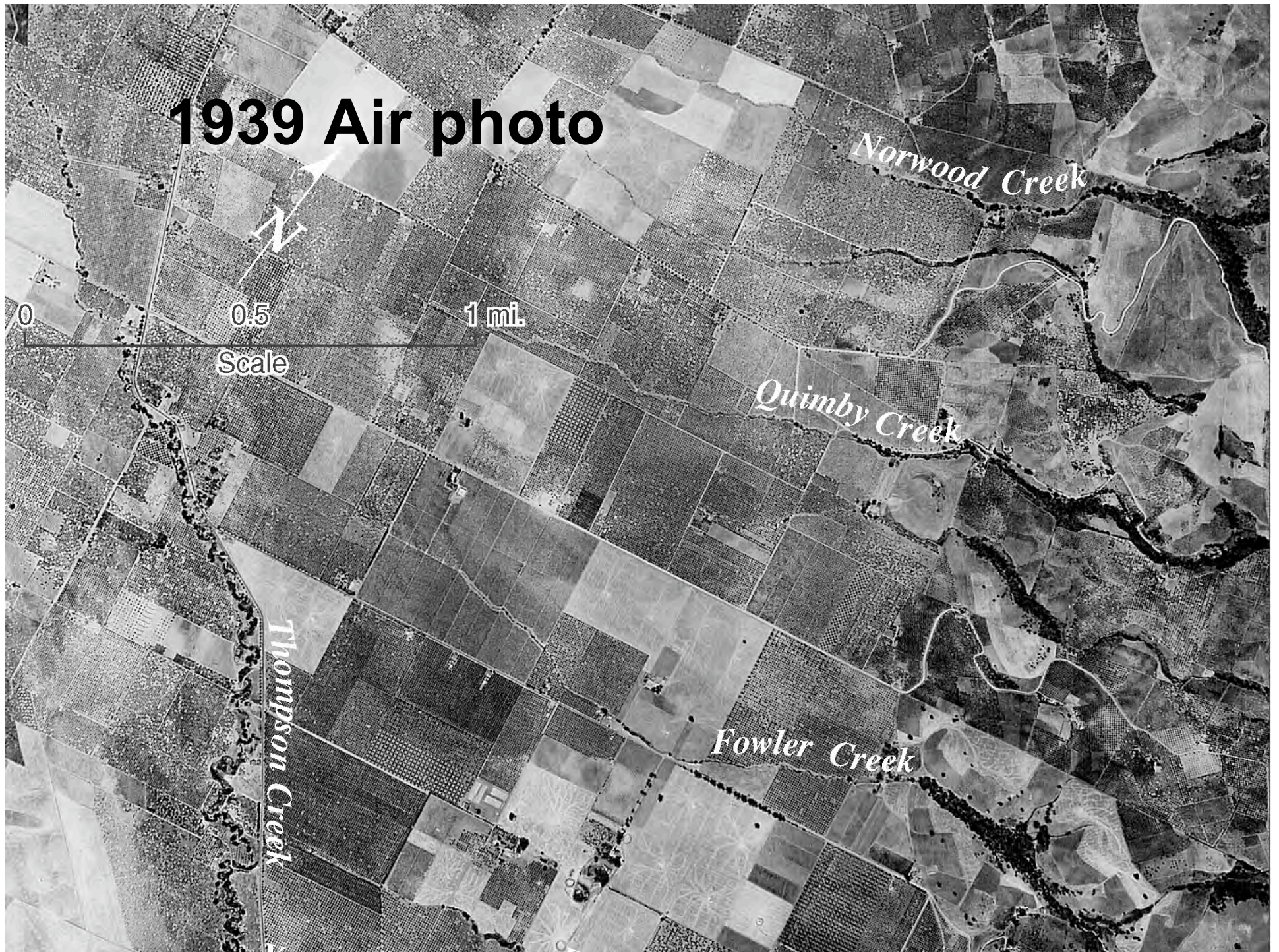
1899 USGS



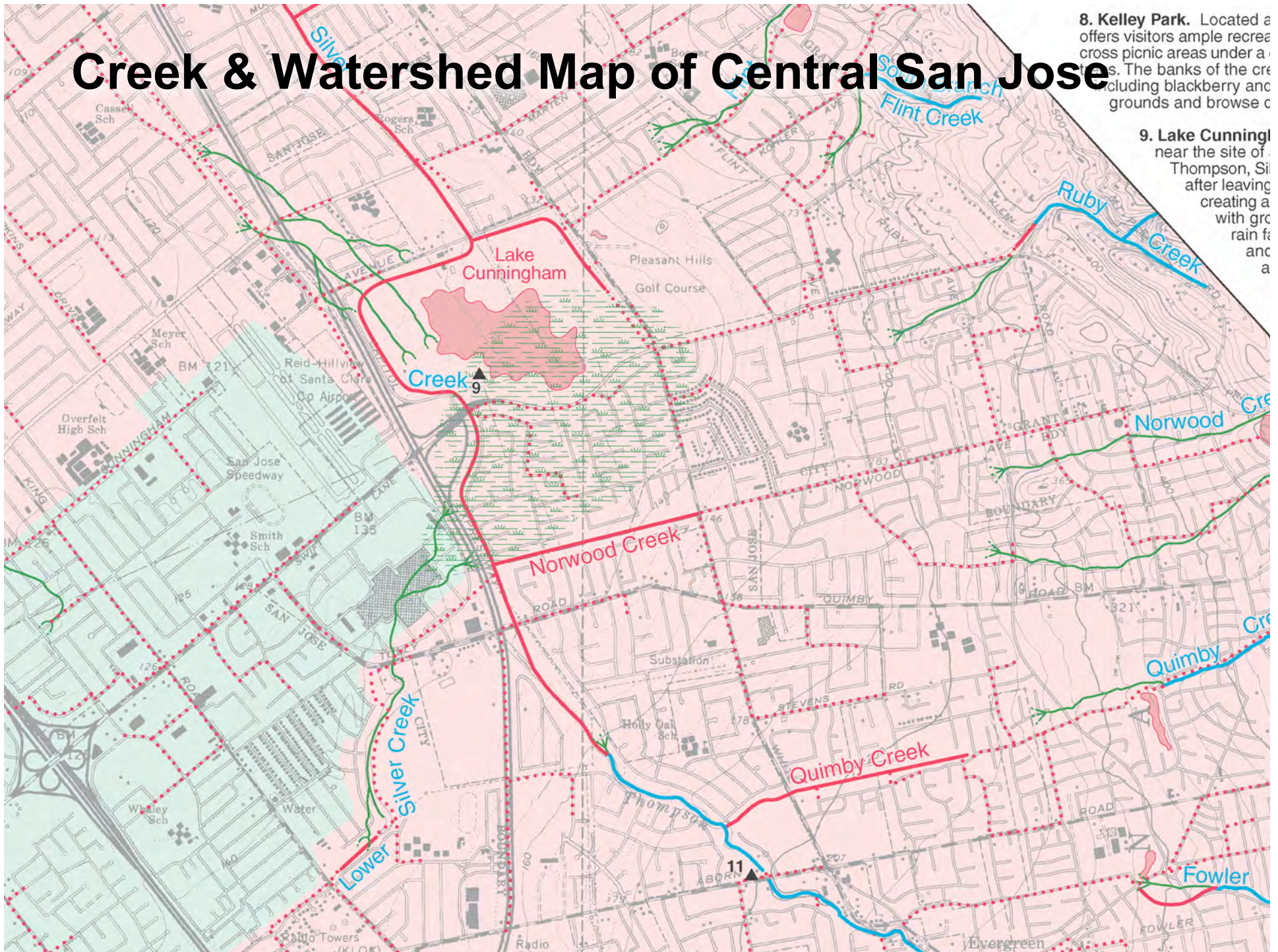
1953 USGS



1939 Air photo

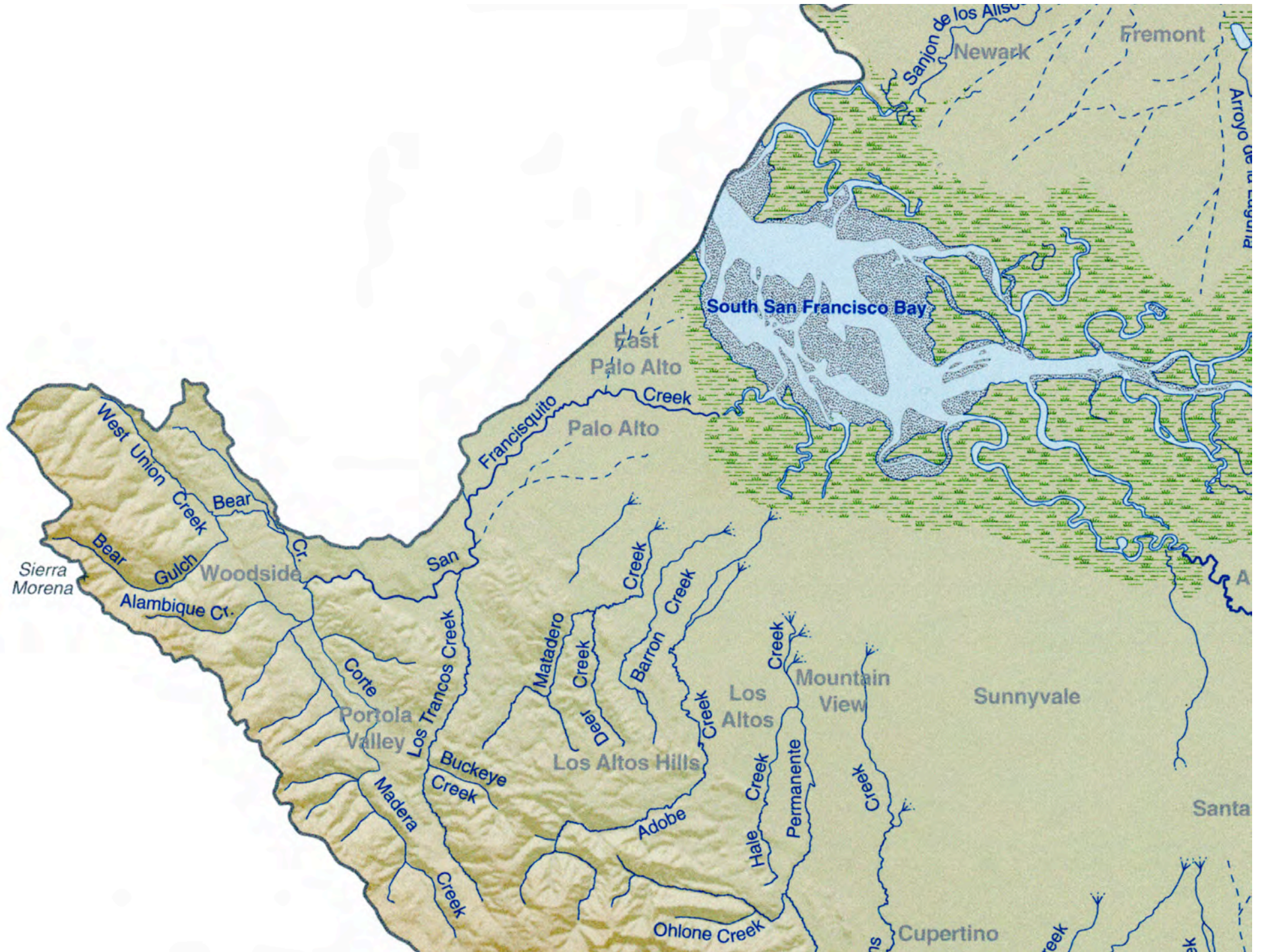


Creek & Watershed Map of Central San Jose



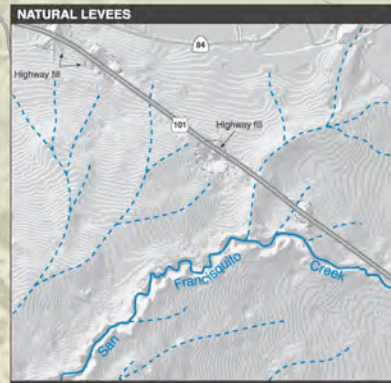
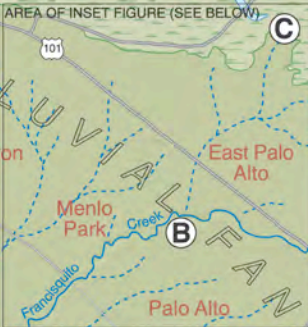
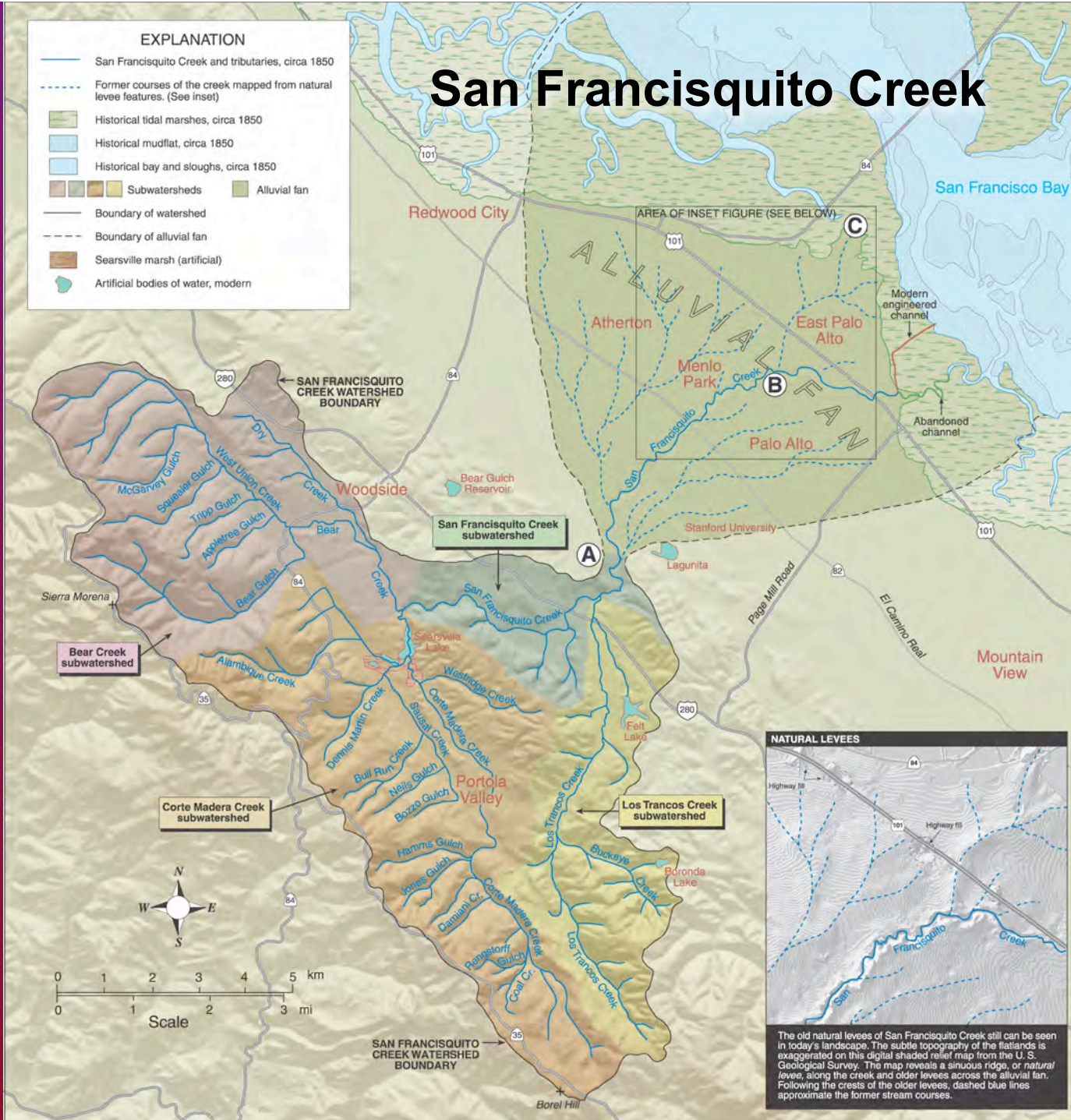
8. Kelley Park. Located a offers visitors ample recrea cross picnic areas under a s. The banks of the cre including blackberry and grounds and browse c

9. Lake Cunnin near the site of Thompson, Si after leaving creating a with gr rain fa and a



San Francisquito Creek

- EXPLANATION**
- San Francisquito Creek and tributaries, circa 1850
 - Former courses of the creek mapped from natural levee features. (See inset)
 - Historical tidal marshes, circa 1850
 - Historical mudflat, circa 1850
 - Historical bay and sloughs, circa 1850
 - Subwatersheds
 - Alluvial fan
 - Boundary of watershed
 - Boundary of alluvial fan
 - Searsville marsh (artificial)
 - Artificial bodies of water, modern

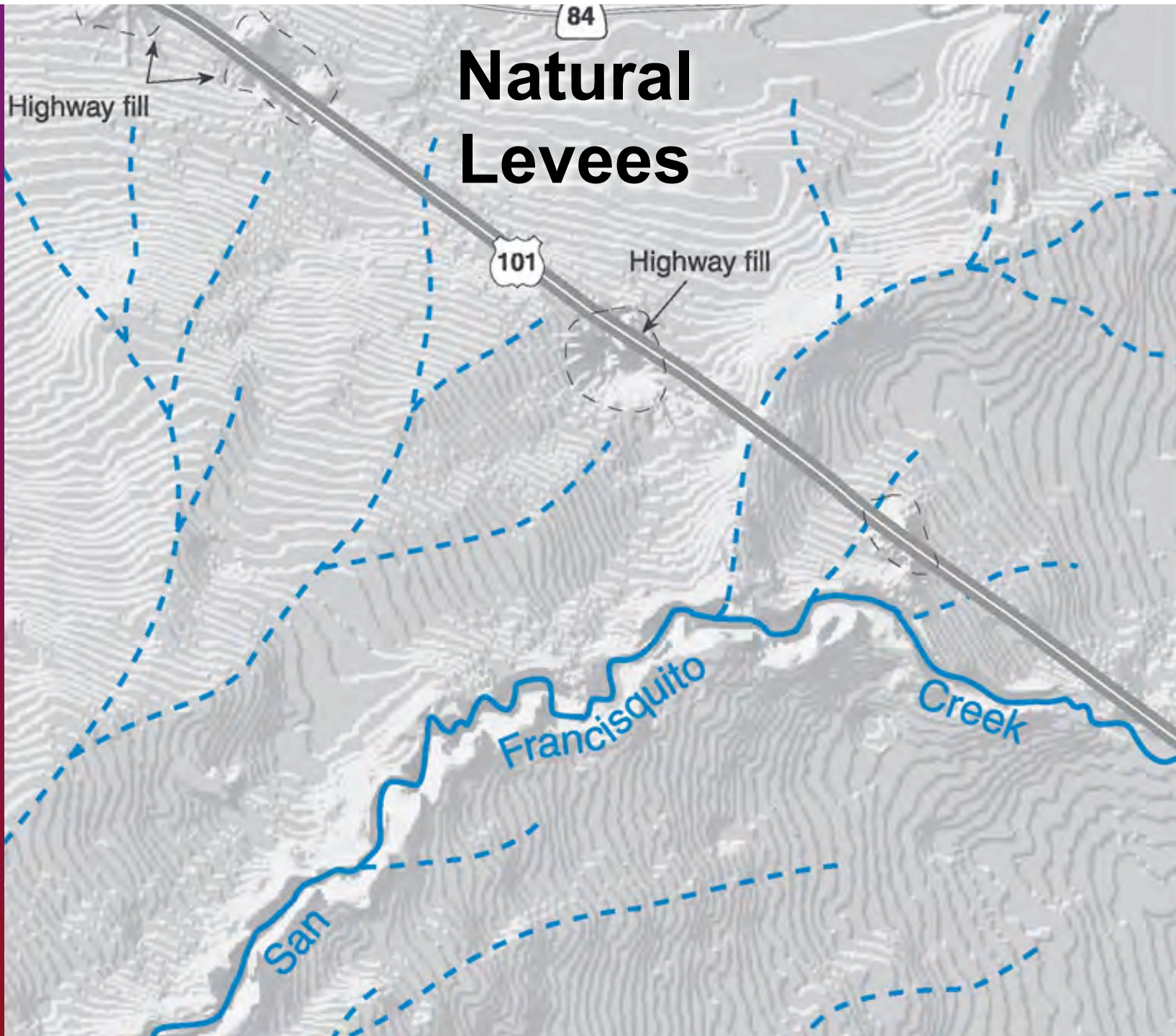


The old natural levees of San Francisquito Creek still can be seen in today's landscape. The subtle topography of the flatlands is exaggerated on this digital shaded relief map from the U.S. Geological Survey. The map reveals a sinuous ridge, or *natural levee*, along the creek and older levees across the alluvial fan. Following the crests of the older levees, dashed blue lines approximate the former stream courses.

San Francisquito Creek Fan



Natural Levees



Historical Waterscape of the Santa Clara Basin



Conclusions

1. Original system an intimate interaction among surface water, groundwater, sediment, and biota.
2. Valley floor topography reflects coalescing and competing alluvial fans and levees.
3. Reaches classified by function and character, $A \rightarrow B \rightarrow C \rightarrow D$.
4. Most SC basin streams are artificially connected to bay, designed for storm water conveyance.
5. Map tool is now available that provides historical and modern context for restoration planning