

ESM 228
Field Trip No. 2
1/25/08
Santa Clara River and Ventura River

Objectives:

- Learn about fluvial geomorphology on the Santa Clara and Ventura rivers.
- Discuss and view management concerns of groundwater resources on the Oxnard and Ventura Plain, groundwater wells, agricultural runoff, and common management issues for water districts and regulators in charge of water supply, water quality, and preservation of natural resources.
- Investigate the pros and cons of water diversions for municipal and agricultural uses, looking at the impact to migratory fish on the Santa Clara and Ventura rivers.

Background Information:

Santa Clara River: The Santa Clara River is one of California's last semi-free flowing rivers that can produce some of the highest discharge and sediment transport rates in the state. Its watershed, with headwaters in the San Gabriel Mountains north of the City of Los Angeles, has an aerial extent of 1,618 square miles. The elevation range within the watershed is from sea level to 8,800 feet at Mount Pinos in the northwestern corner of the basin. Tributaries to the Santa Clara River are relatively narrow and steeply sloping in the canyons to the north of the river. Significant tributaries in square miles and discharge are Sespe, Piru, Castaic, Bouquet Canyon, Mint Canyon, Soledad Canyon and Aliso Canyon creeks. There are four reservoirs in the watershed (Pyramid Lake, Lake Piru, Castaic Lake and Bouquet Canyon Reservoir, each impounding local and State waters for agricultural and urban uses. The Santa Clara River itself is a broad sandy wash, only a small portion of which normally contains the shallow waters of the river. The river flows generally east to west from its headwaters south of Palmdale to the Pacific Ocean between the cities of Ventura and Oxnard. Development in the watershed has significantly changed land use over time in the basin from range land to agriculture to a present day boom in urban development. Many reaches and riparian corridors of the river system have important biological resources that include endangered Southern Steelhead Trout (*Oncorhynchus mykiss iridius*), Unarmored Three-spine Stickleback (*Gasterosteus aculeatus williamsoni*), and Tidewater Goby (*Eucyclogobius newberryi*). The mountains and their geologic units are composed of marine and terrestrial sedimentary and volcanic rocks that load the floodplain with large quantities of sand, silt and clay.

Saticoy, United Water Conservation District: UWCD manages, supplies, and monitors groundwater and surface water resources throughout the Oxnard Plain. We will go with their field hydrogeologist to the Freeman Diversion that takes water out of the Santa Clara River for irrigation and look at their fish ladder designed to enable migrating steelhead trout navigate around the diversion dam. We will then observe agricultural well monitoring techniques on several UWCD wells near Saticoy.

Hedrick Ranch, Friends of the Santa Clara River: This ranch was purchased and now managed by the Friends of the Santa Clara River as a preserve. We will be touring bioswales that have been constructed recently and is being monitored for their success towards improving agricultural runoff prior to entering the Santa Clara River. We will also discuss the invasive weed (*Arundo*) problem along the river. See handouts for more information.

Ojai, Casitas Municipal Water District: CMWD diverts water out of the Ventura River near Ojai to Casitas Lake for municipal use and recreation. We will discuss their watershed management issues, water quality monitoring and visit their state of the art fish ladder and fish counter from Iceland and the only one in southern California.

Agenda:

- 8:00** Depart promptly from the loading docks behind Bren School, UCSB.
- 8:45** River Ridge Golf Course: overview of the Santa Clara River watershed, City of Ventura's WWTP, and outlet lagoon.
- 9:10** United Water Conservation District Freeman Diversion and fish ladder, aquifer management and agricultural well monitoring (Steve Howard, Jim Kentosh, and Murray McEacheron).
- 10:30** Hedrick Ranch, bioswales and nutrient export treatment, and Arundo removal (Kristin Clark).
- 12:00** Fish passage barriers on Santa Paula Creek of the Santa Clara River, Harvey Dam (Steve Howard).
- 1:00** Matilija Dam, Matilija Creek of the Ventura River, Watershed Protection District, Ventura County, overview of the dam removal project (Pam Lindsey).
- 2:00** Robles Diversion on the Ventura River, tour of the Casitas Municipal Water District's diversion and fish ladder facility (Neil Cole).
- 3:15** Foster Park Ventura River Diversion facility and well field (Jim Passanisi).
- 5:00** Return to UCSB.

Materials provided:

- Lunch.
- Rain gear.
- Comfortable walking shoes.
- Warm clothes.

Questions - use the field trip to ask questions to answer the following:

1. You have been awarded \$50,000 to do a groundwater assessment of the aquifer in the Tecolote Creek drainage. Design a monitoring strategy and general work plan to determine the extent and depth of the aquifer, flownet, water quality conditions and whether your monitoring site (TO02) is influenced by groundwater during a variety of antecedent soil moisture conditions.
2. If steelhead/rainbow trout were found in the lagoon at the outlet of Tecolote Creek but not in the upper watershed, there is a good chance that fish passage barriers are present along the stream network. Draft a proposal to assess and mitigate the fish passage issue, offering several alternatives to remove and subsequently monitor the success of the modifications of the stream channel.
3. Bell Canyon Creek was not included in the Stoecker Steelhead Report. Investigate why.