

**Department of Water Resources
Testimony for SWRCB Hearing on Cease and Desist Order**

Agriculture in the Southern Delta

The southern Delta generally encompasses lands and channels of the Sacramento-San Joaquin Delta southwest of Stockton (See Figure 1). The bulk of the lands in the southern Delta are included within the South Delta Water Agency (SDWA) (Figure 2). Water conditions in the southern Delta are influenced by San Joaquin River inflow; tidal action; water export facilities (primarily water levels and circulation), local pump diversions; agricultural and municipal return flows; channel capacity; and upstream development. The area is irrigated primarily with surface water through numerous local agricultural diversions. A small percentage of SDWA agricultural land is irrigated with groundwater. Average annual rainfall in the southern Delta varies from approximately 8 inches to over 12 inches.

The SDWA area is predominantly mineral soils. The soils within the lowlands in the SDWA tend to be of lower permeability with a higher groundwater table than the upland areas (Figure 3). Most of the upland areas in the SDWA are characterized by soils that are well to moderately well drained and depth to groundwater ranges from 4 to 6 feet during the irrigation season (Figures 4 and 5). The depth to water table information is from the USDA, Natural Resources Conservation Service *Soil Survey of San Joaquin County, California*. The soil survey shows that a large area of the SDWA where beans are grown has a year-round water table that varies in depth from 4 to 6 feet. The depth to the water table could be less than six feet during the growing season. The soil survey does not specify where within this range the water table is located during the growing season. This could vary from one year to another.

Of the nearly 150,000 acres within the SDWA, approximately 120,000 are in agricultural production. The remaining acreage includes urban lands, waterways, berms, channel islands, and levees. Staff in the Department of Water Resources' (DWR) Central District Office have periodically conducted land use surveys of San Joaquin County, most recently in 1982, 1988, and 1996. In the 1996 survey, field crops including alfalfa, grain, corn, beans, hay and pasture, accounted for nearly 70 percent of the agricultural production. Other crops grown within SDWA include permanent crops such as fruits, nuts, and vineyards as well as truck crops.

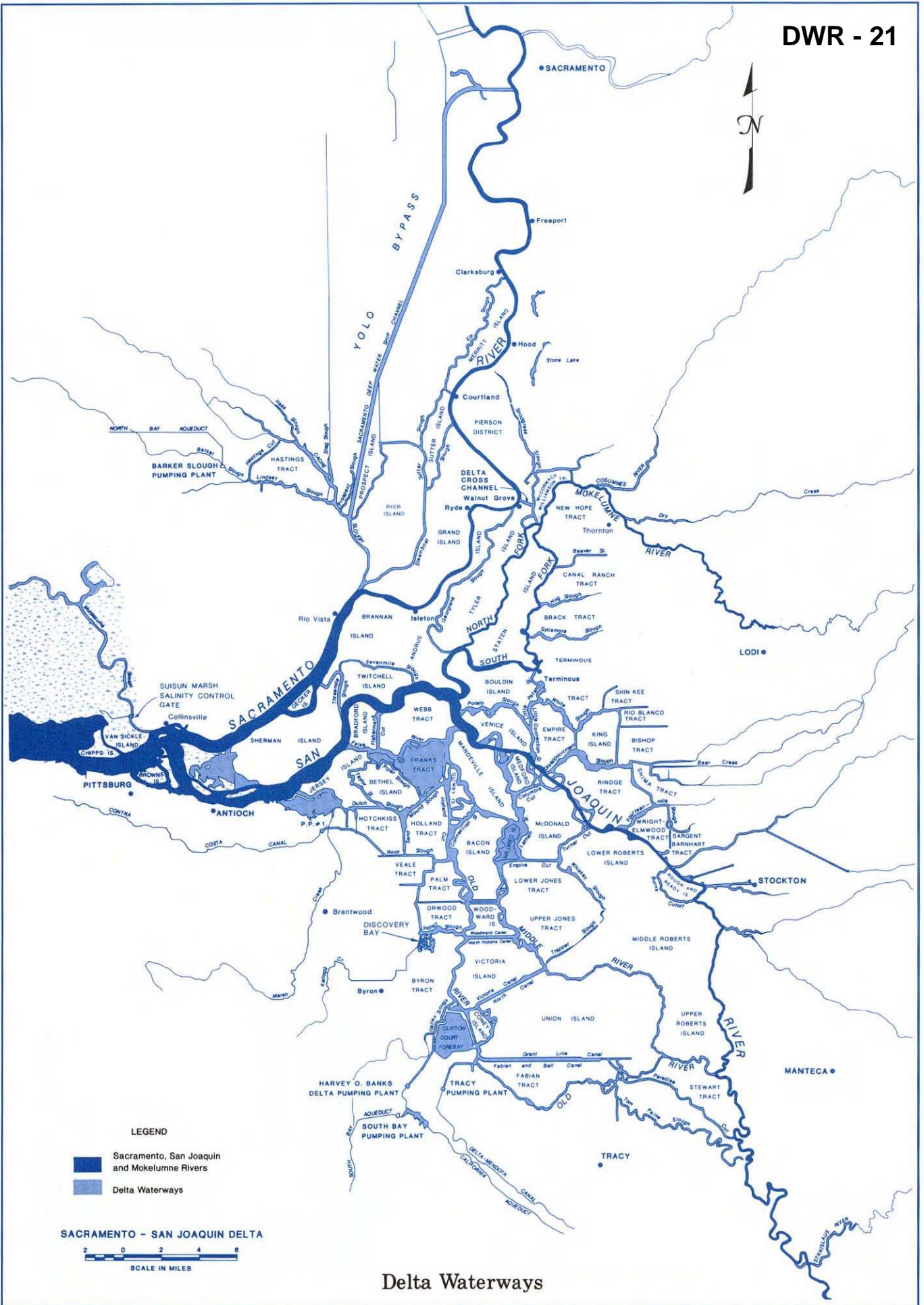
The southern Delta agricultural salinity objective of 0.7 EC, April through August, is implemented through water right Decision 1641 (D-1641). This objective was initially established in the 1978 Water Quality Control Plan for the Sacramento-San Joaquin River and Suisun March (1978 Bay/Delta Plan). It was based on guidelines from the University of California Agricultural Extension, and

Irrigation and Drainage Paper 29 of the Food and Agriculture Organization of the United Nations (FAO)(Ayers and Westcot). The 0.7 EC objective is intended to be protective of beans which were determined to be an important salt sensitive crop grown in the southern Delta during the summer irrigation season (SWRCB WQCP, p. VI-19 (1978)).

At the time the 1978 Bay/Delta Plan was developed it was estimated that acreage planted in field beans had diminished to approximately 2,400 acres in the southern Delta, generally in the area receiving Delta-Mendota water (SWRCB WQCP, p. VI-18 (1978)). Delta-Mendota water is delivered to Plainview Irrigation District and Banta Carbona Irrigation District along a narrow strip adjacent to the southwest boundary of SDWA. This trend does not appear to have continued through the 1980's and 1990's. The net cropped acreage for beans grown in SDWA mapped in the 1982, 1988, and 1996, DWR land use surveys, were approximately 11,800, 7,600, and 8,700 acres, respectively. These acreages do not include acreage planted in beans for any land within the southern Delta outside SDWA, including the lands receiving Delta-Mendota water. The 1982, 1988, and 1996 acreages of beans represent an increase over the 2,400 acres reported at the time the 0.7 EC objective was established.

In the 1996 survey, beans were grown primarily in an area bounded by the San Joaquin River on the east and Old River on the north (Figure 6). The data collected in the 1988 land use survey of San Joaquin County showed a similar regional distribution of cropped acreage for beans (Figure 7). In general the mineral soils in this area have better drainage characteristics and a greater depth to groundwater than those in other parts of SDWA. This would tend to suggest that factors such as soil characteristics and depth to groundwater are a significant factor in cropping decisions.

Prior to adoption of D-1641 in December 1999, the agricultural salinity objective was not implemented. There was no specific water right permit conditions controlling salinity, as measured by EC, in the southern Delta. Other DWR testimony for this hearing has indicated that during the growing season for beans, the EC value in the south Delta channels has often been above the 0.7 EC. Since 1978 when the 0.7 EC objective was adopted in the WQCP, acreage planted to beans in SDWA has appeared to increase. This practical observation raises the question as to whether 0.7 EC is a necessary value to reasonably protect agricultural uses or if other factors, such as leaching fraction, soil type, permeability, depth to groundwater, annual rainfall, and general land management, have more important influences on crop yield than the quality of irrigation water, as long as it is within a reasonable range. DWR believes that SDWA has not provided evidence of yield decrement in beans to counter this observation and it is a fair assumption that existing conditions with water quality in the range of 0.7 to 1.0 EC have not adversely impacted the quantity of beans grown in SDWA.



LEGEND

- Sacramento, San Joaquin and Mokelumne Rivers
- Delta Waterways

SACRAMENTO - SAN JOAQUIN DELTA

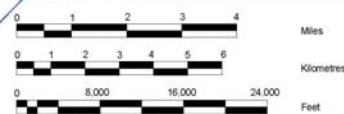
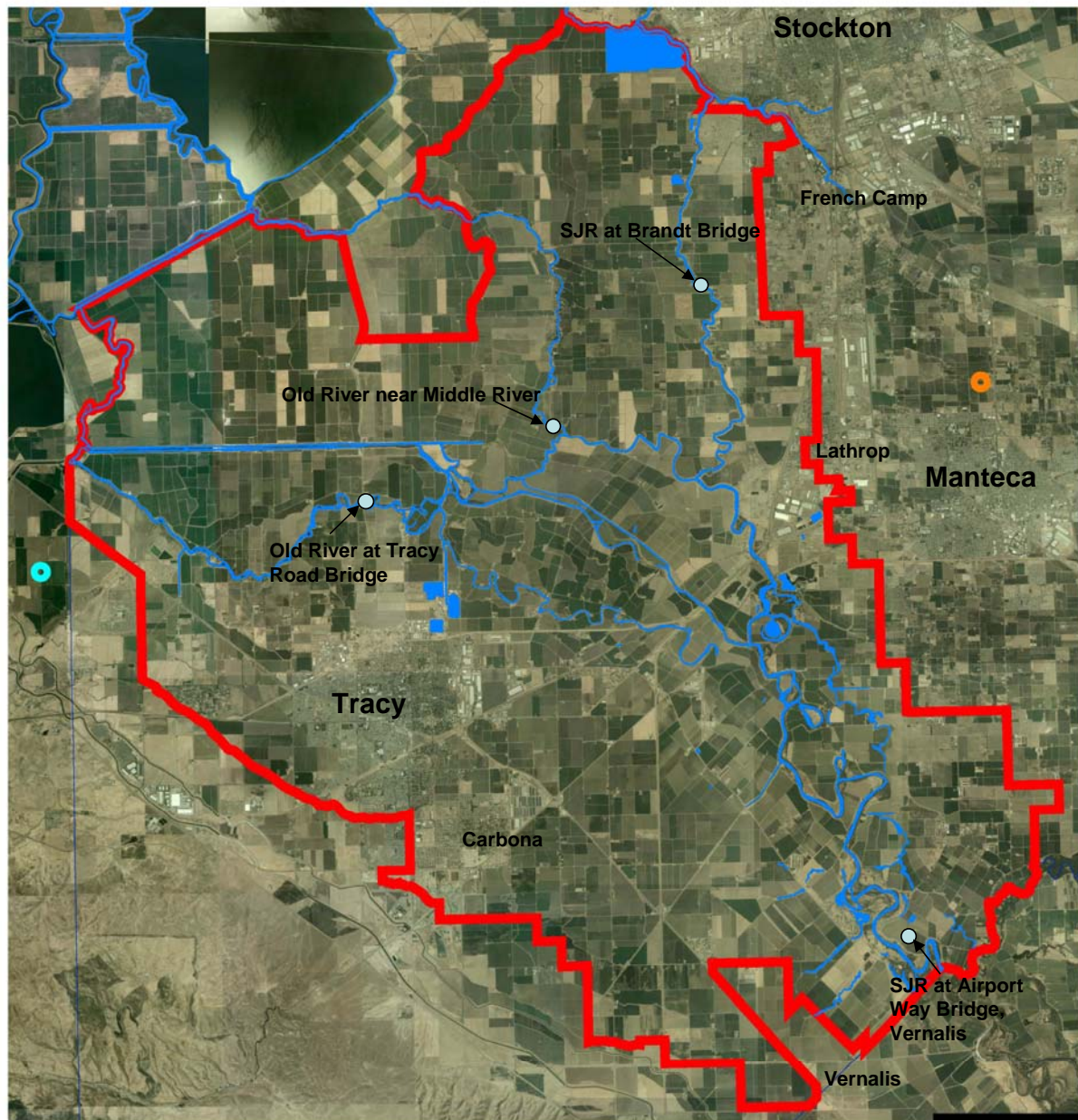
SCALE IN MILES

Delta Waterways

South Delta Water Agency



Location Map



Legend

- South Delta Water Agency (DRAFT Boundary, subject to correction)
- San Joaquin County Boundary
- Manteca CIMIS Weather Station
- Tracy Pumping Plant Weather Station
- D1641 Compliance Monitoring Locations

July 2-3, 2004 Aerial Photo
USDA Farm Services Agency

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Figure 2

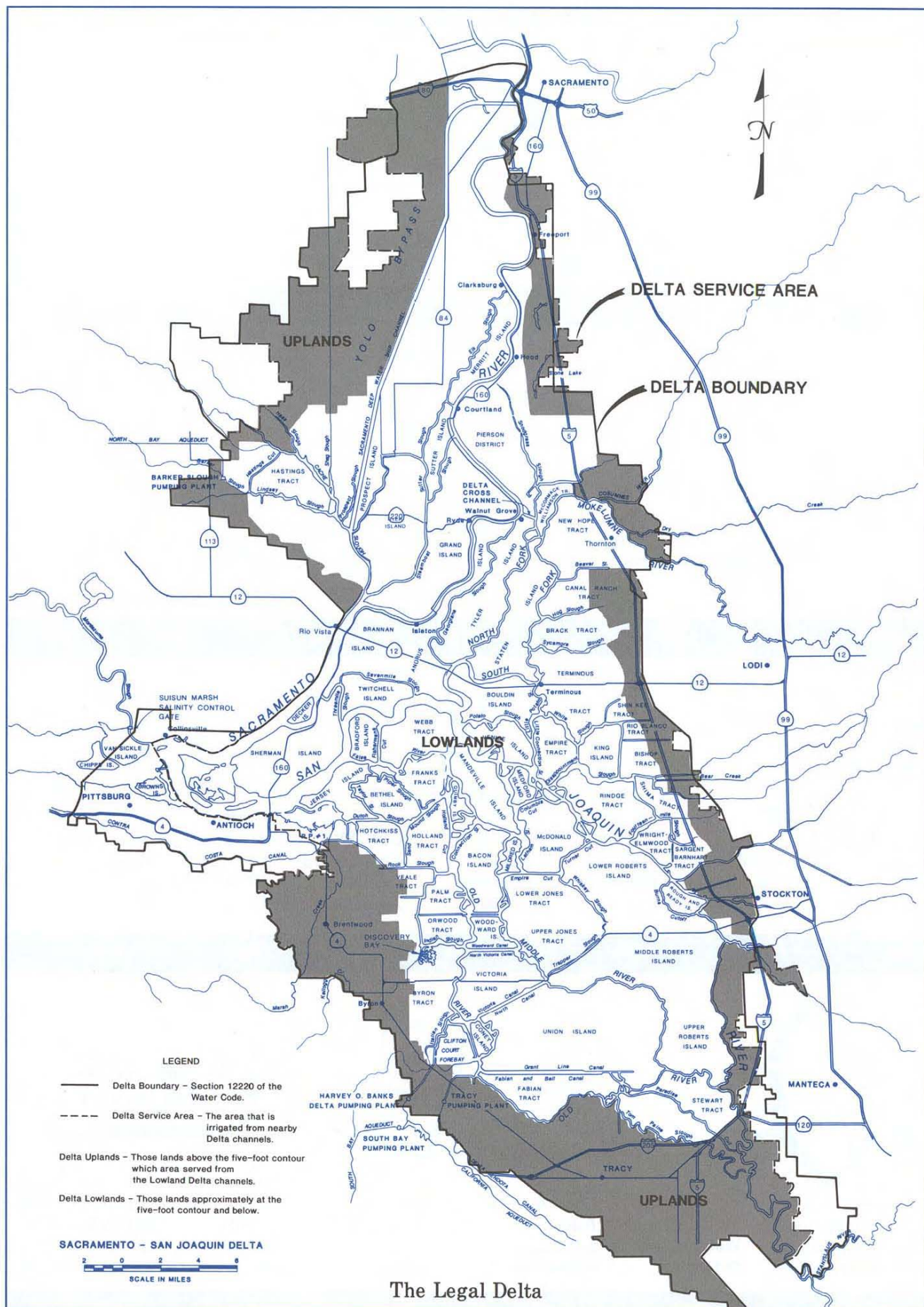


Figure 3

South Delta Water Agency Depth to Water Table

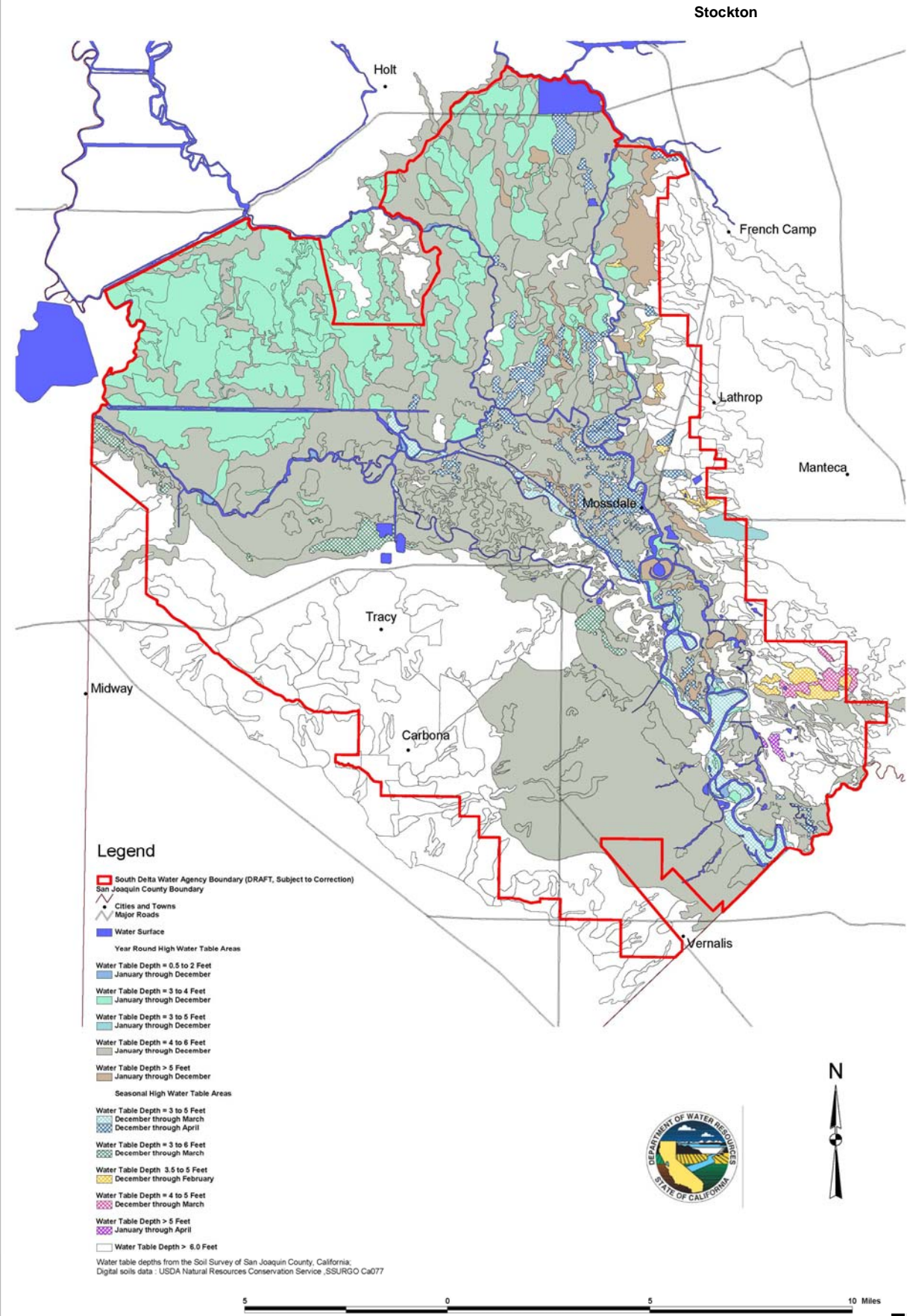


Figure 4

South Delta Water Agency Natural Drainage Classes of Soils

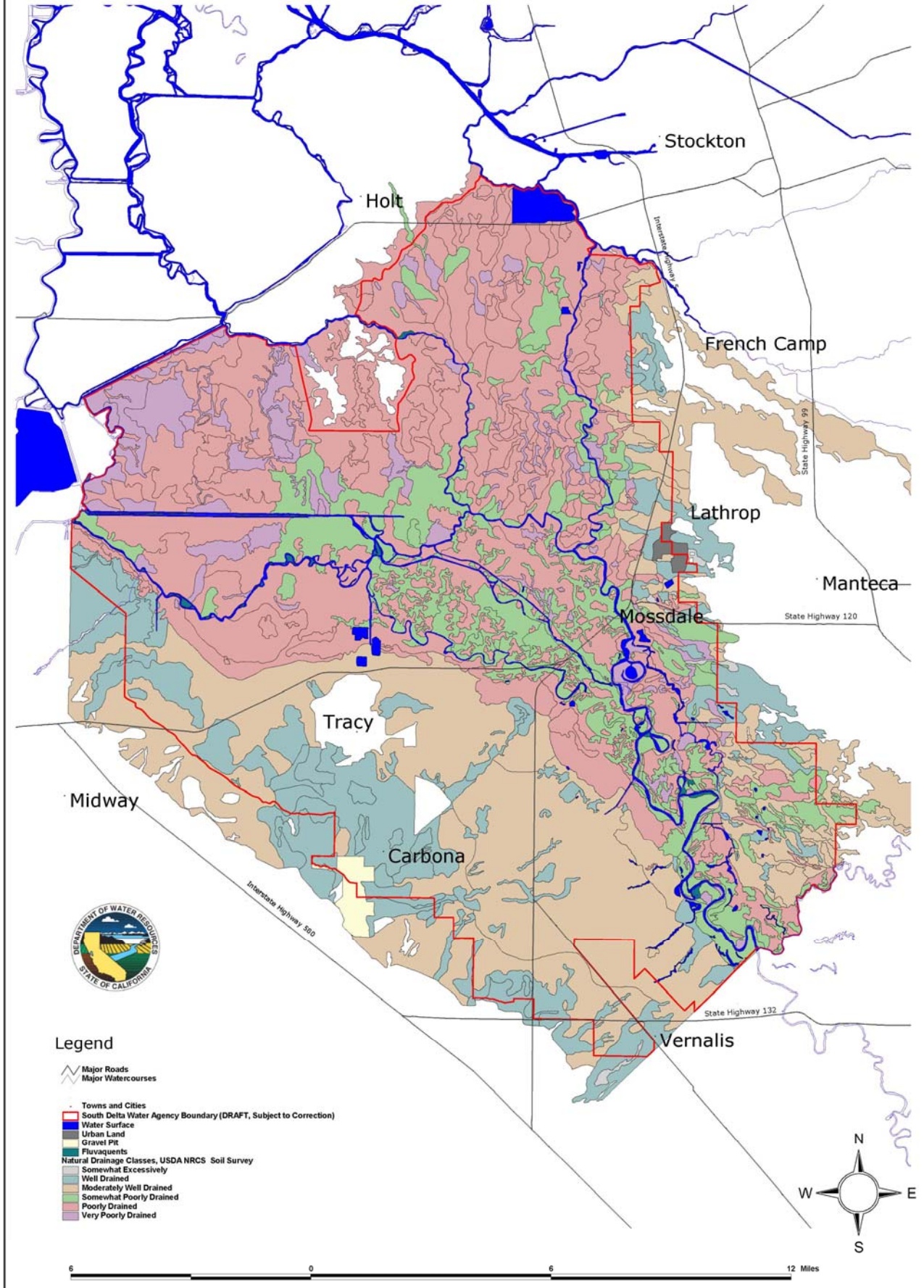
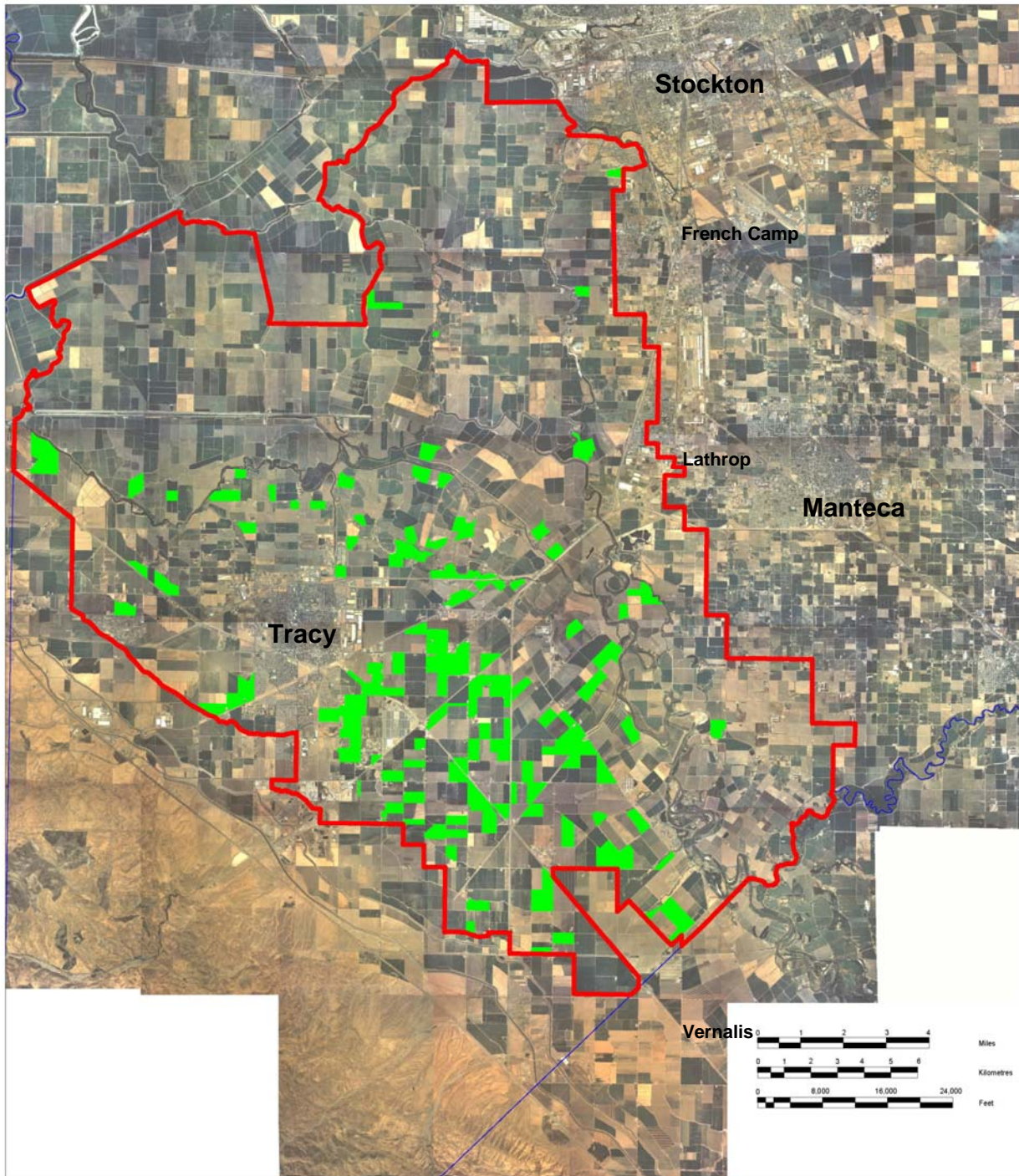


Figure 5

South Delta Water Agency
1996 Land Use Survey
Bean Fields



Location Map



Legend

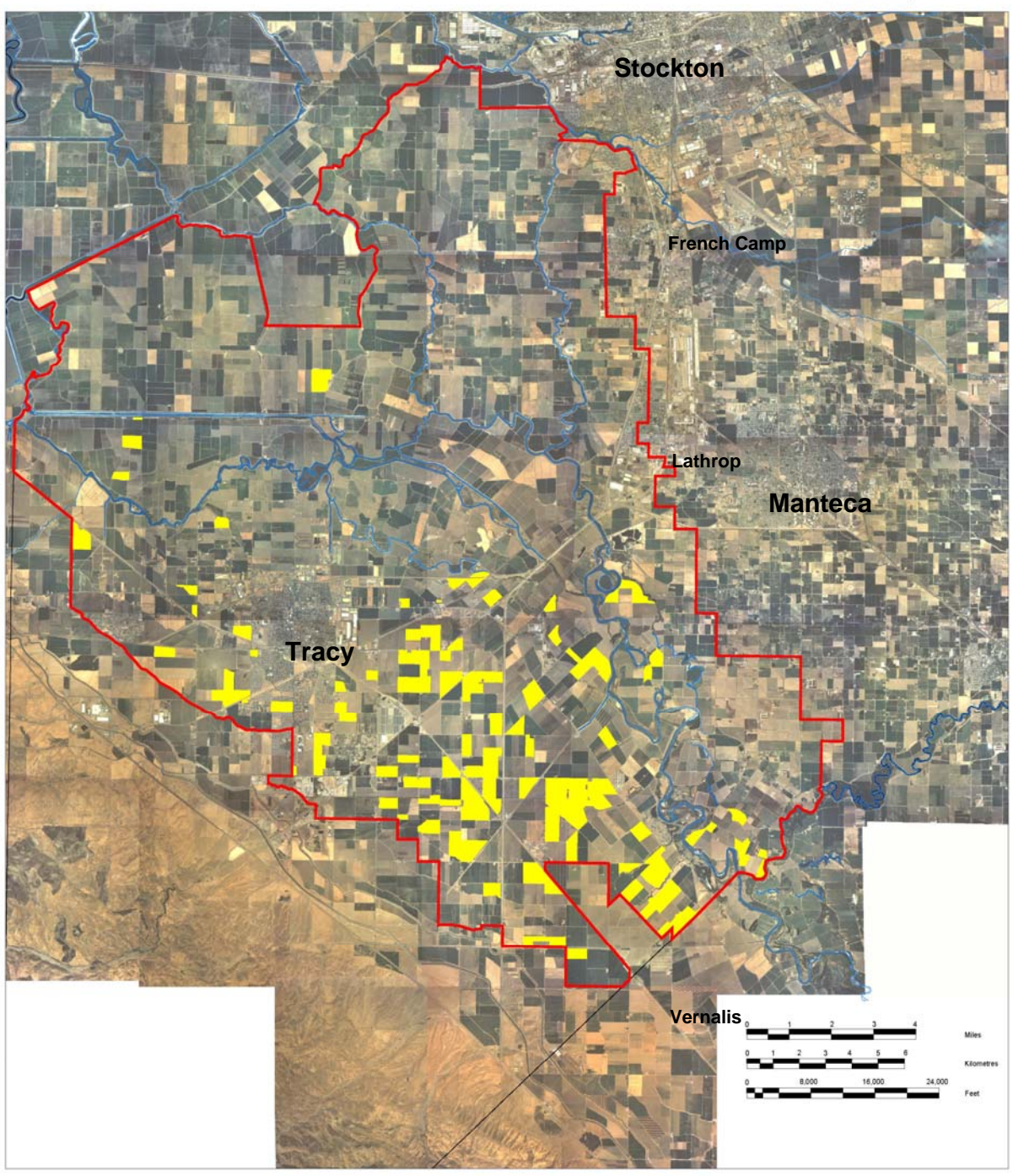
- Beans Mapped in 1996 Land Use Survey of San Joaquin County
- South Delta Water Agency Boundary (DRAFT, Subject to Correction)
- San Joaquin County Boundary

Aerial Photo: June, 1996

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Figure 6

South Delta Water Agency 1988 Land Use Survey Bean Fields



Legend

- Beans Mapped in 1988 Land Use Survey of San Joaquin County
- South Delta Water Agency Boundary (DRAFT, Subject to Correction)
- San Joaquin County Boundary

Aerial Photo: June, 1996

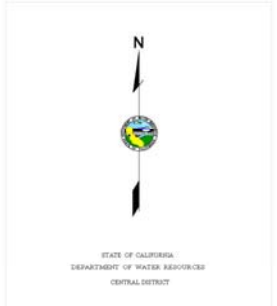


Figure 7