

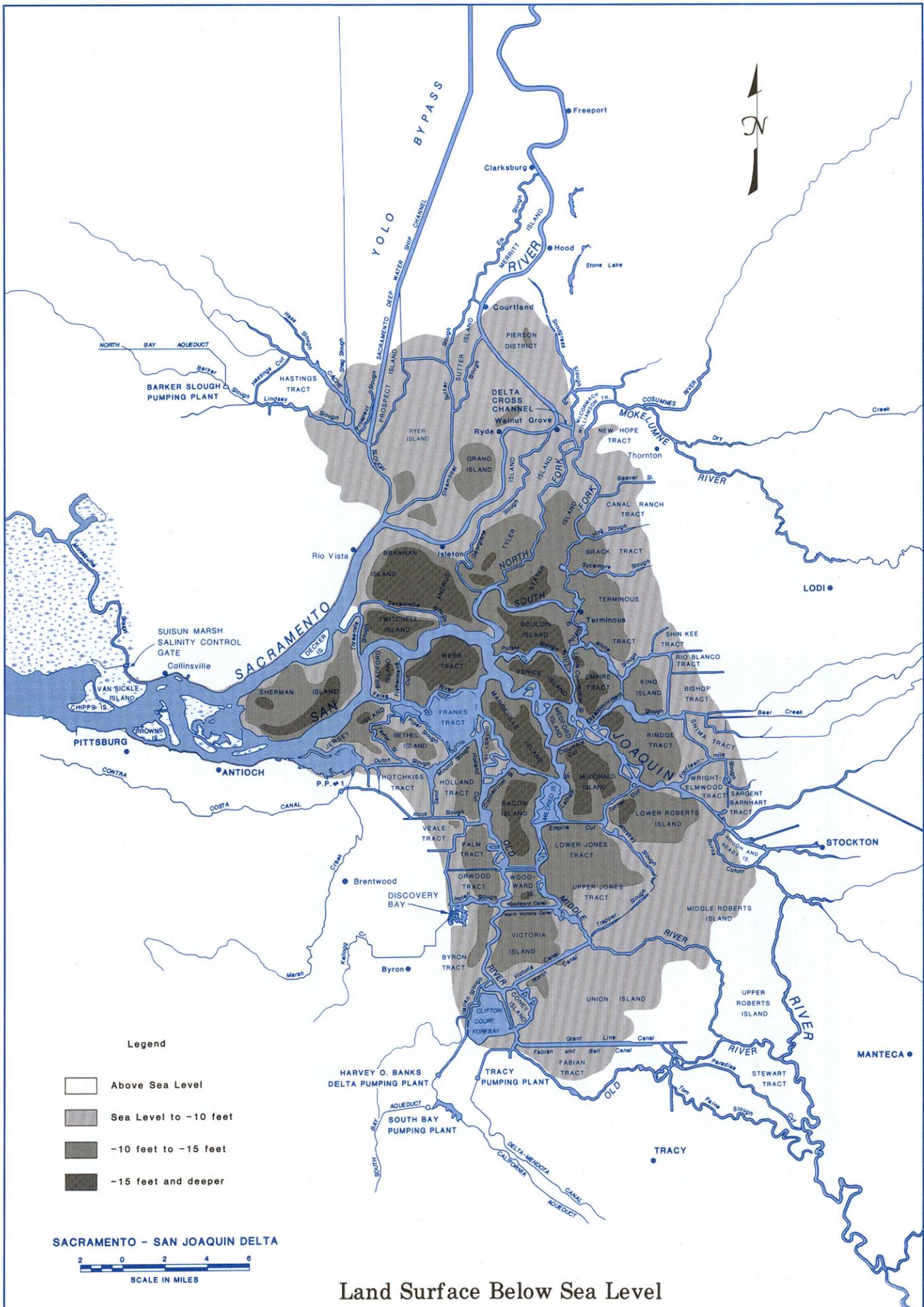
Thickness of Organic Materials

For millions of years, river flows and tidal action deposited sediment in the Delta, the low point of the Central Valley. Thick organic soil, commonly referred to as peat, was formed as tules and other plants were covered by this sediment throughout the

years. These organic soils, up to 60 feet deep in some areas, were first farmed in the mid-1800s. Although highly productive for agriculture, peat is also very prone to subsidence (see the following section).



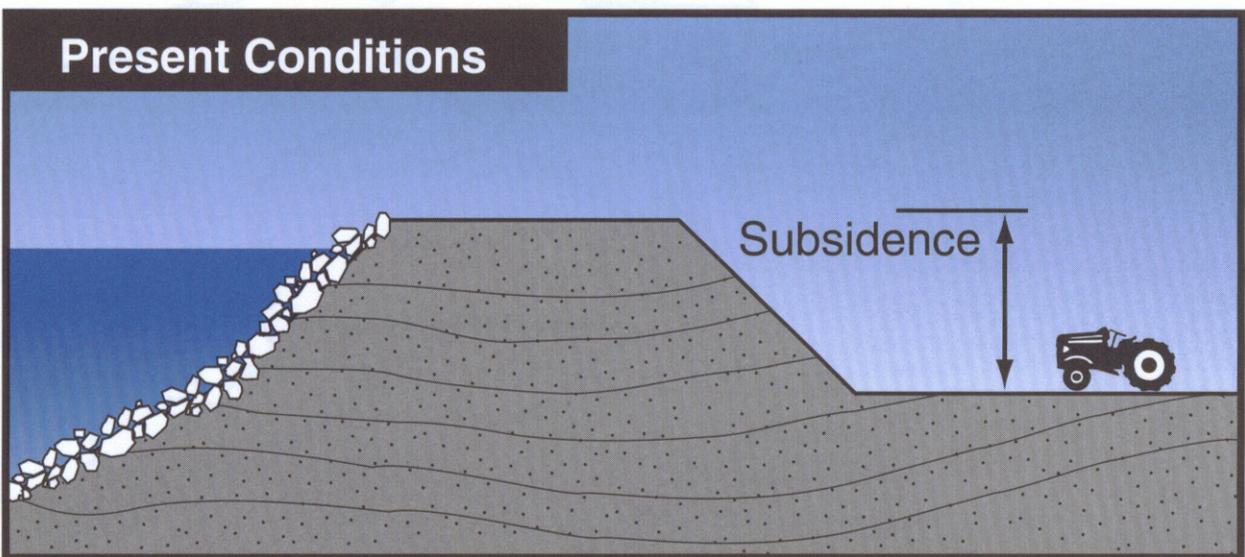
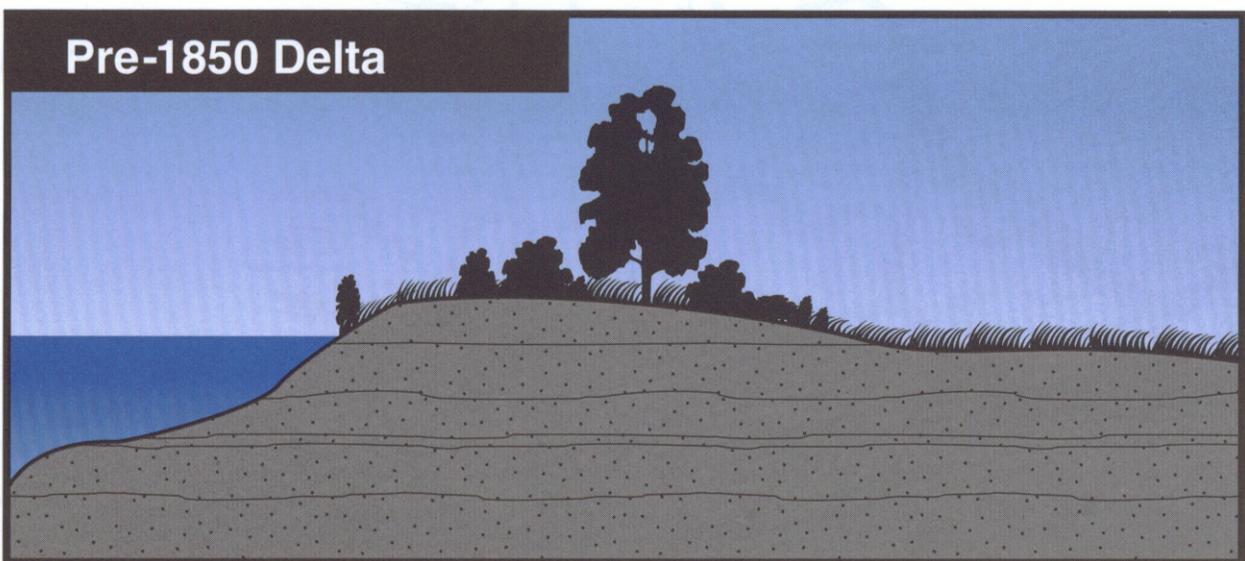
Farming on Sherman Island. Delta crops average a gross value of over \$500 million per year.

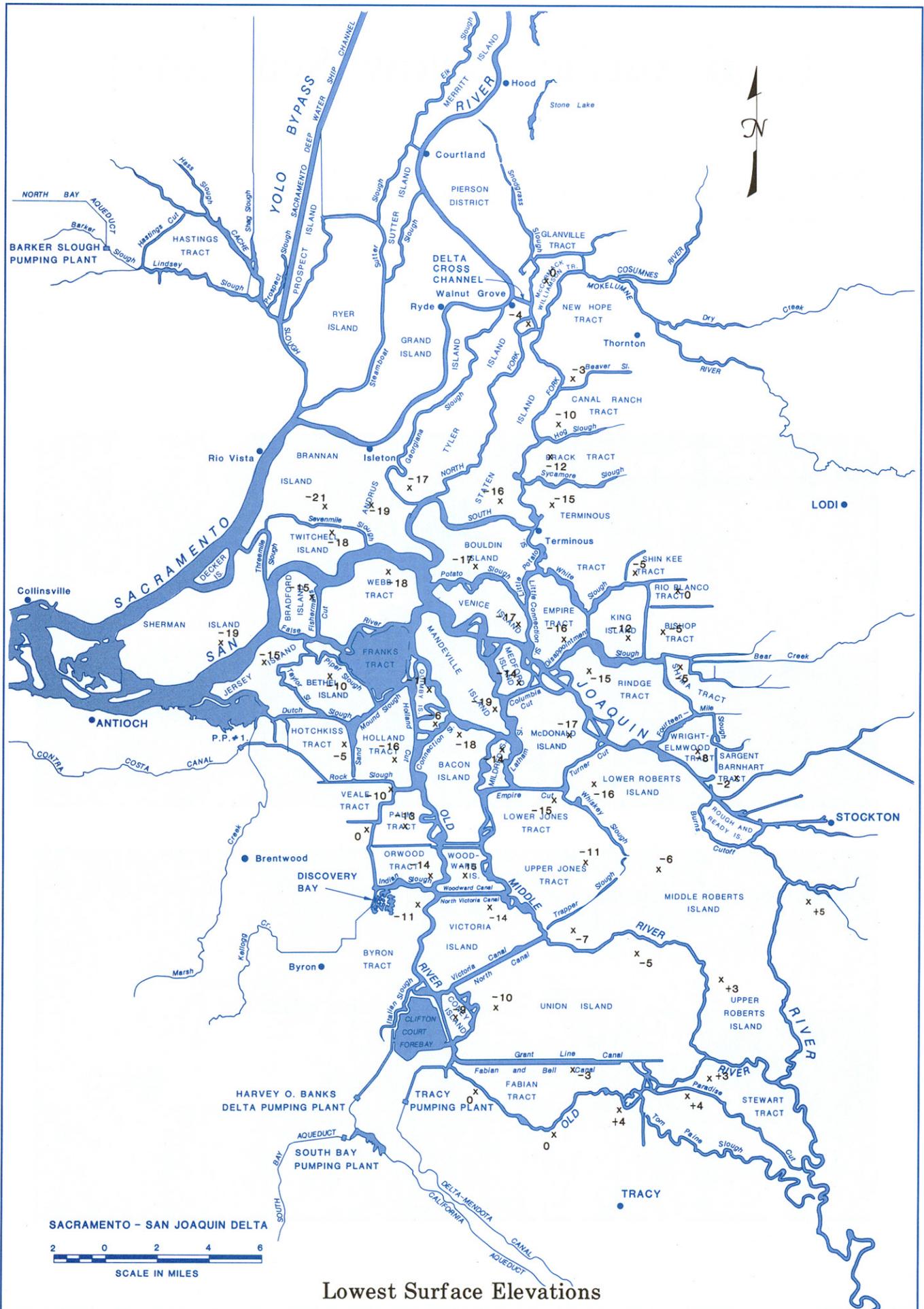


Land Surface Below Sea Level

As shown in the figure to the left, some land in the central and western Delta is more than 15 feet below sea level. This situation is caused by land subsidence which is primarily the result of the loss of organic soil (peat). The loss is caused by exposure of peat

to oxygen, which converts organic carbon solids to carbon dioxide and aqueous carbon. Subsidence is a major concern in the Delta because it increases the water pressure on levees and, therefore, the probability of levee failure and flooding.





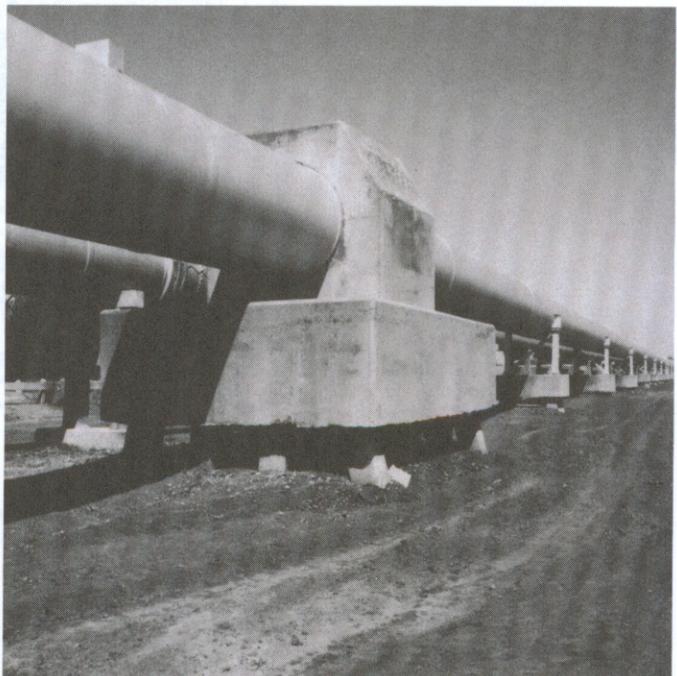
Lowest Surface Elevations

Today, in low-lying areas of the Delta, hundreds of miles of levees are needed to keep the land from being flooded by the surrounding water. The water surface can be over 20 feet higher than the land surface. As a result of this condition, a levee failure could result in flooding during the summer as well as the winter.

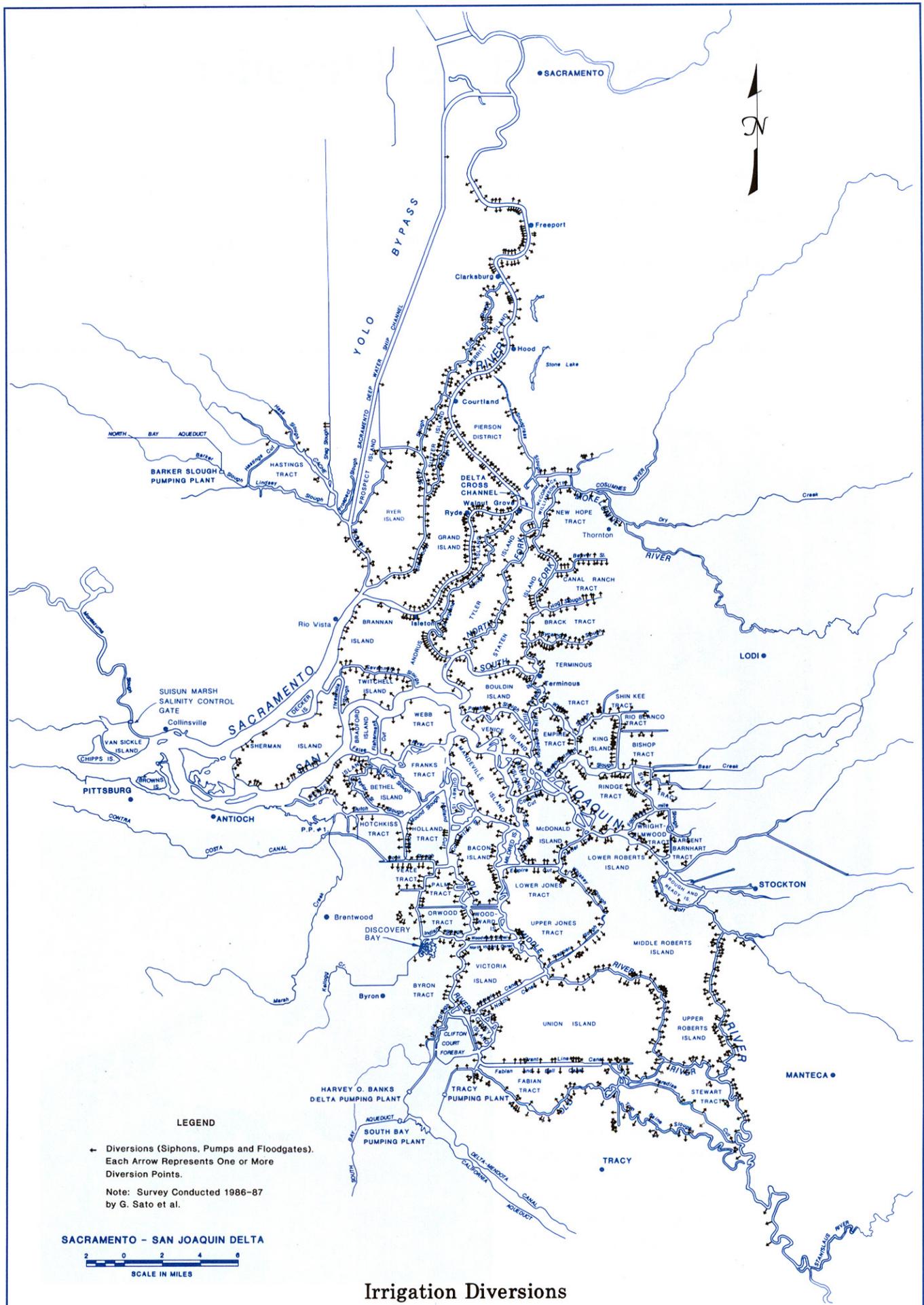
At least four levee failures have occurred during the summer or early fall — Webb Tract, June 1950; Andrus-Brannan Island, June 1972; Jones Tract, September-October 1980; and MacDonald Island, August 1982.



Cracks occurring on the levees of a low-lying island.



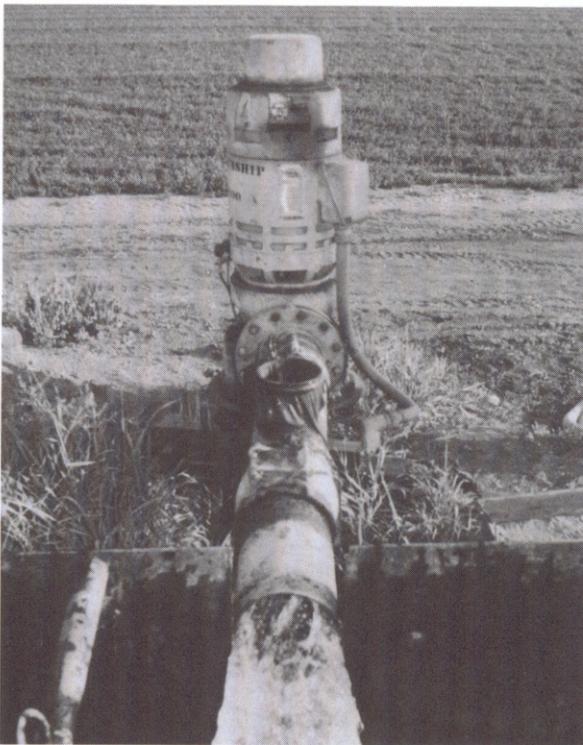
Land subsidence on Orwood Tract is exposing piles supporting the East Bay Municipal Utility District Aqueduct. These piles extend deep into the ground to assure continued stability.



Irrigation Diversions

As shown on the map at left, there are about 1,800 agricultural diversions in the Delta. During the peak summer irrigation season, diversions from these facilities collectively exceed

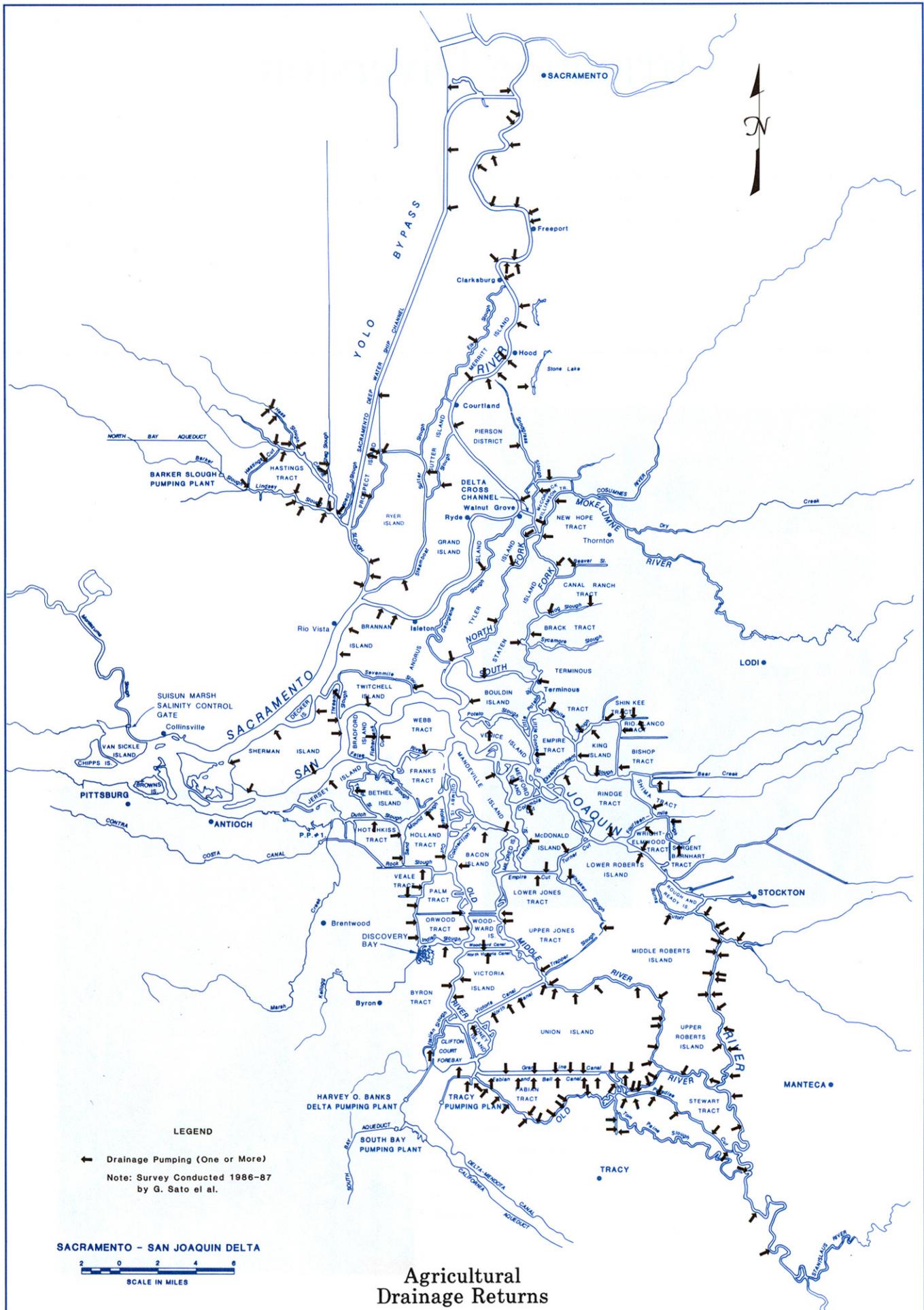
4,000 cubic feet per second. Principal crops grown in the Delta are corn, grain, sugarbeets, alfalfa, pasture, tomatoes, asparagus, fruit, safflower, and nuts.



Typical agricultural diversion pump.



A siphon diverting water from the San Joaquin River to irrigate Sherman Island cropland.



Agricultural Drainage Returns

Irrigated plants will naturally evaporate pure water and leave the salts and minerals in the surrounding soil and water. This process results in agricultural drainage that is higher in salt and mineral concentration than the water initially applied to the

crop. Most agricultural areas in the Delta are near or below sea level. Agricultural drainage water must be pumped from the low farmland over the levees into the nearby channel (see map at left). In some channels, this process degrades water quality.



*Tomato field
being irrigated.*



*Agricultural drainage pipes
on Twitchell Island. (The
water is lifted approximately
20 feet to flow into the
San Joaquin River.)*