Tracy Research Technical Report Abstract

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This report presents a summary and assessment of the water quality at the Bureau of Reclamation (Reclamation) Tracy Fish Collection Facility (TFCF), Tracy, California. The TFCF is the intake structure for the Tracy Pumping Plant (TPP) and provides water that is pumped into the Delta Mendota Canal for irrigation in the Central Valley. This study gathered water quality data from several different sources: queries from the Environmental Protection Agency STORET database; the 1997 San Joaquin County agricultural chemical application database; a U.S. Geological Survey study that measured sub-µg/L concentrations of pesticides and herbicides in the San Joaquin and Sacramento Rivers; data from a permanent Hydrolab probe installed in the TFCF intake channel; and data from a recent sampling event performed by Reclamation personnel in October 1997. The water chemistry and salinity at the TFCF are influenced by a complex set of variables. These variables include large-scale Central Valley land use and watershed gradients, precipitation and storm events, seasonal runoff patterns, daily tidal fluctuations, large-scale irrigation water pumping at the TPP and the nearby State of California pumping facility at Clifton Court Forebay, seasonal irrigation and application of agricultural chemicals, and installation and removal of flow-restriction dams in local rivers and canals. Data gathered for this report suggest that Old River water at the TFCF is a sodium-chloride dominant water with total dissolved solids (TDS) ranging from 300 to 1100 mg/L, and that the salinity and chemistry are primarily influenced by seasonal runoff hydrology and watershed land use patterns. The dominant source water for the Old River is from the SJR; however, daily conductivity (EC) fluctuations of 100 to 300 µS/cm, caused by tidal action, are commonly observed at the TFCF. The daily salinity fluctuations are thought to be caused by up-gradient transport and mixing of lower concentration waters from the Mokelumne River and Sacramento River by the rising estuarine salt wedge. Given the scarcity of available data and observed presence of many chemical toxins at low, sub-lethal concentrations in the SJR, and the lack of representative historical data in the vicinity of the TFCF, we recommend implementation of a defensible quality composite sampling program for low detection limit analyses.