I. Introduction

The study was conducted for the San Joaquin River TMDL technical committee as part of the CALFED 2000 investigations. Water and suspended sediments in the San Joaquin River and Stockton Deep Water Ship Channel (DWSC) were studied during the summer and fall of 2000 to elucidate settling and resuspension mechanisms that influence dissolved oxygen (DO) concentrations. The width and depth of the San Joaquin River increases significantly upon entering the DWSC resulting in reduced flow velocities and turbulence that allows greater settling of particulate matter. Of the suspended solids entering the DWSC from the San Joaquin River, algae have been estimated to be a dominant source of the biochemical oxygen demand (BOD) load (Jones and Stokes, 1998). This work was performed to quantify the setting fluxes and velocities of particulate matter and oxygen demand associated with these suspended sediments. It is anticipated that deposition rates and settling velocity data will be used to calibrate a water quality model of the DWSC.

Sediment deposition rates were measured with a series of traps placed in the DWSC. Water samples from the DWSC and the San Joaquin River upstream of the DWSC were collected to estimate settling velocities from the deposition rates. Algae concentrations of both the water column and the trapped sediments were quantified with chlorophyll *a* measurements. Laboratory biochemical oxygen demand (BOD) tests were performed with the trapped sediment to estimate the oxygen demand of the trapped matter. In combination these measurements provide evidence supporting significant settling and resuspension rates. These data also yield water and sediment quality constituent correlations that may be used for other San Joaquin River TMDL investigations or analyses.