

## ABSTRACT

### SOIL PROFILE MODELING IN THE KERN COUNTY, CALIFORNIA WATER BANKING PROJECTS

Water is the engine of the agricultural economy in the Central Valley of California. Much of the water used each year is provided by the Federal Bureau of Reclamation to end users through local water districts. Currently there is much water lost each year to uncontrolled or un-storable flows that result from weather patterns that cannot be planned for. Water districts use a process called “Water Banking” as an option to ameliorate the water losses each year. This thesis was designed to simulate the surface and deep-layer soil conditions in a portion of the Central Valley as they affect groundwater recharge and withdrawal rates and volumes. Computer software ArcGIS 9, RockWorks 2004, and HYDRUS-1D were used to develop a water bank model focused on the soils of the project area from ground surface to 500 feet below sea level. This model will be used in the development of groundwater management practices and policies in the Central Valley of California.

James Robert Meier  
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