

Russian River Tributaries Water Budget Modeling

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Abstract. The importance of water to ecosystems and agriculture in the western United States cannot be overstated. The arid climate that is prevalent throughout the region requires agriculture to rely heavily on water storage and irrigation projects for the redistribution of natural system flows to meet demands. At the same time, stream ecosystems depend on a natural pattern of both the timing and volume of flows to thrive. While there may be adequate supply to satisfy both agricultural and environmental demands within a stream ecosystem, the disparities in both the timing and quantity of required flows creates conflicts between the two uses. These conflicts present opportunities where detailed modeling can be used to develop management solutions. The Russian River in Sonoma and Mendocino Counties in Northern California is being used as a case study for analyzing the relationship between agricultural diversions and instream flows. Recent trends in the Russian River basin include increased restrictions on agricultural diversions in favor of environmental flows. Although the legal proceedings surrounding recent restrictions on agricultural diversions are ongoing, it is generally recognized by all stakeholders that there is a need for better understanding of the effects of agricultural activities on tributary flows. This talk will present the development of a prototype Geo-MODSIM water management model of a tributary system within the Russian River basin that can be used to examine the relationship between agricultural diversions and instream flow rates. The prototype can also be used to evaluate the impacts of administrative restrictions and management options in the basin.