

**Summary Expert Report**  
**Phase 3 – Basin Yield and Overdraft**  
**Antelope Valley Area of Adjudication**



*prepared by:*

Robert Beeby, Timothy Durbin, William Leever, Peter Leffler,  
Joseph C. Scalmanini, Mark Wildermuth

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## **Appendix D**

### **Land Use, Water Requirements and Water Supplies**

### **Antelope Valley Area of Adjudication**

historical rural residential water requirements are considered to be that constant fraction of the historical M&I water requirements of the major purveyors. As such, the rural residential water requirement in 2009 is estimated to be about 7,000 af.

In order to estimate the annual total water use of the mutual and private water companies for years 1946 through 2009, their per capita water use rate was estimated based on limited available population data and reported water use for 16 of the companies (1992 through 1995, the most recent years available; USGS, 1995 and 2003). The resultant unit rate of water use, 0.40 afy per capita, was then utilized to calculate annual total water use for all water companies for those years when population figures were available (2001, 2004, 2005, and 2006; California Department of Health Services). The total calculated water requirements were then compared to the total recorded water requirements of the major water purveyors for those four years in order to develop a ratio of water use between the mutual and private companies and major purveyors (5 percent). That percentage was then applied to the annual total recorded water requirements of the major purveyors for the remaining years in order to complete the estimation of annual total water requirements of the water companies for the period 1946 through the 2009. Appendix D-4: Table 1 shows the individual calculations made to develop the estimated per capita water use for the water companies, and the resultant estimates are included in Table D.3-3.

In summary, the total M&I water requirements in the Valley, including those recorded by the main purveyors and estimated for the water companies and rural residential users, was as high as about 122,000 af in 2007 and is currently about 98,000 afy.

#### *Historical M&I Return Flows*

Historical M&I return flows have originated from two sources: 1) on-property, including from landscape irrigation and other outdoor water use around all homes, and from the discharge of water to on-site disposal systems of unsewered homes and 2) off-property, specifically from infiltration of recycled water at water reclamation plants (WRPs) serving sewerred homes and other municipal service connections. Regarding return flows from irrigation/outdoor water use, and as part of this investigation, it was estimated that the percentages of indoor and outdoor water use in the Valley are 45 and 55 percent, respectively, based on interpretation of the variations in monthly municipal water requirements for LACWWD40 (data available for 2001 forward). Further, it was assumed that the percentages of irrigation water consumptively used vs. generating return flows are 80 and 20 percent, respectively, which are considered to reasonably meet irrigation requirements without generating excessive runoff or deep percolation. Thus, of the 55 percent of total municipal-type water requirements (urban, mutual and small water company, and rural residential) utilized outdoors, 20 percent would become return flow. This equates to 11 percent of the total M&I water requirements becoming return flow from M&I irrigation.