

Sin agua, no huy vida.

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Urban areas of the semi-arid western United States are faced with the dilemma of providing adequate high quality water supplies from limited available resources in an increasingly urban-centric economy with significantly larger service populations. A general lack of connection between land use planning and economic development plans with the limited available water resources and strict environmental regulations are requiring a major change in approaches that should be used by water supply managers across the region. The general expectation of the public is a presumption that water will continue to flow from the tap, that public health will be protected and that communities can continue to expand without regard for the impact of limited water supplies. Unfortunately, that cornucopia of cheap or heavily subsidized water is being, or has been, exhausted after more than 150 years of heroic efforts to control Nature’s limited bounty.

The water resources of the Western states were developed from the early 1800’s for mining, irrigated agriculture, power development and urban service using major dams and structural water supply projects. Frequently, the available and reliable water resources were over-committed to the desirable uses, primarily agriculture, of that time leaving little “surplus” water for later users. The basic tenet of water allocation in the West is the Appropriation Doctrine where “*first in time, first in right*” has created a sequential versus a “highest beneficial use” property allocation of water that must inevitably change over time. The next 50 years, however, includes megapolitans and increasingly large urban areas that have now become the flywheels of economic development. It will also see additional commitments of limited water resources to environmental and recreational uses and greater uncertainty about water supply conditions, whether from climate change, historical droughts or regulatory constraints. Water supply planners are now faced with major public policy questions more related to re-allocation of historic water uses, demand management and the challenges of purifying marginal water sources to acceptable drinking water quality. A “zero-sum” game has developed where new urban water needs will be met through hard policy tradeoffs between community planning (and the inherent water demands of backyards, parks and human consumption), protection and enhancement of the environment, maintenance and sustenance of the majority of rural irrigated agricultural life styles and public acceptance of drinking from water sources requiring high (but effective) purification. The price for these decisions is extremely high and will mostly be borne at the local and state level.

This presentation will describe these megatrends and the last five years of water supply development in Aurora, Colorado as that city addresses these issues. In 2002-2006, the region was hit by a severe drought that exposed the limitations for both urban and agricultural water systems that were masked by 20 years of excessively wet weather in

the 1980's and 1990's. In the short-term, the City rapidly implemented a highly effective water conservation program that reduced annual water deliveries up to 35% with the major benefit coming from reduced outdoor watering. The City also introduced legislation and then implemented a short-term fallowing program with agricultural water users where foregone crop production was compensated and the irrigation water was delivered to the City for drinking water. Similarly, subsidies for more efficient drip irrigation systems released additional water to help the City maintain service while recovering reservoir levels that had declined to less than one year of supply. Work has now started on a \$750 million project that will increase the current City water supply by 20 percent, reduce its drought vulnerability and provide infrastructure that can be expanded in the future to meet the needs of the growing community. This project develops existing, but unused, City water rights downstream from the metropolitan area, purifies the water through a 40-day, six step process using environmentally sustainable natural purification and engineered treatment processes and maximizes the use of previously developed water sources. Regulators and environmentalists alike have recognized this program as an example of how water supply managers must recognize current and emerging public goals while meeting their primary mandate of supplying safe drinking water to their customers.