

Environmental Management of the Colorado River and Its Tributaries: Science, Values, and Public Policy

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Geophysical science significantly contributed information to the critical decisions of the early and middle twentieth century regarding water supply allocation and development of the Colorado River and its tributaries. Today's decisions about the Colorado River's future are of two types – those that concern allocation of a decreasing water supply that meets the needs of a growing population and those that concern environmental management of the river segments that intervene between reservoirs. Can these two types of decisions be jointly addressed? Geophysical science, including climate science, plays a large role in addressing water supply issues, and the geophysical and biological sciences are important foundations to programs that address endangered species and landscape rehabilitation issues, including those addressed by several adaptive management programs. Although the linkage between geophysical science and water supply decision-making is straightforward, the application of the natural sciences to adaptive management of rivers is challenged by the competing values of the many stakeholders who participate in these programs. This is the case, for example, in the Glen Canyon Dam Adaptive Management Program where some of the desired future conditions that guide the program are mutually exclusive. Moving forward, natural scientists have the opportunity to provide alternative strategies that prioritize where in the watershed lie the greatest opportunities in ecosystem rehabilitation, because the geography of runoff generation and water use creates rehabilitation opportunities in some parts of the watershed and severely limits opportunities elsewhere. The science community can help lead the way towards a sustainable future by identifying strategies that optimize ecosystem rehabilitation while also meeting water supply needs.