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Economic Efficiency, Ecosystem Management, and Policy Making in the Watershed

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Two literatures that have flourished over the past three decades have produced distinct recommendations for improving water resource management. The water economics literature has promoted the introduction and extension of markets, to allow marginal adjustments of water use in response to incentives and rewards that promote water-use efficiency and the allocation of water to its highest-valued uses. Although the primary emphasis of this literature has been on consumptive uses of water supplies, the market recommendation has been extended readily to non-consumptive uses such as instream flows for environmental needs, and to water quality concerns such as pollution loading. The economics literature has consistently recommended that firm and quantified property rights in water be allocated among users, so they can make long-term decisions and investments, and enter into transactions that will maximize overall efficiency.

The ecosystem management literature has promoted the integration of water allocation decisions with other decisions and actions concerning source water quality protection, the health of aquatic and riparian habitat and species, regulation of land uses, and other choices that may affect water supply, demand, and quality in the context of overall attention to multiple indicators of ecosystem health. This literature has promoted a focus on the watershed as the relevant ecosystem management scale, inclusive decision making processes that engage multiple stakeholders, and "adaptive management"—relying closely upon feedback concerning the states of multiple indicators in order to inform decisions about next steps. Considerable importance is placed on the uncertainties inherent in ecosystem management, and the need to maintain flexibility in resource management in order to achieve best results under those conditions.

Both literatures have prospered, and each has had demonstrable influence on water resource policy at state and federal levels. Yet each relies on a prescription that causes some difficulty for the other—on the one hand, firm, quantified property rights in water with myriad transactions taking the place of a centralized effort to "manage" the resource in a deliberate way; on the other hand, flexible and adaptive management able to respond to changing conditions under uncertainty with joint decision making through a watershed-scale political process involving the representation of various stakeholders.

This paper discusses the implications of these two literatures for one another, and for our prospects (in the words of the Call for Papers) "to develop programs and policies that encourage efficient water use and minimize conflict." As part of that discussion, the paper emphasizes the differences in the meaning of "uncertainty" in the two literatures. It also analyzes the limitations of watershed-scale multi-stakeholder political processes to achieve either the sensitive adaptive management recommended by the ecosystem literature or the relatively open markets recommended by the economics literature.