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The Creation of New Risk Sharing Water Entitlement Regimes: The Case Of The Truckee-Carson Settlement

by

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The Creation Of New Risk Sharing Water Entitlement Regimes: The Case Of The Truckee-Carson Settlement

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INTRODUCTION

Throughout the West, a diverse coalition of urban and Native

* Professor of Law, Chicago-Kent College of Law. A.B., LL.B., Stanford University 1962 and 1965. I wish to disclose that I have studied the Truckee-Carson basin for two federal agencies. From 1989-1992, I chaired the Water Science and Technology Board of the National Research Council/National Academy of Sciences Committee on Western Water Management, which examined the West-wide third-party effects of water transfers. The Truckee-Carson case study is published at Chapter 5 of the Committee's report. *See* COMM. ON WESTERN WATER MANAGEMENT, NATIONAL RESEARCH COUNCIL, WATER TRANSFERS IN THE WEST: EQUITY, EFFICIENCY AND THE ENVIRONMENT (1992). From 1996-1997, I was chief report writer for the Western Water Policy Review Advisory Commission and a consultant to the Commission's case study of the Truckee-Carson basin. The Commission's report, WATER IN THE WEST: THE CHALLENGE FOR THE NEXT CENTURY (1998) and the Truckee-Carson case study, JEREMY PRATT, TRUCKEE-CARSON RIVER BASIN STUDY (1997), were released as a draft for public comment in October, 1997. The final report, with revisions, was published in June, 1998. This article draws from these published studies, other published secondary literature, and my 1997 interviews in the basin. However, the opinions expressed in this article and all errors of fact and judgment are solely my own and represent neither the opinions of the National Academy of Sciences nor the Western Water Policy Advisory Review Commission. No effort has been made to include developments since the time of this symposium.

American users, environmental groups, and local watershed protection organizations are contesting the traditional water allocation regime. These groups have a common complaint: too much cheap water is allocated to agriculture and not enough is allocated to urban users, Native American tribes, instream flow maintenance, and aquatic ecosystem restoration.[1] The new water allocation agenda and vision of the western landscape increasingly recognizes that water use conflicts are often best addressed at the basin or sub-basin level, because that is the geographic scale necessary to craft acceptable accommodations between sustainable aquatic ecosystems and sustainable water consumption.[2] The doctrine of prior appropriation, the fundamental institution of western water allocation, has long been criticized because it promotes economic inefficiency, yet insuffi-

1. *See* WATER POLICY REVIEW ADVISORY COMM'N, WATER IN THE WEST: THE CHALLENGE FOR THE NEXT CENTURY 3-51 (1998) ("The emphasis on the protection of fish and migratory water fowl is one of the most dramatic changes in Federal water policy since 1973 and is leading to a more holistic focus on the restoration and maintenance of healthy aquatic ecosystems."). The case that watershed degradation is a principal, but under-appreciated, cause of ecosystem deterioration is documented by Henry B. Lacey, *Dancing in Place: The Clinton Administration and Aquatic Ecosystem Protection in the Pacific Northwest*, 36 NAT. RESOURCES J. 779 (1996).

2. The conceptual underpinnings for place-based solutions are emerging as the international norm of sustainable development. *See* Gabcikovo-Nagymarros Project (Hung. v. Slovk.), 1997 I.C.J. (Sept. 25, 1997) (visited Sept. 25, 1998) <http://www.icj-cij.org/idocket/ihs/ihsjudgement/ihsjudcontent.html> (opinion and separate opinion of Vice-President Weeramantry) (discussing sustainable development and the marriage of the old idea of river basin planning with the new theory of bioregional landscape management). Moreover, one of the central lessons of current efforts to construct habitat conservation plans to protect endangered species is that we need to manage resources on larger geographic, more ecologically rational, scales. Land use scale is emerging as a central focus of future biodiversity protection. *See, e.g.*, John Turner and Jason Rylander, *Land Use: The Forgotten Agenda*, in THINKING ECOLOGICALLY: THE NEXT GENERATION OF ENVIRONMENTAL POLICY 60, 66 (Marian R. Chertow and Daniel C. Esty eds., 1997); Eric T. Freyfogle, *Ethics, Community, and Private Land*, 23 ECOLOGY L.Q. 631, 654- 655 (1996). Biodiversity is not a self-defining scientific concept that can easily be translated into simple standards; rather, it is a kaleidoscopic human construct that must be applied to specific landscapes. *See* DAVID TAKACS, THE IDEA OF BIODIVERSITY: PHILOSOPHIES OF PARADISE 99 (1996). The new emphasis on landscape recognizes that large areas such as regional landscapes and watersheds must be seen not simply as physical maps to be "read," *see, e.g.*, LANDSCAPE IN AMERICA (George F. Thompson ed., 1995), but as modified natural systems to be protected and actively managed. This emphasis requires a delineation of the landscape and the construction of baselines against which resource use patterns can be measured. *See* Duncan Patten, *Restoration as the Order of the 21st Century: An Ecologists Perspective*, in RECLAIMING THE NATIVE HOME OF HOPE-COMMUNITY, ECOLOGY AND THE AMERICAN WEST 69 (Robert B. Keiter ed. 1998). The goal is not necessarily to preserve a natural system but to manage the process of change in actual landscapes in order to strike a balance between the maintenance of natural system functions and human use of the system.

ciently protects aquatic ecosystems.[3] The current critics of the system seek to improve the operation of the system and promote environmental values at the margin rather than to replace it with a new allocation scheme. For example, strict judicial or administrative enforcement of water rights can be supplemented by adaptive management schemes.[4] Such schemes seek to meet the legitimate public and private demands of all basin stakeholders by a mix of creative physical solutions and water marketing strategies that equitably distribute the risks of inadequate water years among broad classes of users.

In many western river basins, urban suppliers and environmental organizations are pursuing a two-pronged strategy.[5] The first prong seeks to solve conflicts through collaborative, consensus-based processes that, in effect, create new basin or watershed-wide physical solutions and the institutions to administer them.[6] The collaborative governance movement views the government not as a mediator but as an interest group having a strong, but not preemptive role, in the consensus building process.[7] In effect, these solutions often seek to restore the basin's biological and cultural diversity by defining a non-consumptive baseline against which existing and future consumptive uses will be measured and reassigning blocks of unallocated or under used water. These solutions may also require reallocating water dedicated to existing users. Environmental organizations and

3. See MARC REISNER & SARAH BATES, OVERTAPPED OASIS: REFORM OR REVOLUTION FOR WESTERN WATER (1990).

4. Adaptive management is continuous resource management "based on trial, monitoring, and feed back." NATIONAL RESEARCH COUNCIL, RESTORATION OF AQUATIC ECOSYSTEMS 357 (1992).

5. For a good summary of this strategy by two of its leading architects, see Thomas J. Graff and David Yardas, *Reforming Western Water Policy: Markets and Regulation*, 12 NAT. RESOURCES & ENV'T 165 (1998).

6. For an early articulation of this idea based on the Truckee-Carson experience, see Charles F. Wilkinson, *A View Towards the Future: Lessons from Tahoe and the Truckee*, *in* NATURAL RESOURCES POLICY AND LAW: TRENDS AND DIRECTIONS 216 (Lawrence J. MacDonnell and Sarah F. Bates eds., 1993). *See generally* David H. Getches, *Colorado River Governance: Sharing Federal Authority as an Incentive to Create a New Institution*, 68 U. COLO. L. REV. 573 (1997) (recommending a broader, more participatory process in the management of the Colorado River). This movement also illustrates the second major shift in governance theory since the Progressive Era and New Deal models, which were characterized by delegation to experts. The environmental and consumer movements of the 1960s and early 1970s triggered a great number of experiments in enhanced democratic participation. The focus is now shifting to more limited (but better quality) participation by stakeholder representatives. *See* Jim Rossi, *Participation Run Amok: The Costs of Mass Participation for Deliberative Agency Decisionmaking*, 92 NW. U. L. REV. 173 (1997).

7. Jody Freeman, *Collaborative Governance in the Administrative State*, 45 UCLA L. REV. 1, 30-33 (1997).

others increasingly rely on market rather than administrative allocation to implement these basin-wide solutions. Market allocation is presumptively fair because it compensates existing users for the loss of valuable water rights and efficient because it reallocates a scarce resource from low to higher value uses. The second prong, which is not wholly consistent with the first, seeks to use federal environmental baselines[8] to reallocate, or to threaten to reallocate, water, often to induce other stakeholders to seek alternatives to the gridlock that currently characterizes many western water conflicts. Taken together, these approaches provide a potential model for sustainable watershed management throughout the West.

I.

THE TRUCKEE-CARSON BASIN AS AN EXAMPLE OF THE NEW POLITICS AND LAW OF WESTERN WATER

The Truckee-Carson Basins in western Nevada are prime examples of the transition between the allocation and settlement patterns of the Reclamation era and the emerging water and land use patterns of the reallocation and management era, which began in the 1970s. These closed basins are characterized by extremely arid lands and limited water supplies. Located in the rain shadow of the Sierra Nevada Mountains, the lower Truckee-Carson Basin receives an annual precipitation of approximately 4.9 inches. Ninety percent of the annual precipitation is lost to evaporation and transpiration, compounding the problems of a naturally short growing season. Urban users, Native Americans, environmental interests seeking to restore degraded aquatic ecosystems, and long established (but increasingly less economically important) irrigators all compete for the Basins' limited and overworked supplies. This puts a strain on the region's economy, and water use reflects an imbalance between allocation and demand that is typical of many places in the modern West. Traditional commodity production activities, such as irrigated agriculture,[9] are declining in value relative to the activities of the

8. For example, the Endangered Species Act creates regulatory water rights that may require an appropriator to forego using a state-created water right during times when flows are needed for the protection of a listed species. *See, e.g.*, United States v. Glenn-Colusa Irrigation Dist., 788 F. Supp. 1126, 1133 (E.D. Cal. 1992). The ESA was recently upheld against a post-*Lopez* Commerce Clause challenge. *See* Nat'l Home Builders v. Interior Dep't, 130 F.3d 1041, (D.C. Cir. 1997) (finding that "the extinction of animals substantially affects interstate commerce" and thus biodiversity maintenance is a legitimate exercise of the Commerce Clause). *Id.* at 1054.

9. The future role of irrigation in the West is the subject of intense debate. A recent National Academy of Sciences/National Research Council study characterizes

modern service and information economy.[10] For example, the increasingly economically marginal Newlands irrigation project near Fallon uses 4.5 times as much water as Sierra Pacific Power, which supplies the Reno-Sparks area.[11] Moreover, urban water consumers pay 80 times more than the irrigators in the Truckee-Carson Irrigation District (TCID). Put another way, 82 percent of the water is used to support less than 1 percent of the Basin's economy, while 18 percent of the water supports 95 percent of the economy.

Water use decisions are further complicated by the emergence of two long subordinated Native American claims for water to support a traditional tribal fishery and to irrigate crop lands. The claims have exposed the need for new Basin-wide water allocation patterns and governance institutions to remedy the environmental costs of the Reclamation Era and to share and manage all the waters of the Truckee-Carson Basin among a broad range of stakeholders.

The Pyramid Lake Paiute Tribe,[12] has successfully transformed itself from a marginal to a major stakeholder in the Basin by using two listed endangered species, the cui-ui which has

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irrigated agriculture as both a culture and a business. COMMITTEE ON THE FUTURE OF IRRIGATION IN THE FACE OF COMPETING DEMANDS, NATIONAL RESEARCH COUNCIL, A NEW ERA FOR IRRIGATION (1996). The first characterization is the basis of pleas for continued subsidization and the second is the basis of the case for increasing reliance on free markets to allocate water. The study's basic conclusions are that total irrigation acreage will decline in the future, that irrigation will still account for roughly the same percentage value of agricultural production, and that acreage will shift from the arid west to the humid southeast and lower Mississippi valley, where irrigation is growing. Turf-irrigation golf courses will also continue to grow in economic importance. *See* Bill Huffman, *Golf Near Top in State Revenue Behind Agriculture*, THE ARIZ. REPUBLIC, Dec. 23, 1997, at A1.

10. A recent study of the economic value of golf in Arizona illustrates the shifts in the relative value of raw commodity *vis a vis* the production of services. Golf now produces roughly the same or perhaps more revenue than agriculture. *See* Huffman, *supra* note 10, at A1. The most up to date quantitative and qualitative analysis of the post-commodity production era western economy and its dual latte drinking and cowboy culture is WILLIAM E. RIEBSAME & JAMES J. ROBB, ATLAS OF THE NEW WEST: PORTRAIT OF A CHANGING REGION (1997).

11. The district is located in Churchill County, some 50 miles east Reno, and is increasingly a bedroom community for Reno-Sparks. The region's economy is diversified among gaming, tourism, manufacturing, government, retail, mining and agriculture. Most TCID farms are small and about one-half of member household income comes from non-farming sources. *See* PRATT, *supra* note *, at 1-22-1-23 (citing MEYER RESOURCES, INC., SOCIO-ECONOMIC EFFECTS OF WATER RIGHTS ACQUISITIONS PROGRAM FOR LAHONTAN VALLEY WETLANDS (1993)). Farming and agricultural services account for only about 10-12 percent of county income; the Fallon Naval Air Station provides 27 percent of the county's jobs. *See id.* at 5-27.

12. *See, e.g.*, MARTHA C. KNACK AND OMER C. STEWART, AS LONG AS THE RIVER SHALL RUN: AN ETHNOHISTORY OF PYRAMID LAKE RESERVATION (1984).

been extirpated from all of its former habitats except Pyramid Lake, and the Lahontan cutthroat trout. The tribe's troubles go back to 1905 when about one-half of the lower Truckee's flow, where the fish spawn, was diverted to the Carson Basin to provide carry-over storage for the Newlands reclamation project.[13] The federal government intervened on behalf of the tribe in the Truckee River adjudication, but it only claimed reserved rights for farming, not the maintenance of the Pyramid Lake fishery. The resulting Orr Ditch Decree, signed in 1944, was challenged by the Tribe, but ultimately upheld by the Supreme Court in 1983.[14] This defeat forced the Tribe to use other federal statutes to mitigate the losses caused by TCID's entitlements. The Tribe's first legal victory was a ruling that the Department of Interior's trust duties required it to operate the Lahontan Reservoir, which supports TCID, more efficiently by adopting new Operating Criteria and Procedures (OCAP).[15] Ultimately, the success of the Pyramid Lake Paiute Tribe in using the Endangered Species Act to control the Basin's major source of unallocated drought reserve carry-over storage— the Stampede reservoir on Truckee River[16]— created incentives for the urban stakeholders to seek a more comprehensive Basin-wide long-term settlement. The net result is that major stakeholders, with the exception of the TCID, are slouching toward sustainable use and management.

The journey toward sustainable use and management has been difficult and is by no means complete. Through the aggressive use of litigation and political pressure by the Pyramid Lake Paiute Tribe, significant amounts of water have been allocated to

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13. For a history of the founding of the District by the leading sponsor of the Reclamation Act of 1902, see WILLIAM D. ROWLEY, RECLAIMING THE ARID WEST: THE CAREER OF FRANCIS G. NEWLANDS (1996).

14. The Tribe subsequently sought to reopen the 1944 Orr Ditch Decree because the federal government did not adequately represent its interests, which conflicted with the implementation of the Reclamation Act of 1902. But the Supreme Court held that the water rights had vested in the project beneficiaries and thus the federal government and the Tribe were estopped from reopening the decree. *See* Nevada v. United States, 463 U.S. 110, 143 (1983).

15. The Department of Interior had started developing more efficient operating criteria in 1966, and in 1973 a federal district court held that the Department had a trust duty to implement the OCAP. *See* Pyramid Lake Paiute Tribe of Indians v. Morton, 354 F. Supp. 252, 257 (D.D.C. 1973). That duty was reaffirmed in *Pyramid Lake Tribe of Indians v. Hodel*, 878 F.2d 1215 9th Cir. 1989). TCID's efficiency has increased from about 40% in 1964, when the Department of Interior began investigating Newlands' operations, to 68.4% in 1992, and annual diversions have fallen from 370,000 to 320,000 acre feet. *See* PRATT, *supra* note *, at 91.

16. Carson-Truckee Water Conservancy Dist. v. Clark, 741 F.2d 257 (9th Cir. 1984). CALIFORNIA DEP'T OF WATER RESOURCES, TRUCKEE RIVER ATLAS (1991) is a valuable source of the geography, hydrology, and history of the river and its use.

the preservation of the cui-ui and the Lahontan cutthroat trout. In addition, a second tribe, the Fallon Paiute-Shoshone Tribe, has gained a $43 million economic development fund and a small amount of water to irrigate its allotment lands in the TCID. Unfortunately, these reallocations of power exacerbated other problems. Increased flows into Pyramid Lake have come at the expense of the maintenance of World Heritage wetlands. The Carson River historically spread over a broad area of Ancient Lake Lahontan to the east of the TCID[17] and created a series of lakes and marshes. The Bureau of Reclamation's increasingly stringent OCAP rules, combined with the ongoing effects of a prolonged drought, decreased flows into the Carson Sink and began to dry up the Stillwater Wildlife Refuge.[18] Many return flows were also highly polluted because they were concentrated in drainage ditches. Between 1988 and 1992 only about 10,000 acres of wetlands were sustained, and the figure fell to 845 acres at the end of the 1985-1992 drought.

In 1990, Congress intervened triggering an on-going settlement process, which serves as a possible paradigm of the new West. There are many stories to tell about the Truckee-Carson Basin. They include: the use of federal environmental statutes to circumvent the limitations of the law of prior appropriation;[19] the use of water markets to restore degraded aquatic ecosystems;[20] the strengths and weaknesses of multi-stakeholder consensus processes to resolve water use conflicts;[21] the reasons that some groups refuse to become stakeholders in the process of change;[22]

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17. The area is generally known as the Carson Sink. *See* CALIFORNIA DEP'T OF WATER RESOURCES, CARSON RIVER ATLAS 33 (1991).

18. Irrigation created much more variable flows and the roughly 150,000 wetland acres sustained by the Carson River in 1900 decreased by 82% during the twentieth century. The major remnant wetlands of the Carson Sink, such as the Stillwater National Wildlife Refuge, remain among the most productive wildlife habitats in North America; because they serve as a vital stop over on the Pacific Flyway, they are a Western Hemisphere Shorebird Reserve. *See* CALIFORNIA DEP'T OF WATER RESOURCES, CARSON RIVER ATLAS, *supra* note 17, at 98-99.

19. *See The Truckee-Carson Basins in Nevada: Indian Tribes and Wildlife Concerns Shape a Reallocation Strategy*, *in* COMM. ON WESTERN WATER MANAGEMENT, WATER TRANSFERS IN THE WEST, *supra* note *, at 119.

20. *See* U.S. FISH AND WILDLIFE SERVICE, FINAL ENVIRONMENTAL IMPACT STATEMENT, WATER RIGHTS ACQUISITION FOR LAHONTAN VALLEY WETLANDS, CHURCHILL COUNTY, NEVADA, Vol 1. (1996).

21. *See, e.g.*, PRATT, *supra* note *, at 119. This report is the most complete and up to date analysis of the basin and the settlement process.

22. The analogy has its limits, but there is much to be learned from contemporary explanations of why some traditional cultures reject western modernity in the name of nationalism and others seek to adapt to modernity within the framework of traditional culture. *See* Charles Taylor, *Nationalism and Modernity*, *in* THE MORALITY

and the changing role of the federal government in western water management. This article draws from all of the basins' stories to examine the impact of a place-based settlement process on the doctrine of prior appropriation.

Place based solutions are springing up around the West for two basic reasons. First, watersheds and aquatic ecosystems have unique physical and cultural characteristics that must be addressed on a case by case basis within the limits imposed by national and state environmental quality mandates and state and federal water law. Second, there is increasing recognition of the fact that governmental regulation and management of ecosystems must be supplemented by local participation in the development and administration of management strategies. This process does not directly change the law of prior appropriation, which is the classic example of statewide regulation of civil relations. These settlements, however, can change the substance (though not the form) of the appropriative and riparian rights held by the stakeholders, especially the irrigators, by substituting risk allocation for the simple enforcement of prior rights.

The adoption of new water solutions has three primary consequences. First, the process shows that the nature of water rights fundamentally defines expectations about how risks should be borne. Second, it reveals that the claimed entitlements are often much less firm than many holders may initially have assumed. Third, it seeks ways to cabin these risks in a creative but fair and acceptable manner. Risk assumption is an inherent element of the expectations of water right users and thus the adoption of modified risk sharing arrangements does not fundamentally change the ground rules of western water use. This article examines the way that new risk allocation regimes have developed in the Truckee-Carson Basin. First, it focuses on the necessary physical and entitlement conditions for place-based settlements. Second, it argues that modified risk allocation is a two-step process that is essential to sustainable river basin management and aquatic ecosystem restoration.

II.

THE NECESSARY CONDITIONS FOR PLACE-BASED CONSENSUS: FEDERAL CLOUT LIGHT

There are several necessary conditions, all of which exist in the Truckee Carson, for parties to successfully practice place-based consensus building in basin-level management. First, the

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OF NATIONALISM 31 (Robert McKim & Jeff McMahon eds., 1997).

federal government must play a major role in creating the incentives for stakeholders to consider new allocations. Second, there must be large blocks of water held by institutional players with the capacity to bear risks. Small individual rights holders, as opposed to irrigation districts, are not ideal units to assume substantial new risk and management obligations. In cases where there are numerous small individual rights holders, such as in the TCID, it may be more fair and efficient to reallocate water through the outright purchase of water rights.[23] Third, incentives for negotiation must be created through an actual or threatened shift of political or legal power.[24] Fourth, there must be a scientific basis for adaptive management and physical solutions. In the Truckee River, the biology of cui-ui provides this basis. Because there is no need for the species to spawn every year, Sierra Pacific Power can store its base water underneath the water held in Stampede Reservoir for cui-ui spawning flow releases. In brief, the deal is that Sierra Pacific can use Stampede Reservoir, legally captured by the Tribe, to store its excess water rights in return for fishery releases in non-drought years.[25]

In order for place-based decisionmaking to work, the federal government must play a major role in creating the incentives for stakeholders to consider new allocations. Place based solutions are not about the devolution of power but about shared responsibility for ecosystem management. The federal government has played a critical role in the Truckee-Carson Basin, as it has in other areas of the West. But the government's role is changing

23. The Truckee-Carson Basin has been a pioneer in the use of water markets to accommodate both urban and environmental uses. Supported by state and federal funds, TCID water rights are purchased and reallocated to support the Stillwater Wildlife Refuge. The guiding policy objective for the program is to restore and maintain 25,000 acres of primary wetland habitat; roughly 125,000 acre-feet of water rights may ultimately need to be acquired to accomplish this objective. *See* U.S. FISH AND WILDLIFE SERVICE, *supra* note 20, at 1-5 - 1-7.

24. The Tribe's success shows the necessity of litigation, or the threat of litigation, to jump start stakeholder involvement through a power shift from dominant to marginal players. The beneficiaries of the power shift must maintain a credible threat that the courts will produce a result worse than the likely compromise reached by the parties. The Tribe continues to use both federal and state law to keep pressure on the TCID and has won more cases than it has lost. For example, the Tribe lost in *United States v. Alpine Land & Reservoir Co.*, 697 F.2d 851 (9th Cir. 1983) (upholding water duties fixed by decree), but won in *Truckee-Carson Irrigation Dist. v. Secretary of the Dep't of Interior*, 742 F.2d 527 (9th Cir. 1984) (finding that irrigation district was not deprived of rights when Secretary of the Interior terminated its contract for violating operating criteria), and *United States v. Alpine Land & Reservoir Co.*, 983 F.2d 1487 (9th Cir. 1992) (finding that Nevada water rights are based on amount actually applied to beneficial use).

25. *See* PRATT, *supra* note *, at 78-79.

as its mission changes from regional development to resource stewardship. This shift in the federal government's role is creating a new federalism paradigm.[26] For most of this century, the western states have followed a simple federalism strategy. The federal government's duty was to subsidize regional development through dams and irrigation projects, but defer to state water allocation. This strategy is no longer viable because the Reclamation Era is over. There is no evidence that additional federal subsidies are necessary to sustain the West's dynamic economy. Thus there is no reason to subsidize new water projects on the scale of those during the Great Depression or World War II. The federal government's role is now that of a project manager and environmental steward.

Stewardship, like reclamation development, will continue to funnel money to the states, but the federal government will increasingly rely on the regulatory mandates under the Clean Water Act and Endangered Species Act.[27] The net result is a paradox. The federal government has less fiscal clout but more regulatory authority. The political price of the exercise of this authority is high because of the deep-seated distrust of the federal government in the West. Students of diverse new environmental protection management experiments, such as the California Bay Delta or the Orange County Multi-Species Habitat Conservation plan, have observed that the threat, but not the actual exercise, of federal clout can be the driving factor behind legal and institutional innovation.[28] Thus, the federal govern-

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26. The Bureau of Reclamation has formally changed its mission from development, *see, e.g.*, MARC REISNER, CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER (1986), to resource management. *See* BUREAU OF RECLAMATION, RECLAMATION'S STRATEGIC PLAN: A LONG TERM FRAMEWORK FOR WATER RESOURCES MANAGEMENT, DEVELOPMENT AND PROTECTION (1992). *See generally* A. Dan Tarlock, *Biodiversity Federalism*, 54 MD. L. REV. 1315 (1995); A. Dan Tarlock, *Federalism Without Preemption: A Case Study in Bioregionalism*, 27 PACIFIC L. J. 1629 (1996).

27. The initial draft of *Water in the West*, *supra* note *, contained the phrase "respect for state law" rather than deference to reflect both the preemptive effect of federal environmental regulation and the need to integrate state water law where it does not frustrate federal objectives. After strong protests from the traditional western water establishment, however, the Commission changed the phrase to "appropriate legal deference" in the pending final version. The different phrasing appears to be one of style not substance. As the former Commissioner of Reclamation, Daniel P. Beard, told the Commission, "[t]he premise of federal water resources policy is that we should defer to state law and procedures. That's the policy. The reality is much different . . . . The reality is that the federal government has passed numerous laws that directly impact state laws and procedures." Daniel P. Beard, Remarks to the Western Water Policy Review Advisory Commission (Feb. 18, 1997).

28. *See, e.g.*, Elizabeth A. Reike, *The Bay Delta Accord: A Stride Toward Sustainability*, 67 U. Colo. L. Rev. 341 (1996); Jon Welner, *Natural Communities Con-*

ment can no longer rely on the traditionally exclusive federal and state operating roles. It must try to ensure cooperation within the federal family so that it can play an effective role as one of several major private and public stakeholders by adapting federal law to a basin-wide risk allocation and management solution.

In 1990, Congress intervened in the basin to end the decades long interstate dispute and to create a process to develop a comprehensive new physical solution. The 1990 Truckee-Carson-Pyramid Lake Water Rights Settlement Act[29] ended a long interstate dispute between California and Nevada[30] and codified a settlement reached by the Pyramid Lake Paiute Tribe and urban water users.[31] The Truckee River is allocated by a series of agreements and decrees,[32] going back to 1908, which formed the legal basis for future management. Any risk allocation must come at the margins of this regime, which confirms generous amounts of water and water duties for irrigation. There may, however, be some play in the system. Specifically, the requirement to maintain 400 to 500 cubic feet per second at the point where the Truckee passes through Floristan, California, has become less defensible over time and is a possible candidate for re-

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servation Planning: An Ecosystem Approach to Protecting Endangered Species, 47 STAN. L. REV. 319, 346 (1995).

29. *See* Falon Paiute Shoshone Indian Tribes Water Rights Settlement Act of 1990, Pub. L. No. 101-618, 104 Stat. 3289 (1990). Senator Harry Reid was the prime architect of the legislation. For an analysis of the legislation, see E. Leif Reid, Note, *Ripples From the Truckee: The Case for Congressional Apportionment of Disputed Interstate Water Rights*, 14 STAN. ENVTL. L.J. 145 (1995).

30. *See* John Kramer, *Lake Tahoe, the Truckee River, and Pyramid Lake: the Past, Present, and Future of Interstate Water Issues*, 19 PACIFIC L. J. 1339 (1988), (discussing the history of this dispute).

31. A preliminary settlement agreement was reached in 1989 between the Pyramid Lake Paiute Tribe and Sierra Pacific, but not TCID. This agreement was incorporated by reference in the 1990 legislation and must be incorporated into the Truckee River Operating Agreement. The Preliminary Settlement Agreement is reprinted in CALIFORNIA DEP'T OF WATER RESOURCES, TRUCKEE RIVER ATLAS, *supra* note 17, at 119-126.

32. The basic allocation agreement dates from 1908 and set the "Floriston Rates" for Truckee River between its source (Lake Tahoe) and its terminus (Pyramid Lake). The 1908 agreement among the Truckee River General Electric Company (predecessor to Sierra Pacific), the Floriston Land and Power Company, and the Floriston Pulp and Paper Company required that "there shall be maintained a flow of water in the said Truckee River at Floriston [California] of not less than 500 cubic feet per second from the First day of March to the 30th day of September inclusive, in each year, and of not less than 400 cubic feet per second from the 1st day of October to the last day of February, inclusive, in each year." *See* TRUCKEE RIVER ATLAS, *supra* note 17, at 49-50. The Floriston Rates were subsequently incorporated into the 1915 Truckee River General Electric Decree. *See id.* at 52. The Truckee River Agreement, finalized in 1935, represents the current basis for the operation of the Truckee River.

vision.[33]

The 1990 legislation ordered the Secretary of Interior to negotiate an operating agreement with the State of Nevada, the State of California, and the major stakeholders, except TCID, for the operation of the Truckee River and the Newlands Project. The proposed Truckee River Operating Agreement (TROA), which had not been adopted as of February, 1998, must: (1) provide for the operation of the Truckee River reservoirs to satisfy dam safety and flood requirements; (2) provide for the enhancement of spawning flows available in the Lower Truckee River for the Pyramid Lake fishery (in order to meet the requirements of the Endangered Species Act); (3) carry out the terms of the Preliminary Settlement Agreement, and (4) ensure that water is stored and released from Truckee River reservoirs to satisfy the exercise of water rights in conformance with the Orr Ditch Decree and Truckee River General Electric Decree, except where those rights have been modified by the Preliminary Settlement Agreement or which have been transferred pursuant to state law.

III.

TRUCKEE RIVER OPERATING AGREEMENT: A MODEL PHYSICAL SOLUTION FOR THE NEXT CENTURY

While seeking to change the actual water allocations, TROA maintains a regime that has evolved over a century. Instead of seeking a fundamental change in the Law of the Truckee-Carson, the TROA seeks to manage more efficiently the reservoir operations and stream flows in the Truckee River Basin by a combination of new operating procedures and an allocation of Lake Tahoe water and Truckee River water between the States of Nevada and California. TROA, in effect, creates a more sophisticated western water physical solution[34] in order to satisfy expectations through

33. The rates were established at the turn of the century to support hydroelectric facilities along the river. Today, Sierra Pacific Power Company has four small 100-year old plants with a combined capacity of 10.1 megawatts. *See* CALIFORNIA DEP'T OF WATER RESOURCES, TRUCKEE RIVER ATLAS, *supra* note 17, at 81. The 1944 *Orr Ditch Decree* incorporated the Truckee River Agreement and adjudicated numerous individual water rights. *See* United States v. Adams, No. A3 (D. Nev. Sept. 8, 1944 1944).

34. Professor Dunning defines a physical solution as "a way to accommodate change without significantly damaging a senior . . . ," which may arise from an appropriate judicial or administrative order to "compel a senior right holder to accept a substituted source of water or modification of his means of diversion, distribution, or use of water at a junior right holder's expense in order to benefit the junior and to achieve better overall utilization of the resource." Harrison C. Dunning, *The "Physical Solution" in Western Water Law*, 57 U. COLO. L. REV. 445, 448 (1986). The physical solution was a judicial response to the 1928 Amendment to the California Constitution, CA CONST. art. X, § 2, which substituted the reasonable use for the natural

more effective and efficient use of existing federal and non-federal reservoirs. Moreover, it improves, *inter alia*, the timing and magnitude of river flows to provide drought insurance for Reno-Sparks and spawning flows for the Pyramid Lake Paiute Tribe. It is a more sophisticated physical solution than past solutions because it recognizes the need for demand and adaptive management to respond to shifting water use demands and cycles of water availability.

TROA is premised on the assumption that Floristan rates do not have to be consistently maintained unless they are necessary to satisfy vested water rights or to meet flood control objectives. This is an illustration of the increasing reliance on reservoir operation to improve the environment by modifying the timing of releases established under a previous regime.[35] First, pooled water (that would have been released) as well as runoff water (that would have been passed through federal reservoirs to achieve Floriston Rates or to satisfy the exercise of Orr Ditch Decree affirmed water rights) remains in storage, but under new water categories. Second, TROA will facilitate and encourage coordination of scheduled releases and exchanges[36] of water among reservoirs. This will allow a scheduled release from one reservoir to be substituted for a release from another, with water accounts in the two reservoirs credited or debited. Water would not necessarily need to be physically moved between reservoirs under this arrangement, and releases of stored water for a single purpose could be coordinated to derive multiple benefits. Thus, existing water and storage rights will be served while enhancing instream flows and recreation pools and possibly retaining water that would otherwise spill in storage elsewhere.

These river operation provisions coordinate the storage capacity in the five upper federal reservoirs for use as if they were a new, single reservoir. To take advantage of surplus capacity,

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flow of riparian rights. Courts have interpreted the amendment to allow appropriators to satisfy riparian rights by substitute supplies when riparians claimed large flows to satisfy uses that could be satisfied by relatively inexpensive and less "wasteful" alternatives. *See* Clifford W. Schultz & Gregory S. Webber, *Changing Judicial Attitudes Towards California Water Resources: From Vested Rights to Utilitarian Reallocations*, 19 PACIFIC L. J. 1031, 1061-86 (1988).

35. *See generally* MICHAEL COLLIER ET AL., DAMS AND RIVERS: PRIMER ON THE DOWNSTREAM EFFECTS OF DAMS 3 (U.S.Geological Survey Circular 1126, 1996).

36. Water exchanges substitute one source of water for another to meet prior rights, for example, to allow a junior to change the point of diversion and use. An appropriator has no unqualified right to refuse a substitute. *See* Wilder Irrigation District v. Jorgensen, 64 Idaho 538 (1943). Nevertheless, the exchanged water must, of course, be legally available to the exchanger. *See* City of Thornton v. Bijou Irrigation Co., 926 P.2d 1, 52-62 (Colo. 1996).

water is moved around within the system via exchanges and credits to place water for a particular use in the location where it can most efficiently be used. To keep track of the actual storage and use, TROA creates a new category of water— "stored credit water." This water can be acquired for Municipal and Industrial (M&I) uses or for fisheries maintenance by retaining stored or runoff water that would otherwise have been released to achieve Floriston Rates and by exchanging or restoring certain privately owned water. The categories of storage and credit water include (1) Pooled Water, (2) M&I Credit Water, (3) Fish Water and Fish Credit Water, (4) Tahoe-Prosser Exchange Water, (5) Water Quality Water (under the Water Quality Agreement), (6) Sierra Pacific privately owned water, (7) California M&I Storage, (8) Joint Program Fish Credit Water (for use in California), and (9) other Stored Water.

Under TROA, water would be exchanged physically or administratively by category among the reservoirs to conserve storage, enhance instream flows, and maintain reservoir recreational pools. Exchanges could be made by: (1) administratively trading water in one reservoir for that in another, (2) releasing water from one reservoir in lieu of another; or (3) moving water from an upstream reservoir to a downstream reservoir. To make the exchange system work, Sierra Pacific agreed to waive its Truckee River hydroelectric water rights. In return, Sierra Pacific was permitted to purchase unused storage capacity in Truckee River Reservoir,[37] where it will store water from its Donner and Independence Lakes reservoirs. The Preliminary Settlement Agreement gives Sierra Pacific the ability to store up to 39,500 acre-feet of drought reserve water covered by a portion of its water rights at times when it was not needed for municipal and industrial water supply in the Reno-Sparks metropolitan area. Thus, the contemplated exchange allows the water that would normally have been used to maintain Floriston Rates for hydroelectric power generation by Sierra Pacific to be used to benefit the fishery at Pyramid Lake. This is water that would have

37. This agreement allows Sierra Pacific to recapture, with the consent of the Pyramid Lake Paiute Tribe, a part of Stampede Reservoir, which it lost under the Endangered Species Act. *See The Newlands Project, Nevada, Oversight Hearing on Public Law 101-618, The Fallon Paiute Shoshone Water Rights Settlement Act of 1990 and The Truckee-Carson-Pyramid Lake Water Rights Settlement Act Before the Subcomm. on Water and Power of the Senate Comm. on Energy and Natural Resources*, 103rd Cong. 18 (1994) (prepared statement of Elizabeth Ann Reike, Assistant Secretary, Water and Science, U.S. Dep't of the Interior). Since the mid-1980s, Stampede Reservoir, where much of the new storage capacity for Sierra Pacific was to be located, has been exclusively managed to benefit the Pyramid Lake fishery.

eventually gone into Pyramid Lake anyway. Under the Preliminary Settlement Agreement, however, instead of releasing that water year-round to maintain Floriston Rates for Sierra Pacific, it is stored as "fish credit water" and released as needed for spawning.

In November, 1995, an additional agreement between Sierra Pacific and the Pyramid Lake Paiute Tribe allowed the federal Watermaster to drop the Truckee River's minimum allowable rate of flow, from 350 cfs (Orr Ditch Decree rights) to 300 cfs. Sierra Pacific can now store an estimated 20,000-30,000 acre-feet in Stampede Reservoir for use during the spring cui-ui spawning runs.[38] TROA also requires demand-side management. The Reno-Sparks metropolitan area was required to implement conservation measures, such as lawn watering restrictions and water saving devices, to reduce water use by about ten percent.[39]

IV.

PROPERTY RIGHTS AS RISK ALLOCATION

The rhetoric of prior appropriation is that it provides certain, exclusive, perpetual rights to a defined quantity of water.[40] Courts often announce that the function of water law is to create certain exclusive property rights.[41] The reality, however, is different. Water rights are more accurately characterized as a risk allocation regime among a wide range of claimants.[42] Property

38. This agreement also increased Sierra Pacific's storage capacity in Stampede Reservoir to 39,000 acre-feet. *See id.*

39. *See id.*

40. The seminal prior appropriation case, *Coffin v. Left Hand Ditch Co.*, 6 Colo. 443, 449-50 (1882), justified the doctrine because it protected investment in the necessary water diversion works. *See generally* ROBERT G. DUNBAR, FORGING NEW RIGHTS IN WESTERN WATERS (1989).

41. See, for example, Justice Hobbs' articulate opinion in *Williams v. Midway Ranches*, 938 P.2d 515, 521 (Colo. 1997).

42. This analysis borrows from some of premises of Green Property theory such as the need to recognize that entitlements are part of a larger landscape, the role of public participation in defining the expectations of property right holders, *see* Terry W. Frazier, *The Green Alternative to Classical Liberal Property Theory*, 20 Vermont L. Rev. 299, 357-363 (1995), and the insight that property rights are redefined as societies change. *See* Imperial Irrigation Dist. v. State Water Resources Control Bd., 225 Cal. App. 3d 548, 573 (1990); Joseph L. Sax, *Property Rights and the Economy of Nature: Understanding Lucas v. South Carolina Coastal Council*, 45 STAN. L. REV. 1443, 1447-48 (1993). Nevertheless, I ultimately make a more traditional argument that the voluntary or involuntary adjustment of the risks inherent in water rights to modify (but not eliminate) historic water delivery patterns is a limitation inherent in a water right title and thus constitutional under the restrictive test of *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003 (1992). For a creative application of this argument to wetland regulation, see Fred P. Bosselman, *Limitations Inherent in the Title to Wetlands At Common Law*, 15 STAN. ENVTL. L. J. 247 (1996).

rights, in contrast to contracts, are not conventionally defined as risk allocation mechanisms. Rather, the law of property seeks to eliminate the risk of interference with complete enjoyment, such as an unconsented entry.[43] Appropriative rights, however, never have been risk free; they have always included a fixed risk allocation scheme that prefers senior to junior water right holders in low water years.

The doctrine of prior appropriation is a practical, intuitive response to the seasonable unreliability of western water supplies. Miners developed the custom of allocating rights by priority rather than trying to use the vague equal sharing rules of the common law of riparian rights. Courts sanctioned this custom as an acceptable risk distribution scheme for the arid West.[44] But the rhetoric of western water law has obscured the risks inherent in prior appropriation and stressed the illusory firmness of water rights. Also, risks were masked by the construction of large carry-over storage reservoirs in the Reclamation Era, which reduced but did not eliminate the inherent risks. Truckee-Carson teaches that water rights are subject not only to the fixed risks of priority but to new risks created by new demands on the system. This is not an argument for administrative or judicial reallocation. It asserts only that because risk is inherent in water entitlements, there are no inherent legal barriers to management solutions that equitably reassign the risks of water shortages to accommodate all relevant uses and stakeholders in a basin.[45] Thus, the focus should be on the actual expectations that lie behind a use[46] rather than the perpetual enforcement of

43. *See* Richard A. Epstein, *A Clear View of The Cathedral: The Dominance of Property Rules*, 106 YALE L. J. 2091, 2096-97 (1996).

44. For example, at a time when the public use doctrine limited the exercise of the power of eminent domain to property which would be used by the public, the Supreme Court upheld a Utah statute which allowed appropriators of water to condemn ditch rights of way across private lands because of "some peculiar condition of the soil or climate, or other peculiarity of the state . . . ." Clark v. Nash, 198 U.S. 361, 368 (1905).

45. The California Supreme Court has recently sanctioned a new risk-based law of flood control liability. *See* Bunch v. Coachella Valley Water Dist., 63 Cal.Rptr.2d 89 (1997). The court held that a public entity that constructs flood control works that divert water from a natural watercourse, which has historically flooded adjacent lands, is only liable when the flood control works fail in a major rain event if the public entity acted unreasonably in designing, constructing, and operating the project. "[T]he only way to determine whether a damaged [private] landowner has . . . been forced to contribute a compensable 'disproportionate' share of the public undertaking is to determine whether the system, as designed, constructed, operated, [and maintained], exposed him to an 'unreasonable' risk of harm, either individually or in relation to other landowners." *Id.* at 100-01.

46. This analysis echoes and recasts the Progressive Era concern that the mo-

the entitlement, so that alternative ways of satisfying those expectations while accommodating new uses can be found.[47]

The TROA is a step in this direction because it substitutes a new risk allocation regime for the one embedded in the law of prior appropriation. Stakeholders in basin-wide solutions such as the Truckee-Carson, the Cal-Fed Bay Delta process, or the North Platte negotiations are beginning to recognize that many water use conflicts need not be settled exclusively by shoring up property entitlements through quantifying them in perpetuity. Rather, adaptive management formulas that reflect new risk sharing arrangements among the major basin stakeholders can perform this function. Tribal, environmental, and municipal efforts to comprehensively address basin wide problems and to devise creative solutions that promote both efficiency and equity have produced an acceptable compromise. These players have moved to trade firm rights for a risk-based physical solution that provides an adequate margin of safety in water-short years. The new regime is characterized by the greater reliance on physical solutions, which include adaptive management, rather than the anticipated enforcement of priorities.[48] The modified prior appropriative rights can be characterized as rights protected by mixed, interruptible, property-liability rules.[49]

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nopolization of water rights would prevent the more widespread distribution of access to water to the detriment society's interest in the conservation of resources. For example, Samuel Wiel floated the idea that unreasonable assertions of priority would not be recognized. *See* SAMUEL WIEL, WATER RIGHTS IN THE WESTERN STATES 329-340 (3d ed. 1911).

47. The United States Department of Interior's "No Surprises" policy shifts the major risk of unanticipated conservation measures necessary to maintain the integrity of habitat conservation plans from the developer to the government. This is an example of defining the core entitlement-developer ability to adapt to changed conditions and implementing a mutually advantageous risk sharing arrangement. *See* Fred Bosselman, *The Statutory and Constitutional Mandate for a No Surprises Policy*, 24 ECOLOGY L.Q. 707 (1997).

48. Senior rights holders always bear the risk that priorities will not be enforced as decreed. The classic prior appropriation risk allocation scheme is illustrated by *Application of Hines Highlands Partnership*, 929 P.2d 718, 723 (Colo. 1996). There, public interest intervenors sought to require a water judge to impose a public interest limitation on a ski resort's conditional water rights because the future exercise of these rights would diminish the amount of water available to support senior public instream flow rights. *Id.* at 722. The court rejected this argument based on the presumption that the state engineer will discharge his or her duties and enforce the priorities. *Id.* at 725-26. Thus, "a public interest objection is not a valid objection to a decree for new conditional water rights because such an argument conflicts with the doctrine of prior appropriation." *Id.* at 725.

49. This characterization borrows from two intellectual constructs. Modern law and economics theory distinguishes between entitlements protected by property rules (injunctive relief) and those protected by only liability rules (damages). The seminal article is Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and*

CONCLUSION

Change produces fear, and the shifting water allocation patterns of the new West produce a great amount of fear among existing water rights holders. The Truckee-Carson experience suggests that water use conflict can evolve from litigation, once it performs its power reallocation function, to the use of legislation, voluntary transfers, and collaborative consensus-based management to deal with the dislocations of change. In short, the Truckee-Carson settlement illustrates that the recognition of the risk allocation basis of water rights is a necessary step in creating a sustainable basin and watershed management. Local or regional risk based allocation regimes address the central barrier to progress, the fear of change without accommodation.

Inalienability: One View of the Cathedral, 85 HARV. L. REV. 1089 (1972). Public utility law distinguishes between firm and interruptible service. In general, property rules are recognized when a proposed allocation is presumed efficient and the transaction costs of a reallocation are low; damages are preferred when transaction costs are high. *See* RICHARD POSNER, ECONOMIC ANALYSIS OF LAW § 3.9 (4th ed. 1992). This analysis makes the crucial assumptions that a property owner's expectations remain constant over time and that we must protect the right in a consistent manner. It also pays insufficient attention to the possibility of mutual dynamic mitigation. In fact, more generally, all or nothing legal solutions are breaking down throughout the law and we can devise solutions that take advantage of the positive benefits of both property and liability rules. Property rules enable parties to create stable future resource use regimes, see Carol M. Rose, *The Shadow of the Cathedral*, 106 Yale L. J. 2175, 2193-2197 (1996), but liability rules can provide efficiency gains that property rules sometimes block.