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Water Supply and Urban Growth in New Mexico: Same Old, Same Old or a New Era?

If the unrestrained engineering of water was original sin, it was essentially a sin of scale. Anyone who wants to live in the west has to manage water to some degree.¹

ABSTRACT

New Mexico and other arid western states face the following dilemma: rapid urban growth and the increasing demand for the dedication of water to aquatic ecosystem services are placing new stresses on the ability of available water supplies to support these new demands at a time when a coherent federal supply and water policy no longer exists and states have been slow to fill the vacuum. The answer to the increasing demand for water is no longer simply to augment supply through new diversions, high-capacity wells, or the construction of large storage reservoirs. Instead, in today's increasingly unmediated, competitive water allocation environment, states and local governments are being forced to reexamine the traditional relationship between water policy and urban growth: if they come, we will supply them, and, more generally, water should never limit growth. Thus, urban areas are being forced to use alternative strategies such as demand management (conservation) and controversial rural-urban transfers to accommodate continuing urban growth and the state is aggressively limiting new groundwater access. New Mexico is an important case study of the stresses of reallocating water to meet continuing urban growth. The state has mined its ground water both for urban growth and irrigation, and it does not have a large, under-allocated federal project to support future growth or a major new source of water that can be tapped. The highly stressed Rio Grande, a major interstate and international river,

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1. WALLACE STEGNER, THE AMERICAN WEST AS LIVING SPACE 36 (1987).

must be shared with other states and Mexico. Furthermore, New Mexico has a unique rural landscape with strong Native American and Hispanic communities fighting to maintain a non-urban way of life. The article argues that water policies and urban growth policies must be better coordinated to promote more sustainable water use and "smarter" urban growth. Planning is the link. As the margin of error for unsustainable resource use decreases, integrated land and water use planning takes on a more critical role in connecting policies with decision making. Water and urban growth policies must support each other rather than continue to separate enterprises that are often at cross purposes with each other.

I. INTRODUCTION: THE INHERENT LIMITS OF CLIMATE REDUX

Many states, especially in the arid West, face a dilemma—rapid urban growth is placing new stresses on the ability of available water supplies to support growth. To complicate matters, this is occurring at a time when a coherent federal water supply and management policy no longer exists, and states have been slow, unwilling, or unable to fill the vacuum. Put differently, these stresses arise at a time when the answer to the increasing demand for water is not simply to augment supply through new diversions, high-capacity wells, or the construction of large storage reservoirs. In today's increasingly unmediated, competitive water allocation environment, urban areas are being forced to use alternative strategies such as demand management (conservation) and controversial rural-urban transfers to accommodate continuing urban growth. As a result, state and local governments are being forced to reexamine the traditional relationship between water policy and urban growth, which was, if they come (as we fervently desire), we will supply them.

This article, using New Mexico as a case study, traces the transition from the assumption that the function of water law and policy is to support unlimited urban growth to a growing recognition that water policies and urban growth policies must be better coordinated to promote more sustainable water use and "smarter" urban growth. Planning is the link. As the margin of error for unsustainable resource use decreases, integrated land and water use planning takes on a more critical role in connecting policies with decision making.² Furthermore, planning assumes a strategic role when decision makers recognize that water policies and urban growth policies must support each other. New

2. See A. Dan Tarlock & Lora A. Lucero, *Connecting Land, Water, and Growth*, 34 URB. LAW. 971 (2002).

Mexico is a particularly appropriate case study because it is a rapidly growing state³ with fewer urban water supply options compared to other western states.⁴

The state has mined its ground water to support both urban growth and irrigated agriculture. Most of the urban growth in New Mexico is concentrated between Albuquerque and Santa Fe, an area of limited and fully-appropriated ground and surface water supplies.⁵ And there is a growing recognition that the Albuquerque region must adopt aggressive water conservation measures to sustain the 1,000,000 plus persons expected to reside there by 2025.⁶

Unlike other states, New Mexico does not have a large, under-allocated federal project to support future growth or a major new source of water that can be tapped. The state has not used its full share of its Colorado River allotment, but in an era of "no new starts," a major new federal project is unlikely. If Arizona's long-delayed Central Arizona Project is considered a potential model, New Mexico will have to agree to even more aggressive water conservation measures than it has

3. In 2000, New Mexico had 1,819,000 people compared to 372,000 in 1910 and was the twelfth fastest growing state in the Union. ALLETTA BELIN, CONSUELO BOKUM & FRANK TITUS, *TAKING CHARGE OF OUR WATER DESTINY: A WATER MANAGEMENT POLICY GUIDE FOR NEW MEXICO IN THE 21ST CENTURY* 1 (2002).

4. Ground water supplies 90 percent of the state's drinking water, but historically it has been mined and many reserves will not be tapped for environmental and economic reasons. *Id.* at 25. See *infra* notes 117-122 and accompanying text. The state's major river, the Rio Grande, must be shared with Colorado, Mexico, and Texas. Article III(a)(2) of the Upper Basin Compact of 1948 allocates 11.25 percent of the Upper Basin's share of the Colorado Basin to New Mexico. Since the San Juan River is the state's only Upper Basin tributary, Article XIV allows the state to take its entire apportionment from the San Juan and Colorado tributaries. The San Juan/Chama basin lies in a remote unpopulated area of the state and is the only project constructed to use the state's share. The San Juan/Chama Project does not use the state's full share but the prospect of another major trans-basin diversion to benefit the Rio Grande basin seems unlikely at the present time. In contrast to New Mexico, thanks to the Central Utah Project, Utah is awash with water. For an analysis of the evolution of the Central Utah Project from an irrigation to a municipal and industrial project (M&I) and a careful calculation of the subsidies that both irrigation and M&I users receive at high construction, operation, and environmental costs, see, Jeffrey Ashley & Robert L. Jones, *The Central Utah Project*, 22 J. LAND, RESOURCES & ENVTL. L. 273 (2002).

5. Other parts of the state, especially the lower Rio Grande corridor, also face growth stresses, either from second-home development or the spread of colonias along the border.

6. Population projections for Albuquerque's future growth, as do all such predictions, vary. TOM DANIELS, *WHEN CITY AND COUNTRY COLLIDE: MANAGING GROWTH ON THE METROPOLITAN FRINGE* 242 (1999) projected a 700,000 increase over mid-1990 levels, but the City of Albuquerque Water Resources Management Strategy (May 1997) uses figures between 850,000 and 1,041,000, and The Mid-Region Council of Governments and UNMBBER project an Albuquerque-Bernalillo County regional population of 1,075,238 by 2025. See MID-REGION COUNCIL OF GOVERNMENTS, *REGIONAL LONG RANGE TRANSPORTATION PLAN 2* (2002), available at <http://www.mrcog-nm.org/images/Documents/RPO%20Long%20Range%20Transportation%20Plan.pdf> (last visited Nov. 24, 2003).

heretofore taken.⁷ The highly stressed Rio Grande must be shared with other states and Mexico.⁸ Furthermore, New Mexico has a unique rural landscape with strong Native American and Hispanic communities fighting to maintain a non-urban way of life, and, as all western states, New Mexico has a long, aggressive history of subordinating the maintenance of functioning aquatic ecosystems to consumptive use.⁹ This makes it extremely difficult to integrate compliance with the Endangered Species Act¹⁰ and a more general demand for aquatic ecosystem restoration into its water allocation system.¹¹

An inquiry into the link between water supply and urban growth ultimately raises the question of whether there are any environmental barriers to human settlement. One of the persistent themes in the history of the West has been the question of what limits, if any, the region's climate and geography impose on human settlement. John Wesley Powell's efforts to design a land and water policy around the fact of aridity or, more accurately, highly variable water supplies is the first serious effort to propose a "sustainable" settlement policy and remains the model for sustainable alternatives to the historic encouragement of unlimited and unplanned growth.¹² His legacy was

7. See generally William M. Fleming & G. Emlen Hall, *Water Conservation Incentives for New Mexico: Policy and Legislative Alternatives*, 40 NAT. RESOURCES J. 69 (2000).

8. U.S. ARMY CORPS OF ENGINEERS & NEW MEXICO INTERSTATE STREAM COMMISSION, MIDDLE RIO GRANDE WATER SUPPLY STUDY 4-5 (2000), available at <http://www.sspa.com/ashu/Rio/report/ExecutiveSummary.pdf> (last visited Sept. 28, 2003). This study concludes that the state can barely meet its downstream delivery obligations under existing uses and thus any new uses must be offset by the retirement of existing uses. The state has begun to implement this policy. State water planners have identified meeting New Mexico's interstate compact obligations as the number one water policy priority. This will require limiting diversions in the Middle Rio Grande. *State Plan Sets Water Goals*, ASSOCIATED PRESS, Oct. 24, 2003. See *infra* notes 121 to 122.

9. Until 1998, the state took the position that instream flows were impossible because state law required a diversion. A 1998 New Mexico attorney general's opinion concludes that instream flow is a beneficial use but the state does not have an effective instream program, even by the standards of other hard-core appropriation states. Opinion of Tom Udall, Op. Att'y Gen.No. 98-01 (Mar. 27, 1998), available at <http://www.ago.state.nm.us/pdf/OP-NO-98-01.pdf> (last visited Sept. 28, 2003).

10. 16 U.S.C. § 1531 (2000).

11. See Joseph L. Sax, *Environmental Law at the Turn of the Century: A Reportorial Fragment of Contemporary History*, 88 CAL. L. REV. 2375 (2000).

12. JOHN WESLEY POWELL, REPORT ON THE LANDS OF THE ARID REGION OF THE UNITED STATES (Wallace Stegner ed., 1962). Powell's latest biographer, the noted environmental historian Donald Worster, argues that Powell was impressed by the Mormon communitarian society that flourished in Utah in the 1870s, DONALD WORSTER, A RIVER RUNNING WEST: THE LIFE OF JOHN WESLEY POWELL 337-80 (2001), and that Powell himself was not consistent about the need to respect the limits of aridity. It is difficult to adapt Powell's initial vision of small-scale irrigation districts or his later vision of larger hydrologic commonwealths to the modern urban West. Nonetheless, William deBuys describes him as "the nation's first great bioregional thinker," William deBuys, *Visions of*

carried forward by Walter Prescott Webb¹³ and Wallace Stegner¹⁴ and is the core of the modern environmental thinking and debate concerning resource limits.¹⁵ However, these Jeremias have been ignored, marginalized, or demonized. Resource limits were an academic subject but one for serious policy discussion among those who actually developed or regulated.

Powell's marginal influence is illustrated by the unsuccessful efforts of New Deal planners to develop a scientific response to the Dust Bowl of the 1930s—a classic case of our historic refusal to develop settlement policies based on inherent limits. In 1935, a high level committee proposed remedies for the ecological and social disaster that we call the Dust Bowl¹⁶ and actually tried to get to the fundamental cause of resource degradation. The well known *Report of the Great Plains Drought Area Committee*¹⁷ recommended a land use policy for the Great Plains based on the inherent limitations of the region for intensive agriculture and human settlement, what we would now call genuine environmentally-sustainable development. Following John Wesley Powell's admonition,¹⁸ the Committee stated directly that humans must adapt to the harsh unforgiving climate of the Great Plains, not vice versa, by withdrawal and concentration. "The basic cause of the present Great Plains situation is an attempt to impose upon the region a system of agriculture to which the Plains are not adapted to bring into semi-arid and arid region methods that, on the whole, are suitable only for a humid region."

This bold diagnosis—the partial withdrawal of settlement—was too far ahead of its time. Rather than address the root problem,

Western Governance: Powell and His Successors, 23 J. LAND RESOURCES & ENVTL. L. 15, 16 (2003), and Donald Worster argues that Powell taught us that "[t]he watershed is the place we inhabit on earth. It is the place we need to learn to live within and where we learn to live with each other. The watershed is the natural home of democracy." Donald Worster, *Watershed Democracy: Recovering the Lost Vision of John Wesley Powell*, 23 J. LAND RESOURCES & ENVTL. L. 57, 65 (2003).

13. WALTER PRESCOTT WEBB, *THE GREAT PLAINS* (1931).

14. See STEGNER, *supra* note 1.

15. J. DONALD HUGHES, *AN ENVIRONMENTAL HISTORY: HUMANKIND'S CHANGING ROLE IN THE COMMUNITY OF LIFE* 147, 158, 209-11 (2001); CHARLES SOKOL BEDNAR, *TRANSFORMING THE DREAM: ECOLOGISM AND THE SHAPING OF THE ALTERNATIVE AMERICAN VISION* (2003). This thinking can be traced in New Mexico water publications such as NEW MEXICO ENVIRONMENTAL LAW CENTER, *LIVING WITHIN OUR MEANS: A WATER MANAGEMENT POLICY FOR NEW MEXICO IN THE 21ST CENTURY* (1992); DESIGNWRIGHTS COLLABORATIVE, INC., *PEOPLE & WATER IN NEW MEXICO* (1984).

16. Studies include DONALD WORSTER, *THE DUST BOWL* (1979) and R. DOUGLAS HURT, *THE DUST BOWL* (1981).

17. MORRIS L. COOKE ET AL., *REPORT OF THE GREAT PLAINS DROUGHT AREA COMMITTEE* (1936), available at <http://newdeal.feri.org/hopkins/hop27.htm> (last visited Sept. 29, 2003).

18. "These lands will maintain but a scanty population." POWELL, *supra* note 12, at 33.

incremental measures were found. President Franklin Roosevelt considered himself a forester and saw planting trees as the answer to almost all pressing problems of land degradation. In the end, more modest responses were implemented (such as the widely-praised shelter belts)¹⁹ that created the current dysfunctional rural welfare economy sustained only by the subsidies that our irrational federal system produces. New farming methods such as fallowing, greater crop diversity, contouring, and stubble retention were put in place along with the famous shelter belts. Almost 70 years later, the bill for this timidity has come due. The depopulation of rural areas, especially in the northern Great Plains, is now a major social issue,²⁰ but, unlike the New Deal, it is not a political one.

The governors of western development hearkened back to the book of Genesis rather than the Hebrew prophets and imagined an Eden that courted unlimited growth through new technologies to induce permanent settlement in a region initially perceived as incapable of supporting a large permanent population.²¹ After the collapse of large-scale gold and silver mining, cattle ranching, and dryland farming in California, the West turned to irrigated agriculture and raw commodity production to sustain itself.²² Ironically, these "hinterland" activities helped to develop in the West a series of industrial, federal, and military facilities;²³ urban oases; and later archipelagos increasingly less

19. Shelter belts are rows of trees planted to protect crops and reduce wind erosion. See Richard Hordacre & Hamel Nursery, *Effective Shelter Belts*, at <http://aoi.com.au/show/FarmTreesWA/A3170P4.htm> (last updated Apr. 2, 1998).

20. The U.S. Bureau of the Census defines a frontier county as one with less than seven persons per square mile. Montana has 47 such counties, South Dakota 39, and North Dakota 37. The respective populations of these states in frontier status are 35, 25, and 24. Kansas and Nebraska also have large numbers of frontier counties but much less of the population lives in these areas due to the urban areas in the semi-humid eastern areas of these states. The concept of frontier is being defined by professionals to try and better understand the diversity of rural areas, but the continued rural-to-urban migration in the northern Great Plains, high drug use in rural areas, the inability to attract recreation-oriented in-migration in comparison to the Inner-Mountain West, and the increasing poverty rates all point to the need to recapture the New Deal's focus on these areas.

21. For a good new history of the settlement of the inhospitable Imperial Valley, see EVAN R. WARD, *BORDER OASIS: WATER AND THE POLITICAL ECOLOGY OF THE COLORADO RIVER DELTA, 1940-1975* (2003).

22. See DONALD J. PISANI, *TO RECLAIM A DIVIDED WEST: WATER, LAW, AND PUBLIC POLICY* (1992); DONALD J. PISANI, *WATER, LAND AND LAW IN THE WEST: THE LIMITS OF PUBLIC POLICY, 1850-1920* (1996); DONALD J. PISANI, *WATER AND AMERICAN GOVERNMENT: THE RECLAMATION BUREAU, NATIONAL WATER POLICY, AND THE WEST, 1902-1935* (2002).

23. GERALD D. NASH, *THE AMERICAN WEST TRANSFORMED* 75-87 (1985). The impact of WPA spending on the University of New Mexico, the location of regional federal offices in Albuquerque, and the World War II defense spending at Los Alamos and on military aviation facilities due to Albuquerque's near perfect flying weather is traced in MARC SIMMONS, *ALBUQUERQUE: A NARRATIVE HISTORY* 365-67 (1982).

dependent on these traditional activities.²⁴ As Gerald Nash has argued, during World War II, "essentially, the federal government promoted the restructuring of the natural resource-based colonial economy into a technologically-oriented and service economy stimulated by massive federal expenditures."²⁵ In New Mexico, tourism also played an important role in helping to sustain the state as agriculture, grazing, timber production, and trade waned.²⁶

To help settle the West, water law and policy were premised on the assumption that unlimited growth should be accommodated by the removal of all potential barriers posed by the West's highly variable climate cycles of drought and flood. "Humid" regions in the country might take the perpetual availability of adequate water supplies for granted, with modest belt tightening in times of drought, but the West could not. Westerners had to learn from hard experience how to adapt laws and land use practices to the vagaries of the climate.²⁷ They were sustained by the progressive faith in science and technology to overcome nature. To this end, during the Reclamation Era, the West successfully practiced the politics of distribution to make the adaptation less painful. Subsidized water was made available in almost all regions. Until the late twentieth century, the West's two major consumptive users, irrigation and urban areas, were able to divide the region's available supplies with relatively little serious conflict between them and thus were able to avoid any serious discussion of the possibility of limits on future growth.²⁸ The federal government's role is changing, but the dominant philosophy

24. See WESTERN WATER POLICY REVIEW ADVISORY COMMISSION, *WATER IN THE WEST: CHALLENGE FOR THE NEXT CENTURY* ch. 2 (1998) [hereinafter *WATER IN THE WEST*]. Each urban area has its water story. See, e.g., Gary Daves, *History of Water Development in the Middle Valley*, in *THE WATER FUTURE OF ALBUQUERQUE AND THE MIDDLE RIO GRANDE BASIN* 9 (1995), but the wide-spread adoption of air conditioning after World War II is another important component of the rapid urbanization of the southwest. See, e.g., GAIL COOPER, *AIR CONDITIONING AMERICA* (1998); MARSHA E. ACKERMAN, *COOL COMFORT: AMERICA'S ROMANCE WITH AIR-CONDITIONING* (2002) (describing Americans as devoted to the irrational glamour of cool air).

25. GERALD D. NASH, *THE FEDERAL LANDSCAPE: AN ECONOMIC HISTORY OF THE TWENTIETH CENTURY WEST* 52 (1999).

26. HAL K. ROTHMAN, *THE DEVIL'S BARGAINS: TOURISM IN THE TWENTIETH-CENTURY AMERICAN WEST* 81-117 (1998) articulates the thesis that at the turn of the last century "[c]ulture rescued Santa Fe...at a time when few other options existed." *Id.* at 83.

27. One of the most successful short-term adaptations was the introduction of dry farming in the Dakotas during the first two decades of the twentieth century, which coincided with above average rainfall in the region. MICHAEL P. MALONE & RICHARD W. ETULAND, *THE AMERICAN WEST: A TWENTIETH CENTURY HISTORY* 14-16 (1989).

28. See *id.* at 17.

continues to be the principle that water should not be a constraint to growth.²⁹

II. THE NEW REALITY: GROWING DEMAND, INCREASING RISKS, AND THE CHANGING FEDERAL ROLE

The occasional speculations of academics and others about the carrying capacity and inherent resource limits were routinely dismissed³⁰ because water law and federal and state policies supported unlimited growth by giving cities both the de facto and de jure preferences necessary to acquire the water they needed to grow.³¹ Western water law allows cities to transport water from the watersheds of origin, to acquire surface water rights in advance of demand, and to mine ground water as

29. New Mexico's \$113 million package of tax incentives and the promise of unlimited water to induce Intel to Albuquerque in the 1990s is a classic post-Reclamation era response. Bruce Selcraig, *Albuquerque Learns It Really Is a Desert Town*, HIGH COUNTRY NEWS, Dec. 26, 1994.

30. See, e.g., SANDRA POSTEL, LAST OASIS: FACING WATER SCARCITY 17-24 (1997); MARC REISNER, CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER 503-05 (1986). The famous novelist and interpreter of the American West, the late Wallace Stegner, was once asked what he thought the carrying capacity of California was; he replied, "it has the water and the climate and the soil to support a population like Japan, if it has to. I wouldn't want to live here when it was going on that way." WALLACE STEGNER & ROCHARD E. ETULAIN, CONVERSATIONS WITH WALLACE STEGNER ON WESTERN HISTORY AND LITERATURE x (rev. ed. 1990). The experience of the water-induced growth in Australia is instructive. The continent's unique landscape and climate produce an endless cycle of flood and drought on a country with thin soil and extreme aridity except in some coastal bands. But the price for questioning this vision has been high, and policy analysts continue to argue that the country can support 100 million people or more. The debate is summarized in Jonathan Stone, *Empty or Full: The Debate over the Population of Australia*, available at <http://www.naf.org.au/stone.rtf> (last visited Nov. 18, 2003). See also TIM FLANNERY, THE FUTURE EATERS: AN ECOLOGICAL HISTORY OF THE AUSTRALIAN LANDS AND PEOPLE (1994). Australia's most famous dissenter was the geologist-geographer Griffith Taylor. To the disdain of many, in 1911 he suggested that the natural carrying-capacity of the country was 19 million people. When he later had the temerity to argue that Asian immigration would benefit the country, he was ultimately driven from his post at the University of Sydney and ended his career at the University of Chicago. *Id.* at 363-67.

31. A water use preference generally means that a higher preference use should be entitled to unappropriated water over a lower preference use; that a lower preference use appropriation should be conditioned on subordination, without compensation, to a subsequent higher preference one; that a city may invoke the domestic use preference to condemn water rights, e.g., *Town of Sterling v. Pawnee Ditch Extension Co.*, 94 P. 339 (Colo. 1908); or that a preference scheme should be used to allocate water in times of drought. However, these concepts have seldom been applied and today preference is increasingly used in the broader sense of uses that society deems vital and whose use is encouraged by statute or judicial doctrine. See Robert E. Beck, *Use Preferences for Water*, 76 N.D. L. REV. 753 (2000).

a primary or secondary source of water,³² a rational strategy pioneered by New Mexico. The dewatering of the Owens Valley of California³³ alerted states to the need to protect the development opportunities of areas of origin, but area-of-origin protections have not stopped the continued growth of urban oases and archipelagos. Government reduced the risk of natural climate variability through the construction of large reservoirs. Public utility law re-enforced these de facto and de jure water law preferences by positing duties to serve all who demanded service and to acquire the supplies necessary to serve anticipated growth. Municipal and public water suppliers delivered water at subsidized or average cost rates.³⁴ Finally, land use law further promoted growth by projecting cities as ever expanding grids,³⁵ by making it difficult to "manage" growth,³⁶ and by separating land use planning and development decisions from the provision of water and other utility services. The major cities in New Mexico—Albuquerque, Las Cruces, and Santa Fe—have followed this pattern, but the state's unique cultural heritage, its rivers, and its breathtaking landscapes make the preservation of a rural-urban balance a more pressing political issue than in states such as Arizona, Nevada, or Utah.

People continue to migrate toward the sun and to the mountains in large numbers,³⁷ but the federal government is no longer able to support growth and mediate interregional conflicts as it once could when water development was a budget priority. Urban areas compete for increased water in an environment radically different from the days

32. See generally ROBERT GLENNON, *WATER FOLLIES: GROUNDWATER PUMPING AND THE FATE OF AMERICA'S FRESH WATERS* (2002).

33. The story has been told many times. See, e.g., WILLIAM L. KAHRL, *WATER AND POWER: THE CONFLICT OVER LOS ANGELES' WATER SUPPLY IN THE OWENS VALLEY* (1982); JOHN WALTON, *WESTERN TIMES AND WATER WARS: STATE, CULTURE AND REBELLION IN CALIFORNIA* (1992).

34. See David S. Brookshire et al., *Western Urban Water Demand*, 42 NAT. RESOURCES J. 873 (2002). Urban water is less under-priced compared to irrigation water. For example, it is estimated that current rates recover 90 percent of the cost of building and maintaining water systems but the percentage of cost recovery is likely to drop over the long run, and other factors contribute to a systematic bias toward under-pricing. These include the failure to internalize the full costs of groundwater exploitation and the fact that average cost pricing does not reflect the scarcity value of water. *Id.* at 875.

35. See JOHN W. REPS, *THE MAKING OF URBAN AMERICA* (1965); JOHN W. REPS, *TOWN PLANNING IN FRONTIER AMERICA* (1980). Albuquerque's expansion through the extension of trolley lines and the consequent plotting of new suburbs is briefly traced in *ALBUQUERQUE: A NARRATIVE HISTORY*. SIMMONS, *supra* note 23, at 339-41.

36. See KENNETH FRAMPTON, *LABOR, WORK AND ARCHITECTURE* (2002) (capitalist consumer society and the car to blame).

37. The migration will be jerky, as the collapse of the high tech boom of the 1990s has created high unemployment in places such as Denver and Salt Lake City.

of Clinton Anderson,³⁸ Steve Reynolds,³⁹ Wayne Aspinall,⁴⁰ and others. As more users have the power to influence decisions, many suppliers now face three linked water resource issues: (1) How will cities find the necessary secure water supplies to sustain the boom? (2) What will be the fate of irrigated agriculture, the acequias, and the farming and ranching communities? and (3) Will sufficient amounts of water be allocated to maintain water quality and to restore aquatic ecosystems?⁴¹ To complicate matters, cities must now address these challenges in the context of very different conditions than existed in the early twentieth century: the end of the big dam era, the general "decentering" of federal power, the rise of the environmental movement, and the increasing possibility that global climate change will alter traditional supply patterns for the worse.

Urban growth stresses water supplies in four primary ways: (1) it increases the demand for water dedicated to municipal and industrial (M&I) uses; (2) it increases the risk of ground water contamination, foreclosing the use of the resource; (3) it increases the pressure to tap (mine) unallocated surface and groundwater supplies, creating additional environmental-consumptive use tensions; and (4) it increases the pressure to reallocate existing agricultural entitlements to M&I uses through water marketing. Future allocation decisions will be shaped by four basic categories of water use—agriculture, M&I uses, hydroelectric power, and dedicated instream flows.⁴² Agriculture has historically claimed the largest share of the West's developed supplies, but it is declining. Irrigated agriculture will be the new storage reservoirs of the twenty-first century. Nationally, withdrawals for domestic use more than doubled between 1960 and 1990, while population only increased

38. Clinton P. Anderson (1895–1975) served as Secretary of Agriculture under President Harry S. Truman from 1945–1948. Prior to his move to Washington, Anderson worked as a newspaper journalist and editor, later becoming involved in civic organizations and politics. He served in the U.S. House of Representatives from 1940 to 1945 as a congressman from New Mexico. Anderson was a U.S. Senator from New Mexico from 1948–1973. Truman and Hoover Presidential Libraries, *Biographical Sketches: Clinton Anderson*, at www.trumanlibrary.org/hover/anderson.htm (last visited Sept. 29, 2003).

39. G. EMLÉN HALL, *HIGH AND DRY: THE TEXAS NEW MEXICO STRUGGLE FOR THE PECOS RIVER* 108-29 (2002) is an insightful look at Steve Reynolds, the great *zanjero* of New Mexico. Lon Fuller described his vision of *zanjeros*, before he knew the English translation of the Spanish word for watermaster, "as a kind of biblical figure, dividing the waters and quieting the alarms of farmers whose crops would be destroyed...by a lack of moisture." Lon L. Fuller, *Irrigation and Tyranny*, 17 STAN. L. REV. 1021, 1022 (1965).

40. STEPHEN C. STURGEON, *THE POLITICS OF WESTERN WATER: THE CONGRESSIONAL CAREER OF WAYNE ASPINALL* (2002) is a full treatment of this classic "water buffalo."

41. See WATER IN THE WEST, *supra* note 24, at 3-51 to 30-52.

42. WAYNE B. SOLLEY ET AL., U.S. GEOLOGICAL SURVEY, *ESTIMATED USE OF WATER IN THE UNITED STATES IN 1995*, at 4 (1998) (classifying water use as offstream use, instream use, and wastewater release).

by 75 percent. The significant increase in the domestic use category reflects the new landscape of office campi, gated communities, and golf courses. Domestic demands rose from five percent of the total in 1960 to eight percent in 1990, and water used for hydroelectric power generation rose from four percent of the total in 1960 to nine percent in 1990.⁴³ Thus, both domestic use demands and per capita urban use rates are increasing. The most important conclusion that can be drawn from recent growth studies is that urban sprawl is *relatively less* dependent on the traditional patterns of water use and development because the West's population growth has not been accompanied by a proportional rise in total water demand.⁴⁴ Urban water use is more efficient compared to agriculture.

A. The End of the Big Dam Era

U.S. water policy is moving from the dominant paradigm of the twentieth century—multiple-purpose development through alteration of river hydrographs—to a new, although less articulated, one that seeks to use water in more environmentally sustainable ways and to respect the river's natural hydrograph.⁴⁵ The distinguished resource economist Len Shabman described what some scientists call the normative river, "first we took the tails off of unruly rivers and now we are trying to reattach them."⁴⁶ We are now in the post-reclamation era of reallocation and sustainable water use and management.⁴⁷ The era of large-scale dam building is over,⁴⁸ although the pork mill for navigation-improvement and flood control projects grinds on, especially in the states with politically powerful senators and congressmen.⁴⁹ The Bureau of Reclamation has formally changed its mission from water development to water management, and budget priorities reflect this change.⁵⁰ The U.S. Army Corps of Engineers is undergoing a similar but more complex

43. *Id.*

44. *Id.* at 6.

45. See Chris Bromley, *A Political and Legal Analysis of the Rise and Fall: Western Dams and Reclamation Projects*, 5 U. DENVER WATER L. REV. 204 (2001).

46. Interview with Leonard Shabman, Resident Scholar, Resources for the Future (May 8, 2003).

47. See WATER IN THE WEST, *supra* note 24, at 3-1 to 3-3.

48. See, e.g., JAMES R. FERRELL, BIG DAM ERA: LEGISLATIVE AND INSTITUTIONAL HISTORY OF THE PICK-SLOAN MISSOURI BASIN PROGRAM (1993).

49. The George W. Bush administration has been unusually aggressive in trying to curb marginal economically justified projects. Michael Grunwald, *The Corps Cored*, WASH. POST, May 6, 2003.

50. See U.S. BUREAU OF RECLAMATION, RECLAMATION'S STRATEGIC PLAN: A LONG-TERM FRAMEWORK FOR WATER RESOURCES MANAGEMENT, DEVELOPMENT AND PROTECTION (June 1992).

and uneven transition. Some new "smarter" storage projects will be built but they will be smaller and more environmentally friendly.

B. The Decentering and Devolution of Federal Power

Neither irrigated agriculture nor municipal water suppliers will be able to control the policy agenda as they did in the past. Power is more diffused. Today, growing cities compete with proponents of aquatic ecosystem restoration and other traditional users such as agricultural irrigators struggling to maintain an often economically irrational, but deeply valued, way of life. All of these old and new interests or "stakeholders" now demand a seat in the multiparty bargaining processes that characterize many allocation conflicts.

The decreasing budgets of the Bureau of Reclamation and Corps of Engineers have been constant in both Republican and Democratic administrations.⁵¹ Thus, the institutions that have managed and allocated this country's water resources are less able to perform their historic function of mediating competing demands for water and buffering all major uses against the vagaries of climate. They continue to operate and manage the infrastructure heritage of the twentieth century, but with increasingly limited ability to augment supplies and to control the allocation of the stored water. In the future, the federal water agencies will function more as project managers and stakeholders in multiparty negotiations rather than *the* major policy maker and distributor of federal largesse.

C. Fish Power

The major winners of the Reclamation Era were cities and farmers; the major losers were fish and aquatic ecosystems. Federal and state environmental laws are slowly redressing this neglect. The allocation of water for ecosystem maintenance and recovery is likely to increase in the future. The Endangered Species Act⁵² is the major environmental constraint on urban water use.⁵³ To date, many of the conflicts have pitted farmers against fish, but New Mexico has experienced significant urban-environmental-social conflicts. The on-

51. "When measured in 1995 constant dollars, the Corps Civil Works budgets have declined by almost one-third since reaching an apex in 1973." U.S. ARMY CORPS OF ENGINEERS, CIVIL WORKS PROGRAMS 6 (2001).

52. 16 U.S.C. §§ 1531-1542 (2003).

53. See Holly Doremus, *Water, Population Growth, and Endangered Species in the West*, 72 U. COLO. L. REV. 361 (2001).

going effort to save the silvery minnow in the Rio Grande⁵⁴ pits the fish against Albuquerque and other New Mexico cities.⁵⁵ For several years, temporary releases have kept the minnow alive, but in 2002 a federal district judge ordered the Bureau of Reclamation to release municipal drought reserve water diverted from the Colorado basin by the San Juan/Chama project from an upstream reservoir.⁵⁶ The court ruled that the Fish and Wildlife Service's jeopardy opinion, which recommended upstream storage rather than release, was arbitrary and capricious. One does not quench thirst by withholding water. On appeal, the Tenth Circuit affirmed the order.

In New Mexico, environmental and cultural claims, although quite different, are often mixed together. Isleta Pueblo's use of the Clean Water Act⁵⁷ to set ceremonial use and drinking water standards for its portion of the Rio Grande⁵⁸ is an example of the power of indigenous communities to squeeze cities.

D. Global Climate Change

Global climate change further complicates water allocation. In the water community, global climate change has been a subject of intense discussion but no action. There are two basic policy options to deal with

54. In 1994, the U.S. Fish and Wildlife Service listed the Rio Grande Silvery Minnow as an endangered species under the ESA. U.S. Fish and Wildlife Service, Endangered and Threatened Species and Plants, Final Rule to List the Rio Grande Silvery Minnow as an Endangered Species, 59 Fed. Reg. 36,998 (1994). In 1996, thousands of minnows died when the river dried up, and by 1999, 95 percent of the remaining minnow population was concentrated in a 60-mile stretch of the river. See Joseph L. Sax, *Environmental Law at the Turn of the Century: A Reportorial Fragment of Contemporary History*, 88 CAL. L. REV. 2377, 2390-91 (2000).

55. Tania Soussan, *Chavez: No City Water for Minnow*, ALBUQUERQUE J., Sept. 6, 2002, at A1 (Albuquerque Mayor Chavez said, "The seizure of San Juan/Chama water by the courts for the silvery minnow would be a frontal assault on the people of New Mexico and their livelihoods. Enough is enough. The fact is that New Mexicans paid to bring this water to the middle Rio Grande, and it was not intended to be used for the fish.").

56. *Rio Grande Silvery Minnow v. Keys*, 333 F.3d 1109 (10th Cir. 2003). The Tenth Circuit rejected the major arguments of the Bureau of Reclamation contract holders and the state that the Endangered Species Act did not permit the Bureau from departing from the pre-Act allocation regime. Specifically, the court held that the storage clauses in BOR contracts provided a basis for ESA compliance, and diverting San Juan Chama water to comply with the Act was a beneficial use under state law. In 2001, the state of New Mexico proposed to make 100,000 acre feet of water stored in Elephant Butte Reservoir in the lower Rio Grande available for the fish over a three-year period. The water was surplus water in excess of its Rio Grande Compact obligations to Texas and would be exchanged for water stored upstream. Texas, however, reserved the right to review the agreement in 2002. *Environment, Energy, and Natural Resources Law, The Year in Review 2001*, WATER RESOURCES 151-52 (2002).

57. 33 U.S.C. §§ 1251 *et seq.*

58. *City of Albuquerque v. Browner*, 97 F.3d 415 (10th Cir. 1996).

the possibility of substantially and adversely altered weather patterns. We can either mitigate the cause by reducing greenhouse gas emissions and carbon sequestration or we can adapt to adverse consequences. Water management falls in the second category. States are beginning to take the possible hydrologic consequences of global climate more seriously⁵⁹ as recent weather patterns more closely resemble projected scenarios.

Adaptation is a daunting task because the hydrological, economic, and political consequences of global climate change in a given watershed or river basin are uncertain,⁶⁰ even as our understanding of the forces that influence climate changes increase. No consensus exists about the long-term patterns in the West. Some models predict that global climate change may alter precipitation and runoff patterns throughout the world. One possible model is extremes of wet and dry years, although most models do not predict significant increased precipitation in the Rocky Mountains and some predict a decrease in summer precipitation.⁶¹ In water-short areas with historically variable rainfall patterns, increased precipitation may actually exacerbate efforts to provide reliable water supplies. Warmer average temperatures may cause spring runoffs to come earlier and evaporate faster, snowpacks may melt earlier, and more precipitation may fall as winter rain rather than snow. Increased, but out-of-cycle, rainfall is the projected pattern for parts of the western United States. Wetter, warmer weather could strain existing storage systems that currently provide reliable regional water supplies and increase flooding. Existing reservoirs may not be able to capture the increased winter runoff, causing serious shortages in the summer.⁶² On the other hand, increased but early runoff may create opportunities for creative off-stream storage, such as refilling depleted

59. See California State Climate Change Activities, *available at* http://www.energy.ca.gov/global_climate_change/state_roles.html (last modified Oct. 28, 2002) (In 2002, the California Department of Water Resources became the first state water resources agency to include potential global climate change impacts in its forecast.).

60. See NATIONAL RESEARCH COUNCIL COMMITTEE ON GLOBAL CLIMATE CHANGE RESEARCH, *GLOBAL ENVIRONMENTAL CHANGE: RESEARCH PATHWAYS FOR THE NEXT DECADE* (National Academy Press 1999) (explaining the gap between what we know and need to know about the relationships between climate change and human and natural systems).

61. NATIONAL ASSESSMENT TEAM DOCUMENT, *POTENTIAL CONSEQUENCES OF CLIMATE VARIABILITY AND CHANGE FOR THE WESTERN UNITED STATES* 10 (June 12, 2000).

62. An early study by an Environmental Defense Fund economist concluded that water deliveries for federal and state water projects that serve California's San Joaquin Valley could be reduced by as much as 25 to 28 percent. DANIEL J. DUDEK, *CLIMATE CHANGE IMPACTS ON AGRICULTURE & RESOURCES: A CASE STUDY OF CALIFORNIA* (1989).

aquifers. Finally, there is the possibility that the region faces "megadrought" cycles independent of global climate change.⁶³

III. NEW MEXICO: OLD CHALLENGES AND NEW RESPONSES

No water reallocation decision in New Mexico is easy and those that involve potential limits on land development are even harder. Newly-elected Governor Bill Richardson heard very quickly what some constituents thought of his deal with Texas to release water from Elephant Butte Lake, a popular water-sports venue. A parade of pleasure craft trolled along Santa Fe's Paseo de Peralta outside the state capitol building in April to protest the governor's plan to ship 122,500 acre-feet of water downstream to southern New Mexico and El Paso-area farmers. The agreement, in turn, allows additional storage upstream and provides some water for protection of the endangered Rio Grande Silvery minnow.⁶⁴ The governor assumed that he was fairly spreading the pain of the drought around, a win-win for all, but the community of Elephant Butte, whose economy is heavily dependent on recreational boating, feels it got the short end of the stick. This is one example of many (past-present-future) challenges facing local, state, and federal water resource decision makers.

Many New Mexicans have known for years that the day of reckoning was coming but have repressed this unpleasant reality; this is getting harder. Today, there is increasingly visible evidence of the collision between explosive population growth and diminishing water supplies. The state's population has almost doubled since 1960, with the greatest growth in the three Metropolitan Statistical Areas in the Rio Grande corridor: Albuquerque, Santa Fe, and Las Cruces. In many cases, the high growth areas hold junior water rights that could be cut off during a dry year. Land subsidence as a result of an aquifer that's been severely stressed and overdrawn is now a reality in the northeast portion of Albuquerque, as some buildings and roads begin to show signs of failure.⁶⁵ Domestic wells have gone dry in Placitas, north of

63. See generally Connie A. Woodhouse & Jonathan T. Overpeck, *2000 Years of Drought Variability in the Central United States*, 79 *Bulletin of the American Meteorological Society*, No. 12, 2693 (Dec. 1998); National Oceanic and Atmospheric Administration, 16th Century Megadrought, at http://lwf.ncdc.noaa.gov/img/climate/research/2002/aug/Megadry_pg.gif (last visited Oct. 8, 2003).

64. Editorial, *Boater Backlash Draws Sharp Retort*, ALBUQUERQUE J., Apr. 30, 2003, at A10; Kate Nash, *Gov. Has Change of Heart on Butte*, ALBUQUERQUE J., May 2, 2003; Kate Nash, *Gov. Offers \$1.8 Million to Aid Butte*, ALBUQUERQUE J., May 3, 2003, at A1.

65. The Office of the State Engineer adopted guidelines in September 2000 for the administration of the Middle Rio Grande Administrative Area (MRGAA) in order to protect water rights, Rio Grande Compact compliance, and the aquifer, and to minimize subsidence. Now there are designated critical management areas in Albuquerque that are

Albuquerque, where the National Guard was called to truck water into area residents. Building permits issued in the City of Santa Fe have jumped from 400 (2000–2001) to over 700 (2001–2002) in just a year, while piñon trees are dying from lack of water.⁶⁶ And as some talk about the current “dry-spell” as a drought, others remind us that the 1980s and 1990s were unusually wet years and we might just be headed back to “normal” conditions.⁶⁷

A. The Federal Response

Because the federal government can no longer practice the politics of distribution and offer federally subsidized, large, multiple purpose projects as the solution to all problems, it has been slow to come to grips with the emergence of the “New West.” In the future, the federal government will have to practice the politics of allocation or, more accurately, reallocation, which will require it to be more of a facilitator and project manager. Lack of money can spur surprising innovation and flexibility, even among those who regret the passing of the old West. In May of 2003, Interior Secretary Gale Norton announced that the federal government will focus its declining dollars and technical resources on the Middle Rio Grande Valley in a new initiative called *Water 2025*, which it considers one of ten hot spots in the West where water conflicts are expected in the next 25 years;⁶⁸ the Department of the Interior looked at growth projections, water availability, storage capacity, and environmental demands in order to focus on areas most vulnerable to water conflicts.

closed to additional pumping and new groundwater appropriations will only be approved in the MRGAA if surface water rights are obtained and transferred to offset the corresponding streamflow depletion. Office of the N.M. State Engineer, *Middle Rio Grande Administrative Area Guidelines for Review of Water Right Applications* (Sept. 13, 2000), available at <http://www.seo.state.nm.us/doing-business/mrgbasin/crit9-13.pdf> (last visited Nov. 18, 2003).

66. See, e.g., Maria Luisa Tucker, *Environmental Outrage*, SANTA FE REPORTER, Sept. 4, 2002 (“The future of Santa Fe is an environmental disaster,” says Julia Takahashi, former executive director of Sustainable Communities, a nonprofit that teaches conservation. “We don’t have enough water to grow in an unmanaged way.”).

67. U.S. National Drought Overview, Climate of 2002–August, available at <http://lwf.ncdc.noaa.gov/oa/climate/research/2002/aug/drought-national-overview.html> (last modified Sept. 17, 2002) (Tree-ring analysis indicates that the sixteenth century “mega-drought” was by far the most severe, even more pronounced than the “dust bowl” droughts of the 1930s and 1950s.).

68. U.S. DEPARTMENT OF THE INTERIOR, *WATER 2025: PREVENTING CRISES AND CONFLICT IN THE WEST*, available at <http://www.doi.gov/water2025/> (last visited Oct. 8, 2003) (The other hot spots include Las Vegas, Denver, Houston, parts of eastern Arizona and Salt Lake City, Carson City, Sacramento, and Los Angeles.).

The *Water 2025* plan identifies five challenges that need to be addressed to prevent crises and conflict in the West: (1) explosive population growth in areas of the West where water is already scarce, (2) frequent water shortages, (3) over-allocated watersheds, (4) aging water supply facilities, and (5) crisis management's ineffectiveness in dealing with water conflicts.⁶⁹ A number of New Mexico water planners and decision makers concur. Apparently Governor Richardson agrees with Interior Secretary Norton's assessment of the seriousness of the situation, because many of his initiatives mirror those from the federal government. The *Water 2025* initiative hopes to stretch water supplies by using four main tools: (1) improved water efficiency, conservation, and water banks; (2) collaboration on a local level to "emphasize action and answers to avoid needless impasse;" (3) research to improve desalination and other technologies; and (4) increased interagency cooperation.⁷⁰

B. The State Response

Prior to taking office, Richardson shared with the public his seven-point platform for managing the state's water resources, which he called "H₂O New Mexico—A Plan for Water Security."⁷¹ At the top of the list are statewide, regional, and community water plans, which are to be completed by December 31, 2003, and submitted to the 2004 session of the New Mexico Legislature. Second, he called for an end to the "indiscriminate permitting of domestic wells in New Mexico."⁷² The state engineer estimates that it will take another 600 years to complete the adjudication of water rights. With this in mind, Richardson proposed the creation of the New Mexico Water Court, with judges, mediators, and clerks to handle the backlog at an estimated cost of \$3 million, but this proposal was not advanced in the 2003 New Mexico Legislature. Third, building on his strong reputation as a negotiator, the governor proposed a negotiation strategy to coordinate ongoing water issues with other states, Mexico, and Native American tribes and pueblos. Fourth, phreatophyte removal remains a favorite low-tech water conservation

69. *Id.*, available at <http://www.doi.gov/water2025/summary.html>. For an extended analysis of the model of failed crisis management that the Department of the Interior is using, the events in the Klamath basin in 2001–2002, see Holly Doremus & A. Dan Tarlock, *Fish, Farms, and the Clash of Cultures in the Klamath Basin*, 30 *ECOLOGY L.Q.* 279 (2003).

70. Tania Soussan, *Norton Plan Aims to Douse Water Wars*, *ALBUQUERQUE J.*, May 3, 2003, at A1.

71. NEW MEXICO OFFICE OF THE STATE ENGINEER & THE INTERSTATE STREAM COMMISSION, *FRAMEWORK FOR PUBLIC INPUT TO A STATE WATER PLAN*, available at <http://www.ose.state.nm.us/water-info/NMWaterPlanning/framework.html> (last modified June 10, 2003) [hereinafter *FRAMEWORK FOR PUBLIC INPUT*].

72. See *infra* note 121.

strategy and he proposed to remove the salt cedars from the river valleys and restore the watersheds. Fifth, he embraced the creation of water banks to provide a mechanism where an owner of water rights can lease conserved water for other beneficial uses without losing (forfeiting) those rights.⁷³ Sixth, Richardson suggested that New Mexico use the brainpower at our national labs and state universities to research the latest water technology and conservation programs, including desalinization, arsenic removal, security of water supplies, quality monitoring systems, and advanced irrigation technology. Finally, Richardson vowed to continue the effort started by his predecessor to upgrade the water rights file database, called WATERS, to track 100 years of water rights ownership in the state.⁷⁴

Governor Richardson has moved swiftly to capitalize on the growing concern about water as a possible constraint to future growth. Legislation establishing New Mexico's first Comprehensive State Water Plan⁷⁵ was introduced and won overwhelming legislative support.⁷⁶ The State Water Plan is the Governor's "blueprint" for transitioning from a laissez faire approach for water management to what he calls statewide Active Water Resource Management (AWRM).⁷⁷

New Mexico must now act to complete the conversion to active management of New Mexico's water resources. We need to establish functional limits on the use of finite water resources, especially in areas where demand far outstrips supply or where failure to limit uses may create liability for the State and bad outcomes for water users. Active Water Resource Management is the name we have given to the comprehensive, assertive approach that is needed to protect and enhance New Mexico's water supply.⁷⁸

The legislation authorizing a State Water Plan is a major step forward for New Mexico—a state that has a tradition of crisis

73. H.B. 303, 46th Leg., Reg. Sess. (N.M. 2003) (Rep. Lujan) and S.B.124, 46th Leg., Reg. Sess. (N.M. 2003) (Sen. Cisneros) are companion bills that provide water banking authority for acequias. H.B. 303 (Lujan) and H.B. 123 (Cisneros) require compliance with acequia or ditch requirements for a change in the point of diversion or place or purpose of use of a water right. Each passed and was signed by the governor.

74. FRAMEWORK FOR PUBLIC INPUT, *supra* note 71, at 17-20.

75. H.B. 260, 46th Leg., Reg. Sess. (N.M. 2003) (Rep. Stewart).

76. The legislative support is due in no small part to the efforts of Consuelo Bokum, Project Director for the New Mexico Water Project of 1000 Friends of New Mexico. Actively working on water policy issues since 1991, she is one of three authors of *LIVING WITHIN OUR MEANS: A WATER MANAGEMENT POLICY FOR NEW MEXICO IN THE 21ST CENTURY* (New Mexico Environmental Law Center 1995).

77. FRAMEWORK FOR PUBLIC INPUT, *supra* note 71, at 119-23.

78. *Id.* at 9.

management and defensive water planning rather than planning and proactively engaging all levels of government to address statewide issues, such as water resources, in a comprehensive and coordinated fashion.⁷⁹ The legislation directs the Interstate Stream Commission (ISC) (with the Office of the State Engineer and the Water Trust Board) to prepare and implement the plan, which is envisioned as a "strategic management tool." In addition to what might be normally expected in a state water plan⁸⁰ (i.e., an inventory of the quantity and quality of the water resources, population projections and other water resource demands, water conservation strategies, a drought management component, restoration of riparian and watersheds), this legislation also requires the preparation of water budgets for the state and all major river basins and aquifer systems, "recognition" of the relationship between water availability and land use decisions, strategies to coordinate all levels of government, identification of water-related infrastructure and management investment needs, opportunities to leverage federal and other funding, and integration of regional water plans with the state water plan. The ISC and the state engineer are directed to consult directly with the Indian nations, tribes, and pueblos; while the ISC is to ensure that public participation and public input are integrated throughout the planning process. It is premature to evaluate the success of this effort.⁸¹ The first state water plan is not expected to be completed in 2003 and must be reviewed every five years. The plan will fill a serious vacuum that has plagued New Mexico in the past.⁸² A "shoot-

79. When he took office, the governor added a new position to his executive staff titled "Director of Policy and Planning," another indication of change at the state level.

80. The governor has stated that the priorities and solutions identified in the State Water Plan must be based upon

A) A comprehensive assessment of statewide surface and groundwater resources; B) Sound policies to move us forward; C) Consensual and collaborative decisions on how we choose to use available supply to meet various statewide demands; and D) Priorities for available funds and human resources in the eight areas of Active Water Resource Management: (1) quantification of water rights, (2) measurement and metering of water, (3) water planning, (4) compliance, (5) analysis and integration of data, plans and policies, (6) water distribution, (7) water transfers, markets and water banks, and (8) water development.

FRAMEWORK FOR PUBLIC INPUT, *supra* note 71, at 120.

81. Consensus was not evident at the twenty-first of 29 public forums. The standard efficiency argument that the state should reallocate water for agriculture to urban use was met with the following retort by a farmer: "Last time I looked, you couldn't eat a computer chip." Associated Press, *Water Forum Produces Rural-Urban Clash*, ALBUQUERQUE J. Aug. 26, 2003.

82. The NEW MEXICO WATER RESOURCE ATLAS, just recently released, fills another serious vacuum—the information gap. N.M. STREAM COMMISSION & N.M. OFFICE OF THE STATE ENGINEER, THE NEW MEXICO WATER RESOURCE ATLAS, available at <http://www.ose.state.nm.us/water-info/NMWaterPlanning/nmwateratlas.pdf> (last visited Oct. 8, 2003).

from-the-hip" mentality to serious issues just won't cut it in the twenty-first century.

C. The Regional Response

Although the State Water Plan is a relatively new strategy in New Mexico, sixteen regions have been actively engaged in regional water planning since the mid-1990s and there has been some coordination of land use permitting and water supply.⁸³ The most recent regional water plan to be accepted by the ISC is the Jemez y Sangre Regional Water Plan (covering the Santa Fe region from Espanola to Galisteo to Los Alamos), which predicts that the demand for water in that area could more than double by 2060.⁸⁴ The plan suggests six ways to meet future demand, including conservation, cutting growth, transferring agricultural water from northern New Mexico, transferring agricultural water from the south, allowing more domestic wells locally, and using water from the federal San Juan/Chama project. A hydrologist working on the plan has publicly stated that all of the alternatives are painful.⁸⁵

The Middle Rio Grande Regional Water Plan is being shepherded through an extensive public participation process called the Regional Water Assembly by an all volunteer organization created in 1997.⁸⁶ Volunteers have donated hundreds (perhaps thousands) of hours to public meetings and "community conversations" in the hope of building a consensus vision for the plan. The plan is expected to be completed by the end of 2003. The Middle Rio Grande Region covers a geographic area from the Otowi gauge on the north to Elephant Butte Dam on the south, a distance of about 200 miles. The Assembly prepared a water budget⁸⁷ in 1999 to translate the technical "jargon" for public consumption, anticipating that the public's input would be improved if they understand where the "wet" water comes from, where it goes and

83. N.M. STAT. ANN. § 47-6-11.2 (2003).

84. The Jemez y Sangre Regional Water Plan is available on the website of the consulting firm that assisted the community in its preparation, Daniel B. Stephens & Assocs., Inc., available at http://www.dbstephens.com/project_plans.php?plan_id=51 (last visited Oct. 8, 2003).

85. Ben Neary, *Report Predicts Severe Water Shortage*, NEW MEXICAN, May 5, 2003, at A1 ("[Amy] Lewis said, 'I think all the alternatives are pretty painful.'").

86. See Middle Rio Grande Water Assembly home page, at <http://www.waterassembly.org> (last visited Nov. 25, 2003) For a guarded assessment of the likelihood of the success of the effort, see John R. Brown, "Whisky's fer Drinkin', Water's fer Fightin'; Is It? Resolving a Collective Action Dilemma in New Mexico," 43 NAT. RESOURCES J. 185 (2003).

87. Action Committee of the Middle Rio Grande Water Assembly, Middle Rio Grande Water Budget (Where water comes from and goes, and how much) Averages for 1972-1997 (1999).

how much wet water there is in the region. The water budget clearly shows that today's water use is not sustainable because the current usage results in a 55,000-acre foot average deficit per year.⁸⁸

The Assembly, along with the MidRegion Council of Governments and Sandia Laboratory, developed an extremely user-friendly computer model that allows the public to manipulate variables to see how decisions today might impact the future.⁸⁹ Now the Assembly is considering the feasibility (including the technical, physical/hydrological/environmental, economic, legal, and social/cultural feasibility) of alternative actions before drafting the regional water plan.

The regional water planning processes occurring throughout the state are very good tools for educating the public and giving members of the public a forum to express their opinions, but whether or not any of these plans are capable of implementation remains to be seen. There is no statutory guidance for connecting the regional water plans with the local land use and development decisions made by city councilors and county commissioners. Furthermore, local government officials are under no "edict" to adopt the regional water plan or agree to conform local decision making to the "vision," goals, and policies that ultimately will find their way into the regional water plan. New Mexico has a long history and many bookshelves filled with plans that have not been implemented. The current danger Governor Richardson and other elected officials face with their emphasis on planning, public participation, collaboration, and coordination is that, if the plans remain on the shelf this time, the consequences may be greater than mere public disappointment.

88. *Id.* The pie chart for current water use in the region illustrates that evaporation from Elephant Butte Reservoir and other sources uses the most (38 percent); riparian use accounts for approximately 26 percent; irrigated agriculture uses approximately 19 percent; domestic use is about 11 percent; office, commercial, and industrial uses (6 percent).

89. A description of the computer model and the variables used in the model can be found in chapter 9, *Scenarios of Alternative Actions*, of the Middle Rio Grande Water Assembly's *Water Plan (2000–2050)*, available at <http://www.waterassembly.org/3WAPUB/pdfs/3PBCH9-3.pdf>. Some of the variables that can be manipulated include converting existing residences to low flow appliances, requiring new homes to have low flow appliances, converting existing homes to xeriscaping, requiring new homes to have xeriscaping, reducing the size of yards in new homes, price elasticity of demand, rooftop harvesting for existing and/or new construction, converting existing homes to on-site graywater use, requiring on-site graywater use for new construction, and many additional variables related to non-residential uses, the bosque, the San Juan/Chama diversion project, agriculture, reservoirs, desalination, drought, and potential transfers from other areas. *Id.*

D. Local Initiatives

Land use decisions have traditionally been exclusively local ones in New Mexico, as they have been in most states. New Mexicans thus expect that land and water issues will be linked, if at all, at the local rather than the regional, state, or federal level. Recent developments in Santa Fe are a case in point. Santa Fe's location and surviving charm have drawn people from all over the United States and the world for centuries, but it has very limited water supplies. It is, in fact, bumping up against those limits. To develop new housing, the city now requires that developers install low flush toilets in the new construction and retrofit between eight to twelve toilets per project, depending on the size of the new construction. Many conservationists and some city council members favored a more direct approach: the city should adopt a water budget and tie new building permits directly to the availability of water supplies. However, the development community argued that the adoption of a formal water budget would have a serious detrimental economic impact on the community.⁹⁰ A water budget was not adopted, but the "pull up the ladder" syndrome is strong in Santa Fe and a council recall is being discussed in the community.⁹¹

In the hope that an informed public will make better conservationists and support some future, tough growth management decisions, the city publishes a weekly online water report about the condition of the city's public wells, consumption, demand, and reservoir levels. Recently, Santa Fe declared a Stage 3 Drought Emergency.⁹² Water restrictions were increased, including no car washing at residences and once a month only at car washes. Outdoor watering is limited to one irrigation per week, and no new grass seed may be planted. Swimming pools must be covered when not in use.

Albuquerque is also moving to consider direct ties between water supply and growth. The New Mexico Public Interest Group (NMPIRG) and others have asked public officials to consider a conservation ordinance that includes a water budget to tie new

90. Dan Frosch, *The Building Block*, SANTA FE REP., Sept. 4, 2002. (The Santa Fe Home Builders Association has 700 members and claims that construction accounts for 25 percent of the city's economic base.)

91. Maria Luisa Tucker, *Environmental Outrage: Supporters of a water budget aren't ready to accept defeat*, SANTA FE REP., Sept. 4, 2002 (Science writer George Johnson observed, "it's hard to be gung ho about conserving water when the water is going to new development." In the same article, Doug Micklejohn, executive director of the New Mexico Environmental Law Center, argued that it was unrealistic to expect Santa Fe to acquire the water supplies necessary to sustain unlimited demand. "The real issue that needs to be addressed is growth.").

92. See www.sfwatercrisis.org/discuss/archives/000079.html.

developments to wet (as opposed to paper) water supplies.⁹³ As in Santa Fe, the development community strongly opposes making the formal connection, and a compromise ordinance drafted by the mayor's office has eliminated the water budget. Instead, the administration relies on voluntary incentives to encourage conservation and argues that progress to date is a "national milestone."⁹⁴ The incentives include rebates for those who convert from high to low use toilets and washing machines and from midwestern landscapes to xeriscapes as well as for those who install rainwater harvesting barrels and hot water recirculating systems.

The City of Albuquerque has embarked on a bold new path some refer to as a new paradigm for growth. Historically, the city has acted as a growth facilitator. Wherever and whenever the development community wanted to build, city leaders almost always gave the green light and then scurried to keep pace with the necessary infrastructure and public services needed to support the growth, including the water utility system. After years of trying to keep up, the city taxpayers are now saddled with more than a \$1 billion dollar backlog of rehabilitation for streets, water, sewer, and parks. In addition, there is an estimated \$750 million dollars in needed infrastructure investment.

The new paradigm adopted by the city council in the fall of 2002, known as the Planned Growth Strategy⁹⁵ (PGS), requires the city to step into the driver's seat and provide incentives and inducements to encourage the public sector to build where it is most efficient and fiscally-prudent for the community to serve. The PGS won't stop growth, or even slow growth, as some detractors argue,⁹⁶ but it provides new decision-making tools for responding to growth. Although the PGS does not establish an explicit annual quota on development (such as the point

93. WILLIAM COYNE & JEANNE BASSETT, NMPIRG, *WATER FUELS SPRAWL: AN ANALYSIS OF WATER TRANSFERS AND INEFFICIENT GROWTH IN NEW MEXICO* (2002) recommends, inter alia, that growth management and water planning be connected, that conservation focus on urban demand management to reduce the need for transfers, that increased attention be given to the prevention of adverse third impacts, and that the transfer process be made more open.

94. City of Albuquerque, Water Conservation Office, at <http://www.cabq.gov/water-conservation/index.html> (last visited Sept. 28, 2003). The city claims that the "extraordinary response to incentive programs" has resulted in a 30 percent decrease in water use in the city. However, the numbers have been questioned by both NGOs and city council members.

95. City of Albuquerque & Bernalillo County, *Planned Growth Strategy*, at <http://www.cabq.gov/council/pgs.html> (last visited Sept. 28, 2003) (One of the authors, Lora Lucero, participated on the PGS consulting team.).

96. Jim Ludwick, *Mayor Chavez to Join in City Council Campaigns*, ALBUQUERQUE J., Apr. 29, 2003 ("This anti-growth, anti-business policy of the City Council will stop, or I will govern by veto for the rest of my term....I'm going to start drawing some very serious lines in the sand." Chavez said.).

system set up in Petaluma⁹⁷ in the mid-1970s, which the court found was valid), nor does it recommend an urban growth boundary (UGB), such as those pioneered in Oregon); it does challenge the "old" way of doing things and makes many people uncomfortable. However, three components in the PGS will help link a growing population with diminishing water supplies. First, a concurrency review⁹⁸ is recommended to ensure that adequate facility capacity exists (or will be built within a reasonable time) to support the proposed development. In the case of water supplies, this should mean both the pipes in the ground as well as sufficient water rights to support the new development. Second, connecting the city's capital improvement program (CIP) to the priorities in the PGS—taking care of the backlog of rehabilitation projects, correcting deficiencies, and providing facilities and infrastructure to support growth.⁹⁹ Third, the city will soon be establishing an impact fees program¹⁰⁰ that will require developers to pay fees to build the public improvements needed to support growth. The fees will be set at the full "marginal" cost of growth, meaning that where it is more expensive to build facilities, the fees will be higher. The PGS recommends a "tiered system" or three separate areas in which public facilities and infrastructure will be provided at variable costs, depending on the location: the fully served area (where the infrastructure already exists), the partially served area, and the unserved area. Therefore, new development that proposes to locate in areas of the city where the water utility lines exist will pay less than new development that wishes to build in the "unserved area."

Albuquerque's growth management initiative appears to have suffered a serious setback in 2003. Bernalillo County officials caught the city off guard by pushing a new law through the state legislature that strips the city of its extra-territorial land use authority in the five mile "donut" surrounding the city.¹⁰¹ Companion legislation created a new joint city-county water and wastewater board, stripping Albuquerque of exclusive control of its water and sewer service.¹⁰² This new legislation

97. *Construction Indus. Ass'n of Sonoma County v. City of Petaluma*, 522 F.2d 897 (9th Cir. 1975).

98. ARTHUR C. NELSON & JAMES B. DUNCAN, *GROWTH MANAGEMENT PRINCIPLES & PRACTICES* (1995).

99. See *City of Albuquerque, Introduction and Process*, <http://www.cabq.gov/cip/planning/intro.html> (last visited Nov. 25, 2003). In the old paradigm, the CIP represented a "wish list" of capital needs but was disconnected from the plans and policies for growth.

100. The New Mexico Development Fees Act, N.M. STAT. ANN. § 5-8-1 (Michie 1978) authorizes impact fees for water supply, treatment, and distribution facilities.

101. S.B. 241, 2003 Leg., 46th Sess. (N.M. 2003) (N.M. STAT. ANN. § 3-21-2 was amended and signed Apr. 14, 2003).

102. S.B. 887, 2003 Leg., 46th Sess. (N.M. 2003).

illustrates the split between urban and less urban governments regarding the best growth management strategy to follow and undermines the city's tentative but important efforts to link water and urban growth. Ultimately, these differences in growth philosophy will have to be resolved at the state level.

IV. THE MUNICIPAL SUPER-PREFERENCE

New Mexico's new water and land use initiatives are symptomatic of the fundamental change that is occurring in many places in the West. California is leading the way in making future urban growth dependent on the existence of firm, long-term water supplies.¹⁰³ These efforts add new and important elements to state water and land use planning and regulation, but water availability in the West will not be a major urban growth inhibitor because of the perpetual growth bias in water law. This bias will assure that urban areas will be the major winners in post-dam-construction-era water policy, which is based primarily on the reallocation of existing supplies and aquatic ecosystem restoration.¹⁰⁴ Development may become more difficult and costly in some places. In others, it may be delayed or be more concentrated until the requisite guaranteed water supply is in place, depending on the available total developed water in a state and the strength of competing demands. The delays will include mitigation of the environmental and third party impacts of water transfers. The question is how helpful the bias will be for water-stressed New Mexico.

A. The Super-Preference in the Western United States

Cities have thrived in the West in part because prior appropriation, originally designed for an irrigation and mining society, is an ideal law for urban expansion. It is a use-based rather than land-based system of property rights that allows the last possible amount of a stream to be diverted far from the watershed of origin, as California and Colorado have demonstrated. Water may be used any place to which it

103. In 2001, California passed legislation that prohibits approval of tentative subdivision maps, parcel maps, or development agreements for a subdivision of more than 500 units unless there is a "sufficient water supply." CAL. GOV. CODE § 66473. The legislation also requires cities and counties to prepare detailed "water supply assessment reports" as part of the environmental review process for various types of large development projects. Other areas are considering a formal link between water supply and land use planning.

104. See A. Dan Tarlock, *We Are All Water Lawyers Now: Water Law's Potential but Limited Impact on Urban Growth Management*, in *WET GROWTH: SHOULD WATER LAW CONTROL LAND USE?* (Craig Anthony (Tony) Arnold ed., forthcoming 2004).

can be transported within a state.¹⁰⁵ A water right is perfected simply by diverting water and applying it to a beneficial use. The law has turned a potentially scarce resource into an open access commons.¹⁰⁶ Rights are allocated by priority. In times of shortage, there is no pro rata curtailment. Junior rights must cut back so that senior right holders will obtain the full amount of their rights. Holders of senior rights are entitled to take the full amount of their rights regardless of the comparative efficiencies of junior and senior uses. These rules were generously applied to cities, although in theory priority gives rural areas considerable legal and political power since their rights are generally superior to later urban rights. In general, priority's bark is often worse than its bite, although in any given situation it can be invoked and a municipality may bear the cost.¹⁰⁷ The strict enforcement of priorities is less likely to be applied against municipalities, or when it is they can

105. Ironically, many states have imposed statutes that prohibit or restrict the export of water across state lines. Export prohibitions are unconstitutional discrimination against interstate commerce, but statutes that prefer in- to out-of-state users may be constitutional. *Sporhase v. Nebraska*, 458 U.S. 941 (1982).

106. In late 2002, the Director of the Imperial Irrigation District, which was faced with great pressure to approve a rural-urban transfer, defended the District's refusal to sell water, acquired from the federal government for a \$15.50 per acre-foot delivery fee, for \$248.00 per acre-foot, on the ground that "[w]e own the water." Rudy Yniguez, *Horne: Valley Owns the Water*, IMPERIAL VALLEY PRESS, Dec. 19, 2002.

107. *City of Barstow v. Mojave Water Agency*, 5 P.3d 853 (2000), is an example of the potential impact of priority enforcement on urban areas. For a prescient defense of the Supreme Court's holding, see Rebecca Sugerman, *The Mojave Basin Physical Solution: It's a Good Idea, But Is It Good Law?*, 6 HASTINGS W.-N.W. J. ENVTL. L. & POL'Y 307 (2000). In brief, the Mojave River basin in southern California is a severely over-drafted groundwater basin. After a lengthy negotiation, the trial court imposed a physical solution, much like compulsory unitization is imposed on holdout oil and gas pumpers, on all pumpers after over 80 percent of the basin water users agreed to it. Under the solution, pumpers were assigned a free production allowance; pumping in excess of the allowance was subject to a charge dedicated to the purchase of replacement water. California groundwater law divides rights among overlying, appropriative, and prescriptive. Overlying owners have priority over non-overlying users; non-overlying users may obtain appropriative rights only if there is surplus water—water in excess of safe yield. Non-overlying pumpers can also obtain prescriptive rights. These rules are difficult to administer, in large part because most groundwater basins are overdrafted, and in the past the courts have preferred basin-wide solutions that equitably distribute the burden of limiting groundwater use to safe yield among all basin users. The Mojave settlement pitted large municipal users against alfalfa and dairy farmers who decided to stand on their "prior" overlying rights, and the California Supreme Court held that trial courts lack the authority to impose a physical solution on holdout overlying pumpers, which alters their pre-existing rights. "[I]t is clear that a trial court may impose a physical solution to achieve a practical allocation of water to competing interests, [but] the solution's general purpose cannot simply ignore the priority rights of the parties asserting them." The court's reluctance to impose the solution on the holdout farmers appears to be based on the conclusion that it was inequitable to deprive the farmers of their prior water rights because the payment of replacement waters would be a hardship to them. *Barstow*, 5 P.3d at 869.

buffer themselves from it. Equity and efficiency aside, it is unlikely that it will be politically acceptable to ration water to large municipalities based on the strict enforcement of priorities.¹⁰⁸

One reason that cities do not feel the brunt of priority enforcement is that they have the power, the financial capability, and the legal authority to acquire large reserves to buffer them against drought. Special doctrines largely exempt cities from the anti-monopoly principle that water rights cannot be held for speculative purposes. Anti-speculation rules seek to ensure that water rights are as widely distributed as the available supply will permit among those who have the present ability to put water to beneficial use. Prior appropriation was initially rooted in the vision of western settlement through small farms and there has always been a strong anti-monopoly rhetoric in the law. Water can only be used for beneficial purposes, and rights depend on the actual application of water to beneficial use. Cities have largely been exempt from any possible limitations. Under the progressive growth doctrine, a claimant can perfect a water right based on expected anticipated need for the water.¹⁰⁹ Cities enjoy an even larger exemption from the anti-speculation principle under the growing cities doctrine, which, like the progressive growth doctrine, allows cities to perfect a water right to the amount of water that they will need to meet reasonably anticipated future growth.¹¹⁰ The growing communities doctrine, for example, allowed cities to appropriate water to meet the anticipated future capacity of its system.¹¹¹

108. This point has been developed at greater length in A. Dan Tarlock, *Prior Appropriation: Rule, Principle, or Rhetoric?*, 76 N.D. L. REV. 881 (2000).

109. See, e.g., *City & County of Denver v. Sheriff*, 96 P.2d 836 (Colo. 1939); *City & County of Denver v. Northern Colo. Water Conservancy Dist.*, 276 P.2d 992 (Colo. 1954); *Thornton v. Bijou Irrigation Co.*, 926 P.2d 1, 29-30 (Colo. 1996). For a discussion of the evolution of the adaptation of the Colorado water of municipal water rights to Eastern Slope growth, see Malcolm Lindsey, *Legal Problems in City Water Supply*, 22 COLO. L. REV. 356 (1950). See also *Reynolds v. City of Roswell*, 654 P.2d 537 (1982); *State Dept. of Ecology v. Theodoratus*, 135 Wash. 2d 582, 957 P.2d 1241, 1257-58 (1998) (Sanders, J., dissenting); Janis E. Carpenter, *Water for Growing Communities: Refining Tradition in the Pacific Northwest*, 27 ENVTL. L. 127 (1997); Dennis J. Herman, *Sometimes There's Nothing Left to Give: The Justification for Denying Water Service to New Customers to Control Growth*, 44 STAN. L. REV. 429 (1992); A. Dan Tarlock & Sarah B. Van de Wetering, *Growth Management and Western Water Law: From Urban Oases to Archipelagos*, 5 HASTINGS W.-N.W. J. ENVTL. L. & POLICY 163 (1999).

110. See, e.g., *State ex rel. State Eng'r v. Crider*, 431 P.2d 45 (N.M. 1967); *St. Onge v. Blakeley*, 245 P. 532 (Mont. 1926).

111. However, the Washington Supreme Court has limited the reach of this doctrine by holding that actual application to beneficial use rather than capacity of a private municipal water system is the measure of the water right. *State Dept. of Ecology v. Theodoratus*, 957 P.2d 1241 (1998). The court left open the issue of whether the holding applies to municipal water suppliers. The growing communities doctrine was strongly endorsed in the dissenting opinion. *Id.* at 1257-58 (Sanders, J., dissenting). For another example of judicial

Water law doctrines have been complemented by public utility law. Municipal water suppliers are generally either public utilities under state law or subject to judicially imposed public utility duties.¹¹² The primary duty that drives growth accommodation is the duty to serve. Public utilities have a duty to serve all customers within a service area provided that the system as a whole can absorb the cost and still yield a reasonable rate of return. They also have a duty to acquire the necessary supplies to accommodate anticipated growth.

B. The Super-Preference in New Mexico

New Mexico law and municipal practice illustrates the super-preference at work, but the state's constrained supplies make it less likely that cities will enjoy this advantage to the extent that they have in the past. The doctrine was originally posited as a modest extension of the rule that an irrigator's right was fixed by the amount originally put to beneficial use.¹¹³ New Mexico adopted it in *State v. Crider*¹¹⁴ with little discussion of its potential variance with New Mexico and western water law. Irrigators in the Roswell basin objected to a decree that limited their use to the amount of water put to beneficial use but decreed municipal rights based on well capacity. The court traced the origin of the doctrine to the Wiel and Kinney treatises, which asserted that an irrigator had a right to claim sufficient water for the "reclamation of the entire area owned at the time" a diversion is contemplated. The court saw "no reason why the rule should not apply to the future use of water by cities intended to satisfy needs resulting from normal increase in population."¹¹⁵ The formulation is not an unlimited license to appropriate, as the water must be actually applied to beneficial use within a reasonable period of time. Subsequent cases extended it, even

willingness to limit water rights to actual use, see *San Carlos Apache Tribe v. Superior Court ex. Rel. County of Maricopa*, 972 P.2d 179 (Ariz. 1999) (statute that mandates the use of maximum theoretical capacity violates the doctrine of separation of powers because it prevents a court from basing a decree on a factual determination of the amount of water actually diverted or stored).

112. *Reid Dev. Co. v. Township of Parsipanny Troy Hills*, 89 A.2d 6674 (N.J. 1952).

113. 1 SAMUEL C. WIEL, *WATER RIGHTS IN THE WESTERN STATES* §§ 483-485a (3d. ed 1911). The principle that an appropriator could appropriate water for future needs was seen as an extension of classic, possession-based, prior appropriation and justified by Wiel as necessary to allow an appropriator to clear additional land for irrigation without having to risk that the water would not be available as a result of intervening appropriations. Courts did not always recognize the claim; the right was limited in many ways and Wiel warned of its riparian characteristics. The future needed amount had to be claimed at the time of the appropriation, the enlargement could not exceed the original ditch, and the future amount could only be held for a reasonable time.

114. 431 P.2d 45 (1967).

115. *Id.* at 49.

over the objections of State Engineer Reynolds,¹¹⁶ but the doctrine is not without limits. The Tenth Circuit Court of Appeals held that Albuquerque's storage of San Juan/Chama water for 40 years was not a beneficial use due to evaporation losses.¹¹⁷ As a result, Albuquerque has had to lease its entitlement or pay the United States for the subsequent right to use.

Formal legal preferences aside, cities have benefited from the law of prior appropriation. Prior appropriation developed as a law of irrigation water rights, but the drive for security allowed all states, except perennial outlier Colorado, to use their administrative allocation regimes to develop sufficiently firm property rights to encourage investment. Once most states abandoned the romantic notion of a permanent irrigation society and modified or rejected the appurtenancy rule, the result was an alienable property right. The correlative right of appropriative rights raised the transaction costs of transfer, but in most states they were not excessive. Albuquerque was able to purchase senior irrigation rights, lease them back, and avoid the transfer process since there was no change of use or point of diversion.¹¹⁸

Cities also enjoy a similar super-preference to use ground water, which has allowed urban areas such as Albuquerque to mine ground water in the face of stringent conservation efforts. The strategy of mining the aquifer, replenishing it from the Rio Grande, and in turn replenishing the "Great River" with San Juan/Chama water is not sustainable. The initial drama of New Mexico water law was the state's effort to manage the depletion of the mining of the Roswell basin.¹¹⁹ This effort led to the creation of designated underground basins and, until Arizona was forced to adopt a major groundwater conservation regime in 1980, New Mexico's management of ground water was the western conservation model because it was the first state to effectively administer ground and surface water rights.¹²⁰ Efforts by former State Engineer Steve Reynolds

116. *State ex rel. Reynolds v. Rio Rancho Estates, Inc.*, 624 P.2d 502 (1981). The court held that a private water supplier was entitled to a Mendenhall water right to use water in the designated Rio Grande Underground Basin and further held that, under the growing cities doctrine, the state engineer could not limit the right to the size of the well casing installed to test the well. *Reynolds v. City of Roswell*, 654 P.2d 537 (1982), held that the state engineer could not deny a city the right to change the place or purpose of its use of sewage effluent acquired from a former air base. The court both invoked the settled Colorado law that irrigators have no right to rely on a fixed point of effluent return, *Metropolitan Sewage v. Farmers Reservoir & Irrigation Co.*, 499 P.2d 1190 (1972), and the city's future use is a legitimate constraint on conditions imposed by the state engineer.

117. *Jicarilla Apache Tribe v. United States*, 657 F.2d 1126 (10th Cir. 1981).

118. Lawrence J. Macdonell, *The Water Transfer Process as a Management Option for Meeting Changing Demands*, 6 (U.S. Geological Survey Grant 14-08-0001-G1538 1990).

119. IRA G. CLARK, *WATER IN NEW MEXICO* 233-42 (1987).

120. *Templeton v. Pecos Valley Artesian Conservation Dist.*, 332 P.2d 465 (1958).

to practice conjunctive management in the Rio Grande basin were initially opposed by Albuquerque's elite, but after Reynolds prevailed in the courts, he ultimately convinced the proponents of growth that conjunctive management promoted stable rights and was not a barrier to pumping.¹²¹ Coordination allowed Albuquerque to develop a well field, which became the city's sole source of supply, by retiring surface rights in the over-appropriated Rio Grande.¹²² However, the city has now exhausted its groundwater supplies and since 1997 has relied more and more on the over-appropriated and contested Rio Grande. In retrospect, coordination did not lead to effective, sustainable groundwater conservation. Instead, it provided a firm legal framework for Albuquerque to continue to grow in response to in-migration. However, the surface right retirement requirement forced the city to link its growth to state water policies and provided an important precedent for more sustainable urban growth water supply links.

Conjunctive management is becoming more difficult as the state engineer is setting more stringent off-set requirements in the Middle Rio Grande. Primarily to protect the flow of the Rio Grande and existing rights, the state engineer closed the Middle Rio Grande Administrative Area to new appropriations in 2000.¹²³ In 2001, the state engineer approved a groundwater application from Rio Rancho, north of Albuquerque, to increase its appropriation from 12,000 to 24,000 acre-feet per year. Rio Rancho projected a 100,000 increase in population by 2040 over its current population of some 51,000 and projected that it would exhaust its existing water rights between 2005 and 2007. This projected growth and the requested appropriation led the state engineer to

121. HALL, *supra* note 39, at 113-15.

122. City of Albuquerque v. Reynolds, 379 P.2d 73 (1963).

123. N.M. STATE ENGINEER, MIDDLE RIO GRANDE ADMINISTRATIVE AREA GUIDELINES FOR REVIEW OF WATER RIGHTS APPLICATIONS (2000). For a detailed analysis of the state's timed mining and surface water flow protection policy, see Celina A. Jones, *The Administration of the Middle Rio Grande Basin: 1956-2002*, 42 NAT. RESOURCES J. 939 (2002). See also USGS, GROUND-WATER RESOURCES OF THE MIDDLE RIO GRANDE BASIN, NEW MEXICO, CIRCULAR 1222 (2002). Domestic wells are exempted because it was assumed that their impact on long-term available supplies was minimal. This minor domestic use preference is now a source of considerable unregulated water use because of their cumulative impact. One state, Washington, has moved to close this increasingly dysfunctional exemption. *State Dept. of Ecology v. Campbell & Gwinn, L.L.C.*, 146 Wash. 2d 1, 43 P.3d 4 (2002), holds that the Department of Ecology correctly interpreted the state's water rights statute to exclude large subdivisions from the domestic well exemption. WA. ST. 90.44.050 exempts withdrawals under 5000 gallons per day (gpd) and the Department of Ecology ruled that the entire subdivision was entitled to one 5000 or less gpd well or it must file for ground or surface water rights. Applying an expanded plain meaning rule that permits reference to closely related statutes and legislative purposes, the court concluded that "the Legislature did not intend unlimited use of the exemption to for domestic uses, and did not intend that water appropriation for...[subdivision] uses be wholly unregulated."

conclude that "[i]t would impair the existing rights and be contrary to the conservation of water in the State of New Mexico if a permit were issued without certainty" that city would be able to obtain the necessary off-set rights to preserve Rio Grande and Jemez river flows.¹²⁴ For the first time, the state engineer conditioned an appropriation on the city actually obtaining and transferring all off-set rights prior to the actual impacts on surface rights and river flows.¹²⁵ In addition, the city must have an approved return plan before it can receive an off-set credit.

Rio Rancho is an example of the increasing recognition that realistic water supply planning should be done before urban growth occurs. California has increasingly shifted the responsibility to local water suppliers and developers to have reliable plans in place, and proposed legislation would impose greater duties on local governments to assess available and needed water supplies in their land use plans. The problem is that this seems to treat new water use as a zero sum game. It will be very difficult, if not impossible, to meet this condition. Thus, the city must ultimately reevaluate its growth projections or devise an alternative water supply strategy. The latter is the more likely but New Mexico law provides opportunities to consider the first.

C. Counter-Pressures to the Super-Preference

One may assert with confidence that the end of the federal dam-building era heightens rather than lessens competing demands for water. One manifestation of diffused power is the new pressure to keep the water in the watershed of origin. These new "in place" claims include environmental claims and Indian reserved rights claims, as well as local community and irrigation district opposition to transfers because of a fear of loss of power and culture. The fate of a proposal to divert water from the mouth of two small North Coast rivers in California for shipment to San Diego in polyfiber bags is a classic example of the increased transaction costs imposed by environmental requirements. The company, Alaska Water Exports, filed a state water rights application, but the diversion facility also required approval from the California Coastal Commission, which unanimously rejected the proposal. Alaska Water Exports quickly withdrew its state water rights application because it could not afford the estimated \$2,000,000 for the environmental studies necessary to construct the hydrological models

124. In the Matter of the Application of the City of Rio Rancho for Permit to Appropriate Water and Drill New Wells, Hearing No. 97-004, OSC File No. RG-6745 through RG-6745-S-34.

125. AM. BAR ASS'N, SECTION ON ENVIRONMENT, ENERGY, AND RESOURCES, ENVIRONMENT, ENERGY, AND RESOURCES LAW: THE YEAR IN REVIEW 2001 170 (2002).

and environmental baseline against which the diversion could be measured.¹²⁶ Out-of-basin diversions remain a major issue in many basins, large and small. These problems are well known in New Mexico. New Mexico's surviving acequia communities have used and will continue to use the transfer process to oppose transfers that threaten to eliminate traditional people-to-land connections.¹²⁷ Efforts to preserve the remnant population of the silvery minnow are an illustration of the pressures to balance sufficient base flows to sustain aquatic ecosystems with urban use.

V. CONCLUSION: SUSTAINABLE CITIES OR ARCHEOLOGICAL SITES

As Western cities come to grips with limited supplies, the role of local and state governments in promoting more sustainable growth will be a new chapter in the history of western water law and land use law. Out of necessity, water supply and growth will need to be better coordinated. Coordination does not mean "no growth," but it may mean slower growth in highly water stressed areas like New Mexico. The cost of urban water is likely to increase as more interests and an increasing population in the West compete for a relatively fixed, even perhaps diminished, pie through demand management and mandated technology. Increasingly, water markets rather than federal and state water development projects will determine the allocation of scarce supplies.¹²⁸ However, these will be highly constrained or imperfect markets because of the complexity of legitimate alternative demands. Local governments and developers must become more active participants in federal and state water policy decisions by providing greater leadership and conservation initiatives. This process is already underway but time will tell whether the Rio Grande Valley will become an example of a sustainable society living within the limits of aridity or a subject of study for students of ancient history and archaeology. New

126. *Water Grab Over for Now*, MENDOCINO BEACON (2002).

127. David Benavides, *The Social Costs of Moving Water in Northern New Mexico* (paper presented at University of Colorado School of Law, Natural Resources Law Center Conference, Water and Growth in the West) (June 6-9, 2000). For a rather romantic view of these remnant communal cultures, see JOSE R. RIVERA, *ACEQUIA CULTURE: WATER LAND AND COMMUNITY IN THE SOUTHWEST* (1998).

128. Ironically, water markets are the consequence of the Bureau of Reclamation's post-World War II abandonment of its original Jeffersonian vision of transforming the West into a region of family farms in favor of support for large-scale agribusiness. This thesis is well articulated in Donald J. Pisani, *Federal Water Policy and the Rural West, in THE RURAL WEST SINCE WORLD WAR II* 119 (R. Douglas Hunt ed., 1998). The concentration of water rights in larger hands makes the holders more economically rational and willing to sell and reduces the *relative* transaction costs of transfer.

Mexico would do well to adapt the legacy of the late Steve Reynolds as it charts its future: a well administered system of water allocation tied both to hydrologic reality and sound planning serves all the citizens of the state.