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## The Federal Role in Managing the Nation's Groundwater

By John D. Leschy<sup>1</sup>

### I. Introduction

Groundwater is increasingly important to the nation. Groundwater withdrawals for irrigation have tripled in the last half-century. Moreover, as an ever-growing segment of the population get their drinking water from public entities (62% in 1950; 85% today), the portion of public water supplies derived from groundwater has increased from 26% to 37%.<sup>2</sup>

Groundwater nevertheless remains a subject about which "misinformation, misunderstanding, and mysticism"<sup>3</sup> abound, and the law that governs it is murky.<sup>4</sup> Most of the governing law is state law, for the separate states have generally assumed primary responsibility for managing the nation's groundwater.<sup>5</sup> But "primary" does not mean "exclusive." The federal government has a large amount of authority in this area, and has on occasion exercised it, albeit with mixed results, as this article will discuss.

1. Harry Sunderland Distinguished Professor of Law, U.C. Hastings College of the Law. This paper grew out of remarks delivered in June 2004 at the 25<sup>th</sup> summer conference of the Natural Resources Law Center at the University of Colorado School of Law. I benefited from able research assistance by Chris Giovinazzo, a third year student at Harvard Law School, and able editorial advice from Avinash Kar.

2. SUSAN S. HUTSON ET AL., U.S. GEOLOGICAL SURVEY, ESTIMATED USE OF WATER IN THE UNITED STATES IN 2000, CIRCULAR No. 1268, at Trends in Water Use, 1950-2000 (released March 2004, last revised May 2004), available at <http://water.usgs.gov/pubs/circ/2004/circ1268> (last updated 13 May, 2004); see also JOSEPH L. SAX, BARTON THOMPSON, JR., JOHN D. LESHY & ROBERT ABRAMS, LEGAL CONTROL OF WATER RESOURCES 345 (3rd ed. 2000).

3. See NATIONAL WATER COMMISSION, WATER POLICIES FOR THE FUTURE 230 (1973) [hereinafter WATER POLICIES FOR THE FUTURE].

4. See generally SAX ET AL., *supra* note 2, at 343-459.

5. *Id.* at 345.

State law generally has not been adequate to the task of managing the nation's groundwater. Professor Glennon has recently documented many emerging problems, mostly stemming from inadequate state laws and management.<sup>6</sup> As population growth, drought and the specter of climate change are all bringing water management under new scrutiny across the country, a fresh examination of the national government's role with respect to groundwater seems appropriate. The first part of this essay identifies the various ways the federal government can influence groundwater management. Building on examples of successful federal interventions, the second part suggests ways it should exercise that influence.

## II. Federal Authority Over Groundwater

Generally speaking, the federal government does not lack for constitutional authority to regulate or otherwise influence groundwater management and use. The Supreme Court's 1982 decision in *Sporhase v. Nebraska*<sup>7</sup> made clear that the Commerce Clause gives Congress "affirmative power . . . to implement its own policies concerning [groundwater] regulation. . . . Ground water overdraft is a national problem and Congress has the power to deal with it on that scale."<sup>8</sup>

### A. Federal reserved water rights

The Commerce Clause and the Property Clause both furnish the national government with the authority to create federal-law-based property rights in groundwater under the so-called *Winters* doctrine of federal reserved water rights.<sup>9</sup> The issue that occasionally arises is whether, in any given situation, this authority has been exercised. In its only brush with such a question, the Court in 1976 decided, in *Cappaert v. United States*,<sup>10</sup> that the federal government had exercised its authority to reserve water in what everyone agreed was an "underground pool." Oddly, the Court shrank from characterizing that water as groundwater as the Ninth Circuit had,<sup>11</sup> calling it instead surface water.<sup>12</sup>

Lower court post-*Cappaert* decisions on whether the federal government has reserved groundwater in particular instances have not been consistent. The Wyoming Supreme Court found no reservation in its *Big Horn* decision,<sup>13</sup> justifying its conclusion with a decidedly weird explanation. It first said that "the logic which supports a reservation of surface water to fulfill the purpose of the reservation also supports reservation of groundwater."<sup>14</sup> It then said, without further explanation, that because no final judicial decision had accepted this logic in a holding (the Supreme Court's dodge in *Cappaert* having wiped out the Ninth Circuit's decision), it would affirm the trial court's ruling that groundwater had not been reserved here.<sup>15</sup>

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

7. 458 U.S. 941 (1982).

8. *Id.* at 953-54.

9. *See Winters v. United States*, 207 U.S. 564 (1908); *see also Arizona v. California*, 373 U.S. 546, 597-98 (1963) (expressing "no doubt about the power of the United States under these clauses to reserve water rights for its reservations and property").

10. 426 U.S. 128 (1976).

11. *See United States v. Cappaert*, 508 F.2d 313, 317 (9<sup>th</sup> Cir. 1974).

12. 426 U.S. at 142.

13. *In Re General Adjudication of Big Horn River System*, 753 P.2d 76 (Wyo. 1988), *aff'd* by an equally divided Court *sub nom. Wyoming v. United States*, 492 U.S. 406 (1989).

14. 753 P.2d at 99-100.

15. *Id.*

More recently, the Arizona and Montana Supreme Courts, using more persuasive reasoning, have disagreed with Wyoming.<sup>16</sup> Further, Congress itself has acted on the assumption that at least some Indian tribes have federally reserved rights to groundwater, because a number of congressionally approved settlements of Indian water rights have expressly included groundwater as well as surface water.<sup>17</sup> Sometimes Congress has demonstrated this assumption by doing the opposite, i.e., by expressly authorizing the pumping of groundwater from inside a federally protected area for use outside the reservation under certain conditions.<sup>18</sup>

Professor Dan Tarlock concludes that while the issue is “technically open,” in his judgment “little, if any, doubt remains that Indian tribes have groundwater as well as surface water rights.”<sup>19</sup> It is perhaps a little less clear whether this is true for other kinds of federal reservations such as national parks.<sup>20</sup>

Regardless of whether the federal reserved water right extends to groundwater in any given situation, the *Cappaert* decision establishes the very important principle that “the United States can protect its water from subsequent diversion, whether the diversion is of surface or groundwater.”<sup>21</sup> The water Cappaert was pumping was clearly considered ground-

water under Nevada water law,<sup>22</sup> and the Court curtailed his pumping to protect the superior federal water right in the “underground pool” that was the pupfish’s sole habitat.<sup>23</sup> At the least, then, the Court has made clear that the federal government can create federal water rights that trump groundwater pumping lawful under state law. Put slightly differently, when federal reserved rights exist, federal law provides for a realistic accounting of interconnections between groundwater and surface water, even where state law does not.<sup>24</sup>

### B. Federal “non-reserved” water rights

The federal power to assert rights in groundwater does not have to be exercised through a conventional federal reserved *Winters* right. For example, Congress provided federal protection for the water — including the groundwater — that sustains a complex sand dunes ecosystem in the Great Sand Dunes National Park and Preserve Act of 2000,<sup>25</sup> not in association with a federal reservation of land, but through a “non-reserved” federal water right.<sup>26</sup> This is a right whose substantive contours are defined by federal law, but which must be perfected through the processes of state law.<sup>27</sup> I have elsewhere explored the differences between this and a federal reserved water right.<sup>28</sup>

16. *In Re General Adjudication of Gila River System*, 195 Ariz. 411, 989 P.2d 739 (Ariz. 1999), cert. denied sub nom. *Phelps Dodge v. United States*, 530 U.S. 1250 (2000); *Confederated Salish and Kootenai Tribes of the Flathead Reservation v. Stults*, 312 MONT. 420, 59 P.3d 1093, 1099 (2002).

17. *See, e.g.*, *Timbisha Shoshone Homeland Act*, Pub. L. No. 106-423, 114 Stat. 1875 (2000); *Zuni Indian Tribe Water Rights Settlement Act*, Pub. L. No. 108-34, 117 Stat. 782 (2003).

18. *See, e.g.*, 16 U.S.C. § 460z-9(a) (2000 & Supp. II 2003) [Oregon Sand Dunes National Recreation Area].

19. A. DAN TARLOCK, *LAW OF WATER RIGHTS AND RESOURCES*, § 9.41, at 9.80-9.80.1 (5<sup>th</sup> ed. 2002).

20. *See* Section IIC2

21. 426 U.S. at 143.

22. *See id.* at 133-35.

23. *Id.* at 132.

24. *See* SAX ET AL., *supra* note 2, at 443-46; John D. Leshy & James Belanger, *Arizona Law Where Ground and Surface Water Meet*, 20 ARIZ. ST. L.J. 657, 733-38 (1988).

25. Pub. L. No. 106-530, 114 Stat. 2527; 16 U.S.C. § 4210hhh-7(b)(2)(A) (2000).

26. For more on this, see John D. Leshy, *Water Rights for New Federal Land Conservation Programs: A Turn-of-the-Century Evaluation*, 4 U. DENV. WATER L. REV. 271 (2001).

27. *Id.*

28. *Id.*

### C. Questions about federal water rights

While the national government has the authority to create and protect property rights in groundwater as a matter of federal law, a number of important questions remain unanswered. For example:

1. Does the existence of a federal reservation of groundwater depend on whether groundwater is needed to fulfill the purpose of the reservation?

2. Could the answer be different in Indian and non-Indian contexts? The needs of Indian and non-Indian land reservations might not be congruent. Non-Indian federal reservations need groundwater mostly for *in situ* uses, to preserve surface waters and the ecosystems that depend on them. Indian reservations may need groundwater not only for these uses, but also for irrigation, municipal and industrial purposes. Dean Charlie Meyers suggested, for example, that a national park may have no reserved right in groundwater to meet its needs, while an Indian tribe does.<sup>29</sup>

3. If the federal right extends to groundwater as well as surface water, but both sources need not be relied upon to satisfy the federal need, should one be preferred over the other? In a rare judicial exploration of this issue, the Arizona Supreme Court suggested looking first to surface water to satisfy Indian water needs.<sup>30</sup>

4. Where federal and non-federal rights co-exist in a non- or minimally recharging aquifer, how should the aquifer water be apportioned? Does the federal right forestall any new pumping that could interfere with the federal reservation, or should the finite groundwater in the aquifer be shared between federal and non-federal users on

some sort of equitable basis? More than four decades ago, the Supreme Court rejected the states' argument for equitable apportionment of surface water between federal and non-federal users, saying a federal land "reservation is [not] so much like a State that its rights to water should be determined by the doctrine of equitable apportionment."<sup>31</sup> Would the Court reach the same result in the groundwater context?

5. What if non-federal pumping were already underway when the federal reservation was created? The Cappaerts had begun pumping only after the federal reservation was created.<sup>32</sup> Would the result be the same if they had been pumping first? What if the impact of their pumping on the underground pool was not apparent when the federal reservation was created, but became noticeable only some time later?

Will the answer be governed or influenced by state law? If so, the picture becomes even more cloudy. In a state applying the prior appropriation doctrine to groundwater, the sequence of appropriation may be a major factor in reconciling the federal right with rights created under state law. Priority is, however, irrelevant in determining rights among those who withdraw groundwater for use on the overlying land pursuant to the groundwater doctrines followed in many states, e.g., the rule of capture followed in Texas,<sup>33</sup> the American "reasonable use" rule followed in parts of Arizona and many other states,<sup>34</sup> and the correlative rights doctrine followed in California.<sup>35</sup> In these jurisdictions (which comprise a significant majority of American states), a late-comer may not be disadvantaged. Therefore, if the United States reserves land that needs

29. See Charles J. Meyers, *Federal Groundwater Rights: A Note on Cappaert v. United States*, 13 LAND & WATER L. REV. 377, 385-89 (1978).

30. See *Gila River*, 195 Ariz. 411, 420-21, 989 P.2d 739, 748-49 (2001).

31. *Arizona v. California*, 373 U.S. 546, 596-97 (1963).

32. See 426 U.S. at 133.

33. See *Sipriano v. Great Spring Waters of America, Inc.*, 1 S.W.3d 75 (Tex. 1999).

34. See *SAX ET AL.*, *supra* note 2, at 371-77.

35. *Id.* at 377-80.

groundwater for *in situ* use, it can make a credible case for some protection under state law, even against pumping initiated by others prior to the reservation.<sup>36</sup>

6. Perhaps the most important of the unanswered questions is whether the United States will have the political courage to assert federal rights to curtail or prohibit pumping under state law in controversial situations. In the late 1990s, a well-connected private entrepreneur proposed to pump groundwater near the Mojave National Preserve in southern California, and market it to urban users in metropolitan Los Angeles.<sup>37</sup> Although that scheme, referred to as the Cadiz project, was eventually abandoned when the Metropolitan Water District decided not to buy the water, others are on the drawing board. For example, Las Vegas has announced plans to pump and transport into the City groundwater from near a National Wildlife Refuge several miles northeast of the City.<sup>38</sup> Will the federal government assert a federal reserved right to protect groundwater necessary to maintain the Refuge, even if it might limit one means of supplying water to the fastest growing metropolitan area in the country? In such situations, how realistic is it to expect the federal government to aggressively protect the national interest in the Refuge? If it does not, there is considerable doubt that third parties can persuade the courts to intervene.<sup>39</sup>

36. See discussion, *infra* Section II.D.

37. See generally Cadiz Groundwater Storage and Dry-Year Supply Program (web-site sponsored by Cadiz, Inc.), at <http://www.desertwater.com/> (last updated Dec. 2003).

38. See generally the longer-range plans of the Southern Nevada Water Authority, available at [http://www.snwa.com/html/news\\_pubs\\_wr\\_plan.html](http://www.snwa.com/html/news_pubs_wr_plan.html) (last visited August 21, 2004).

39. *Heckler v. Chaney*, 470 U.S. 821 (1985) (federal courts are reluctant to interfere with federal agency law enforcement decisions); *Shoshone-Bannock Tribes v. Reno*, 56 F.3d 1476 (D.C. Cir. 1995) (same, specifically with regard to assertion of water rights claims on

In hindsight, *Cappaert* was a rather easy case: The facts were clear about the impact of pumping on the federal interest, an endangered species was involved,<sup>40</sup> and the rancher commenced pumping after the federal government had reserved the water in the pool. Where the impacts are less clear, the federal interest less certain, and the forces behind groundwater pumping more politically powerful, will federal law be brought into play, especially now that the Supreme Court has turned rightward and become more deferential to state water law?<sup>41</sup>

#### D. United States' claims of rights to groundwater under state law

Many states apply groundwater doctrines — principally American reasonable use and correlative rights (but not prior appropriation) — that give overlying landowners superior rights to groundwater against those who pump from the same source but seek to export the water, if the overlying landowners can show injury.<sup>42</sup> If an aquifer lies under both federal and non-federal lands, state law might allow the United States to protect the waters associated with its lands against export schemes such as those in the Cadiz or Las Vegas situations. I have suggested above that, especially outside the Indian context, the federal interest will often be to protect groundwater *in situ* to support surface ecosystems and water flows.

behalf of tribes); cf. *Trout Unlimited v. U.S. Department of Agriculture*, 320 F. Supp. 2d 1090 (D. Colo. 2004) (suggesting federal courts will scrutinize federal land management agencies' alleged failure to claim adequate water rights to protect a national park).

40. The Endangered Species Act itself was not involved, even though the pupfish had been listed under the Act, a fact noted by the lower courts but not the Supreme Court. See *United States v. Cappaert*, 375 F. Supp. 456, 460-61 (D. Nev. 1974); *United States v. Cappaert*, 508 F.2d 313, 316 (9th Cir. 1974).

41. See, e.g., *California v. United States*, 438 U.S. 645 (1978); *United States v. New Mexico*, 438 U.S. 696 (1978).

42. See SAX ET AL., *supra* note 2, at 371-80.

State law may be unclear on the extent to which it recognizes rights to groundwater *in situ*, for storage or ecological purposes, and whether ecological harm from groundwater depletion is the kind of “injury” that state law would recognize as sufficient to curtail groundwater pumping for export. Answering these questions in the affirmative may require stretching state law concepts of injury, and the attitude of the Wyoming Supreme Court in the *Big Horn* case<sup>43</sup> illustrates how some state courts may be reluctant to interpret state laws to accommodate and protect federal interests.

### E. Other federal regulatory policies may affect groundwater

The most prominent of these are found in the Endangered Species Act,<sup>44</sup> already the trigger for several major disputes involving groundwater pumping,<sup>45</sup> and the Clean Water Act.<sup>46</sup>

### F. Federal water contracting policies may affect groundwater

The U.S. Bureau of Reclamation (BOR) captures, stores, and delivers, under contract, large volumes of irrigation, municipal and industrial water throughout the West. The “rights” to this water are determined by an untidy amalgam of federal contract law, federal water law, and state water law.<sup>47</sup> A good deal of this federal reclamation project

water ends up as groundwater through seepage.<sup>48</sup> Are there federal rights in this federally enhanced groundwater?

The question, again, is not one of authority, but whether the federal government has chosen to exercise it. The Supreme Court long ago decided that the United States could recapture and reuse seepage water in a federal reclamation project.<sup>49</sup> Sometimes the federal government does claim rights in the enhanced groundwater, as in the Quincy-Columbia Basin in Washington, and the courts have agreed.<sup>50</sup> But the United States has not always made such claims. Indeed, some of BOR’s contracts expressly disclaim any right to groundwater recharged as a result of federally built and operated projects.<sup>51</sup>

Many BOR contracts go even further. At the behest of the agricultural interests it serves, BOR has often included a provision in its contracts that any land irrigated with groundwater which “reaches the underground strata as an *unavoidable result* of” irrigating lands with BOR-supplied water is not subject to the acreage limitations of federal reclamation law.<sup>52</sup> Reclamation law generally limits a single farmer’s use of federally subsidized water to a maximum of 960 acres;<sup>53</sup> the contract provision effectively allows farmers to irrigate an unlimited amount of acres with such water, simply by

43. See 753 P.2d 76; see also discussion, *supra* Section II.A.

44. See 16 U.S.C. §§ 1531-43 (2000 & Supp. II 2003).

45. See, e.g., the Edwards Aquifer saga, recounted in SAX ET AL., *supra* note 2, at 367, 577-82.

46. 33 U.S.C. §§ 1251-1387 (2000 & Supp. I 2002).

47. See SAX ET AL., *supra* note 2, at 651-89.

48. See *Jensen v. Department of Ecology*, 102 Wash. 2d 109, 685 P.2d 1068 (1984).

49. *Ide v. United States*, 263 U.S. 497, 505-07 (1924). The Court did not make clear whether that result was dictated by state or federal law

or both. Although *Ide* involved seepage which was recaptured while it was surface water, the same result could obtain with groundwater.

50. See SAX ET AL., *supra* note 2, at 437-46; *Jensen*, 102 Wash. 2d 109; *Flint v. United States*, 906 F.2d 471 (9th Cir. 1990).

51. For a review, see SAX ET AL., *supra* note 2, at 443-44.

52. See *id.* at 444 (emphasis added).

53. See 43 U.S.C. § 390dd, 96 Stat. 1265; Hamilton Candee, *The Broken Promise of Reclamation Reform*, 40 HASTINGS L.J. 657 (1989).

pumping it from an aquifer replenished by the federal project.

### G. Federal land use policies may affect groundwater

Groundwater use that is otherwise lawful under state law may also be affected by federal policies regarding the use of federal land.

Groundwater extraction, storage and recovery projects sometimes require rights-of-way across federal lands. The federal government usually has broad discretion to grant or deny such rights-of-way. Numerous court decisions make clear that the federal government can condition such permits on steps being taken to protect federal interests.<sup>54</sup> It seems clear that the federal land manager can condition permission to use the federal land upon an agreement by the permittee to limit groundwater pumping that is otherwise lawful under state law.

While the law is clear, the politics are complicated, and such conditions can be controversial. This is the groundwater version of the "bypass flows" controversy that has, for nearly two decades, plagued Forest Service efforts to use its land use permitting authority to protect and restore *surface* water flows in the national forests which have been depleted by non-federal diversions taking place on federal land under state water law.<sup>55</sup>

54. See SAX ET AL., *supra* note 2, at 874-76. See also a recent case thoroughly exploring this issue (albeit in the context of surface water rather than groundwater), *Trout Unlimited v. U.S. Department of Agriculture*, 320 F. Supp. 2d 1090 (D. Colo. 2004).

55. See SAX ET AL., *supra* note 2, at 874-76; GEORGE CAMERON COGGINS, CHARLES F. WILKINSON, JR. & JOHN D. LESHY, *FEDERAL PUBLIC LAND & RESOURCES LAW* 549-52 (5th ed. 2002).

56. See SAX ET AL., *supra* note 2, at 692-771, esp. at 733, 753-54.

57. See WATER POLICIES FOR THE FUTURE, *supra* note

### H. Interstate issues

The federal common law of equitable apportionment, along with compacts and statutes that apply to interstate watercourses, may also operate to restrict use of groundwater in a variety of circumstances.<sup>56</sup> For example, the Special Master in *Arizona v. California* indicated at one point that he was prepared to enjoin additional groundwater pumping in New Mexico where its effect would be to deplete surface water flow earmarked for senior water right holders in Arizona.<sup>57</sup>

To sum up, the federal government has potentially enormous power — through a variety of means — to influence groundwater management throughout the country, and especially in the West where much land is federally owned and many stream systems contain federal reclamation water projects.

## III. The Federal Role in Groundwater Policy

### A. Before 1968<sup>58</sup>

With the advent of the New Deal, the national government assumed new responsibilities in many areas of American life, substantially reworking federal-state relations. But groundwater remained generally subject to state control, for several reasons: First, large-scale extraction of groundwater was not possible until the development of high-speed centrifugal pumps and rural electrification on the eve of World War II.

3, at 244. The Commission's report is discussed more fully below in Section III.B.

58. The material in this section is drawn from a variety of sources, including SAX ET AL., *supra* note 2, at 343-459; WATER POLICIES FOR THE FUTURE, *supra* note 3, at 230-293; CHARLES E. CORKER, *GROUNDWATER LAW, MANAGEMENT AND ADMINISTRATION*, NTIS No. PB 205-527 (1971) (background study for the National Water Commission); and from personal observations derived from my work on these issues over more than three decades.

Groundwater's variability also cut sharply against national rules. Moreover, groundwater rarely had an obvious interstate dimension that invited national involvement — which is how the federal government assumed responsibility for such major surface water projects as Hoover Dam. Finally, groundwater management just lacked political sex appeal, compared to taming a wild river through some colossal engineering achievement.

Nevertheless, more unwittingly than by design, federal policies put in place during this era — including those promoting rural electrification and cheap hydropower, and providing federal subsidies to a variety of agricultural crops — would soon powerfully promote groundwater development.<sup>59</sup> These federal policies did not displace state control over how groundwater was used.

This is not to say, however, that states did very much actual management of the groundwater resource. To the contrary, with few exceptions, the states' approach was *laissez-faire* — to treat groundwater more or less as a commons, to stand aside and let pumpers have as much as they wanted. In most places, state law purported to give landowners rights to pump groundwater without regard to its sustainability, or to its effect on rights to use surface water. As they worked in practice, these state groundwater doctrines may be better understood as rules of liability than as property rules of ownership.<sup>60</sup> In any event, these doctrines created an illusion of unlimited private property rights in groundwater, when in fact the available supply of groundwater and associated surface water was not sufficient to satisfy such rights.

59. SAX ET AL., *supra* note 2, at 440.

60. For a discussion of this idea, see Eric Opiela, *The Rule of Capture in Texas: An Outdated Principle Beyond Its Time*, 6 U. DENV. WATER L. REV. 87, 90 (2002).

Hindsight shows this was a big mistake. Allowing unlimited pumping and characterizing it as a property right, when combined with promotional federal policies, produced predictable results. Pumpers made large investments in operations that depended on groundwater, and they came to think they had open-ended, unlimited private property rights in the groundwater resource. The concealed nature of the resource contributed to this problem of inflated, unrealistic expectations. A farmer or industrial concern might readily appreciate the difficulty of gaining exclusive control over a river that flows through many separately owned parcels of land. Such appreciation may be harder to come by when water is extracted from the bowels of the earth, even though the aquifer from which the water is extracted may extend under many separately owned parcels of land. These unrealistic expectations fueled the notion that the government had limited power to regulate the withdrawal of groundwater.

As large-scale groundwater mining began to occur after World War II, federal policy, which was already promoting such mining, became even more wrong-headed. Far from encouraging the states to take the longer view and manage for sustainability, the federal government actively encouraged groundwater mining. It even invented a new way to subsidize it, by granting a federal tax depletion allowance to pumpers of water from the giant Ogallala Aquifer in the High Plains, which had little natural recharge.<sup>61</sup> And it built projects to “rescue” groundwater miners, with additional federal subsidies. This postponed, but could not avoid, the inevitable day when limits on groundwater had to be reckoned with.

61. See SAX ET AL., *supra* note 2, at 30. The IRS ruling was triggered by a court decision, *United States v. Shurbet*, 347 F.2d 103 (5th Cir. 1965).

## B. A Turn to Greater Federal Involvement

Federal policy makers eventually began to wake up to the error of their ways. A pivotal moment came in 1968, when Congress authorized federal construction of the multi-billion dollar Central Arizona Water Project, or CAP.<sup>62</sup> The project that Arizona got was not the project it originally envisioned, which was to use imported Colorado River water to expand irrigated acreage in central Arizona. Instead, the CAP was expressly designed to be a rescue project, and no more, for Congress prohibited CAP water from being used “directly or indirectly for the irrigation of lands not having a recent irrigation history,” except for Indian land.<sup>63</sup>

Moreover, Congress wanted this to be Arizona’s last federal rescue project. By 1968 it was becoming clear that the water of the Colorado River had been over-allocated. The Colorado was the sole source of supply for the CAP, and both the national government and the other Basin interests wanted to make sure Arizona would not be coming back for more Colorado River water or another federal bailout because it had not been willing to control groundwater mining.<sup>64</sup> Therefore the CAP legislation specifically forbade the Secretary of the Interior from delivering CAP water to any area in Arizona that did not have “adequate” measures in place to “control expansion of irrigation from aquifers affected by the irrigation in the contract service area.”<sup>65</sup> This was a radical departure from past practice: For

the first time ever, Congress insisted on effective state groundwater law reform as a price for getting federal largesse.

This was a rather miraculous bit of progressive policy-making. Even more miraculously, the federal ultimatum worked. True, it remained in the background for ten years as the CAP canal snaked its way across the Arizona desert to the booming cities of Phoenix and Tucson. Arizona obviously was not eager to bring up the subject, and other Basin states (perhaps figuring they would be next to feel this kind of federal prod to reform their groundwater management) appeared to forget about it. Then two things happened: Cecil Andrus became Secretary of the Department of the Interior in 1977, and Bruce Babbitt became governor of Arizona in 1978.

In a bit of drama orchestrated with the new Governor, Secretary Andrus announced he was indeed prepared to enforce the congressional mandate to regulate groundwater pumping. Arizona would have to abandon its Wild West laissez-faire approach to groundwater if it wanted the Secretary to open the spigot of the two billion dollar CAP. Babbitt then almost literally locked key representatives of the state’s big water users in his office for many weeks of hard bargaining until they produced the 1980 groundwater code — a detailed, complex, command-and-control reform that was anything but laissez faire.<sup>66</sup> All this from a state that had always stoutly resisted any meaningful

62. See 43 U.S.C. § 1521 (2000). The material on the events described here is drawn from a variety of sources, including SAX ET AL., *supra* note 2, at 692-705 and the other sources cited there; MARC REISNER, *CADILLAC DESERT* (1987); and STEVEN C. SCHULTE, *WAYNE ASPINALL AND THE SHAPING OF THE AMERICAN WEST* 177-226 (2002). As Associate Solicitor of Interior for Energy and Resources in 1977-80, I was a bit player in some of these events and draw upon some personal observations.

63. 43 U.S.C. § 1524(a) (2000).

64. See SCHULTE, *supra* note 62.

65. 43 U.S.C. § 1524(c) (2000).

66. This is not to suggest the federal ultimatum was the only factor, for an Arizona Supreme Court decision that made it difficult for cities to obtain groundwater for urban growth also played a key role. See SAX ET AL., *supra* note 2, at 427-29; Desmond Connall, *A History of the Arizona Groundwater Management Act*, 1982 ARIZ. ST. L.J. 313.

controls on groundwater pumping, that not too long before had thrust free market apostle Barry Goldwater on the national scene, and that in that same year, 1980, voted overwhelmingly for Ronald Reagan — whose anti-federal regulation views were well-known — for President.

One other important development in the evolution of national groundwater policy occurred in 1968. It grew out of a congressional debate over whether water might be imported into the Colorado River system from the Columbia-Snake River system. Led by members of Congress from the Pacific Northwest, opponents of importation prevailed. While the legislation Congress enacted called on the Secretary of the Interior to conduct “full and complete reconnaissance investigations for the purpose of developing a general plan to meet the future water needs of the Western United States,” it prohibited “any Federal official” from undertaking any study of “any plan for the importation of water into the Colorado River Basin from any other natural river drainage basin” outside of Arizona, California, Colorado and New Mexico.<sup>67</sup> As a consolation prize to import proponents, Congress seized upon a favorite tactic — it set up a commission.<sup>68</sup> While this National Water Commission grew out of the fight over importation, it addressed water policy across the board, including groundwater.

The Commission’s 1973 Report was aptly titled *Water Policies for the Future*. It called for much more attention to be paid to economic efficiencies (leading it to focus on project costs, water pricing, and water mar-

keting); equity (leading it to call for greater attention to Indian water rights); and environmental quality (leading it to pay serious attention to the environment — which was just beginning to become a household word in the early 1970s).

On groundwater specifically, the Commission began by condemning the “misinformation, misunderstanding, and mysticism” that surrounded the subject.<sup>69</sup> It worked hard to demystify the topic, tersely expressing its key findings:

The three principal problems of ground water law, management, and administration are: (1) integrating management of surface water and ground water, (2) depletion of ground water aquifers at rates exceeding recharge (often referred to as the “mining” of ground water), and (3) impairment of ground water quality. Lesser, though important, problems are . . . accelerating collection of ground water data together with fuller and more meaningful interpretation of it, aquifer protection, and subsidence.<sup>70</sup>

On all three points, the Commission rather gently criticized the miserable failure of most states to reform their laws and policies to address these problems. For example, on the first problem, the report noted that “only recently and in only a few water-short Western States has an effort been made to coordinate the administration of the integrated surface water-ground water supply.”<sup>71</sup> On

67. 43 U.S.C. § 1511 (2000). The original prohibition was for ten years but it was extended once, to 1988, and then was permitted to expire, apparently because the Pacific Northwest members of Congress decided the big water project era was over and the risk had passed.

68. National Water Commission Act, Pub. L.

No. 90-515, 82 Stat. 868; see SCHULTE, *supra* note 62, at 204-07, 214.

69. See WATER POLICIES FOR THE FUTURE, *supra* note 3, at 230.

70. *Id.* at 232.

71. *Id.* at 233.

the second, it noted that “[o]nly a few States have squarely faced the . . . problems caused by ground water mining.”<sup>72</sup> On the third, the Commission’s criticism extended to the national government as well; the report noted that little attention had been paid to groundwater pollution even though it has “long-term and sometimes irreversible effects . . . [and] the subject is of national concern.”<sup>73</sup>

Although many of the Commission’s recommendations called simply for reform of state laws and policies, at several points it recommended that the federal government be more involved. For example:

**Recommendation No. 7-6: Any Federal agency seeking authorization of a Federal water project for an area having a usable ground water aquifer should describe and evaluate the ground water management programs of the area.**

**Discussion** — Congress should be apprised of the status of ground water management programs in areas in which the desirability of authorizing Federal water projects is under consideration. Federal agency reports on proposed water projects should contain appropriate descriptions and evaluations of such ground water management programs so the Congress can judge whether or not and the extent to which progress in effective conjunctive management of ground water and surface water is being made and, thus, the extent to which that option is adequately considered as an alternative to proposed Federal projects.<sup>74</sup>

Recognizing that groundwater mining was a “national problem,”<sup>75</sup> the Commission openly wrestled with various alternative ways of dealing with it:

The Commission has given extended thought to the role of the Federal Government in discouraging ground water mining and promoting prudent aquifer management. One possibility is preemptive Federal regulation. The Commission rejects this alternative because it does not think the problem is capable of a single solution and questions the likelihood of a Federal agency developing multiple solutions adaptable to a variety of local conditions.<sup>76</sup>

At the same time, the Commission was clear-eyed about the federal government’s “direct financial interest in ground water mining when a region suffering from overdraft seeks a rescue operation.”<sup>77</sup>

Based on this reasoning, the Commission made the following recommendations:

**Recommendation No. 7-8: The President should issue an executive order directing Federal agencies charged with responsibility of water resource planning and development to include in all pertinent studies and project proposals a description of the ground water resource, whether or not ground water is being mined and, if so, the regulatory and management regime applicable to it, together with an evaluation of that regime.**

**Recommendation No. 7-9: Con-**

72. *Id.* at 232.

73. *Id.* at 243.

74. *Id.* at 238.

75. *Id.* at 242.

76. *Id.*

77. *Id.*

**gress should scrutinize closely the economic justification for water supply projects designed to supply supplementary water to areas that have mined ground water and should examine the circumstances giving rise to the project proposal including the presence or absence of ground water regulation and management, and their operation.**<sup>78</sup>

The Commission also recognized the potential seriousness of groundwater pollution, and acknowledged an important federal role there too. It called for (1) more funding for the U.S. Geological Survey to study and monitor groundwater quality; (2) the federal government to take into account state and local efforts to protect pertinent groundwater quality in considering any federal water supply project; and (3) federal clean water legislation to cover groundwater pollution through the same “regulatory regime and enforcement techniques,” applied to surface water.<sup>79</sup>

Finally, the Commission addressed what it called the “central and pervasive problem” of the lack of basic pertinent information about groundwater, including its availability and its connection with surface flows.<sup>80</sup> It noted that data are “relatively difficult to obtain, costly, and usually less precise than comparable data about the water

that is visible at the earth’s surface.”<sup>81</sup> The Commission did not mince words: it called the data shortcomings “potentially disastrous,” and made rather detailed recommendations for how the U.S. Geological Survey (USGS) should be adequately funded to gather specific data on significant aquifer systems and report the results to Federal, State and local officials (including, specifically, state and federal courts).<sup>82</sup> The Commission also advocated that the national Water Resources Council (since deauthorized) use the USGS data to “formulate recommendations for improved ground water management practices and transmit its recommendations to appropriate Federal, State, and local officials.”<sup>83</sup>

In short, the Commission proclaimed that the era of promoting the use of groundwater without adequate regulation was, or ought to be, over, and that more active, effective management of this vital resource was necessary. It called on States to do a much better job of managing and regulating, and while it rejected a top-down federal approach (except to protect ground water quality), it called for federal policies that actively promoted rather than postponed solutions to these problems. It was a remarkably able and prescient report, and it is noteworthy that westerners with substantial experience in state-level water management (in Arizona, Montana, Oregon, Texas, and Washington) dominated its membership.<sup>84</sup> Coming on the

78. *Id.*

79. *Id.* at 243-44 (Recommendations Nos. 7-10, 7-14, 7-15).

80. *Id.* at 245.

81. *Id.*

82. *Id.* (Recommendations Nos. 7-16 through 7-20).

83. *Id.* (Recommendation No. 7-19).

84. The Chair, Charles Luce, had been a prominent attorney from Washington State, general counsel to an Indian tribe, Administrator of the Bonneville Power Administration, and Undersecretary of the Interior under Stewart Udall; the other six members were Howard Appling

(a former Oregon state official who had worked in the agricultural industry), James Ellis (attorney from Seattle with extensive experience in state and local government issues), Roger Ernst (former Arizona state engineer, water commissioner, land commissioner and water district official), Ray K. Linsley (Engineering Professor at Stanford and consultant to state and federal agencies), James E. Murphy (Montana attorney active on water issues at the state and interstate level), and Josiah Wheat (Texas attorney and state and water district official). *WATER POLICIES FOR THE FUTURE*, *supra* note 3, at iv-v. Its staff and consultants included many westerners experienced in state water management systems. *Id.* at vii.

heels of the 1968 CAP legislation, it pointed the way toward better groundwater management, with the federal government playing a constructive role.

### C. The Current Scenario

It is, frankly, a pity that the Commission's recommendations have mostly not been implemented. Delay in addressing these issues is costly, as economies increasingly rely on unsustainable water practices and expectations harden in resistance to change. As the Commission itself noted with respect to the integration of ground and surface water management, "when the coordination effort comes late - after an economy has been developed in reliance on two different legal systems for one integrated supply — achieving coordinated administration is very difficult."<sup>85</sup>

But the Commission's recommendations remain viable. This was demonstrated when, a quarter-century later, another congressionally chartered blue-ribbon commission revisited western water management. The 1998 report of this Western Water Policy Review Advisory Commission essentially updated and refined much of the work of its predecessor, reaffirming its key conclusions. Among other things, the new Commission recommended that Congress "require state . . . regulation of [groundwater] withdrawals as a condition of federal financial assistance for the construction of new water storage projects."<sup>86</sup> It also asked Congress to "scrutinize proposals for water projects in areas with groundwater mining, especially noting the presence or absence of groundwater regulation and manage-

ment."<sup>87</sup> Finally, it called on all federal agencies with responsibilities in the water area to be aware of "associated groundwater resources and their current management, including . . . rates of depletion."<sup>88</sup>

Now, fast-forward five more years, to the Bush Administration's major water policy pronouncement, *Water 2025*.<sup>89</sup> It contains some nice rhetoric and has some sensible, constructive elements. But on groundwater, the Administration is basically missing in action.

For example, *Water 2025* does not identify groundwater depletion as a priority water management problem in the west. It does not mention the problem of ignoring connections between groundwater and surface water. And it does not include improved groundwater management or replenishment in its tool kit. Indeed, its only statement on the subject is the tepid promise that the U.S. Geological Survey "will enhance groundwater monitoring . . . in critical areas of the West."<sup>90</sup>

One does not have to look too far for an explanation of the Bush Administration's modesty. Its policy is replete with statements like these:

- "Since 1866, federal water law and policy has deferred to states in the allocation and administration of water within their boundaries. This policy will be honored and enhanced by Water 2025."
- Decisions to address "the complex water needs of the West . . . cannot and should not be driven from the federal level."
- "Water 2025 can only work if it is

85. *Id.* at 233.

86. WESTERN WATER POLICY REVIEW ADVISORY COMMISSION, *WATER IN THE WEST: THE CHALLENGE FOR THE NEXT CENTURY*, p. 6-23 (1998).

87. *Id.*

88. *Id.*

89. See U.S. Department of the Interior, *Water 2025: Providing Water for the West*, at <http://www.doi.gov/initiatives/water2025> (last updated June 21, 2004).

90. U.S. DEPARTMENT OF THE INTERIOR, *WATER 2025: PREVENTING CRISES AND CONFLICT IN THE WEST* 18, available at <http://www.doi.gov/water2025/Water2025.pdf> (last visited Oct. 26, 2004).

implemented in accordance with state law."<sup>91</sup>

While the Administration at least acknowledged that the federal government "built many of the water storage and delivery systems in the arid west,"<sup>92</sup> its virtual silence on groundwater, and its zeal to respect state law, assumes that states will solve groundwater problems by themselves. Experience does not support this assumption.

Groundwater mining, for example, is fundamentally created by and tolerated through state law. The artificial bifurcation between groundwater and surface water is a problem solely created by state law, because it is not tolerated in federal law, as the *Cappaert* decision illustrates.<sup>93</sup> Arizona's pre-CAP experience is typical - when states are given absolute supremacy over groundwater management, the result in many places will be continued relentless mining of groundwater and the destruction of dwindling supplies of riparian habitat so that, over time, groundwater depletion reaches crisis proportions, both for water supply and for aquatic ecosystems. There are many other examples.<sup>94</sup>

Although groundwater in much of the

United States is not being managed very well, states will continue to have a primary role in its management. Unilateral, top-down federal solutions are no more likely to be adopted or to work here than in any other aspect of water policy. But as the National Water Commission recognized, the federal government has a constructive role to play. The Arizona experience shows how it can encourage and sometimes even require states to do better. Unfortunately, *Water 2025* seems to ignore that approach, making it a missed opportunity to improve management of a vital natural resource.

*Water 2025* also reflects federal fiscal shortsightedness. Again, the National Water Commission saw the problem clearly, recognizing that groundwater mining is of national concern, not so much from the fact that the resource may be ultimately depleted, although that is a problem, but from the fact that the depletion is unplanned, and the future is not provided for. As disaster approaches, the Federal Government is likely to be implored to step in with a rescue project, to furnish a supplementary water supply at taxpayers' expense to save an economy established in reliance on imprudent overuse of groundwater.<sup>95</sup>

91. *Id.* at 1-3.

92. *Id.* at 11.

93. *See*, discussion, *supra* Section II.A.

94. Consider the State of Wyoming's failure to address the problem of disposing of vast quantities of groundwater that are pumped in coal bed methane extraction. GARY BRYNER, COALBED METHANE DEVELOPMENT IN THE INTERMOUNTAIN WEST 13-16 (Natural Resources Law Center, University of Colorado School of Law, 2002), available at [http://www.colorado.edu/law/centers/nrlc/publications/CBM\\_Primer.pdf](http://www.colorado.edu/law/centers/nrlc/publications/CBM_Primer.pdf) (last visited Nov. 14, 2004). *See also*, JOSHUA SKOV & NANCY MYERS, EASY MONEY, HIDDEN COSTS: APPLYING PRECAUTIONARY ECONOMIC ANALYSIS TO COALBED METHANE IN THE POWDER RIVER BASIN (Science and Environmental Health Network, June 2004), available at [www.sehn.org/pdf/cbm.pdf](http://www.sehn.org/pdf/cbm.pdf) (last visited Nov. 9, 2004). This report estimates that coal bed methane

development could pump 40 million acre-feet of groundwater, causing a several hundred-foot drop in the water table and affecting 5000 water wells. Consider also Nevada's limited and mostly ineffectual response to huge groundwater withdrawals associated with hard-rock mining — a one million acre-foot draw-down in the Humboldt Basin in Nevada alone. One, the Barrick Goldstrike mine, pumps about 80,000 acre-feet a year from its pit, and when it backfills after mining ceases it will likely severely reduce surface flows in the Humboldt River to create the second largest reservoir (after Lake Mead) in Nevada. *See, e.g.*, SAX ET AL., *supra* note 2, at 361-62.

95. WATER POLICIES FOR THE FUTURE, *supra* note 3, at 232. Of course, even when a state has a groundwater management scheme in place that adequately addresses how shortfalls in supply should be allocated, it may still come to the federal government

#### IV. An Appropriate Federal Role

Arizona is managing its groundwater much better than it was before the federal government helped engineer its reform. The Arizona experience suggests the right path for federal policy — to use a mixture of information-gathering, carrots (federal dollars), sticks (federal claims of water rights and enforcement of federal regulatory laws like the Endangered Species Act), and persuasion (conditions in federal reclamation contracts and federal land use permits) to move the states toward more active management of groundwater.

As the National Water Commission emphasized, an essential step is simply gathering information. The U.S. Geological Survey operates about 7200 stream-flow gauges around the country, and in my experience, its support role in this regard is widely accepted. But the states have never advocated for — indeed, they may have quietly resisted — a comparable federal role in groundwater. I believe this is because of their concern that federal information-gathering will ultimately lead to federal displacement of their primacy over groundwater. This extreme short-sightedness has resulted in a great disparity in the amount of federal dollars invested in assessing and monitoring aquifers compared to their importance to the nation in supplying drinking water for

for assistance. Thus, Idaho agricultural interests have been exploring how they might obtain federal funds to ameliorate pain caused by applying Idaho's priority system to curtail groundwater pumping by farmers in order to protect senior water rights in surface springs and the Snake River. See Jennifer Sandmann, *Idaho Debates Idling Farms for Spring Water*, THE TIMES-NEWS (Twin Falls, Idaho), August 19, 2004 (on file with *West-Northwest*) (originally accessed at <http://www.magicvalley.com>); Rocky Barker, *Idaho Farmer May Be Asked to Dry Up 100,000 Acres*, IDAHO STATESMAN, Sept. 3, 2004, Local Section, at 6.

96. See U.S. GEOLOGICAL SURVEY, WATER RESOURCES OF THE UNITED STATES, available at <http://water.usgs.gov/programs.html> (last updated Aug. 12, 2004).

a large proportion of the country.<sup>96</sup>

In much of the West, the federal government operates a giant plumbing system of storage and delivery projects.<sup>97</sup> This system has great potential for facilitating groundwater banking, which is emerging as an essential tool for progressive water management in many areas.<sup>98</sup> Moreover, the federal government's power to contract for the use of this water, including when it seeps into aquifers, gives clear opportunity to promote better management of groundwater, including restoration of associated stream systems.<sup>99</sup>

The assertion of federal claims to groundwater may sometimes lead to negotiated settlements that improve management of groundwater and related surface water with benefits to non-federal as well as federal interests. Around the Lummi Indian Reservation north of Seattle, where Indians and a rapidly growing number of non-Indians pump groundwater from a common pool, and salt water intrusion from nearby Puget Sound threatens all, federal claims to groundwater on behalf of the Indians can help forge a solution to the common problem by forcing non-Indians to the negotiating table.<sup>100</sup> Elsewhere, federal claims to groundwater may help spur states to manage water in a way that acknowledges the interface between ground and surface water.<sup>101</sup>

97. See SAX ET AL., *supra* note 2, at 651-57.

98. See *id.* at 431-59. See also several reports on conjunctive use prepared by The Natural Heritage Institute, found at <http://www.n-h-i.org/Projects/WaterResources/ConjUse/ConjunctiveUse.html> (last visited Nov. 14, 2004).

99. *Id.*

100. SAX ET AL., *supra* note 2, at 862-63.

101. See the Arizona Supreme Court's decision in the *Gila River Adjudication* case, *supra* note 16, recognizing a federal reserved right to groundwater, and its closely related decision, *In re General Adjudication of Gila River System*, 198 Ariz. 330, 334, 9 P.3d 1069, 1073 (2000), recognizing a test for defining sub-flow of surface water that "comports with hydrological reality, as it is currently understood."

Sometimes the federal prod may not be needed. Colorado has developed, without overt federal intervention, a sophisticated system of managing groundwater and surface water in an integrated way that puts it miles ahead of any other western state.<sup>102</sup> The threat of salinity intrusion and aquifer contamination along Southern California's coastal plain has led to some remarkably sophisticated groundwater management there, again without significant federal involvement.<sup>103</sup> (But California is schizophrenic — in its great Central Valley there is precious little management of groundwater.<sup>104</sup>) Land subsidence around Houston from unregulated groundwater pumping led to some modest legal reform, at least on paper, of Texas's wild and woolly rule of capture — the “absolute ownership in the landowner” principle of groundwater law.<sup>105</sup>

But looking across the entire landscape, progress without federal prodding is more the exception than the rule. In most places the federal government is needed, as in Central Arizona, to be a catalyst for constructive change in groundwater management. Its tough stance there was driven by interstate politics, uncharacteristic federal fiscal prudence, and progressive leadership. A more common rationale for more recent federal intervention in state groundwater management has been to preserve biodiversity. Consider the Edwards Aquifer in south-central Texas. Even as pumping

from this vital supply (the sole source of water for the Nation's ninth largest city, San Antonio) increased dramatically, Texas stubbornly resisted regulation. The aquifer discharges into some springs which support several endangered species listed and protected under federal law. Litigation to enforce that law eventually, if slowly, led Texas to begin to come to grips with managing the aquifer to protect not only the species' future, but also that of one of its great cities.<sup>106</sup>

Much the same thing is happening on the Platte River, where endangered species concerns are driving Colorado, Nebraska and Wyoming toward better management of the River and its associated aquifers. A recent editorial in the *Denver Post* underscored the importance of the federal government driving the solution, and noted that the endangered species concerns are forcing Nebraska to stop “ignor[ing] the physical reality that excessive pumping of shallow aquifers near a river reduces the river's water levels . . . [which is a] big problem on the Platte.”<sup>107</sup>

A final example involves the San Pedro, a small desert river in southern Arizona, pleasant enough to the untrained eye but spectacular to biologists and bird-watchers - a remnant of pre-settlement Arizona, before groundwater pumping and surface diversions dried up nearly all Arizona's major rivers.<sup>108</sup> The San Pedro corridor is one of the largest surviving expanses of southwestern cottonwood-willow riparian forests, and is important habitat for

102. See, e.g., SAX ET AL., *supra* note 2, at 361, 401-402.

103. SAX ET AL., *supra* note 2, at 446-59; See WILLIAM BLOMQUIST, *DIVIDING THE WATERS: GOVERNING GROUNDWATER IN SOUTHERN CALIFORNIA* (1992).

104. SAX ET AL., *supra* note 2, at 458.

105. See *Friendswood Development Co. v. Smith-Southwest Industries*, 576 S.W.2d 21 (Tex. 1978); SAX ET AL., *supra* note 2, at 367, 430-31.

106. See, e.g., SAX ET AL., *supra* note 2, at 577-82; GLENNON, *supra* note 6, at 87-97.

107. Editorial, *A Solution on Platte River Fight*, DENVER

POST, Aug. 9, 2004, at B7, available at 2004 WL 59330297. See also Bureau of Reclamation, *Platte River Recovery Program EIS*, at [http://www.usbr.gov/pmts/groundwater/allprojects/platte\\_river.htm](http://www.usbr.gov/pmts/groundwater/allprojects/platte_river.htm) (last updated July 1, 2003).

108. The facts referred to in the discussion of the San Pedro are derived generally from GLENNON, *supra* note 6; see also COMM'N ON ENVTL. COOPERATION, *RIBBON OF LIFE: AN AGENDA FOR PRESERVING TRANSBOUNDARY MIGRATORY BIRD HABITAT ON THE UPPER SAN PEDRO RIVER* (1999) [hereinafter *RIBBON OF LIFE*], available at [http://www.cec.org/pubs\\_docs/documents/index.cfm?varlan=english&ID=283](http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=283) (last visited Nov. 14, 2004).

millions of migratory birds, making it a world-class showcase of biological diversity. *Birder's Digest* named the area the premier birdwatching site in the country.<sup>109</sup>

It is an international stream, arising in Mexico and flowing northward into Arizona where it eventually joins the Gila River. The San Pedro sits atop a large aquifer that contains perhaps 50 million acre-feet of water. Nearby are an army base, Fort Huachuca, and one of Arizona's fastest growing cities, Sierra Vista. The City, the Army, farmers, and others all pump groundwater. The pumping aims a loaded gun at the stream-flow and the riparian corridor. The resulting overdraft will, unless checked, inexorably extinguish the stream and its rich riparian habitat. State law has been inadequate to protect the riparian corridor because the State has been slow to recognize the connection between groundwater and surface water, and because the area is outside the primary regulatory ambit of the 1980 groundwater code.<sup>110</sup>

Formerly in private hands, the legacy of a Mexican land grant, the riparian corridor is now in federal ownership as a result of a three-way state/private/federal trade engineered by then-Governor Babbitt in the mid-1980s. In 1988, Congress made it the nation's first Riparian National Conservation Area, and it is now part of the Bureau of Land Management's National Landscape Conservation System.<sup>111</sup>

The federal legislation expressly reserves water as a matter of federal law to protect the riparian corridor. It also contains the unusual command to the Secretary of the Interior to "take steps necessary to protect" federally reserved water rights, includ-

ing "filing . . . a claim for the quantification of such rights in any present or future appropriate stream adjudications."<sup>112</sup> The federal right has been asserted in the massive Gila River general stream adjudication (filed a quarter of a century ago), but the proceedings are going forward at a glacial pace.<sup>113</sup> Still, the federal water rights, the presence of endangered species and Fort Huachuca make the national government a major player in, and a proponent of, protecting the stream and riparian corridor.

Apparently frustrated with the pace of the adjudication, last year Congress stepped in again, with a little-noticed provision buried in the 2004 National Defense Authorization Act.<sup>114</sup> On the one hand, it clarified that the consultation process of section 7 of the Endangered Species Act did not require consideration of water consumption by *non*-federal entities outside Fort Huachuca, in determining whether federal groundwater pumping would be likely to jeopardize endangered species.<sup>115</sup> On the other hand, and more important, it directed the Secretary of the Interior to "prepare . . . a report on water use management and conservation measures that have been implemented and are needed to restore and maintain the sustainable yield of the regional aquifer by and after September 30, 2011."<sup>116</sup> The report, due by the end of this calendar year, is to:

set forth measurable annual goals for the reduction of the overdrafts of the groundwater of the regional aquifer, to identify specific water use management and conservation measures to facilitate the

109. See GLENNON, *supra* note 6, at 51-69.

110. See, e.g., RIBBON OF LIFE, *supra* note 108.

111. See 16 U.S.C. § 460xx-6 (2000) [San Pedro Riparian National Conservation Area].

112. *Id.* § 460xx-1(d).

113. See *supra* note 101.

114. Pub. L. No. 108-136, § 321, 117 Stat. 1392, 1437-39 (2003).

115. *Id.* § 321(a)(1), 117 Stat. at 1437.

116. *Id.* § 321(c)(1), 117 Stat. at 1438.

achievement of such goals, and to identify impediments in current Federal, State, and local laws that hinder efforts . . . to mitigate water usage in order to restore and maintain the sustainable yield of the regional aquifer by and after September 30, 2011.<sup>117</sup>

The report is supposed to set out the “net quantity of water withdrawn from and recharged to the regional aquifer” in the most recent one-year period,<sup>118</sup> identify annual overdraft reduction goals each year from 2005 through 2011 “to achieve sustainable yield,”<sup>119</sup> and contain an “allocation of responsibility for the achievement of such reduction among” water users in the basin.<sup>120</sup> It must also address monitoring and verification activities, and provide for annual progress reports.<sup>121</sup> While Congress did not mandate that the recommendations in the report be implemented as a matter of federal law, it expressed the “sense of Congress” that “any future appropriations” of federal money to the local water management partnership “should take into account whether the partnership has met its annual goals for overdraft reduction.”<sup>122</sup>

Here, Congress has combined the carrot and the stick. Interestingly, it does not rely on federal claims of water rights, even though the San Pedro has an express federal water right. The “stick” of choice here is instead the threat of enforcement of federal regulatory laws like the ESA. This may be because the ESA is so powerful where listed

endangered species are affected<sup>123</sup> or perhaps because the process of identifying, adjudicating, and enforcing *Winters* rights is so long, complex and expensive. The San Pedro experience also suggests that the assertion of a *Winters* property right may be less politically palatable to state and local interests than the assertion of federal regulatory authority. Indeed, the *Winters* doctrine — the principal basis for federal water rights — has long caused substantial state discomfiture.<sup>124</sup> It may be that in some, perhaps many circumstances, states may be more accepting of federal regulation than they are of federal assertion of property rights in natural resources they see as within their purview.

Finally, the San Pedro may also illustrate, in the end, that solutions may not come easily. The ESA may drive the process, but ultimately further federal carrots might be necessary, in the form of funds for measurement and scientific modeling, for conservation, for water reuse, and for plumbing facilities both to better manage local supplies and, possibly, to import supplies from outside.

## V. Conclusion

As Aldous Huxley said, facts do not cease to exist simply because they are ignored.<sup>125</sup> The nation and its constituent states have not fully faced up to serious groundwater problems. Robert Glennon’s stories of depletion of groundwater and associated surface water are grim reminders

to trigger the ESA section 7 consultation process. This can be a more accessible tool than the direct enforcement of “take” of endangered species under section 9. See 16 U.S.C. § 1536 (2000).

124. SAX ET AL., *supra* note 2, at 781-866, esp. 815-17.

125. Aldous Huxley, *A Note on Dogma*, in PROPER STUDIES 205 (1927). The quotation is available at <http://www.quotationspage.com/subjects/facts> (last visited Nov. 22, 2004).

117. *Id.* § 321(c)(2), 117 Stat. at 1438.

118. *Id.* § 321(c)(3)(A), 117 Stat. at 1438.

119. *Id.* § 321(c)(3)(B), 117 Stat. at 1438.

120. *Id.* § 321(c)(3)(C), 117 Stat. at 1438.

121. *Id.* § 321(d), 117 Stat. at 1438-39.

122. *Id.* § 321(f), 117 Stat. at 1439.

123. In many situations there may be enough of a federal connection to groundwater overdraft

of a resource in trouble.<sup>126</sup> Droughts of recent years — possibly long-term, possibly exacerbated by humanly induced climate change — is leading to more groundwater extraction, more depletion, and more adverse effects on surface water rights and ecosystems.

Grappling with these questions is not easy. Groundwater management can be staggeringly complex, as anyone can attest who has ever waded through page after page of mind-numbing detail in the Arizona groundwater code,<sup>127</sup> or struggled with the definition of “not-nontributary groundwater” along Colorado’s Front Range.<sup>128</sup> While the scientific, technical and legal challenges are daunting, there is room for optimism, if the federal government is willing to assume a more active role. There is much at stake.

126. GLENNON, *supra* note 6, *passim*.

127. See sources cited in SAX ET AL., *supra* note 2, at 428.

128. See Colo. Rev. Stat. Ann. § 37-90-103(10.7) (2004); SAX ET AL., *supra* note 2, at 361.

